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TO: Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621

DATE: October 4, 1993

ATTN: Ms. Juliet Shin

JOB NUMBER: 6-93-5112

SUBJECT: Former Bill Chun's Service Station
2301 Santa Clara Avenue, Alameda, Alameda County, California

WE ARE TRANSMITTING THE FOLLOWING:

One copy of the "Report of Findings: Additional Site Assessment and Third Quarter 1993 Ground Water Monitoring".

CC: Mr. Wayne Chun

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LB
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ORIGINATOR

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

BY _____
Michael E. Quillin, RG
Senior Hydrogeologist

4090 Nelson Avenue, Suite J Concord, CA 94520 Phone (510) 685-4053 Fax (510) 685-5323

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REPORT OF FINDINGS
ADDITIONAL SITE ASSESSMENT AND
THIRD QUARTER 1993 GROUND WATER MONITORING
FORMER BILL CHUN'S SERVICE STATION
2301 SANTA CLARA AVENUE
ALAMEDA, ALAMEDA COUNTY, CALIFORNIA

(ESE PROJECT #6-93-5112)

PREPARED FOR:

FORMER BILL CHUN'S SERVICE STATION
2301 SANTA CLARA AVENUE
ALAMEDA, ALAMEDA COUNTY, CALIFORNIA

AND

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY
DEPARTMENT OF ENVIRONMENTAL HEALTH
80 SWAN WAY, ROOM 200
OAKLAND, CALIFORNIA 94621

PREPARED BY:

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
4090 NELSON AVENUE, SUITE J
CONCORD, CA 94520

OCTOBER 1, 1993

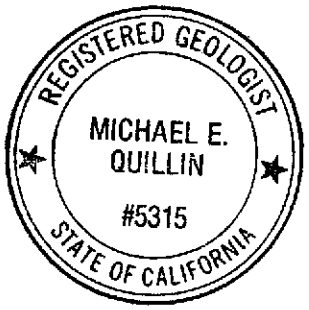
This report has been prepared by Environmental Science & Engineering, Inc. for the exclusive use of Former Bill Chun's Service Station as it pertains to their site located at 2301 Santa Clara Avenue in Alameda, Alameda County, California. Our professional services have been performed using that degree of care and skill ordinarily exercised under similar circumstances by other geologists and engineers practicing in this field. No other warranty, express or implied, is made as to professional advice in this report.

REPORT PREPARED BY:

Michael E. Quillin

OCTOBER 4, 1993
DATE

Michael E. Quillin
Senior Hydrogeologist
California Registered Geologist No. 5315

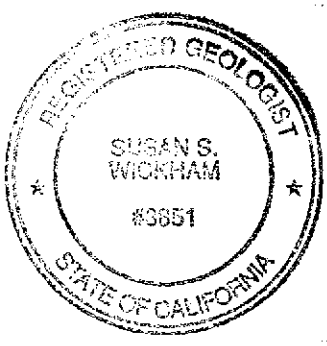


REVIEWED BY:

Susan S. Wickham

Oct. 4, 1993
DATE

Susan S. Wickham
Senior Geologist
California Registered Geologist No. 3851



ESE PROJECT NO. 6-93-5112

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1.0 INTRODUCTION

This report was prepared by Environmental Science & Engineering, Inc. (ESE), and presents the results of additional soil investigation and Third Quarter 1993 ground water monitoring at the Former Bill Chun's Service Station ("site") located at 2301 Santa Clara Avenue in Alameda, Alameda County, California (see Figure 1 - Location Map). Field activities that are the subject of this report were conducted by ESE in September 1993. They included drilling four soil borings at the site, collecting soil samples at selected depths within the borings, installing four monitoring wells, measuring static water levels and collecting ground water samples from the new and existing monitoring wells analyzing the soil and ground water samples for petroleum hydrocarbon content, and conducting limited aquifer testing and analysis. For data evaluation purposes, this report incorporates findings of a Preliminary Site Assessment (PSA) performed by ESE in January 1993 (ESE, 1993a) in presenting conclusions and recommendations for additional work at the site.

The work described herein is pursuant to an April 5, 1993 request for further investigation by the Alameda County Health Care Services Agency, Department of Environmental Health (Alameda County, 1993a). All procedures were consistent with ESE's August 24, 1993 "Workplan for Remedial Investigation" (ESE, 1993b), which was approved, with modifications, by Alameda County in an August 31, 1993 letter to the client contact, Mr. Wayne Chun of Pittsburg, California (Alameda County, 1993b).

1.1 SITE DESCRIPTION

The site is a former service station consisting of a kiosk, a single fuel island with associated canopy, and a separate two-bay repair service building (see Figure 2 - Site Map). An excavation resulting from the July 1992 removal of three underground storage tanks (USTs) remains open. A security fence has been present around the site since January 1993.

The site is relatively flat with an approximate elevation of 30 feet above mean sea level (USGS, 1980). Site physiography and geology were summarized in ESE's March 1993 PSA report (ESE, 1993a).

1.2 INVESTIGATION BACKGROUND

Site investigation was initiated in July 1992, when Parker Environmental Services (Parker) directed the excavation and removal of three gasoline USTs (two 550-gallon and one 285-gallon) and their associated fuel lines and dispensers. Parker reported that a two-inch hole was observed at the bottom of the 285-gallon tank, for which original contents (type of gasoline) were not specified. Parker collected six soil samples in conjunction with the excavation, which was performed by Burnabe & Brinker (B&B): One sample of undisturbed soil from beneath each of the former tanks (approximately nine feet below grade), one from beneath the former fuel island, and two from the stockpiled soil resulting from tank excavation. Sample locations were reportedly directed by a representative of Alameda County. Those locations were shown in Figure 2 - Site Map of ESE's PSA report (ESE, 1993a).

In an August 4, 1992 letter report to B&B, Parker reported the results of soil sample analysis (Parker, 1992). Concentrations of Total Petroleum Hydrocarbons as Gasoline (TPH-gas) up to 16,000 milligrams per Kilogram (mg/Kg) or parts per million (ppm) were reported. Concentrations of Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) up to 1,400 ppm were reported. By far, the highest concentrations of petroleum hydrocarbons were detected in samples collected from beneath the former tanks. ESE was informed by a Parker representative that overexcavation of soil was not performed (Jim Parker, personal communication, 1993).

A stockpile with an estimated volume of 50-60 cubic yards was generated as a result of tank excavation. As part of ESE's PSA, the stockpile was profiled and appropriately disposed. That work was documented in ESE's PSA report (ESE, 1993a).

In January 1993, ESE performed the referenced PSA which included drilling three soil borings to a depth of approximately 25 feet below ground surface (bgs), sampling soil at five foot intervals within the borings and having selected samples analyzed for petroleum hydrocarbon content, installing two-inch diameter monitoring wells in the borings (MW-1, MW-2, and MW-3; Figure 2), measuring static water levels in the wells, and collecting ground water samples which were analyzed for petroleum hydrocarbon content. The work was performed in accordance with ESE's "Workplan for PSA" (ESE, 1992), which was approved, with modifications, by Alameda County in a December 30, 1992 letter to Mr. Wayne Chun (Alameda County, 1992).

ESE's PSA determined that soil in the vicinity of the three borings was impacted with petroleum hydrocarbons, particularly at the approximate vadose zone/saturated zone interface (approximately 10-15 feet bgs). Analytical results for soil samples collected from 10 feet bgs in each boring confirmed that concentrations of petroleum hydrocarbons ranged from 640 to 5,800 ppm. Hydrocarbons detected in soil samples from borings MW-1 and MW-3 were quantified by the analytical laboratory as weathered gasoline. Hydrocarbons in the diesel fuel range were not quantified in any of the samples.

Static water levels in resultant monitoring wells MW-1, MW-2, and MW-3 were approximately nine feet bgs when measured on January 7, 1993. ESE estimated the approximate direction of ground water flow beneath the site as generally westward toward Oak Street (Figure 2). Ground water samples collected from the wells at that time reported TPH-gas concentrations ranging from 8.5 to 110 ppm. In MW-3, the hydrocarbons were quantified as weathered gasoline. No diesel was quantified in any of the samples. BTEX concentrations in the samples ranged from nondetectable to 20 ppm.

Based on findings of the PSA, ESE recommended an additional site investigation to define the extent of petroleum hydrocarbons in site soil and ground water and to further characterize the shallow site subsurface in order to evaluate remedial options.

2.0 METHODS

2.1 SOIL BORINGS

Using Soils Exploration Services, Inc. (SES), ESE drilled the borings for wells MW-4, MW-5, MW-6, and MW-7 on September 1 and 2, 1993. Locations of the additional borings are shown in Figure 2. Drilling, logging, and sample collection were overseen by an ESE geologist in strict accordance with ESE Standard Operating Procedure (SOP) No. 1 for Soil Borings and Soil Sampling with Hollow Stem Augers in Unconsolidated Formations (see Appendix A - ESE Standard Operating Procedures). Soil cuttings were segregated, by boring, and stockpiled onsite on and underneath plastic sheeting.

2.2 SOIL SAMPLING

Soil samples were collected at five-foot intervals in each boring for visual observation and screening for organic vapors. The sample collected from the approximate vadose zone/ground water interface in each boring was preserved for analysis and submitted under appropriate chain of custody documentation to Coast-to-Coast Analytical Services (CCAS). The samples (MW-4-9, MW-5-9, MW-6-10, and MW-7-10) were analyzed by CCAS for fuel fingerprint constituents using EPA Method 5030/8260 modified. In addition, several other soil samples (MW-4-6, MW-5-6, MW-7-6, MW-7-9.5, and MW-7-20), were analyzed by CCAS as described above.

2.3 MONITORING WELL CONSTRUCTION AND DEVELOPMENT

As each boring was completed, ESE coordinated the installation of a two-inch diameter monitoring well in general accordance with ESE SOP No. 2 for Monitoring Well Installation and Development (Appendix A). The wells were constructed with .020-inch slotted PVC screen from total depth (approximately 25 feet bgs) to approximately 7 feet bgs and solid casing from 7 feet bgs to ground surface. Each well was secured with a locking cap and a flush mounted water resistant utility box.

ESE deviated from SOP No. 2 by developing the wells following emplacement of the sand pack but prior to emplacement of the annular seal. This is a widely used procedure that greatly reduces the time necessary to construct, develop, and sample monitoring wells without compromising the wells' integrity. Mechanical surging, bailing, and over pumping techniques were used to settle the sand pack, improve communication between the water bearing zone and the well, and to remove fine sediments and other debris. Water bailed and pumped from the wells was placed in appropriately labeled DOT-rated 55-gallon drums and stored onsite pending laboratory analysis of ground water samples and proper recycling.

2.4 GROUND WATER SAMPLING

On September 7, 1993, ESE measured static water levels in the new wells (MW-4 through MW-7) and existing wells (MW-1 through MW-3) and purged each well and collected ground water samples in accordance with ESE SOP No. 3 for Ground Water Monitoring and Sampling from Monitoring Wells (Appendix A). Purge water was stored in appropriately labeled DOT-rated drums and stored onsite pending analysis and recycling.

Ground water samples were preserved for analysis and transferred under chain of custody documentation to Sequoia Analytical (Sequoia). Sequoia analyzed each sample for total purgeable petroleum hydrocarbons (TPH-gas) with BTEX distinction using EPA Method 5030/8015/8020, and for total extractable petroleum hydrocarbons (TPH-diesel) using EPA Method 3510/3520/8015.

2.5 AQUIFER TESTING AND ANALYSIS

To characterize the hydraulic properties of the shallow site water bearing zone, ESE performed slug tests in each of the new and existing wells on September 14, 1993. The objective of this testing was to obtain estimates for the aquifer parameters of hydraulic conductivity (K) and transmissivity (T), from which ground water flow associated with ground water extraction from the site water bearing zone could be simulated.

The slug testing procedure involved instantaneously introducing a solid cylinder of PVC into a well and recording the downward recovery of ground water using an electronic datalogger. Following recovery of ground water to its static level, the slug was then removed from the well and the upward recovery of ground water was recorded in the same manner. This procedure was repeated for each well.

Slug test data were downloaded from the datalogger onto a personal computer, on which field results were evaluated using interactive curve-matching software (AQTESOLV®) for estimating aquifer parameters. Using the subsequent estimates for K and T, ESE modeled the shallow water bearing zone for flow and advective contaminant transport using (DREAM®), a modular two-dimensional finite-difference ground water flow model.

3.0 FINDINGS

3.1 SOIL BORINGS

Logs for borings MW-4 through MW-7 are presented in Appendix B - Geologic Boring Logs. The logs show a lithologic description of subsurface soils and a graphic log showing general lithology and well installation details. **The shallow subsurface is dominated by a silty sand unit that occurs to total depth (approximately 25 feet bgs) in site borings. Along the northwestern margin of the site, a clayey sand unit four to nine feet thick was observed at approximately four feet bgs in borings MW-4, MW-5, and MW-6. This clayey sand unit was also observed at the bottom of boring MW-6.**

Visual observation and screening with photoionization detector (PID) of soil cuttings and samples revealed that contamination of **subsurface soil with petroleum hydrocarbons at the site is concentrated at a depth of approximately ten feet bgs.** The depth of this apparent "smear" zone is generally coincidental with the estimated occurrence of first ground water over the past year. These findings are consistent with those presented in ESE's PSA report (ESE, 1993a).

3.2 SOIL SAMPLES

Analytical results for soil samples collected from borings during this investigation are summarized in Table 1 - Analytical Results for Soil Samples. Laboratory reports and chain of custody documentation for the samples are presented in Appendix C - Analytical Results and Chain of Custody Documentation for Soil Samples. For the purpose of comparing these data with previous findings, analytical results for soil samples collected from borings drilled during ESE's January 1993 PSA are presented in Table 1.

The results presented in Table 1 demonstrate two primary findings: First is that analytical results confirm visual observation that the bulk of the contamination with petroleum hydrocarbons is at a depth of 9-10 feet bgs. Secondly, it is noted that no petroleum

hydrocarbons were detected in samples from boring MW-4, located at the northwestern margin of the site (Figure 2). It should also be noted that petroleum hydrocarbons in the current samples were not quantified as weathered gasoline, as were two of the samples collected during the PSA (ESE, 1993a).

3.3 GROUND WATER ELEVATIONS

Ground water elevations measured by ESE in site wells on September 7 are contoured in Figure 3 - Ground Water Elevations. For reference, datum, depth to water, and elevation relative to MSL are tabulated in the figure. The results show an overall gradient toward the northeast with a magnitude of approximately .006 feet/foot (30 feet/mile).

3.4 GROUND WATER SAMPLES

Analytical results for ground water samples collected by ESE on September 7, 1993 are summarized in Table 2 - Analytical Results for Ground Water Samples. Laboratory reports and chain of custody documentation for the samples are presented in Appendix D - Analytical Results and Chain of Custody Documentation for Ground Water Samples.

Results summarized in Table 2 document that ground water at all locations sampled has been impacted by petroleum hydrocarbons. These hydrocarbons are primarily in the gasoline range, but extractable hydrocarbons (diesel and non-diesel mixtures) were also detected in each sample. The data also demonstrate that the highest concentrations of petroleum hydrocarbons occur in samples from wells adjacent to and downgradient of the former USTs (MW-1, MW-2, MW-5, MW-6, and MW-7). Of note is that the highest concentrations of all constituents measured occur in the sample from MW-2, which is immediately adjacent to and downgradient of the former USTs. The occurrence of petroleum hydrocarbons in wells MW-3 and MW-4, which are downgradient of the former fuel island and USTs, suggests that an offsite source for petroleum hydrocarbons may exist to the south. Why?

To estimate the approximate extent of petroleum hydrocarbons in ground water associated with the site, ESE prepared contour maps of TPH-gas, benzene, and TPH-diesel concentrations in ground water, which are presented as figures 4, 5, and 6, respectively. These diagrams suggest two key findings: The source for the highest concentrations of petroleum hydrocarbons appears to be near the former USTs, and some petroleum hydrocarbons may have migrated offsite in ground water.

A trip blank collected by ESE (Trip; Table 2), preserved with the remaining samples and analyzed for BTEX reported nondetectable concentrations of those constituents. The trip blank is a quality control sample collected as a check on ESE's sample handling and transport procedures. The results indicate that ESE's sample handling and transport procedures did not result in sample cross-contamination.

3.5 AQUIFER TESTING AND ANALYSIS

Raw field data collected during ESE's September 14, 1993 aquifer testing (slug testing) are presented in Appendix E - Slug Test Data. These data represent corrected relative changes in water levels in each well in response to introduction and removal of a slug, as described in Section 2.5. The data were collected using a Hermit SE2000 Environmental Logger with associated pressure transducer.

Field data were processed with AQTESOLV®, an interactive curve matching software. ESE used both the Bouwer and Rice (1976) slug test solution for unconfined aquifers and the Cooper-Jacob (1967) slug test solution for confined aquifers to find the best curve fit and thereby the best estimates for K and T. The plotted data and associated curves using both solutions for each well are presented as Appendix F - Aquifer Test Solution Plots. In general, the confined aquifer solutions show the best curve match, but data for both solutions are generally consistent and show estimates that average approximately .0015 feet/minute for K and .02 feet^2/minute for T. This K is consistent with that for a clean to silty sand, which is the dominant lithology of the site's water bearing zone.

Based on these results, ESE simulated ground water flow to an extraction well at the downgradient margin of the site. For the purpose of this simulation, ESE used MW-1 as the extraction well and a conservative pumping rate of one gallon per minute (gpm). The results of this simulation demonstrated that capture of the estimated hydrocarbon plume can be accomplished with the single well/one gpm scenario, should an extraction system for ground water remediation be required.

During ESE's aquifer testing, routine monitoring of static water levels revealed that approximately .25 feet (3 inches) of free product was present on ground water in well MW-5. No product was observed in this well when it was monitored and sampled one week earlier.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this investigation, combined with those of ESE's January 1993 PSA, ESE makes the following conclusions:

- Excavation of the former USTs and associated backfill and some native soil in July 1992 did not adequately address all soil impacted by petroleum hydrocarbons at the site.
- The source for the elevated concentrations of petroleum hydrocarbons in soil at the site appears to be related to the former USTs and associated equipment and piping.
- Soil impacted by petroleum hydrocarbons, as observed in the previous and current soil borings, is generally found at a depth of approximately 10 feet bgs, which is the approximate vadose zone/ground water interface. As such, this zone of contamination appears to be a smear zone associated with fluctuation of the water table. Therefore, it would not be advisable to conduct additional excavation (beyond the immediate area of the former excavation) at the site to remove this zone of contamination when other remedial alternatives may be preferable.
- Ground water elevations measured for all site wells reveal that the general direction of ground water flow beneath the site is to the northeast, which will be the preferred direction of migration for dissolved petroleum hydrocarbons in ground water.
- **Petroleum hydrocarbons were detected in ground water samples collected from all wells at the site, and at particularly high concentrations in the wells adjacent to and downgradient of the former USTs. These data suggest that the former USTs were the source for the hydrocarbons found in ground water. Petroleum hydrocarbons detected in upgradient wells are indicative of a potential offsite source to the south of the site.**
- Estimates for the extent of petroleum hydrocarbons in shallow site ground water, as represented using TPH-gas, benzene, and TPH-diesel concentrations, indicate that hydrocarbons do not appear to have migrated offsite in the downgradient direction. However, petroleum hydrocarbons appear to be offsite to the northwest and southeast. **Free product observed in one site well indicates that significant concentrations of petroleum hydrocarbons in soil and/or ground water may still be present onsite.**

- Aquifer testing and analysis of the data reveal results that are consistent with the observed lithology of the site's shallow water bearing zone, which is a silty sand. Furthermore, simulation of a one-well extraction system based on those results demonstrates that capture of the existing hydrocarbon plume, as estimated from current data, can be accomplished using that scenario.
- Remediation of site ground water using an extraction system that serves to lower the ground water level will expose the presumed smear zone such that soil remediation can be effected using soil vapor extraction technology.

In consideration of these conclusions, ESE recommends the following course of action:

- Measure and bail free product from well MW-5 weekly for a period of approximately one month. If the amount of free product on ground water is not reduced, install a skimmer in the well to initiate passive removal of free product in the vicinity of that well, and to inhibit potential offsite migration of free product.
- Based on soil data from original tank excavation activities (Parker, 1992) and ESE's visual observation of the excavation, additional excavation in the immediate area of the excavation to remove potential source materials should be conducted. Subsequent to additional excavation, the excavation should be appropriately backfilled and compacted to prevent potential personal injury to the public.
- The site lithology and aquifer test data indicate that vapor extraction and air sparging may be applicable for site remediation following free product removal. Pilot testing should be performed to evaluate the effectiveness of the air sparging/vapor extraction in-situ treatment. Based on test results, remedial options should be evaluated in depth in the form of a feasibility study.
- Prepare specifications and cost estimates for an interim remediation system to be employed to arrest potential offsite migration of petroleum hydrocarbons in ground water. The system should be designed such that its adaptation as a full remedial system can be readily accomplished.

5.0 REFERENCES

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TABLE 2

ANALYTICAL RESULTS FOR GROUND WATER SAMPLES

Former Bill Chun's Service Station
2301 Santa Clara Avenue, Alameda

Well No.	Purgeable Hydrocarbons (TPH-Gas)	Benzene	Toluene	Ethylbenzene	Total Xylenes	Extractable Hydrocarbons (TPH-Diesel)
MW-1	28.0	11.000	2.100	0.380	1.200	1.000
MW-2	140.0	46.000	28.000	3.300	15.000	8.200
MW-3	2.8	0.019	0.046	0.0077	0.023	2.500
MW-4	0.44	0.0027	0.0012	0.001	0.0019	0.330
MW-5	37.0	2.700	1.700	0.870	4.600	1.700
MW-6	10.0	1.300	0.540	0.370	1.600	1.400
MW-7	24.0	6.800	4.800	0.490	2.300	1.300
TRIP	NA	ND<.0005	ND<.0005	ND<.0005	ND<.0005	NA

Notes:

Samples collected on September 7, 1993 by ESE.
Samples analyzed by Sequoia Analytical, Concord, California.
All results presented in milligrams per Liter (parts per million).

NA = Analysis not requested
ND = Not detected at reporting limit shown

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TABLE 1

ANALYTICAL RESULTS FOR SOIL SAMPLES

Former Bill Chun's Service Station
2301 Santa Clara Avenue, Alameda

Sample/ Depth (feet)	TPH-Gas	Benzene	Toluene	Ethylbenzene	Xylenes	TPH-Diesel
MW-1/10	640*	1.500	17.000	10.000	54.000	ND<50.0
MW-2/10	5,800	110.0	850.0	210.0	1,200	ND<300.0
MW-3/10	2,100*	ND<.5	2,000	ND<.5	1,400	ND<50.0
MW-4/6	ND<1	ND<.005	ND<.005	ND<.005	ND<.005	ND<5.0
MW-4/9	ND<1	ND<.005	ND<.005	ND<.005	ND<.005	ND<5.0
MW-5/6	ND<1	ND<.005	.006	ND<.005	0.096	ND<5.0
MW-5/9	11,000	34.000	310.0	180.0	1,000	NQ
MW-6/10	3,400	8.000	65.000	48.000	290.0	NQ
MW-7/6	ND<1	0.045	.030	ND<.005	0.016	ND<5.0
MW-7/9.5	9,000	190.0	720.0	170.0	1,000	NQ
MW-7/10	13,000	250.0	990.0	260.0	1,600	NQ
MW-7/20	ND<1	0.038	0.100	0.020	0.140	ND<5.0

NOTES:

Samples MW-1/10, MW-2/10, and MW-3/10 collected by ESE on January 4, 1993; Remaining samples collected by ESE on September 1 and 2, 1993.

All samples analyzed by Coast-to-Coast Analytical Services, Benicia and San Jose, California.
All results presented in milligrams per Kilogram (parts per million).

TPH-Gas = Total Petroleum Hydrocarbons quantified as Gasoline.
TPH-Diesel = Total Petroleum Hydrocarbons quantified as Diesel Fuel.
* = Petroleum Hydrocarbons quantified as Weathered Gasoline.
ND = Nondetectable at or above the listed Practical Quantitation.
NQ = Petroleum Hydrocarbons not quantified as Diesel Fuel.

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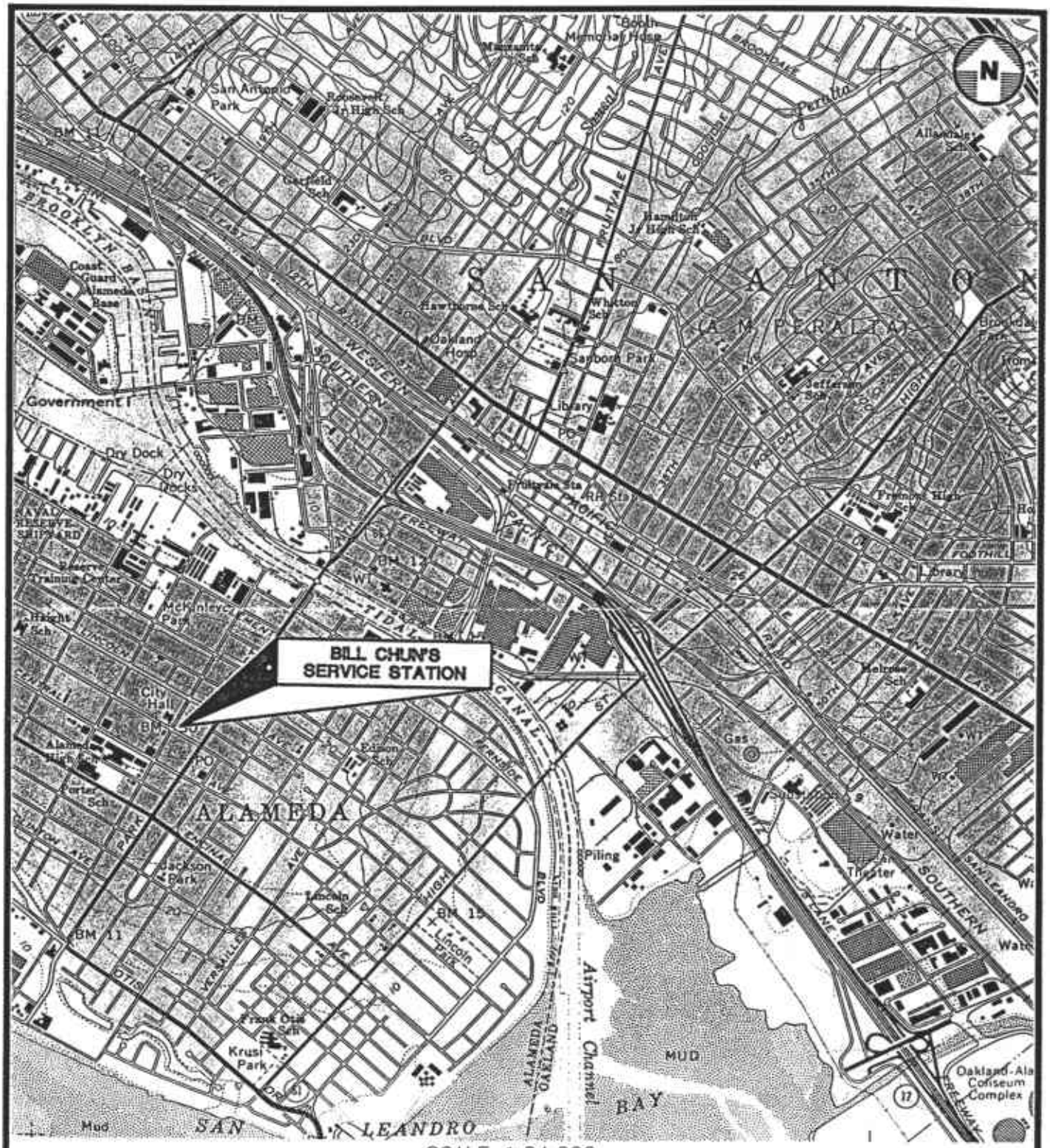
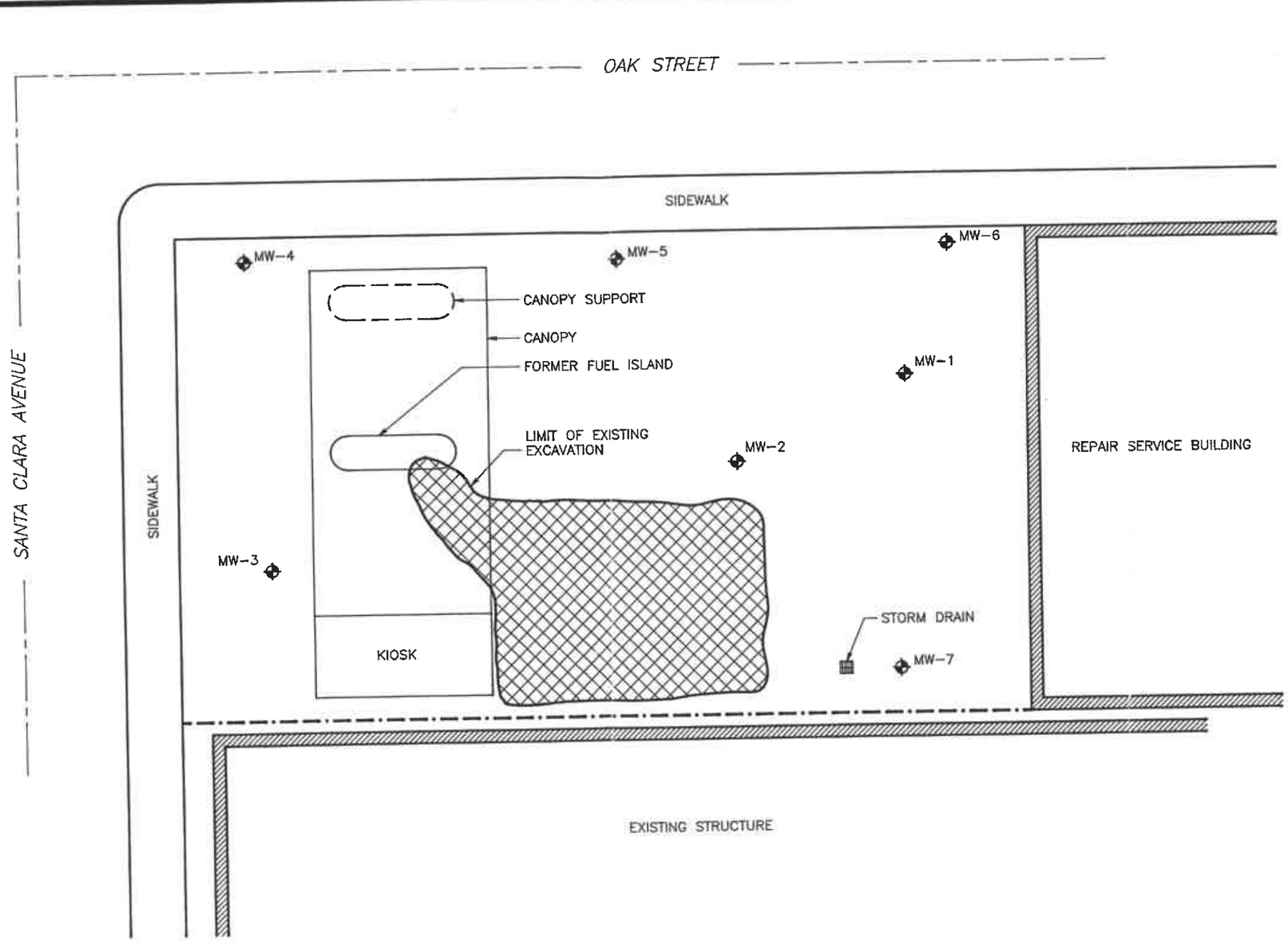


ADAPTED FROM U.S.G.S. OAKLAND EAST 7.5 MINUTE TOPOGRAPHIC QUADRANGLE MAP, 1959, PHOTOREVISED 1980.

ESE A CELCORP Company — Environmental Science & Engineering, Inc.	DATE 8/93	LOCATION MAP	FIGURE NO. 1
4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	REVISED	BILL CHUN'S SERVICE STATION 2301 SANTA CLARA AVENUE ALAMEDA, CALIFORNIA	PROJ. NO. 6-93-5112
	CAD FILE 51121001		

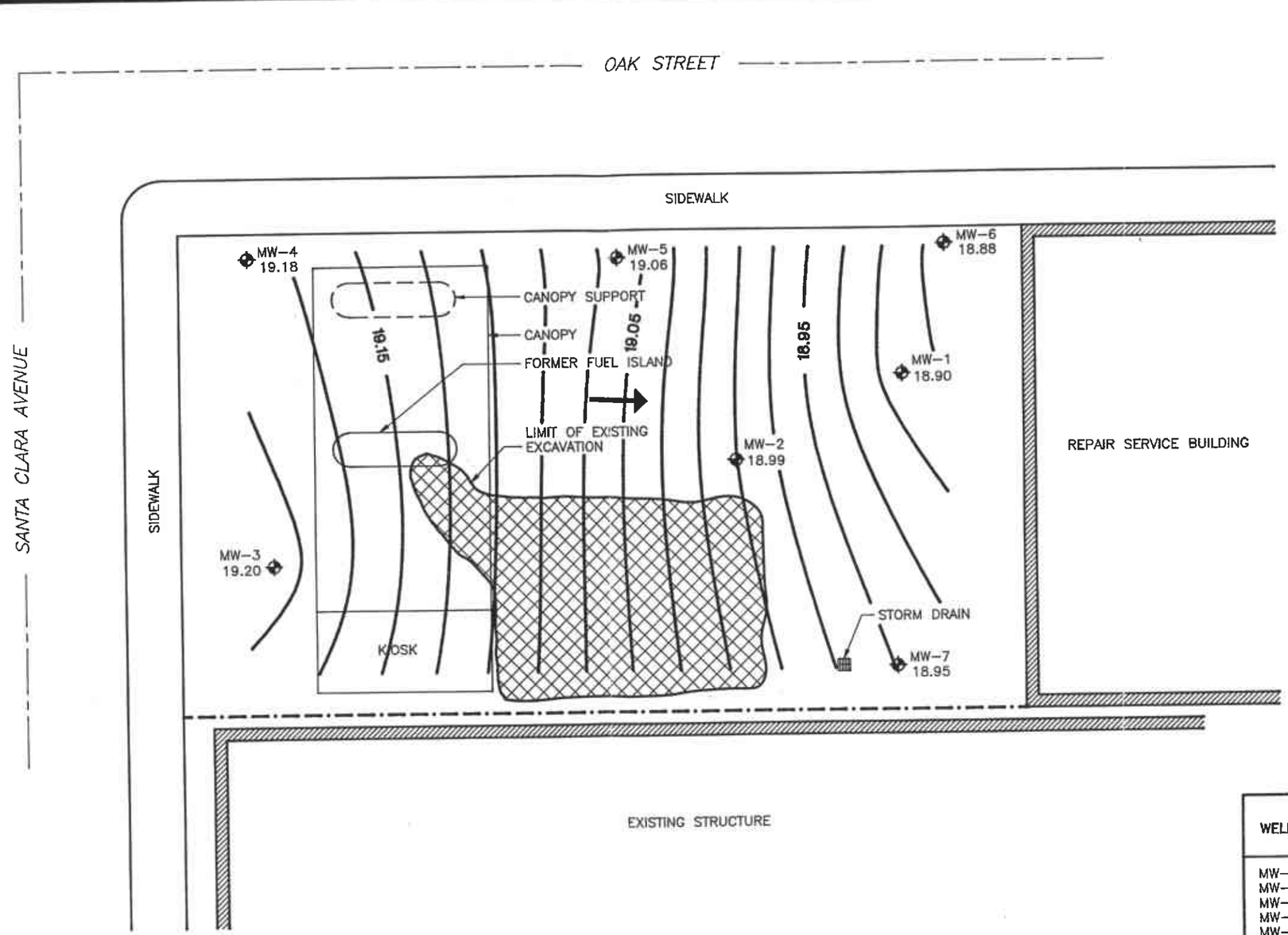


LEGEND

- EXISTING MONITORING WELL LOCATION
- PROPERTY BOUNDARY

SCALE
0 10 FEET

ESE A CILCORP Company Environmental Science & Engineering, Inc. 4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	DATE 8/93 REVISED 9/93 MEQ CAD FILE 51121002	SITE MAP BILL CHUN'S SERVICE STATION 2301 SANTA CLARA AVENUE ALAMEDA, CALIFORNIA	FIGURE NO. 2 PROJ. NO. 6-93-5112



WELL	DATUM	DEPTH TO WATER	ELEVATION
MW-1	28.53	9.63	18.90
MW-2	28.51	9.52	18.99
MW-3	28.82	9.62	19.20
MW-4	28.57	9.39	19.18
MW-5	28.37	9.31	19.06
MW-6	28.41	9.53	18.88
MW-7	28.56	9.61	18.95

LEGEND

- EXISTING MONITORING WELL LOCATION
- PROPERTY BOUNDARY
- 18.88 GROUND WATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (MSL)
- 19.05 GROUND WATER ELEVATION CONTOUR IN FEET ABOVE MSL
- APPROXIMATE DIRECTION OF GROUND WATER FLOW

SCALE
0 10 FEET

CONTOUR INTERVAL = 0.02 FEET

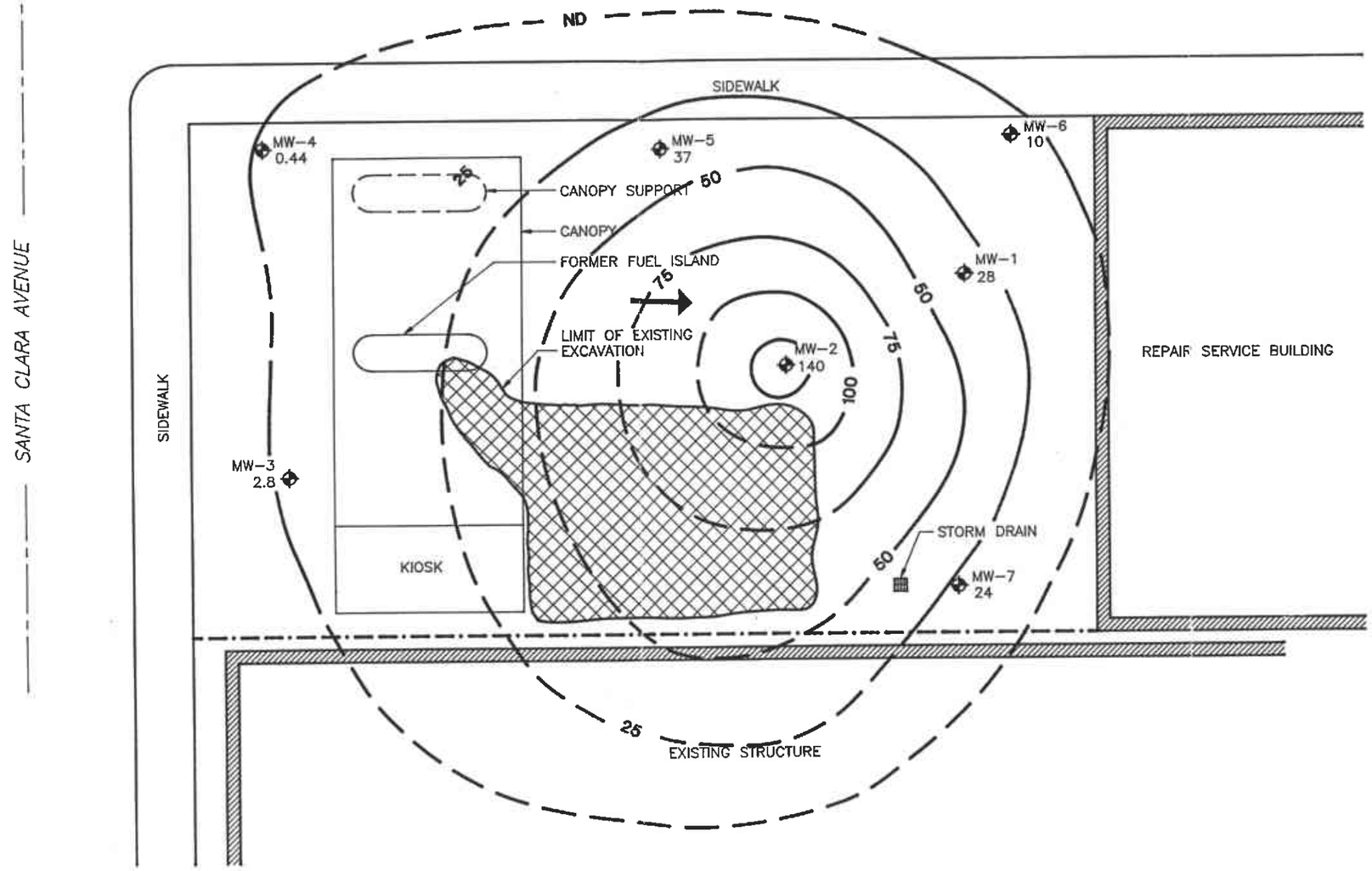
ESE A CALCORP Company
Environmental Science & Engineering, Inc.
4090 NELSON AVENUE, SUITE J
CONCORD, CA 94520

DATE 9/93
REVISED
CAD FILE 51121003

GROUND WATER ELEVATIONS
SEPTEMBER 7, 1993

BILL CHUN'S SERVICE STATION
2301 SANTA CLARA AVENUE
ALAMEDA, CALIFORNIA

FIGURE NO. 3
PROJ. NO. 6-93-5112



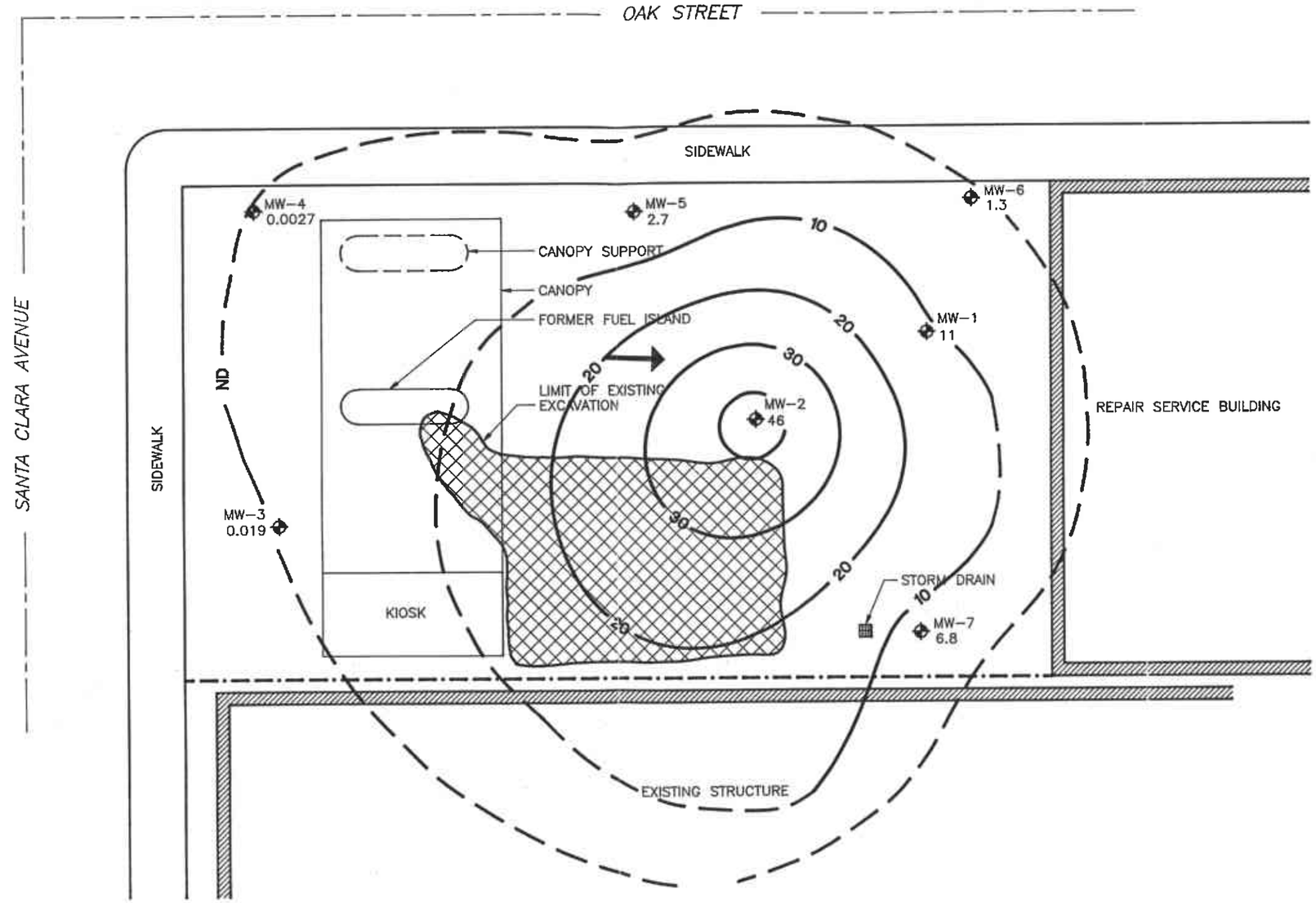
LEGEND

- ◆ EXISTING MONITORING WELL LOCATION
- PROPERTY BOUNDARY
- 140 TPH-GAS (TPH-G) CONCENTRATION IN MILLIGRAMS PER LITER (mg/L)
- 100 TPH-G CONCENTRATION CONTOUR IN mg/L (DASHED WHERE INFERRED)
- APPROXIMATE DIRECTION OF GROUND WATER FLOW

SCALE
0 10 FEET

CONTOUR INTERVAL = 25 mg/L

ESE A CILCORP Company — Environmental Science & Engineering, Inc. 4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	DATE 9/93 REVISED CAD FILE 51121004	TPH-GAS CONCENTRATIONS IN GROUND WATER SEPTEMBER 7, 1993 BILL CHUN'S SERVICE STATION 2301 SANTA CLARA AVENUE ALAMEDA, CALIFORNIA	FIGURE NO. 4 PROJ. NO. 6-93-5112



LEGEND

- EXISTING MONITORING WELL LOCATION
- PROPERTY BOUNDARY
- 46 BENZENE CONCENTRATION IN GROUND WATER IN MILLIGRAMS PER LITER (mg/L)
- 35 BENZENE CONCENTRATION CONTOUR IN mg/L (DASHED WHERE INFERRED)
- APPROXIMATE DIRECTION OF GROUND WATER FLOW

SCALE
0 10 FEET

CONTOUR INTERVAL = 10 mg/L

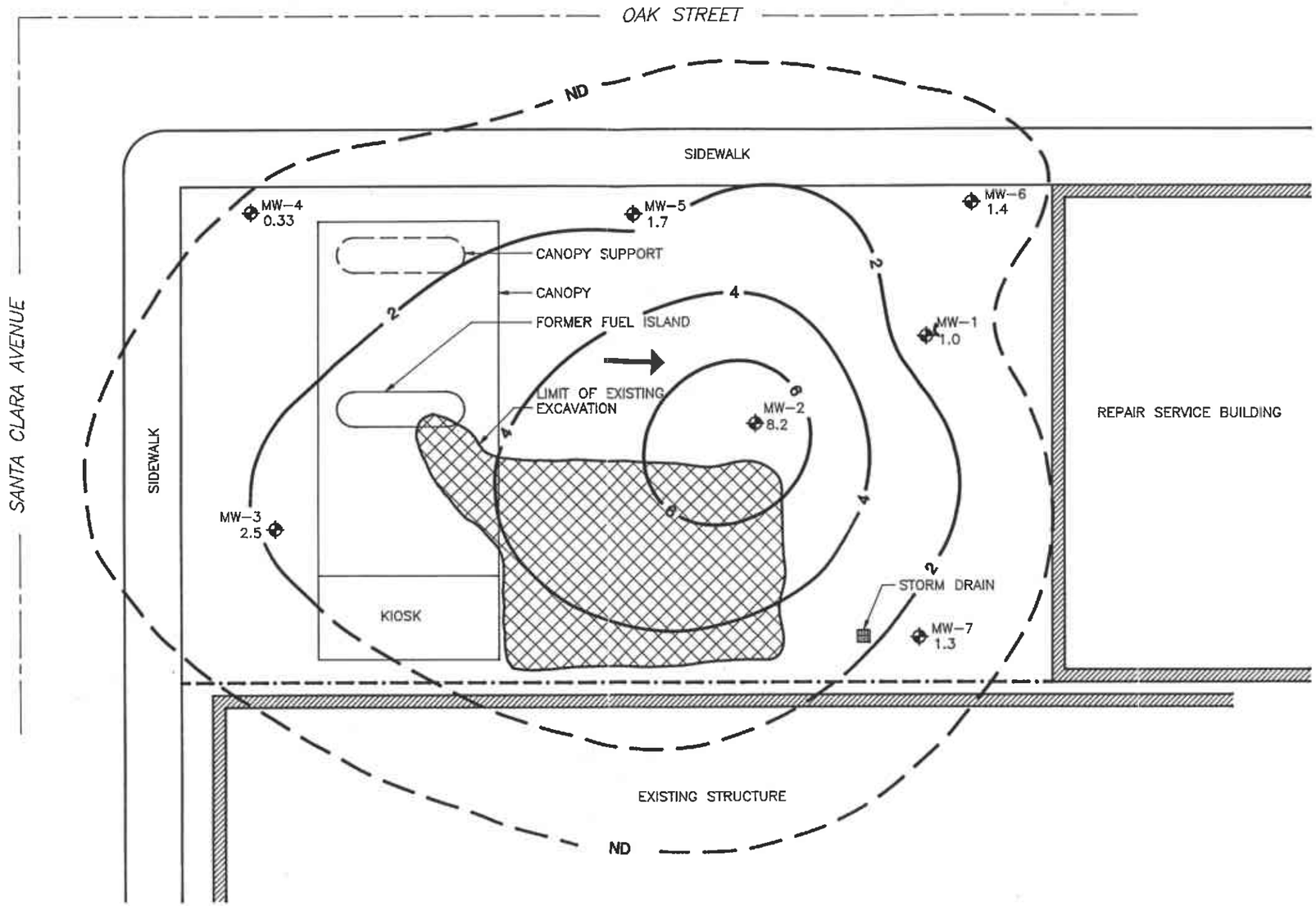
ESE Environmental Science & Engineering, Inc.
A CILCORP Company
4090 NELSON AVENUE, SUITE J
CONCORD, CA 94520

DATE 9/93
REVISED
CAD FILE 51121005

BENZENE CONCENTRATIONS IN GROUND WATER SEPTEMBER 7, 1993

BILL CHUN'S SERVICE STATION
2301 SANTA CLARA AVENUE
ALAMEDA, CALIFORNIA

FIGURE NO. 5
PROJ. NO. 6-93-5112



LEGEND

- EXISTING MONITORING WELL LOCATION
- PROPERTY BOUNDARY
- 8.2 TPH–DIESEL (TPH–D) CONCENTRATION IN GROUND WATER IN MILLIGRAMS PER LITER (mg/L)
- 7 TPH–D CONCENTRATION CONTOUR IN mg/L (DASHED WHERE INFERRED)
- APPROXIMATE DIRECTION OF GROUND WATER FLOW

SCALE
0 10 FEET

CONTOUR INTERVAL = 2 mg/L

ESE A CELCORP Company
Environmental Science & Engineering, Inc.
4090 NELSON AVENUE, SUITE J
CONCORD, CA 94520

DATE 9/93
REVISED
CAD FILE 51121006

TPH–DIESEL CONCENTRATIONS IN GROUND WATER SEPTEMBER 7, 1993

BILL CHUN'S SERVICE STATION
2301 SANTA CLARA AVENUE
ALAMEDA, CALIFORNIA

FIGURE NO. 6
PROJ. NO. 6–93–5112

APPENDIX A

ESE STANDARD OPERATING PROCEDURES

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
CONCORD, CALIFORNIA OFFICE

STANDARD OPERATING PROCEDURE NO. 1
FOR SOIL BORINGS AND SOIL SAMPLING WITH HOLLOW-STEM AUGERS IN UNCONSOLIDATED FORMATIONS

Environmental Science & Engineering, Inc. (ESE) typically drills soil borings using a truck-mounted, continuous-flight, hollow-stem auger drill rig. The drill rig is owned and operated by a drilling company possessing a valid State of California C-57 license. The soil borings are conducted under the direct supervision and guidance of an experienced ESE geologist. The ESE geologist logs each borehole during drilling in accordance with the Unified Soil Classification System (USCS). Additionally, the ESE geologist observes and notes the soil color, relative density or stiffness, moisture content, odor (if obvious) and organic content (if present). The ESE geologist will record all observations on geologic boring logs.

Soil samples are collected during drilling at a minimum of five-foot intervals by driving an 18-inch long Modified California Split-spoon sampler (sampler), lined with new, thin-wall brass sleeves, through the center of and ahead of the hollow stem augers, thus collecting a relatively undisturbed soil sample core. The brass sleeves are typically 2-inches in diameter and 6-inches in length. The sampler is driven by dropping a 140-pound hammer 30-inches onto rods attached to the top of the sampler. Soil sample depth intervals and the number of hammer blows required to advance the sampler each six-inch interval are recorded by the ESE geologist on geologic boring logs. The ends of one brass sleeve are covered with Teflon sheeting, then covered with plastic end caps. The end caps are sealed to the brass sleeve using duct tape. Each sample is then labeled and placed on ice in a cooler for transport under chain of custody documentation to the designated analytical laboratory. A portion of the remaining soil in the sampler is placed in either a new Ziploc® bag or a clean Mason Jar® and set in direct sunlight to enhance the volatilization of any Volatile Organic Compounds (VOCs) present in the soil. After approximately 15-minutes that sample is screened for VOCs using a photoionization detector (PID). The PID measurements will be noted on the geologic boring logs. The PID provides qualitative data for use in selecting samples for laboratory analysis. Soil samples from the saturated zone (beneath the ground-water table) are collected as described above, are not screened with the PID, and are not submitted to the analytical laboratory. The samples from the saturated zone are used for descriptive purposes. Soil samples from the saturated zone may be retained as described above for physical analyses (grain size, permeability and porosity testing).

If the soil boring is not going to be completed as a well, then the boring is typically terminated upon penetrating the saturated soil horizon or until a predetermined interval of soil containing no evidence of contamination is penetrated. This predetermined interval is typically based upon site specific regulatory or client guidelines. The boring is then backfilled using either neat cement, neat cement and bentonite powder mixture (not exceeding 5% bentonite), bentonite pellets, or a sand and cement mixture (not exceeding a 2:1 ratio of sand to cement). However, if the boring is to be completed as a monitoring well, then the boring is continued until either a competent, low estimated-permeability, lower confining soil layer is found or 10 to 15-feet of the saturated soil horizon is penetrated, whichever occurs first. If a low estimated-permeability soil layer is found, the soil boring will be advanced approximately five-feet into that layer to evaluate its competence as a lower confining layer, prior to the termination of that boring.

All soil sampling equipment is cleaned between each sample collection event using an Alconox® detergent and tap water solution followed by a tap water rinse. Additionally, all drilling equipment and soil sampling equipment is cleaned between borings, using a high pressure steam cleaner, to prevent cross-contamination. All wash and rinse water is collected and contained onsite in Department of Transportation approved containers (typically 55-gallon drums) pending laboratory analysis and proper disposal/recycling.

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
CONCORD, CALIFORNIA OFFICE

STANDARD OPERATING PROCEDURE NO. 2
FOR MONITORING WELL INSTALLATION AND DEVELOPMENT
PAGE 1

Environmental Science & Engineering, Inc. (ESE) typically installs ground-water monitoring wells in unconsolidated sediments drilled using a truck-mounted hollow-stem auger drill rig. The design and installation of all monitoring wells is performed and supervised by an experienced ESE geologist. Figure A - Typical ESE Monitoring Well Construction Diagram (attached) graphically displays a typical ESE well completion. Prior to the construction of the well, the portion of the borehole that penetrates a lower confining layer (if any) is filled with bentonite pellets. The monitoring well is then constructed by inserting polyvinylchloride (PVC) pipe through the center of the hollow stem augers. The pipe (well-casing) is fastened together by joining the factory threaded pipe ends. ESE typically uses two-inch or four-inch diameter pipe for ground-water monitoring wells. The diameter of the borehole is typically 6-inches greater than that of the diameter of the well-casing, but is at least four-inches greater than that of the well casing. The lowermost portion of the well-casing will be factory perforated (typically having slot widths of 0.010-inch or 0.020-inch). The slotted portion of the well-casing will extend from the bottom of the boring up to approximately five-feet above the occurrence of ground water. A PVC slip or threaded cap will be placed at the bottom end of the well-casing, and a locking expandable well cap will be placed over the top (or surface) end of the well-casing. A sand pack (typically No. 2/12 or No. 3 Monterey sand) will be placed in the borehole annulus, from the bottom of the well-casing up to one to two-feet above the top of the slotted portion, by pouring the clean sand through the hollow stem augers. One to two-feet of bentonite pellets will be placed on top of the sand pack. The bentonite pellets will then be hydrated with three to four-gallons of potable water, to protect the sand pack from intrusion during the placement of the sanitary seal. The sanitary seal (grout) will consist of either neat cement, a neat cement and bentonite powder mixture (containing no more than 5% bentonite), or a neat cement and sand mixture (containing no more than a 2:1 sand to cement ratio). If, the grout seal is to be greater than 30-feet in depth or if standing water is present in the boring on top of the bentonite pellet seal, then the grout mixture will be tremied into the boring from the top of the bentonite seal using either a hose, pipe or the hollow-stem augers, which serve as a tremie. The well will be protected at the surface by a water tight utility box. The utility box will be set into the grout mixture so that it is less than 0.1-foot above grade, to prevent the collection of surface water at the well head. If the well is set within the public right of way, then the utility box will be Department of Transportation (DOT) traffic rated, and the top of the box will be set flush to grade. If the well is constructed in a vacant field a brightly painted metal standpipe may be used to protect the well from traffic. If a standpipe is used, it will be held in place with a grout mixture and will extend one to two-feet above ground surface. All well completion details will be recorded by the ESE geologist on the geologic boring logs.

Subsequent to the solidification of the sanitary seal of the well (a minimum of 72 hours), the new well will be developed by an ESE geologist or field technician. Well development will be performed using surging, bailing and overpumping techniques. Surging is performed by raising and lowering a surge block through the water column within the slotted interval of the well casing. The surge block utilized has a diameter just smaller than that of the well casing, thus, forcing water flow through the sand pack due to displacement and vacuum caused by the movement of the surge block. Bailing is performed by lowering a bailer to the bottom of the well and gently bouncing the bailer off of the well end cap, then removing the full bailer and repeating the procedure. This will bring any material (soil or PVC fragments) that may have accumulated in the well into suspension for removal. Overpumping is performed by lowering a submersible pump to the bottom of each well and pumping at the highest sustainable rate without completely evacuating the well casing. Effective well development will settle the sand pack surrounding the well-casing, which will improve the filtering properties of the sand pack and allow water to flow more easily through the sand pack; improve the communication between the aquifer and the well by aiding the removal of any smearing of fine sediments along the borehole penetrating the aquifer; and, remove fine sediments and any foreign objects (PVC fragments) from the well casing. The ESE geologist or

technician will monitor the ground water purged from the well during development for clarity, temperature, pH and conductivity. Development of the well will proceed until the well produces relatively clear, sand-free water with stable temperature, pH and conductivity measurements. At a minimum, 10 well-casing volumes of ground water will be removed during the development process. Measurements of temperature, conductivity, pH and volume of the purged water and observations of purge water clarity and sediment content will be recorded on the ESE Well Development Data Forms. All equipment used during the well development procedure will be cleaned using an Alconox® detergent and tap water solution followed by a tap water rinse prior to use in each well. All ground water purged during the well development process and all equipment rinse water will be collected and contained onsite in DOT approved containers (typically 55-gallon drums) pending analytical results and proper disposal or recycling.

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.
CONCORD, CALIFORNIA OFFICE

STANDARD OPERATING PROCEDURE NO. 3
FOR GROUND-WATER MONITORING AND SAMPLING FROM MONITORING WELLS

Environmental Science & Engineering, Inc. (ESE) typically performs ground-water monitoring at project sites on a quarterly basis. As part of the monitoring program an ESE staff member will first gauge the depth to water and free product (if present) in each well, then collect ground-water samples from each well. Depth to water measurements are taken by lowering an electric fiberglass tape measure into the well and recording the occurrence of water in feet below a fixed datum set on the top of the well-casing. If free-phase liquid hydrocarbons (free product) are known or suspected to be present in the well, then an electric oil/water interface probe is used to determine the depth to the occurrence of ground-water and the free product in feet below the fixed datum on the top of the well-casing. Depth to water and depth to product measurements are measured and recorded within an accuracy of 0.005-foot. The electric tape and the electric oil/water interface probe are washed with an Alconox® detergent and tap water solution then rinsed with tap water between uses in different wells.

Ground-water samples are collected from a well subsequent to purging a minimum of three to four well-casing volumes of ground water from the well, if the well bails dry prior to the removal of the required minimum volume, then the samples are collected upon the recovery of the ground water in that well to 80% of its initial static level. Ground water is typically purged from monitoring wells using either a hand-operated positive displacement pump, constructed of polyvinylchloride (PVC); a new (precleaned), disposable polyethylene bailer; or, a variable-flow submersible pump, constructed of stainless steel and Teflon®. The hand pumps and the submersible pumps are cleaned between each use with an Alconox® detergent and tap water solution followed by a tap water rinse. During the well purging process the conductivity, pH and temperature of the ground water are monitored by the ESE staff member. Ground-water samples are collected from the well subsequent to the stabilization of the of the conductivity, pH and temperature of the purge water, and the removal of four well-casing volumes of ground-water (unless the well bails dry). The parameters are deemed to have stabilized when two consecutive measurements are within 10% of each other, for each respective parameter. The temperature, pH, conductivity and purge volume measurements, and observations of water clarity and sediment content will be documented by the ESE staff member on ESE Ground-Water Sampling Data Forms.

Ground-water samples are collected by lowering a new (precleaned), disposable polyethylene bailer into the well using new, disposable nylon cord. The filled bailer is retrieved, emptied, then filled again. The ground water from this bailer is decanted into appropriate laboratory supplied glassware and/or plastic containers (if sample preservatives are required, they are added to the empty containers at the laboratory prior to the sampling event). The containers are filled carefully so that no headspace is present to avoid volatilization of the sample. The filled sample containers are then labeled and placed in a cooler with ice for transport under chain of custody documentation to the designated analytical laboratory. The ESE staff member will document the time and method of sample collection, and the type of sample containers and preservatives (if any) used. These facts will appear on the ESE Ground-Water Sampling Data Forms. ESE will collect a duplicate ground-water sample from one well for every ten wells sampled at each site. The duplicate will be a blind sample (its well designation will be unknown to the laboratory). The duplicate sample is for Quality Assurance and Quality Control (QA/QC) purposes, and provides a check on ESE sampling procedures and laboratory sample handling procedures. When VOCs are included in the laboratory analyses, ESE will include a trip blank, if required, in the cooler with the ground-water samples for analysis for the identical VOCs. The trip blank is supplied by the laboratory and consists of deionized water. The trip blank is for QA/QC purposes and provides a check on both ESE and laboratory sample handling and storage procedures. Since disposable bailers are used for sample collection, and are not reused, no equipment blank (rinsate) samples are collected.

APPENDIX B
GEOLOGIC BORING LOGS

Environmental Science & Engineering, Inc.
A CILCORP Company

BORING LOG AND WELL COMPLETION SUMMARY

MW-4

Page 1 of 1

WELL COMPLETION

Completion Depth: 25 Feet

	Size/Type	From	To
Casing:	2" Blank PVC	0 Feet	7 Feet
Screen:	2" Slotted (0.020") PVC	7 Feet	25 Feet
Filter:	2/12 Sand	6 Feet	25 Feet
Seal:	Bentonite	5 Feet	6 Feet
	Cement	0 Feet	5 Feet

Well Cap or Box:

Project Name: Bill Chun Project No: 6-93-5112

Location: 2301 Santa Clara Avenue
Alameda, California

Driller: Soils Exploration Services, Inc.
Method: Hollow Stem Auger
Hole Diameter: 8" Total Depth: 25 Feet
Ref. Elevations:
Logged By: Chris Valcheff

Dates:
Start: 9-2-93
Finish: 9-2-93

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
0	CONCRETE						
	FILL, gravel						
	SILTY SAND, dark brown, dense, damp, 20-30% fines, fine to medium grained sand, no odor.	SM					
	As above, light brown.	SM					
5	CLAYEY SAND, brownish orange, very dense, 20-30% fines, medium grained sand, no odor.	SC	12 19 27			0	Sample @ 6.0 Feet
	SILTY SAND, brown, dense, 20-30% fines, damp, no odor.	SM	31 50 72				Sample @ 9.0 Feet
10							Water @ 10.0 Feet
	As above, grey, wet, strong hydrocarbon odor.	SM					
	As above, light brown, no odor.						
15		ML	9 17 31				Standard Pen
20							
25	As above.						TOTAL DEPTH = 25 FEET
30							
35							

REGISTERED GEOLOGIST
MICHAEL E. QUILLIN
#5315
STATE OF CALIFORNIA

Environmental Science & Engineering, Inc.

BORING LOG AND WELL COMPLETION SUMMARY

MW-5

Page 1 of 1

WELL COMPLETION

Completion Depth: 25 Feet

	Size/Type	From	To
Casing:	2" Blank PVC	0 Feet	7 Feet
Screen:	2" Slotted (0.020") PVC	7 Feet	25 Feet
Filter:	2/12 Sand	6 Feet	25 Feet
Seal:	Bentonite	5 Feet	6 Feet
	Cement	0 Feet	5 Feet

Well Cap or Box:

Project Name: Bill Chun Project No: 6-93-5112

Location: 2301 Santa Clara Avenue
Alameda, California

Driller: Soils Exploration Services, Inc
Method: Hollow Stem Auger
Hole Diameter: 8" Total Depth: 25 Feet
Ref. Elevations:
Logged By: Chris Valcheff

Dates:
Start: 9-1-93
Finish: 9-1-93

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
0	ASPHALT FILL gravel SILTY SAND, dark brown, dense, damp, 20-30% fines, fine to medium grained sand, no odor.	SM					
	CLAYEY SAND, brown, dense, 20-30% fines, fine to medium grained sand, damp, no odor.	SC					
5	As above, grey-green, strong hydrocarbon odor.	SC	9 20 31			34	Sample @ 6.0 Feet
			29 34 50			2500	Sample @ 9.0 Feet
10	As above, saturated with water.	SC					Water @ 10.0 Feet
	SAND, brown, fine to medium grained, dense, wet, no odor.	SP					
15			24 31 37			0	No Sample, Standard Pen
20							
25	As above.						TOTAL DEPTH = 25 FEET
30							
35							

REGISTERED GEOLOGIST
MICHAEL E. QUILLIN
#5315
STATE OF CALIFORNIA

Environmental Science & Engineering, Inc.
A CILCORP Company

BORING LOG AND WELL COMPLETION SUMMARY

MW-6

Page 1 of 1

WELL COMPLETION

Completion Depth: 25 Feet

	Size/Type	From	To
Casing:	2" Blank PVC	0 Feet	7 Feet
Screen:	2" Slotted (0.020") PVC	7 Feet	25 Feet
Filter:	2/12 Sand	6 Feet	25 Feet
Seal:	Bentonite	5 Feet	6 Feet
	Cement	0 Feet	5 Feet

Well Cap or Box: EMCO-Wheaton Traffic Rated Flush Mounted

Project Name: Bill Chun Project No: 6-93-5112

Location: 2301 Santa Clara Avenue
Alameda, California

Driller: Soils Exploration Services, Inc.
Method: Hollow Stem Auger
Hole Diameter: 8" Total Depth: 25 Feet
Ref. Elevations:
Logged By: Chris Valcheff

Dates:
Start: 9-1-93
Finish: 9-1-93

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
0	ASPHALT FILL, crushed rock SILTY SAND, dark brown, dense, damp, 20-30% fines, fine to medium grained sand, no odor.	SM					
	CLAYEY SAND, orange, very dense, 20-30% fines, fine to medium grained sand, damp, no odor.	SC					
5			17 27 13			0	
	As above, grey, 30-40% fines, dense, strong hydrocarbon odor.	SC					
10	As above.	SC	25 50			233	Sample @ 10.0 Feet Water @ 10.5 Feet
	SILTY SAND, light brown, very dense, 20-30% fines, saturated, fine to medium grained sand, no odor.	SM					
15			13 32 29			0	No Sample, Standard Pen
20	As above.	SM					No Sample Taken
	CLAYEY SAND, light brown, very dense, saturated, 20-30% clay, medium to coarse grained sand, no odor.	SC					
25							TOTAL DEPTH = 25 FEET
30							
35							

REGISTERED GEOLOGIST
MICHAEL E. QUILLIN
#5315
STATE OF CALIFORNIA

ESE Environmental Science & Engineering, Inc.
A CILCORP Company

BORING LOG AND WELL COMPLETION SUMMARY

MW-7

Page 1 of 1

WELL COMPLETION

Completion Depth: 25 Feet

	Size/Type	From	To
Casing:	2" Blank PVC	0 Feet	7 Feet
Screen:	2" Slotted (0.020") PVC	7 Feet	25 Feet
Filter:	2/12 Sand	6 Feet	25 Feet
Seal:	Bentonite	5 Feet	6 Feet
	Cement	0 Feet	5 Feet

Well Cap or Box: EMCO-Wheaton Traffic Rated Flush Mounted

Project Name: Bill Chun Project No: 6-93-5112
Location: 2301 Santa Clara Avenue, Alameda, California

Driller: Soils Exploration Services, Inc.
Method: Hollow Stem Auger
Hole Diameter: 8" Total Depth: 25 Feet
Ref. Elevations:
Logged By: Chris Valchelf

Dates: Start: 9-1-93 Finish: 9-1-93

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology / Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
0	ASPHALT Fill SILTY SAND, dark brown, dense, damp, 20-30% fines, fine to medium grained sand, no odor.	SM				
5	As above, grey, strong hydrocarbon odor As above, light brown.	SM	17, 24, 30		1321 1332	Sample @ 6.0 Feet
10	As above, light brown, very strong hydrocarbon odor, 10-20% fines, moist.	SM	27, 34, 32		2178	Sample @ 9.5 and 10.0 Feet Water @ 10.5-11 Feet
15	As above, no odor, saturated.	SM	23, 27, 41			No Sample, Standard Pen
20	As above.	SM	17, 27, 40			Sample @ 20.0 Feet
25						TOTAL DEPTH = 25 FEET
30						
35						

REGISTERED GEOLOGIST
MICHAEL E. QUILLIN
#5315
STATE OF CALIFORNIA

APPENDIX C
ANALYTICAL RESULTS AND CHAIN OF CUSTODY DOCUMENTATION FOR SOIL SAMPLES

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

San Luis Obispo, CA • Benicia, CA • Camarillo, CA • San Jose, CA • Goleta, CA
Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (San Jose Laboratory) San Jose, CA 95131
2059 Junction Ave. (408) 955-9077

Lab Number : JJ-1629-8
Project : 6-93-5112/Wayne Chun

CLIENT: Mike Quillin
Environmental Science & Engineering
4090 Nelson Avenue Suite J
Concord, CA 94520

Analyzed : 09/10/93
Analyzed by: ON
Method : As Listed

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
MW-4-6	Soil	Chris Valcheff	09/02/93	09/03/93

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
FUEL FINGERPRINT ANALYSIS				1,2
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
1,2-Dichloroethane		0.005	ND	
Ethylene dibromide		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Total Petroleum Hydrocarbons (Diesel 2)		5.	ND	
Percent Surrogate Recovery			95.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH, EPA 8260 modified (GC/MS)

09/15/93
MSD1/1AN36A
MC/mcc/on
MSD1-0910

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Laboratory Director

COAST · TO · COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

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Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (San Jose Laboratory) San Jose, CA 95131
2059 Junction Ave. (408) 955-9077

CLIENT: Mike Quillin
Environmental Science & Engineering
4090 Nelson Avenue Suite J
Concord, CA 94520

Lab Number : JJ-1629-9
Project : 6-93-5112/Wayne Chun

Analyzed : 09/10/93
Analyzed by: ON
Method : As Listed

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
MW-4-9	Soil	Chris Valcheff	09/02/93	09/03/93

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
FUEL FINGERPRINT ANALYSIS				1,2
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
1,2-Dichloroethane		0.005	ND	
Ethylene dibromide		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Total Petroleum Hydrocarbons (Diesel 2)		5.	ND	
Percent Surrogate Recovery			99.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH, EPA 8260 modified (GC/MS)

09/15/93
MSD1/1AN37A
MC/mcc/on
MSD1-0910

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Laboratory Director

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

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Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (San Jose Laboratory) San Jose, CA 95131
2059 Junction Ave. (408) 955-9077

CLIENT: Mike Quillin
Environmental Science & Engineering
4090 Nelson Avenue Suite J
Concord, CA 94520

Lab Number : JJ-1629-2
Project : 6-93-5112/Wayne Chun

Analyzed : 09/10/93
Analyzed by: ON
Method : As Listed

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
MW-5-6	Soil	Chris Valcheff	09/01/93	09/03/93

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
FUEL FINGERPRINT ANALYSIS				1,2
Benzene		0.005	ND	
Toluene		0.005	0.006	
Ethylbenzene		0.005	ND	
Xylenes		0.005	0.096	
1,2-Dichloroethane		0.005	ND	
Ethylene dibromide		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Total Petroleum Hydrocarbons (Diesel 2)		5.	ND	
Percent Surrogate Recovery			91.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH, EPA 8260 modified (GC/MS)

09/15/93
MSD1/1AN33A
MC/mcc/on
MSD1-0910

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Laboratory Director

COAST - TO - COAST ANALYTICAL SERVICES

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Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

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NorCal Division (San Jose Laboratory)
2059 Junction Ave.
San Jose, CA 95131
(408) 955-9077

Lab Number : JJ-1629-3
Project : 6-93-5112/Wayne Chun

CLIENT: Mike Quillin
Environmental Science & Engineering
4090 Nelson Avenue Suite J
Concord, CA 94520

Analyzed : 09/13/93
Analyzed by: ON
Method : As Listed

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
MW-5-9	Soil	Chris Valcheff	09/01/93	09/03/93

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
FUEL FINGERPRINT ANALYSIS				1,2
Benzene		5.	34.	
Toluene		5.	310.	
Ethylbenzene		5.	180.	
Xylenes		5.	1000.	
1,2-Dichloroethane		5.	ND	
Ethylene dibromide		5.	ND	
Total Petroleum Hydrocarbons (Gasoline)		1000.	11000.	
Percent Surrogate Recovery			96.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH, EPA 8260 modified (GC/MS)

09/15/93
MSD1/1AN65A/39A
MC/mcc/on
MSD1-0910

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Laboratory Director

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

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NorCal Division (San Jose Laboratory) San Jose, CA 95131
2059 Junction Ave. (408) 955-9077

Lab Number : JJ-1629-1
Project : 6-93-5112/Wayne Chun

CLIENT: Mike Quillin
Environmental Science & Engineering
4090 Nelson Avenue Suite J
Concord, CA 94520

Analyzed : 09/13/93
Analyzed by: ON
Method : As Listed

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
MW-6-10	Soil	Chris Valcheff	09/01/93	09/03/93

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
FUEL FINGERPRINT ANALYSIS				1,2,3
Benzene		2.	8.	
Toluene		2.	65.	
Ethylbenzene		2.	48.	
Xylenes		2.	290.	
1,2-Dichloroethane		2.	ND	
Ethylene dibromide		2.	ND	
Total Petroleum Hydrocarbons (Gasoline)		400.	3400.	
Percent Surrogate Recovery			95.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH, EPA 8260 modified (GC/MS)
(3) High detection limits due to sample dilution

09/15/93
MSD1/1AN64A/38A
MC/mcc/on
MSD1-0910

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Laboratory Director

COAST · TO · COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

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Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (San Jose Laboratory) San Jose, CA 95131
2059 Junction Ave. (408) 955-9077

Lab Number : JJ-1629-4
Project : 6-93-5112/Wayne Chun

CLIENT: Mike Quillin
Environmental Science & Engineering
4090 Nelson Avenue Suite J
Concord, CA 94520

Analyzed : 09/10/93
Analyzed by: ON
Method : As Listed

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
MW-7-6	Soil	Chris Valcheff	09/01/93	09/03/93

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
FUEL FINGERPRINT ANALYSIS				1,2
Benzene		0.005	0.045	
Toluene		0.005	0.030	
Ethylbenzene		0.005	ND	
Xylenes		0.005	0.016	
1,2-Dichloroethane		0.005	ND	
Ethylene dibromide		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Total Petroleum Hydrocarbons (Diesel 2)		5.	ND	
Percent Surrogate Recovery			95.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH, EPA 8260 modified (GC/MS)

09/15/93
MSD1/1AN34A
MC/mcc/on
MSD1-0910

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Laboratory Director

COAST - TO - COAST ANALYTICAL SERVICES

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NorCal Division (San Jose Laboratory) San Jose, CA 95131
2059 Junction Ave. (408) 955-9077

Lab Number : JJ-1629-7
Project : 6-93-5112/Wayne Chun

CLIENT: Mike Quillin
Environmental Science & Engineering
4090 Nelson Avenue Suite J
Concord, CA 94520

Analyzed : 09/13/93
Analyzed by: ON
Method : As Listed

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
MW-7-9.5	Soil	Chris Valcheff	09/01/93	09/03/93

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
FUEL FINGERPRINT ANALYSIS				1,2,3
Benzene		10.	190.	
Toluene		10.	720.	
Ethylbenzene		10.	170.	
Xylenes		10.	1000.	
1,2-Dichloroethane		10.	ND	
Ethylene dibromide		10.	ND	
Total Petroleum Hydrocarbons (Gasoline)		2000.	9000.	
Percent Surrogate Recovery			91.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH, EPA 8260 modified (GC/MS)
(3) High detection limits due to sample dilution

09/15/93
MSD1/1AN67A/41A
MC/mcc/on
MSD1-0910

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Laboratory Director

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

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NorCal Division (San Jose Laboratory) San Jose, CA 95131
2059 Junction Ave. (408) 955-9077

Lab Number : JJ-1629-5
Project : 6-93-5112/Wayne Chun

CLIENT: Mike Quillin
Environmental Science & Engineering
4090 Nelson Avenue Suite J
Concord, CA 94520

Analyzed : 09/13/93
Analyzed by: ON
Method : As Listed

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
MW-7-10	Soil	Chris Valcheff	09/01/93	09/03/93

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
FUEL FINGERPRINT ANALYSIS				1,2,3
Benzene		10.	250.	
Toluene		10.	990.	
Ethylbenzene		10.	260.	
Xylenes		10.	1600.	
1,2-Dichloroethane		10.	ND	
Ethylene dibromide		10.	ND	
Total Petroleum Hydrocarbons (Gasoline)		2000.	13000.	
Percent Surrogate Recovery			91.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH, EPA 8260 modified (GC/MS)
(3) High detection limits due to sample matrix

09/15/93
MSD1/1AN66A/40A
MC/mcc/on
MSD1-0910

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Laboratory Director

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NorCal Division (San Jose Laboratory) San Jose, CA 95131
2059 Junction Ave. (408) 955-9077

Lab Number : JJ-1629-6
Project : 6-93-5112/Wayne Chun

CLIENT: Mike Quillin
Environmental Science & Engineering
4090 Nelson Avenue Suite J
Concord, CA 94520

Analyzed : 09/10/93
Analyzed by: ON
Method : As Listed

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
MW-7-20	Soil	Chris Valcheff	09/01/93	09/03/93

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
FUEL FINGERPRINT ANALYSIS				1,2
Benzene		0.005	0.038	
Toluene		0.005	0.10	
Ethylbenzene		0.005	0.020	
Xylenes		0.005	0.14	
1,2-Dichloroethane		0.005	ND	
Ethylene dibromide		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Total Petroleum Hydrocarbons (Diesel 2)		5.	ND	
Percent Surrogate Recovery			93.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH, EPA 8260 modified (GC/MS)

09/15/93
MSD1/1AN35A
MC/mcc/on
MSD1-0910

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Laboratory Director

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

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Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (San Jose Laboratory) San Jose, CA 95131
2059 Junction Ave. (408) 955-9077

QC Batch ID: MSD1-0910

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 09/10/93
Analyzed by: ON
Method : As Listed

METHOD BLANK
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
METHOD BLANK	Solid			

CONSTITUENT	(CAS RN)	*PQL mg/Kg	RESULT mg/Kg	NOTE
FUEL FINGERPRINT ANALYSIS				1,2
Benzene		0.005	ND	
Toluene		0.005	ND	
Ethylbenzene		0.005	ND	
Xylenes		0.005	ND	
1,2-Dichloroethane		0.005	ND	
Ethylene dibromide		0.005	ND	
Total Petroleum Hydrocarbons (Gasoline)		1.	ND	
Total Petroleum Hydrocarbons (Diesel 2)		5.	ND	
Percent Surrogate Recovery			92.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH, EPA 8260 modified (GC/MS)

09/15/93
MSD1/1AN20A
MC/mcc/on
JJ1629-9

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Laboratory Director

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

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Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (San Jose Laboratory) San Jose, CA 95131
2059 Junction Ave. (408) 955-9077

QC Batch ID: MSD1-0910

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 09/10/93
Analyzed by: ON
Method : As Listed

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED	DATE RECEIVED
QC SPIKE	Solid			

CONSTITUENT	*PQL mg/Kg	SPIKE AMOUNT	RESULT mg/Kg	%REC	NOTE
FUEL FINGERPRINT ANALYSIS					1,2
Benzene	0.005	0.10	0.098	98.	
Toluene	0.005	0.10	0.10	100.	
Ethylbenzene	0.005	0.10	0.099	99.	
Xylenes	0.005	0.10	0.097	97.	
1,2-Dichloroethane	0.005	0.10	0.098	98.	
Ethylene dibromide	0.005	0.10	0.10	100.	
Total Petroleum Hydrocarbons (Gasoline)	1.	2.5	2.2	88.	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH, EPA 8260 modified (GC/MS)

09/15/93
MSD1/1AN22A/1AN24A
MC/mcc/on
JJ1629-9

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Laboratory Director

COAST - TO - COAST ANALYTICAL SERVICES

Air, Water & Hazardous Waste Sampling, Analysis & Consultation
Certified Hazardous Waste, Chemistry, Bacteriology & Bioassay Laboratories

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Anaheim, CA • Tempe, AZ • Valparaiso, IN • Westbrook, ME • Indianapolis, IN

NorCal Division (San Jose Laboratory) San Jose, CA 95131
2059 Junction Ave. (408) 955-9077

QC Batch ID: MSD1-0910

CLIENT: Coast-to-Coast Analytical Services, Inc.

Analyzed : 09/10/93
Analyzed by: ON
Method : As Listed

QC SPIKE
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED BY	SAMPLED DATE	RECEIVED
QC SPIKE DUPLICATE	Solid			

CONSTITUENT	*PQL mg/Kg	SPIKE AMOUNT	RESULT mg/Kg	%REC	%DIFF	NOTE
FUEL FINGERPRINT ANALYSIS						1,2
Benzene	0.005	0.10	0.10	100.	2.	
Toluene	0.005	0.10	0.10	100.	0.	
Ethylbenzene	0.005	0.10	0.11	110.	11.	
Xylenes	0.005	0.10	0.10	100.	3.	
1,2-Dichloroethane	0.005	0.10	0.10	100.	2.	
Ethylene dibromide	0.005	0.10	0.10	100.	0.	
Total Petroleum Hydrocarbons (Gasoline)	1.	2.5	2.1	84.	4.7	

San Jose Lab Certifications: CAELAP #1204
*RESULTS listed as 'ND' were not detected at or above the listed PQL (Practical Quantitation Limit)
(1) EXTRACTED by EPA 5030 (purge-and-trap)
(2) ANALYZED by CAL DHS DRAFT TPH, EPA 8260 modified (GC/MS)

09/15/93
MSD1/1AN23A/1AN25A
MC/mcc/on
JJ1629-9

Respectfully submitted,
COAST-TO-COAST ANALYTICAL SERVICES, INC.

Marissa Coronel
Laboratory Director

DATE 9-1-93 PAGE 1 OF 1

CHAIN OF CUSTODY RECORD

PROJECT NAME WAYNE CHUN

ADDRESS 2301 SANTA CLARA AVE. ALAMEDA, CA

PROJECT NO. 6-93-5112

SAMPLED BY CHRIS VALCHEFF

LAB NAME

ESE Environmental Science & Engineering, Inc.
A CRCORP Company
4090 Nelson Avenue Suite J
Concord, CA 94520
Phone (510) 685-4053
Fax (510) 685-5323

SAMPLE #	DATE	TIME	LOCATION	TPH-G	TPH-D (FUEL FINGERPRINT)	BTEX	MATRIX	NUMBER OF CONTAINERS	REMARKS (CONTAINER, SIZE, ETC.) JJ1629
MW-6-10	9-1-93	0825	ALAMEDA				SOIL	1	6" BRASS RING 1
MW-5-6'	9-1-93	1110	ALAMEDA					1	2
MW-5-9'		1120						1	3
MW-7-6'		1330						1	4
MW-7-10'		1347						1	5
MW-7-20'		1430						1	6
MW-7-25'		1345						1	7

RELINQUISHED BY: (signature)	RECEIVED BY: (signature)	date	time
1.		9/3/93	0800
2.		9/3/93	1175
3		9/3/93	3:45
4.			
5.			

7 TOTAL NUMBER OF CONTAINERS

REPORT RESULTS TO: MIKE QUINLIN

SPECIAL SHIPMENT REQUIREMENTS: CCAS COURIER-COLD TRANSPORT

SAMPLE RECEIPT

CHAIN OF CUSTODY SEALS	
REC'D GOOD CONDTN/COLD	
CONFORMS TO RECORD	

INSTRUCTIONS TO LABORATORY (handling, analyses, storage, etc.):

NORMAL TA

CHAIN OF CUSTODY RECORD

DATE 9-2-93 PAGE 1 OF 1

PROJECT NAME WAYNE CHUN

ADDRESS 2301 SANTA CLARA AVE, ALAMEDA, CA

PROJECT NO. 6-93-5712

SAMPLED BY CHRIS VACCHEFF

LAB NAME

ESE Environmental Science & Engineering, Inc.
A CRLCORP Company
4090 Nelson Avenue
Suite J
Concord, CA 94520
Phone (510) 685-4053
Fax (510) 685-5323

SAMPLE #	DATE	TIME	LOCATION	ANALYSES TO BE PERFORMED: TPH-G	TPH-D Filter-Prep	BTEX	MATRIX	NUMBER OF CONTAINERS	REMARKS (CONTAINER, SIZE, ETC.) JJ1624
MW-9-6	9-2-93	1400	ALAMEDA				SOIL	1	6" BRASS RING 8
MW-9-9	"	1415	"				"	1	" 9

RELINQUISHED BY: (signature)	RECEIVED BY: (signature)	date	time
1.		9/3/93	0800
2.		9/3/93	1115
3.		9/8/93	9:47
4.			
5.			

2 TOTAL NUMBER OF CONTAINERS

REPORT RESULTS TO: MIKE QUILLIN

SPECIAL SHIPMENT REQUIREMENTS: CCAS COURIER COLD TRANSPORT

SAMPLE RECEIPT

CHAIN OF CUSTODY SEALS	
REC'D GOOD CONDTN/COLD	
CONFORMS TO RECORD	

INSTRUCTIONS TO LABORATORY (handling, analyses, storage, etc.):

NORMAL TA

APPENDIX D

ANALYTICAL RESULTS AND CHAIN OF CUSTODY DOCUMENTATION FOR GROUND WATER SAMPLES

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Environmental Science & Engineering, Inc.	Client Project ID:	#6-93-5112/Bill Chun-Alameda	Sampled:	Sep 7, 1993
4090 Nelson Ave., Ste J	Sample Matrix:	Water	Received:	Sep 7, 1993
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Reported:	Sep 20, 1993
Attention: Mike Quillin	First Sample #:	309-0414		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 309-0414 MW-1	Sample I.D. 309-0415 MW-2	Sample I.D. 309-0416 MW-3	Sample I.D. 309-0417 MW-4	Sample I.D. 309-0418 MW-5	Sample I.D. 309-0419 MW-6
Purgeable Hydrocarbons	50	28,000	140,000	2,800	440	37,000	10,000
Benzene	0.5	11,000	46,000	19	2.7	2,700	1,300
Toluene	0.5	2,100	28,000	46	1.2	1,700	540
Ethyl Benzene	0.5	380	3,300	7.7	1.0	870	370
Total Xylenes	0.5	1,200	15,000	23	1.9	4,600	1,600
Chromatogram Pattern:		Gasoline	Gasoline	Gasoline	Gasoline	Gasoline	Gasoline

Quality Control Data

Report Limit Multiplication Factor:	200	400	10	2	100	50
Date Analyzed:	9/16/93	9/16/93	9/16/93	9/16/93	9/16/93	9/16/93
Instrument Identification:	HP-4	HP-4	HP-2	HP-2	HP-4	HP-5
Surrogate Recovery, %: (QC Limits = 70-130%)	97	96	126	102	92	104

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Environmental Science & Engineering, Inc.	Client Project ID:	#6-93-5112/Bill Chun-Alameda	Sampled:	Sep 7, 1993
4090 Nelson Ave., Ste J	Sample Matrix:	Water	Received:	Sep 7, 1993
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Reported:	Sep 20, 1993
Attention: Mike Quillin	First Sample #:	309-0420		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 309-0420 MW-7
Purgeable Hydrocarbons	50	24,000
Benzene	0.5	6,800
Toluene	0.5	4,800
Ethyl Benzene	0.5	490
Total Xylenes	0.5	2,300
Chromatogram Pattern:		Gasoline

Quality Control Data

Report Limit Multiplication Factor:	100
Date Analyzed:	9/16/93
Instrument Identification:	HP-5
Surrogate Recovery, %: (QC Limits = 70-130%)	101

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

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Karen L. Enstrom
Project Manager

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Environmental Science & Engineering, Inc.	Client Project ID:	#6-93-5112/Bill Chun-Alameda	Sampled:	Sep 7, 1993
4090 Nelson Ave., Ste J	Sample Matrix:	Water	Received:	Sep 7, 1993
Concord, CA 94520	Analysis Method:	EPA 5030/8020	Reported:	Sep 20, 1993
Attention: Mike Quillin	First Sample #:	309-0421		

BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 309-0421 Trip
Benzene	0.5	N.D.
Toluene	0.5	N.D.
Ethyl Benzene	0.5	N.D.
Total Xylenes	0.5	N.D.

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Analyzed:	9/16/93
Instrument Identification:	HP-4
Surrogate Recovery, %: (QC Limits = 70-130%)	99

Analytes reported as N.D. were not detected above the stated reporting limit.

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Environmental Science & Engineering, Inc.	Client Project ID:	#6-93-5112/Bill Chun-Alameda	Sampled: Sep 7, 1993
4090 Nelson Ave., Ste J	Sample Matrix:	Water	Received: Sep 7, 1993
Concord, CA 94520	Analysis Method:	EPA 3510/3520/8015	Reported: Sep 20, 1993
Attention: Mike Quillin	First Sample #:	309-0414	

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 309-0414 MW-1	Sample I.D. 309-0415 MW-2	Sample I.D. 309-0416 MW-3	Sample I.D. 309-0417 MW-4	Sample I.D. 309-0418 MW-5	Sample I.D. 309-0419 MW-6
Extractable Hydrocarbons	50	1,000	8,200	2,500	330	1,700	1,400
Chromatogram Pattern:		Diesel & Non-Diesel Mixture (<C16)	Diesel & Non-Diesel Mixture (<C16)	Non-Diesel Mixture (<C16)	Diesel & Non-Diesel Mixture (<C16)	Diesel & Non-Diesel Mixture (<C16)	Diesel & Non-Diesel Mixture (<C16)

Quality Control Data

Report Limit Multiplication Factor:	1.0	10	1.0	1.0	1.0	1.0
Date Extracted:	9/14/93	9/14/93	9/14/93	9/14/93	9/14/93	9/14/93
Date Analyzed:	9/16/93	9/17/93	9/16/93	9/16/93	9/16/93	9/16/93
Instrument Identification:	HP-3A	HP-3A	HP-3A	HP-3A	HP-3A	HP-3A

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

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Environmental Science & Engineering, Inc.	Client Project ID:	#6-93-5112/Bill Chun-Alameda	Sampled:	Sep 7, 1993
4090 Nelson Ave., Ste J	Sample Matrix:	Water	Received:	Sep 7, 1993
Concord, CA 94520	Analysis Method:	EPA 3510/3520/8015	Reported:	Sep 20, 1993
Attention: Mike Quillin	First Sample #:	309-0420		

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 309-0420 MW-7
Extractable Hydrocarbons	50	1,300
Chromatogram Pattern:		Diesel & Non-Diesel Mixture (<C16)

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Extracted:	9/14/93
Date Analyzed:	9/16/93
Instrument Identification:	HP-3A

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

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Environmental Science & Engineering, Inc.
4090 Nelson Ave., Ste J
Concord, CA 94520
Attention: Mike Quillin

Client Project ID: #6-93-5112/Bill Chun-Alameda
Matrix: Water
QC Sample Group: 3090414-421

Reported: Sep 20, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Diesel
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015
Analyst:	J.F.	J.F.	J.F.	J.F.	K.Wimer
Conc. Spiked:	20	20	20	60	300
Units:	µg/L	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	1LCS091693	1LCS091693	1LCS091693	1LCS091693	BLK091493
Date Prepared:	9/16/93	9/16/93	9/16/93	9/16/93	9/14/93
Date Analyzed:	9/16/93	9/16/93	9/16/93	9/16/93	9/17/93
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2	HP-3A
LCS % Recovery:	105	101	102	102	97
Control Limits:	70-130	70-130	70-130	70-130	80-120
MS/MSD Batch #:	3090495	3090495	3090495	3090495	BLK091493
Date Prepared:	9/16/93	9/16/93	9/16/93	9/16/93	9/14/93
Date Analyzed:	9/16/93	9/16/93	9/16/93	9/16/93	9/17/93
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2	HP-3A
Matrix Spike % Recovery:	110	105	105	108	97
Matrix Spike Duplicate % Recovery:	110	105	105	107	91
Relative % Difference:	0.0	0.0	0.0	0.0093	6.7

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

Please Note:

The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

TAT - 10 d

CHAIN OF CUSTODY RECORD

DATE Sept. 7, 1993 PAGE 1 OF 1

PROJECT NAME WAYNE CHUN - ALAMEDA

ADDRESS 2301 SOUTH CLINTON AVE. ALAMEDA, CA

PROJECT NO. 6-93-5112

SAMPLED BY CHRIS VALCHESS

LAB NAME SEQUOIA ANALYTICAL

ESE Environmental Science & Engineering, Inc.
A GILCORP Company
4090 Nelson Avenue
Suite J
Concord, CA 94520
Phone (510) 685-4053
Fax (510) 685-5323

SAMPLE #	DATE	TIME	LOCATION	ANALYSES TO BE PERFORMED: TPH-GAS	TPH-DIESEL	BTEX							MATRIX	NUMBER OF CONTAINERS	REMARKS (CONTAINER, SIZE, ETC.)
													MATRIX		
MW-1	9-7-93	1250	ALAMEDA	X	X	X			309014		A-C		H_2O	3	2 VOA's (HCl), 1 LIT. AMBER
MW-2		1415		X	X	X			04 15					3	
MW-3		1510		X	X	X			04 16					3	
MW-4		1445		X	X	X			04 17					3	
MW-5		1345		X	X	X			04 18					3	
MW-6		1115		X	X	X			04 19					3	
MW-7		1155		X	X	X			04 20					3	
TRIP						X			04 21		A-B			2	2 VOAs

RELINQUISHED BY: (signature)	RECEIVED BY: (signature)	date	time
1. [signature]	Melissa Cairone	9-7-93	4:20p
2.			
3.			
4.			
5.			

23 TOTAL NUMBER OF CONTAINERS

REPORT RESULTS TO: MIKE QUILLIN

SPECIAL SHIPMENT REQUIREMENTS

SAMPLE RECEIPT

CHAIN OF CUSTODY SEALS	
REC'D GOOD CONDTN/COLD	
CONFORMS TO RECORD	

INSTRUCTIONS TO LABORATORY (handling, analyses, storage, etc.):

APPENDIX E

SLUG TEST DATA

SE2000
Environmental Logger
09/14 14:21

Unit# Test 3

Setups: INPUT 1

Type	Level (F)
Mode	Surface
I.D.	MW-1
Reference	0.000
SG	1.000
Linearity	0.097
Scale factor	20.151
Offset	-0.141
Delay mSEC	50.000

Step 0 09/14 09:53:45

Elapsed Time	INPUT 1
0.0000	1.541
0.0083	1.689
0.0166	1.682
0.0250	1.548
0.0333	1.573
0.0416	1.548
0.0500	1.490
0.0583	1.484
0.0666	1.458
0.0750	1.426
0.0833	1.413
0.0916	1.388
0.1000	1.362
0.1083	1.343
0.1166	1.324
0.1250	1.305
0.1333	1.286
0.1416	1.266
0.1500	1.254
0.1583	1.234
0.1666	1.222
0.1750	1.202
0.1833	1.190
0.1916	1.177
0.2000	1.158
0.2083	1.145
0.2166	1.132
0.2250	1.119
0.2333	1.106
0.2416	1.094
0.2500	1.081
0.2583	1.068
0.2666	1.055
0.2750	1.042
0.2833	1.030
0.2916	1.023
0.3000	1.010
0.3083	0.998
0.3166	0.991
0.3250	0.978
0.3333	0.972
0.3500	0.946
0.3666	0.927
0.3833	0.908
0.4000	0.895
0.4166	0.876
0.4333	0.857
0.4500	0.844
0.4666	0.825
0.4833	0.812
0.5000	0.793
0.5166	0.780
0.5333	0.761
0.5500	0.748
0.5666	0.735
0.5833	0.722
0.6000	0.710
0.6166	0.697
0.6333	0.684
0.6500	0.671
0.6666	0.658
0.6833	0.646
0.7000	0.633
0.7166	0.620
0.7333	0.607
0.7500	0.594
0.7666	0.588
0.7833	0.575

0.8000	0.562
0.8166	0.556
0.8333	0.543
0.8500	0.537
0.8666	0.524
0.8833	0.511
0.9000	0.505
0.9166	0.499
0.9333	0.486
0.9500	0.479
0.9666	0.467
0.9833	0.460
1.0000	0.447
1.2000	0.345
1.4000	0.255
1.6000	0.185
1.8000	0.140
2.0000	0.089
2.2000	0.051
2.4000	0.019
2.6000	-0.006
2.8000	-0.025
3.0000	-0.051
3.2000	-0.070
3.4000	-0.083
3.6000	-0.095
3.8000	-0.108
4.0000	-0.115
4.2000	-0.121
4.4000	-0.127
4.6000	-0.140
4.8000	-0.140
5.0000	-0.147
5.2000	-0.153
5.4000	-0.153
5.6000	-1.426

SE2000
Environmental Logger
09/14 14:27

Unit# Test 3

Setups: INPUT 1

Type	Level (F)
Mode	Surface
I.D.	MW-1
Reference	0.000
SG	1.000
Linearity	0.097
Scale factor	20.151
Offset	-0.141
Delay mSEC	50.000

Step 1 09/14 09:59:23

Elapsed Time	INPUT 1
0.0000	-1.381
0.0083	-1.375
0.0166	-1.362
0.0250	-1.356
0.0333	-1.349
0.0416	-1.343
0.0500	-1.330
0.0583	-1.324
0.0666	-1.317
0.0750	-1.311
0.0833	-1.304
0.0916	-1.292
0.1000	-1.285
0.1083	-1.279
0.1166	-1.272
0.1250	-1.266
0.1333	-1.260
0.1416	-1.253
0.1500	-1.247
0.1583	-1.234
0.1666	-1.234
0.1750	-1.221
0.1833	-1.221
0.1916	-1.208
0.2000	-1.208
0.2083	-1.202
0.2166	-1.196
0.2250	-1.189
0.2333	-1.183
0.2416	-1.176
0.2500	-1.170
0.2583	-1.164
0.2666	-1.157
0.2750	-1.151
0.2833	-1.144
0.2916	-1.144
0.3000	-1.138
0.3083	-1.132
0.3166	-1.125
0.3250	-1.119
0.3333	-1.112
0.3500	-1.100
0.3666	-1.093
0.3833	-1.081
0.4000	-1.074
0.4166	-1.061
0.4333	-1.055
0.4500	-1.042
0.4666	-1.036
0.4833	-1.023
0.5000	-1.017
0.5166	-1.004
0.5333	-0.997
0.5500	-0.991
0.5666	-0.978
0.5833	-0.972
0.6000	-0.959
0.6166	-0.953
0.6333	-0.946
0.6500	-0.940
0.6666	-0.933
0.6833	-0.927
0.7000	-0.914
0.7166	-0.908
0.7333	-0.901
0.7500	-0.895
0.7666	-0.889
0.7833	-0.882

0.8000	-0.876
0.8166	-0.869
0.8333	-0.863
0.8500	-0.857
0.8666	-0.844
0.8833	-0.844
0.9000	-0.837
0.9166	-0.831
0.9333	-0.825
0.9500	-0.818
0.9666	-0.812
0.9833	-0.805
1.0000	-0.799
1.2000	-0.722
1.4000	-0.665
1.6000	-0.614
1.8000	-0.569
2.0000	-0.537
2.2000	-0.498
2.4000	-0.466
2.6000	-0.434
2.8000	-0.415
3.0000	-0.390
3.2000	-0.377
3.4000	-0.358
3.6000	-0.345
3.8000	-0.332
4.0000	-0.319
4.2000	-0.307
4.4000	-0.294
4.6000	-0.287
4.8000	-0.281
5.0000	-0.268
5.2000	-0.262
5.4000	-0.262
5.6000	-0.255
5.8000	-0.249
6.0000	-0.249
6.2000	-0.243
6.4000	-0.243
6.6000	-0.236
6.8000	-0.236
7.0000	-0.230
7.2000	-0.230
7.4000	-0.230
7.6000	-0.223
7.8000	-0.223
8.0000	-0.223

SE2000
Environmental Logger
09/14 14:32

Unit# Test 5

Setups: INPUT 1

Type	Level (F)
Mode	Surface
I.D.	MW-2
Reference	0.000
SG	1.000
Linearity	0.097
Scale factor	20.151
Offset	-0.141
Delay mSEC	50.000

Step 0 09/14 10:27:16

Elapsed Time	INPUT 1
0.0000	1.125
0.0083	1.112
0.0166	1.093
0.0250	1.080
0.0333	1.067
0.0416	1.055
0.0500	1.042
0.0583	1.023
0.0666	1.010
0.0750	0.991
0.0833	0.978
0.0916	0.965
0.1000	0.933
0.1083	0.901
0.1166	0.882
0.1250	0.863
0.1333	0.844
0.1416	0.831
0.1500	0.818
0.1583	0.805
0.1666	0.792
0.1750	0.780
0.1833	0.767
0.1916	0.760
0.2000	0.748
0.2083	0.741
0.2166	0.728
0.2250	0.716
0.2333	0.709
0.2416	0.703
0.2500	0.690
0.2583	0.684
0.2666	0.677
0.2750	0.664
0.2833	0.658
0.2916	0.652
0.3000	0.645
0.3083	0.633
0.3166	0.626
0.3250	0.620
0.3333	0.613
0.3500	0.613
0.3666	0.601
0.3833	0.588
0.4000	0.575
0.4166	0.562
0.4333	0.549
0.4500	0.537
0.4666	0.524
0.4833	0.517
0.5000	0.505
0.5166	0.492
0.5333	0.485
0.5500	0.473
0.5666	0.466
0.5833	0.453
0.6000	0.447
0.6166	0.441
0.6333	0.428
0.6500	0.421
0.6666	0.415
0.6833	0.402
0.7000	0.396
0.7166	0.390
0.7333	0.383
0.7500	0.370
0.7666	0.364
0.7833	0.358

0.8000	0.351
0.8166	0.345
0.8333	0.338
0.8500	0.332
0.8666	0.326
0.8833	0.319
0.9000	0.313
0.9166	0.306
0.9333	0.300
0.9500	0.294
0.9666	0.287
0.9833	0.281
1.0000	0.274
1.2000	0.217
1.4000	0.159
1.6000	0.121
1.8000	0.089
2.0000	0.057
2.2000	0.051
2.4000	0.031
2.6000	0.012
2.8000	-0.006
3.0000	-0.019
3.2000	-0.031
3.4000	-0.038
3.6000	-0.051
3.8000	-0.057
4.0000	-0.063
4.2000	-0.063
4.4000	-0.070
4.6000	-0.076
4.8000	-0.083
5.0000	-0.549

SE2000
Environmental Logger
09/14 14:34

Unit# Test 5

Setups: INPUT 1

Type	Level (F)
Mode	Surface
I.D.	MW-2
Reference	0.000
SG	1.000
Linearity	0.097
Scale factor	20.151
Offset	-0.141
Delay mSEC	50.000

Step 1 09/14 10:32:22

Elapsed Time	INPUT 1
0.0000	-0.575
0.0083	-0.575
0.0166	-0.568
0.0250	-0.568
0.0333	-0.562
0.0416	-0.562
0.0500	-0.556
0.0583	-0.556
0.0666	-0.556
0.0750	-0.556
0.0833	-0.549
0.0916	-0.549
0.1000	-0.549
0.1083	-0.549
0.1166	-0.543
0.1250	-0.543
0.1333	-0.543
0.1416	-0.543
0.1500	-0.543
0.1583	-0.537
0.1666	-0.537
0.1750	-0.537
0.1833	-0.537
0.1916	-0.530
0.2000	-0.530
0.2083	-0.530
0.2166	-0.530
0.2250	-0.530
0.2333	-0.524
0.2416	-0.524
0.2500	-0.524
0.2583	-0.524
0.2666	-0.517
0.2750	-0.517
0.2833	-0.517
0.2916	-0.517
0.3000	-0.511
0.3083	-0.511
0.3166	-0.511
0.3250	-0.511
0.3333	-0.505
0.3500	-0.505
0.3666	-0.505
0.3833	-0.498
0.4000	-0.498
0.4166	-0.492
0.4333	-0.492
0.4500	-0.485
0.4666	-0.485
0.4833	-0.479
0.5000	-0.479
0.5166	-0.479
0.5333	-0.473
0.5500	-0.466
0.5666	-0.466
0.5833	-0.466
0.6000	-0.460
0.6166	-0.460
0.6333	-0.453
0.6500	-0.453
0.6666	-0.447
0.6833	-0.447
0.7000	-0.447
0.7166	-0.441
0.7333	-0.441
0.7500	-0.441
0.7666	-0.434
0.7833	-0.434

0.8000	-0.428
0.8166	-0.428
0.8333	-0.421
0.8500	-0.421
0.8666	-0.415
0.8833	-0.415
0.9000	-0.415
0.9166	-0.409
0.9333	-0.409
0.9500	-0.409
0.9666	-0.402
0.9833	-0.402
1.0000	-0.402
1.2000	-0.370
1.4000	-0.345
1.6000	-0.326
1.8000	-0.306
2.0000	-0.287
2.2000	-0.274
2.4000	-0.262
2.6000	-0.255
2.8000	-0.242
3.0000	-0.236
3.2000	-0.230
3.4000	-0.223
3.6000	-0.217
3.8000	-0.217
4.0000	-0.210
4.2000	-0.204
4.4000	-0.198
4.6000	-0.198
4.8000	-0.191
5.0000	-0.185
5.2000	-0.179
5.4000	-0.179
5.6000	-0.179
5.8000	-0.172
6.0000	-0.172

SE2000
Environmental Logger
09/14 14:08

Unit# Test 0

Setups: INPUT 1

Type	Level (F)
Mode	Surface
I.D.	MW-3
Reference	0.000
SG	1.000
Linearity	0.097
Scale factor	20.151
Offset	-0.141
Delay mSEC	50.000

Step 0 09/14 09:07:00

Elapsed Time	INPUT 1
0.0000	0.952
0.0083	0.927
0.0166	0.888
0.0250	0.882
0.0333	0.863
0.0416	0.850
0.0500	0.837
0.0583	0.824
0.0666	0.811
0.0750	0.805
0.0833	0.837
0.0916	0.811
0.1000	0.818
0.1083	0.805
0.1166	0.799
0.1250	0.786
0.1333	0.773
0.1416	0.760
0.1500	0.754
0.1583	0.741
0.1666	0.728
0.1750	0.716
0.1833	0.709
0.1916	0.696
0.2000	0.684
0.2083	0.671
0.2166	0.664
0.2250	0.652
0.2333	0.632
0.2416	0.594
0.2500	0.575
0.2583	0.562
0.2666	0.549
0.2750	0.543
0.2833	0.530
0.2916	0.517
0.3000	0.511
0.3083	0.505
0.3166	0.492
0.3250	0.485
0.3333	0.479
0.3500	0.466
0.3666	0.453
0.3833	0.441
0.4000	0.428
0.4166	0.415
0.4333	0.409
0.4500	0.396
0.4666	0.383
0.4833	0.377
0.5000	0.364
0.5166	0.351
0.5333	0.345
0.5500	0.332
0.5666	0.326
0.5833	0.319
0.6000	0.306
0.6166	0.300
0.6333	0.294
0.6500	0.287
0.6666	0.281
0.6833	0.274
0.7000	0.268
0.7166	0.262
0.7333	0.255
0.7500	0.242
0.7666	0.242
0.7833	0.230

0.8000	0.230
0.8166	0.223
0.8333	0.217
0.8500	0.210
0.8666	0.204
0.8833	0.204
0.9000	0.198
0.9166	0.198
0.9333	0.191
0.9500	0.191
0.9666	0.185
0.9833	0.178
1.0000	0.178
1.2000	0.134
1.4000	0.115
1.6000	0.095
1.8000	0.070
2.0000	0.051
2.2000	0.031
2.4000	0.025
2.6000	0.012
2.8000	0.006
3.0000	-0.006
3.2000	-0.012
3.4000	-0.019
3.6000	-0.025
3.8000	-0.025
4.0000	-0.031
4.2000	-0.038
4.4000	-0.044
4.6000	-0.044

SE2000
Environmental Logger
09/14 14:09

Unit# Test 0

Setups: INPUT 1

Type	Level (F)
Mode	Surface
I.D.	MW-3
Reference	0.000
SG	1.000
Linearity	0.097
Scale factor	20.151
Offset	-0.141
Delay mSEC	50.000

Step 1 09/14 09:11:47

Elapsed Time	INPUT 1
0.0000	-0.658
0.0083	-0.613
0.0166	-0.594
0.0250	-0.568
0.0333	-0.536
0.0416	-0.524
0.0500	-0.504
0.0583	-0.492
0.0666	-0.479
0.0750	-0.466
0.0833	-0.453
0.0916	-0.447
0.1000	-0.441
0.1083	-0.434
0.1166	-0.428
0.1250	-0.421
0.1333	-0.421
0.1416	-0.415
0.1500	-0.409
0.1583	-0.402
0.1666	-0.402
0.1750	-0.396
0.1833	-0.396
0.1916	-0.389
0.2000	-0.389
0.2083	-0.389
0.2166	-0.383
0.2250	-0.383
0.2333	-0.383
0.2416	-0.377
0.2500	-0.377
0.2583	-0.377
0.2666	-0.370
0.2750	-0.370
0.2833	-0.370
0.2916	-0.364
0.3000	-0.364
0.3083	-0.364
0.3166	-0.364
0.3250	-0.357
0.3333	-0.357
0.3500	-0.351
0.3666	-0.351
0.3833	-0.345
0.4000	-0.345
0.4166	-0.338
0.4333	-0.338
0.4500	-0.332
0.4666	-0.326
0.4833	-0.326
0.5000	-0.319
0.5166	-0.319
0.5333	-0.319
0.5500	-0.313
0.5666	-0.313
0.5833	-0.306
0.6000	-0.306
0.6166	-0.300
0.6333	-0.300
0.6500	-0.300
0.6666	-0.294
0.6833	-0.294
0.7000	-0.294
0.7166	-0.287
0.7333	-0.287
0.7500	-0.287
0.7666	-0.281
0.7833	-0.281

0.8000	-0.281
0.8166	-0.274
0.8333	-0.274
0.8500	-0.274
0.8666	-0.268
0.8833	-0.268
0.9000	-0.268
0.9166	-0.262
0.9333	-0.262
0.9500	-0.262
0.9666	-0.255
0.9833	-0.255
1.0000	-0.255
1.2000	-0.223
1.4000	-0.204
1.6000	-0.191
1.8000	-0.185
2.0000	-0.172
2.2000	-0.166
2.4000	-0.159
2.6000	-0.153
2.8000	-0.147
3.0000	-0.140
3.2000	-0.134
3.4000	-0.127
3.6000	-0.127
3.8000	-0.121
4.0000	-0.121
4.2000	-0.115
4.4000	-0.115
4.6000	-0.115
4.8000	-0.108
5.0000	-0.108
5.2000	-0.108
5.4000	-0.102
5.6000	-0.102
5.8000	-0.095

SE2000
Environmental Logger
09/14 14:15

Unit# Test 1

Setups: INPUT 1

Type	Level (F)
Mode	Surface
I.D.	MW-4
Reference	0.000
SG	1.000
Linearity	0.097
Scale factor	20.151
Offset	-0.141
Delay mSEC	50.000

Step 0 09/14 09:23:45

Elapsed Time	INPUT 1
0.0000	0.492
0.0083	0.473
0.0166	0.460
0.0250	0.447
0.0333	0.428
0.0416	0.422
0.0500	0.409
0.0583	0.402
0.0666	0.396
0.0750	0.383
0.0833	0.377
0.0916	0.370
0.1000	0.370
0.1083	0.364
0.1166	0.358
0.1250	0.351
0.1333	0.345
0.1416	0.345
0.1500	0.338
0.1583	0.332
0.1666	0.326
0.1750	0.326
0.1833	0.319
0.1916	0.319
0.2000	0.313
0.2083	0.306
0.2166	0.306
0.2250	0.300
0.2333	0.300
0.2416	0.294
0.2500	0.294
0.2583	0.287
0.2666	0.287
0.2750	0.281
0.2833	0.281
0.2916	0.281
0.3000	0.274
0.3083	0.274
0.3166	0.268
0.3250	0.262
0.3333	0.262
0.3500	0.255
0.3666	0.249
0.3833	0.249
0.4000	0.243
0.4166	0.236
0.4333	0.230
0.4500	0.230
0.4666	0.223
0.4833	0.217
0.5000	0.217
0.5166	0.211
0.5333	0.211
0.5500	0.204
0.5666	0.198
0.5833	0.198
0.6000	0.191
0.6166	0.191
0.6333	0.185
0.6500	0.185
0.6666	0.179
0.6833	0.179
0.7000	0.172
0.7166	0.172
0.7333	0.166
0.7500	0.166
0.7666	0.159
0.7833	0.159

0.8000	0.159
0.8166	0.153
0.8333	0.147
0.8500	0.147
0.8666	0.147
0.8833	0.147
0.9000	0.140
0.9166	0.140
0.9333	0.134
0.9500	0.134
0.9666	0.134
0.9833	0.127
1.0000	0.127
1.2000	0.102
1.4000	0.083
1.6000	0.070
1.8000	0.057
2.0000	0.044
2.2000	0.038
2.4000	0.025
2.6000	0.019
2.8000	0.012
3.0000	0.006
3.2000	0.006
3.4000	0.000
3.6000	0.000
3.8000	-0.006
4.0000	-0.006
4.2000	-0.006

SE2000
Environmental Logger
09/14 14:16

Unit# Test 1

Setups: INPUT 1

Type	Level (F)
Mode	Surface
I.D.	MW-4
Reference	0.000
SG	1.000
Linearity	0.097
Scale factor	20.151
Offset	-0.141
Delay mSEC	50.000

Step 1 09/14 09:28:07

Elapsed Time	INPUT 1
0.0000	-0.741
0.0083	-0.684
0.0166	-0.633
0.0250	-0.581
0.0333	-0.537
0.0416	-0.505
0.0500	-0.466
0.0583	-0.441
0.0666	-0.415
0.0750	-0.390
0.0833	-0.370
0.0916	-0.358
0.1000	-0.338
0.1083	-0.326
0.1166	-0.319
0.1250	-0.306
0.1333	-0.300
0.1416	-0.294
0.1500	-0.281
0.1583	-0.274
0.1666	-0.268
0.1750	-0.262
0.1833	-0.255
0.1916	-0.255
0.2000	-0.249
0.2083	-0.242
0.2166	-0.236
0.2250	-0.230
0.2333	-0.230
0.2416	-0.230
0.2500	-0.230
0.2583	-0.223
0.2666	-0.223
0.2750	-0.223
0.2833	-0.217
0.2916	-0.217
0.3000	-0.217
0.3083	-0.217
0.3166	-0.211
0.3250	-0.211
0.3333	-0.211
0.3500	-0.211
0.3666	-0.211
0.3833	-0.204
0.4000	-0.204
0.4166	-0.198
0.4333	-0.198
0.4500	-0.198
0.4666	-0.191
0.4833	-0.185
0.5000	-0.185
0.5166	-0.185
0.5333	-0.185
0.5500	-0.179
0.5666	-0.179
0.5833	-0.179
0.6000	-0.179
0.6166	-0.179
0.6333	-0.172
0.6500	-0.172
0.6666	-0.172
0.6833	-0.172
0.7000	-0.166
0.7166	-0.159
0.7333	-0.159
0.7500	-0.159
0.7666	-0.159
0.7833	-0.159

0.8000	-0.153
0.8166	-0.153
0.8333	-0.153
0.8500	-0.153
0.8666	-0.153
0.8833	-0.153
0.9000	-0.153
0.9166	-0.153
0.9333	-0.153
0.9500	-0.147
0.9666	-0.147
0.9833	-0.147
1.0000	-0.147
1.2000	-0.134
1.4000	-0.121
1.6000	-0.115
1.8000	-0.102
2.0000	-0.102
2.2000	-0.095
2.4000	-0.089
2.6000	-0.089
2.8000	-0.083
3.0000	-0.076
3.2000	-0.076
3.4000	-0.070
3.6000	-0.070
3.8000	-0.063
4.0000	-0.063
4.2000	-0.063
4.4000	-0.063
4.6000	-0.063
4.8000	-0.057
5.0000	-0.057
5.2000	-0.057
5.4000	-0.057
5.6000	-0.057
5.8000	-0.057

SE2000
Environmental Logger
09/14 14:35

Unit# Test 6

Setups: INPUT 1

Type	Level (F)
Mode	Surface
I.D.	MW-5
Reference	0.000
SG	1.000
Linearity	0.097
Scale factor	20.151
Offset	-0.141
Delay mSEC	50.000

Step 0 09/14 10:41:18

Elapsed Time	INPUT 1
0.0000	0.518
0.0083	0.518
0.0166	0.511
0.0250	0.511
0.0333	0.505
0.0416	0.505
0.0500	0.498
0.0583	0.492
0.0666	0.486
0.0750	0.486
0.0833	0.479
0.0916	0.473
0.1000	0.473
0.1083	0.466
0.1166	0.466
0.1250	0.460
0.1333	0.460
0.1416	0.454
0.1500	0.530
0.1583	0.524
0.1666	0.473
0.1750	0.530
0.1833	0.511
0.1916	0.492
0.2000	0.492
0.2083	0.479
0.2166	0.473
0.2250	0.466
0.2333	0.460
0.2416	0.454
0.2500	0.454
0.2583	0.447
0.2666	0.441
0.2750	0.441
0.2833	0.434
0.2916	0.428
0.3000	0.434
0.3083	0.422
0.3166	0.434
0.3250	0.415
0.3333	0.415
0.3500	0.409
0.3666	0.402
0.3833	0.396
0.4000	0.390
0.4166	0.383
0.4333	0.383
0.4500	0.377
0.4666	0.370
0.4833	0.377
0.5000	0.364
0.5166	0.364
0.5333	0.358
0.5500	0.358
0.5666	0.351
0.5833	0.345
0.6000	0.345
0.6166	0.358
0.6333	0.345
0.6500	0.332
0.6666	0.326
0.6833	0.326
0.7000	0.326
0.7166	0.319
0.7333	0.313
0.7500	0.313
0.7666	0.307
0.7833	0.307

0.8000	0.300
0.8166	0.300
0.8333	0.294
0.8500	0.294
0.8666	0.294
0.8833	0.287
0.9000	0.287
0.9166	0.281
0.9333	0.281
0.9500	0.275
0.9666	0.275
0.9833	0.275
1.0000	0.268
1.2000	0.230
1.4000	0.204
1.6000	0.172
1.8000	0.147
2.0000	0.127
2.2000	0.115
2.4000	0.102
2.6000	0.089
2.8000	0.083
3.0000	0.076
3.2000	0.070
3.4000	0.063
3.6000	0.057
3.8000	0.051
4.0000	0.044
4.2000	0.038
4.4000	0.038
4.6000	0.025
4.8000	0.025
5.0000	0.019
5.2000	0.012
5.4000	0.012
5.6000	0.006
5.8000	0.006
6.0000	0.000

SE2000
Environmental Logger
09/14 14:37

Unit# Test 6

Setups: INPUT 1

Type	Level (F)
Mode	Surface
I.D.	MW-5
Reference	0.000
SG	1.000
Linearity	0.097
Scale factor	20.151
Offset	-0.141
Delay mSEC	50.000

Step 1 09/14 10:47:28

Elapsed Time	INPUT 1
0.0000	-1.586
0.0083	-1.554
0.0166	-1.522
0.0250	-1.483
0.0333	-1.451
0.0416	-1.419
0.0500	-1.387
0.0583	-1.355
0.0666	-1.323
0.0750	-1.298
0.0833	-1.266
0.0916	-1.240
0.1000	-1.215
0.1083	-1.189
0.1166	-1.163
0.1250	-1.138
0.1333	-1.119
0.1416	-1.093
0.1500	-1.074
0.1583	-1.048
0.1666	-1.029
0.1750	-1.010
0.1833	-0.991
0.1916	-0.972
0.2000	-0.952
0.2083	-0.933
0.2166	-0.914
0.2250	-0.901
0.2333	-0.882
0.2416	-0.863
0.2500	-0.850
0.2583	-0.831
0.2666	-0.818
0.2750	-0.805
0.2833	-0.793
0.2916	-0.780
0.3000	-0.767
0.3083	-0.754
0.3166	-0.741
0.3250	-0.729
0.3333	-0.716
0.3500	-0.697
0.3666	-0.677
0.3833	-0.665
0.4000	-0.645
0.4166	-0.633
0.4333	-0.613
0.4500	-0.601
0.4666	-0.588
0.4833	-0.582
0.5000	-0.569
0.5166	-0.556
0.5333	-0.543
0.5500	-0.537
0.5666	-0.518
0.5833	-0.511
0.6000	-0.505
0.6166	-0.492
0.6333	-0.479
0.6500	-0.473
0.6666	-0.466
0.6833	-0.460
0.7000	-0.454
0.7166	-0.441
0.7333	-0.434
0.7500	-0.434
0.7666	-0.422
0.7833	-0.422

0.8000	-0.409
0.8166	-0.402
0.8333	-0.396
0.8500	-0.390
0.8666	-0.383
0.8833	-0.377
0.9000	-0.377
0.9166	-0.370
0.9333	-0.364
0.9500	-0.358
0.9666	-0.345
0.9833	-0.338
1.0000	-0.332
1.2000	-0.294
1.4000	-0.262
1.6000	-0.230
1.8000	-0.211
2.0000	-0.191
2.2000	-0.172
2.4000	-0.159
2.6000	-0.140
2.8000	-0.134
3.0000	-0.121
3.2000	-0.115
3.4000	-0.108
3.6000	-0.102
3.8000	-0.095
4.0000	-0.089
4.2000	-0.089
4.4000	-0.083
4.6000	-0.083
4.8000	-0.076
5.0000	-0.076
5.2000	-0.070
5.4000	-0.070
5.6000	-0.070
5.8000	-0.063
6.0000	-0.063
6.2000	-0.063
6.4000	-0.063
6.6000	-0.063
6.8000	-0.063
7.0000	-0.057
7.2000	-0.057
7.4000	-0.057
7.6000	-0.057

SE2000
Environmental Logger
09/14 14:18

Unit# Test 2

Setups: INPUT 1

Type	Level (F)
Mode	Surface
I.D.	MW-6
Reference	0.000
SG	1.000
Linearity	0.097
Scale factor	20.151
Offset	-0.141
Delay mSEC	50.000

Step 0 09/14 09:37:32

Elapsed Time	INPUT 1
0.0000	0.799
0.0083	0.754
0.0166	0.716
0.0250	0.716
0.0333	0.658
0.0416	0.645
0.0500	0.620
0.0583	0.607
0.0666	0.588
0.0750	0.575
0.0833	0.562
0.0916	0.626
0.1000	0.524
0.1083	0.556
0.1166	0.530
0.1250	0.524
0.1333	0.517
0.1416	0.511
0.1500	0.505
0.1583	0.498
0.1666	0.492
0.1750	0.485
0.1833	0.466
0.1916	0.485
0.2000	0.466
0.2083	0.466
0.2166	0.466
0.2250	0.460
0.2333	0.460
0.2416	0.453
0.2500	0.447
0.2583	0.447
0.2666	0.447
0.2750	0.441
0.2833	0.434
0.2916	0.434
0.3000	0.428
0.3083	0.428
0.3166	0.422
0.3250	0.422
0.3333	0.422
0.3500	0.415
0.3666	0.479
0.3833	0.422
0.4000	0.409
0.4166	0.402
0.4333	0.396
0.4500	0.396
0.4666	0.390
0.4833	0.383
0.5000	0.377
0.5166	0.377
0.5333	0.370
0.5500	0.370
0.5666	0.364
0.5833	0.364
0.6000	0.358
0.6166	0.358
0.6333	0.351
0.6500	0.351
0.6666	0.345
0.6833	0.345
0.7000	0.338
0.7166	0.338
0.7333	0.338
0.7500	0.345
0.7666	0.332
0.7833	0.332

0.8000	0.326
0.8166	0.319
0.8333	0.326
0.8500	0.319
0.8666	0.313
0.8833	0.313
0.9000	0.313
0.9166	0.306
0.9333	0.306
0.9500	0.306
0.9666	0.300
0.9833	0.300
1.0000	0.300
1.2000	0.268
1.4000	0.249
1.6000	0.230
1.8000	0.210
2.0000	0.191
2.2000	0.185
2.4000	0.166
2.6000	0.159
2.8000	0.147
3.0000	0.134
3.2000	0.127
3.4000	0.115
3.6000	0.102
3.8000	0.089
4.0000	0.083
4.2000	0.076
4.4000	0.063
4.6000	0.057
4.8000	0.057
5.0000	0.044
5.2000	0.031
5.4000	0.031
5.6000	0.025
5.8000	0.019
6.0000	0.012
6.2000	0.006
6.4000	0.000
6.6000	-1.809

SE2000
Environmental Logger
09/14 14:19

Unit# Test 2

Setups: INPUT 1

Type	Level (F)
Mode	Surface
I.D.	MW-6
Reference	0.000
SG	1.000
Linearity	0.097
Scale factor	20.151
Offset	-0.141
Delay mSEC	50.000

Step 1 09/14 09:44:12

Elapsed Time	INPUT 1
0.0000	-1.553
0.0083	-1.534
0.0166	-1.508
0.0250	-1.489
0.0333	-1.463
0.0416	-1.444
0.0500	-1.419
0.0583	-1.400
0.0666	-1.380
0.0750	-1.361
0.0833	-1.342
0.0916	-1.323
0.1000	-1.304
0.1083	-1.284
0.1166	-1.265
0.1250	-1.246
0.1333	-1.233
0.1416	-1.214
0.1500	-1.195
0.1583	-1.182
0.1666	-1.169
0.1750	-1.150
0.1833	-1.137
0.1916	-1.125
0.2000	-1.112
0.2083	-1.099
0.2166	-1.086
0.2250	-1.074
0.2333	-1.061
0.2416	-1.048
0.2500	-1.035
0.2583	-1.029
0.2666	-1.016
0.2750	-1.003
0.2833	-0.997
0.2916	-0.984
0.3000	-0.978
0.3083	-0.965
0.3166	-0.958
0.3250	-0.952
0.3333	-0.939
0.3500	-0.926
0.3666	-0.907
0.3833	-0.895
0.4000	-0.875
0.4166	-0.863
0.4333	-0.850
0.4500	-0.837
0.4666	-0.824
0.4833	-0.811
0.5000	-0.805
0.5166	-0.792
0.5333	-0.779
0.5500	-0.773
0.5666	-0.760
0.5833	-0.754
0.6000	-0.747
0.6166	-0.735
0.6333	-0.728
0.6500	-0.722
0.6666	-0.709
0.6833	-0.703
0.7000	-0.696
0.7166	-0.690
0.7333	-0.684
0.7500	-0.677
0.7666	-0.671
0.7833	-0.664

0.8000	-0.658
0.8166	-0.652
0.8333	-0.645
0.8500	-0.639
0.8666	-0.639
0.8833	-0.632
0.9000	-0.626
0.9166	-0.620
0.9333	-0.620
0.9500	-0.613
0.9666	-0.607
0.9833	-0.600
1.0000	-0.600
1.2000	-0.543
1.4000	-0.498
1.6000	-0.466
1.8000	-0.434
2.0000	-0.409
2.2000	-0.389
2.4000	-0.364
2.6000	-0.351
2.8000	-0.332
3.0000	-0.319
3.2000	-0.313
3.4000	-0.300
3.6000	-0.287
3.8000	-0.281
4.0000	-0.274
4.2000	-0.268
4.4000	-0.255
4.6000	-0.249
4.8000	-0.242
5.0000	-0.242
5.2000	-0.236
5.4000	-0.230
5.6000	-0.223
5.8000	-0.217
6.0000	-0.217
6.2000	-0.210
6.4000	-0.210
6.6000	-0.204

SE2000
Environmental Logger
09/14 14:29

Unit# Test 4

Setups: INPUT 1

Type	Level (F)
Mode	Surface
I.D.	MW-7
Reference	0.000
SG	1.000
Linearity	0.097
Scale factor	20.151
Offset	-0.141
Delay mSEC	50.000

Step 0 09/14 10:10:13

Elapsed Time	INPUT 1
0.0000	0.530
0.0083	0.524
0.0166	0.511
0.0250	0.505
0.0333	0.499
0.0416	0.486
0.0500	0.479
0.0583	0.473
0.0666	0.467
0.0750	0.460
0.0833	0.454
0.0916	0.454
0.1000	0.447
0.1083	0.441
0.1166	0.435
0.1250	0.428
0.1333	0.428
0.1416	0.422
0.1500	0.422
0.1583	0.415
0.1666	0.409
0.1750	0.409
0.1833	0.403
0.1916	0.403
0.2000	0.396
0.2083	0.396
0.2166	0.390
0.2250	0.390
0.2333	0.390
0.2416	0.383
0.2500	0.383
0.2583	0.383
0.2666	0.377
0.2750	0.377
0.2833	0.377
0.2916	0.371
0.3000	0.371
0.3083	0.371
0.3166	0.364
0.3250	0.364
0.3333	0.364
0.3500	0.358
0.3666	0.358
0.3833	0.351
0.4000	0.351
0.4166	0.345
0.4333	0.345
0.4500	0.339
0.4666	0.339
0.4833	0.339
0.5000	0.332
0.5166	0.332
0.5333	0.332
0.5500	0.326
0.5666	0.326
0.5833	0.319
0.6000	0.319
0.6166	0.313
0.6333	0.319
0.6500	0.313
0.6666	0.307
0.6833	0.307
0.7000	0.307
0.7166	0.300
0.7333	0.300
0.7500	0.300
0.7666	0.294
0.7833	0.294

0.8000	0.294
0.8166	0.287
0.8333	0.287
0.8500	0.287
0.8666	0.281
0.8833	0.281
0.9000	0.281
0.9166	0.281
0.9333	0.281
0.9500	0.275
0.9666	0.275
0.9833	0.275
1.0000	0.268
1.2000	0.243
1.4000	0.223
1.6000	0.204
1.8000	0.191
2.0000	0.179
2.2000	0.159
2.4000	0.147
2.6000	0.134
2.8000	0.121
3.0000	0.108
3.2000	0.095
3.4000	0.089
3.6000	0.076
3.8000	0.063
4.0000	0.057
4.2000	0.044
4.4000	0.031
4.6000	0.025
4.8000	0.012
5.0000	0.006
5.2000	0.000
5.4000	-0.006
5.6000	-0.012
5.8000	-0.019
6.0000	-0.025

SE2000
Environmental Logger
09/14 14:31

Unit# Test 4

Setups: INPUT 1

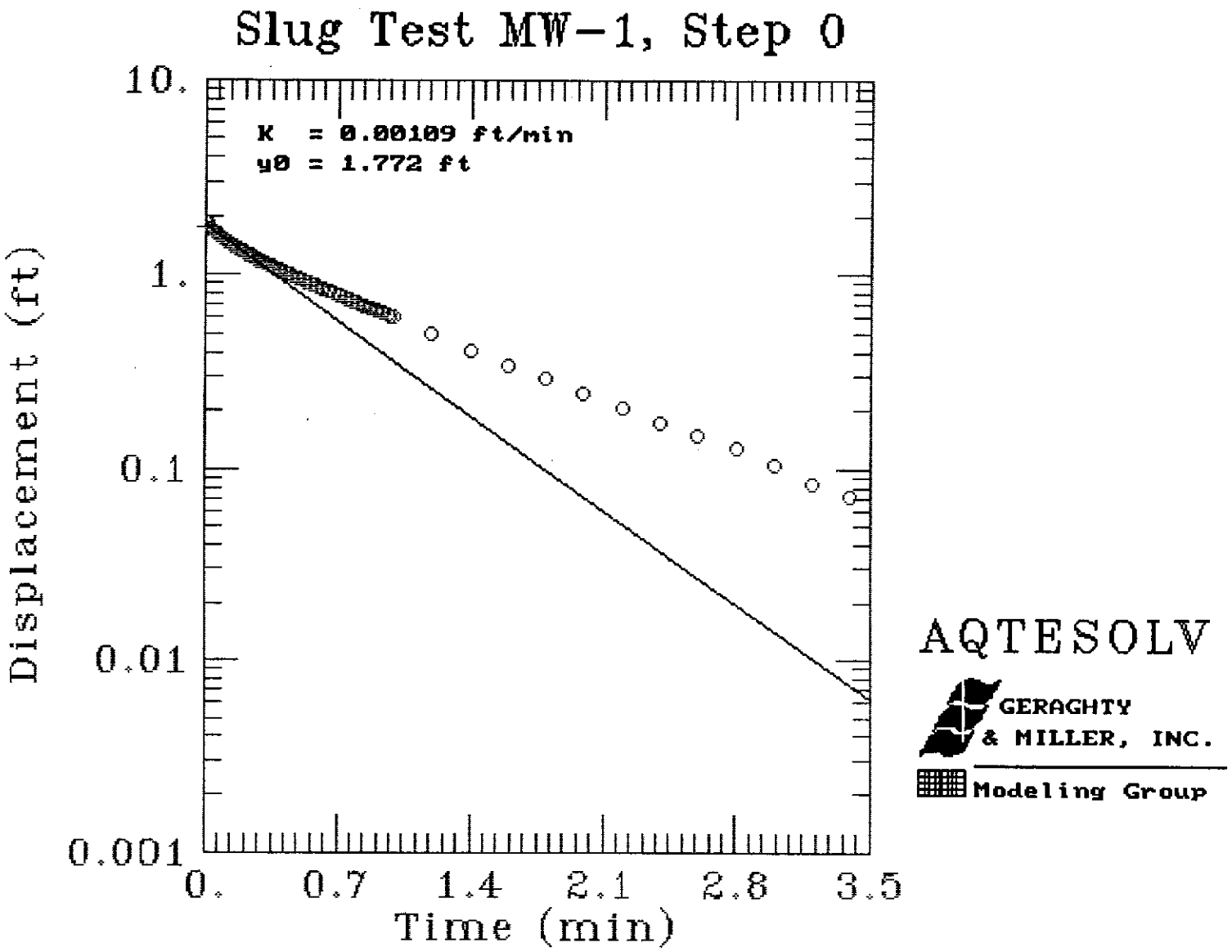
Type	Level (F)
Mode	Surface
I.D.	MW-7
Reference	0.000
SG	1.000
Linearity	0.097
Scale factor	20.151
Offset	-0.141
Delay mSEC	50.000

Step 1 09/14 10:16:24

Elapsed Time	INPUT 1
0.0000	-1.189
0.0083	-1.151
0.0166	-1.106
0.0250	-1.074
0.0333	-1.042
0.0416	-1.010
0.0500	-0.978
0.0583	-0.953
0.0666	-0.927
0.0750	-0.908
0.0833	-0.889
0.0916	-0.869
0.1000	-0.850
0.1083	-0.837
0.1166	-0.825
0.1250	-0.812
0.1333	-0.799
0.1416	-0.786
0.1500	-0.780
0.1583	-0.767
0.1666	-0.761
0.1750	-0.754
0.1833	-0.742
0.1916	-0.735
0.2000	-0.729
0.2083	-0.722
0.2166	-0.716
0.2250	-0.710
0.2333	-0.703
0.2416	-0.697
0.2500	-0.697
0.2583	-0.690
0.2666	-0.684
0.2750	-0.684
0.2833	-0.678
0.2916	-0.671
0.3000	-0.671
0.3083	-0.665
0.3166	-0.658
0.3250	-0.658
0.3333	-0.658
0.3500	-0.652
0.3666	-0.646
0.3833	-0.639
0.4000	-0.633
0.4166	-0.626
0.4333	-0.620
0.4500	-0.614
0.4666	-0.614
0.4833	-0.607
0.5000	-0.601
0.5166	-0.594
0.5333	-0.594
0.5500	-0.582
0.5666	-0.582
0.5833	-0.582
0.6000	-0.575
0.6166	-0.569
0.6333	-0.562
0.6500	-0.556
0.6666	-0.556
0.6833	-0.550
0.7000	-0.550
0.7166	-0.543
0.7333	-0.543
0.7500	-0.537
0.7666	-0.530
0.7833	-0.524

0.8000	-0.524
0.8166	-0.518
0.8333	-0.518
0.8500	-0.511
0.8666	-0.505
0.8833	-0.505
0.9000	-0.498
0.9166	-0.498
0.9333	-0.492
0.9500	-0.492
0.9666	-0.486
0.9833	-0.486
1.0000	-0.479
1.2000	-0.434
1.4000	-0.396
1.6000	-0.358
1.8000	-0.319
2.0000	-0.281
2.2000	-0.243
2.4000	-0.223
2.6000	-0.204
2.8000	-0.185
3.0000	-0.172
3.2000	-0.166
3.4000	-0.159
3.6000	-0.153
3.8000	-0.147
4.0000	-0.140
4.2000	-0.134
4.4000	-0.134
4.6000	-0.134
4.8000	-0.127
5.0000	-0.127
5.2000	-0.121
5.4000	-0.121
5.6000	-0.121
5.8000	-0.121
6.0000	-0.115
6.2000	-0.115
6.4000	-0.115
6.6000	-0.115
6.8000	-0.108
7.0000	-0.108
7.2000	-0.108
7.4000	-0.108
7.6000	-0.108

APPENDIX F
AQUIFER TEST SOLUTION PLOTS


Slug Test MW-1, Step 0
K = 0.00109 ft/min
y0 = 1.772 ft
Displacement (ft)
10.
1.
0.1
0.01
0.001
0.
0.7
1.4
2.1
2.8
3.5
Time (min)
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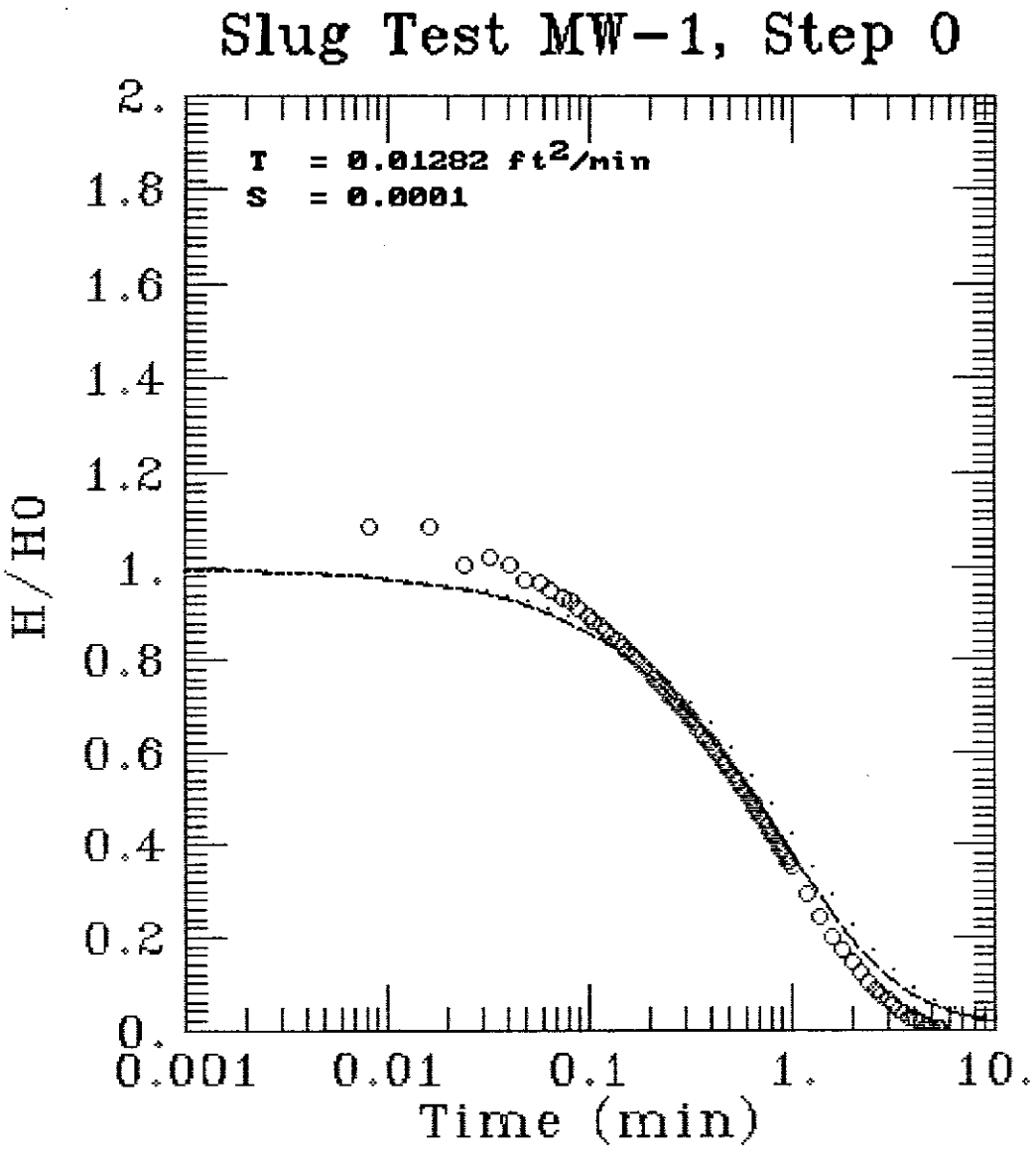

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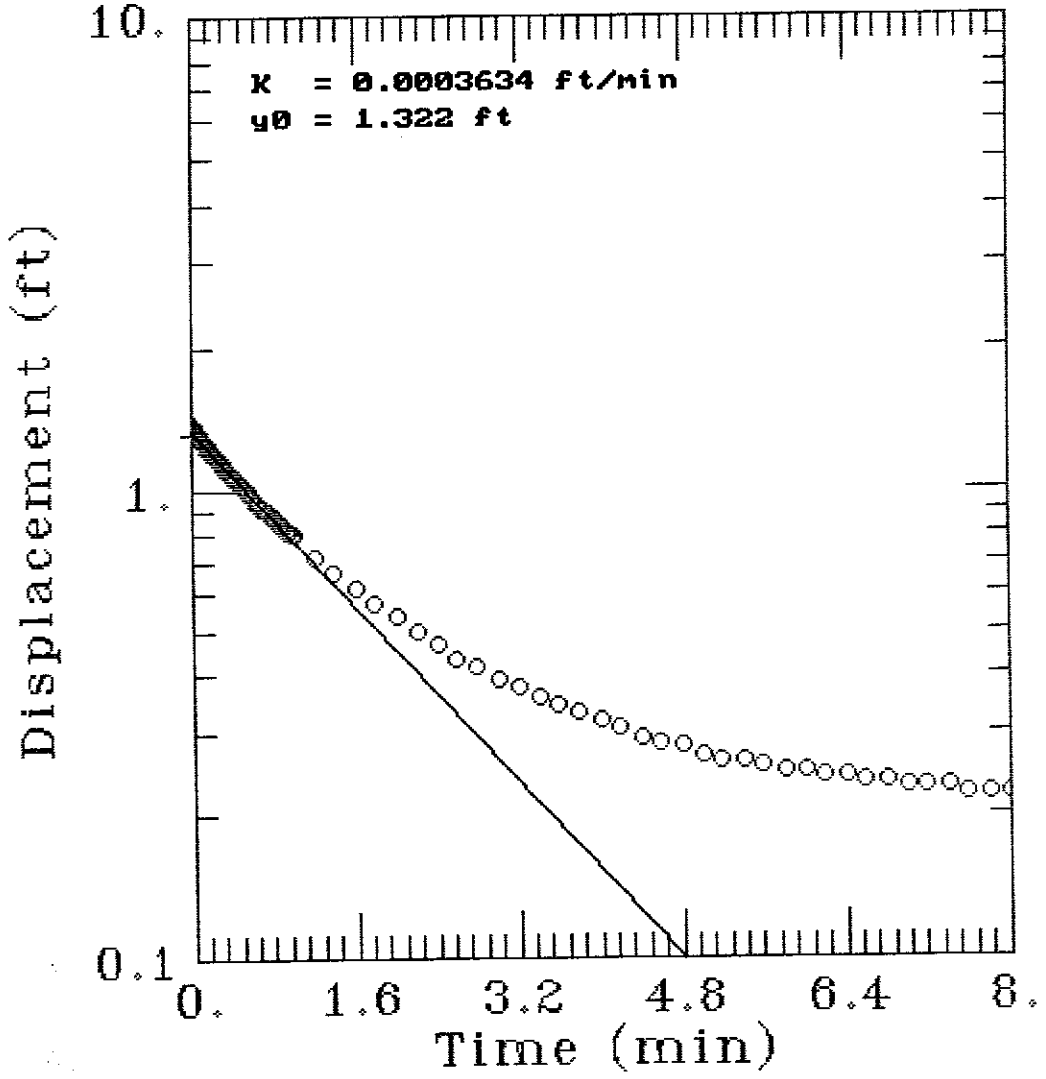
Slug Test MW-1, Step 1



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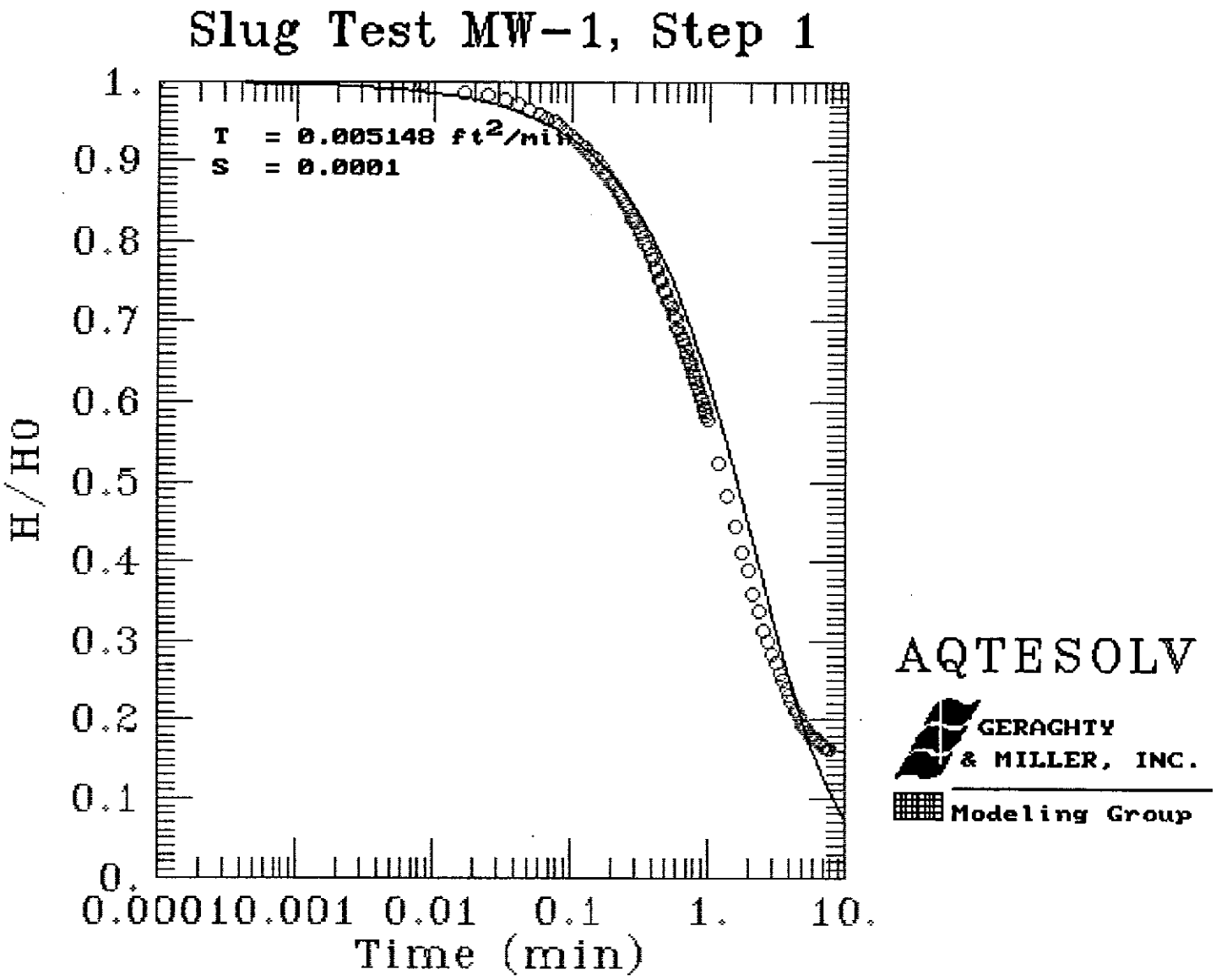
Modeling Group


Slug Test MW-1, Step 1
T = 0.005148 ft²/min
S = 0.0001
H/H0
1.
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.
0.0001
0.001
0.01
0.1
1.
10.
Time (min)
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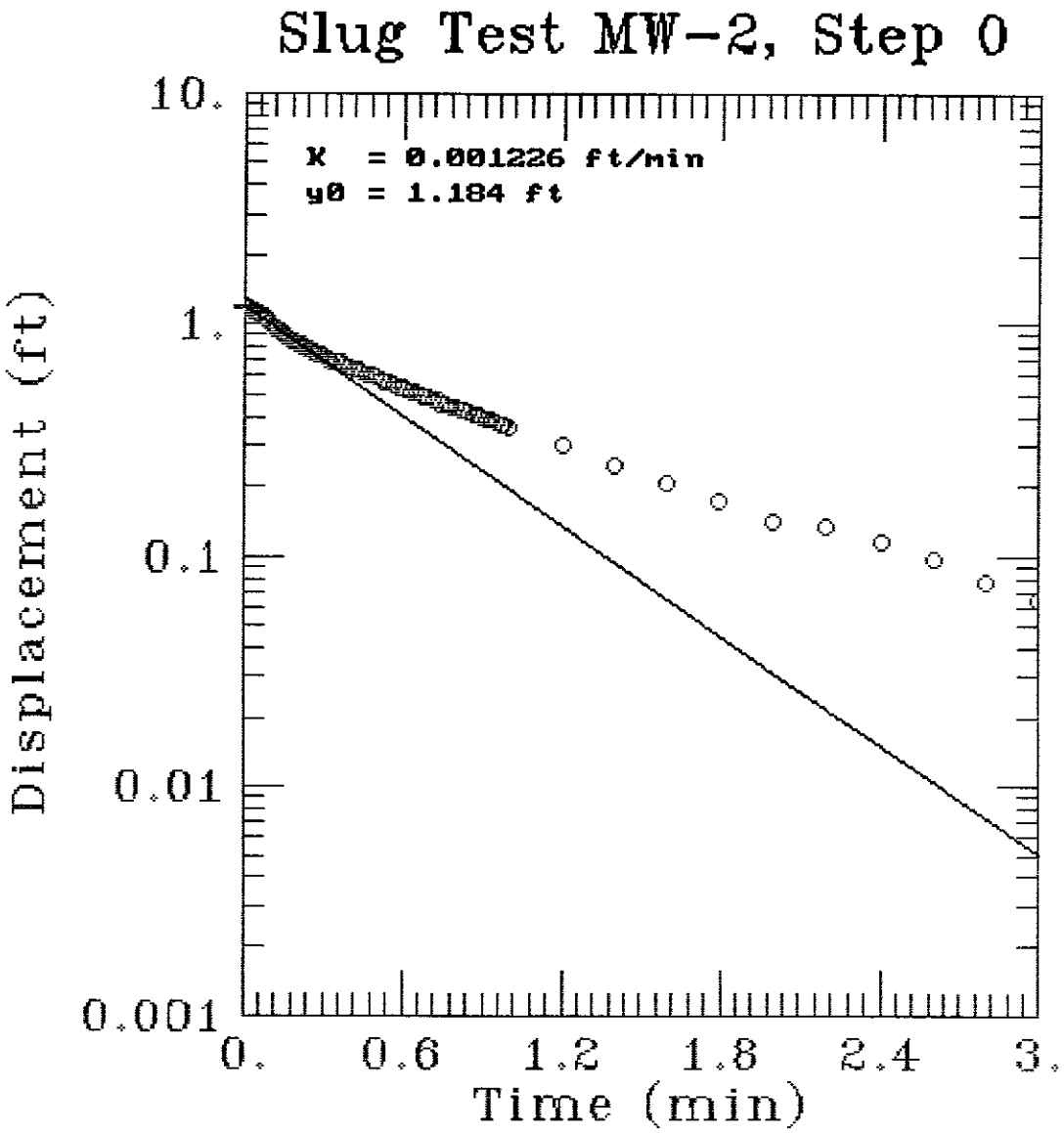

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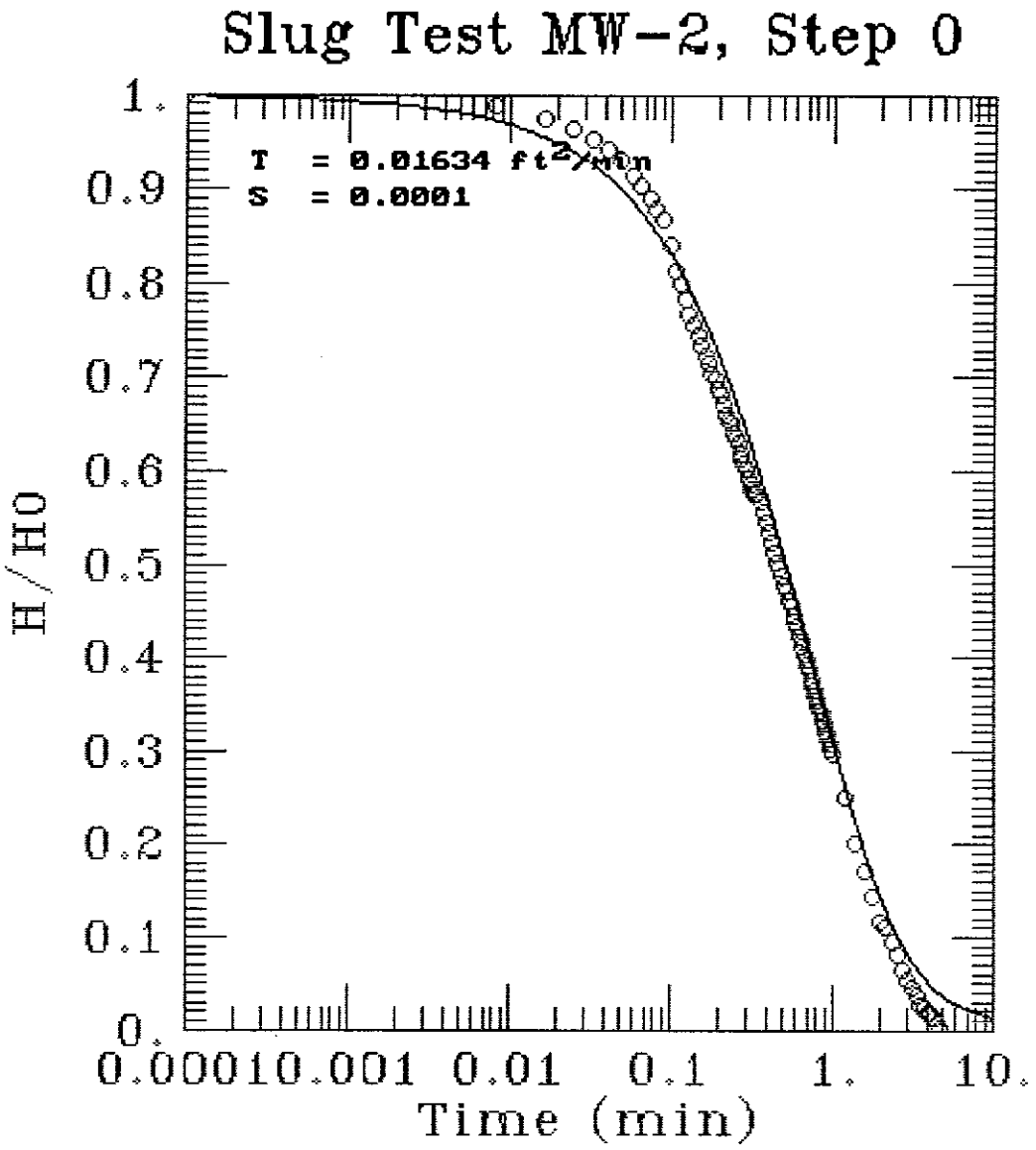
Modeling Group



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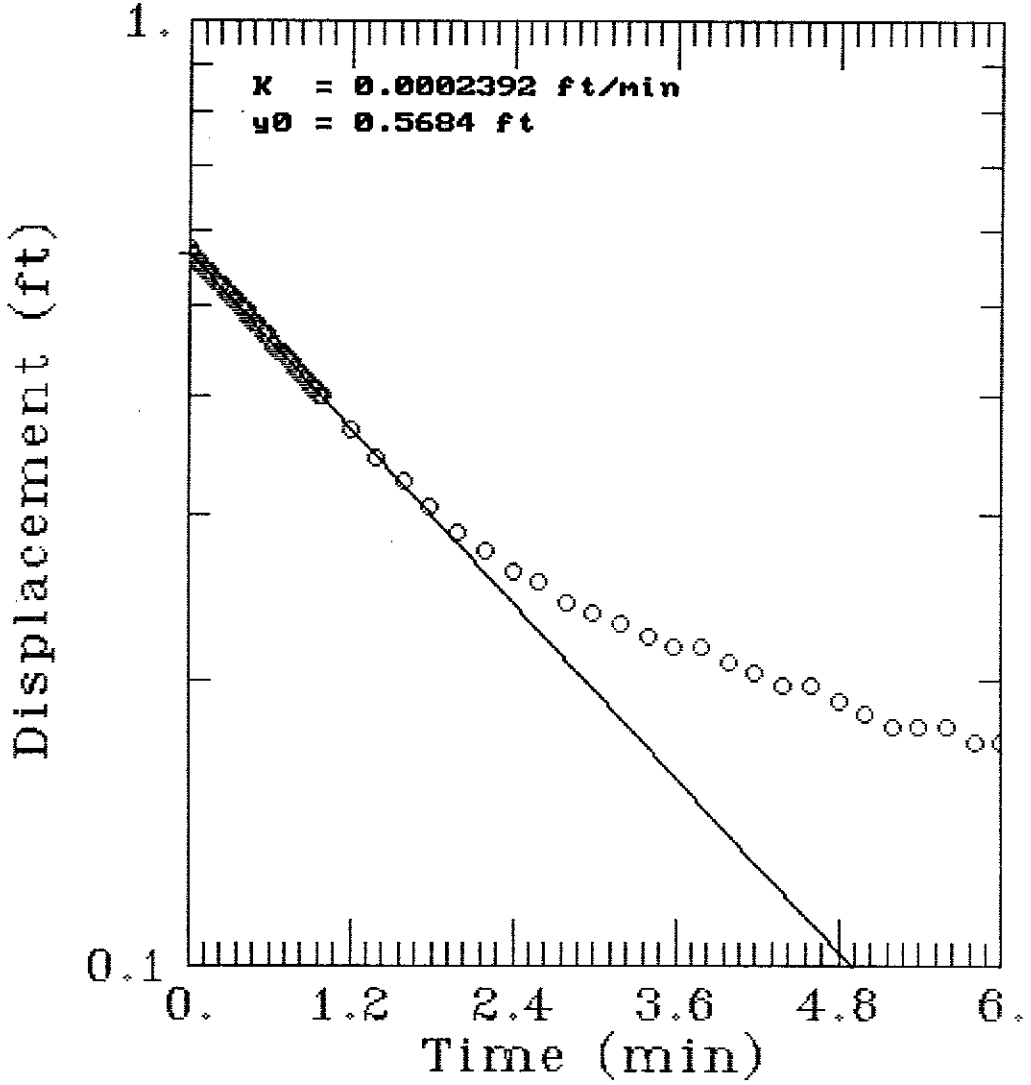
Slug Test MW-2, Step 1



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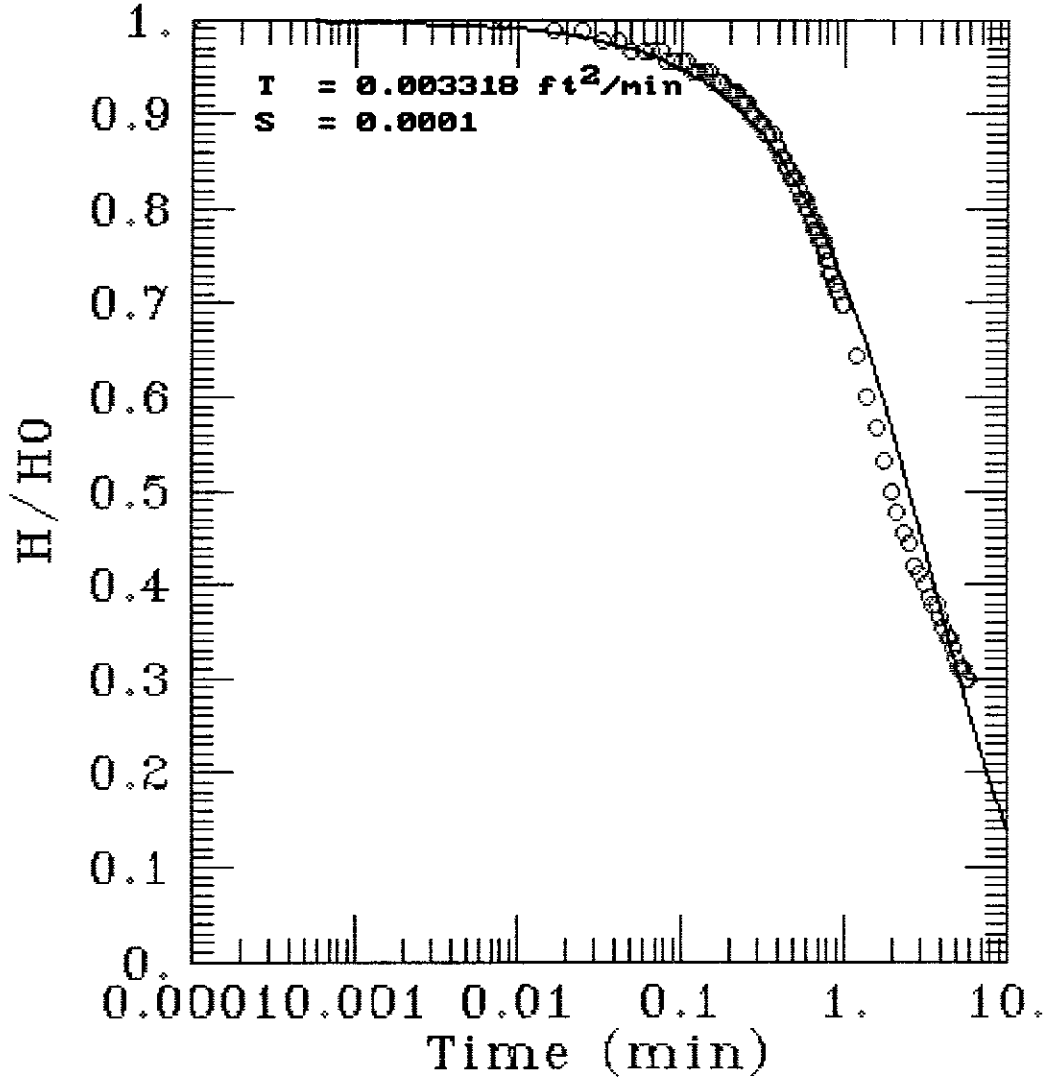
Slug Test MW-2, Step 1



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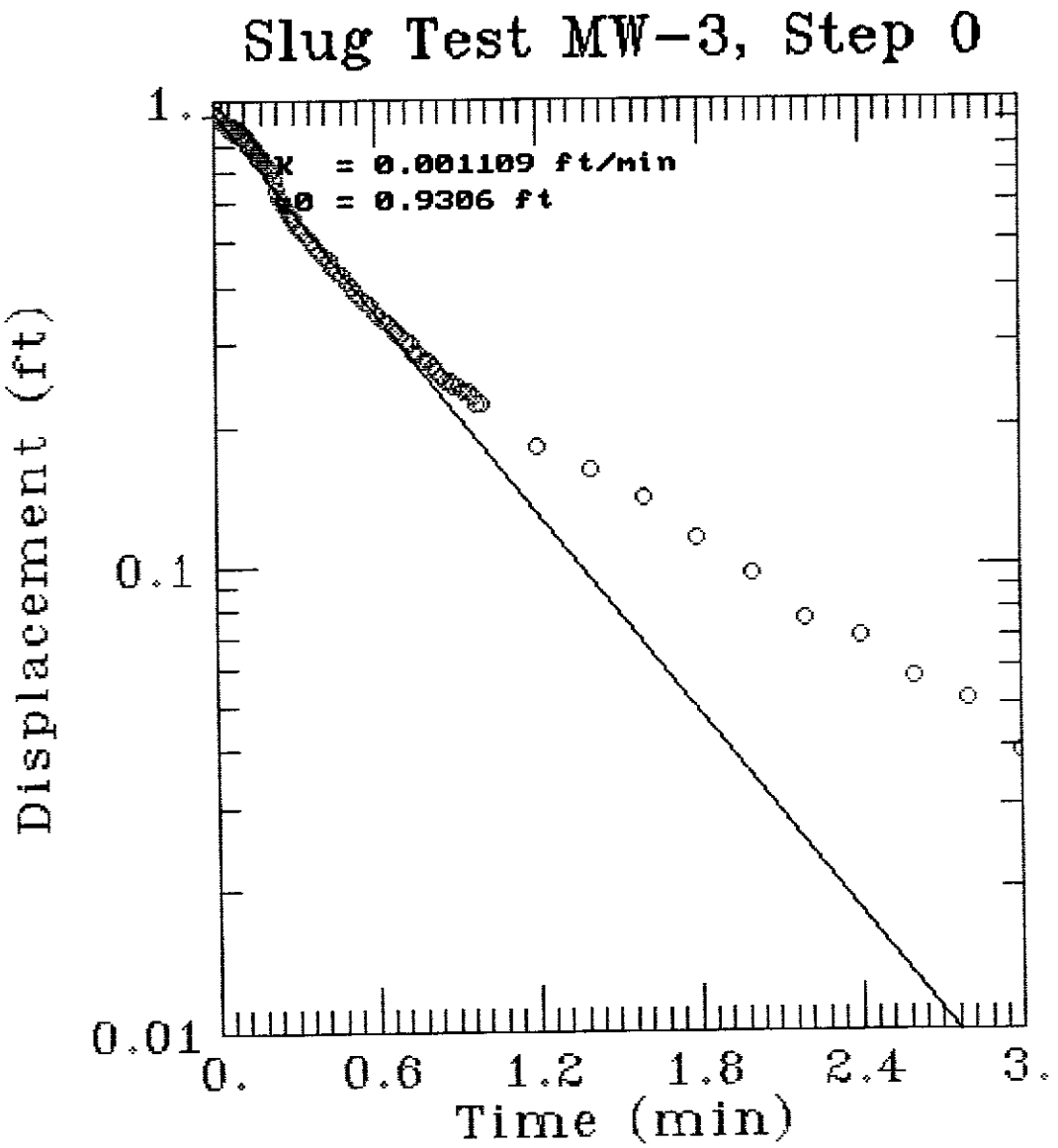

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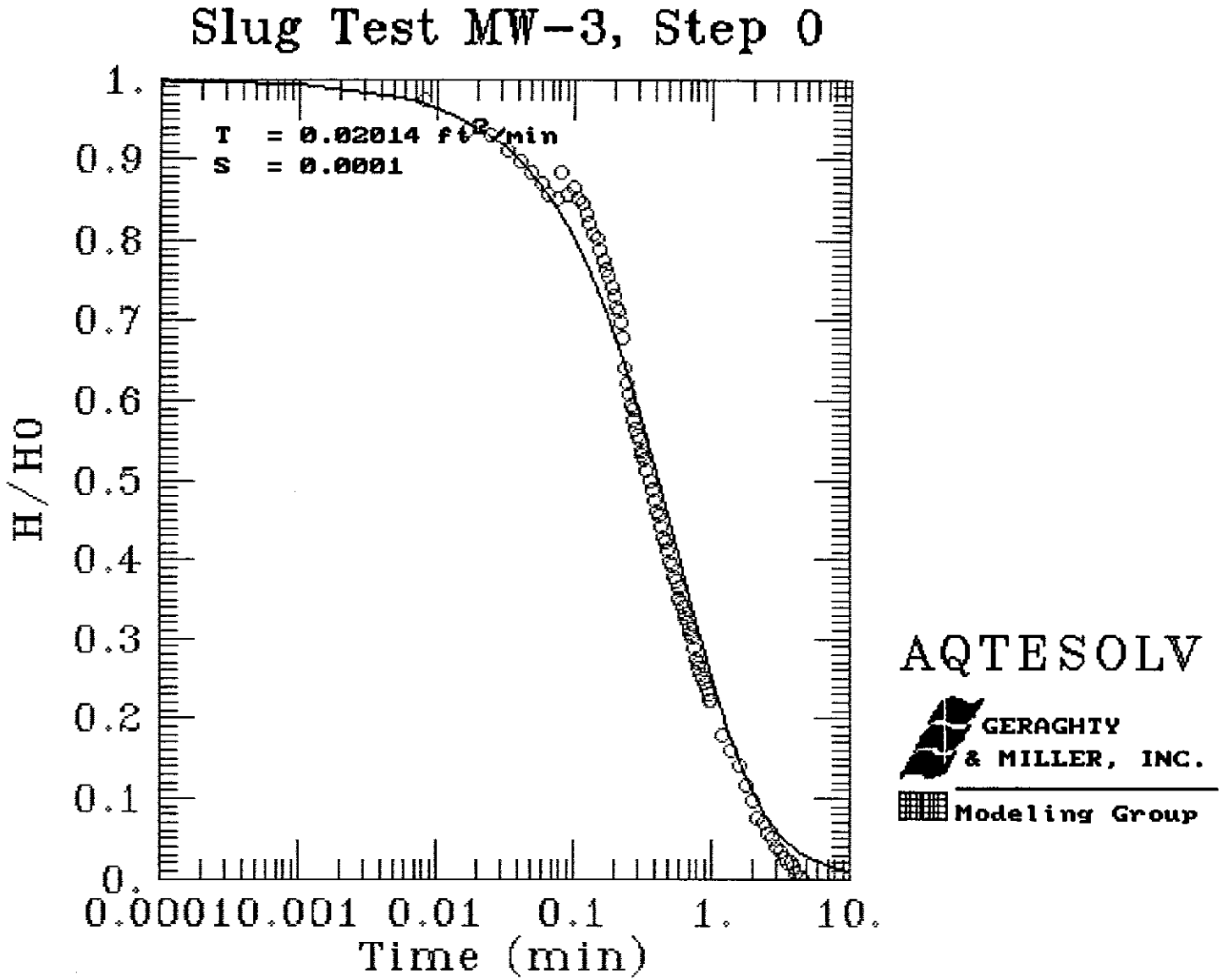
Modeling Group


Slug Test MW-3, Step 0
T = 0.02014 ft²/min
S = 0.0001
H/H0
1.
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.
0.0001
0.001
0.01
0.1
1.
10.
Time (min)
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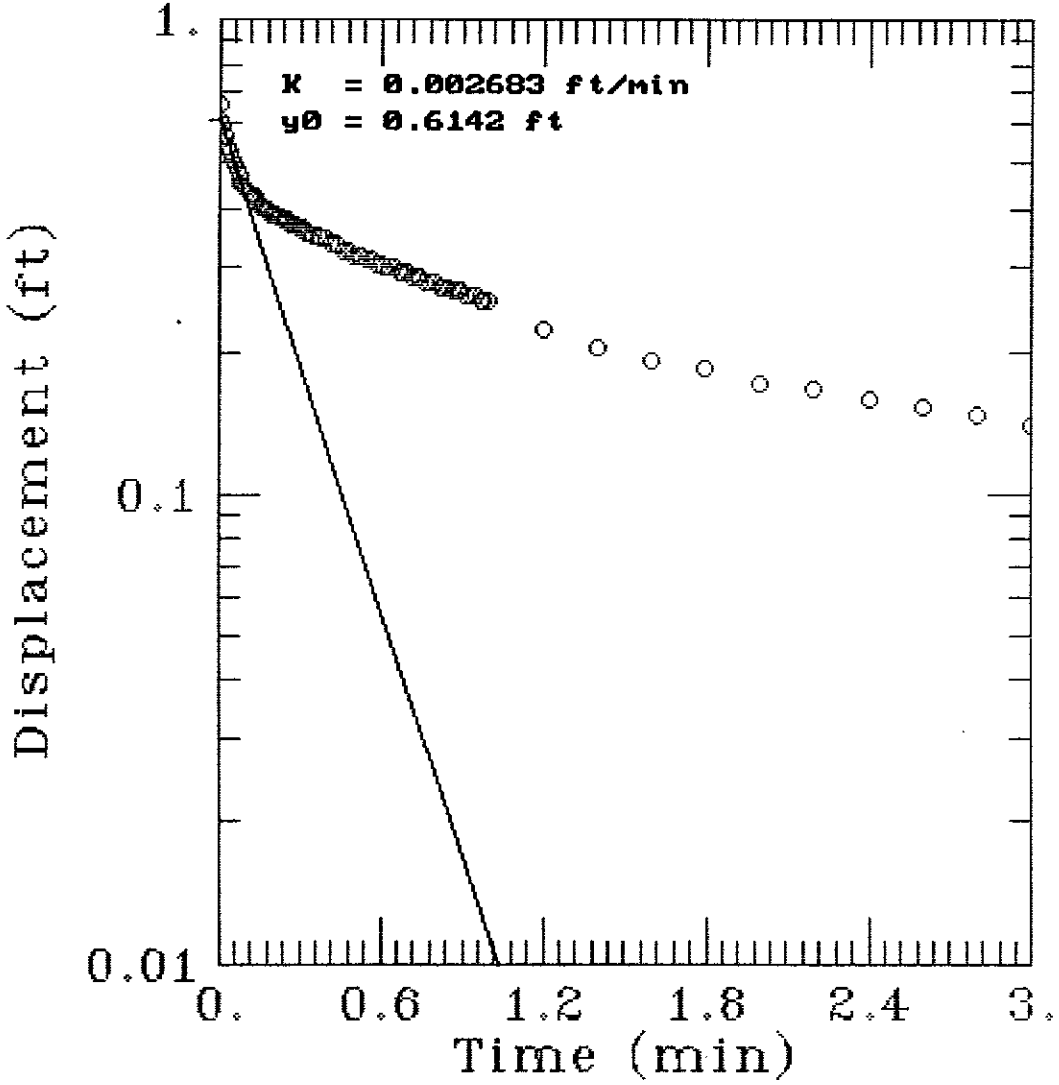
Slug Test MW-3, Step 1



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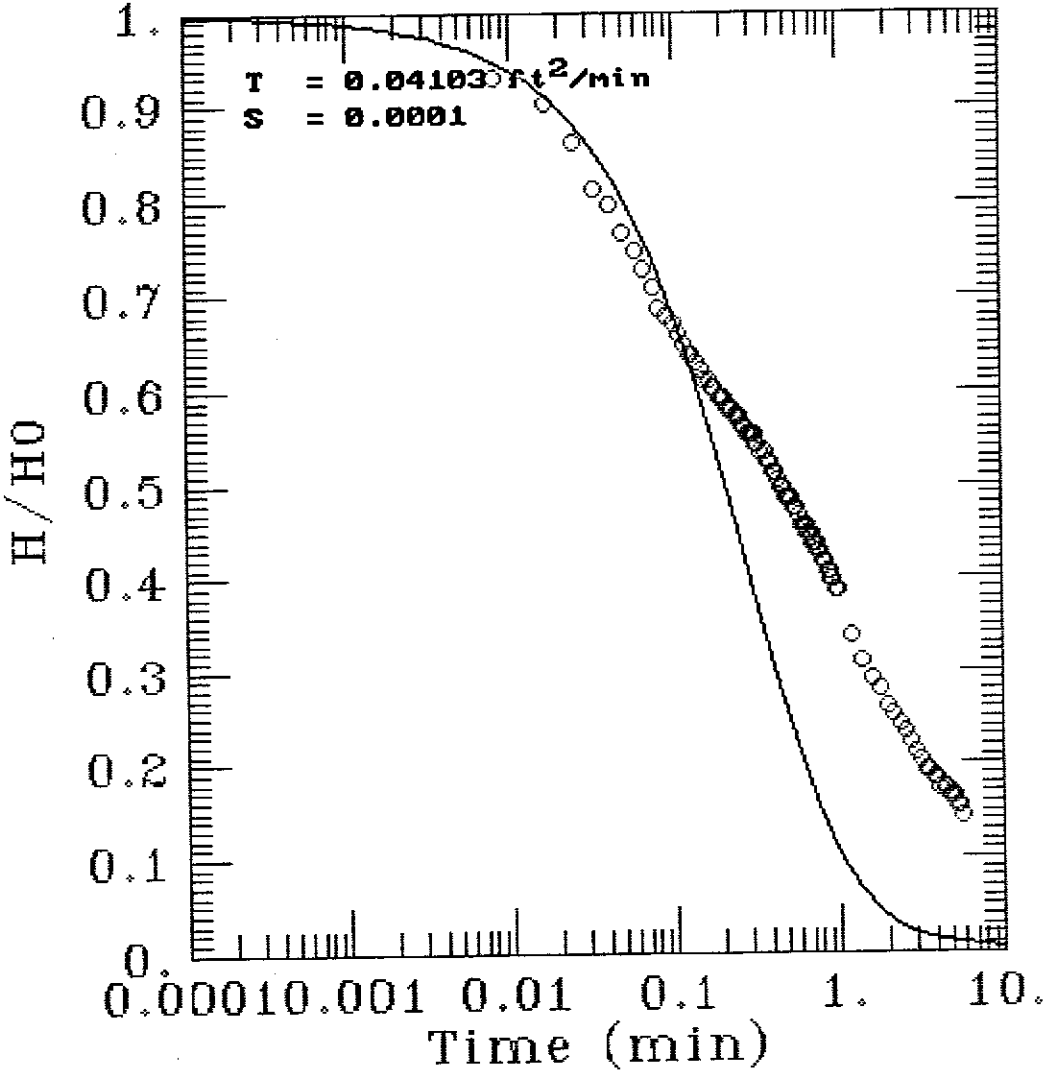
Slug Test MW-3, Step 1



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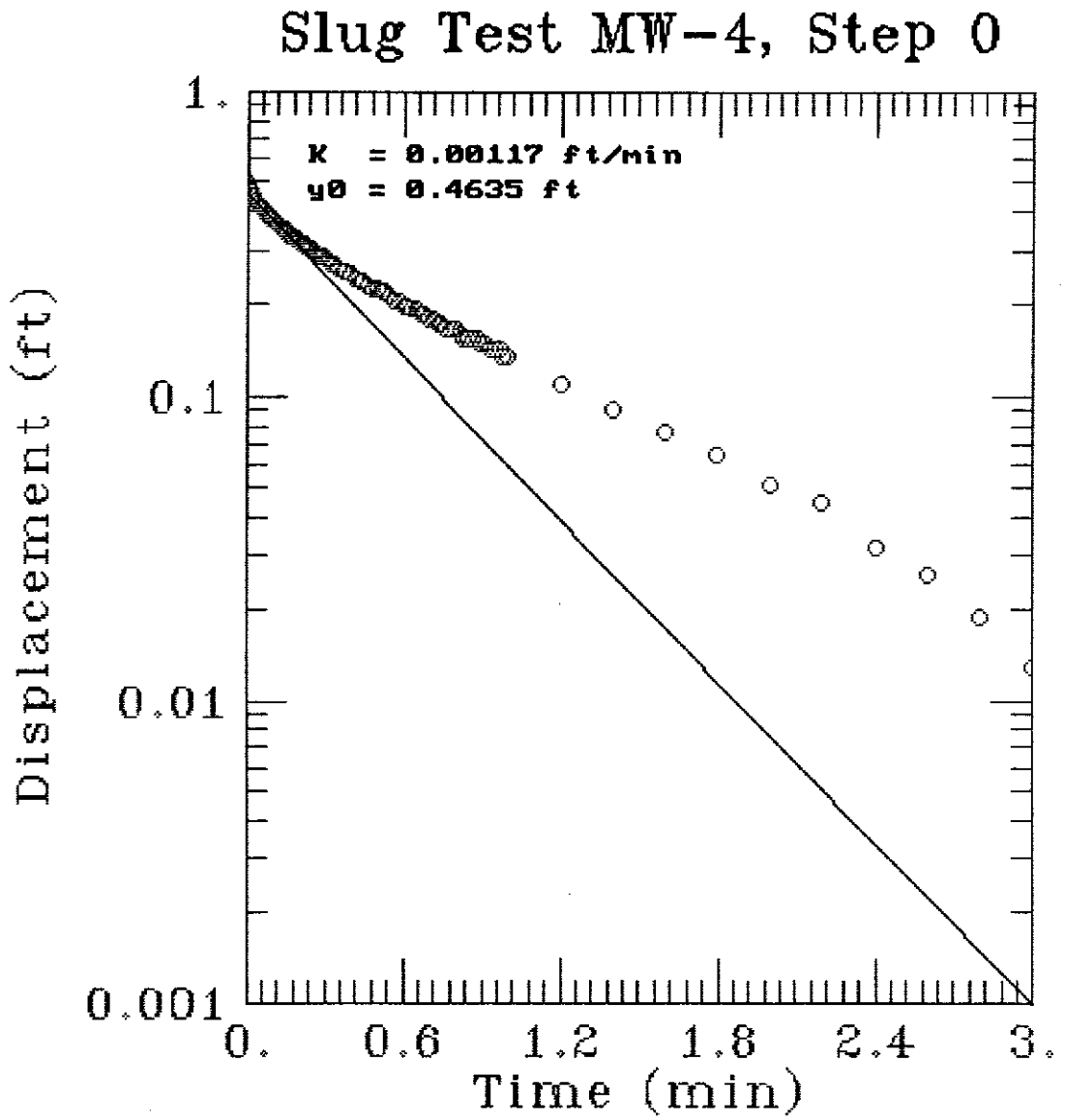
Modeling Group



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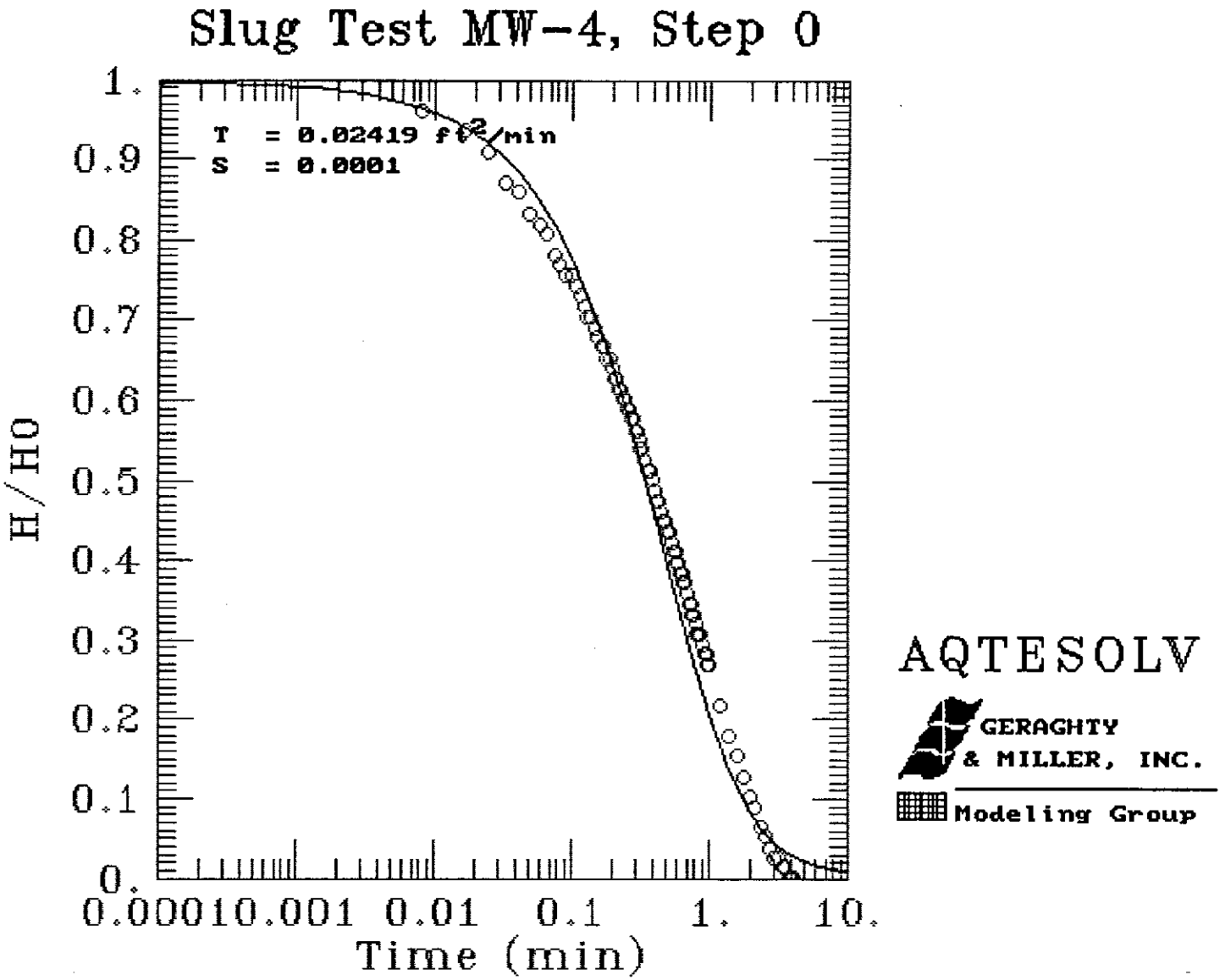
Modeling Group


Slug Test MW-4, Step 0
T = 0.02419 ft²/min
S = 0.0001
H/H0
1.
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.
0.0001
0.001
0.01
0.1
1.
10.
Time (min)
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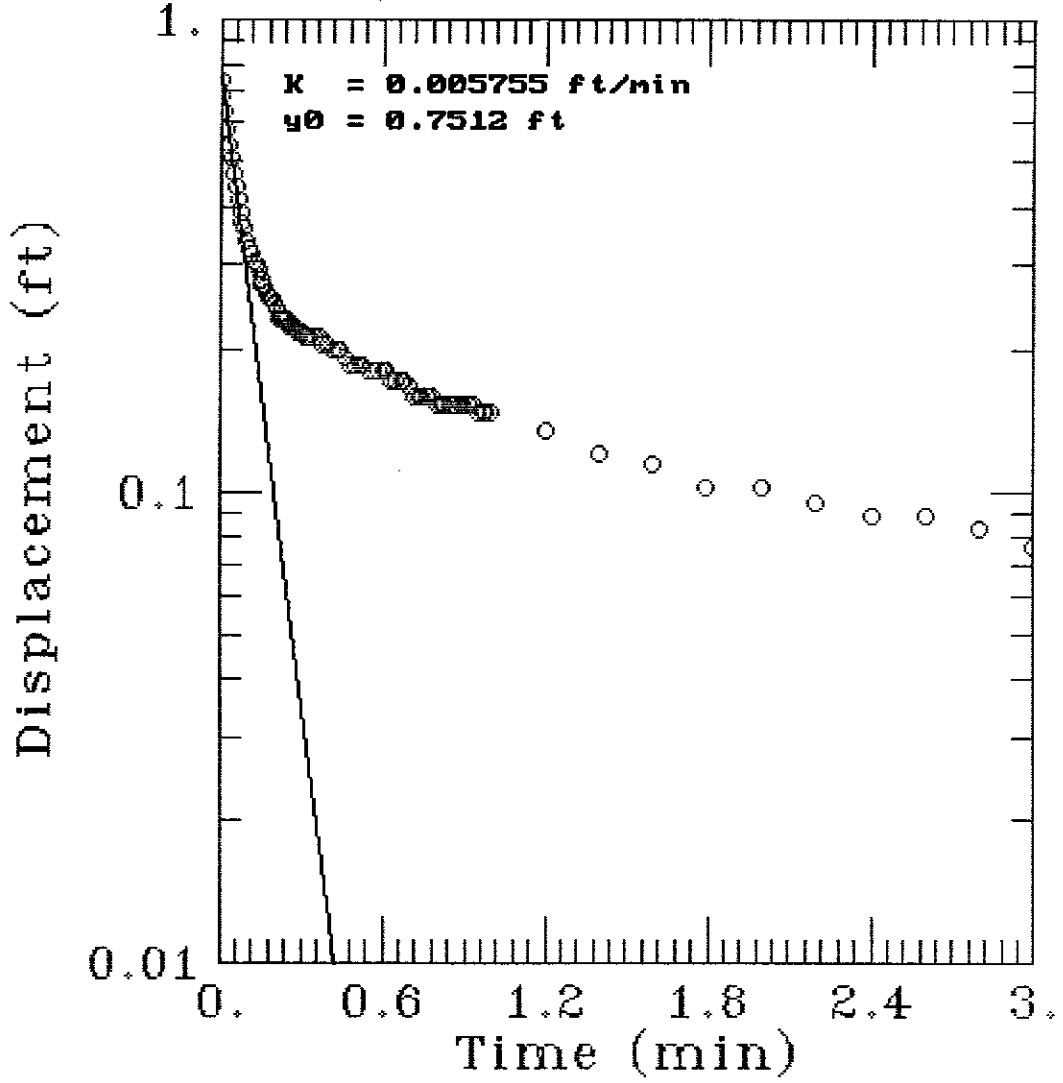
Slug Test MW-4, Step 1



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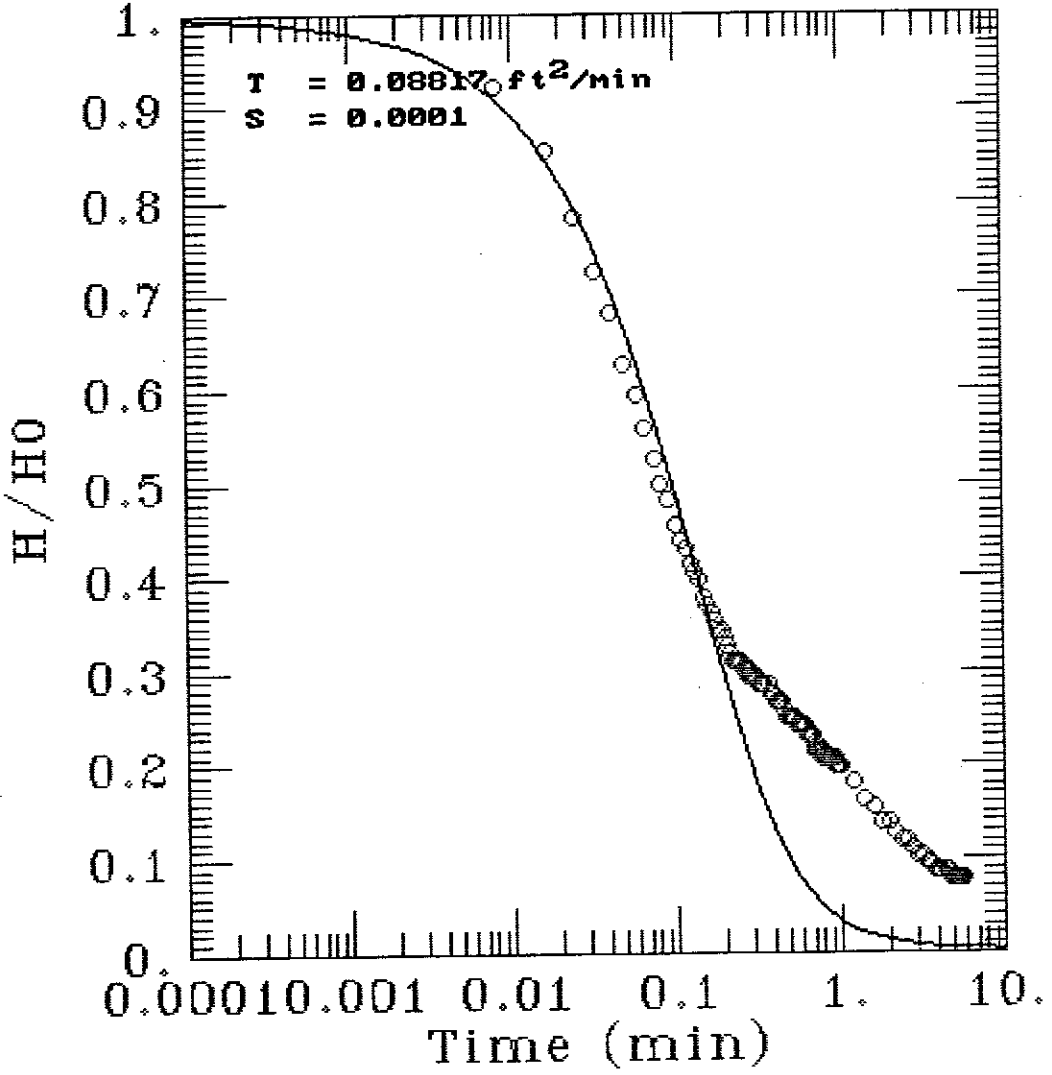
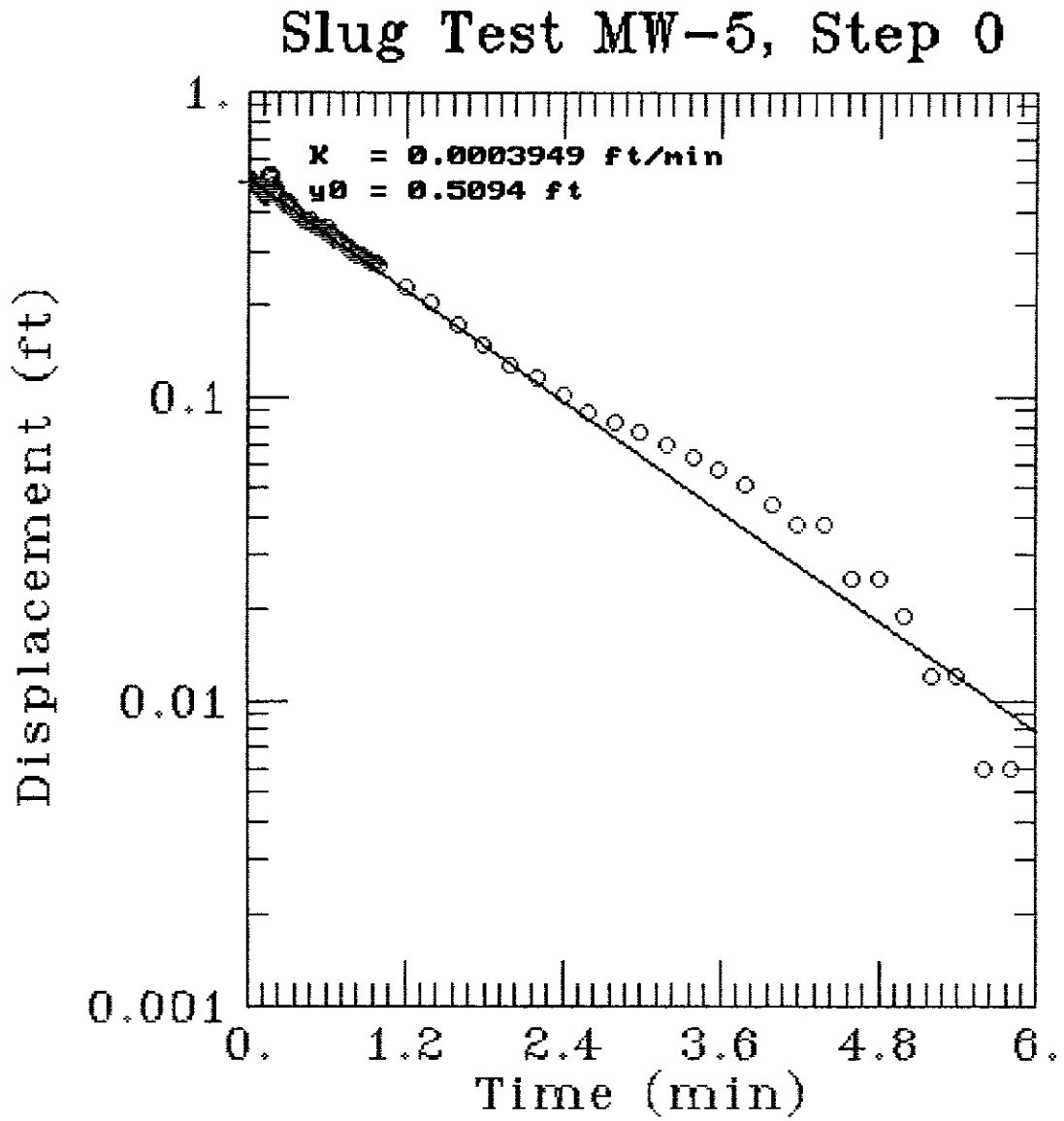
Slug Test MW-4, Step 1



AQTESOLV

GERAGHTY & MILLER, INC.

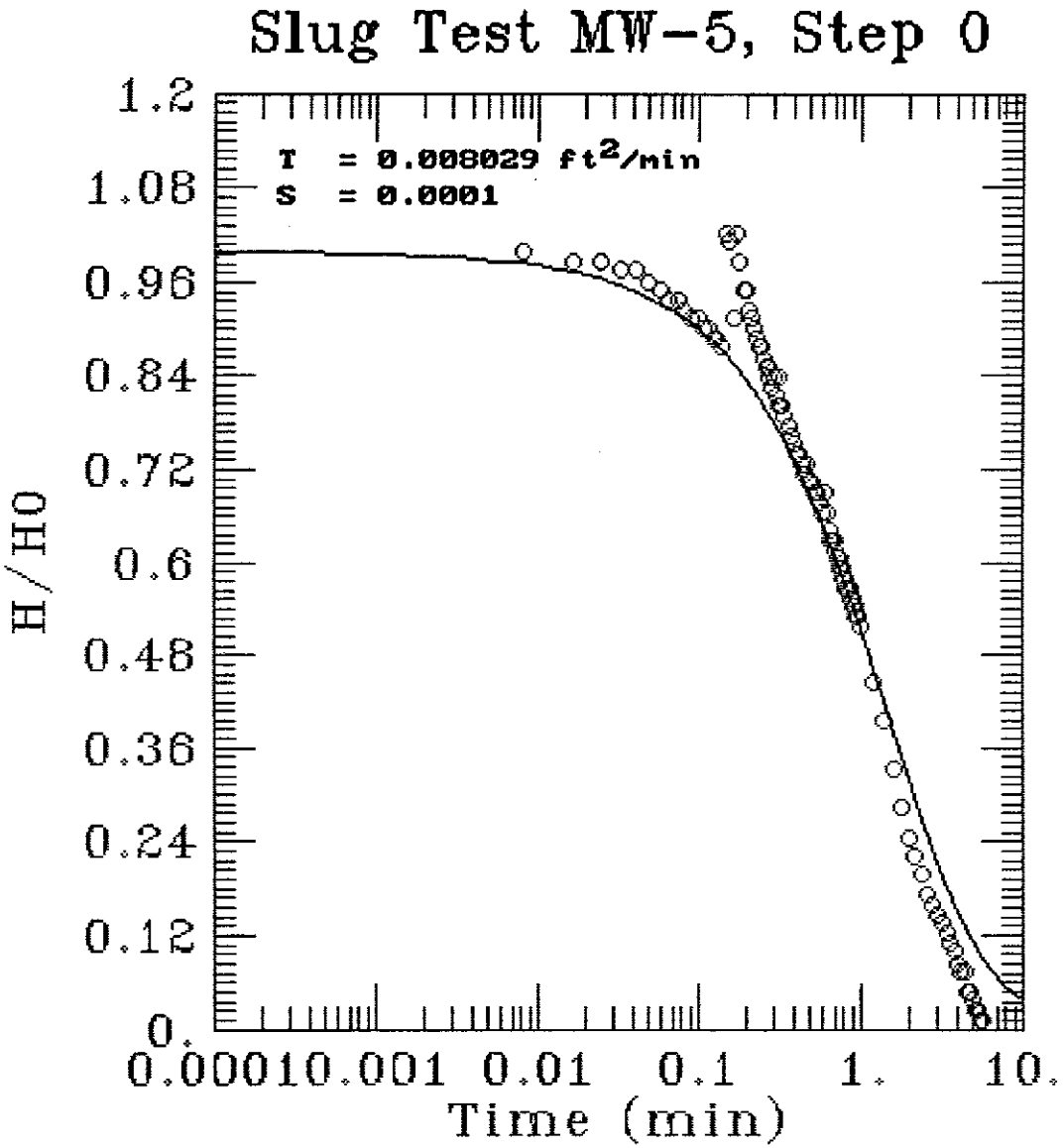
Modeling Group



AQTESOLV

GERAGHTY & MILLER, INC.

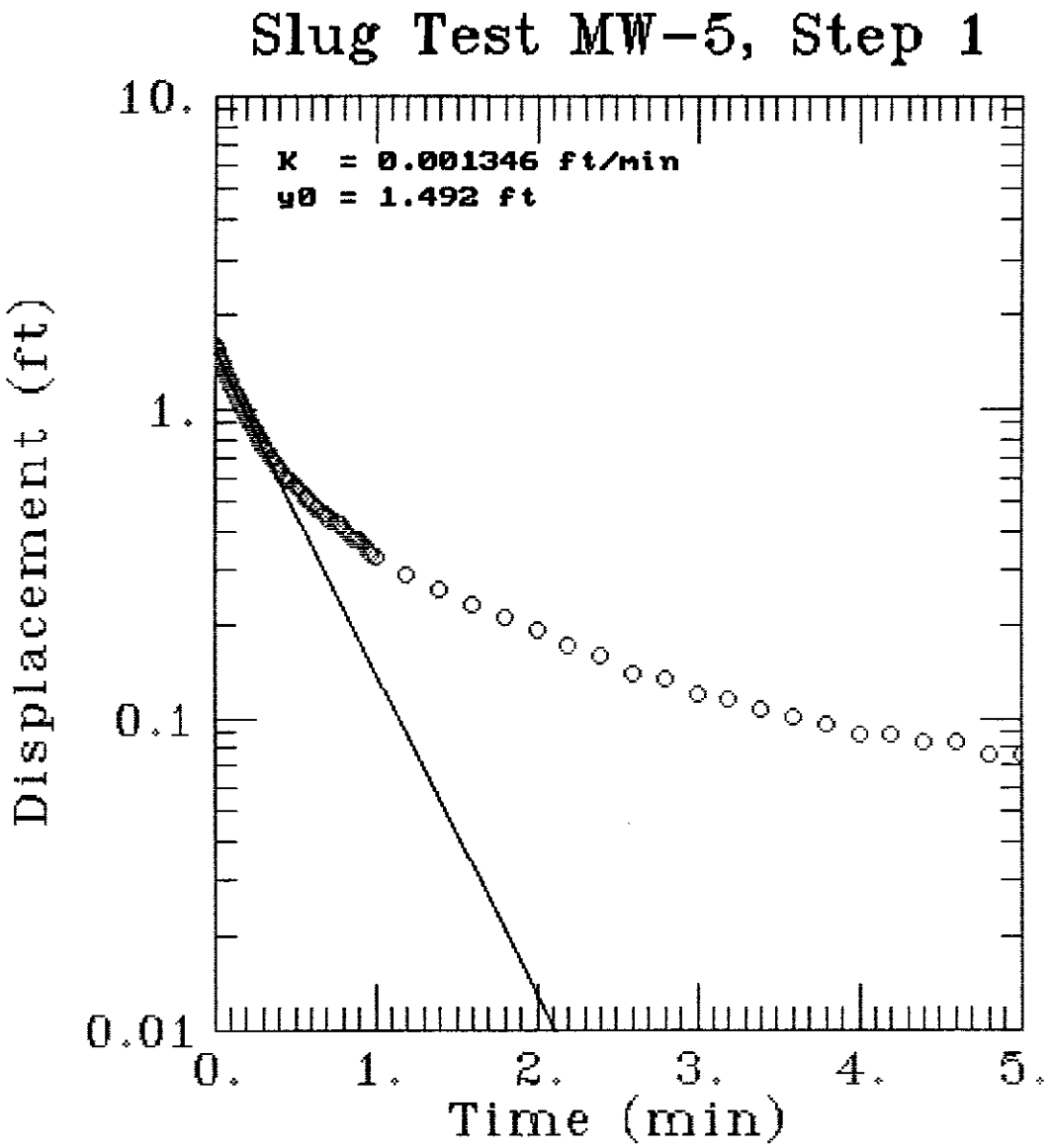
Modeling Group



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

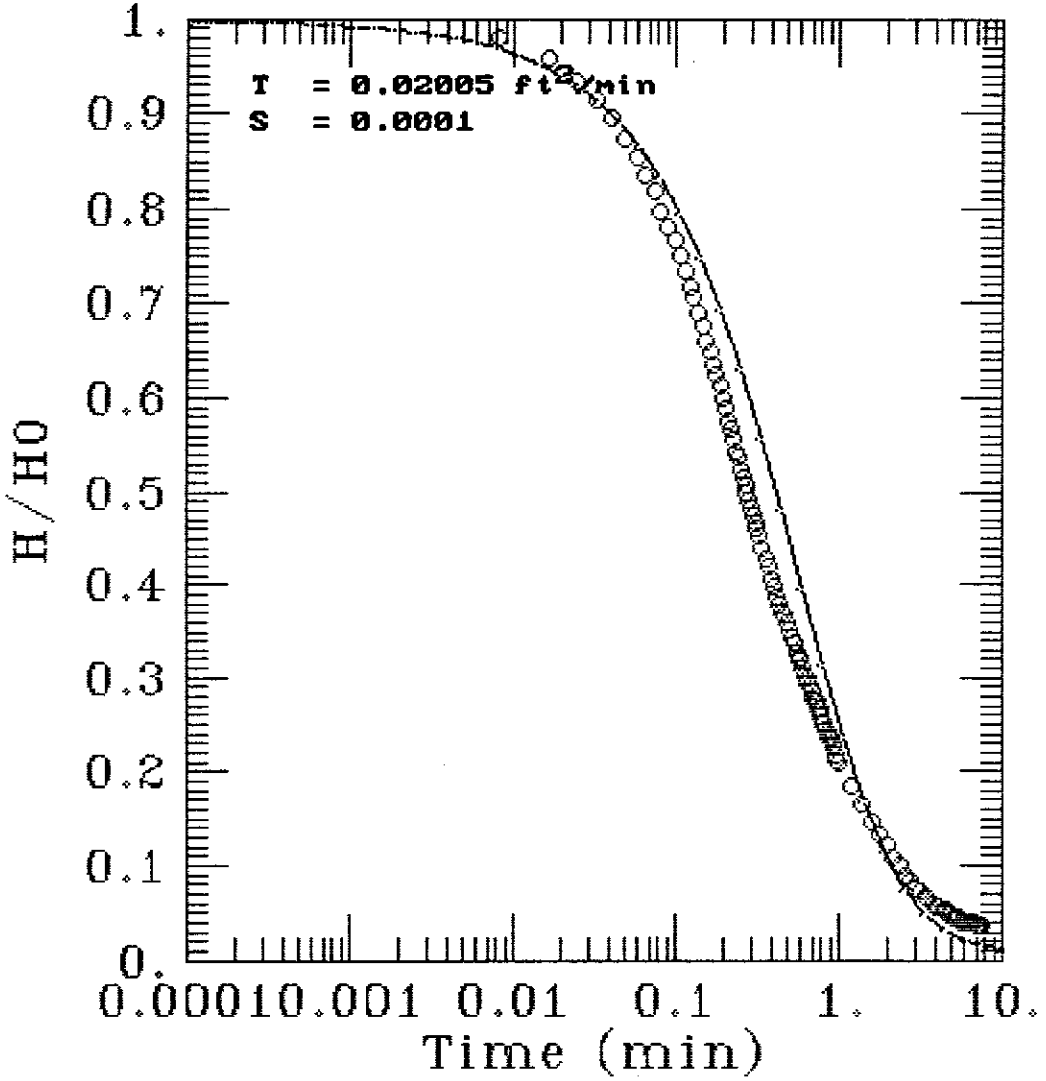


AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

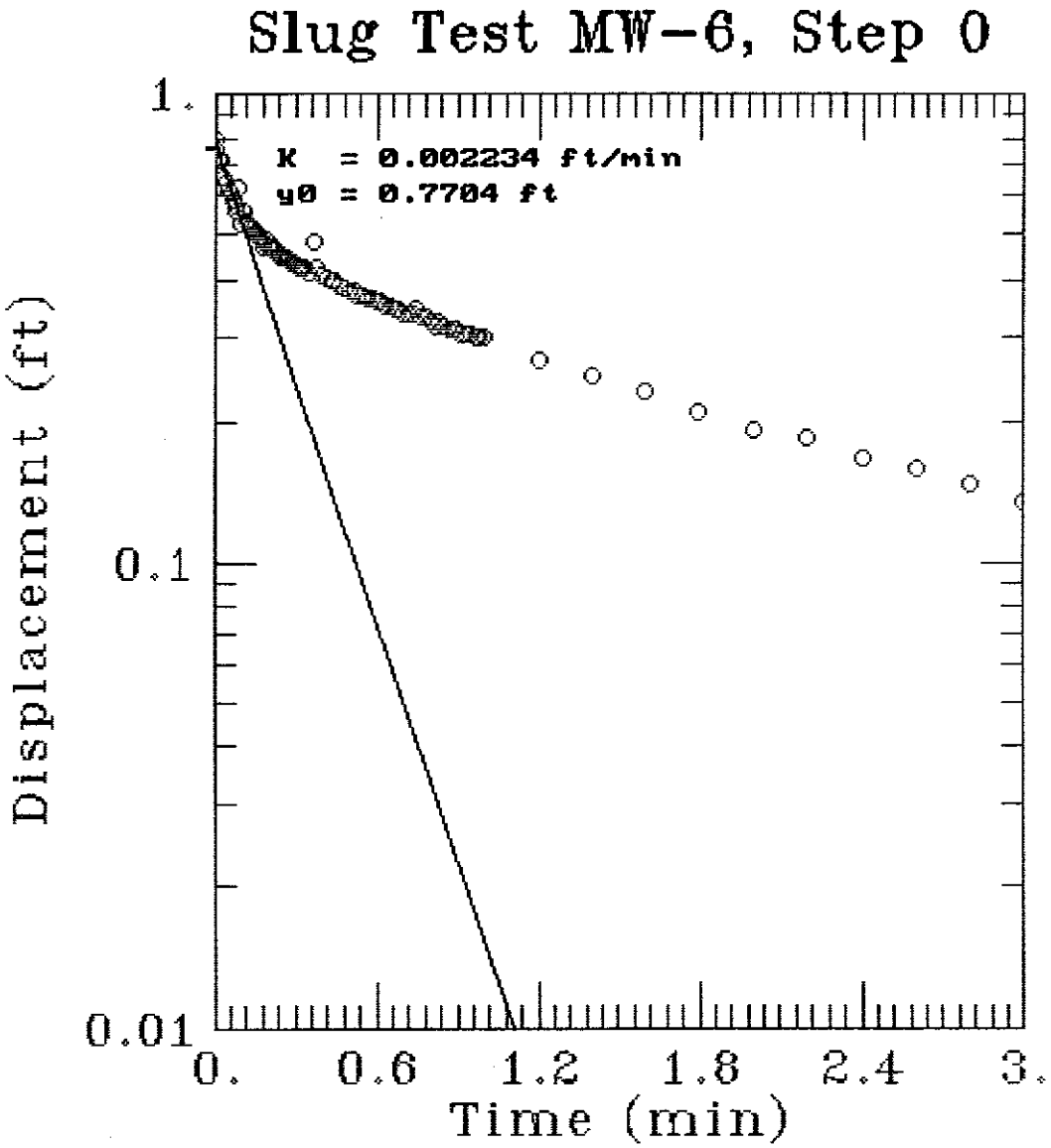
Slug Test MW-5, Step 1



AQTESOLV

GERAGHTY & MILLER, INC.

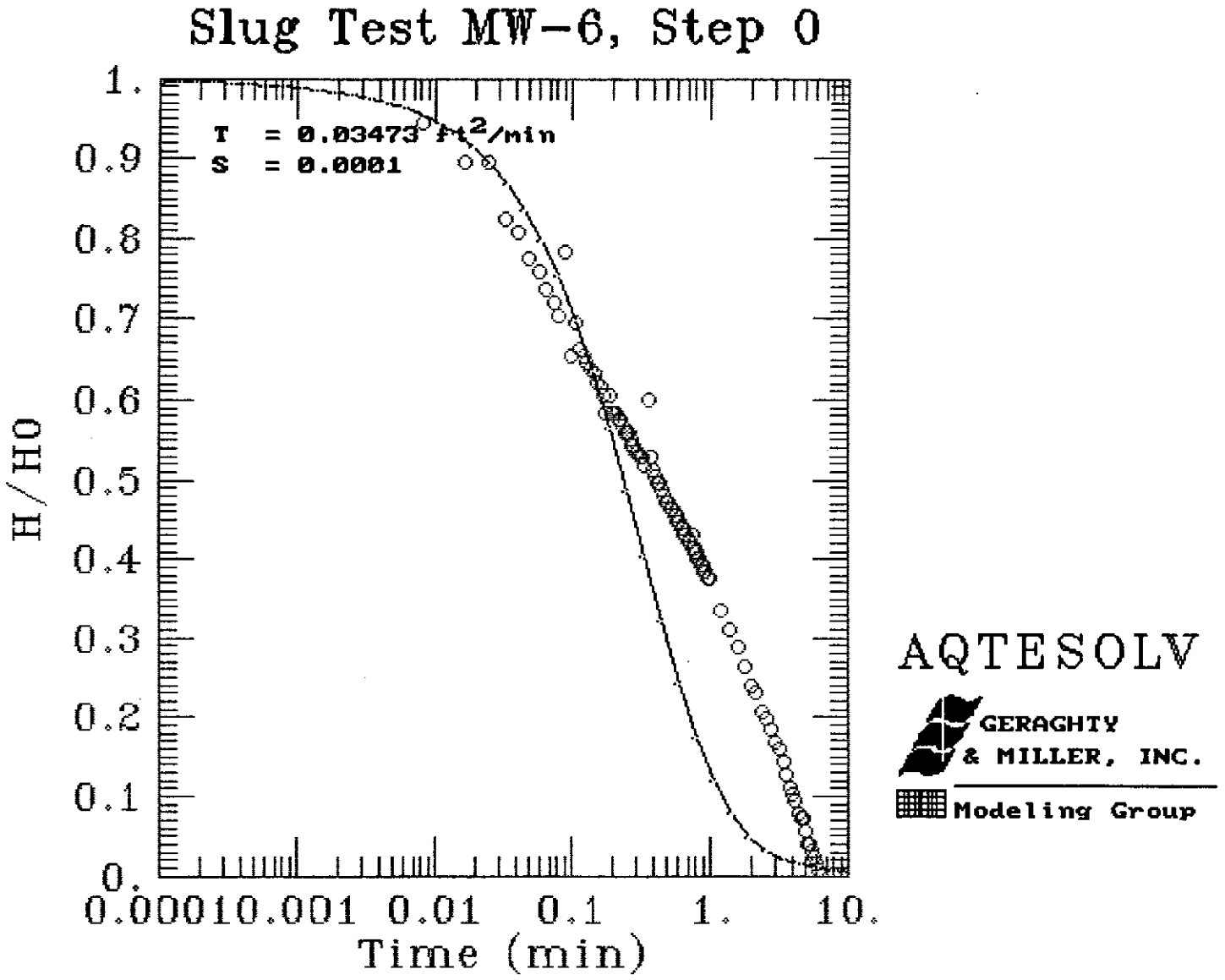
Modeling Group

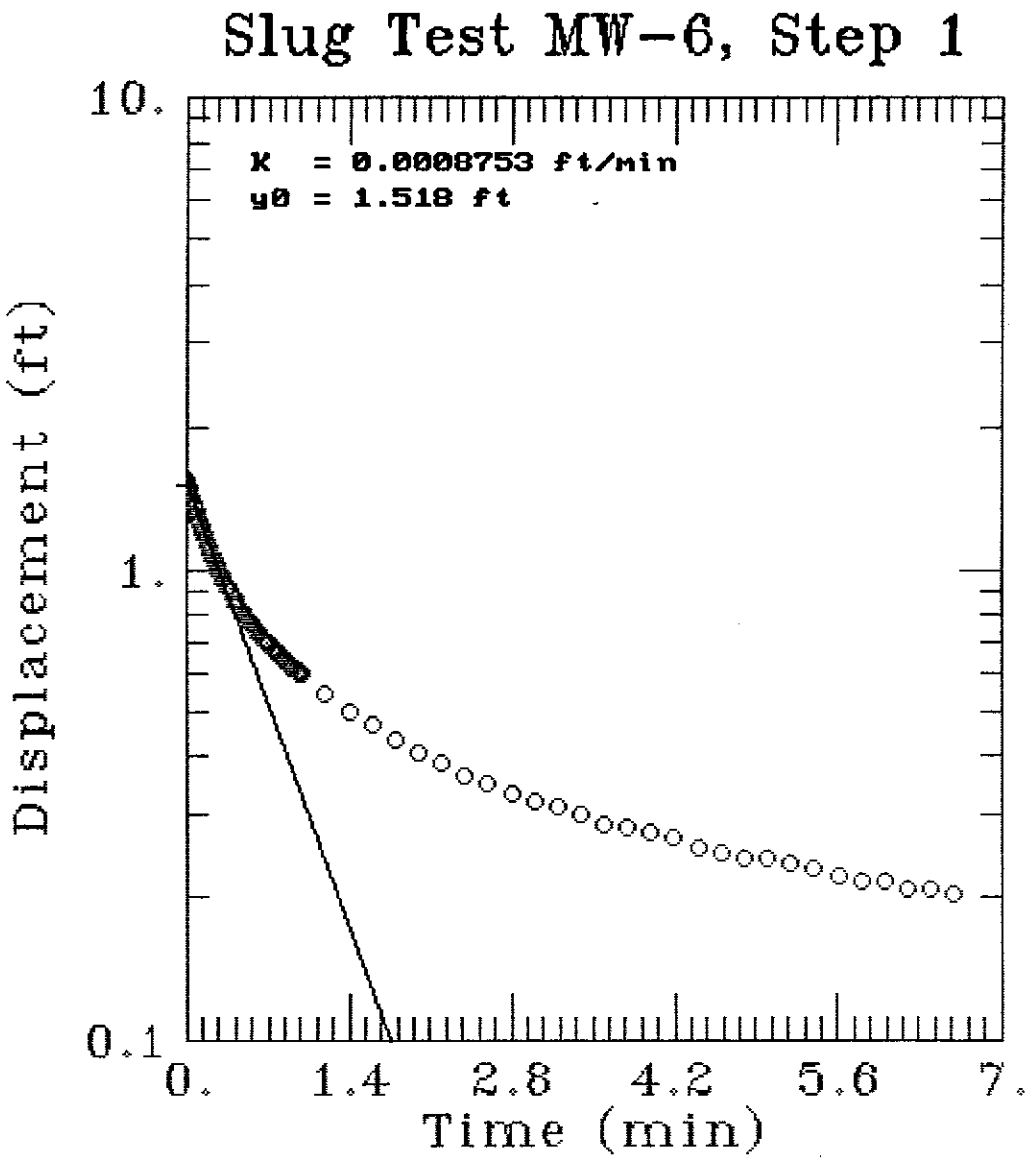


AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group


Slug Test MW-6, Step 0
T = 0.03473 ft²/min
S = 0.0001
H/H0
1.
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.
0.0001
0.001
0.01
0.1
1.
10.
Time (min)
AQTESOLV
GERAGHTY & MILLER, INC.
Modeling Group



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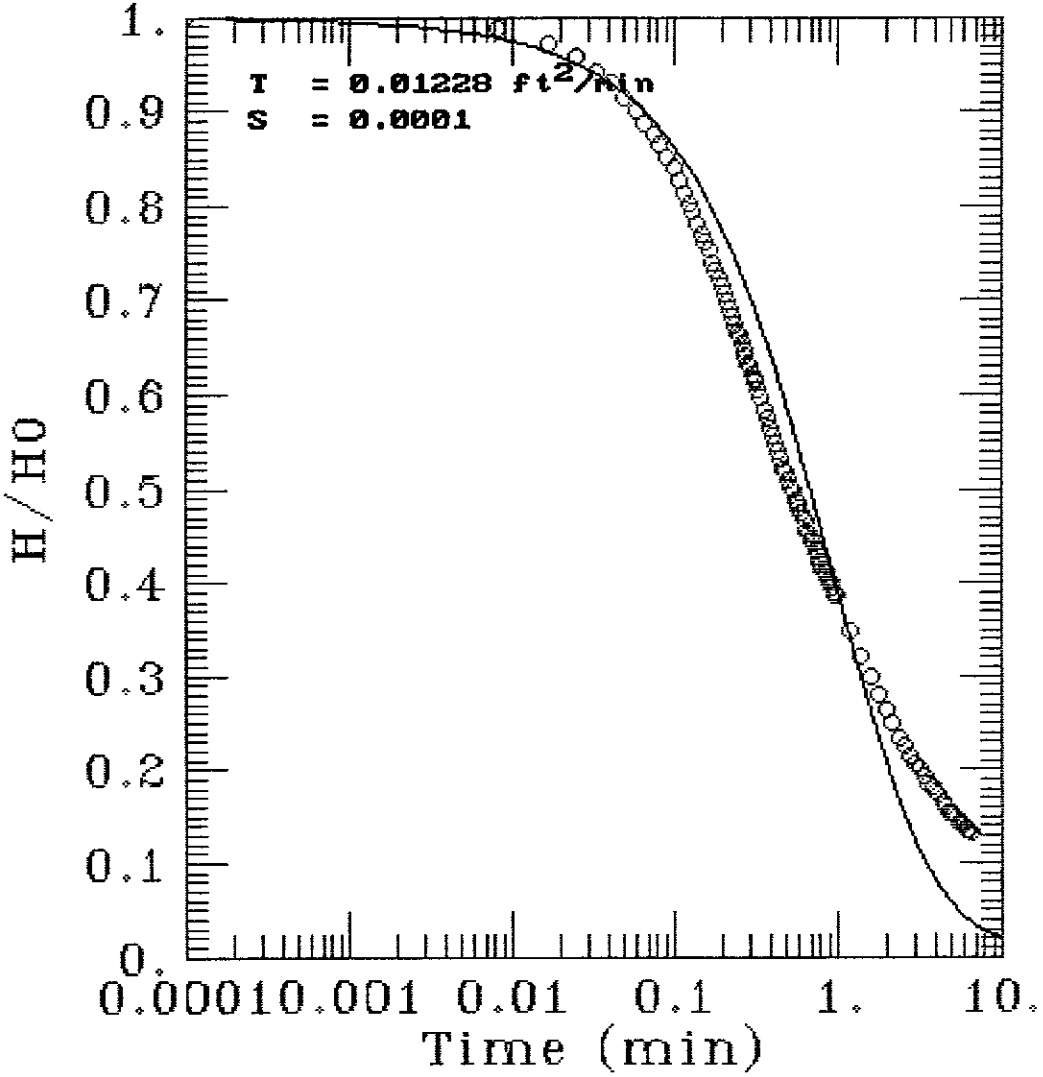
Modeling Group

Slug Test MW-6, Step 1



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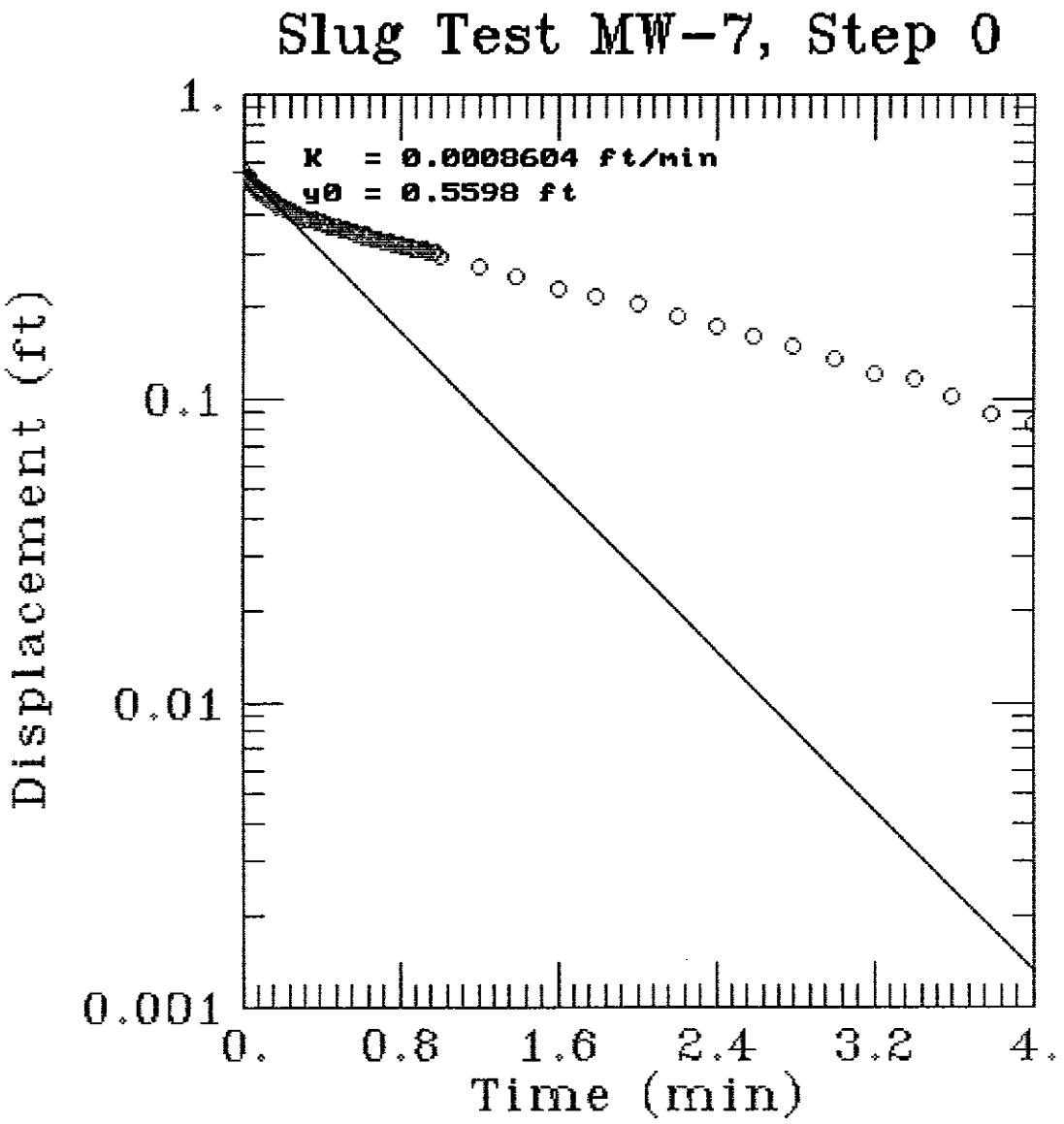
GERAGHTY & MILLER, INC.

Modeling Group



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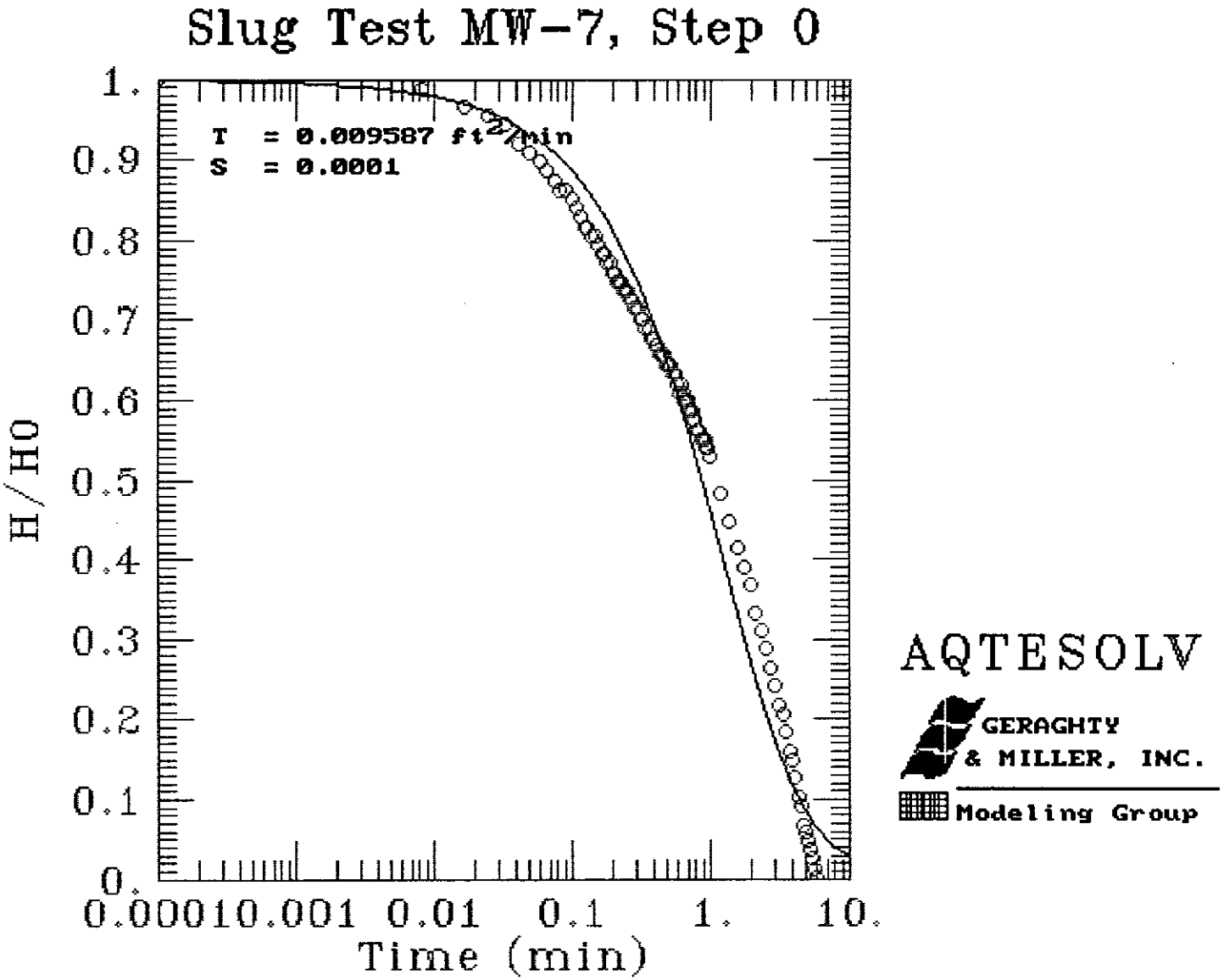
Slug Test MW-7, Step 0
T = 0.009587 ft²/min
S = 0.0001
H/H0
1.
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.
0.0001
0.001
0.01
0.1
1.
10.
Time (min)
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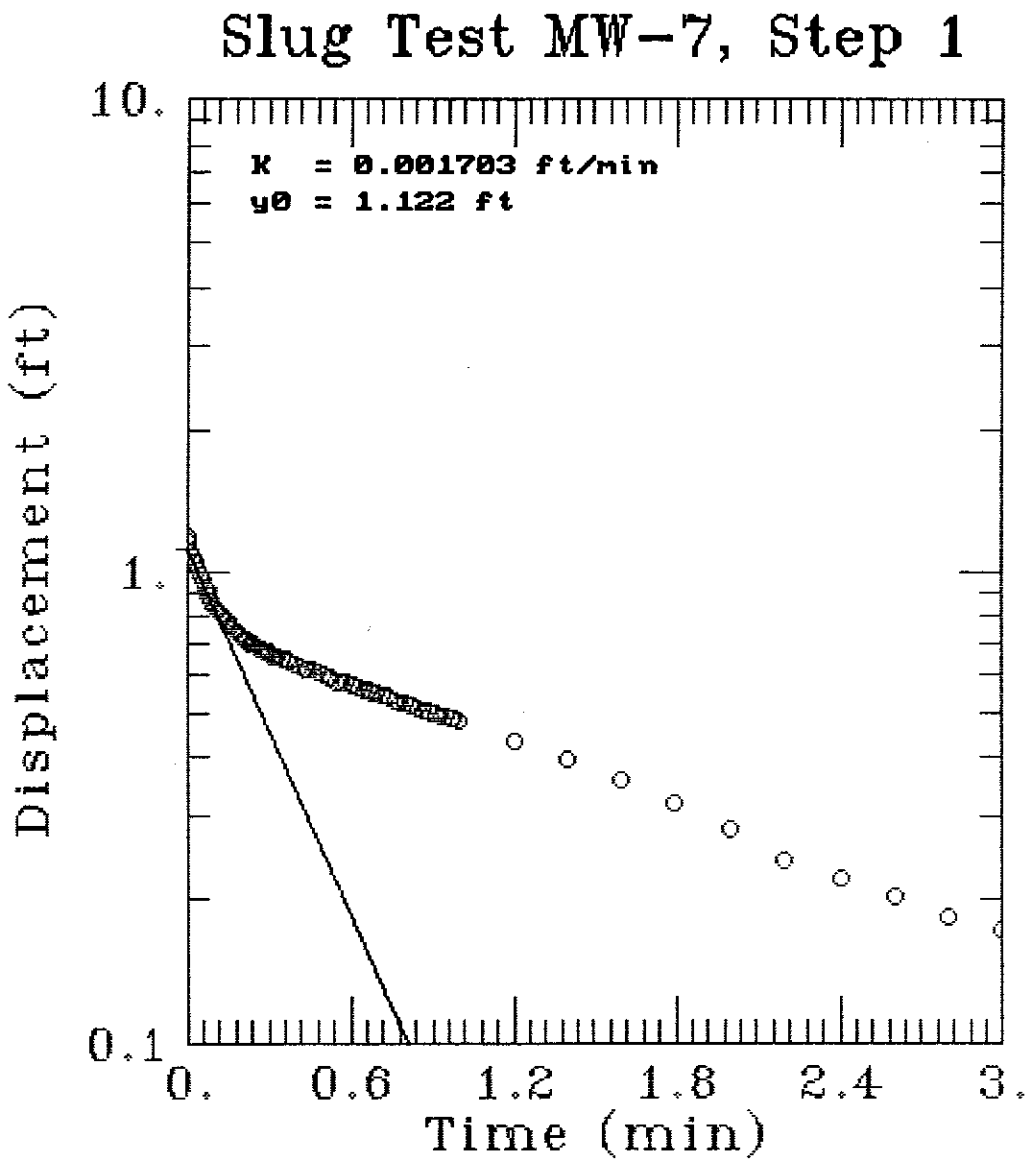

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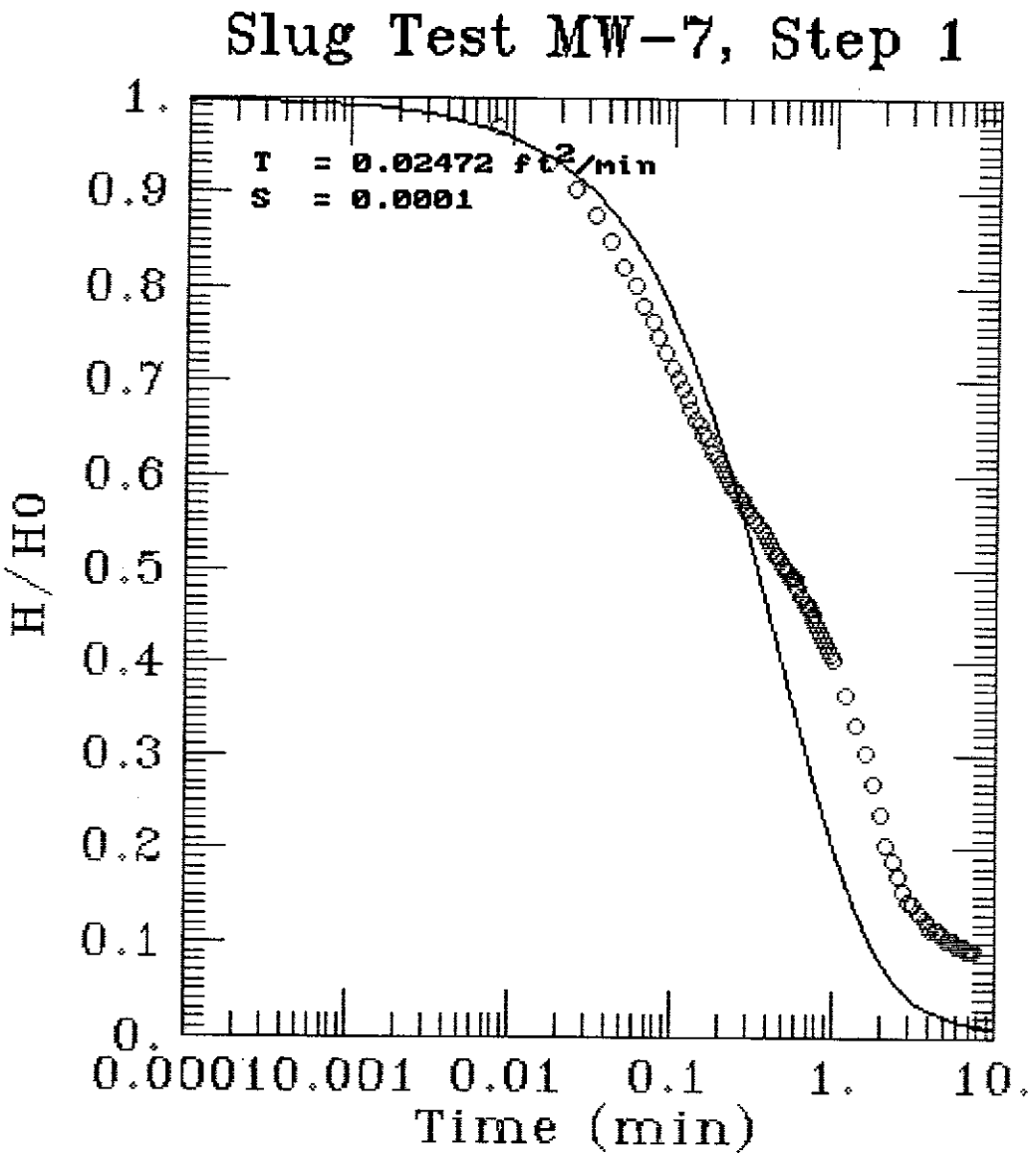

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