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FINAL REPORT
SITE INVESTIGATION

Fedco Automotive Components Co.
Buffalo, New York

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September 1989
Ref. No. 3042 (2)

ADVANCED ENVIRONMENTAL SERVICES
CONESTOGA-ROVERS & ASSOCIATES

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1.0 INTRODUCTION

Advanced Environmental Services, Inc. (AES) and Conestoga-Rovers and Associates (CRA) have been contracted by Fedco Automotive Components Co. (FAC) to undertake a Site Investigation at their plant in Buffalo, N.Y. A "Phase I Investigation" report, prepared in January 1986 for the New York State Department of Environmental Conservation (DEC) by Engineering-Science in conjunction with Dames and Moore, indicated several possible areas of concern and recommended that an additional site investigation be conducted. This report details the results of the Site Investigation with appropriate conclusions.

2.0 EXTENT OF WORK PERFORMED

The Site Investigation indicated two areas of concern; the possible use of PCB waste oil on the parking lot and the historical generation of wastes including degreasing solvents. In order to address the PCB concern, CRA collected six surface soil samples at the locations indicated on Figure 1. These soil samples were analyzed for the Target Compound List (TCL) volatiles and PCBs. One of these samples was taken directly adjacent to the on-Site transformer station.

As well, two shallow overburden wells were installed along the east side of the parking lot adjacent to Scajaquada Creek (see Figure 1) in order to identify any possible subsurface migration of contaminants via groundwater through the fill towards the Creek. These well locations were deemed most appropriate as this area is estimated to be hydraulically downgradient based on the site topography and the proximity of the Creek. At each monitoring well, one soil and one groundwater sample was collected and analyzed for the TCL volatiles, PCBs and petroleum products (groundwater only).

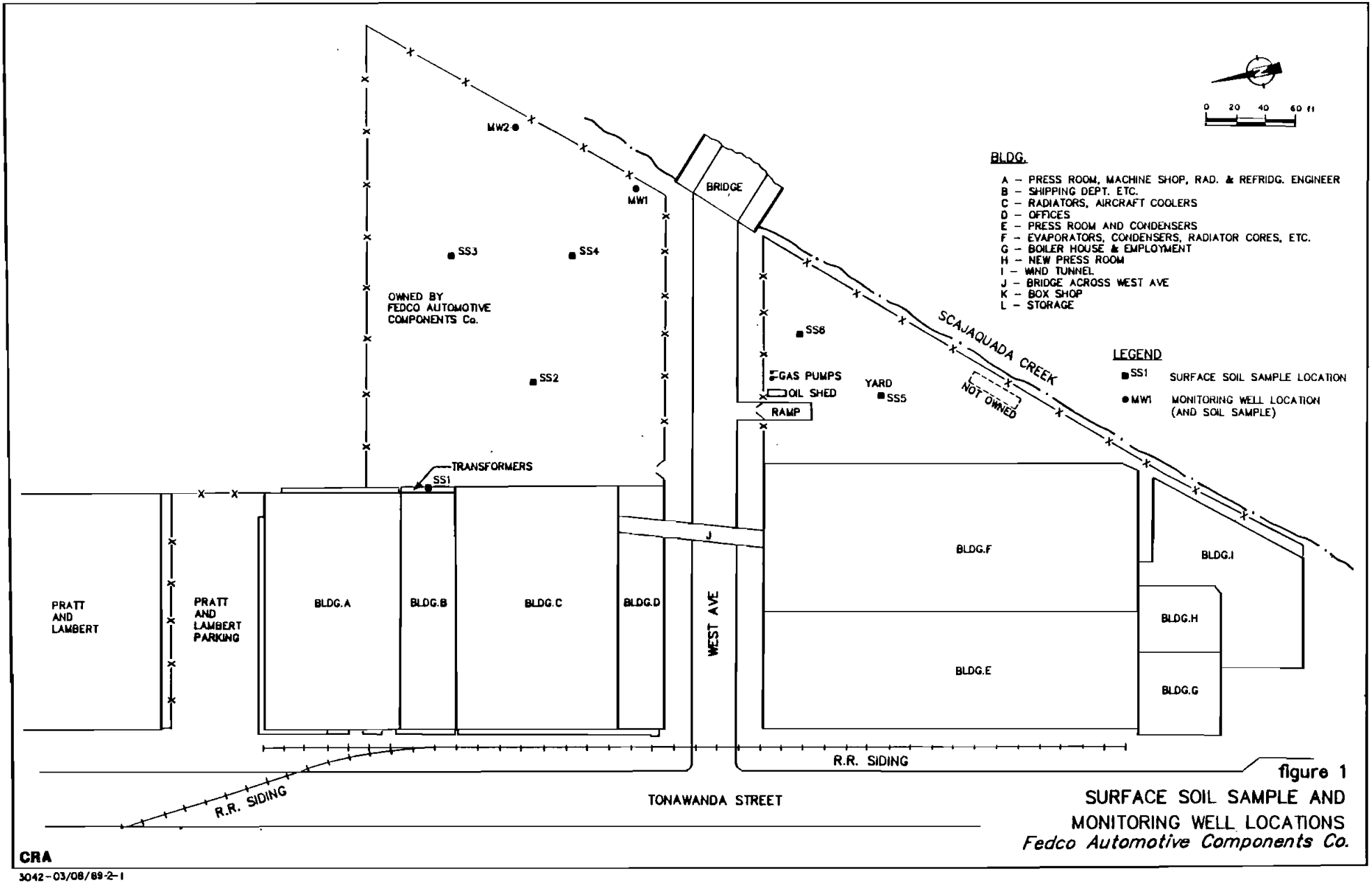


figure 1

SURFACE SOIL SAMPLE AND MONITORING WELL LOCATIONS

Fedco Automotive Components Co.

CRA

3042-03/08/89-2-1

3.0 INVESTIGATION PROTOCOLS/PROCEDURES

3.1 SURFACE SOIL SAMPLE COLLECTION

All surface soil samples were collected on August 16, 1989 using a precleaned stainless steel sampling trowel. Cleaning followed the procedures described in Section 4. Each sample consisted of a composite of two sampling locations within close proximity (approximately 10 feet) of each other. Samples were collected over the 0 to 2-inch depth. Sample containers were subsequently stored in a cooler packed with ice for transport to the analytical facility. Appropriate Chain of Custody procedures were followed throughout the sampling and shipping process.

Surface soil descriptions for the six sample locations are presented in Table 1.

3.2 MONITORING WELL INSTALLATIONS

Two groundwater monitoring wells were installed on August 16, 1989 using a backhoe (contracted from Buffalo Drilling Co.) to excavate a pit to a depth that provided approximately five feet of groundwater in the well. The bucket was precleaned following the procedures described in Section 4. Native soils were not encountered at any depth at either well location even though depths extended to 11 and 12 feet. Soil stratigraphy for each of the monitoring well locations is presented in Table 2.

TABLE 1

SURFACE SOIL SAMPLE DESCRIPTIONS

Sample	*Date*	*Time*	*Material Description*
SS1	8/16/89	08:45	black moist silty sand fill
SS2	8/16/89	09:10	black/dark brown moist gravelly sand fill
SS3	8/16/89	09:20	dark brown gravelly sand fill with trace red brick and cinders
SS4	8/16/89	09:30	dark brown gravelly sand fill with trace cinders
SS5	8/16/89	13:30	black moist gravelly sand fill
SS6	8/16/89	13:40	yellow brown moist sand fill with trace small stones.

TABLE 2

MONITORING WELL STRATIGRAPHY

Well Description	*Depth (BGS)*	*Material Description*
MW1-89	0' - 0.2'	black moist gravelly sand fill
	0.2' - 1.5'	brown dry silty sand fill, with many large stones and some bricks, cinders, concrete rubble, and lumps of silty clay
	1.5' - 6.0'	brown dry clayey silt fill, with some sand, many large stones and some concrete rubble
	6.0' - 10.0'	brown moist clayey silt fill, with some gravel, concrete and asphalt rubble, stones, rocks, and wood fragments
	10.0' - 12.0'	brown moist silty clay fill, with some stones, rocks, gravel, cinders, ash, and wood fragments

Notes:
- static water level 7.0 ft. BGS*
- bottom of well 11.3 ft. BGS
- top of well 2.9 ft. AGS**
- top of sandpack 7.3 ft. BGS
- screened interval 11.0 - 9.0 ft. BGS
- total well length 13.9 ft.

* BGS - below ground surface
** AGS - above ground surface

TABLE 2

MONITORING WELL STRATIGRAPHY

Well Description	*Depth (BGS)*	*Material Description*
MW2-89	0' - 0.3'	black moist gravelly sand fill
	0.3' - 1.5'	brown dry silty sand fill, with some gravel, some cinders, stones, rocks, concrete rubble, and trace brick material
	1.5' - 6.0'	brown dry gravelly sand fill, with trace silt, some concrete rubble, asphalt rubble, stones and rocks
	6.0' - 9.0'	brown wet sandy silt fill, with some gravel and clay lumps and trace wood fragments
	9.0' - 11.0'	same as above except soil has an iridescent sheen and diesel odor

Notes:
- static water level 6.0 ft. BGS*
- bottom of well 8.0 ft. BGS
- top of well 2.3 ft. AGS**
- top of sandpack 4.0 ft. BGS
- screened interval 7.7 - 5.7 ft. BGS
- total well length 10.0 ft.

* BGS - below ground surface
** AGS - above ground surface

Each well was installed as follows:

- a 6-inch diameter PVC temporary casing pipe of appropriate length was set to the bottom of the excavated pit.

- a two-foot long, #10 slot, 2-inch diameter PVC well screen with attached length of 2-inch ID PVC riser pipe was lowered inside the 6-inch PVC temporary casing pipe.

- the pit was then partially backfilled to a level above the planned height of sandpack.

- the annulus between the 6-inch temporary casing and the 2-inch well riser pipe was backfilled with quartzite sand over the saturated interval.

- the 6-inch temporary casing was slowly pulled out of the excavated pit allowing the soil to fall in against and over the sandpack.

- the pit was then backfilled to the ground surface with the excavated material.

- the well was finished with a PVC cap.

3.3 SOIL SAMPLE COLLECTION

Soil samples were collected on August 16, 1989 from the excavations used to install the monitoring wells using a precleaned stainless steel sampling trowel. Each sample was a composite of the soils removed by the backhoe bucket representing the entire depth of fill material. Sample containers were stored in the same manner as the surface soil samples and shipped under appropriate Chain of Custody procedures.

3.4 GROUNDWATER SAMPLE COLLECTION

After allowing several days for well stabilization, each well was developed and purged (August 23, 1989) by removal of ten well volumes of groundwater prior to sample collection. Development and purging was conducted with a peristaltic pump. Samples were also collected through the peristaltic pump except for volatile samples which were collected by a clean bottom-loading stainless steel bailer. Since the bailer would not fit down MW2-89, the peristaltic pump was also used for the collection of volatile samples at this well location only. New teflon tubing was used for purging and sampling. Groundwater samples were stored and shipped in the same manner as the soil samples.

3.5 SAMPLE ANALYSIS

All surface soil, soil and groundwater samples collected during the course of this investigation were analyzed for the following set of parameters:

- Target Compound List volatiles
- PCBs
- Petroleum products (water only)

Petroleum products was added to the list of analytical parameters after the appearance of an iridescent sheen and the observance of a diesel fuel odor in the excavated pit of MW2-89.

A sampling summary is presented on Table 3.

Analyses were performed by Advanced Environmental Services, Inc. a New York State DEC Technically Acceptable Laboratory. The analytical reports are included in Appendix A. A duplicate sample for both soil and groundwater was collected and analyzed for quality assurance and quality control (QA/QC) purposes (see Table 3). Trip blanks were also provided by AES and analyzed after each sampling event.

An assessment of the data with respect to QA/QC was performed by CRA and is included in Appendix B.

TABLE 3

SAMPLING AND ANALYSIS SUMMARY

Analysis	*Total Number of Samples Collected*	*Sample Type*
TCL Organics	8	Soil
	2	Water
PCBs	8	Soil
	2	Water
Petroleum Products	2	Water
QA/QC		
Field Duplicates	1	Soil
	1	Water
Trip Blanks	2	Water
Total	26	

4.0 EQUIPMENT CLEANING

4.1 EXCAVATION EQUIPMENT

Prior to initiation of field activities and following completion of field activities, the backhoe bucket and any other dirty excavation equipment surfaces were cleaned in the following manner:

- all soil was removed with a wire brush
- equipment was rinsed with potable water
- washed with pressurized water.

All equipment was cleaned at the well site/test pit locations. All equipment was completely cleaned (including undercarriage) and inspected by the Site Representative prior to leaving the Site.

Following completion of each well and test pit, care was taken to remove all fill type wastes from the wheels of the backhoe to ensure that they were not tracked over the Site.

4.2 SAMPLING EQUIPMENT

Prior to initiation of sampling activities and after completion of sampling at each location, all non-dedicated sampling equipment was cleaned in the following manner:

- rinsed with potable water
- rinsed with methanol (pesticide grade)
- rinsed with hexane (pesticide grade)
- rinsed with methanol (pesticide grade)
- rinsed with distilled water
- allowed to air dry
- wrapped in aluminum foil (shiny side out) for transport.

Neither methanol, hexane or distilled water rinses were recycled.

5.0 WASTE MATERIAL HANDLING

All excess excavation materials brought to the surface during the test pit/well installation program were spread around the excavation area.

All development and purge water was discharged to the adjacent ground surface. Cleaning solvents were contained separately. All spent cleaning fluids evaporated during the cleaning process, therefore disposal was not required.

6.0 PERSONAL SAFETY EQUIPMENT

All personnel actively involved with the excavation and handling of soil samples wore the following personal protective equipment:

- disposable Tyvek coverall
- rubber gloves
- rubber boots
- a Scott 64 OAF (or approved equivalent) half face respirator equipped with acid and organic vapor cartridges was available for use but not required during this program.

7.0 ANALYTICAL RESULTS

The analytical results for both the soil and groundwater samples have been reviewed and the following observations made. The full analytical results are included in Appendix A to this report.

7.1 PCBs

PCBs were observed to be present above the detection limit of 0.01 ppm in 3 of the 8 soil samples collected. The most notable of these results was 34.2 ppm of PCBs detected in surface soil sample SS1. This was to be expected as this sample was collected directly adjacent to a bank of transformers along the east side of Fedco Building B (see Figure 1). The material collected was a black moist fill approximately 1/2 to 1-inch thick overlying a concrete pad.

One other surface soil sample (SS2) also contained PCBs but at a somewhat lower concentration (4.4 ppm). None of the other surface soil samples indicated the presence of PCBs above the detection limits.

The soil sample collected from the fill removed from the test pit excavated for monitoring well MW2-89 indicated a very low concentration of PCBs (0.17 ppm). The soil sample from MW1-89 did not reveal any PCB presence in the soils adjacent to that well installation. PCBs were not detected in the groundwater samples from either of the two groundwater monitoring wells.

7.2 TCL VOLATILES

Table 4 has been prepared summarizing those TCL volatile parameters detected in the soil samples collected. The presence of trichloroethylene (15 ppm) was detected in soils collected from the excavation for MW1-89. Also, styrene and xylenes were detected at notable levels in surface soil sample SS4 (Note: styrene was not present in the duplicate sample).

Twenty-eight of the 35 TCL Volatile parameters were not detected in the soil samples. As well, three of the soil samples had no parameters detected and three other soil samples had only one parameter detected (none of these were greater than 0.5 ppm). All but two reported concentrations were below 1.0 ppm.

Table 5 presents the detected TCL volatile parameters for the groundwater samples collected. A total of eight volatile parameters were detected in the groundwater collected from the wells with the two highest concentrations at MW2-89. Vinyl chloride was detected at 350 ppb in the groundwater while trichloroethylene was detected at 310 ppb. Benzene was also present at concentrations of 60 to 76 ppb in the groundwater samples from both wells.

Twenty-seven of the 35 TCL Volatile parameters were not detected in the groundwater samples. Also, except for those concentrations

TABLE 4

TCL VOLATILES DETECTED IN SOIL SAMPLES
(Reported in ppm)

	SS1	*SS2*	*SS3*	*SS4*	*SS5*	*SS6*	*MW1*	*MW2*
Ethylbenzene(0.25)*	ND	ND	ND	0.47/ND	ND	ND	ND	ND
Methylene Chloride (0.25)	ND	ND	ND	ND/ND	ND	ND	ND	0.61
Trichlorethylene (0.25)	ND	ND	0.32	0.35/ND	ND	ND	ND	15
Toluene (0.25)	ND	ND	ND	0.46/ND	0.29	0.47	ND	ND
Styrene (0.25)	ND	ND	ND	5.6/ND	ND	ND	ND	ND
o-Xylene (0.25)	ND	ND	ND	0.84/1.13	ND	ND	ND	ND
m/p-Xylene (0.25)	ND	ND	ND	0.50/0.47	ND	ND	ND	ND

Note: All other TCL Volatile parameters were not detected in any of the samples.

* Detection Limit in ppm.

TABLE 5

TCL VOLATILES DETECTED IN GROUNDWATER SAMPLES
(Reported in ppb)

	MW1-89	*MW2-89*
Vinyl Chloride (10)*	99/100	350
Ethylbenzene (5.0)	9.1/11	ND
1,1-Dichloroethane (5.0)	41/40	39
1,1-Dichloroethylene (5.0)	ND/ND	15
1,2-Dichloroethylene (5.0)	ND/ND	12
1,1,1-Trichloroethane (5.0)	22/23	22
Trichloroethylene (5.0)	ND/ND	310
Benzene (5.0)	60/63	76

Note: All other TCL Volatile parameters were not detected in any of the samples.

* Detection Limit in ppb.

specifically mentioned in the previous paragraph, all other concentrations were reported to be 40 ppm or less.

7.3 PETROLEUM PRODUCTS

Due to the observed iridescent sheen and diesel fuel odor at MW2-89, analysis for petroleum products was also performed on the groundwater samples. None of the following petroleum products were detected in any of the groundwater samples:

- Kerosene
- Fuel Oils #2, #4, #6
- Lubricating Oils
- Gasoline.

8.0 CONCLUSIONS

Fedco has historically spread oil on the parking lot for dust suppression but has indicated that the oil used was not waste PCB transformer oil. However, the presence of low-level PCBs in surface soil sample SS2 indicates that the surface soil in that location contains PCBs. Therefore, the analytical results do not conclusively support the premise that waste PCB oil was never used at the Fedco site. But, as PCBs were detected in only one sample from the parking lot, there was apparently no widespread use of waste PCB oil. No PCBs have apparently reached the groundwater as illustrated by the samples collected from monitoring wells MW1-89 and MW2-89.

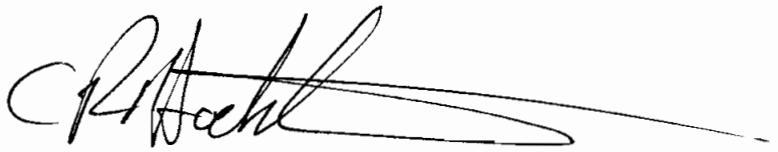
The presence of PCBs at 34.2 ppm in the immediate area of the transformers is most likely due to the historic usage of PCBs in the transformers. It should be noted that all the transformer oil has been changed over to non-PCB oil.

The area of the transformers is a fenced-off, restricted access area located at least 0.1 km from a residential/commercial area. The PCB concentration in this area is below the 50 ppm decontamination policy level mentioned in 40 CFR Part 761. The parking lot would be considered a restricted access area (other than substation) located at least 0.1 km from a residential/commercial area. The only identified PCB concentration is well below the 25 ppm, without a cap, decontamination policy level also mentioned in 40 CFR Part 761.

Some TCL volatile parameters were detected in both the soil and groundwater samples. Fedco has never manufactured any chemical compounds (although small quantities of some degreasing solvents may have been used in their manufacturing processes) and therefore the source of these chemicals is unknown. The parking lot area is covered with construction/soil fill up to at least 10 - 12 feet in depth in the area of the monitoring wells. This fill may have been from the demolition of former buildings and other imported fill in order to raise the elevation of this historically low-lying area. This fill may have contained the volatile parameters prior to relocation to this site. The presence of benzene and the observance of a diesel fuel odor could also be attributable to the fill or surrounding areas. Adjacent properties are topographically elevated and surface water drains towards the Fedco Site and therefore may contribute to the chemical presence particularly closer to the Creek where the elevation is lowest.

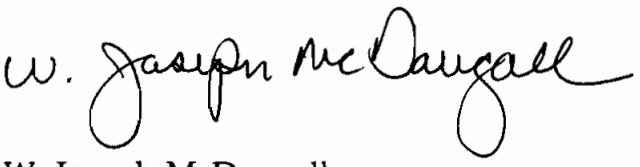
All of Which is Respectfully Submitted,

CONESTOGA-ROVERS & ASSOCIATES



C. Richard Hoekstra, P. Eng.

ADVANCED ENVIRONMENTAL SERVICES, INC.



W. Joseph McDougall

APPENDIX A

ANALYTICAL RESULTS

ADVANCED
ENVIRONMENTAL SERVICES INC.

ANALYSIS OF GROUNDWATER SAMPLES
PHASE II SITE INVESTIGATION

Report Prepared For

FEDCO AUTOMOTIVE

Donovan L. Klaaren
Project Manager

Paul T. McMahon
Technical Evaluation

September 1, 1989
AES Report EGT

COMMITMENT
TO
HONESTY - QUALITY - SERVICE

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TCL VOLATILES

Units of Measure: Micrograms/ Liter or ppb
Client: FEDCO A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- 11191 / Sample ID - MW 1 / Sample Date- GRAB WATER	11192 MW 11 GRAB WATER
Chloromethane	8240	10	BQL *	BQL
Vinyl Chloride	"	"	99	100
Chloroethane	"	"	BQL	BQL
Bromomethane	"	"	BQL	BQL
2-Chloroethyl Vinyl Ether	"	"	BQL	BQL
Ethylbenzene	"	5.0	9.1	11
Methylene Chloride	"	"	BQL	BQL
Chlorobenzene	"	"	BQL	BQL
1,1-Dichloroethylene	"	"	BQL	BQL
1,1-Dichloroethane	"	"	41	40
trans-1,2-Dichloroethylene	"	"	BQL	BQL
Chloroform	"	"	BQL	BQL
1,2-Dichloroethane	"	"	BQL	BQL
1,1,1-Trichloroethane	"	"	22	23
Carbon Tetrachloride	"	"	BQL	BQL
Bromodichloromethane	"	"	BQL	BQL
1,2-Dichloropropane	"	"	BQL	BQL
trans-1,3-Dichloropropene	"	"	BQL	BQL
Trichloroethylene	"	"	BQL	BQL
Benzene	"	"	60	63
cis-1,3-Dichloropropene	"	"	BQL	BQL
1,1,2-Trichloroethane	"	"	BQL	BQL
Bromoform	"	"	BQL	BQL

* Below Quantifiable Limits

WJJ

Wayne J. Juda
Organic Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TCL VOLATILES

Units of Measure: Micrograms/ Liter or ppb
Client: FEDCO A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- / Sample ID - / Sample Date-	11191 MW 1 GRAB WATER	11192 MW 11 GRAB WATER
1,1,2,2-Tetrachloroethylene	8240	5.0		BQL *	BQL
1,1,2,2-Tetrachloroethane	"	5.0		BQL	BQL
Toluene	"	5.0		BQL	BQL
Acetone	"	50		BQL	BQL
Carbon Disulfide	"	5.0		BQL	BQL
2-Butanone	"	50		BQL	BQL
Vinyl Acetate	"	10		BQL	BQL
2-Hexanone	"	50		BQL	BQL
4-Methyl-2-Pentanone	"	50		BQL	BQL
Styrene	"	5.0		BQL	BQL
o-Xylene	"	5.0		BQL	BQL
m/p-Xylene	"	5.0		BQL	BQL

* Below Quantifiable Limits

WJJ

Wayne J. Juda
Organic Supervisor

SEP 01 '89 11:52 AES

P.4

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TCL VOLATILES

Units of Measure: Micrograms/ Liter or ppb
Client: FEDCO A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- / Sample ID - / Sample Date-	11193 MW 2 WATER GRAB	11194 TRIP BLANK GRAB
Chloromethane	8240	10		BQL *	BQL
Vinyl Chloride	"	"		350	BQL
Chloroethane	"	"		BQL	BQL
Bromomethane	"	"		BQL	BQL
2-Chloroethyl Vinyl Ether	"	"		BQL	BQL
Ethylbenzene	"	5.0		BQL	BQL
Methylene Chloride	"	"		BQL	BQL
Chlorobenzene	"	"		BQL	BQL
1,1-Dichloroethylene	"	"		15	BQL
1,1-Dichloroethane	"	"		39	BQL
trans-1,2-Dichloroethylene	"	"		12	BQL
Chloroform	"	"		BQL	BQL
1,2-Dichloroethane	"	"		BQL	BQL
1,1,1-Trichloroethane	"	"		22	BQL
Carbon Tetrachloride	"	"		BQL	BQL
Bromodichloromethane	"	"		BQL	BQL
1,2-Dichloropropane	"	"		BQL	BQL
trans-1,3-Dichloropropene	"	"		BQL	BQL
Trichloroethylene	"	"		310	BQL
Benzene	"	"		76	BQL
cis-1,3-Dichloropropene	"	"		BQL	BQL
1,1,2-Trichloroethane	"	"		BQL	BQL
Bromoform	"	"		BQL	BQL

WJJ

* Below Quantifiable Limits

Wayne J. Juda
Organic Supervisor

SEP 01 '89 11:53 AES

P.5

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TCL VOLATILES

Units of Measure: Micrograms/ Liter or ppb
Client: FEDCO A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- / Sample ID - / Sample Date-	11193 MW 2 WATER GRAB	11194 TRIP BLANK GRAB
1,1,2,2-Tetrachloroethylene	8240	5.0		BQL *	BQL
1,1,2,2-Tetrachloroethane	"	5.0		BQL	BQL
Toluene	"	5.0		BQL	BQL
Acetone	"	50		BQL	BQL
Carbon Disulfide	"	5.0		BQL	BQL
2-Butanone	"	50		BQL	BQL
Vinyl Acetate	"	10		BQL	BQL
2-Hexanone	"	50		BQL	BQL
4-Methyl-2-Pentanone	"	50		BQL	BQL
Styrene	"	5.0		BQL	BQL
o-Xylene	"	5.0		BQL	BQL
m/p-Xylene	"	5.0		BQL	BQL

* Below Quantifiable Limits

WJJ

Wayne J. Juda
Organic Supervisor

SEP 01 '89 11:53 AES

P.5

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT
QUALITY CONTROL - ACCURACY

Type of Analysis: Matrix Spikes and E.P.A. Standards
Client: FEDCO A.E.S. Job Code: EGT

(Units: ug/l , or ppb)

Analytical Parameters	Method	Sample No.	Type	Observed Conc.	Original Conc.	Added Conc.	Percent Recovery*
Trichloroethylene	8240	11193	SPK	355	310	40	113

* % Recovery=100 x ((Observed Conc. - "background" Original Conc.)/"Spike" Added Conc.)

SEP 01 '89 11:54 AES

P.1

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: POLYCHLORINATED BIPHENYLS

Units of Measure: Micrograms/ Liter or ppb
Client: FEDCO A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits		AES lab No.-	11191	11192	11193
			Sample ID -		MW - 1 WATER	MW - 11 WATER	MW - 2 WATER
			Sample Date-		08/23/89	08/23/89	08/23/89
PCB's	EPA608	0.50			BQL *	BQL	BQL

* Below Quantifiable Limits

Wayne J. Juda
Organic Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT
QUALITY CONTROL - PRECISION

Type of Analysis: Duplicate Analysis
Units of Analysis: Micrograms/ Liter or ppb
Client: FEDCO A.E.S. Job Code:EGT

Analytical Parameters	Method	Sample No.	Original Conc.	Duplicate Conc.	Average Conc.	Range	Rel. % Difference
PCB's	EPA608	11191	BQL *	BQL	BQL	None	None

Relative Percent Difference =
Range/Average X 100
* Below Quantifiable Limits

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT
QUALITY CONTROL - ACCURACY

Type of Analysis: Matrix Spikes and E.P.A. Standards
Client: FEDCO A.E.S. Job Code: EGT

(Units: ug/l , or ppb)

Analytical Parameters	Method	Sample No.	Type	Observed Conc.	Original Conc.	Added Conc.	Percent Recovery*
PCB's	EPA608	11191	SPK	200	BQL **	250	80

* % Recovery=100 x ((Observed Conc. - "background" Original Conc.)/"Spike" Added Conc.)
** Below Quantifiable Limits

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: PETROLEUM PRODUCTS

Units of Measure: Microliters/ Liter or ppm
Client: FEDCO A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- / Sample ID - / Sample Date-	11191 MW - 1 WATER 08/23/89	11192 MW - 11 WATER 08/23/89	11193 MW - 2 WATER 08/23/89
Kerosene	310-13	0.75		BQL *	BQL	BQL
Fuel Oil #2	"	"		BQL	BQL	BQL
Fuel Oil #4	"	"		BQL	BQL	BQL
Fuel Oil #6	"	"		BQL	BQL	BQL
Lubricating Oils	"	---		None Det	None Det	None Det
Gasoline	"	---		None Det	None Det	None Det

* Below Quantifiable Limits

Wayne J. Juda
Organic Supervisor

SEP 07 '89 15:38 AES

P.2

ADVANCED ENVIRONMENTAL SERVICES, INC.
PARAMETER TRACEABILITY REPORT
GAS CHROMATOGRAPHY DEPARTMENT

AES JOB CODE EGT

ANALYST	ANALYTICAL METHOD	SAMPLE CODE	DATE OF ANALYSIS	TIME OF ANALYSIS
Wayne J. [illegible] for [illegible]	EPA 608	#1191 - #1193	August 27-28, 1989	4:00
Patricia A. Fama	310-13	1191,92	8/29/89	2130
J. Scrocchi	310-13	1193	8/30/89	850

ADVANCED ENVIRONMENTAL SERVICES, INC.
PARAMETER TRACEABILITY REPORT
GAS CHROMATOGRAPHY DEPARTMENT

AES JOB CODE E6T

ANALYST	ANALYTICAL METHOD	SAMPLE CODE	DATE OF ANALYSIS	TIME OF ANALYSIS
Jim Tuft	8240	11191 - 11194	8/30/89	1000 - 1400

APPENDIX A

CHAIN OF CUSTODY RECORDS

ADVANCED ENVIRONMENTAL SERVICES INC.
2196 LIBERTY DRIVE
NIAGARA FALLS, NY 14304
(716) 283-3120

CHAIN OF CUSTODY RECORD

JOB CODE: EGT

PROJECT NAME: FEDCO #3042

SAMPLER'S SIGNATURE: [signature]

SAMPLE NO.	SEQ. NO.	DATE	TIME	SAMPLE LOCATION	GRAB	COMP	SAMPLE TYPE	NO. OF CONTAINERS	REMARKS
		8/23/89	1410	MW-1	X		Water	2	PCB & Petro Prod
		8/23/89	1440	MW-11	X		Water	2	PCB + Petro Prod
		8/23/89	1520	MW-2	X		Water	2	PCB + Petro Prod
		8/23/89	1410	MW-1	X		Water	2	VOA's
		8/23/89	1440	MW-11	X		Water	2	VOA's
		8/23/89	1520	MW-2	X		Water	2	VOA's
				~~Field~~ Blank Trip	X		Water	2	VOA's
							TOTAL CONTAINERS	14	

	DATE	TIME	
1 RELINQUISHED BY (Sign): [signature]	8/23/89	1620	2 RECEIVED BY (Sign): [signature]
2 RELINQUISHED BY (Sign):	DATE	TIME	3 RECEIVED BY (Sign):
3 RELINQUISHED BY (Sign):	DATE	TIME	4 RECEIVED BY (Sign):
4 RELINQUISHED BY (Sign):	DATE	TIME	5 RECEIVED BY (Sign):

REMARKS:

ADVANCED
ENVIRONMENTAL SERVICES INC.

PHASE II SITE INVESTIGATION

Report Prepared For

FEDCO AUTOMOTIVE

Donovan L. Klaaren
Project Manager

Paul T. McMahon
Technical Evaluation

August 30, 1989
AES Report EGT

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TOTAL POLYCHLORINATED BIPHENYLS

Units of Measure: Milligrams/ Kilogram or ppm
Client: FEDCO AUTOMOTIVE A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits		AES Lab No.-	10970	10971
				Sample ID -	SOIL MW-1	SOIL MW-2
			Sample Date-		08/16/89	08/16/89
PCBs 1254	8080	0.01			BQL *	0.17

* Below Quantifiable Limits

Wayne J. Juda
Organic Supervisor

SEP 01 '89 11:59 AES

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ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TOTAL POLYCHLORINATED BIPHENYLS

Units of Measure: Milligrams/ Kilogram or ppm
Client: FEDCO AUTOMOTIVE A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- / Sample ID - / Sample Date-	10972 SOIL SS-1 08/16/89	10973 SOIL SS-2 08/16/89
PCBs 1254	8080	0.01		34.2	4.4

Wayne J. Juda
Organic Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TOTAL POLYCHLORINATED BIPHENYLS

Units of Measure: Milligrams/ Kilogram or ppm
Client: FEDCO AUTOMOTIVE A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.-	10974	10975
			Sample ID -	SOIL SS-3	SOIL SS-4
			Sample Date-	08/16/89	08/16/89
PCBs 1254	8080	0.01		BQL *	BQL

* Below Quantifiable Limits

Wayne J. Juda
Organic Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TOTAL POLYCHLORINATED BIPHENYLS

Units of Measure: Milligrams/ Kilogram or ppm
Client: FEDCO AUTOMOTIVES A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.-	10976	10977
			Sample ID -	SS-5 SOIL	SS-6 SOIL
			Sample Date-	08/16/89	08/16/89
PCBs 1254	8080	0.01		BQL *	BQL

* Below Quantifiable Limits

Wayne J. Juda
Organic Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TOTAL POLYCHLORINATED BIPHENYLS

Units of Measure: Milligrams/ Kilogram or ppm
Client: FEDCO AUTOMOTIVE A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.-	10978	10979
			Sample ID -	SOIL SS-41	WATER TRIP BLANK
			Sample Date-	08/16/89	08/16/89
PCBs 1254	8080	0.01		BQL *	BQL

* Below Quantifiable Limits

Wayne J. Juda
Organic Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT
QUALITY CONTROL - PRECISION

Type of Analysis: Duplicate Analysis
Units of Analysis: Milligrams/ Kilogram or ppm
Client: FEDCO AUTOMOTIVES A.E.S. Job Code:EGT

Analytical Parameters	Method	Sample No.	Original Conc.	Duplicate Conc.	Average Conc.	Range	Rel. % Difference
Total Polychlorinated Biphenyls	8080	10978	BQL *	BQL	BQL	None	None

Relative Percent Difference =
Range/Average X 100
* Below Quantifiable Limits

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TCL VOLATILES

Units of Measure: Milligrams/ Kilogram or ppm
Client: FEDCO AUTO A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- / Sample ID - / Sample Date-	10970 GRAB MW-1 SOIL 08/16/89	10971 GRAB MW-2 SOIL 08/16/89	10972 GRAB SS-1 SOIL 08/16/89
Chloromethane	8240	0.50		BQL *	BQL	BQL
Vinyl Chloride	"	"		BQL	BQL	BQL
Chloroethane	"	"		BQL	BQL	BQL
Bromomethane	"	"		BQL	BQL	BQL
2-Chloroethyl Vinyl Ether	"	"		BQL	BQL	BQL
Ethylbenzene	"	0.25		BQL	BQL	BQL
Methylene Chloride	"	"		BQL	0.61	BQL
Chlorobenzene	"	"		BQL	BQL	BQL
1,1-Dichloroethylene	"	"		BQL	BQL	BQL
1,1-Dichloroethane	"	"		BQL	BQL	BQL
trans-1,2-Dichloroethylene	"	"		BQL	BQL	BQL
Chloroform	"	"		BQL	BQL	BQL
1,2-Dichloroethane	"	"		BQL	BQL	BQL
1,1,1-Trichloroethane	"	"		BQL	BQL	BQL
Carbon Tetrachloride	"	"		BQL	BQL	BQL
Bromodichloromethane	"	"		BQL	BQL	BQL
1,2-Dichloropropane	"	"		BQL	BQL	BQL
trans-1,3-Dichloropropene	"	"		BQL	BQL	BQL
Trichloroethylene	"	"		BQL	15	BQL
Benzene	"	"		BQL	BQL	BQL
cis-1,3-Dichloropropene	"	"		BQL	BQL	BQL
1,1,2-Trichloroethane	"	"		BQL	BQL	BQL
Dibromochloromethane	"	"		BQL	BQL	BQL
Bromoform	"	"		BQL	BQL	BQL

* Below Quantifiable Limits

Wayne J. Juda
Organic Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TCL VOLATILES

Units of Measure: Milligrams/ Kilogram or ppm
Client: FEDCO AUTO A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- / Sample ID - / Sample Date-	10970 GRAB MW-1 SOIL 08/16/89	10971 GRAB MW-2 SOIL 08/16/89	10972 GRAB SS-1 SOIL 08/16/89
1,1,2,2-Tetrachloroethylen	8240	0.25		BQL *	BQL	BQL
1,1,2,2-Tetrachloroethane	"	"		BQL	BQL	BQL
Toluene	"	"		BQL	BQL	BQL
Acetone	"	2.5		BQL	BQL	BQL
Carbon Disulfide	"	0.25		BQL	BQL	BQL
2-Butanone	"	2.5		BQL	BQL	BQL
Vinyl Acetate	"	0.50		BQL	BQL	BQL
2-Hexanone	"	2.5		BQL	BQL	BQL
4-Methyl-2-Pentanone	"	"		BQL	BQL	BQL
Styrene	"	0.25		BQL	BQL	BQL
o-Xylene	"	"		BQL	BQL	BQL
m/p-Xylene	"	"		BQL	BQL	BQL

* Below Quantifiable Limits

Wayne J. Juda
Organic Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TCL VOLATILES

Units of Measure: Milligrams/ Kilogram or ppm
Client: FEDCO AUTO A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.-	10973	10974
			Sample ID -	GRAB SS-2 SOIL	GRAB SS-3 SOIL
			Sample Date-	08/16/89	08/16/89
Chloromethane	8240	0.50		BQL *	BQL
Vinyl Chloride	"	"		BQL	BQL
Chloroethane	"	"		BQL	BQL
Bromomethane	"	"		BQL	BQL
2-Chloroethyl Vinyl Ether	"	"		BQL	BQL
Ethylbenzene	"	0.25		BQL	BQL
Methylene Chloride	"	"		BQL	BQL
Chlorobenzene	"	"		BQL	BQL
1,1-Dichloroethylene	"	"		BQL	BQL
1,1-Dichloroethane	"	"		BQL	BQL
trans-1,2-Dichloroethylene	"	"		BQL	BQL
Chloroform	"	"		BQL	BQL
1,2-Dichloroethane	"	"		BQL	BQL
1,1,1-Trichloroethane	"	"		BQL	BQL
Carbon Tetrachloride	"	"		BQL	BQL
Bromodichloromethane	"	"		BQL	BQL
1,2-Dichloropropane	"	"		BQL	BQL
trans-1,3-Dichloropropene	"	"		BQL	BQL
Trichloroethylene	"	"		BQL	0.32
Benzene	"	"		BQL	BQL
cis-1,3-Dichloropropene	"	"		BQL	BQL
1,1,2-Trichloroethane	"	"		BQL	BQL
Dibromochloromethane	"	"		BQL	BQL
Bromoform	"	"		BQL	BQL

* Below Quantifiable Limits

Wayne J. Juda
Organic Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TCL VOLATILES

Units of Measure: Milligrams/ Kilogram or ppm
Client: FEDCO AUTO A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- / Sample ID - / Sample Date-	10973 GRAB SS-2 SOIL 08/16/89	10974 GRAB SS-3 SOIL 08/16/89
1,1,2,2-Tetrachloroethylen	8240	0.25		BQL *	BQL
1,1,2,2-Tetrachloroethane	"	"		BQL	BQL
Toluene	"	"		BQL	BQL
Acetone	"	2.5		BQL	BQL
Carbon Disulfide	"	0.25		BQL	BQL
2-Butanone	"	2.5		BQL	BQL
Vinyl Acetate	"	0.50		BQL	BQL
2-Hexanone	"	2.5		BQL	BQL
4-Methyl-2-Pentanone	"	"		BQL	BQL
Styrene	"	0.25		BQL	BQL
o-Xylene	"	"		BQL	BQL
m/p-Xylene	"	"		BQL	BQL

* Below Quantifiable Limits

Wayne J. Juda
Organic Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TCL VOLATILES

Units of Measure: Milligrams/ Kilogram or ppm
Client: FEDCO AUTO A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- / Sample ID - / Sample Date-	10975 GRAB SS-4 SOIL 08/16/89	10976 GRAB SS-5 SOIL 08/16/89
Chloromethane	8240	0.50		BQL *	BQL
Vinyl Chloride	"	"		BQL	BQL
Chloroethane	"	"		BQL	BQL
Bromomethane	"	"		BQL	BQL
2-Chloroethyl Vinyl Ether	"	"		BQL	BQL
Ethylbenzene	"	0.25		0.47	BQL
Methylene Chloride	"	"		BQL	BQL
Chlorobenzene	"	"		BQL	BQL
1,1-Dichloroethylene	"	"		BQL	BQL
1,1-Dichloroethane	"	"		BQL	BQL
trans-1,2-Dichloroethylene	"	"		BQL	BQL
Chloroform	"	"		BQL	BQL
1,2-Dichloroethane	"	"		BQL	BQL
1,1,1-Trichloroethane	"	"		BQL	BQL
Carbon Tetrachloride	"	"		BQL	BQL
Bromodichloromethane	"	"		BQL	BQL
1,2-Dichloropropane	"	"		BQL	BQL
trans-1,3-Dichloropropene	"	"		BQL	BQL
Trichloroethylene	"	"		0.35	BQL
Benzene	"	"		BQL	BQL
cis-1,3-Dichloropropene	"	"		BQL	BQL
1,1,2-Trichloroethane	"	"		BQL	BQL
Dibromochloromethane	"	"		BQL	BQL
Bromoform	"	"		BQL	BQL

* Below Quantifiable Limits

Wayne J. Juda
Organic Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TCL VOLATILES

Units of Measure: Milligrams/ Kilogram or ppm
Client: FEDCO AUTO A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.-	10975	10976
			Sample ID -	GRAB SS-4 SOIL	GRAB SS-5 SOIL
			Sample Date-	08/16/89	08/16/89
1,1,2,2-Tetrachloroethylen	8240	0.25		BQL *	BQL
1,1,2,2-Tetrachloroethane	"	"		BQL	BQL
Toluene	"	"		0.46	0.29
Acetone	"	2.5		BQL	BQL
Carbon Disulfide	"	0.25		BQL	BQL
2-Butanone	"	2.5		BQL	BQL
Vinyl Acetate	"	0.50		BQL	BQL
2-Hexanone	"	2.5		BQL	BQL
4-Methyl-2-Pentanone	"	"		BQL	BQL
Styrene	"	0.25		5.6	BQL
o-Xylene	"	"		0.84	BQL
m/p-Xylene	"	"		0.50	BQL

* Below Quantifiable Limits

Wayne J. Juda
Organic Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TCL VOLATILES

Units of Measure: Milligrams/ Kilogram or ppm
Client: FEDCO AUTO A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- / Sample ID - / Sample Date-	10977 GRAB SS-6 SOIL 08/16/89	10978 GRAB SS-41 SOIL 08/16/89
Chloromethane	8240	0.50		BQL *	BQL
Vinyl Chloride	"	"		BQL	BQL
Chloroethane	"	"		BQL	BQL
Bromomethane	"	"		BQL	BQL
2-Chloroethyl Vinyl Ether	"	"		BQL	BQL
Ethylbenzene	"	0.25		BQL	BQL
Methylene Chloride	"	"		BQL	BQL
Chlorobenzene	"	"		BQL	BQL
1,1-Dichloroethylene	"	"		BQL	BQL
1,1-Dichloroethane	"	"		BQL	BQL
trans-1,2-Dichloroethylene	"	"		BQL	BQL
Chloroform	"	"		BQL	BQL
1,2-Dichloroethane	"	"		BQL	BQL
1,1,1-Trichloroethane	"	"		BQL	BQL
Carbon Tetrachloride	"	"		BQL	BQL
Bromodichloromethane	"	"		BQL	BQL
1,2-Dichloropropane	"	"		BQL	BQL
trans-1,3-Dichloropropene	"	"		BQL	BQL
Trichloroethylene	"	"		BQL	BQL
Benzene	"	"		BQL	BQL
cis-1,3-Dichloropropene	"	"		BQL	BQL
1,1,2-Trichloroethane	"	"		BQL	BQL
Dibromochloromethane	"	"		BQL	BQL
Bromoform	"	"		BQL	BQL

* Below Quantifiable Limits

Wayne J. Juda
Organic Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TCL VOLATILES

Units of Measure: Milligrams/ Kilogram or ppm
Client: FEDCO AUTO A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.-	10977	10978
			Sample ID -	GRAB SS-6 SOIL	GRAB SS-41 SOIL
			Sample Date-	08/16/89	08/16/89
1,1,2,2-Tetrachloroethylen	8240	0.25		BQL *	BQL
1,1,2,2-Tetrachloroethane	"	"		BQL	BQL
Toluene	"	"		0.47	BQL
Acetone	"	2.5		BQL	BQL
Carbon Disulfide	"	0.25		BQL	BQL
2-Butanone	"	2.5		BQL	BQL
Vinyl Acetate	"	0.50		BQL	BQL
2-Hexanone	"	2.5		BQL	BQL
4-Methyl-2-Pentanone	"	"		BQL	BQL
Styrene	"	0.25		BQL	BQL
o-Xylene	"	"		BQL	1.13
m/p-Xylene	"	"		BQL	0.47

* Below Quantifiable Limits

Wayne J. Juda
Organic Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TCL VOLATILES

Units of Measure: Milligrams/ Kilogram or ppm
Client: FEDCO AUTO A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- 10979 Sample ID - TRIP BLANK Sample Date-
Chloromethane	624	10	BQL *
Vinyl Chloride	"	"	BQL
Chloroethane	"	"	BQL
Bromomethane	"	"	BQL
2-Chloroethyl Vinyl Ether	"	"	BQL
Ethylbenzene	"	5.0	BQL
Methylene Chloride	"	"	BQL
Chlorobenzene	"	"	BQL
1,1-Dichloroethylene	"	"	BQL
1,1-Dichloroethane	"	"	BQL
trans-1,2-Dichloroethylene	"	"	BQL
Chloroform	"	"	BQL
1,2-Dichloroethane	"	"	BQL
1,1,1-Trichloroethane	"	"	BQL
Carbon Tetrachloride	"	"	BQL
Bromodichloromethane	"	"	BQL
1,2-Dichloropropane	"	"	BQL
trans-1,3-Dichloropropene	"	"	BQL
Trichloroethylene	"	"	BQL
Benzene	"	"	BQL
cis-1,3-Dichloropropene	"	"	BQL
1,1,2-Trichloroethane	"	"	BQL
Dibromochloromethane	"	"	BQL
Bromoform	"	"	BQL

* Below Quantifiable Limits

Wayne J. Juda
Organic Supervisor

SEP 01 '89 12:08 AES

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ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT

Type of Analysis: TCL VOLATILES

Units of Measure: Milligrams/ Kilogram or ppm
Client: FEDCO AUTO A.E.S. Job Code EGT

Analytical Parameter(s)	Method No.	Quant. Limits	AES Lab No.- 10979 Sample ID - TRIP BLANK Sample Date-
1,1,2,2-Tetrachloroethylen	624	5.0	BQL *
1,1,2,2-Tetrachloroethane	"	"	BQL
Toluene	"	"	BQL
Aceton	"	50	BQL
Carbon Disulfide	"	5.0	BQL
2-Butanone	"	50	BQL
Vinyl Acetate	"	10	BQL
2-Hexanone	"	50	BQL
4-Methyl-2-Pentanone	"	50	BQL
Styrene	"	5.0	BQL
o-Xylene	"	"	BQL
m/p-Xylene	"	"	BQL

* Below Quantifiable Limits

Wayne J. Juda
Organic Supervisor

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT
QUALITY CONTROL - PRECISION

Type of Analysis: Duplicate Analysis
Units of Analysis: Milligrams/ Kilogram or ppm
Client: FECO AUTO A.E.S. Job Code:EGT

Analytical Parameters	Method	Sample No.	Original Conc.	Duplicate Conc.	Average Conc.	Range	Rel. % Difference
Chloromethane	8240	10970	<0.50	<0.50	<0.50	None	None
Vinyl Chloride	"	"	"	"	"	"	"
Chlororethane	"	"	"	"	"	"	"
Bromomethane	"	"	"	"	"	"	"
2-Chloroethylvinylether	"	"	"	"	"	"	"
Ethylbenzene	"	"	<0.25	<0.25	<0.25	None	None
Methylene Chloride	"	"	"	"	"	"	"
Chlorobenzene	"	"	"	"	"	"	"
1,1-Dichloroethylene	"	"	"	"	"	"	"
1,1-Dichloroethane	"	"	"	"	"	"	"
trans-1,2-Dichloroethylene	"	"	"	"	"	"	"
Chloroform	"	"	"	"	"	"	"
1,2-Dichloroethane	"	"	"	"	"	"	"
1,1-Trichloroethane	"	"	"	"	"	"	"
Carbon Tetrachloride	"	"	"	"	"	"	"
Bromodichloromethane	"	"	"	"	"	"	"
1,2-Dichloropropane	"	"	"	"	"	"	"
trans-1,3-Dichloropropane	"	"	"	"	"	"	"
Trichloroethylene	"	"	"	"	"	"	"
Benzene	"	"	"	"	"	"	"
cis-1,3-Dichloropropene	"	"	"	"	"	"	"
1,1,2-Trichloroethane	"	"	"	"	"	"	"
Dibromochloromethane	"	"	"	"	"	"	"
Bromoform	"	"	"	"	"	"	"

Relative Percent Difference =
Range/Average X 100

SEP 01 '89 12:09 AES

ADVANCED ENVIRONMENTAL SERVICES, INC.
LABORATORY REPORT
QUALITY CONTROL - PRECISION

Type of Analysis: Duplicate Analysis
Units of Analysis: Milligrams/ Kilogram or ppm
Client: FECO AUTO A.E.S. Job Code:EGT

Analytical Parameters	Method	Sample No.	Original Conc.	Duplicate Conc.	Average Conc.	Range	Rel. % Difference
1,1,2,2-Tetrachloroethylene	8240	10970	<0.25	<0.25	<0.25	None	None
1,1,2,2-Tetrachloroethane	"	"	"	"	"	"	"
Toluene	"	"	"	"	"	"	"
Trichlorofluromethane	"	"	"	"	"	"	"
Acetone	"	"	<2.5	<2.5	<2.5	"	"
Carbon Disulfide	"	"	<0.25	<0.25	<0.25	"	"
2-Butanone	"	"	<2.5	<2.5	<2.5	"	"
Vinyl Acetate	"	"	<0.25	<0.25	<0.25	"	"
2-Hexanone	"	"	<2.5	<2.5	<2.5	"	"
4-Methyl-2-Pentanone	"	"	<2.5	<2.5	<2.5	"	"
Styrene	"	"	<0.25	<0.25	<0.25	"	"
Xylenes (total)	"	"	<0.25	<0.25	<0.25	"	"

Relative Percent Difference =
Range/Average X 100

ADVANCED ENVIRONMENTAL SERVICES, INC.
PARAMETER TRACEABILITY REPORT
GAS CHROMATOGRAPHY DEPARTMENT

AES JOB CODE EGT

ANALYST	ANALYTICAL METHOD	SAMPLE CODE	DATE OF ANALYSIS	TIME OF ANALYSIS
Wayne Fuller for EW	8080	10930-10979	August 21-24, 1989	15:00

ADVANCED ENVIRONMENTAL SERVICES, INC.
PARAMETER TRACEABILITY REPORT
GAS CHROMATOGRAPHY DEPARTMENT

AES JOB CODE EGT

ANALYST	ANALYTICAL METHOD	SAMPLE CODE	DATE OF ANALYSIS	TIME OF ANALYSIS
[signature]	8240	10971, 10979	8/21/89	1300 - 1500
[signature]	8240	10970, 10972-10975	8/22/89	800 - 1500
Patricia Fama	8240	10976 - 10978	8/22/89	1600 - 1830

APPENDIX A

CHAIN OF CUSTODY RECORDS

CRA Consulting Engineers
CONESTOGA-ROVERS & ASSOCIATES
651 Colby Drive, Waterloo, Ontario Canada N2V 1C2

SHIPPED TO (Laboratory name): AES

CHAIN OF CUSTODY RECORD

PROJECT Nº: 3042

PROJECT NAME: Fedco

SAMPLER'S SIGNATURE (SIGN): [signature]

SEQ. Nº	SAMPLE Nº	DATE	TIME	SAMPLE LOCATION	SAMPLE TYPE	Nº OF CONTAINERS	REMARKS
	MW-1	8/16/89	1130		Soil	2	PCB + Vol
	MW-2	8/16/89	1355		Soil	2	PCB + Vol
	SS-1	8/16/89	0845		Soil	2	PCB + Vol
	SS-2	8/16/89	0910		Soil	2	PCB + Vol
	SS-3	8/16/89	0920		Soil	2	PCB + Vol
	SS-4	8/16/89	0930		Soil	2	PCB + Vol
	SS-5	8/16/89	1330		Soil	2	PCB + Vol
	SS-6	8/16/89	1340		Soil	2	PCB + Vol
	SS-4	8/16/89	0930		Soil	2	PCB + Vol
	Trip Blank				Water	2	PCB + Vol

NOTE: Please homogenize all samples as they are composite samples

TOTAL NUMBER OF CONTAINERS: 20

ANTICIPATED CHEMICAL HAZARDS:

RELINQUISHED BY	DATE/TIME	RECEIVED BY
1 [signature] (SIGN)	8/16/89 1535	2 [signature] (SIGN)
2 (SIGN)		3 (SIGN)
3 (SIGN)		4 (SIGN)

ADDITIONAL SIGNATURE SHEET REQUIRED ☐

METHOD OF SHIPMENT:	SHIPPED BY:	RECEIVED FOR LABORATORY BY: (SIGN)	DATE/TIME
CONDITION OF SEAL UPON RECEIPT: GENERAL CONDITION OF COOLER:		COOLER OPENED BY: (SIGN)	DATE/TIME

WHITE - CRA OFFICE COPY
YELLOW - RECEIVING LABORATORY COPY
PINK - CRA LABORATORY COPY
GOLDEN ROD - SHIPPERS

Nº 4465

APPENDIX B

QA/QC ASSESSMENT

M E M O

To: Rick Hoekstra

From: Tony Misercola/cdd

Reference No: 3042

Date: September 6, 1989

Re: Analytical Data - Validation
Fedco Automotive Component Co.
Site Investigation

The following memo summarizes an analytical data assessment and validation of results obtained by Advanced Environmental Services (AES), for soil and groundwater samples collected at the Fedco Site on August 16, 1989 and August 23, 1989, respectively. Based on a review of this data set and related quality control criteria, the following are noted:

1) **Holding Times**

Based upon the criteria outlined in the relevant methods, all samples were analyzed within their maximum holding time limits. Thus, no qualifications of the data was required on this basis.

2) **Matrix Spike (MS) Analyses**

Analysis of matrix, spike samples is for the purpose of assessing the accuracy of the analytical methodology on various matrices. Based on the matrix spike recovery data reported, acceptable analytical accuracy was attained for VOC and PCB spike analyses.

3) **Laboratory Duplicate Analyses**

The precision of an analytical method on various matrices is determined by the reproducibility of the data. Laboratory duplicate analyses were performed on samples submitted for VOC and PCB determinations, the results of which indicated satisfactory reproducibility of the analytical data.

4) **Field QA/QC**

The field QA/QC samples included trip blanks and duplicate samples.

The trip blank samples submitted for VOC and PCB determinations, yielded non-detectable concentrations of the analytes of interest. Therefore, no contamination of the sample due to sample transport and/or ambient site conditions were noted. On this basis, no qualification of the data was required.

The results of the groundwater field duplicate samples (MW-1 and MW-11) submitted for VOC, petroleum product and PCB determinations were reproducible, indicating satisfactory precision of the sampling protocols.

A soil field duplicate of SS-4 was collected and labelled as SS-41. The sample from SS-4 submitted for VOC analysis yielded analytical detected results for ethylbenzene, trichloroethylene, toluene and styrene while its duplicate (SS-41) yielded non-detectable concentrations of these compounds. The discrepancies in these data may be attributed to the heterogeneity in the sample matrix. Organic analysis are highly dependent on the sample matrix. Small changes in the matrix may have a substantial effect on the reproducibility of the analytical data.

5) **Summary**

Based on assessment noted in the foregoing, it is recommended that the data produced by Advanced Environmental Services (AES) be accepted as accurate and complete with no qualifications of the data.

c.c. Jim Kay
Bruce Clegg