FLUOR DANIEL GTI

SITE ASSESSMENT REPORT
SOUND SUBARU
240/250 RAINIER AVENUE SOUTH
RENTON, WASHINGTON

Fluor Daniel GTI Project 103562

March 25, 1998

Prepared for:

Mr. Dale Walker
Sound Subaru
720 Rainier Avenue South
Renton, Washington 98055

Submitted by:
Fluor Daniel GTI, Inc.

Cheri Reimers
Staff Geologist

Approved by:
Fluor Daniel GTI, Inc.

Stanley C. Haskins, R.G.
Project Manager

EXECUTIVE SUMMARY

Fluor Daniel GTI, Inc. conducted a subsurface investigation at Sound Subaru, located at 240/250 Rainer Avenue S. Renton, Washington. The purpose of the investigation was to assess the soil and groundwater for the presence of substances regulated under the Model Toxics Control Act[1] (MTCA). Tasks performed during the assessment included: 1) drilling four soil borings to a maximum depth of 20 feet below grade (bg) at strategic locations; 2) collecting soil samples from each soil boring at approximately 5-foot intervals; 3) installing groundwater monitoring wells at approximately 17 to 20 feet bg in each boring; 4) developing the monitoring wells; 5) gauging the depth of the groundwater and collecting groundwater samples from the monitoring wells; 6) performing quantitative chemical analyses on selected soil and groundwater samples; 7) surveying the relative wellhead elevations; 8) interpreting the information obtained; and 9) compiling and arranging the data for this report.

Observations and findings:

- Soil encountered during drilling included brown and gray medium to fine grain sand, gravel and silt.
- Groundwater was encountered at approximately 11 feet bg.
- The groundwater flow direction was to the southwest, with a gradient of approximately 0.002 feet per foot.
- Benzene, toluene, ethylbenzene, xylenes (BTEX) and total petroleum hydrocarbons-as-gasoline (TPH-G) concentrations did not exceed the MTCA Method A Compliance Cleanup Levels [CCL(a)s] in the soil samples collected from MW-1, MW-2, MW-3, and MW-4. Total petroleum hydrocarbons-as-diesel (TPH-D) and total petroleum hydrocarbons-as-oil (TPH-O) concentrations were reported to be above the MTCA CCL(a)s in soil sample MW-3C, collected at approximately 15 feet below grade.
- Benzene, ethylbenzene, total xylenes, and TPH-G were reported at concentrations above the MTCA CCL(a)s in the groundwater sample collected from MW-1. The reported TPH-O concentration was also above the CCL(a) in groundwater samples collected from MW-3 and MW-4.

[1] Washington Department of Ecology (WAC 173-340)

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1.0 INTRODUCTION/BACKGROUND

This report presents the work steps and results of the subsurface investigation work conducted by Fluor Daniel GTI, Inc. at Sound Subaru located at 240/250 Rainer Avenue S., Renton, Washington (Figure 1). This work was conducted to assess the soil and groundwater underlying the site for the presence of substances regulated under the Washington Department of Ecology (WDOE) Model Toxics Control Act (MTCA).

1.1 Work Scope

The following outline summarizes the specific work steps involved.

- Drilled and sampled four 20-foot soil borings.
- Installed groundwater monitoring wells in each boring.
- Analyzed select soil samples from each soil boring for hydrocarbon compounds and total lead.
- Developed and surveyed the newly installed wells to a common site elevation datum.
- Gauged depth to water, purged and sampled the wells.
- Analyzed one water sample from each of the four monitoring wells for hydrocarbon compounds and total lead.
- Analyzed, summarized and presented the information obtained in report form.

1.2 Background

The site is located in a commercial business district on the northwest corner of the intersection of Rainer Avenue S. and South 3rd Street in Renton, Washington. The site is situated in the northwest quarter of the southeast quarter of Section 18, Township 23 North, Range 5 East. Topographically, the site and immediate surrounding areas are flat.

The site is currently a used car lot operated by Sound Subaru of Renton, Washington. Historically five buildings have been located on various portions of the site. Former uses of these buildings include: auto repair shop, pet shop, transmission shop, private residences, and two service stations. A former Texaco station service island and three 10,000 gallon USTs were located on the Sound Subaru property leased from the City of Renton. The former pump islands were located to the southeast of the sales office and the former USTs were located to the southwest of the sales office. The locations, shown on Figure 2, of the former Texaco service station, the former pump islands and the second service station are approximate.

A preliminary site assessment was completed in April 1996, which included the installation of eight soil borings at various locations, across the site (Figure 2). Gasoline compounds were found in both soil and groundwater.

2.0 GEOLOGY/HYDROGEOLOGY

The site is located within the Green River Valley. The closest body of water is the Cedar River, located approximately 0.5 miles northwest of the site and Lake Washington is approximately one mile to the northeast.

3.0 ASSESSMENT ACTIVITY

Four groundwater monitoring wells were installed and sampled during this phase of the investigation. Well locations were chosen based on data acquired from the previous investigation to further evaluate the subsurface conditions and groundwater gradient.

3.1 Soil Borings and Well Installation

Four soil borings were drilled to a maximum depth of 20 feet bg for the installation of groundwater monitoring wells on February 26, 1998 (MW-1 through MW-4). Cascade Drilling, Inc. drilled the soil borings using truck-mounted, six inch inside diameter hollow-stem auger drilling equipment. Each boring was sampled using a 2-inch inside diameter, split-barrel sampler. A Fluor Daniel GTI engineer supervised the drilling and maintained a log of the materials encountered in accordance with the Unified Soil Classification System (Appendix A). Soil samples were collected at approximately five-foot intervals in each boring. The collected soil samples were screened for volatile hydrocarbons in the field using a photo-ionization detector (PID) calibrated to an isobutylene standard. PID results were noted on the drill logs.

Soil encountered during drilling included brown and gray medium to fine grain sand with gravel and silt to the depth of exploration, 20 feet below grade (bg). Groundwater was observed during drilling at approximately 11 feet bg.

Two soil samples from each boring (MW-1, MW-2, MW-3, and MW-4) were selected for laboratory analysis. Soil samples were selected based on proximity to water, PID readings, and position within the boring ie., collected at the depth of exploration). The drilling and soil sampling activities were conducted in accordance with the Standard Operating Procedures presented in Appendix B. The drill cuttings were stockpiled on Visqueen™ awaiting laboratory analytical results and soil disposal.

Groundwater monitoring wells were installed in each boring to depths ranging from 17 to 20 feet bg. The wells were constructed with 4-inch diameter, machine slotted (0.020-inch) schedule 40 PVC well screen and blank casing, and completed with a traffic-rated street box and locking cap. Details of construction are shown in the drill logs in Appendix A.

On March 3, 1998, monitoring wells MW-1 through MW-4 were developed by surging and hand bailing approximately three to five well volumes of water. The development water was treated on site by pumping it through disposable activated carbon filters prior to discharge to ground surface.

3.2 Site Survey

On March 4, 1998, wells MW-1 through MW-4 were surveyed by Fluor Daniel GTI personnel to obtain top-of-casing (TOC) well-head elevations. The base of the light pole, located near the southwest corner of the sales building, was assigned an arbitrary datum of 100 feet and used as a bench mark. The relative TOC elevations of the monitoring wells are listed in Table 1.

3.3 Groundwater Monitoring and Sampling

Depth to water was measured in each well on March 4, 1998 to evaluate the groundwater flow direction and gradient. Table 1 shows the TOC and groundwater elevations measured in the monitoring wells. Relative groundwater elevations were plotted and contoured to show the groundwater flow direction (Figure 3). Following groundwater monitoring, the wells were purged of approximately three well volumes and water samples were collected in accordance with the Standard Operating Procedures in Appendix B. Samples collected were designated MW-1, MW-2, MW-3, and MW-4 and sent to a laboratory with the sample chain-of-custody form. Purge water was treated as described above and discharged on-site.

The depth to groundwater ranged from approximately 11.05-12.53 feet. The apparent groundwater flow direction was generally to the southwest at a gradient of approximately 0.002 feet per foot.

4.0 ANALYTICAL RESULTS

Soil and groundwater samples were analyzed by North Creek Analytical of Bothell, Washington, a WDOE-accredited laboratory.

4.1 Soil

Eight soil samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8021B, total petroleum hydrocarbons-as-gasoline (TPH-G) by WDOE Method WTPH-G, and total lead by EPA Method 7420. One sample was also analyzed for total petroleum hydrocarbons-as-diesel (TPH-D) and total petroleum hydrocarbons-as-oil (TPH-O) by WDOE Method WTPH-D (extended). Chemical analytical results and MTCA Method A Compliance Cleanup Levels [CCL(a)s] for soil are summarized in Table 2. A complete laboratory report is contained in Appendix C.

BTEX and TPH-G were not detected at the method reporting limit in the eight soil samples analyzed, except for TPH-G, reported at concentrations below the CCL(a) in samples MW-1B and MW-3C. TPH-D and TPH-O concentrations were reported above the CCL(a) in sample MW-3C at 884 mg/kg and 4,420 mg/kg respectively. Total lead concentrations did not exceed the CCL(a).

4.2 Groundwater

Water samples collected from wells MW-1 through MW-4 were analyzed for BTEX, TPH-G, TPH-D, and TPH-O using the same EPA/WDOE methods mentioned above. Chemical analytical results and the CCL(a) s for groundwater are summarized in Table 3. Complete laboratory results are contained in Appendix C.

Benzene, ethylbenzene, total xylenes, and TPH-G concentrations were reported above the CCL(a)s in MW-1, at 10.2 micrograms per liter (ug/L), 145 ug/L, 502 ug/L and 5,230 ug/L respectively. TPH-O was reported above the CCL(a)s in MW-3 and MW-4 at 3,510 ug/L and 1,000 ug/L respectively. The other analytes were either not detected at the method reporting limit or did not exceed the CCL(a)s.

5.0 CONCLUSIONS

Soil encountered during drilling included brown and gray medium to fine grain sand, gravel and silt. Reported BTEX and TPH-G soil concentrations did not exceed the CCL(a)s. Reported TPH-D and TPH-O concentrations exceeded the CCL(a)s in sample MW-3C. The locations of this petroleum contaminated soil, 16 feet bg and five feet below the water table, suggests that the oil has migrated to this location from a source area other than the ground surface near MW-3.

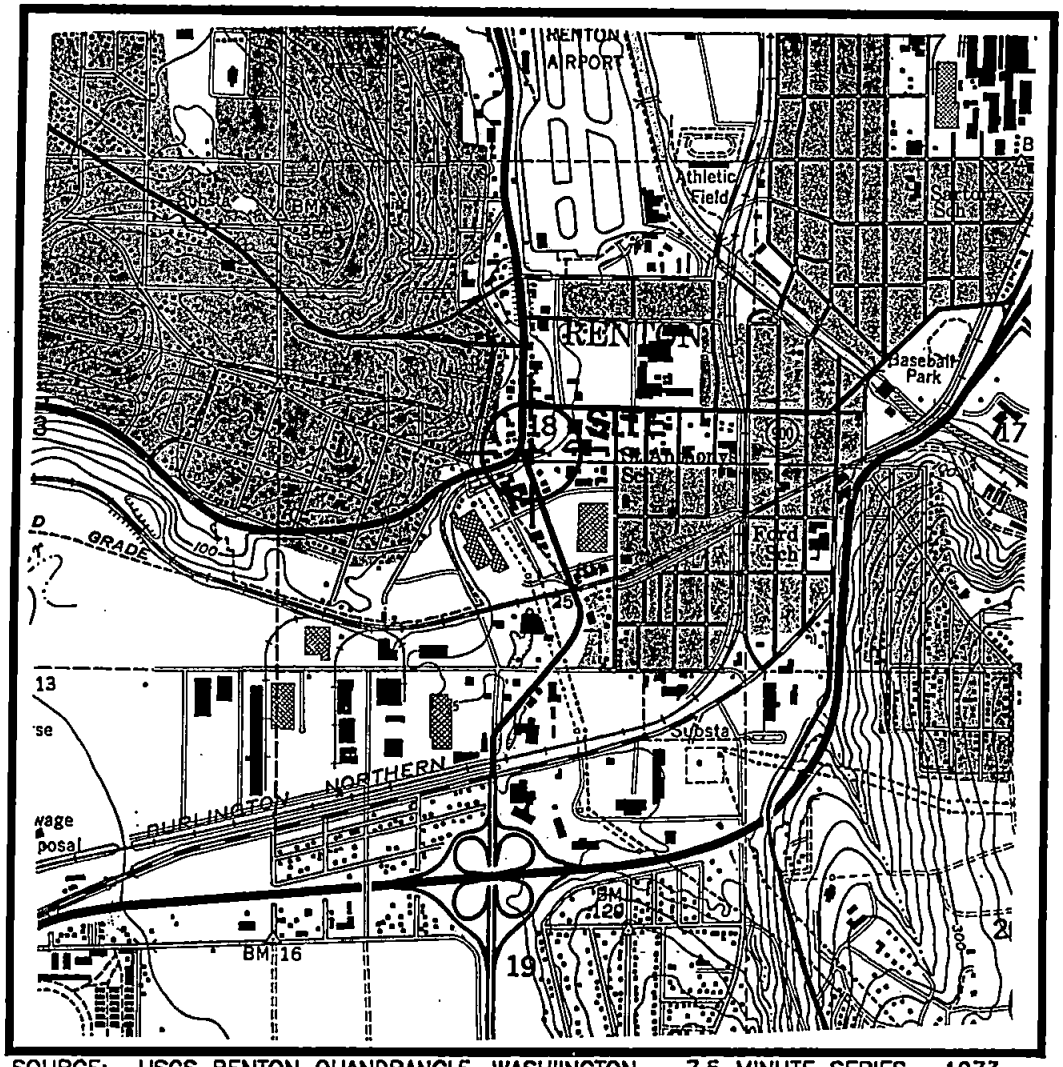
Depth to groundwater was approximately 11 feet. The groundwater flow direction was generally to the southwest at a gradient of approximately 0.002 feet per foot.

Reported benzene, ethylbenzene, xylenes and TPH-G concentrations exceeded the CCL(a)s in groundwater sample MW-1. Reported TPH-O concentrations exceeded the CCL(a) in groundwater samples MW-3 and MW-4.

6.0 RECOMMENDATIONS

Fluor Daniel GTI recommends semi-annual groundwater monitoring and sampling of the four wells on site. This sampling program will allow the monitoring of groundwater quality over time.

FIGURES



SOURCE: USGS RENTON QUANDRANGLE, WASHIINGTON – 7.5 MINUTE SERIES, 1973

EXPLANATION

SITE LOCATION

N

0 2000 4000

APPROX. SCALE IN FEET

SOUND SUBARU

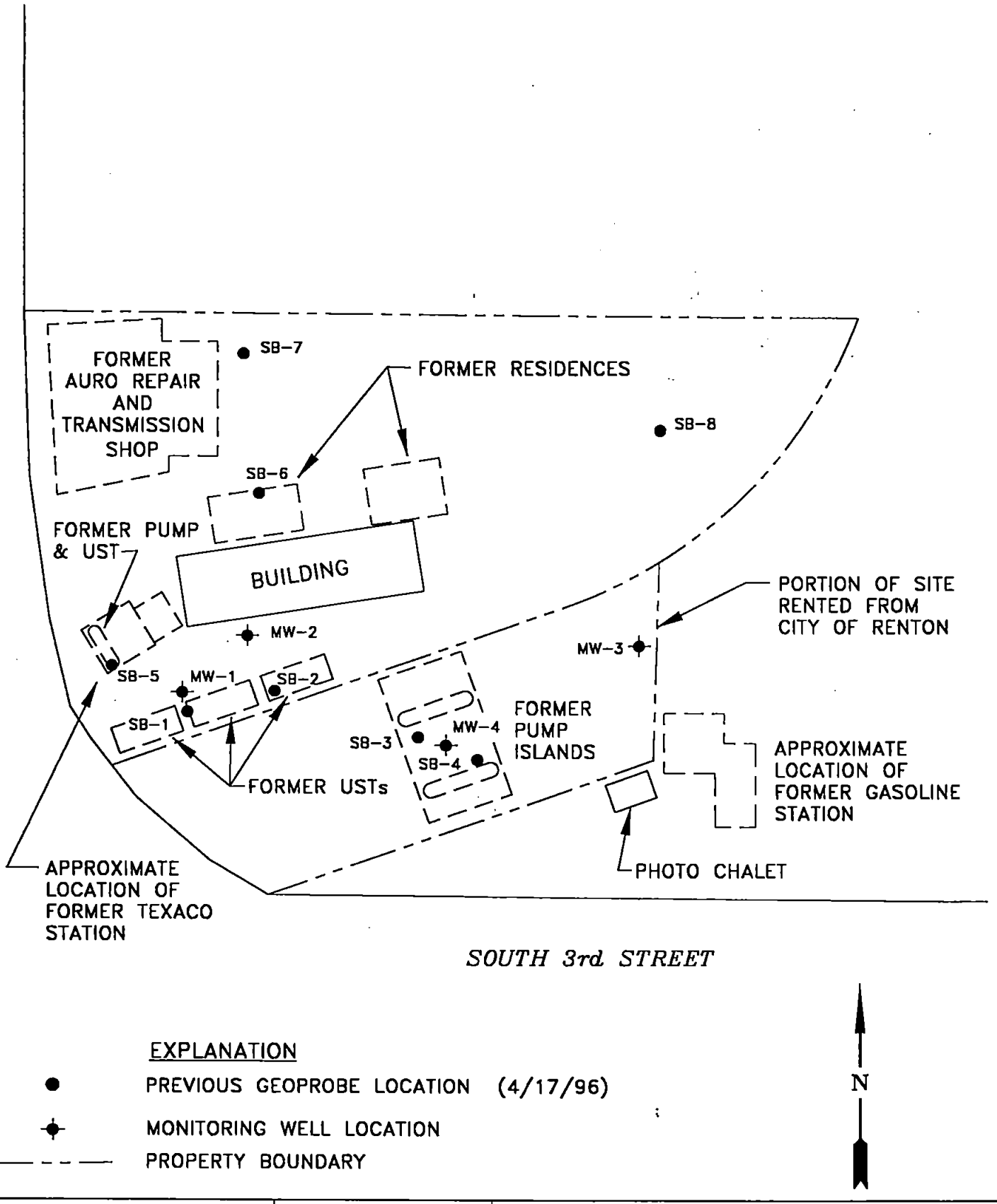
240/250 RAINER AVENUE SOUTH
RENTON, WASHINGTON

DRAWN BY: LC DATE: 5-10-96
DRAFTED BY: EER DATE: 3-24-98
CHECKED BY: CS DATE:_____

SITE LOCATION MAP

FIGURE 1

FLUOR DANIEL GTI

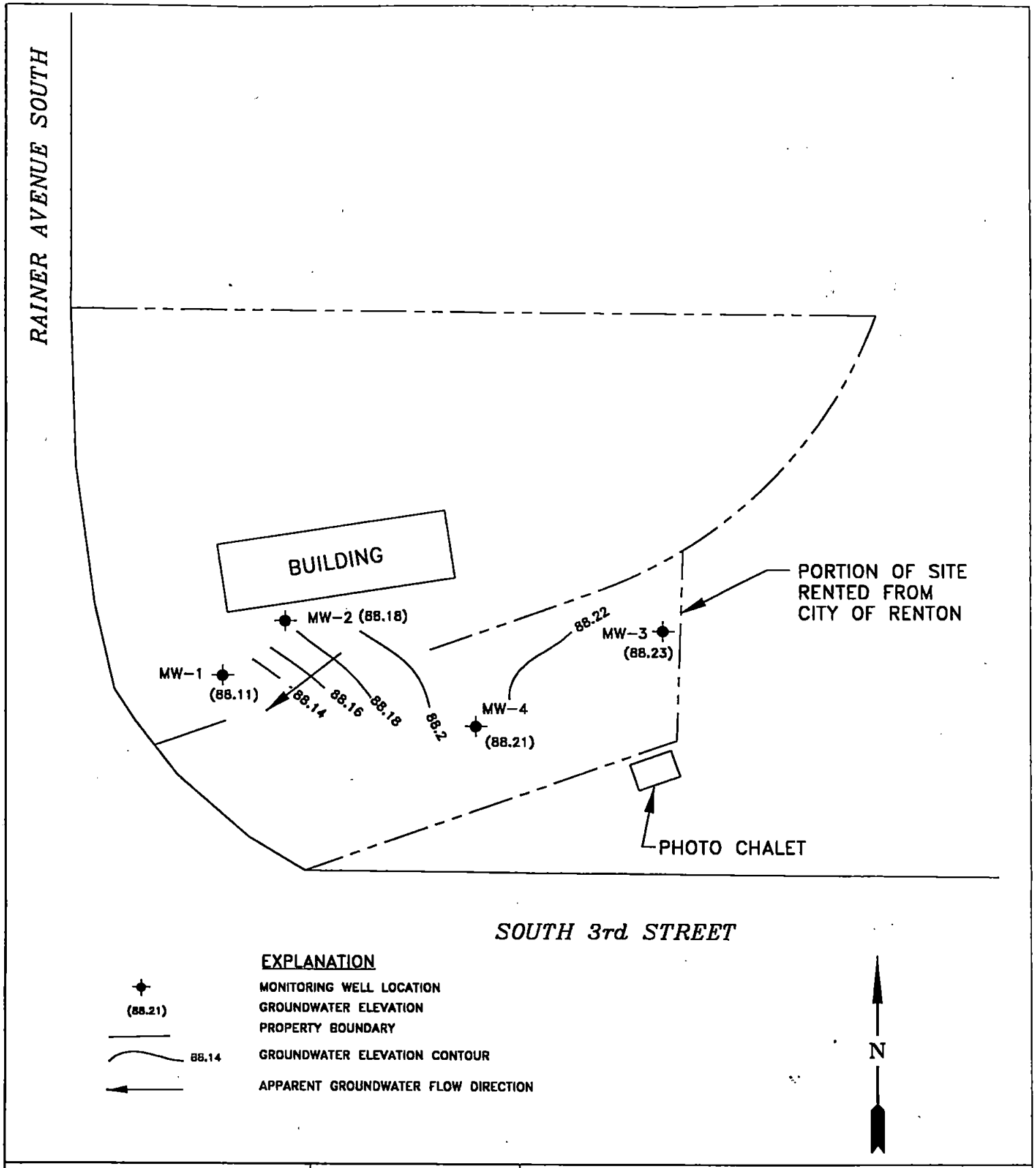


FLUOR DANIEL GTI

0 FEET 50
SCALE

SITE PLAN

CLIENT: SOUND SUBARU	FILE: SP496	PROJECT NO: 103562	PM	RG/PE
LOCATION: 240-250 RAINER AVENUE S. RENTON, WASHINGTON	REV: 0		FIGURE: 2	
	DES: SH	DET: CY	DATE: 4/2/98	

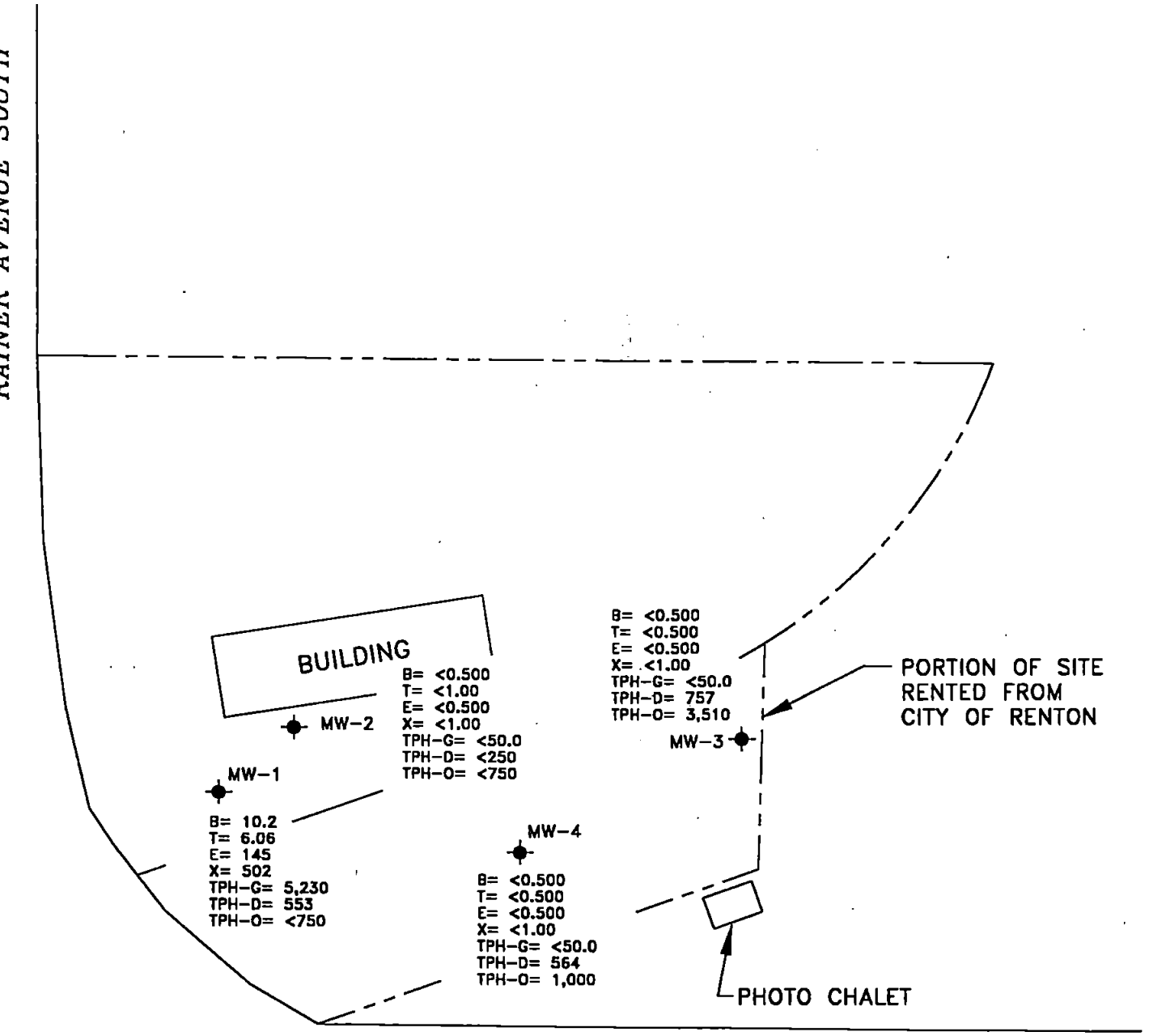


FLUOR DANIEL GTI

0 FEET 50
SCALE

GROUNDWATER GRADIENT MAP

CLIENT: SOUND SUBARU	FILE: SP496		PROJECT NO: 103562	PM	RG/PE
	REV: 0				
LOCATION: 240-250 RAINER AVENUE S. RENTON, WASHINGTON	DES: SH	DET: CY	DATE: 4/2/98	FIGURE: 3	



EXPLANATION

⌖	MONITORING WELL
— - —	PROPERTY BOUNDARY
B	BENZENE (ug/L)
T	TOLUENE (ug/L)
E	ETHYLBENZENE (ug/L)
X	TOTAL XYLENES (ug/L)
TPH-G	TOTAL PETROLEUM HYDROCARBONS-AS-GASOLINE (ug/L)
TPH-D	TOTAL PETROLEUM HYDROCARBONS-AS-DIESEL (ug/L)
TPH-O	TOTAL PETROLEUM HYDROCARBONS-AS-OIL (ug/L)
ug/L	MICROGRAMS PER LITER

N

FLUOR DANIEL GTI

0 FEET 50
SCALE

GROUNDWATER CONCENTRATION MAP

CLIENT: SOUND SUBARU	FILE: SP496	PROJECT NO: 103562		PM	RG/PE
	REV: 0				
LOCATION: 240-250 RAINER AVENUE S. RENTON, WASHINGTON	DES: SH	DET: CY	DATE: 4/2/98	FIGURE: 4	

TABLES

TABLE 1
GROUNDWATER ELEVATION DATA
SOUND SUBARU
240/250 RAINER AVENUE SOUTH
RENTON, WASHINGTON

Well ID	Date	Top Of Well Casing (ft)	Depth To Water (ft)	Groundwater Elevation (ft)
MW-1	3/4/98	99.16	11.05	88.11
MW-2	3/4/98	99.14	10.96	88.18
MW-3	3/4/98	100.76	12.53	88.23
MW-4	3/4/98	100.08	11.87	88.21

Note: Elevations based on an arbitrary site datum.

TABLE 2
SUMMARY OF LABORATORY RESULTS - SOIL
SOUND SUBARU
240/250 RAINER AVENUE SOUTH
RENTON, WASHINGTON
(Results in milligrams per kilogram)

Well No.	Sample ID	Sample Date	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH-G	TPH-D	TPH-O	Total Lead
Method Reporting Limit			0.0500	0.0500	0.0500	0.100	5.0	50.0	125	25.0
MW-1	MW-1B	2/26/98	<0.0500	<0.0500	<0.0500	<0.100	6.80	---	---	27.4
MW-1	MW-1C	2/26/98	<0.0500	<0.0500	<0.0500	<0.100	<5.0	---	---	33.6
MW-2	MW-2A	2/26/98	<0.0500	<0.0500	<0.0500	<0.100	<5.0	---	---	77.7
MW-2	MW-2B	2/26/98	<0.0500	<0.0500	<0.0500	<0.100	<5.0	---	---	<25.0
MW-3	MW-3B	2/26/98	<0.0500	<0.0500	<0.0500	<0.100	<5.0	---	---	<25.0
MW-3	MW-3C	2/26/98	<0.0500	<0.0500	<0.0500	<0.100	30.3	**884**	**4,420**	232
MW-4	MW-4A	2/26/98	<0.0500	<0.0500	<0.0500	<0.100	<5.0	---	---	<25.0
MW-4	MW-4B	2/26/98	<0.0500	<0.0500	<0.0500	<0.100	<5.0	---	---	<25.0
MTCA-CCL (a)			0.5	40	20.0	20	100	200	200	250

TPH-G = Total petroleum hydrocarbons-as-gasoline
TPH-O = Total petroleum hydrocarbons-as-heavy oil
TPH-D = Total petroleum hydrocarbons-as-diesel
MTCA-CCL[a] = Model Toxics Control Act Method A Compliance Cleanup Level
< = Less than the method reporting limit
--- = Not analyzed
Bold values exceed MTCA-CCL[a]

TABLE 3
SUMMARY OF LABORATORY RESULTS -GROUNDWATER
SOUND SUBARU
240/250 RAINIER AVENUE SOUTH
RENTON, WASHINGTON
(Results in micrograms per liter)

Well No.	Sample Date	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH-G	TPH-D	TPH-O
MW-1	3/4/98	**10.2**	6.06	**145**	**502**	**5,230**	553	<750
MW-2	3/4/98	<0.500	<1.00	<0.500	<1.00	<50.0	<250	<750
MW-3	3/4/98	<0.500	<0.500	<0.500	<1.00	<50.0	757	**3,510**
MW-4	3/4/98	<0.500	<0.500	<0.500	<1.00	<50.0	564	**1,000**
MTCA-CCL (a)		5	40	30	20	1,000	1,000	1,000

TPH-g = Total petroleum hydrocarbons-as-gasoline
TPH-o = Total petroleum hydrocarbons-as-heavy oil
TPH-d = Total petroleum hydrocarbons-as-diesel
MTCA-CCL[a] = Model Toxics Control Act Method A Compliance Cleanup Level
< = Less than the method detection limit
Bold values exceed MTCA-CCL[a]

APPENDIX A

DRILL LOGS

Drilling Log

FLUOR DANIEL GTI

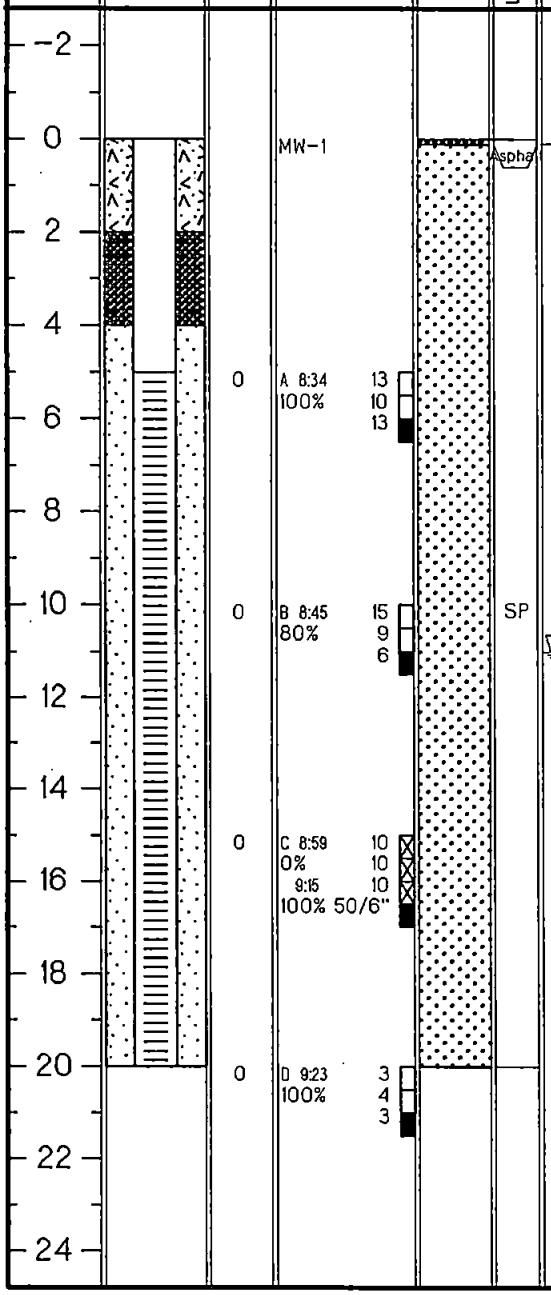
Monitoring Well **MW-1**

Project *Sound Subaru* Owner *Sound Subaru*
Location *240 &250 Rainer Avenue South, Renton WA* Proj. No. *103562*
Surface Elev. ____ Total Hole Depth *20 ft.* Diameter *11 in.*
Top of Casing ____ Water Level Initial *11 ft.* Static ____
Screen: Dia *4 in.* Length *15 ft.* Type/Size *0.020 in.*
Casing: Dia *4 in.* Length *5 ft.* Type *Sched. 40 PVC*
Fill Material *10/20 Sand* Rig/Core *CME-55*
Drill Co. *CASCADE DRILLING* Method *HSA*
Driller *JAMES* Log By *CS* Date *02/26/98* Permit # ____
Checked By *CHRIS STOREY* License No. ____

See Site Map For Boring Location

COMMENTS:

Analyzed soil samples are indicated by a black box.



Description
(Color, Texture, Structure)
Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%

Asphaltic Concrete. Hand dug to five feet.
Brown medium to fine grain SAND, trace fine gravel.

(Asphalt pieces)

(Grades medium dense, dry, no odor)

(Grades gray, medium grain, some silt, fine gravel, wet, slight odor.)

Encountered Water 8:45 2/26/98

(No sample recovery at 15-16.5 feet. Resampled at 16.5 feet.)

(Grades very dense, no odor.)

End of boring installed well.

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MW-2**

Project *Sound Subaru* Owner *Sound Subaru*
Location *240 &250 Rainer Avenue South, Renton WA* Proj. No. *103562*
Surface Elev. ____ Total Hole Depth *20 ft.* Diameter *11 in.*
Top of Casing ____ Water Level Initial *12.5 ft.* Static ____
Screen: Dia *4 in.* Length *15 ft.* Type/Size *0.020 in.*
Casing: Dia *4 in.* Length *5 ft.* Type *Sched. 40 PVC*
Fill Material *10/20 Sand* Rig/Core *CME-55*
Drill Co. *CASCADE DRILLING* Method *HSA*
Driller *JAMES* Log By *CS* Date *02/26/98* Permit # ____
Checked By *CHRIS STOREY* License No. ____

See Site Map For Boring Location

COMMENTS:

Analyzed soil samples are indicated by a black box.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0			MW-2			Aspha	Asphaltic Concrete. Hand dug to five feet.
2							Dark brown medium grain SAND and coarse gravel. (Dry to slightly moist, no odor)
4		0	A 11:41 50%	22 50/6"			(Grades dark brown, some gravel, very dense)
10		0	B 11:50 65%	10 34 30		SP	(Grades medium brown, medium dense)
12							*Encountered Water at 11:54 2/26/98*
16		0	C 11:58 50%	12 18 19			(Grades gray, fine gravel, wet)
20		0	D 12:09 80%	4 4 10			(Grades coarse gravel, little brown silt, loose) End of boring installed well.

Drilling Log

FLUOR DANIEL GTI

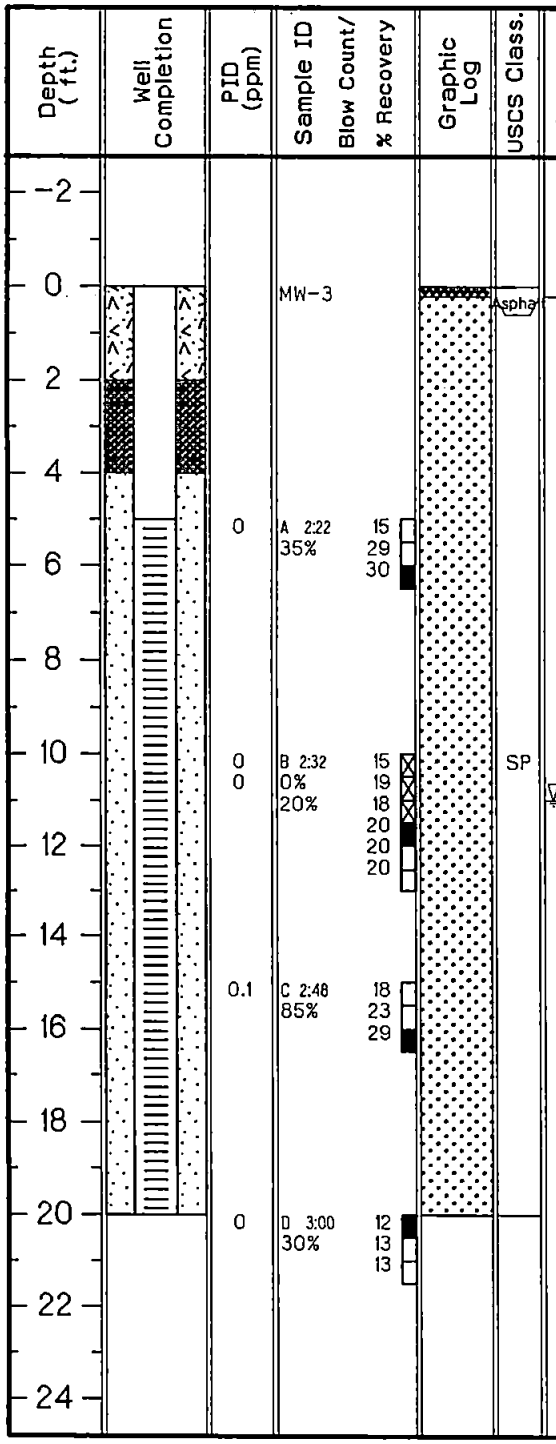
Monitoring Well **MW-3**

Project *Sound Subaru* Owner *Sound Subaru*
Location *240 &250 Rainer Avenue South, Renton WA* Proj. No. *103562*
Surface Elev. ____ Total Hole Depth *20 ft.* Diameter *11 in.*
Top of Casing ____ Water Level Initial *11 ft.* Static ____
Screen: Dia *4 in.* Length *15 ft.* Type/Size *0.020 in.*
Casing: Dia *4 in.* Length *5 ft.* Type *Sched. 40 PVC*
Fill Material *10/20 Sand* Rig/Core *CME-55*
Drill Co. *CASCADE DRILLING* Method *HSA*
Driller *JAMES* Log By *CS* Date *02/26/98* Permit # ____
Checked By *CHRIS STOREY* License No. ____

See Site Map For Boring Location

COMMENTS:

Analyzed soil samples are indicated by a black box.



Description

(Color, Texture, Structure)

Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%

Asphaltic Concrete. Hand dug to five feet.
Brown fine grain SAND and some gravel.

(Encountered asphalt and cobbles.)

(Grades medium dense, moist, no odor)

(Zero sample recovery from 10-11.5 feet. Resampled from 11.5-13 feet.)
(Grades gray, medium grain, coarse gravel, wet.)
Encountered Water at 2:35 2/26/98

(Grades dark liquid oil/aged gas, wood pieces, odor.)

End of boring installed well.

Drilling Log

FLUOR DANIEL GTI

Monitoring Well **MW-4**

Project *Sound Subaru* Owner *Sound Subaru*
Location *240 &250 Rainer Avenue South, Renton WA* Proj. No. *103562*
Surface Elev. ____ Total Hole Depth *20 ft.* Diameter *11 in.*
Top of Casing ____ Water Level Initial *12.0 ft.* Static ____
Screen: Dia *4 in.* Length *15 ft.* Type/Size *0.020 in.*
Casing: Dia *4 in.* Length *5 ft.* Type *Sched. 40 PVC*
Fill Material *10/20 Sand* Rig/Core *CME-55*
Drill Co. *CASCADE DRILLING* Method *HSA*
Driller *JAMES* Log By *CS* Date *02/26/98* Permit # ____
Checked By *CHRIS STOREY* License No. ____

See Site Map For Boring Location

COMMENTS:

Analyzed soil samples are indicated by a black box.

Depth (ft.)	Well Completion	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2							
0			MW-3			Concrete	Concrete. Hand dug to five feet.
2							Dark brown medium grain SAND. (Ashpalt chunks)
4		0	A 4:13 30%	23 28 36		SP	(Grades gray, gravel, medium dense, moist, no odor)
6							
8							
10		0	B 4:23 100%	11 12 12			Gray medium to fine SAND and silt. (Grades wet)
12							*Encountered Water at 4:27 2/26/98*
14							
16		0	C 4:33 45%	5 10 10		SM	(Grades some silt, loose.)
18							
20		0	D 4:48 100%	26 26 50/1"			(Grades some coarse gravel, dense.) End of boring installed well.
22							
24							

APPENDIX B

STANDARD OPERATING PROCEDURES

1.0 DRILLING

1.1 The principle reason for requiring on-site drilling supervision is to acquire reliable information.

1.2 While supervising a test boring or well installation, the geologist should always make certain that the driller is making accurate depth measurements by ruler and not by visually "eyeballing" the measurements (five foot auger lengths or drill rods may vary in length by +/- .75 feet.

1.3 Discrepancies between the driller's statements of depth and the geologist's should be immediately clarified by remeasurement so that the driller and geologist are in agreement.

1.4 Note lithologic changes that occur between sampling depths. Lithologic changes can be estimated by: noting changes in the rate of penetration of the drilling tools; noting color and/or soil-type changes in the drill cuttings; and, noting the soil on the auger flights.

1.5 Samples obtained by split-spoon sampler should follow the standard penetration test procedure (see Section 2.0).

1.6 For each soil sample taken, the following information must be recorded on the well/boring log:
- sample depth
- sample number
- sampling method: split-spoon (SS), wash sample, auger flight sample, drill cutting sample.
- blow counts for every 6 inches penetration of the split-spoon sampler
- sample description should follow the Unified Soil Classification System.

1.7 The sample brass tubes must be labeled with the following information
- job number
- date and time
- well/boring number
- sample number
- sample depth
- name of sampler

1.8 Insure that samples are sealed in brass tubes as nearly intact and undisturbed as possible. Soil structure can be an important feature in interpreting the subsurface geology.

1.9 Seal the ends of the brass tubes with aluminum foil or teflon tape prior to placing on the air tight cap. Place the sealed and labeled tube on ice in a cooler for shipment to the lab along with a chain-of-custody.

1.10 Seal the contents of a second brass tube in a plastic sample bag for vapor level measurements.

1.11 Measure vapor levels with a photoionization detector (PID) when the samples reach room temperature (70 degrees F). Otherwise keep the samples cool until an instrument is available. Bring the samples to room temperature prior to measuring the vapor levels.

1.12 Attempt to determine the depth to groundwater as drilling progresses. After a well has been installed, measure the initial groundwater level. If no well has been installed,

measure the water level in the boring prior to removing all of the auger flights or casing and backfilling the borehole.

1.13 When drilling in soils such as loose sands and silts, which tend to run up into the borehole, whether it is stabilized with casing or augers or not, the driller should maintain a positive head of water in the borehole (that is above the water table) at ALL times.

1.14 All pertinent data concerning drilling method, groundwater, penetration resistance, soil description, etc. should be entered onto the well/boring log.

1.15 Locate each well/boring location by taping the distances to at least three permanent physical features at the site. These may include any feature that is shown on the site plan provided, such as building corners, pump island, light standards, fences, planters, etc. DO NOT measure to another well/boring as one of the three measurements unless it is absolutely necessary. DO include measurements between well/borings as additional location information. This information, entered onto the well/boring log, will be used in conjunction with survey data to complete the site map and to generate groundwater contour and petroleum distribution maps.

1.16 At the completion of drilling, arrange to survey the well/boring locations and elevations.

1.17 Groundwater Technology does not assume the responsibility of directing the operations of independent contractors or insuring the safety of their workmen. Inform the contractor of the project requirements. Do not drive contractor trucks or operate or borrow his equipment.

1.18 Comply with all applicable articles of the Occupational Safety and Health Act of 1970, (OSHA).

2.0 STANDARD PENETRATION TEST

2.1 The standard split-spoon sampler consists of a 2-inch O.D. by 1-3/8-inch I.D., 18-inch minimum length, heat treated, case hardened, steel head, split-spoon and shoe assembly.

2.2 The head is vented to prevent pressure buildup during sampling and must be kept clean. A ball check valve is located in the head to prevent downward water pressure during sampling and sample retrieval. Removal of the water check valve often results in sample loss.

2.3 The drive rods which connect the split-spoon must have a stiffness equal or greater than an A-rod. In order to reduce rod deflection, especially in deep holes, it may be preferable to use larger diameter rods. The size of the drive rods must be consistent throughout a specific exploration as the energy absorbed will vary with the size and the weight of the rods used. The type of drive rod should be noted on the well/boring log.

2.4 The drive head consists of a guide rod to give the drop hammer a free fall in order to strike the anvil attached to the lower end of the assembly. The rod must be a minimum of 3-1/2 feet in length to insure the correct 30-inch hammer drop.

2.5 The drop hammer must weigh 140 pounds and have a 2-1/2-inch diameter hole through the center for the passage of the drive head rod.

2.6 The hammer is raised with a rope activated by the drill rig cathead. No more than two turns of rope should be allowed on the cathead.

2.7 A 30-inch free hammer drop is mandatory and extreme care should be exercised to insure consistent results.

2.8 Automatic trip hammers are available which insure a 30-inch, free-fall drop. These are recommended when retaining soil-structure data is critical, such as in liquefaction studies.

2.9 Attach the split-spoon sampler to the drill rods and lower the assembly to the bottom of the hole. Measure the drill rod stickup to determine if the bottom of the sampler is resting on the bottom of the hole. If the sampler is not on the bottom (ex. blow-up of the stratum being sampled), remove the assembly and clean out the hole to the appropriate sampling depth.

2.10 Note any penetration of the sampler/rod assembly due to the weight of the rods. Do not drop the assembly to the bottom of the hole.

2.11 Raise the 140-pound hammer 30 inches above the drivehead anvil and then allow it to drop, free-fall, and strike the anvil. This procedure is repeated until the sampler has been driven 18 inches into the stratum at the bottom of the hole (a 24-inch sampler may be driven 24 inches).

2.12 The number of blows of the hammer required for each 6 inches of penetration of the sampler is counted and recorded.

2.13 A penetration rate of 100 blows per foot is normally considered refusal; however, this criterion may be varied depending on the nature of the project and the desired information.

2.14 The penetration resistance, density, is calculated by adding together the second and the third resistance blowcounts. (Ex: for blow counts 2-6-6, density = 12.)

2.15 The sampler is then withdrawn form the borehole, preferably by pulling the rope rather than by bumping it out using the cathead and hammer in reverse.

2.16 Keeping the casing/augers/borehole full of water when removing the sampler will enhance sample recovery. however, this practice may not be appropriate when drilling at contamination sites.

2.17 When sampling soils where recovery is poor, lining the sampler with a flexible material such as plastic wrap or placing a sand catch in the shoe will often increase sample recovery.

2.18 Careful measurement of all drilling tools, samplers, casing, etc. must be exercised throughout all phases of the test boring operation.

2.19 Carefully open the sampler and describe the contents, noting soil structure, color, characteristics, etc. following the Unified Soils Classification System.

2.20 All pertinent data concerning sampling activities including sampling, interval, blow counts and sample recovery should be entered on the well/boring log.

3.0 WATER QUALITY SAMPLING

3.1 Water samples should not be taken from the stagnant water in the well.

3.2 Water samples should be taken in triplicate.

3.3 Remove 3 to 5 volumes of water in the well prior to sampling. The water may be removed by bailing, submersible pump, or purge system. Wells with a slow recovery period should be bailed dry and then sampled within 1 hour or when recovered to 80%. Monitor pH, temperature and specific conductivity with each well volume to insure water quality stabilization has occurred. However, this is not necessary at every well or in all circumstances.

3.4 Use only Teflon, stainless steel, or glass bailers to obtain the sample. Use Teflon only for sampling water containing chlorinated compounds and also for bacteriological samples. PVC bailers can be used for one-time sampling for other than EPA 624 analysis. Using a bailer for a one-time sampling reduces the possibility for cross-contamination.

3.5 When sampling, avoid stirring up any sediments in the well and agitating the water to reduce volitization of any dissolved compounds that may be present.

3.6 All sampling equipment must be cleaned following the appropriate procedure to avoid cross contamination from site to site and sample to sample. The sampling equipment should be cleaned before each well sampling, between each sampling, and at the end of each sampling round.

3.7 Monitoring wells should be gauged prior to sampling.

3.8 If possible, the monitoring wells should be sampled starting with the cleanest well and ending with the most contaminated well.

3.9 Wells containing free-phase contaminants should not be sampled.

3.10 When filling out the chain of custody form:
- enter the samples in the order in which they were collected;
- make a note as to the cleaning fluid used to clean the sampling equipment;
- attempt to identify which samples are the most contaminated;
- complete all other requested information.

3.11 The laboratory sample identification label should be filled out with a waterproof pen and firmly affixed to each sample container. Typically, identification labels require that the following information be supplied:
- job name
- job number
- sampler's name
- sample identification
- date sampled and time
- analysis requested

3.12 Acidification is required for samples that will be analyzed by the EPA 624 method. (see Acidification Procedure in this section)

3.13 Acidification is recommended for EPA method 601 and 602 samples to preserve them and increase their holding life. (see Acidification Procedure in this section)

3.14 Field blanks should be taken as part of each sampling round. A field blank consists of a sample of distilled water which has been collected by putting the distilled water into a sampling bailer after the bailer has been cleaned following the procedure used to clean that bailer during the sampling round. The field blank is stored with the samples. It is not analyzed unless requested by the Project Manager. The field blank should not be identified as such to the laboratory.

3.15 Handling of decontaminated equipment:
- Always use "pristine" gloves (latex, solvex, etc.).
- Place decontaminated bailers on clean surface (plastic).
- Do not wipe down bailer with paper towels or cloth.
- Follow decontamination procedure.

3.16 Sample accuracy can be adversely affected by the entrainment of sediment in wells which have not been properly developed. Contaminants adhering to the sediments can be released when samples are acidified for preservation. Therefore, if sediments are present, field filtering of the samples is recommended.

3.17 Chemical changes can take place because the sample was oxidized during sampling. It is critical to avoid oxidation of samples when sampling for volatile organic compounds (VOC). Therefore, take care to insure minimal agitation occurs during sampling.

3.18 All samples should be properly and promptly preserved.

3.19 All samples should be analyzed quickly; arrangements should be made with the testing laboratory to insure prompt analysis is performed within the allowable times for the specific analyses to be done.

3.20 Bailer strings that have contacted water or contaminants should be replaced between each well to avoid contamination from a bailer string which has absorbed contamination. A good practice is to replace the string between wells. Caution: some bailer strings are treated with a fungicide which may be detected in priority pollutant analysis.

3.21 Notify laboratory that samples are being shipped in advance of sampling to insure proper delivery and turnaround.

3.22 On the chain of custody, note what type of decontamination or preservation fluids, chemicals were used.

4.0 ACIDIFICATION PROCEDURE (EPA Methods 601,602, and 624)

4.1 At the start of each sampling round, the amount of acid required to lower a sampling container of water to be sampled to a pH of less than 2 should be determined.

4.2 After removing 3 to 5 well volumes from the first well to be sampled, put 5-10 drops of 50% HCL into a 40 ml sample vial (larger sampling container will require more acid) and fill the vial with water form the well; determine the pH of water in the vial with pH paper; if the pH is too high, repeat the procedure using 15-20 drops of acid in the vial; repeat until the pH of the water in the sample vial is a pH of less than 2 on the pH paper. Note the amount of acid required to lower the pH of the volume of water in the sampling vial. (pH paper should not be placed into sampling container. Pour sample onto pH paper to check for proper pH.)

4.3 Discard the practice acidified sample.

4.4 Once the amount of acid required to reach a pH of <2 is known, the acid can be routinely added to each sample container directly; the water to be analyzed is added to vial or container containing the appropriate amount of acid.

4.5 Note that the amount of acid required is site specific and should be noted on the Chain of Custody form.

4.6 The procedure should be repeated for each site at the start of each sampling round.

4.7 Equipment

- Bailer or other means to remove 3 to 5 well volumes
- Sampling bailer
- Polyethylene squirt bottle of 50% hydrochloric (HCL) acid
- Narrow range pH paper (1.0 - 2.5 pH range)
- Paper towels
- Waterproof pen
- Laboratory sample identification labels
- Cooler with ice
- Chain of custody forms
- Sample containers (usually 40 ml glass vials with teflon faced septums)
- Alconox solution and/or methanol
- Distilled water
- Safety equipment (gloves, etc.)
- Dissolved oxygen meter (sometimes used in limited biorec projects in conjunction with bacteriological testing)

5.0 SURVEYING

5.1 Equipment Handling

- The level/transit is a sensitive, expensive instrument, handle it accordingly. Keep it dry and clean as possible. Never carry the instrument in the back of the truck.
- Never leave the instrument on the tripod without securely attaching it.
- Make sure that the tripod is stable at all times.
- Always setup the tripod and instrument so that it is easily seen.
- Never leave a tripod and instrument unattended when surveying in an area with vehicular traffic. Place protective cones around the survey station.
- Keep an eye on the equipment at all times.
- Keep the survey rod free of dirt and grit.

5.2 Leveling the Instrument

- Center the level and screw it into the tripod.
- Firmly plant the tripod legs.
- Use foot screw to level the instrument. The bubble must be within the setting circle in order for the instrument the be level.
- Rotate the level 360 degrees, checking to be sure that the bubble remains inside the circle at every point.

5.3 Focusing the Cross Hairs and Siting

- To focus the cross hairs, look through the instrument and turn the ring around the eyepiece until the hairs come into focus.
- Relax your eye while looking through the eyepiece.
- Use a sun shade.

5.4 Rod

- Be careful when using a rod around overhead power and utility lines.
- The rod is graduated into hundredths of a foot. The bottom of each black line is an odd hundredth; the top of each black line is an even hundredth.
- When surveying to the rod, the rod should be slowly rocked forward and back to determine the lowest, and most accurate, reading.

5.5 Stadia Surveys

- Readings should be taken at the intersection of the vertical cross hair with the three horizontal cross hairs. (A level survey requires reading only the center cross hair.)

- Distance (D) calculation:

  D = (High Stadia - Low Stadia) x 100

  ex:
  High Stadia = 8.87 D = (8.87 - 8.29) x 100
  Low Stadia = 8.29 D = 58.0

- Check the accuracy of your readings as you survey. An acceptable error is .01 feet difference between calculations per siting.

- Check Readings: high - mid = mid - low

5.6 Bench Marks

- Clearly note the location and type of the bench mark used for each survey. The location should be marked permanently in the field so that it may be reused.

- If an existing bench mark with a known elevation is within a reasonable distance of the site, the surveyors should attempt to use it as the bench mark for the survey. possible existing bench marks are sewer manhole rims, storm drains, USGS (from topo map)

- If there is no known bench mark in the area, a bench mark must be created arbitrarily.

- Use the following guidelines for establishing an arbitrary bench mark:

  a) use permanent physical features such as the corner of a pump island, a cement floor slab, manhole or sewer rim.
  b) assign an elevation to the bench mark; if the nearest 10-foot contour is known, use it as the BM elevation; if the contour elevation is not known, assign an arbitrary elevation.
  c) clearly note the location and elevation of the BM in the field and on all site plans.
  d) DO NOT USE MONITORING OR RECOVERY WELLS AS BENCH MARKS.

5.7 Level Surveys

- When surveying wells, make certain to choose a survey point that can be used when gauging the well; if the top of the PVC casing is greater than 6 inches below the ground surface, do not use it as the survey point, instead use the lip or rim of the protective casing. Clearly note the survey point of each well in the survey notes.

- Obtain the following for each monitoring well survey location:

  a) the elevation of the top of the well casing (T.O.C.);
  b) the elevation of the lip or rim of the protective casing (T.O.R.)

- Permanently mark the survey point with paint or permanent marker.

- Place the rod on the survey point and hold it vertical; move it backwards and forwards to determine the most accurate reading.

- Calculate the elevation from the middle cross hair reading.

- Limit the number of times the instrument must be moved.

- After completing level readings at each set up, shoot back to two or more wells to close the level run.

- In a multiple-station survey, always shoot at least two known points for each station.

- Where there is a significant topographic change across a site, additional survey information will be required in order to document the ground surface elevation differences; this information is critical when drawing cross-sections and in planning trenching and infiltration gallery installations.

- Calculate elevations before moving instrument to determine if there are any irregularities or errors.

5.8 Turning Points

- A TP (turning point) is used when all of the survey points cannot be seen form one instrument position and the instrument must be moved.

- The TP essentially establishes a new bench mark from which a new height of instrument is calculated.

- A TP can be a permanent structure, a PK, the original BM or a well. (A PK is a surveyor's nail driven into the ground/asphalt to create a hub for the rod to rest upon.)

- Complete the following steps to create a TP:

  a) take a FS (foresight) on the TP and record the measurement under the FS column in the field book;
  b) the FS is subtracted from the HI (height of instrument) for the current instrument location to determine the elevation of the TP;
  c) the instrument is then moved to a new location and leveled;
  d) a BS (backsight) reading is taken to the TP and entered in the BS column in the field book;
  e) the BS is added to the TP to determine the new HI elevation;
  f) NOTE: the TP entry in the survey data in the field book will always have 4 entries: BS, FS, HI, and elevation.

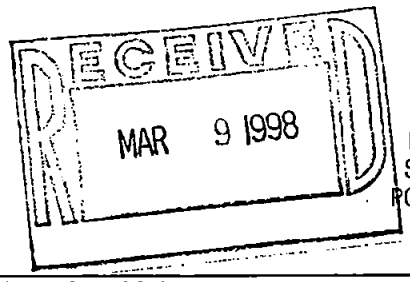
5.9 Taping locations

- Use a tape to verify distances that were surveyed with the instrument.
- Obtain three measurements for each location.
- Pull the tape tightly between points being measured.
- Measure dimensions of buildings on site to confirm base maps.

APPENDIX C

LABORATORY ANALYTICAL REPORTS

NORTH CREEK ANALYTICAL
Environmental Laboratory Services



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PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

Fluor Daniel - GTI, Inc. - Renton	Project:	Sound Subaru	Sampled: 2/26/98
555 South Renton Village Place, Ste 700	Project Number:	103562	Received: 2/27/98
Renton, WA 98055	Project Manager:	Steve Hartman	Reported: 3/6/98 13:18

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
MW-1B	B802510-02	Soil	2/26/98
MW-1C	B802510-03	Soil	2/26/98
MW-2A	B802510-05	Soil	2/26/98
MW-2B	B802510-06	Soil	2/26/98
MW-3B	B802510-10	Soil	2/26/98
MW-3C	B802510-11	Soil	2/26/98
MW-4A	B802510-13	Soil	2/26/98
MW-4B	B802510-14	Soil	2/26/98

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Fluor Daniel - GTI, Inc. - Renton	Project:	Sound Subaru	Sampled: 2/26/98
555 South Renton Village Place, Ste 700	Project Number:	103562	Received: 2/27/98
Renton, WA 98055	Project Manager:	Steve Hartman	Reported: 3/6/98 13:18

Gasoline Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-1B			**B802510-02**				**Soil**	
Gasoline Range Hydrocarbons	0380026	3/3/98	3/4/98		5.00	**6.80**	mg/kg dry	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*93.9*	*%*	
Surrogate: 4-BFB (PID)	"	"	"	*50.0-150*		*97.1*	"	
MW-1C			**B802510-03**				**Soil**	
Gasoline Range Hydrocarbons	0380026	3/3/98	3/4/98		5.00	ND	mg/kg dry	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*91.3*	*%*	
Surrogate: 4-BFB (PID)	"	"	"	*50.0-150*		*96.9*	"	
MW-2A			**B802510-05**				**Soil**	
Gasoline Range Hydrocarbons	0380026	3/3/98	3/4/98		5.00	ND	mg/kg dry	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*93.8*	*%*	
Surrogate: 4-BFB (PID)	"	"	"	*50.0-150*		*95.1*	"	
MW-2B			**B802510-06**				**Soil**	
Gasoline Range Hydrocarbons	0380026	3/3/98	3/4/98		5.00	ND	mg/kg dry	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*88.7*	*%*	
Surrogate: 4-BFB (PID)	"	"	"	*50.0-150*		*90.7*	"	
MW-3B			**B802510-10**				**Soil**	
Gasoline Range Hydrocarbons	0380026	3/3/98	3/4/98		5.00	ND	mg/kg dry	
Benzene	"	"	"		0.0500	ND	"	

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definitions.*

Joy B Chang, Project Manager

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Fluor Daniel - GTI, Inc. - Renton	Project:	Sound Subaru	Sampled: 2/26/98
555 South Renton Village Place, Ste 700	Project Number:	103562	Received: 2/27/98
Renton, WA 98055	Project Manager:	Steve Hartman	Reported: 3/6/98 13:18

Gasoline Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-3B (continued)			B802510-10				Soil	
Toluene	0380026	3/3/98	3/4/98		0.0500	ND	mg/kg dry	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*116*	*%*	
Surrogate: 4-BFB (PID)	"	"	"	*50.0-150*		*120*	"	
MW-3C			B802510-11				Soil	
Gasoline Range Hydrocarbons	0380026	3/3/98	3/4/98		5.00	**30.3**	mg/kg dry	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*69.7*	*%*	
Surrogate: 4-BFB (PID)	"	"	"	*50.0-150*		*74.7*	"	
MW-4A			B802510-13				Soil	
Gasoline Range Hydrocarbons	0380026	3/3/98	3/4/98		5.00	ND	mg/kg dry	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*98.1*	*%*	
Surrogate: 4-BFB (PID)	"	"	"	*50.0-150*		*102*	"	
MW-4B			B802510-14				Soil	
Gasoline Range Hydrocarbons	0380026	3/3/98	3/4/98		5.00	ND	mg/kg dry	
Benzene	"	"	"		0.0500	ND	"	
Toluene	"	"	"		0.0500	ND	"	
Ethylbenzene	"	"	"		0.0500	ND	"	
Xylenes (total)	"	"	"		0.100	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*88.5*	*%*	
Surrogate: 4-BFB (PID)	"	"	"	*50.0-150*		*92.0*	"	

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Fluor Daniel - GTI, Inc. - Renton	Project:	Sound Subaru	Sampled: 2/26/98
1555 South Renton Village Place, Ste 700	Project Number:	103562	Received: 2/27/98
Renton, WA 98055	Project Manager:	Steve Hartman	Reported: 3/6/98 13:18

Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended)
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-3C			**B802510-11**				**Soil**	
Diesel Range Hydrocarbons	0380055	3/3/98	3/4/98		50.0	**884**	mg/kg dry	1
Heavy Oil Range Hydrocarbons	"	"	"		125	**4420**	"	
Surrogate: 2-FBP	"	"	"	*50.0-150*		*91.7*	%	

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Fluor Daniel - GTI, Inc. - Renton	Project:	Sound Subaru	Sampled: 2/26/98
555 South Renton Village Place, Ste 700	Project Number:	103562	Received: 2/27/98
Renton, WA 98055	Project Manager:	Steve Hartman	Reported: 3/6/98 13:18

Total Metals by EPA 6000/7000 Series Methods
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
MW-1B			**B802510-02**				**Soil**	
Lead	0380153	3/6/98	3/6/98	EPA 7420	25.0	**27.4**	mg/kg dry	
MW-1C			**B802510-03**				**Soil**	
Lead	0380153	3/6/98	3/6/98	EPA 7420	25.0	**33.6**	mg/kg dry	
MW-2A			**B802510-05**				**Soil**	
Lead	0380153	3/6/98	3/6/98	EPA 7420	25.0	**77.7**	mg/kg dry	
MW-2B			**B802510-06**				**Soil**	
Lead	0380153	3/6/98	3/6/98	EPA 7420	25.0	ND	mg/kg dry	
MW-3B			**B802510-10**				**Soil**	
Lead	0380153	3/6/98	3/6/98	EPA 7420	25.0	ND	mg/kg dry	
MW-3C			**B802510-11**				**Soil**	
Lead	0380153	3/6/98	3/6/98	EPA 7420	25.0	**232**	mg/kg dry	
MW-4A			**B802510-13**				**Soil**	
Lead	0380153	3/6/98	3/6/98	EPA 7420	25.0	ND	mg/kg dry	
MW-4B			**B802510-14**				**Soil**	
Lead	0380153	3/6/98	3/6/98	EPA 7420	25.0	ND	mg/kg dry	

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Fluor Daniel - GTI, Inc. - Renton	Project:	Sound Subaru	Sampled:	2/26/98
555 South Renton Village Place, Ste 700	Project Number:	103562	Received:	2/27/98
Renton, WA 98055	Project Manager:	Steve Hartman	Reported:	3/6/98 13:18

Dry Weight Determination
North Creek Analytical - Bothell

Sample Name	Lab ID	Matrix	Result	Units
MW-1B	B802510-02	Soil	83.5	%
MW-1C	B802510-03	Soil	89.0	%
MW-2A	B802510-05	Soil	88.9	%
MW-2B	B802510-06	Soil	82.5	%
MW-3B	B802510-10	Soil	92.8	%
MW-3C	B802510-11	Soil	59.2	%
MW-4A	B802510-13	Soil	95.4	%
MW-4B	B802510-14	Soil	76.7	%

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Fluor Daniel - GTI, Inc. - Renton	Project:	Sound Subaru	Sampled: 2/26/98
555 South Renton Village Place, Ste 700	Project Number:	103562	Received: 2/27/98
Renton, WA 98055	Project Manager:	Steve Hartman	Reported: 3/6/98 13:18

Gasoline Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0380026	**Date Prepared: 3/3/98**					**Extraction Method: EPA 5030B (MeOH)**				
Blank	**0380026-BLK1**									
Gasoline Range Hydrocarbons	3/3/98			**ND**	mg/kg dry	**5.00**				
Benzene	"			**ND**	"	**0.0500**				
Toluene	"			**ND**	"	**0.0500**				
Ethylbenzene	"			**ND**	"	**0.0500**				
Xylenes (total)	"			**ND**	"	**0.100**				
Surrogate: 4-BFB (FID)	"	*4.00*		*3.83*	"	*50.0-150*	*95.7*			
Surrogate: 4-BFB (PID)	"	*4.00*		*4.15*	"	*50.0-150*	*104*			
LCS	**0380026-BS1**									
Gasoline Range Hydrocarbons	3/3/98	25.0		29.0	mg/kg dry	75.0-125	116			
Surrogate: 4-BFB (FID)	"	*4.00*		*4.02*	"	*50.0-150*	*100*			
Duplicate	**0380026-DUP2**		**B802510-06**							
Gasoline Range Hydrocarbons	3/4/98		ND	ND	mg/kg dry			50.0		
Surrogate: 4-BFB (FID)	"	*4.85*		*4.45*	"	*50.0-150*	*91.8*			
Matrix Spike	**0380026-MS1**		**B802492-01**							
Benzene	3/4/98	0.605	ND	0.569	mg/kg dry	60.0-140	**94.0**			
Toluene	"	0.605	0.0508	0.615	"	60.0-140	**93.3**			
Ethylbenzene	"	0.605	ND	0.600	"	60.0-140	**99.2**			
Xylenes (total)	"	1.81	10.1	8.68	"	60.0-140	**NR**			2
Surrogate: 4-BFB (PID)	"	*4.84*		*4.46*	"	*50.0-150*	*92.1*			
Matrix Spike Dup	**0380026-MSD1**		**B802492-01**							
Benzene	3/4/98	0.605	ND	0.571	mg/kg dry	60.0-140	**94.4**	20.0	**0.425**	
Toluene	"	0.605	0.0508	0.610	"	60.0-140	**92.4**	20.0	**0.969**	
Ethylbenzene	"	0.605	ND	0.595	"	60.0-140	**98.3**	20.0	**0.911**	
Xylenes (total)	"	1.81	10.1	7.00	"	60.0-140	**NR**	20.0		2
Surrogate: 4-BFB (PID)	"	*4.84*		*4.41*	"	*50.0-150*	*91.1*			

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definitions.*

Joy B Chang, Project Manager

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9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132

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Fluor Daniel - GTI, Inc. - Renton	Project:	Sound Subaru	Sampled: 2/26/98
555 South Renton Village Place, Ste 700	Project Number:	103562	Received: 2/27/98
Renton, WA 98055	Project Manager:	Steve Hartman	Reported: 3/6/98 13:18

Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended)/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0380055	**Date Prepared: 3/3/98**					**Extraction Method: EPA 3550B**				
Blank	**0380055-BLK1**									
Diesel Range Hydrocarbons	3/4/98			**ND**	mg/kg dry	**10.0**				
Heavy Oil Range Hydrocarbons	"			**ND**	"	**25.0**				
Surrogate: 2-FBP	"	*10.7*		*8.15*	"	*50.0-150*	*76.2*			
LCS	**0380055-BS1**									
Diesel Range Hydrocarbons	3/4/98	66.7		62.4	mg/kg dry	60.0-140	93.6			
Surrogate: 2-FBP	"	*10.7*		*8.83*	"	*50.0-150*	*82.5*			
Duplicate	**0380055-DUP1**		**B803048-03**							
Diesel Range Hydrocarbons	3/4/98		18.0	11.9	mg/kg dry			50.0	**40.8**	
Surrogate: 2-FBP	"	*11.4*		*9.42*	"	*50.0-150*	*82.6*			

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Fluor Daniel - GTI, Inc. - Renton	Project:	Sound Subaru	Sampled: 2/26/98
555 South Renton Village Place, Ste 700	Project Number:	103562	Received: 2/27/98
Renton, WA 98055	Project Manager:	Steve Hartman	Reported: 3/6/98 13:18

Total Metals by EPA 6000/7000 Series Methods/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0380153	**Date Prepared: 3/6/98**					**Extraction Method: EPA 3050B**				
Blank	**0380153-BLK1**									
Lead	3/6/98			**ND**	mg/kg dry	**25.0**				
LCS	**0380153-BS1**									
Lead	3/6/98	50.0		48.5	mg/kg dry	75.0-125	97.0			
LCS	**0380153-BS2**									
Lead	3/6/98	84.9		78.3	mg/kg dry	75.0-125	92.2			
Matrix Spike	**0380153-MS1**		**B802510-06**							
Lead	3/6/98	53.6	ND	53.1	mg/kg dry	75.0-125	**99.1**			
Matrix Spike Dup	**0380153-MSD1**		**B802510-06**							
Lead	3/6/98	57.7	ND	59.5	mg/kg dry	75.0-125	**103**	20.0	**3.86**	

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Fluor Daniel - GTI, Inc. - Renton		Project:	Sound Subaru	Sampled:	2/26/98
555 South Renton Village Place, Ste 700		Project Number:	103562	Received:	2/27/98
Renton, WA 98055		Project Manager:	Steve Hartman	Reported:	3/6/98 13:18

Notes and Definitions

#	Note
1	Results in the diesel organics range are primarily due to overlap from a heavy oil range product.
2	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to interference from coeluting organic compounds present in the sample.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

North Creek Analytical, Inc.

Joy B Chang, Project Manager

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CHAIN OF CUSTODY REPORT

B802510

CLIENT: FDGTI
ADDRESS: 555 S. Renton Village Place #700
Renton WA 98055
PHONE: 425-228-9645 FAX: 425-228-
PROJECT NAME: Sound Subaru
PROJECT NUMBER: 103562
SAMPLED BY: CNS

REPORT TO: STAN HASKINS
BILLING TO: Connie Hoffman
P.O. NUMBER:
NCA QUOTE #:

Turnaround	
SAME DAY RUSH (+150%)	
NEXT BUSINESS DAY RUSH (+100%)	
2 BUSINESS DAY RUSH (+80%)	
3 BUSINESS DAY RUSH (+60%)	
5 BUSINESS DAY RUSH (+40%)	
10 BUSINESS DAY STANDARD (LIST PRICE)	✓
5 BUS. DAY HYDROCARBONS (LIST PRICE)	✓

Analysis Request: BTEX NWTPH-G; Total Lead; TPH-D Extended

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	BTEX NWTPH-G	Total Lead	TPH-D Extended						COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. MW-1A	2/26/98 8:34	S	1									Hold	B802510-01
2. MW-1B	8:45		1	X	X								02
3. MW-1C	9:15 ~~8:45~~		1	X	X								03
4. MW-1D	9:23		1									Hold	04
5. MW-2A	11:41		1	X	X								05
6. MW-2B	11:50		1	X	X								06
7. MW-2C	11:58		1									Hold	07
8. MW-2D	12:09		1									Hold	08
9. MW-3A	2:22		1									Hold	09
10. MW-3B	2:32		1	X	X								10

RELINQUISHED BY: Chris N. Storey FIRM: FDGTI DATE: 2/27/98 TIME: 9:45
RECEIVED BY: K Barber FIRM: NCA DATE: 2/27/98 TIME: 10:35

RELINQUISHED BY: K Barber FIRM: NCA DATE: 2/27/98 TIME: 1300
RECEIVED BY: Lisa Hurley FIRM: NCA DATE: 2-27-98 TIME: 1300

ADDITIONAL REMARKS:

9.6° No ce

NORTH CREEK ANALYTICAL

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CHAIN OF CUSTODY REPORT

B802510

CLIENT: FDGTI

ADDRESS: 555 S. Renton Village #700
Renton, WA 98055

PHONE: 425-228-9645 FAX: 425-228-

PROJECT NAME: Sound Share

PROJECT NUMBER: 103562

SAMPLED BY: CNS

REPORT TO: STAN Hastings

BILLING TO: Connie Hofman

P.O. NUMBER:

NCA QUOTE #:

SAME DAY RUSH	(+150%)
NEXT BUSINESS DAY RUSH	(+100%)
2 BUSINESS DAY RUSH	(+80%)
3 BUSINESS DAY RUSH	(+60%)
5 BUSINESS DAY RUSH	(+40%)
10 BUSINESS DAY STANDARD	(LIST PRICE) X
5 BUS. DAY HYDROCARBONS	(LIST PRICE) X

SAMPLE IDENTIFICATION: (NUMBER OR DESCRIPTION)	SAMPLING DATE / TIME	MATRIX (W,S,O)	# OF CONT.	Analysis Request: BTEX, VOA (H-G)	Total Lead	TPH-D Ext.	COMMENTS & PRESERVATIVES USED	NORTH CREEK SAMPLE NUMBER
1. MW-3C	2/26/98 2:48	S	1	X	X	X		B802510-11
2. MW-3D	3:00		1				Hold	12
3. MW-4A	4:13		1	X	X			13
4. MW-4B	4:23		1	X	X			14
5. MW-4C	4:33		1				Hold	15
6. MW-4D	4:40		1				Hold	16
7. MW-4Cvc	5:10	↓	1				Hold	17
8.			1					
9.			1					
10.								

RELINQUISHED BY: Chris N. Storey DATE: 2/27/98
FIRM: FDGTI TIME: 9:45

RECEIVED BY: K Barker DATE: 2/27/98
FIRM: NCA TIME: 1035

RELINQUISHED BY: K Barker DATE: 2/27/98
FIRM: NCA TIME: 1300

RECEIVED BY: Lisa Hurley DATE: 2-27-98
FIRM: NCA TIME: 1300

ADDITIONAL REMARKS:

9.0° NCA

NORTH CREEK ANALYTICAL
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Fluor Daniel - GTI, Inc. - Renton	Project: Sound Subaru	Sampled: 3/10/98
555 South Renton Village Place, Ste 700	Project Number: 103562	Received: 3/11/98
Renton, WA 98055	Project Manager: Stan Haskins	Reported: 3/18/98 15:38

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
MW-1	B803249-01	Water	3/10/98
MW-2	B803249-02	Water	3/10/98
MW-3	B803249-03	Water	3/10/98
MW-4	B803249-04	Water	3/10/98

North Creek Analytical, Inc.

Joy B Chang, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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Fluor Daniel - GTI, Inc. - Renton	Project:	Sound Subaru	Sampled: 3/10/98
555 South Renton Village Place, Ste 700	Project Number:	103562	Received: 3/11/98
Renton, WA 98055	Project Manager:	Stan Haskins	Reported: 3/18/98 15:38

Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended)
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-1			**B803249-01**				**Water**	
Diesel Range Hydrocarbons	0380369	3/13/98	3/16/98		0.250	**0.553**	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	*50.0-150*		*83.4*	*%*	
MW-2			**B803249-02**				**Water**	
Diesel Range Hydrocarbons	0380369	3/13/98	3/17/98		0.250	ND	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	*50.0-150*		*80.8*	*%*	
MW-3			**B803249-03**				**Water**	
Diesel Range Hydrocarbons	0380369	3/13/98	3/17/98		0.250	**0.757**	mg/l	1
Heavy Oil Range Hydrocarbons	"	"	"		0.750	**3.51**	"	
Surrogate: 2-FBP	"	"	"	*50.0-150*		*82.8*	*%*	
MW-4			**B803249-04**				**Water**	
Diesel Range Hydrocarbons	0380369	3/13/98	3/17/98		0.250	**0.564**	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	**1.00**	"	
Surrogate: 2-FBP	"	"	"	*50.0-150*		*76.5*	*%*	

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definitions.*

Joy B Chang, Project Manager

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Fluor Daniel - GTI, Inc. - Renton	Project:	Sound Subaru	Sampled: 3/10/98
1555 South Renton Village Place, Ste 700	Project Number:	103562	Received: 3/11/98
Renton, WA 98055	Project Manager:	Stan Haskins	Reported: 3/18/98 15:38

Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended)/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0380369	**Date Prepared: 3/13/98**					**Extraction Method: EPA 3520C/600 Series**				
Blank	**0380369-BLK1**									
Diesel Range Hydrocarbons	3/17/98			**ND**	mg/l	**0.250**				
Heavy Oil Range Hydrocarbons	"			**ND**	"	**0.750**				
Surrogate: 2-FBP	"	*0.320*		*0.269*	"	*50.0-150*	*84.1*			
LCS	**0380369-BS1**									
Diesel Range Hydrocarbons	3/17/98	2.00		1.83	mg/l	60.0-140	91.5			
Surrogate: 2-FBP	"	*0.320*		*0.254*	"	*50.0-150*	*79.4*			
Duplicate	**0380369-DUP1**		**B803252-01**							
Diesel Range Hydrocarbons	3/17/98		ND	ND	mg/l			44.0		
Surrogate: 2-FBP	"	*0.641*		*0.533*	"	*50.0-150*	*83.2*			
Duplicate	**0380369-DUP2**		**B803269-01**							
Diesel Range Hydrocarbons	3/17/98		0.301	ND	mg/l			44.0		
Surrogate: 2-FBP	"	*0.605*		*0.483*	"	*50.0-150*	*79.8*			

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definitions.*

Joy B Chang, Project Manager

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PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Fluor Daniel - GTI, Inc. - Renton	Project:	Sound Subaru	Sampled: 3/10/98
555 South Renton Village Place, Ste 700	Project Number:	103562	Received: 3/11/98
Renton, WA 98055	Project Manager:	Stan Haskins	Reported: 3/18/98 15:38

Notes and Definitions

#	Note
1	Results in the diesel organics range are primarily due to overlap from a heavy oil range product.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

North Creek Analytical, Inc.

Joy B Chang, Project Manager

OREGON CREEK ANALYTICAL
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CHAIN OF CUSTODY REPORT

Work Order # B803249

REPORT TO: FLOOR DANIEL GTI
ATTENTION: Stan Hoskins
ADDRESS: 555 S Renton Village #700
Renton WA 98055
PHONE: (425) 228 9645 FAX:
PROJECT NAME: SOUND SUBARU
PROJECT NUMBER:
SAMPLED BY:

INVOICE TO: Connie Hoffman
ATTENTION:
ADDRESS:
P.O. NUMBER: NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: 10 (Standard) | 7 | 5 | 4 | 3 | 2 | 1 | Same Day
Fuels & Hydrocarbon Analyses: X (Standard) | 3-4 | 2 | 1 | Same Day
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	Analysis Request: TPHD extended	TPH-D	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1. MW-1	3/10/98 0930	B803249-01	✓	✓		1	
2. MW-2	" 1030	-02	✓	✓		1	
3. MW-3	" 1400	-03	✓	✓		1	
4. MW-4	" 1500	-04	✓	✓		1*	
5.							
6.							
7.							
8.							
9.							
10.							

RELINQUISHED BY (Signature): [signature] DATE: 3/10/98
PRINT NAME: FIRM: TIME:

RECEIVED BY (Signature): KBarker DATE: 3/11/98
PRINT NAME: KBarker FIRM: NCA TIME: 1215

RELINQUISHED BY (Signature): KBarker DATE: 3/11/98
PRINT NAME: KBarker FIRM: NCA TIME: 1500

RECEIVED BY (Signature): [signature] DATE: 3/11/98
PRINT NAME: B. Righthman FIRM: NCA TIME: 15:00

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PAGE OF

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PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Fluor Daniel - GTI, Inc. - Renton	Project:	Sound Subaru	Sampled: 3/4/98
555 South Renton Village Place, Ste 700	Project Number:	103562	Received: 3/5/98
Renton, WA 98055	Project Manager:	Stan Haskins	Reported: 3/9/98 13:18

Summary Report*
(Please refer to the Analytical Report for a thorough review of the complete data set.)

Method	Analyte	Units	MW-1 Water 3/4/98 B803142-01	MW-2 Water 3/4/98 B803142-02	MW-3 Water 3/4/98 B803142-03	MW-4 Water 3/4/98 B803142-04
WTPH-G/8021	Gasoline Range Hydrocarbons	ug/l	**5230**	<50.0	<50.0	<50.0
"	Benzene	"	**10.2**	<0.500	<0.500	<0.500
"	Toluene	"	**6.06**	<1.00	<0.500	<0.500
"	Ethylbenzene	"	**145**	<0.500	<0.500	<0.500
"	Xylenes (total)	"	**502**	<1.00	<1.00	<1.00

North Creek Analytical, Inc.

**The Summary Report is a subset of the final Analytical Report and does not include substantial supportive information such as quality control data; this report accurately summarizes sample results for your convenience only.*

Joy B Chang, Project Manager

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ▪ (425) 481-9200 ▪ FAX 485-2992
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 906-9200 ▪ FAX 906-9210

Fluor Daniel - GTI, Inc. - Renton	Project:	Sound Subaru	Sampled: 3/4/98
555 South Renton Village Place, Ste 700	Project Number:	103562	Received: 3/5/98
Renton, WA 98055	Project Manager:	Stan Haskins	Reported: 3/9/98 13:07

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
MW-1	B803142-01	Water	3/4/98
MW-2	B803142-02	Water	3/4/98
MW-3	B803142-03	Water	3/4/98
MW-4	B803142-04	Water	3/4/98

North Creek Analytical, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Joy B Chang, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132

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Gasoline Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-1			**B803142-01**				**Water**	
Gasoline Range Hydrocarbons	0380148	3/6/98	3/6/98		250	**5230**	ug/l	
Benzene	"	"	"		2.50	**10.2**	"	
Toluene	"	"	"		2.50	**6.06**	"	
Ethylbenzene	"	"	"		2.50	**145**	"	
Xylenes (total)	"	"	"		5.00	**502**	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*94.0*	*%*	
Surrogate: 4-BFB (PID)	"	"	"	*50.0-150*		*114*	"	
MW-2			**B803142-02**				**Water**	
Gasoline Range Hydrocarbons	0380148	3/6/98	3/6/98		50.0	ND	ug/l	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		1.00	ND	"	1
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*96.0*	*%*	
Surrogate: 4-BFB (PID)	"	"	"	*50.0-150*		*96.5*	"	
MW-3			**B803142-03**				**Water**	
Gasoline Range Hydrocarbons	0380148	3/6/98	3/9/98		50.0	ND	ug/l	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*93.3*	*%*	
Surrogate: 4-BFB (PID)	"	"	"	*50.0-150*		*98.8*	"	
MW-4			**B803142-04**				**Water**	
Gasoline Range Hydrocarbons	0380148	3/6/98	3/6/98		50.0	ND	ug/l	
Benzene	"	"	"		0.500	ND	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	*50.0-150*		*87.7*	*%*	
Surrogate: 4-BFB (PID)	"	"	"	*50.0-150*		*96.3*	"	

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definitions.*

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555 South Renton Village Place, Ste 700	Project Number:	103562	Received: 3/5/98
Renton, WA 98055	Project Manager:	Stan Haskins	Reported: 3/9/98 13:07

Gasoline Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0380148	**Date Prepared: 3/6/98**					**Extraction Method: EPA 5030B (P/T)**				
Blank	**0380148-BLK1**									
Gasoline Range Hydrocarbons	3/6/98			**ND**	ug/l	**50.0**				
Benzene	"			**ND**	"	**0.500**				
Toluene	"			**ND**	"	**0.500**				
Ethylbenzene	"			**ND**	"	**0.500**				
Xylenes (total)	"			**ND**	"	**1.00**				
Surrogate: 4-BFB (FID)	"	*48.0*		*45.6*	"	*50.0-150*	*95.0*			
Surrogate: 4-BFB (PID)	"	*48.0*		*47.6*	"	*50.0-150*	*99.2*			
LCS	**0380148-BS1**									
Gasoline Range Hydrocarbons	3/6/98	500		526	ug/l	75.0-125	105			
Surrogate: 4-BFB (FID)	"	*48.0*		*47.6*	"	*50.0-150*	*99.2*			
Duplicate	**0380148-DUP1**		**B803136-01**							
Gasoline Range Hydrocarbons	3/6/98		ND	ND	ug/l			25.0		
Surrogate: 4-BFB (FID)	"	*48.0*		*29.5*	"	*50.0-150*	*61.5*			
Matrix Spike	**0380148-MS1**		**B803142-02**							
Benzene	3/6/98	10.0	ND	10.4	ug/l	70.0-130	**104**			
Toluene	"	10.0	ND	10.6	"	70.0-130	**106**			
Ethylbenzene	"	10.0	ND	10.7	"	70.0-130	**107**			
Xylenes (total)	"	30.0	ND	32.4	"	70.0-130	**108**			
Surrogate: 4-BFB (PID)	"	*48.0*		*49.0*	"	*50.0-150*	*102*			
Matrix Spike Dup	**0380148-MSD1**		**B803142-02**							
Benzene	3/6/98	10.0	ND	11.0	ug/l	70.0-130	**110**	15.0	**5.61**	
Toluene	"	10.0	ND	10.7	"	70.0-130	**107**	15.0	**0.939**	
Ethylbenzene	"	10.0	ND	10.5	"	70.0-130	**105**	15.0	**1.89**	
Xylenes (total)	"	30.0	ND	30.9	"	70.0-130	**103**	15.0	**4.74**	
Surrogate: 4-BFB (PID)	"	*48.0*		*46.1*	"	*50.0-150*	*96.0*			

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**Refer to end of report for text of notes and definitions.*

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Notes and Definitions

#	Note
1	The reporting limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

North Creek Analytical, Inc.

Joy B Chang, Project Manager

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East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

Work Order # B803142

REPORT TO: Fluor Daniel GTI
ATTENTION: Stan Hoskins
ADDRESS: 555 S. Renton Village #700
Renton WA 98055
PHONE: (425) 228 9645 FAX:
PROJECT NAME: Sound Surburn
PROJECT NUMBER:
SAMPLED BY: ABC

INVOICE TO: Connie Hoffman
ATTENTION:
ADDRESS:
P.O. NUMBER: NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: (10) Standard | 7 | 5 | 4 | 3 | 2 | 1 | Same Day
Fuels & Hydrocarbon Analyses: (5) Standard | 3-4 | 2 | 1 | Same Day
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (Laboratory Use Only)	Analysis Request: NWPH-G	BTEX 8020	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	MW-1	3/4/98 1150	B803142-01	✓	✓		2	HCl
2.	MW-2	3/4/98 1220	-02	✓	✓		2	HCl
3.	MW-3	3/4/98 1630	-03	✓	✓		2	HCl
4.	MW-4	3/4/98 1645	-04	✓	✓		2	HCl
5.								
6.								
7.								
8.								
9.								
10.								

RELINQUISHED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY (Signature): K Barker DATE: 3/5/98
PRINT NAME: K Barker FIRM: NCA TIME: 1530

RELINQUISHED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS: a / w/ocs

FLUOR DANIEL GTI

RECEIVED

APR 0 8 1998

DEPT OF ECOLOGY

LETTER OF TRANSMITTAL

To: WDOE/LUST GROUP NW
3190 160th Avenue SE
Bellevue, WA 98008-5452

Date: April 7, 1998

Attn: _____

Re: Sound Subaru
240/250 Rainier Ave. S. Renton, WA

We are sending you: X Attached _Under separate cover, the following:
_Technical Literature _Proposal/Contract _Plans _Samples
_Specifications _Copy of letter _Change Order

Enclosure(s): One copy of "Site Assessment Report" for the above referenced site.

These are transmitted as checked below:
_As requested X For your use _For approval _For review and comment
_For bids due_____19__

Comments: _____

If enclosures received are not as listed above, notify at once.

Signed: _____ (425) 288-9645

555 South Renton Village Place, Suite 700 / Renton, WA 98055 USA (425) 228-9645 FAX (425) 228-9793