REPORT

Description of Current Conditions for Areas South of Leith Street

Volume IV of IV

General Motors Corporation
NAO-Flint Operations
Flint, Michigan

May 30, 2000

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

TECHNICAL REPORT

Description of Current Conditions for Areas South of Leith Street

Volume IV of IV

General Motors Corporation
NAO-Flint Operations
Flint, Michigan

May 30, 2000

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

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Syracuse, New York, 13214-0066
(315) 446-9120

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Appendices

Appendix L - Supplemental Information - Building 40 Basement Tunnel

BUILDING 40 - PCB SAMPLING

ANALYTICAL RESULTS

I. INTRODUCTION/PURPOSE

There were two rounds of sampling for the presence of PCB's in Building 40. The first round of sampling on August 30, 1991, concentrated on collecting samples from a flooded sub-basement on the east side of Building 40 and floor areas. The second round of sampling included collecting samples from sumps and elevator pits, as part of the Building area PCB sampling survey in mid-September 1991.

II. SAMPLING PROTOCOL

In the flooded area of the sub-basement, due to groundwater infiltration, samples were collected of the top layer that had an oily sheen, of the middle layer that appeared to be clear water, and the bottom layer that had some sludge.

Liquid samples were collected using sterile disposable bailers while scrape samples were collected directly from the floor and elevator pit areas.

The following summarizes the sampling locations and the analytical laboratory results for the six samples collected from the basement area of Building 40 during the first round of sampling and the results obtained from the second round of sampling.

III. SAMPLING LOCATIONS

For the first round of sampling, the six sampling locations area are as follows:

(1) LOCATION: DEPRESSION CORNER 2SE
(There is an uneven depression in the southeast corner near the door for the loading dock.)

(2) LOCATION: WATER STAIRS
The oil/water mix sample was collected at the top of the stairs leading from the sub-basement to the basement of Building 40; therefore, it is more representative of the oil layer floating on the top of the water.

(3) LOCATION: 1 WATER WEST
This sample was collected from the top of the stairwell leading from the sub-basement to the basement of Building 20.

(4) LOCATION: WHRBI
This is water collected from the manhole at the foot of the stairs to the basement from the door on the east wall of Building 40.

(5) LOCATION: 3 EAST

This sample is a composite of scrapings collected from the floor near the east wall in the basement of Building 40.

(6) LOCATION: 4 WEST
This sample is a composite of scrapings collected from the floor near the west wall in the basement of Building 40.

IV. ANALYTICAL LABORATORY RESULTS

A. August 1991 Sampling Effort

The laboratory analytical results from the first round of sampling in the flooded east basement stairwell area of Building 40 are compiled in Attachment 1. A summary of the results is as follows:

(1) LOCATION: DEPRESSION CORNER 2SE

TYPE OF ANALYSIS: OIL
There was more oil than water in this sample -- anything other than water is reported in mg/kg units as required by EPA SW-846.

TOTAL PCB CONCENTRATION: 80 mg/kg

(2) LOCATION: WATER STAIRS

TYPE OF ANALYSIS: OIL
There was an oil/water mix. Because there was more oil than water in this sample, it was analyzed with oil as the matrix.

TOTAL PCB CONCENTRATION: 25 mg/kg

(3) LOCATION: 1 WATER WEST

TYPE OF ANALYSIS: WATER
This water sample was collected from the water beneath the floating oil layer at the top of the stairs leading from the sub-basement to the basement of Building 40.

TOTAL PCB CONCENTRATION: 23 ug/l

(4) LOCATION: WHRBI

TYPE OF ANALYSIS: WATER
This water sample was collected from a manhole located at the foot of the stairs to the basement from the door on the east wall of Building 40.

TOTAL PCB CONCENTRATION: < 2.0 ug/l

(5) LOCATION: 3 EAST

TYPE OF ANALYSIS: OIL SLUDGE ANALYSIS
This sample is a composite of scrapings collected from the floor near the east wall in the basement of Building 40.

TOTAL PCB CONCENTRATION: 75 mg/kg

(6) LOCATION: 4 WEST

TYPE OF ANALYSIS: OIL SLUDGE ANALYSIS
This sample is a composite of scrapings collected from the floor near the west wall in the basement of Building 40.

TOTAL PCB CONCENTRATION: 33 mg/kg.

V. CONCLUSION

From the analytical results of the samples of this first round of sampling, the depression area near the large overhead door on the southeast side of Building 40, the east floor area, and to some extent, the west floor area are of concern. In addition, the water with a floating oil layer in the basement stairwell of Building 40 will also need to be addressed.

A workplan, Attachment 2, to remediate the PCB contamination in the basement of Building 40 has been developed. In addition, a Health and Safety Plan, Attachment 3, for implementing the workplan has also been developed.

ATTACHMENT 1

LABORATORY ANALYTICAL RESULTS

BUILDING 40

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: OIL ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:20 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: JB, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO:

	DEPRESSION CORNER 2SE	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72479		
PCB 1016,1232,1242,1248	<25	varies	mg/kg
PCB 1254,1260	80	varies	mg/kg
TOTAL PCB'S	80	---	mg/kg

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: OIL ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:10 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: JB, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	WATER STAIRS	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72480		
PCB 1016,1232,1242,1248	<1.0	varies	mg/kg
PCB 1254,1260	25	varies	mg/kg
OTAL PCB'S	25	---	mg/kg

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: WATER ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:40 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: JB, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	1 WATER WEST	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72481		
PCB 1016,1232,1242,1248	<11	11	ug/l
PCB 1254,1260	23	1.0	ug/l
TOTAL PCB'S	23	—	ug/l

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: WATER ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:30 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: MK, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	WHRBI	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72482		
PCB 1016,1232,1242,1248	<1.0	1.0	ug/l
PCB 1254,1260	<1.0	1.0	ug/l
TOTAL PCB'S	<2.0	---	ug/l

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: OIL ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:30 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: MK, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	3 EAST	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72483		
PCB 1016,1232,1242,1248	<50	varies	mg/kg
PCB 1254,1260	75	varies	mg/kg
TOTAL PCB'S	75	---	mg/kg

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: OIL ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:50 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: MK, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	4 WEST	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72484		
PCB 1016,1232,1242,1248	<5.0	varies	mg/kg
PCB 1254,1260	33	varies	mg/kg
TOTAL PCB'S	33	---	mg/kg

ATTACHMENT 2

REMEDIATION WORKPLAN

BUILDING 40

BUILDINGS 40/16 - TUNNEL & BASEMENT

Prepared For:

GENERAL MOTORS - BOC FLINT OPERATIONS
902 East Hamilton Avenue
Flint, Michigan 48550-8503

Prepared By:

AVENDT ENVIRONMENTAL
432 North Saginaw Street
Fourth Floor, Northbank Center
Flint, Michigan 48502

December, 1991

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HISTORY
GENERAL MOTORS - BOC FLINT OPERATIONS
BUILDINGS 40/16 - TUNNEL & BASEMENT

Original construction of buildings 40 and 6 began in the early 1920's. The existing tunnel was part of this original construction. Building 6 has undergone several building modifications and after the extension of the east wall in 1944, it became identified as building 16. Throughout the years, building 40 has been utilized for a variety of operations. These include building transmissions, tire and wheel welding, bumper assembly, storage of maintenance parts and bumper plating.

Currently building 40 first floor is used for wheel and tire assembly, and the upper floors are used for maintenance storage. At one time, the basement and tunnel were functional in the everyday operations of the building. Presently, however, the basement and tunnel are in an unused area of the building and isolated from the work force. Information regarding changes to the tunnel during building renovations is not available. Therefore, the length of the tunnel, its condition and its contents are unknown at this time. The stairway leading to the tunnel is flooded to the level of the basement floor. This water is assumed to be ground water. Though this is a large volume of water, it is believed to be contained since no outlet for the water is shown on the drawings or found in the field.

On 7/23/91, a sump in the basement of building 40 was sampled by GMPT-Flint, Materials Engineering. Results received on 8/07/91 indicated PCB contamination. WW Science & Engineering collected additional samples in the basement and tunnel area of building 40 on 8/30/91. Buick City was notified on 10/17/91 that these results also indicated PCB contamination in these areas. Sampling results are shown in Appendix A.

WORK PLAN
GENERAL MOTORS - BOC FLINT OPERATIONS
BUILDINGS 40/16 - TUNNEL & BASEMENT

The general work plan for this area began to develop in early November 1991, and Avendt Environmental (Avendt) was contracted to assist. At this early stage of discovery the only information available were the results from the WW Engineering & Science samples, the original building drawings and an existing plant layout. Phase I was developed to include the following items:

- Discovery
- Determination of safety & training requirements
- Site Safety Plan
- Preparing a work area
- Remediation of the basement area
- Investigation of the tunnel
- Sampling in and around the tunnel
- Development of a remediation plan for the tunnel
- Prepare Phase I - Final Report

Discovery

Before any plans or determinations can be made, additional information on the site is required. The tunnel must be located on the existing site layout drawing (Figure 1), additional samples must be taken to recheck PCB concentrations and determine if solvents or metals are present (results are shown in Appendix B); resample if necessary and determine if there are any other access or sampling points for the tunnel other than the stairway in building 40. COMPLETED 12/18/91

Determination of the safety & training requirements

Prior to completion of the Site Safety Plan, a summary of the OSHA training requirements and the necessary personal protective equipment will be prepared. This will be based on the nature of the potentially hazardous substances in the basement area, condition of the atmosphere and the materials to be used in the clean-up. These requirements will be used to ascertain availability of an appropriate work crew for subsequent activities.

Site Safety Plan

A site safety plan will be developed to include the site history, site entry requirements and control procedures, personal protective equipment, decontamination of equipment and personnel and emergency response. This must be done for

all task levels from collecting samples to remediation of the stairway or basement.

Preparing the work area

Prior to beginning work, areas must be secured in preparation of establishing safety zones for removal of personal protective equipment, decontamination and equipment storage. This will also include the placement of auxiliary equipment required to continue work in the basement area (e.g., portable lighting, air monitoring equipment, etc.).

Remediation of the basement area

A remediation plan must be developed to remove the oil and sludge from the basement area and verify clean. Remediation of the basement will permit tunnel investigation work to begin.

Investigation of the tunnel

A diving team will be used to define the extent of flooding, contents of the tunnel and the scope of contamination. Among the tasks to be performed by the diver are video taping and sampling throughout the length of the tunnel, checking for cracks or breaks in the tunnel walls and setting-up a means for future sampling (eg. securing teflon tubing to specific areas along the length of the tunnel). During this investigation the basement can be used as part of a staging area for equipment and personal protective equipment.

Sampling in and around the tunnel

Soil borings will be drilled in the area between the two buildings, both in the soil above the tunnel and on either side of it. If findings indicate additional borings are necessary along the length of the tunnel, borings will be drilled through the manufacturing floor as required. If additional samples are required of the tunnel contents, samples will be pumped through the teflon tubing left by the diver.

Development of a remediation plan for the tunnel

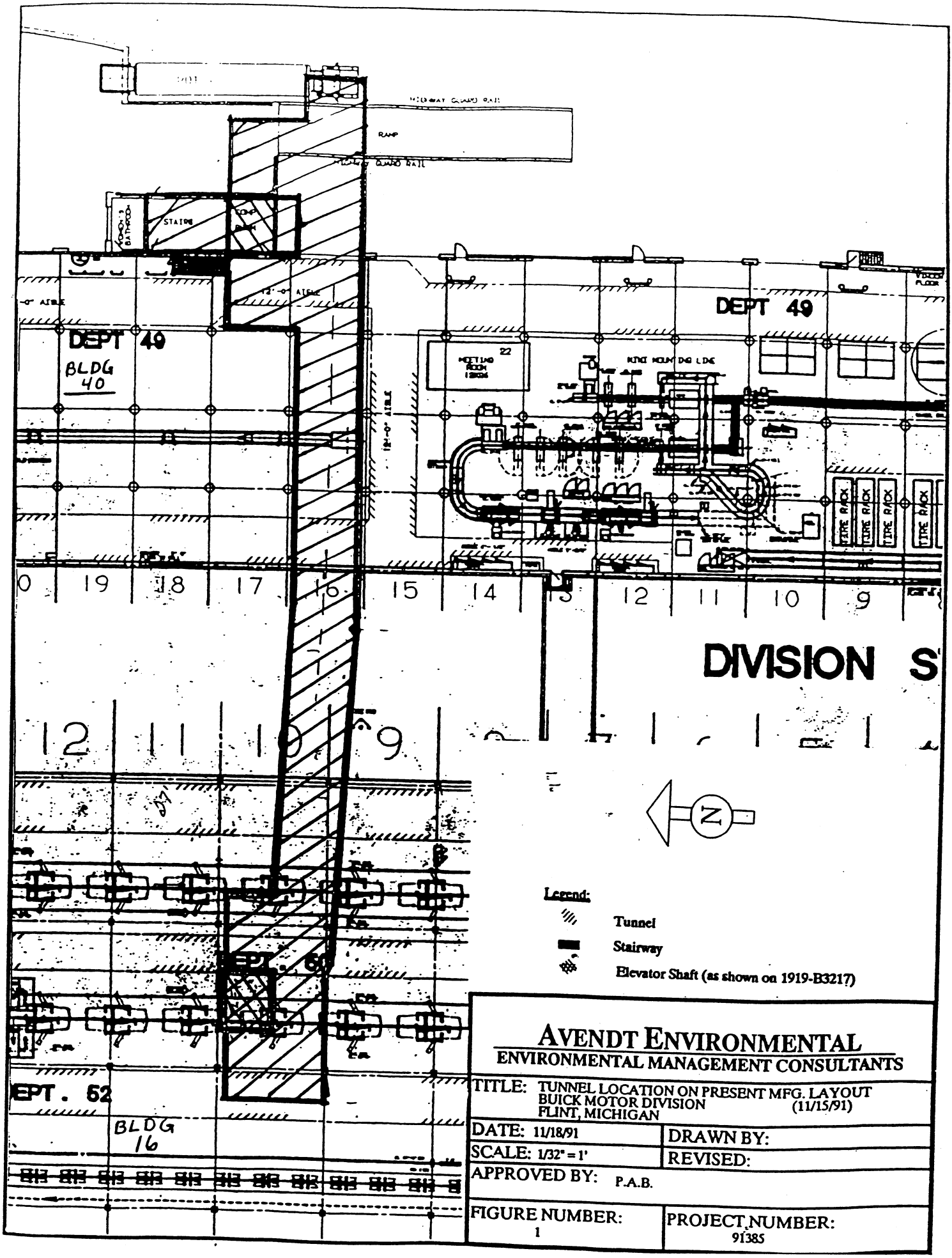
Based on the results of the tunnel investigations, various alternatives will be considered for the remediation of the tunnel. Several methods are currently being looked at to treat and dispose of the potentially large volume of water - to date no acceptable method has been found.

Prepare Phase I - Final Report

All work done including the findings of investigations to this point in time will be summarized into a Phase I - Final Report.

Phase I of this work plan has been scheduled and is shown in detail in Appendix C.

FIGURE



AVENDT ENVIRONMENTAL
ENVIRONMENTAL MANAGEMENT CONSULTANTS

TITLE: TUNNEL LOCATION ON PRESENT MFG. LAYOUT BUICK MOTOR DIVISION FLINT, MICHIGAN (11/15/91)	
DATE: 11/18/91	DRAWN BY:
SCALE: 1/32" = 1'	REVISED:
APPROVED BY: P.A.B.	
FIGURE NUMBER: 1	PROJECT NUMBER: 91385

APPENDIX A

GMPT Materials Engineering

Results Requested by	Page
29 JUL 91	1 of 1

Card Date	Prefix	Lab Number	Project Number	Part Number	Part Name
07/24/91	V	22931	N/A	NPN	OIL AND WATER, SUMP BLDG. 40

Specifications: N/A

Heat Number	Lot Number	Factory	Number of Samples	Quantity in Lot
N/A	7-23	86	1	N/A

Date Received	Source
07/23/91	CLIFF NAUSS

Report To	Telephone Number	Requested by
CLIFF NAUSS	6-7208	M.NIELSEN

Sample History:

SAMPLE REMOVED FROM SUMP BLDG 40. IS MATERIAL OK TO PUMP TO PROCESS WASTE?
SAMPLE FROM CLIFF NAUSS.

Work Requested:

CHECK FOR PRESENCE OF PCB.

Area(s)	Initials	Human Time	Machine Time	Date Completed	Sample(s) Out	Meth/Proc
CM Chemistry	PH	4.0	3.0	07 AUG 91	07 AUG 91	YES
M Chemistry	MW	4.0	0.0	07 AUG 91	07 AUG 91	YES

Results/Methods:

The sample was treated with fluorosil and analyzed by GC/MS. The sample contains 20-30 PPM Arochlor 1254.

Sample	PCB
Bldg. 40 Sump	20-30 PPM Arochlor 1254

MEMORANDUM

TO: Robert Metcalf

FROM: Connie Boris C. Boris

DATE: October 16, 1991

RE: Status Report on Analytical Results for Building 40 and Hydrogeological Investigation

The following is a status report on the analytical laboratory results for the six samples collected from the basement stairwell on the east side of Building 40 as well as a summary of work to date on the hydrogeological study as of October 7, 1991.

I. ANALYTICAL LABORATORY RESULTS - BASEMENT OF BUILDING 40.

The laboratory analytical results for the east basement stairwell of Building 40 are attached. The following is a description of each sample label.

SAMPLE NUMBER 72479:

TYPE OF ANALYSIS: OIL
(There was more oil than water in this sample -- anything other than water is reported in mg/kg units as required by EPA SW-846)

LOCATION: DEPRESSION CORNER 2SE
(There is an uneven depression in the southeast corner of the basement for Building 40.)

SAMPLE NUMBER 72480:

TYPE OF ANALYSIS: OIL
(This sample is an oil/water mix. Because there was more oil than water in this sample, it was analyzed with oil as the matrix.)

LOCATION: WATER STAIRS
(The sample was collected from the surficial oil layer at the top of the stairs leading from the subbasement to the basement of Building 40 -- therefore, it is more representative of the oil layer floating on the top of the water).

SAMPLE NUMBER 72481:

TYPE OF ANALYSIS: WATER
(This sample was also collected from the water beneath the floating oil layer at the top of the stairs leading from the subbasement to the basement of Building 40).

LOCATION: 1 WATER WEST
(This sample was collected from the top of the stairwell leading from the subbasement to the basement of Building 20).

SAMPLE NUMBER 72482:

TYPE OF ANALYSIS: WATER

LOCATION: WHRBI
(This is water collected from the manhole at the foot of the stairs to the basement from the door on the east wall of Building 40.)

SAMPLE NUMBER 72483:

TYPE OF ANALYSIS: SLUDGE ANALYSIS

LOCATION: 3 EAST
(This sample is a composite of scrapings collected from the floor near the east wall in the basement of Building 40).

SAMPLE NUMBER 72484:

TYPE OF ANALYSIS: SLUDGE ANALYSIS

LOCATION: 4 WEST
(This sample is a composite of scrapings collected from the floor near the west wall in the basement of Building 40).

II. HYDROGEOLOGICAL SITE INVESTIGATION

As of October 7, 1991, 21 soil borings were completed, using hollow stem auger methods. Of these 21 borings, 11 were converted to groundwater monitoring wells. The project is slightly more than 50% complete. That is, a total of 40 soil borings are anticipated to be installed, according to the workplan. If the current pace continues and no drilling problems are encountered, the drilling effort should be completed during the week ending October 25, 1991. This assumes an average of eight soil borings to be completed per week.

ENVIRONMENTAL LABORATORY DIVISION

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: OIL ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:20 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: JB, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO:

	DEPRESSION CORNER 2SE	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72479		
PCB 1016,1232,1242,1248	<25	25	mg/kg
PCB 1254,1260	80	25	mg/kg
TOTAL PCB'S	80	---	mg/kg

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: OIL ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:10 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: JB, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	WATER STAIRS	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72480		
PCB 1016,1232,1242,1248	<1.0	1.0	mg/kg
PCB 1254,1260	25	1.0	mg/kg
TOTAL PCB'S	25	---	mg/kg

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: WATER ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:40 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: JB, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	1 WATER WEST	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72481		
PCB 1016,1232,1242,1248	<11	11	ug/l
PCB 1254,1260	23	1.0	ug/l
TOTAL PCB'S	23	---	ug/l

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: WATER ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:30 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: MK, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	WHRBI	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72482		
PCB 1016,1232,1242,1248	<1.0	1.0	ug/l
PCB 1254,1260	<1.0	1.0	ug/l
TOTAL PCB'S	<2.0	---	ug/l

ENVIRONMENTAL LABORATORY DIVISION

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: SLUDGE ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:30 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: MK, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	3 EAST	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72483		
PCB 1016,1232,1242,1248	<50	50	mg/kg
PCB 1254,1260	75	50	mg/kg
TOTAL PCB'S	75	---	mg/kg

WW Engineering & Science
... GLENWOOD HILLS PARKWAY SE • PO BOX 874 • GRAND RAPIDS, MI 49588 0874 • (616) 942-9600 FX (616) 0...

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: SLUDGE ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:50 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: MK, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	4 WEST	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72484		
PCB 1016,1232,1242,1248	<5.0	5.0	mg/kg
PCB 1254,1260	33	5.0	mg/kg
TOTAL PCB'S	33	---	mg/kg

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: BOC FLINT
PROJECT NO.: 25719
LOCATION: BOC FLINT
SAMPLED BY: BOB THOMAS
DESCRIPTION: SLUDGE ANALYSIS

DATE SAMPLED: 10/31/91 TIME: 2:00 PM
DATE RECEIVED: 11/04/91 TIME: 10:30 AM
DATE COMPLETED: 11/20/91
SCHEDULED COMPLETION: 11/25/91
ANALYST: MK
QUALITY CONTROL REVIEW BY: WH
WORKSHEET NO:

LAB SAMPLE NO:	NORTH WHITE ARROW MANHOLE SLUDGE 4628	DETECTION LIMIT	UNITS
PCB 1016, 1232, 1242, 1248	<40	40	mg/kg
PCB 1254, 1260	1.4	1.0	mg/kg
TOTAL PCB'S	1.4		mg/kg

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: BOC FLINT
PROJECT NO.: 25719
LOCATION: BOC FLINT
SAMPLED BY: BOB THOMAS
DESCRIPTION: WATER ANALYSIS (LIQUID)

DATE SAMPLED: 10/31/91 TIME: 2:30 PM
DATE RECEIVED: 11/04/91 TIME: 10:30 AM
DATE COMPLETED: 11/20/91
SCHEDULED COMPLETION: 11/25/91
ANALYST: MK
QUALITY CONTROL REVIEW BY: WH
WORKSHEET NO:

LAB SAMPLE NO:	NORTH WHITE ARROW MANHOLE LIQUID 4630	DETECTION LIMIT	UNITS
PCB 1016, 1232, 1242, 1248	<24	24	ug/l
PCB 1254, 1260	<3	3	ug/l
TOTAL PCB'S	<27		ug/l

APPENDIX B

Fire & Environmental
Consulting Laboratories, Inc.

One East Complex 1451 East Lansing Dr., Suite 222 East Lansing, MI 48823 (517) 332-0167 FAX (517) 332-6333
Indianapolis (317) 879-0913 FAX (317) 879-0914

December 13, 1991

Avendt Environmental
432 N. Saginaw, 4th Floor
Flint, MI 48502

Attention: Ms. Amy S. Webster

Analytical Laboratory Report

FECL #: 8395-91-K1
8396-91-K1-3
Samples analyzed by: P. Roettger, J. Blaszczyk, L. DeWitt
Samples collected by: M.W.K
Analyses requested by: A. Webster
Date/time samples submitted: 12-05-91 3:35 pm
PO #: Verbal

Submitting Company: Avendt Environmental
432 N. Saginaw, 4th Floor
Flint, MI 48502

Project Description: B-40 & Storage Pit 91385-02

Samples Collected:

FECL #: 8395-91-K1
Tag: Storage Pit Area #1
Container: Plastic Bottles
Sample type: Liquid
Preservation: None
Sampling date/time: 12/04/91

FECL #: 8396-91-K2
Tag: B-40 Oil
Container: Glass/Vial
Sample type: Oil/H_2O
Preservation: None
Sampling date/time: 12/04/91

FECL #: 8396-91-K1
Tag: B-40 H_2O
Container: Plastic/Glass/Vial
Sample type: H_2O
Preservation: None
Sampling date/time: 12/04/91

FECL #: 8396-91-K3
Tag: B-40 Sludge
Container: Glass
Sample type: Sludge
Preservation: None
Sampling date/time: 12/04/91

FECL #:	**8395-91-E1**
Tag:	Storage Pit Area #1
Metals	
Arsenic	<0.005 mg/l
Barium	0.47 mg/l
Cadmium	<0.005 mg/l
Chromium	0.012 mg/l
Coper	0.01 mg/l
Lead	<0.01 mg/l
Mercury	<0.005 mg/l
Selenium	<0.005 mg/l
Silver	<0.005 mg/l
Zinc	0.13 mg/l

FECL #:	**8396-91-E1**	**8396-91-E2**	**8396-91-E3**
Tag:	B-40 H_2O	B-40 Oil	B-40 Sludge
Metals			
Arsenic	0.96 mg/l	0.62 mg/kg	3.60 mg/kg
Barium	4.08 mg/l	0.89 mg/kg	39.3 mg/kg
Cadmium	0.016 mg/l	<0.01 mg/kg	0.60 mg/kg
Chromium	0.16 mg/l	0.07 mg/kg	6.48 mg/kg
Coper	0.90 mg/l	0.40 mg/kg	42.8 mg/kg
Lead	1.58 mg/l	0.60 mg/kg	57.1 mg/kg
Mercury	<0.005 mg/l	<0.005 mg/kg	0.043 mg/kg
Selenium	<0.05 mg/l	<0.05 mg/kg	0.09 mg/kg
Silver	<0.01 mg/l	<0.01 mg/kg	0.03 mg/kg
Zinc	7.80 mg/l	1.91 mg/kg	100 mg/kg

FECL #:	8396-91-E1	8396-91-E2	8396-91-E3
Tag:	B-40 H_2O	B-40 Oil	B-40 Sludge
Method 8010 - Halogenated Volatile Organics			
Benzyl chloride	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
bis(2-chloroethoxy) methane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
bis(2-chloroisopropyl) ether	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Bromobenzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Bromodichloromethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Bromoform	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Bromomethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Carbon tetrachloride	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Chloroacetaldehyde	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Chlorobenzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Chloroethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
2-Chloroethylvinyl ether	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Chloroform	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1-Chlorohexane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Chloromethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Chloromethyl methyl ether	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Chlorotoluene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Dibromochloromethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Dibromomethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,2-Dichlorobenzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,3-Dichlorobenzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,4-Dichlorobenzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Dichlorodifluoromethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,1-Dichloroethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,2-Dichloroethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,1-Dichloroethene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
t-1,2-Dichloroethene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,2-Dichloropropane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
c-1,3-Dichloropropene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
t-1,3-Dichloropropene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Methylene chloride	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,1,1,2-Tetrachloroethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,1,2,2-Tetrachloroethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Tetrachloroethene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,1,1-Trichloroethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,1,2-Trichloroethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Trichloroethene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Trichlorofluoromethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Trichloropropane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Vinyl chloride	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg

FECL #:	8396-91-E1	8396-91-E2	8396-91-E3
Tag:	B-40 H_2O	B-40 Oil	B-40 Sludge
Method 8020 - Aromatics Volatile Organics			
Benzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Chlorobenzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,2-Dichlorobenzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,3-Dichlorobenzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,4-Dichlorobenzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Ethylbenzene	<0.005 mg/l	<0.1 mg/kg	0.06 mg/kg
Toluene	<0.005 mg/l	<0.1 mg/kg	0.10 mg/kg
p,m-Xylene	<0.005 mg/l	0.1 mg/kg	0.18 mg/kg
o-Xylene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Method 8080 - Organochlorine PCBs			
PCB-1016	<0.001 mg/l	<0.01 mg/kg	<0.01 mg/kg
PCB-1221	<0.001 mg/l	<0.01 mg/kg	<0.01 mg/kg
PCB-1232	<0.001 mg/l	<0.01 mg/kg	<0.01 mg/kg
PCB-1242	<0.001 mg/l	<0.01 mg/kg	<0.01 mg/kg
PCB-1248	<0.001 mg/l	<0.01 mg/kg	<0.01 mg/kg
PCB-1254	<0.001 mg/l	<0.01 mg/kg	<0.01 mg/kg
PCB-1260	<0.001 mg/l	<0.01 mg/kg	<0.01 mg/kg

V. F. Murshak/ajc

Violetta F. Murshak
Laboratory Manager

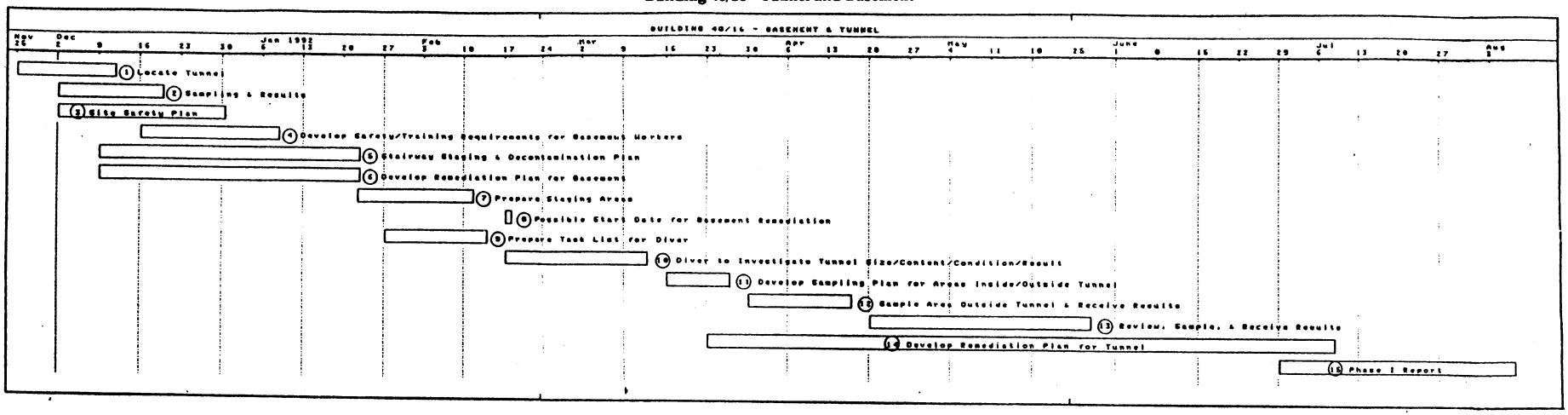
VFM/ajc

APPENDIX C

TENTATIVE SCHEDULE

WORK TASKS
PHASE 1

Building 40/16 - Tunnel and Basement



12/18/91

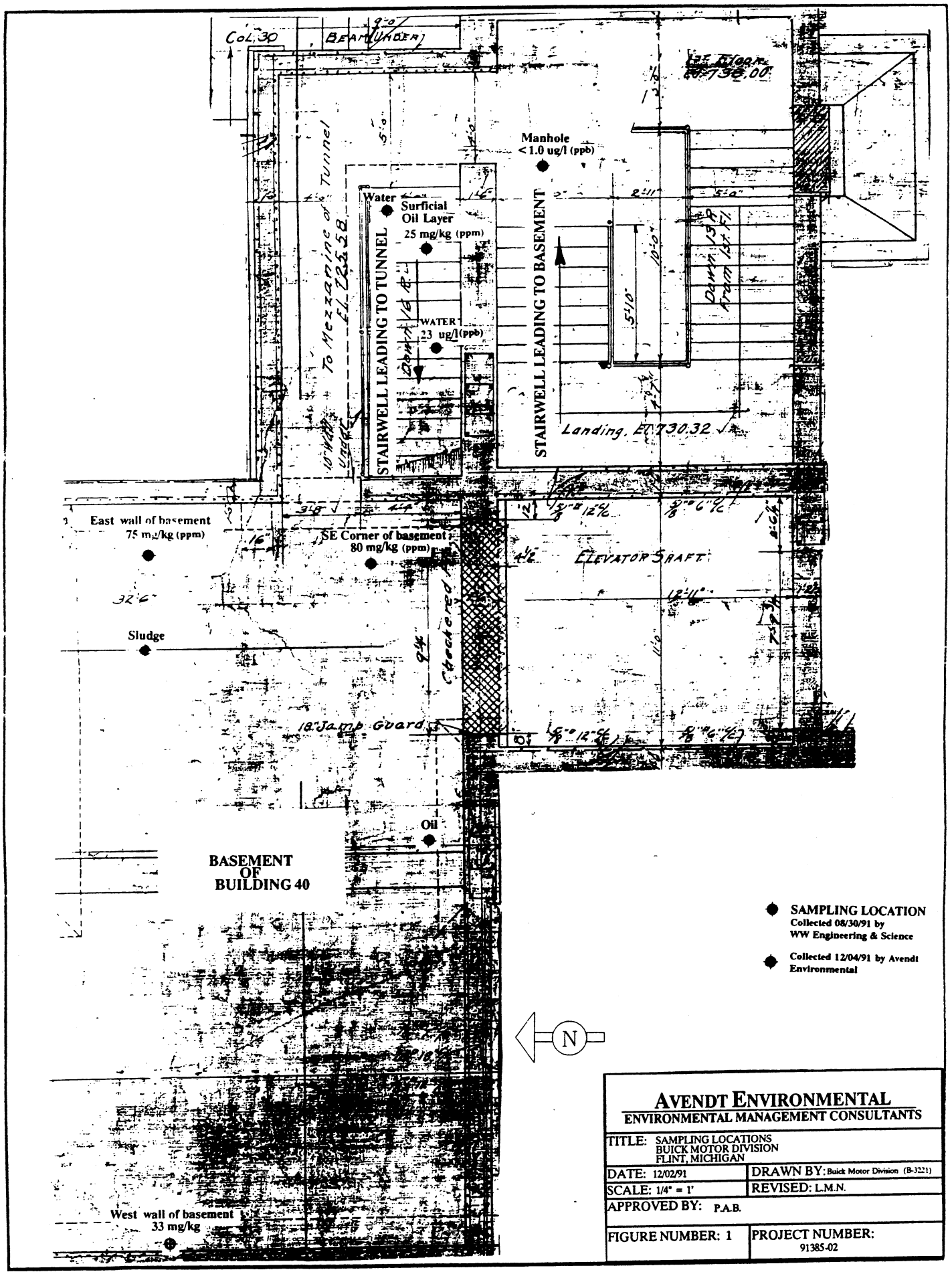
1. Locate the tunnel on existing layout drawings in the field and verify access availability in Building 16.
2. Determine if the sludge, oil or water found in the tunnel and basement areas contains solvents or metals. This information is necessary to complete the site safety plan, decontamination and ultimate disposal of materials.
3. Prepare site safety plan for the discovery stage.
4. Develop the safety, hygiene and training requirements for all personnel working in or around the tunnel and basement.
5. Develop the plan for stairway, staging and decontamination area.
6. Develop the remediation plan for the basement area.
7. Prepare the stairway, staging and decontamination areas including portable lighting and air monitoring.
8. Possible start date for remediation of the basement area.
9. Prepare a task list for diver, including taking measurements, sampling, filming requirements, anchoring teflon tubing for future sampling and others tasks as needed.
10. Diver to investigate the tunnel location, the contents of the tunnel (equipment and chemical nature) and the extent of the flooding.
11. Develop complete sampling plan to determine the extent of contamination both within and outside the tunnel.
12. Collect samples in and outside the tunnel area as specified in the sampling plan (Item 11).
13. Review sampling results and take additional samples as required.
14. Develop the remediation plan for the tunnel and investigate methods of treatment/disposal for contents.
15. Summarize all information into a Phase I report for Buildings 40/16 - Basement and Tunnel.

Time required to remediate the basement area is not shown because this will depend on the complexity of the decontamination plan and availability of a crew. However, remediation of the basement should be completed as soon as possible after the plan is developed. This is not only for safety and hygiene purposes, but will facilitate progress through the remaining clean-up.

ATTACHMENT 3

HEALTH AND SAFETY PLAN

BUILDING 40



AVENDT ENVIRONMENTAL
ENVIRONMENTAL MANAGEMENT CONSULTANTS

TITLE: SAMPLING LOCATIONS BUICK MOTOR DIVISION FLINT, MICHIGAN	
DATE: 12/02/91	DRAWN BY: Buick Motor Division (B-3221)
SCALE: 1/4" = 1'	REVISED: L.M.N.
APPROVED BY: P.A.B.	
FIGURE NUMBER: 1	PROJECT NUMBER: 91385-02

October 17, 1991

Subject: Results of Initial PCB Samples Taken In The Basement of Building #40

To: Cliff Nauss, Environmental Coordinator, Buick City
Gary Field, Safety Engineer, Buick City

I have just received the final results of the PCB testing done in the mezzanine basement and stairwell of Building #40 several weeks ago. This testing shows low levels of PCB contamination in the mezzanine basement areas tested. Based upon a review of the raw data, I have requested additional sampling to verify the working hypothesis that the contamination is spread throughout the mezzanine basement area, and to confirm the water analysis from the flooded stairwell leading to the lower basement. The water sample from the blind sump at the foot of the stairwell going to the mezzanine basement shows non-detect at levels of 1 part per billion (1 ug/l or 1 ppb). All of the tests in this area show the PCB to be of the 1254, 1260 class. A review of the data is as follows:

SAMPLE/LOCATION	DETECTION LIMIT	RESULTS	UNITS *
Mainly oil from a floor depression in the SE corner of the mezzanine basement (oil analysis)	25	80	mg/kg
Surficial oil layer from the flooded stairwell leading to the lower basement (oil analysis)	1.0	25	mg/kg
Water from the flooded stairwell leading to the lower basement (water analysis)	1.0	23	ug/l
Water from the blind sump at the foot of the stairs going to the mezzanine basement (water analysis)	1.0	<1.0	ug/l
Composite of floor scrapings collected along the east wall of the mezzanine basement (sludge analysis)	50	75	mg/kg

Composite of floor scrapings collected along the weat wall of the mezzanine basement (sludge analysis)	5.0	33	mg/kg

* note - mg/kg = parts per million
ug/l = parts per billion

The full analytical report is available for your inspection in our office. I will get back with you as soon as additional data is available.

Please continue to keep this area quarantined. We will begin developing a work plan for this area in the near future and will need your input. If you have any queations contact either Paul Barth or the writer.

Robert S. Metcalf

Robert S. Metcalf
Superintendent
Environmental Control
B-O-C Flint Operations

cc file
F.D. Preston
A. Terrian
A. McGee

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: BOC FLINT
PROJECT NO.: 25719
LOCATION: BOC FLINT
SAMPLED BY: BOB THOMAS
DESCRIPTION: SLUDGE ANALYSIS

DATE SAMPLED: 10/31/91 TIME: 2:00 PM
DATE RECEIVED: 11/04/91 TIME: 10:30 AM
DATE COMPLETED: 11/20/91
SCHEDULED COMPLETION: 11/25/91
ANALYST: MK
QUALITY CONTROL REVIEW BY: WH
WORKSHEET NO:

LAB SAMPLE NO:	NORTH WHITE ARROW MANHOLE SLUDGE 4628	DETECTION LIMIT	UNITS
PCB 1016, 1232, 1242, 1248	<40	40	mg/kg
PCB 1254, 1260	1.4	1.0	mg/kg
TOTAL PCB'S	1.4		mg/kg

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: BOC FLINT
PROJECT NO.: 25719
LOCATION: BOC FLINT
SAMPLED BY: BOB THOMAS
DESCRIPTION: WATER ANALYSIS (LIQUID)

DATE SAMPLED: 10/31/91 TIME: 2:30 PM
DATE RECEIVED: 11/04/91 TIME: 10:30 AM
DATE COMPLETED: 11/20/91
SCHEDULED COMPLETION: 11/25/91
ANALYST: MK
QUALITY CONTROL REVIEW BY: WH
WORKSHEET NO:

LAB SAMPLE NO:	NORTH WHITE ARROW MANHOLE LIQUID 4630	DETECTION LIMIT	UNITS
PCB 1016, 1232, 1242, 1248	<24	24	ug/l
PCB 1254, 1260	<3	3	ug/l
TOTAL PCB'S	<27		ug/l

MEMORANDUM

TO: Robert Metcalf

FROM: Connie Boris C. Boris

DATE: October 16, 1991

RE: Status Report on Analytical Results for Building 40 and Hydrogeological Investigation

The following is a status report on the analytical laboratory results for the six samples collected from the basement stairwell on the east side of Building 40 as well as a summary of work to date on the hydrogeological study as of October 7, 1991.

I. ANALYTICAL LABORATORY RESULTS - BASEMENT OF BUILDING 40.

The laboratory analytical results for the east basement stairwell of Building 40 are attached. The following is a description of each sample label.

SAMPLE NUMBER 72479:

TYPE OF ANALYSIS: OIL
(There was more oil than water in this sample -- anything other than water is reported in mg/kg units as required by EPA SW-846)

LOCATION: DEPRESSION CORNER 2SE
(There is an uneven depression in the southeast corner of the basement for Building 40.)

SAMPLE NUMBER 72480:

TYPE OF ANALYSIS: OIL
(This sample is an oil/water mix. Because there was more oil than water in this sample, it was analyzed with oil as the matrix.)

LOCATION: WATER STAIRS
(The sample was collected from the surficial oil layer at the top of the stairs leading from the subbasement to the basement of Building 40 -- therefore, it is more representative of the oil layer floating on the top of the water).

SAMPLE NUMBER 72481:

TYPE OF ANALYSIS: WATER
(This sample was also collected from the water beneath the floating oil layer at the top of the stairs leading from the subbasement to the basement of Building 40).

LOCATION: 1 WATER WEST
(This sample was collected from the top of the stairwell leading from the subbasement to the basement of Building 20).

SAMPLE NUMBER 72482:

TYPE OF ANALYSIS: WATER

LOCATION: WHRBI
(This is water collected from the manhole at the foot of the stairs to the basement from the door on the east wall of Building 40.)

SAMPLE NUMBER 72483:

TYPE OF ANALYSIS: SLUDGE ANALYSIS

LOCATION: 3 EAST
(This sample is a composite of scrapings collected from the floor near the east wall in the basement of Building 40).

SAMPLE NUMBER 72484:

TYPE OF ANALYSIS: SLUDGE ANALYSIS

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: OIL ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:20 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: JB, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO:

	DEPRESSION CORNER 2SE	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	**72479**		
PCB 1016,1232,1242,1248	<25	25	mg/kg
PCB 1254,1260	80	25	mg/kg
TOTAL PCB'S	80	---	mg/kg

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: OIL ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:10 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: JB, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	WATER STAIRS	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72480		
PCB 1016,1232,1242,1248	<1.0	1.0	mg/kg
PCB 1254,1260	25	1.0	mg/kg
TOTAL PCB'S	25	---	mg/kg

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: WATER ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:40 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: JB, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	1 WATER WEST	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72481		
PCB 1016,1232,1242,1248	<11	11	ug/l
PCB 1254,1260	23	1.0	ug/l
TOTAL PCB'S	23	---	ug/l

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: WATER ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:30 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: MK, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	WHRBI	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72482		
PCB 1016,1232,1242,1248	<1.0	1.0	ug/l
PCB 1254,1260	<1.0	1.0	ug/l
TOTAL PCB'S	<2.0	---	ug/l

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: SLUDGE ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:30 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: MK, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	3 EAST	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72483		
PCB 1016,1232,1242,1248	<50	50	mg/kg
PCB 1254,1260	75	50	mg/kg
TOTAL PCB'S	75	---	mg/kg

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: SLUDGE ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:50 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: MK, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	4 WEST	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72484		
PCB 1016,1232,1242,1248	<5.0	5.0	mg/kg
PCB 1254,1260	33	5.0	mg/kg
TOTAL PCB'S	33	---	mg/kg

Analytic & Biological
Laboratories, Inc.

50 ENDOPLEX CIRCLE
FARMINGTON HILLS, MICHIGAN 48335

(313) 477-0000
FAX (313) 477-0004

DEC. 19 1991

The Advendt Group, Inc.
432 N. Saginaw
Flint, MI 48502

Dear Amy Webster

Thank you for providing Analytic & Biological Laboratories the opportunity to serve your analytical needs. The samples received by this laboratory have been analyzed as requested. The results are compiled in the enclosed report.

If you have any questions regarding the results or if we may be of further assistance to you, please call me at the published telephone number.

Yours very truly,

Janine Reagan

Martine Hurwitz
Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

FBM/mjh

The Advendt Group, Inc.
432 N. Saginaw
Flint, MI 48502

Attention: Amy Webster

Laboratory Sample Number: 91/12:0848
Matrix of Sample Logged : Sludge
Date sample submitted : 911217

Information we received for the sample consisted of the following:

-SLUDGE 12/16/91
-PROJECT NO: 91385-40-02
-PROJECT NAME: BLDG. 40-BOC

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<1.0	ppm
PCB (Arochlor 1221)	<1.0	ppm
PCB (Arochlor 1232)	<1.0	ppm
PCB (Arochlor 1242)	<1.0	ppm
PCB (Arochlor 1248)	<1.0	ppm
PCB (Arochlor 1254)	6.87	ppm
PCB (Arochlor 1260)	<1.0	ppm

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

DEC. 19 1991
Page 1

The Advendt Group, Inc.
432 N. Saginaw
Flint, MI 48502

Attention: Amy Webster

Laboratory Sample Number: 91/12:0849
Matrix of Sample Logged : Oil
Date sample submitted : 911217

Information we received for the sample consisted of the following:

-OIL 12/16/91
-PROJECT NO: 91385-40-02
-PROJECT NAME: BLDG. 40-BOC

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<1.0	ppm
PCB (Arochlor 1221)	<1.0	ppm
PCB (Arochlor 1232)	<1.0	ppm
PCB (Arochlor 1242)	<1.0	ppm
PCB (Arochlor 1248)	<1.0	ppm
PCB (Arochlor 1254)	77.8	ppm
PCB (Arochlor 1260)	<1.0	ppm

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

DEC. 19 1991

The Advendt Group, Inc.
432 N. Saginaw
Flint, MI 48502

Attention: Amy Webster

Laboratory Sample Number: 91/12:0850
Matrix of Sample Logged : Water
Date sample submitted : 911217

Information we received for the sample consisted of the following:

-WATER 12/16/91
-PROJECT NO: 91385-40-02
-PROJECT NAME: BLDG. 40-BOC

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<0.01	ppm
PCB (Arochlor 1221)	<0.01	ppm
PCB (Arochlor 1232)	<0.01	ppm
PCB (Arochlor 1242)	<0.01	ppm
PCB (Arochlor 1248)	<0.01	ppm
PCB (Arochlor 1254)	0.113	ppm
PCB (Arochlor 1260)	<0.01	ppm

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

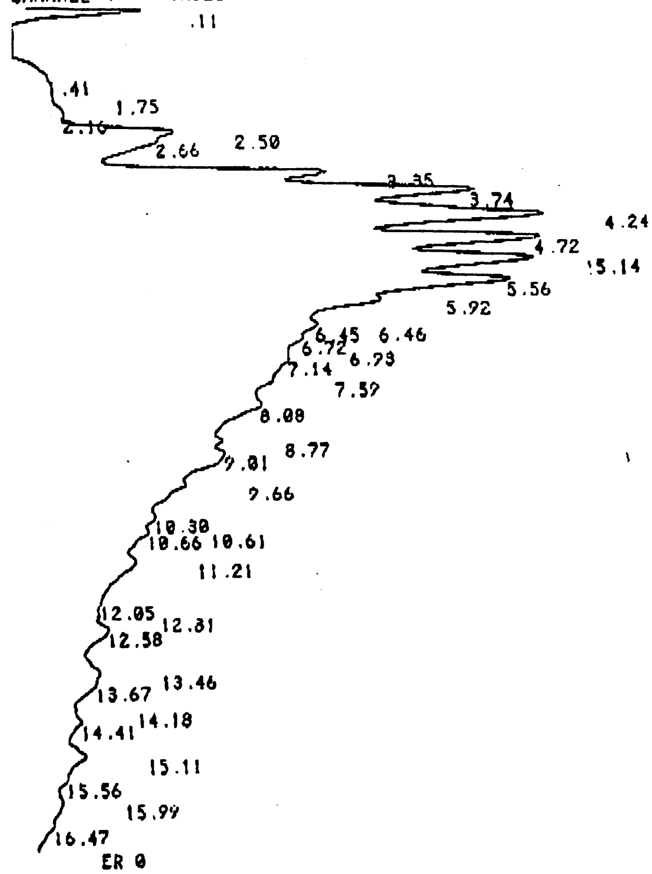
PRECISION & ACCURACY

CONTROL DATA

COMPANY NAME: The Advendt Group.
SAMPLE #: 12:0848 - 12:0850.
DATE: 12-18-91.

PARAMETERS	SPIKE VALUE	RECOVERED VALUE	RECOVERY
Aroclor 1260	5 ppm	4.91 ppm	98 %

CHANNEL A INJECT 01-08-91 17:38:48



PCB 01-08-91 17:38:48 CH= "A" PS= 1.

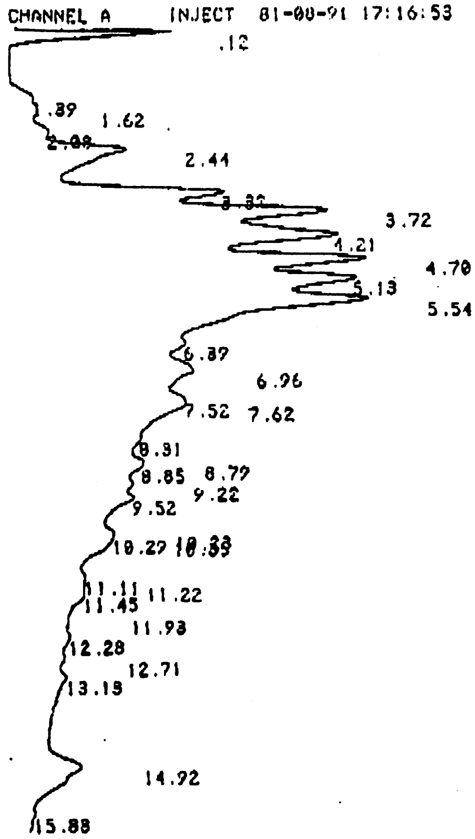
FILE 1. METHOD 0. RUN 57 INDEX 57

PEAK#	AREA%	RT	AREA	BC
1	0.587	0.11	35601	01
2	0.893	1.41	54160	02
3	0.936	1.75	56766	02
4	0.959	2.16	58152	02
5	1.783	2.5	108180	02
6	2.196	2.66	133179	02
7	3.6	3.35	218342	02 –
8	6.113	3.74	370815	02 –
9	9.374	4.24	568599	02 –
10	6.912	4.72	419297	02 –
11	7.341	5.14	445261	02
12	7.178	5.56	435402	02 –
13	5.454	5.92	330859	02
14	1.446	6.45	87687	02
15	2.203	6.46	133637	02
16	2.69	6.72	163140	02
17	0.921	6.98	55842	02
18	5.197	7.14	315266	02
19	2.538	7.59	153933	02
20	6.52	8.08	395475	02
21	1.795	8.77	108900	02
22	4.757	9.01	288563	02
23	3.25	9.66	197158	02
24	1.714	10.3	103957	02
25	0.471	10.61	28595	02
26	1.74	10.66	105567	02
27	3.387	11.21	205476	02
28	0.375	12.05	22761	02
29	0.577	12.31	35005	02
30	1.761	12.58	106799	02
31	1.238	13.46	75114	02
32	0.976	13.67	59180	02
33	0.218	14.18	13199	02
34	0.863	14.41	52337	02
35	1.118	15.11	67809	02
36	0.23	15.56	13942	02
37	0.519	15.99	31499	02
38	0.171	16.47	10352	03

TOTAL 100. 6065806

T.A: 2012455
1.67 ...
[illegible]
83.5 ...

CHANNEL A INJECT 01-08-91 17:16:53



PCB 01-08-91 17:16:53 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 55 INDEX 55

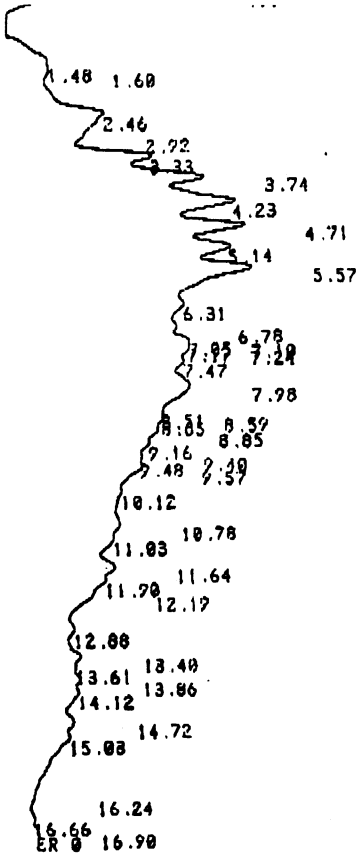
PEAK#	AREA%	RT	AREA	BC
1	1.666	0.12	52255	01
2	1.275	1.39	39984	02
3	1.105	1.62	34669	02
4	1.348	2.00	42292	02
5	4.928	2.44	154577	02
6	4.779	3.32	149901	02 —
7	7.748	3.72	243028	02 —
8	10.305	4.21	323268	02 —
9	8.891	4.7	278895	02 —
10	8.738	5.13	274098	02 -
11	14.784	5.54	463760	02 -
12	3.702	6.39	116112	02
13	7.132	6.96	223736	02
14	2.151	7.52	67485	02
15	6.276	7.62	196879	02
16	1.956	8.31	61368	02
17	1.565	8.79	49093	02
18	1.40	8.85	46426	02
19	1.694	9.22	53129	02
20	3.065	9.52	96151	02
21	0.89	10.23	27925	02
22	0.247	10.29	7755	02
23	1.592	10.35	49935	02
24	0.382	11.11	11989	02
25	0.231	11.22	7248	02
26	0.441	11.45	13827	02
27	0.002	11.93	75	03
28	0.068	12.28	2122	01
29	0.035	12.71	1085	01
30	0.109	13.13	3431	01
31	1.395	14.92	43765	01
32	0.019	15.83	591	01
TOTAL	100.		3136054	

T.A = 1732950
1.44
x 50
72.0 ppm (1242)

CHANNEL A INJECT 01-08-91 17:33:43

NO DATA, CHANNEL A

83.5
72.0
77.80 ppm Avg



PCB 81-08-91 16:28:22 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 53 INDEX 58

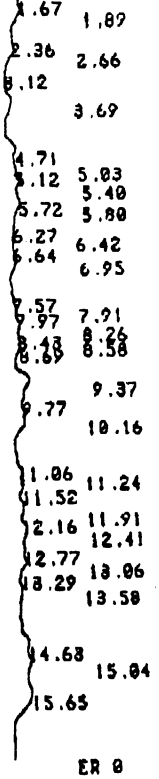
PEAK#	AREAX	RT	AREA	BC
1	1.443	0.11	52845	01
2	1.533	1.48	56143	02
3	0.791	1.6	28970	02
4	4.817	2.46	176481	02
5	0.882	2.92	32311	02
6	2.836	3.33	103885	02
7	4.427	3.74	162166	02
8	6.702	4.23	245508	02
9	5.567	4.71	203937	02
10	5.15	5.14	188653	02
11	9.242	5.57	338571	02
12	4.87	6.31	178389	02
13	2.626	6.78	96188	02
14	1.857	7.05	68016	02
15	0.665	7.1	24349	02
16	0.663	7.17	24287	02
17	2.16	7.24	79114	02
18	2.946	7.47	107933	02
19	7.589	7.98	278001	02
20	0.934	8.51	34233	02
21	0.523	8.59	19159	02
22	1.487	8.65	54461	02
23	2.351	8.85	86127	02
24	1.814	9.16	66446	02
25	0.859	9.4	31473	02
26	0.513	9.48	18789	02
27	3.509	9.57	128564	02
28	3.067	10.12	112373	02
29	2.417	10.78	88540	02
30	2.193	11.03	80342	02
31	2.252	11.64	82485	02
32	1.48	11.9	54200	02
33	1.726	12.19	63238	02
34	1.189	12.88	43547	02
35	1.384	13.4	50696	02
36	0.416	13.61	15246	02
37	0.917	13.86	33679	02
38	1.425	14.12	52202	02
39	1.056	14.72	38670	02
40	1.671	15.03	61956	08
41	0.	16.24	13	05
42	0.022	16.66	811	06
43	0.01	16.9	376	03

T-A = 1242780

1.03

x 6.67

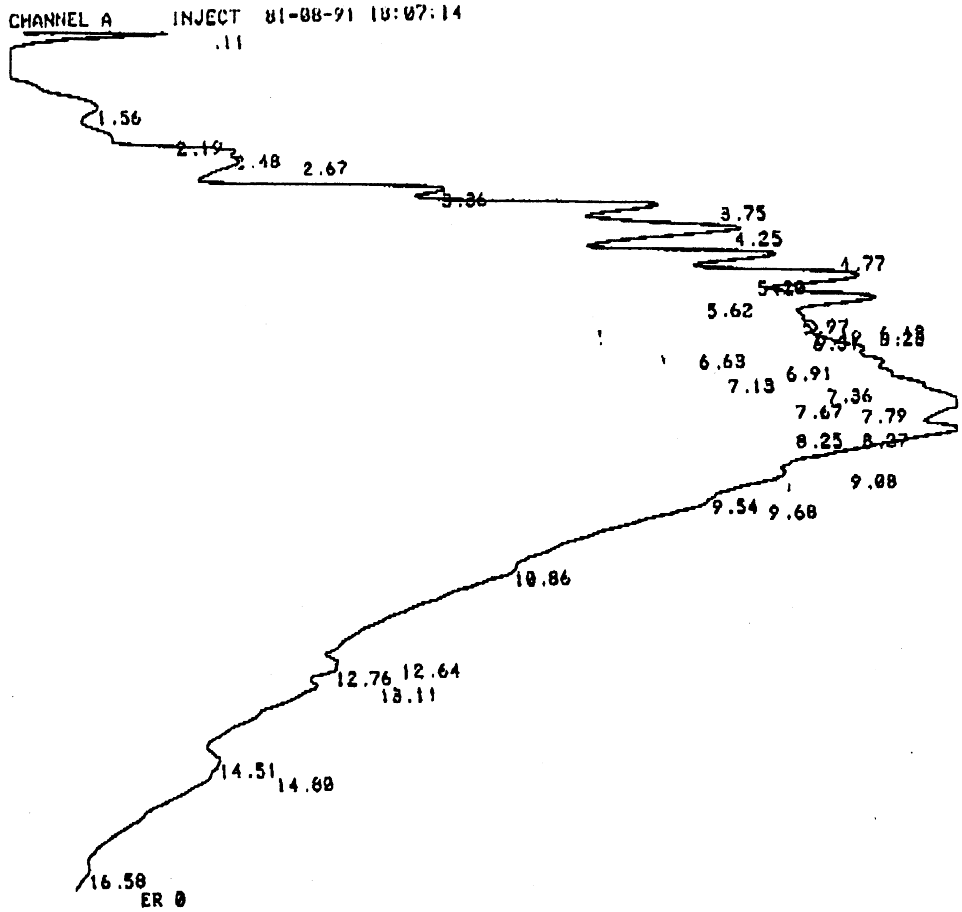
6.83 ppm



PCB 01-08-91 12:45:30 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 46 INDEX 46

PEAK#	AREA%	RT	AREA	BC
1	73.028	0.22	1248909	08
2	0.	1.67	2	05
3	0.167	1.89	2848	05
4	0.072	2.86	1237	06
5	0.198	2.66	3803	07
6	0.	3.12	5	05
7	0.524	3.69	8955	06
8	0.533	4.71	9110	06
9	0.237	5.03	4048	06
10	0.323	5.12	5532	06
11	0.617	5.4	10559	06
12	0.319	5.72	5448	06
13	0.958	5.8	16379	06
14	0.114	6.27	1944	06
15	0.261	6.42	4469	06
16	0.341	6.64	5826	06
17	0.895	6.95	15303	06
18	0.353	7.57	6041	06
19	0.313	7.91	5353	06
20	0.405	7.97	6920	06
21	0.557	8.26	9521	06
22	0.149	8.43	2551	06
23	0.163	8.58	2783	06
24	0.949	8.69	16237	06
25	1.646	9.37	28152	06
26	0.479	9.77	8184	06
27	1.743	10.16	29811	06
28	0.766	11.06	13103	06
29	0.67	11.24	11458	06
30	0.877	11.52	15002	06
31	0.928	11.91	15866	06
32	0.148	12.16	2530	06
33	1.198	12.41	20496	06
34	0.726	12.77	12416	06
35	0.875	13.06	14960	06
36	0.39	13.29	6667	06
37	1.543	13.58	26385	06
38	1.81	14.63	30949	06
39	1.452	15.04	24840	06
40	3.28	15.65	56095	07
TOTAL	100.		1710189	

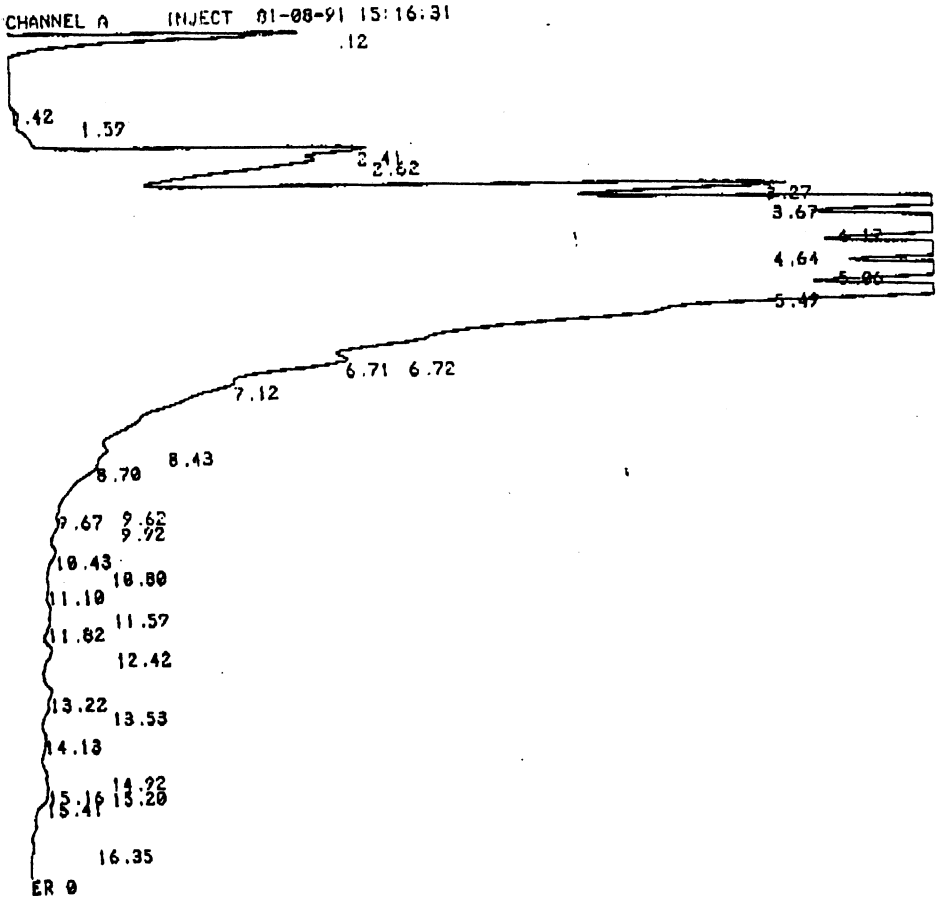


PCB 81-08-91 18:07:14 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 58 INDEX 58

PEAK#	AREA%	RT	AREA	BC
1	0.286	0.11	42388	01
2	1.06	1.56	156939	02
3	0.58	2.19	85940	02
4	0.906	2.48	134070	02
5	1.66	2.67	245694	02
6	2.099	3.36	310777	02 -
7	3.664	3.75	542373	02 -
8	5.262	4.25	779068	02 -
9	4.094	4.77	606048	02 -
10	5.107	5.2	756072	02 -
11	4.951	5.62	732981	02 -
12	1.855	5.97	274662	02
13	1.323	6.12	195891	02
14	0.851	6.19	126022	02
15	0.664	6.23	98360	02
16	0.477	6.31	70874	02
17	4.309	6.63	637969	02
18	3.553	6.91	525980	02
19	2.204	7.13	326272	02
20	2.631	7.36	389447	02
21	3.874	7.67	573480	02
22	5.279	7.79	781545	02
23	1.947	8.25	288585	02
24	8.562	8.27	1267570	02
25	5.31	9.08	786187	02
26	1.316	9.54	194843	02
27	9.116	9.68	1349653	02
28	8.524	10.86	1261998	02
29	0.869	12.64	128587	02
30	1.02	12.76	150937	02
31	3.68	13.11	544810	02
32	1.137	14.51	168335	02
33	1.75	14.8	259044	02
34	0.077	16.58	11339	03

T.A. = 3416 ...
2.83
÷ 25 = 0.113 ppm

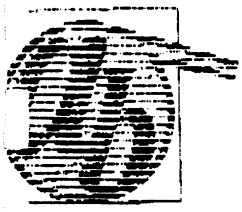


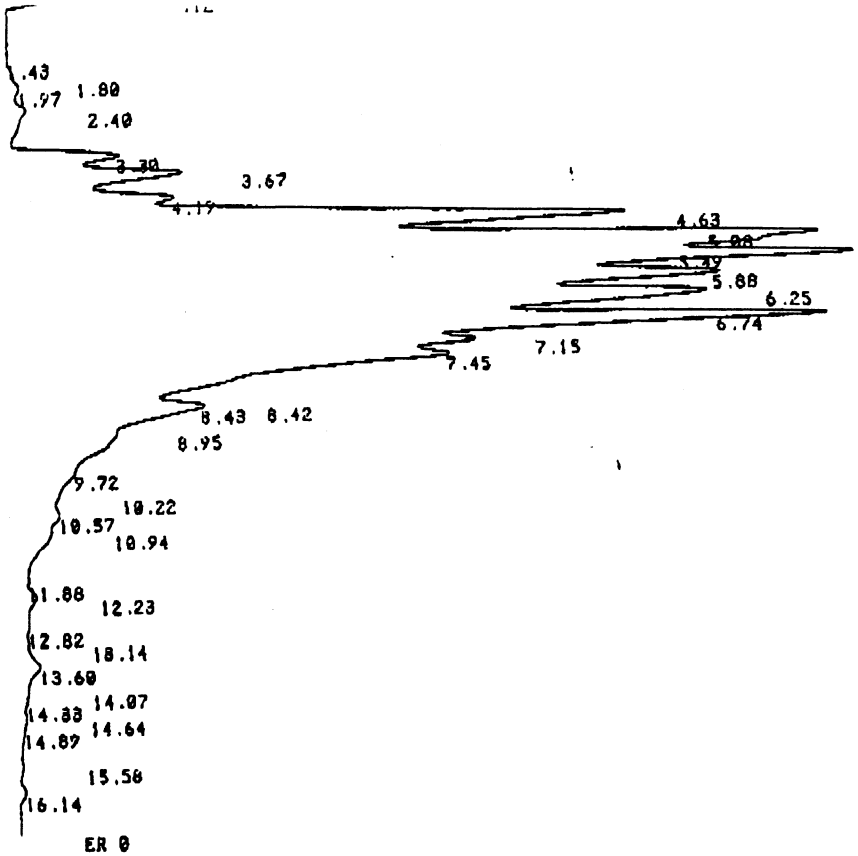
PCB 81-08-91 15:16:31 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 50 INDEX 50

T.A: 6037461

PEAK#	AREA%	RT	AREA BC
1	1.478	0.12	110579 01
2	0.284	1.42	21221 02
3	0.324	1.59	24216 02
4	2.784	2.41	208319 02
5	3.421	2.62	255919 02
6	6.056	3.27	453064 02
7	10.951	3.67	819308 02
8	16.667	4.17	1246731 02
9	12.657	4.64	946742 02
10	12.262	5.06	917400 02
11	22.106	5.49	1653812 02
12	1.034	6.71	77354 02
13	2.795	6.72	209073 02
14	6.651	7.12	497605 08
15	0.029	8.43	2207 05
16	0.	8.7	1 05
17	0.	9.62	4 05
18	0.	9.67	1 05
19	0.023	9.92	1731 05
20	0.042	10.43	3126 05
21	0.	10.8	3 05
22	0.011	11.1	824 01
23	0.036	11.59	2715 02
24	0.03	11.82	2234 03
25	0.058	12.42	4368 01
26	0.078	13.22	5847 02
27	0.04	13.53	3025 03
28	0.008	14.18	577 01
29	0.043	14.92	3237 02
30	0.028	15.16	2113 02
31	0.059	15.2	4391 02
32	0.033	15.41	2440 03
33	0.011	16.35	849 01
TOTAL	100.		7481444



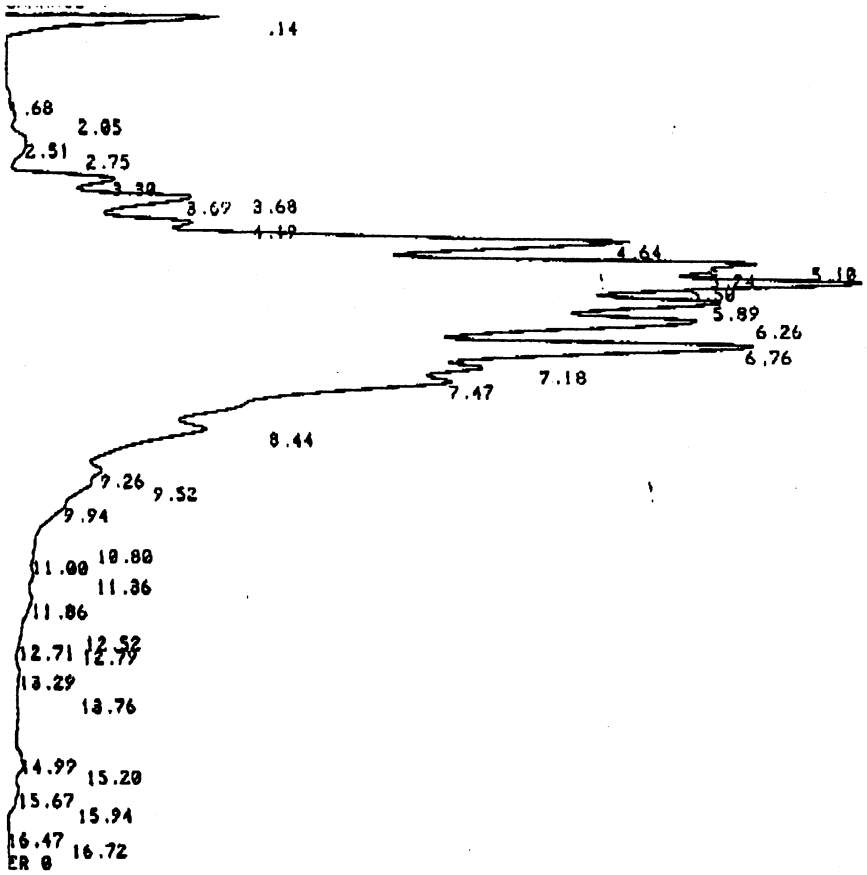


PCB 01-08-91 14:08:31 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 48 INDEX 48

PEAK#	AREA%	RT	AREA BC
1	0.826	0.12	46417 01
2	0.446	1.43	25037 02
3	0.465	1.8	26136 02
4	0.547	1.97	30740 02
5	1.29	2.4	72493 02
6	1.514	3.3	85065 02
7	2.726	3.67	153126 02
8	2.023	4.19	113661 02
9	9.3	4.63	522434 02
10	12.246	5.08	687917 02
11	10.019	5.49	562492 02
12	9.084	5.88	510296 02
13	11.173	6.25	627670 02
14	11.641	6.74	653948 02
15	4.559	7.15	256083 02
16	10.593	7.45	590033 02
17	1.187	8.42	66683 02
18	2.776	8.43	155960 02
19	2.895	8.95	162642 02
20	1.065	9.72	59838 02
21	0.343	10.22	19283 02
22	0.901	10.57	50618 02
23	0.99	10.94	55604 02
24	0.141	11.88	7899 02
25	0.478	12.23	26845 02
26	0.131	12.82	7384 02
27	0.102	13.14	5753 02
28	0.409	13.6	22975 02
29	0.09	14.07	5042 02
30	0.022	14.33	1256 02
31	0.041	14.64	2320 02
32	0.001	14.89	56 03
33	0.016	15.58	901 01
34	0.053	16.14	2960 01
TOTAL	100.		5617567

T.A = 3 132 923



PCB 81-08-91 13:41:23 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 47 INDEX 47

T.A. 3193101

PEAK#	AREA%	RT	AREA	BC
1	1.566	0.14	92687	01
2	0.752	1.68	44483	02
3	0.619	2.05	36653	02
4	0.764	2.51	45179	02
5	0.45	2.75	26602	02
6	1.393	3.3	82480	02
7	1.062	3.68	62843	02
8	1.753	8.69	103754	02
9	2.068	4.19	122847	02
10	9.485	4.64	558284	02
11	6.722	5.1	397749	02
12	8.824	5.24	226244	02
13	10.253	5.5	606671	02
14	8.54	5.89	505290	02
15	10.329	6.26	611189	02
16	10.693	6.76	632700	02
17	4.718	7.18	279147	02
18	10.476	7.47	619862	02
19	4.803	8.44	284203	02
20	1.436	9.26	84969	02
21	1.495	9.52	88486	02
22	1.71	9.94	101103	02
23	0.213	10.8	12580	02
24	0.419	11.	24774	02
25	0.551	11.86	32595	02
26	1.109	11.86	65600	02
27	0.181	12.52	10724	02
28	0.065	12.71	3870	02
29	0.202	12.79	11933	02
30	0.483	13.29	28563	02
31	0.881	13.76	52135	02
32	0.199	14.99	11798	02
33	0.319	15.2	18868	02
34	0.258	15.67	15274	02
35	0.165	15.94	9785	02
36	0.082	16.47	4844	02
37	0.012	16.72	709	03
TOTAL	100.		5917027	

REPORT

Description of Current Conditions for Areas South of Leith Street

Volume IV of IV

General Motors Corporation
NAO-Flint Operations
Flint, Michigan

May 30, 2000

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

TECHNICAL REPORT

Description of Current Conditions for Areas South of Leith Street

Volume IV of IV

General Motors Corporation
NAO-Flint Operations
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May 30, 2000

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6723 Towpath Road, P.O. Box 66
Syracuse, New York, 13214-0066
(315) 446-9120

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Appendices

Appendix L - Supplemental Information - Building 40 Basement Tunnel

BUILDING 40 - PCB SAMPLING

ANALYTICAL RESULTS

I. INTRODUCTION/PURPOSE

There were two rounds of sampling for the presence of PCB's in Building 40. The first round of sampling on August 30, 1991, concentrated on collecting samples from a flooded sub-basement on the east side of Building 40 and floor areas. The second round of sampling included collecting samples from sumps and elevator pits, as part of the Building area PCB sampling survey in mid-September 1991.

II. SAMPLING PROTOCOL

In the flooded area of the sub-basement, due to groundwater infiltration, samples were collected of the top layer that had an oily sheen, of the middle layer that appeared to be clear water, and the bottom layer that had some sludge.

Liquid samples were collected using sterile disposable bailers while scrape samples were collected directly from the floor and elevator pit areas.

The following summarizes the sampling locations and the analytical laboratory results for the six samples collected from the basement area of Building 40 during the first round of sampling and the results obtained from the second round of sampling.

III. SAMPLING LOCATIONS

For the first round of sampling, the six sampling locations area are as follows:

(1) LOCATION: DEPRESSION CORNER 2SE
(There is an uneven depression in the southeast corner near the door for the loading dock.)

(2) LOCATION: WATER STAIRS
The oil/water mix sample was collected at the top of the stairs leading from the sub-basement to the basement of Building 40; therefore, it is more representative of the oil layer floating on the top of the water.

(3) LOCATION: 1 WATER WEST
This sample was collected from the top of the stairwell leading from the sub-basement to the basement of Building 20.

(4) LOCATION: WHRBI
This is water collected from the manhole at the foot of the stairs to the basement from the door on the east wall of Building 40.

(5) LOCATION: 3 EAST

This sample is a composite of scrapings collected from the floor near the east wall in the basement of Building 40.

(6) LOCATION: 4 WEST
This sample is a composite of scrapings collected from the floor near the west wall in the basement of Building 40.

IV. ANALYTICAL LABORATORY RESULTS

A. August 1991 Sampling Effort

The laboratory analytical results from the first round of sampling in the flooded east basement stairwell area of Building 40 are compiled in Attachment 1. A summary of the results is as follows:

(1) LOCATION: DEPRESSION CORNER 2SE

TYPE OF ANALYSIS: OIL
There was more oil than water in this sample -- anything other than water is reported in mg/kg units as required by EPA SW-846.

TOTAL PCB CONCENTRATION: 80 mg/kg

(2) LOCATION: WATER STAIRS

TYPE OF ANALYSIS: OIL
There was an oil/water mix. Because there was more oil than water in this sample, it was analyzed with oil as the matrix.

TOTAL PCB CONCENTRATION: 25 mg/kg

(3) LOCATION: 1 WATER WEST

TYPE OF ANALYSIS: WATER
This water sample was collected from the water beneath the floating oil layer at the top of the stairs leading from the sub-basement to the basement of Building 40.

TOTAL PCB CONCENTRATION: 23 ug/l

(4) LOCATION: WHRBI

TYPE OF ANALYSIS: WATER
This water sample was collected from a manhole located at the foot of the stairs to the basement from the door on the east wall of Building 40.

TOTAL PCB CONCENTRATION: < 2.0 ug/l

(5) LOCATION: 3 EAST

TYPE OF ANALYSIS: OIL SLUDGE ANALYSIS
This sample is a composite of scrapings collected from the floor near the east wall in the basement of Building 40.

TOTAL PCB CONCENTRATION: 75 mg/kg

(6) LOCATION: 4 WEST

TYPE OF ANALYSIS: OIL SLUDGE ANALYSIS
This sample is a composite of scrapings collected from the floor near the west wall in the basement of Building 40.

TOTAL PCB CONCENTRATION: 33 mg/kg.

V. CONCLUSION

From the analytical results of the samples of this first round of sampling, the depression area near the large overhead door on the southeast side of Building 40, the east floor area, and to some extent, the west floor area are of concern. In addition, the water with a floating oil layer in the basement stairwell of Building 40 will also need to be addressed.

A workplan, Attachment 2, to remediate the PCB contamination in the basement of Building 40 has been developed. In addition, a Health and Safety Plan, Attachment 3, for implementing the workplan has also been developed.

ATTACHMENT 1

LABORATORY ANALYTICAL RESULTS

BUILDING 40

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: OIL ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:20 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: JB, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO:

	DEPRESSION CORNER 2SE	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72479		
PCB 1016,1232,1242,1248	<25	varies	mg/kg
PCB 1254,1260	80	varies	mg/kg
TOTAL PCB'S	80	---	mg/kg

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: OIL ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:10 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: JB, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	WATER STAIRS	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72480		
PCB 1016,1232,1242,1248	<1.0	varies	mg/kg
PCB 1254,1260	25	varies	mg/kg
TOTAL PCB'S	25	---	mg/kg

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: WATER ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:40 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: JB, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	1 WATER WEST	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72481		
PCB 1016,1232,1242,1248	<11	11	ug/l
PCB 1254,1260	23	1.0	ug/l
TOTAL PCB'S	23	—	ug/l

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: WATER ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:30 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: MK, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	WHRBI	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72482		
PCB 1016,1232,1242,1248	<1.0	1.0	ug/l
PCB 1254,1260	<1.0	1.0	ug/l
TOTAL PCB'S	<2.0	---	ug/l

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: OIL ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:30 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: MK, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	3 EAST	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72483		
PCB 1016,1232,1242,1248	<50	varies	mg/kg
PCB 1254,1260	75	varies	mg/kg
TOTAL PCB'S	75	---	mg/kg

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: OIL ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:50 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: MK, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	4 WEST	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72484		
PCB 1016,1232,1242,1248	<5.0	varies	mg/kg
PCB 1254,1260	33	varies	mg/kg
TOTAL PCB'S	33	---	mg/kg

ATTACHMENT 2

REMEDIATION WORKPLAN

BUILDING 40

BUILDINGS 40/16 - TUNNEL & BASEMENT

Prepared For:

GENERAL MOTORS - BOC FLINT OPERATIONS
902 East Hamilton Avenue
Flint, Michigan 48550-8503

Prepared By:

AVENDT ENVIRONMENTAL
432 North Saginaw Street
Fourth Floor, Northbank Center
Flint, Michigan 48502

December, 1991

TABLE OF CONTENTS

HISTORY
GENERAL MOTORS - BOC FLINT OPERATIONS
BUILDINGS 40/16 - TUNNEL & BASEMENT

Original construction of buildings 40 and 6 began in the early 1920's. The existing tunnel was part of this original construction. Building 6 has undergone several building modifications and after the extension of the east wall in 1944, it became identified as building 16. Throughout the years, building 40 has been utilized for a variety of operations. These include building transmissions, tire and wheel welding, bumper assembly, storage of maintenance parts and bumper plating.

Currently building 40 first floor is used for wheel and tire assembly, and the upper floors are used for maintenance storage. At one time, the basement and tunnel were functional in the everyday operations of the building. Presently, however, the basement and tunnel are in an unused area of the building and isolated from the work force. Information regarding changes to the tunnel during building renovations is not available. Therefore, the length of the tunnel, its condition and its contents are unknown at this time. The stairway leading to the tunnel is flooded to the level of the basement floor. This water is assumed to be ground water. Though this is a large volume of water, it is believed to be contained since no outlet for the water is shown on the drawings or found in the field.

On 7/23/91, a sump in the basement of building 40 was sampled by GMPT-Flint, Materials Engineering. Results received on 8/07/91 indicated PCB contamination. WW Science & Engineering collected additional samples in the basement and tunnel area of building 40 on 8/30/91. Buick City was notified on 10/17/91 that these results also indicated PCB contamination in these areas. Sampling results are shown in Appendix A.

WORK PLAN
GENERAL MOTORS - BOC FLINT OPERATIONS
BUILDINGS 40/16 - TUNNEL & BASEMENT

The general work plan for this area began to develop in early November 1991, and Avendt Environmental (Avendt) was contracted to assist. At this early stage of discovery the only information available were the results from the WW Engineering & Science samples, the original building drawings and an existing plant layout. Phase I was developed to include the following items:

- Discovery
- Determination of safety & training requirements
- Site Safety Plan
- Preparing a work area
- Remediation of the basement area
- Investigation of the tunnel
- Sampling in and around the tunnel
- Development of a remediation plan for the tunnel
- Prepare Phase I - Final Report

Discovery

Before any plans or determinations can be made, additional information on the site is required. The tunnel must be located on the existing site layout drawing (Figure 1), additional samples must be taken to recheck PCB concentrations and determine if solvents or metals are present (results are shown in Appendix B); resample if necessary and determine if there are any other access or sampling points for the tunnel other than the stairway in building 40. COMPLETED 12/18/91

Determination of the safety & training requirements

Prior to completion of the Site Safety Plan, a summary of the OSHA training requirements and the necessary personal protective equipment will be prepared. This will be based on the nature of the potentially hazardous substances in the basement area, condition of the atmosphere and the materials to be used in the clean-up. These requirements will be used to ascertain availability of an appropriate work crew for subsequent activities.

Site Safety Plan

A site safety plan will be developed to include the site history, site entry requirements and control procedures, personal protective equipment, decontamination of equipment and personnel and emergency response. This must be done for

all task levels from collecting samples to remediation of the stairway or basement.

Preparing the work area

Prior to beginning work, areas must be secured in preparation of establishing safety zones for removal of personal protective equipment, decontamination and equipment storage. This will also include the placement of auxiliary equipment required to continue work in the basement area (e.g., portable lighting, air monitoring equipment, etc.).

Remediation of the basement area

A remediation plan must be developed to remove the oil and sludge from the basement area and verify clean. Remediation of the basement will permit tunnel investigation work to begin.

Investigation of the tunnel

A diving team will be used to define the extent of flooding, contents of the tunnel and the scope of contamination. Among the tasks to be performed by the diver are video taping and sampling throughout the length of the tunnel, checking for cracks or breaks in the tunnel walls and setting-up a means for future sampling (eg. securing teflon tubing to specific areas along the length of the tunnel). During this investigation the basement can be used as part of a staging area for equipment and personal protective equipment.

Sampling in and around the tunnel

Soil borings will be drilled in the area between the two buildings, both in the soil above the tunnel and on either side of it. If findings indicate additional borings are necessary along the length of the tunnel, borings will be drilled through the manufacturing floor as required. If additional samples are required of the tunnel contents, samples will be pumped through the teflon tubing left by the diver.

Development of a remediation plan for the tunnel

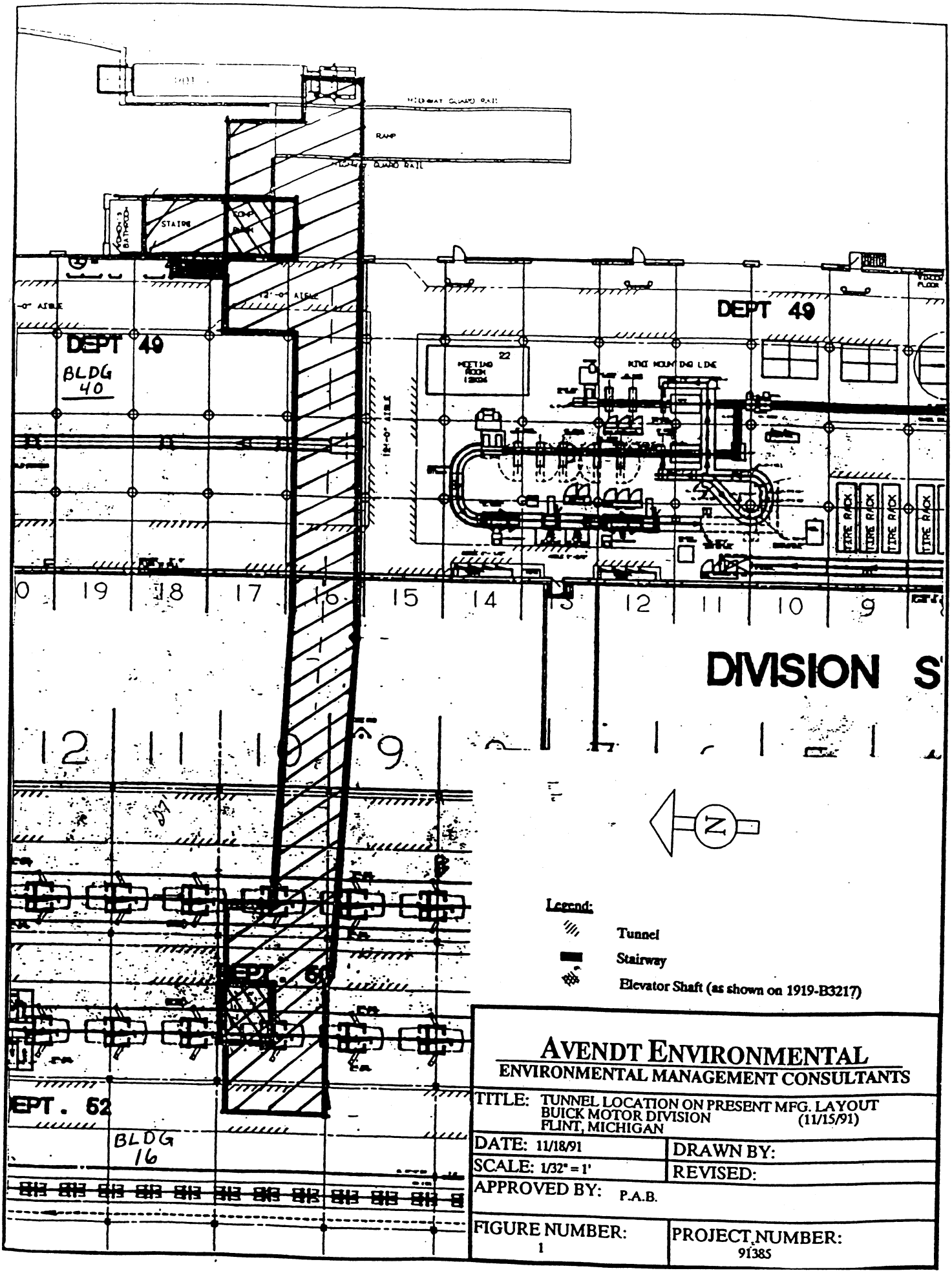
Based on the results of the tunnel investigations, various alternatives will be considered for the remediation of the tunnel. Several methods are currently being looked at to treat and dispose of the potentially large volume of water - to date no acceptable method has been found.

Prepare Phase I - Final Report

All work done including the findings of investigations to this point in time will be summarized into a Phase I - Final Report.

Phase I of this work plan has been scheduled and is shown in detail in Appendix C.

FIGURE



AVENDT ENVIRONMENTAL
ENVIRONMENTAL MANAGEMENT CONSULTANTS

TITLE: TUNNEL LOCATION ON PRESENT MFG. LAYOUT BUICK MOTOR DIVISION FLINT, MICHIGAN (11/15/91)	
DATE: 11/18/91	DRAWN BY:
SCALE: 1/32" = 1'	REVISED:
APPROVED BY: P.A.B.	
FIGURE NUMBER: 1	PROJECT NUMBER: 91385

APPENDIX A

GMPT Materials Engineering

Results Requested by	Page
29 JUL 91	1 of 1

Card Date	Prefix	Lab Number	Project Number	Part Number	Part Name
7/24/91	V	22931	N/A	NPN	OIL AND WATER, SUMP BLDG. 40

Specifications: N/A

Heat Number	Lot Number	Factory	Number of Samples	Quantity in Lot
N/A	7-23	86	1	N/A

Date Received	Source
07/23/91	CLIFF NAUSS

Report To	Telephone Number	Requested by
CLIFF NAUSS	6-7208	M.NIELSEN

Sample History

SAMPLE REMOVED FROM SUMP BLDG 40. IS MATERIAL OK TO PUMP TO PROCESS WASTE? SAMPLE FROM CLIFF NAUSS.

Work Requested

CHECK FOR PRESENCE OF PCB.

Area(s)	Initials	Human Time	Machine Time	Date Completed	Sample(s) Out	Meth/Proc
CM Chemistry	PH	4.0	3.0	07 AUG 91	07 AUG 91	YES
M Chemistry	MW	4.0	0.0	07 AUG 91	07 AUG 91	YES

Results/Methods

The sample was treated with fluorosil and analyzed by GC/MS. The sample contains 20-30 PPM Arochlor 1254.

Sample	PCB
Bldg. 40 Sump	20-30 PPM Arochlor 1254

MEMORANDUM

TO: Robert Metcalf

FROM: Connie Boris C. Boris

DATE: October 16, 1991

RE: Status Report on Analytical Results for Building 40 and Hydrogeological Investigation

The following is a status report on the analytical laboratory results for the six samples collected from the basement stairwell on the east side of Building 40 as well as a summary of work to date on the hydrogeological study as of October 7, 1991.

I. ANALYTICAL LABORATORY RESULTS - BASEMENT OF BUILDING 40.

The laboratory analytical results for the east basement stairwell of Building 40 are attached. The following is a description of each sample label.

SAMPLE NUMBER 72479:

TYPE OF ANALYSIS: OIL
(There was more oil than water in this sample -- anything other than water is reported in mg/kg units as required by EPA SW-846)

LOCATION: DEPRESSION CORNER 2SE
(There is an uneven depression in the southeast corner of the basement for Building 40.)

SAMPLE NUMBER 72480:

TYPE OF ANALYSIS: OIL
(This sample is an oil/water mix. Because there was more oil than water in this sample, it was analyzed with oil as the matrix.)

LOCATION: WATER STAIRS
(The sample was collected from the surficial oil layer at the top of the stairs leading from the subbasement to the basement of Building 40 -- therefore, it is more representative of the oil layer floating on the top of the water).

SAMPLE NUMBER 72481:

TYPE OF ANALYSIS: WATER
(This sample was also collected from the water beneath the floating oil layer at the top of the stairs leading from the subbasement to the basement of Building 40).

LOCATION: 1 WATER WEST
(This sample was collected from the top of the stairwell leading from the subbasement to the basement of Building 20).

SAMPLE NUMBER 72482:

TYPE OF ANALYSIS: WATER

LOCATION: WHRBI
(This is water collected from the manhole at the foot of the stairs to the basement from the door on the east wall of Building 40.)

SAMPLE NUMBER 72483:

TYPE OF ANALYSIS: SLUDGE ANALYSIS

LOCATION: 3 EAST
(This sample is a composite of scrapings collected from the floor near the east wall in the basement of Building 40).

SAMPLE NUMBER 72484:

TYPE OF ANALYSIS: SLUDGE ANALYSIS

LOCATION: 4 WEST
(This sample is a composite of scrapings collected from the floor near the west wall in the basement of Building 40).

II. HYDROGEOLOGICAL SITE INVESTIGATION

As of October 7, 1991, 21 soil borings were completed, using hollow stem auger methods. Of these 21 borings, 11 were converted to groundwater monitoring wells. The project is slightly more than 50% complete. That is, a total of 40 soil borings are anticipated to be installed, according to the workplan. If the current pace continues and no drilling problems are encountered, the drilling effort should be completed during the week ending October 25, 1991. This assumes an average of eight soil borings to be completed per week.

ENVIRONMENTAL LABORATORY DIVISION

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: OIL ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:20 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: JB, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO:

	DEPRESSION CORNER 2SE	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72479		
PCB 1016,1232,1242,1248	<25	25	mg/kg
PCB 1254,1260	80	25	mg/kg
TOTAL PCB'S	80	---	mg/kg

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: OIL ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:10 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: JB, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	WATER STAIRS	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72480		
PCB 1016,1232,1242,1248	<1.0	1.0	mg/kg
PCB 1254,1260	25	1.0	mg/kg
TOTAL PCB'S	25	--	mg/kg

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: WATER ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:40 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: JB, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	1 WATER WEST	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72481		
PCB 1016,1232,1242,1248	<11	11	ug/l
PCB 1254,1260	23	1.0	ug/l
TOTAL PCB'S	23	---	ug/l

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: WATER ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:30 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: MK, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	WHRBI	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72482		
PCB 1016,1232,1242,1248	<1.0	1.0	ug/l
PCB 1254,1260	<1.0	1.0	ug/l
TOTAL PCB'S	<2.0	---	ug/l

E N V I R O N M E N T A L L A B O R A T O R Y D I V I S I O N

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: SLUDGE ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:30 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: MK, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	3 EAST	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72483		
PCB 1016,1232,1242,1248	<50	50	mg/kg
PCB 1254,1260	75	50	mg/kg
TOTAL PCB'S	75	---	mg/kg

ENVIRONMENTAL LABORATORY DIVISION

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: GM-BOC FLINT
PROJECT NO.: 25719
LOCATION: BUILDING #40
SAMPLED BY: J. WOOSTER/ROBERT THOMAS
DESCRIPTION: SLUDGE ANALYSIS

DATED SAMPLED: 08/30/91 TIME: 9:50 AM
DATE RECEIVED: 09/05/91 TIME: 7:00 AM
DATE COMPLETED: 09/24/91
SCHEDULED COMPLETION: 09/23/91
ANALYST: MK, KT
QUALITY CONTROL REVIEW BY: KVH
WORKSHEET NO: 3

	4 WEST	DETECTION LIMIT	UNITS
LAB SAMPLE NO:	72484		
PCB 1016,1232,1242,1248	<5.0	5.0	mg/kg
PCB 1254,1260	33	5.0	mg/kg
TOTAL PCB'S	33	---	mg/kg

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: BOC FLINT
PROJECT NO.: 25719
LOCATION: BOC FLINT
SAMPLED BY: BOB THOMAS
DESCRIPTION: SLUDGE ANALYSIS

DATE SAMPLED: 10/31/91 TIME: 2:00 PM
DATE RECEIVED: 11/04/91 TIME: 10:30 AM
DATE COMPLETED: 11/20/91
SCHEDULED COMPLETION: 11/25/91
ANALYST: MK
QUALITY CONTROL REVIEW BY: WH
WORKSHEET NO:

LAB SAMPLE NO:	NORTH WHITE ARROW MANHOLE SLUDGE 4628	DETECTION LIMIT	UNITS
PCB 1016, 1232, 1242, 1248	<40	40	mg/kg
PCB 1254, 1260	1.4	1.0	mg/kg
TOTAL PCB'S	1.4		mg/kg

WW ENGINEERING & SCIENCE
ENVIRONMENTAL LABORATORY DIVISION

CLIENT: BOC FLINT
PROJECT NO.: 25719
LOCATION: BOC FLINT
SAMPLED BY: BOB THOMAS
DESCRIPTION: WATER ANALYSIS (LIQUID)

DATE SAMPLED: 10/31/91 TIME: 2:30 PM
DATE RECEIVED: 11/04/91 TIME: 10:30 AM
DATE COMPLETED: 11/20/91
SCHEDULED COMPLETION: 11/25/91
ANALYST: MK
QUALITY CONTROL REVIEW BY: WH
WORKSHEET NO:

LAB SAMPLE NO:	NORTH WHITE ARROW MANHOLE LIQUID 4630	DETECTION LIMIT	UNITS
PCB 1016, 1232, 1242, 1248	<24	24	ug/l
PCB 1254, 1260	<3	3	ug/l
TOTAL PCB'S	<27		ug/l

APPENDIX B

Fire & Environmental
Consulting Laboratories, Inc.

One East Complex 1451 East Lansing Dr., Suite 222 East Lansing, MI 48823 (517) 332-0167 FAX (517) 332-6333
Indianapolis (317) 879-0913 FAX (317) 879-0914

December 13, 1991

Avendt Environmental
432 N. Saginaw, 4th Floor
Flint, MI 48502

Attention: Ms. Amy S. Webster

Analytical Laboratory Report

FECL #: 8395-91-K1
8396-91-K1-3
Samples analyzed by: P. Roettger, J. Blaszczyk, L. DeWitt
Samples collected by: M.W.K
Analyses requested by: A. Webster
Date/time samples submitted: 12-05-91 3:35 pm
PO #: Verbal

Submitting Company: Avendt Environmental
432 N. Saginaw, 4th Floor
Flint, MI 48502

Project Description: B-40 & Storage Pit 91385-02

Samples Collected:

FECL #: 8395-91-K1
Tag: Storage Pit Area #1
Container: Plastic Bottles
Sample type: Liquid
Preservation: None
Sampling date/time: 12/04/91

FECL #: 8396-91-K2
Tag: B-40 Oil
Container: Glass/Vial
Sample type: Oil/H_2O
Preservation: None
Sampling date/time: 12/04/91

FECL #: 8396-91-K1
Tag: B-40 H_2O
Container: Plastic/Glass/Vial
Sample type: H_2O
Preservation: None
Sampling date/time: 12/04/91

FECL #: 8396-91-K3
Tag: B-40 Sludge
Container: Glass
Sample type: Sludge
Preservation: None
Sampling date/time: 12/04/91

FECL #:	8395-91-E1
Tag:	Storage Pit Area #1
Metals	
Arsenic	<0.005 mg/l
Barium	0.47 mg/l
Cadmium	<0.005 mg/l
Chromium	0.012 mg/l
Coper	0.01 mg/l
Lead	<0.01 mg/l
Mercury	<0.005 mg/l
Selenium	<0.005 mg/l
Silver	<0.005 mg/l
Zinc	0.13 mg/l

FECL #:	8396-91-E1	8396-91-E2	8396-91-E3
Tag:	B-40 H_2O	B-40 Oil	B-40 Sludge
Metals			
Arsenic	0.96 mg/l	0.62 mg/kg	3.60 mg/kg
Barium	4.08 mg/l	0.89 mg/kg	39.3 mg/kg
Cadmium	0.016 mg/l	<0.01 mg/kg	0.60 mg/kg
Chromium	0.16 mg/l	0.07 mg/kg	6.48 mg/kg
Coper	0.90 mg/l	0.40 mg/kg	42.8 mg/kg
Lead	1.58 mg/l	0.60 mg/kg	57.1 mg/kg
Mercury	<0.005 mg/l	<0.005 mg/kg	0.043 mg/kg
Selenium	<0.05 mg/l	<0.05 mg/kg	0.09 mg/kg
Silver	<0.01 mg/l	<0.01 mg/kg	0.03 mg/kg
Zinc	7.80 mg/l	1.91 mg/kg	100 mg/kg

FECL #:	8396-91-E1	8396-91-E2	8396-91-E3
Tag:	B-40 H_2O	B-40 Oil	B-40 Sludge
Method 8010 - Halogenated Volatile Organics			
Benzyl chloride	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
bis(2-chloroethoxy) methane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
bis(2-chloroisopropyl) ether	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Bromobenzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Bromodichloromethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Bromoform	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Bromomethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Carbon tetrachloride	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Chloroacetaldehyde	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Chlorobenzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Chloroethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
2-Chloroethylvinyl ether	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Chloroform	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1-Chlorohexane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Chloromethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Chloromethyl methyl ether	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Chlorotoluene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Dibromochloromethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Dibromomethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,2-Dichlorobenzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,3-Dichlorobenzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,4-Dichlorobenzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Dichlorodifluoromethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,1-Dichloroethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,2-Dichloroethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,1-Dichloroethene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
t-1,2-Dichloroethene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,2-Dichloropropane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
c-1,3-Dichloropropene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
t-1,3-Dichloropropene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Methylene chloride	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,1,1,2-Tetrachloroethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,1,2,2-Tetrachloroethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Tetrachloroethene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,1,1-Trichloroethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,1,2-Trichloroethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Trichloroethene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Trichlorofluoromethane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Trichloropropane	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Vinyl chloride	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg

FECL #:	8396-91-E1	8396-91-E2	8396-91-E3
Tag:	B-40 H_2O	B-40 Oil	B-40 Sludge
Method 8020 - Aromatics Volatile Organics			
Benzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Chlorobenzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,2-Dichlorobenzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,3-Dichlorobenzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
1,4-Dichlorobenzene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Ethylbenzene	<0.005 mg/l	<0.1 mg/kg	0.06 mg/kg
Toluene	<0.005 mg/l	<0.1 mg/kg	0.10 mg/kg
p,m-Xylene	<0.005 mg/l	0.1 mg/kg	0.18 mg/kg
o-Xylene	<0.005 mg/l	<0.1 mg/kg	<0.05 mg/kg
Method 8080 - Organochlorine PCBs			
PCB-1016	<0.001 mg/l	<0.01 mg/kg	<0.01 mg/kg
PCB-1221	<0.001 mg/l	<0.01 mg/kg	<0.01 mg/kg
PCB-1232	<0.001 mg/l	<0.01 mg/kg	<0.01 mg/kg
PCB-1242	<0.001 mg/l	<0.01 mg/kg	<0.01 mg/kg
PCB-1248	<0.001 mg/l	<0.01 mg/kg	<0.01 mg/kg
PCB-1254	<0.001 mg/l	<0.01 mg/kg	<0.01 mg/kg
PCB-1260	<0.001 mg/l	<0.01 mg/kg	<0.01 mg/kg

V.F. Murshak/RR

Violetta F. Murshak
Laboratory Manager

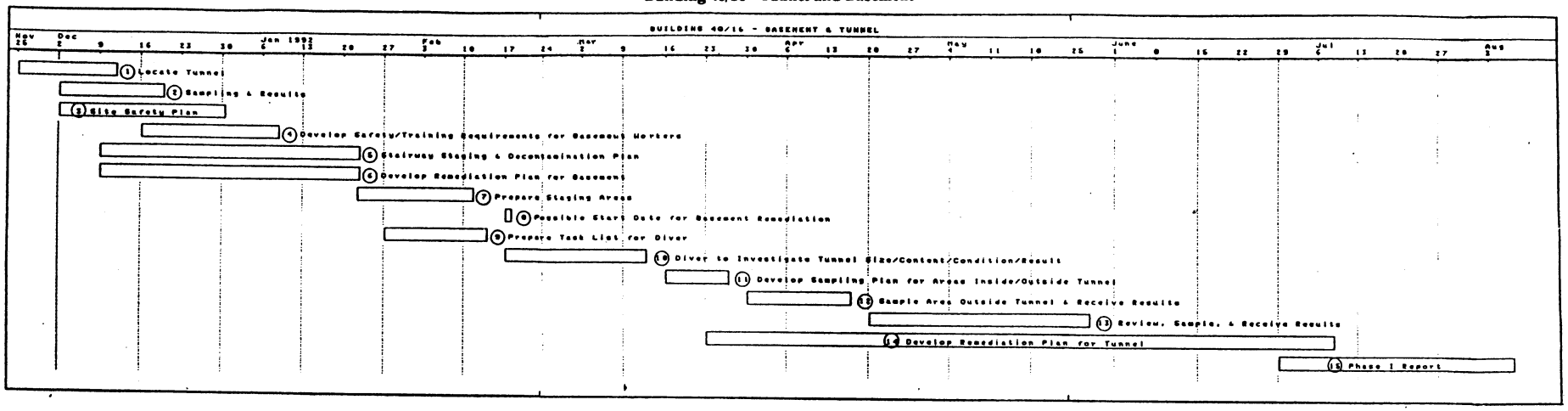
VFM/ajc

APPENDIX C

TENTATIVE SCHEDULE

WORK TASKS
PHASE 1

Building 40/16 - Tunnel and Basement



12/18/91

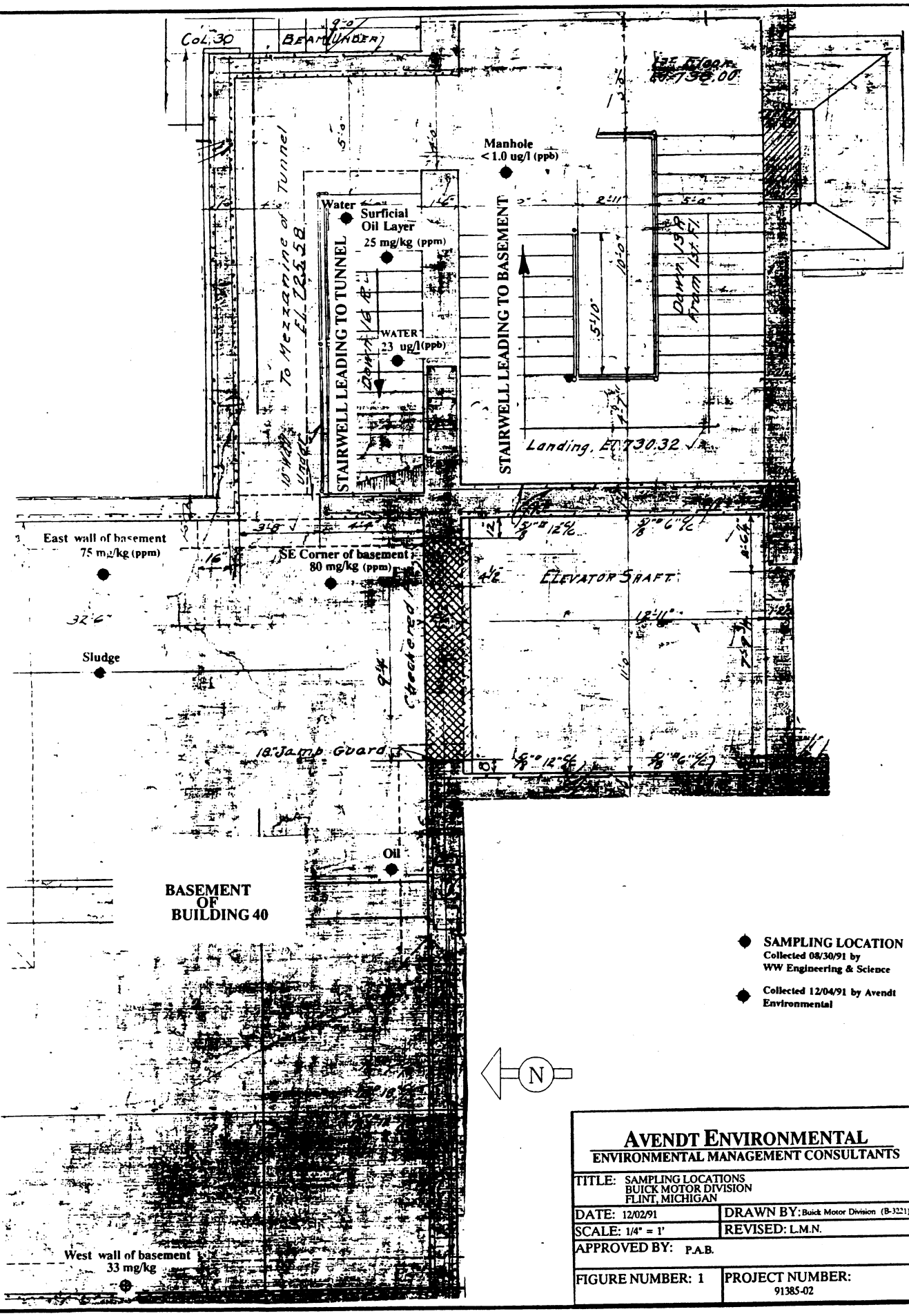
1. Locate the tunnel on existing layout drawings in the field and verify access availability in Building 16.
2. Determine if the sludge, oil or water found in the tunnel and basement areas contains solvents or metals. This information is necessary to complete the site safety plan, decontamination and ultimate disposal of materials.
3. Prepare site safety plan for the discovery stage.
4. Develop the safety, hygiene and training requirements for all personnel working in or around the tunnel and basement.
5. Develop the plan for stairway, staging and decontamination area.
6. Develop the remediation plan for the basement area.
7. Prepare the stairway, staging and decontamination areas including portable lighting and air monitoring.
8. Possible start date for remediation of the basement area.
9. Prepare a task list for diver, including taking measurements, sampling, filming requirements, anchoring teflon tubing for future sampling and others tasks as needed.
10. Diver to investigate the tunnel location, the contents of the tunnel (equipment and chemical nature) and the extent of the flooding.
11. Develop complete sampling plan to determine the extent of contamination both within and outside the tunnel.
12. Collect samples in and outside the tunnel area as specified in the sampling plan (Item 11).
13. Review sampling results and take additional samples as required.
14. Develop the remediation plan for the tunnel and investigate methods of treatment/disposal for contents.
15. Summarize all information into a Phase I report for Buildings 40/16 - Basement and Tunnel.

Time required to remediate the basement area is not shown because this will depend on the complexity of the decontamination plan and availability of a crew. However, remediation of the basement should be completed as soon as possible after the plan is developed. This is not only for safety and hygiene purposes, but will facilitate progress through the remaining clean-up.

ATTACHMENT 3

HEALTH AND SAFETY PLAN

BUILDING 40



AVENDT ENVIRONMENTAL
ENVIRONMENTAL MANAGEMENT CONSULTANTS

TITLE: SAMPLING LOCATIONS BUICK MOTOR DIVISION FLINT, MICHIGAN	
DATE: 12/02/91	DRAWN BY: Buick Motor Division (B-3221)
SCALE: 1/4" = 1'	REVISED: L.M.N.
APPROVED BY: P.A.B.	
FIGURE NUMBER: 1	PROJECT NUMBER: 91385-02

October 17, 1991

Subject: Results of Initial PCB Samples Taken In The Basement of Building #40

To: Cliff Nauss, Environmental Coordinator, Buick City
Gary Field, Safety Engineer, Buick City

I have just received the final results of the PCB testing done in the mezzanine basement and stairwell of Building #40 several weeks ago. This testing shows low levels of PCB contamination in the mezzanine basement areas tested. Based upon a review of the raw data, I have requested additional sampling to verify the working hypothesis that the contamination is spread throughout the mezzanine basement area, and to confirm the water analysis from the flooded stairwell leading to the lower basement. The water sample from the blind sump at the foot of the stairwell going to the mezzanine basement shows non-detect at levels of 1 part per billion (1 ug/l or 1 ppb). All of the tests in this area show the PCB to be of the 1254, 1260 class. A review of the data is as follows:

SAMPLE/LOCATION	DETECTION LIMIT	RESULTS	UNITS *
Mainly oil from a floor depression in the SE corner of the mezzanine basement (oil analysis)	25	80	mg/kg
Surficial oil layer from the flooded stairwell leading to the lower basement (oil analysis)	1.0	25	mg/kg
Water from the flooded stairwell leading to the lower basement (water analysis)	1.0	23	ug/l
Water from the blind sump at the foot of the stairs going to the mezzanine basement (water analysis)	1.0	<1.0	ug/l
Composite of floor scrapings collected along the east wall of the mezzanine basement (sludge analysis)	50	75	mg/kg

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PHONE: (313) 238-9190 • FAX: (313) 238-9195

CHAIN OF CUSTODY RECORD

LABORATORY: NET

PROJECT #: 2018DC

PROJECT: GM-BOC-#10 40

SAMPLERS (Signature)

SAMPLE NUMBER	DATE	TIME	MATRIX	NO. CONTAINERS	ANALYSIS REQUIRED	Turn Around Time	PRESERVATION: ICED	PRESERVATION: SPECIFY CHEMICAL ADDED AND FINAL pH IF KNOWN
Manhole	2/11/92		Water	1	X			

Relinquished by: (Signature) (1)	Date / Time	Received by: (Signature)	Relinquished by: (Signature) (4)	Date / Time	Shipped via:
	2/11/92 9:00	2-11-92 Jerry Moore			
Relinquished by: (Signature) (2)	Date / Time	Received by: (Signature)	Received for Laboratory by: (Signature)	Date / Time	Shipping Ticket No.
				2/11/92	
Relinquished by: (Signature) (3)	Date / Time	Received by: (Signature)	Remarks:		

NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Auburn Hills Division
1700 Harmon Road
Auburn Hills, MI 48326

Tel: (313) 391-2050
Fax: (313) 391-9698

ANALYTICAL REPORT

Keith Edwards
ADVANCED ENVIRONMENTAL INC
352 S Saginaw
Suite 600
Flint, MI 48502-1917

03/23/1992

Job No.: 92.1185
Sample No.: 103507

Project #2018 DC
BOC Building 40

Sample Description: C.B. 6.0 03/06

Date Taken: 03/06/1992

Date Received: 03/09/1992

Parameter	Result	Unit	Date Analyzed	Lab Tech.	Methodology
PCB'S					
Aroclor-1016	<0.05	ug/L	03/19/1992	mmk	8080 (1)
Aroclor-1221	<0.05	ug/L	03/19/1992	mmk	8080 (1)
Aroclor-1232	<0.05	ug/L	03/19/1992	mmk	8080 (1)
Aroclor-1242	<0.05	ug/L	03/19/1992	mmk	8080 (1)
Aroclor-1248	<0.05	ug/L	03/19/1992	mmk	8080 (1)
Aroclor-1254	<0.05	ug/L	03/19/1992	mmk	8080 (1)
Aroclor-1260	<0.05	ug/L	03/19/1992	mmk	8080 (1)

Bruce E. Brown
Project Manager

NET NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Auburn Hills Division
1700 Harmon Road
Auburn Hills, MI 48326

Tel: (313) 391-2050
Fax: (313) 391-9698

ANALYTICAL REPORT

Keith Edwards
ADVANCED ENVIRONMENTAL INC
352 S Saginaw
Suite 600
Flint, MI 48502-1917

03/23/1992

Job No.: 92.1185
Sample No.: 103508

Project #2018 DC
BOC Building 40

Sample Description: C.B. 12.0 03/06

Date Taken: 03/06/1992

Date Received: 03/09/1992

Parameter	Result	Unit	Date Analyzed	Lab Tech.	Methodology
PCB'S					
Aroclor-1016	<0.05	ug/L	03/19/1992	mmk	8080 (1)
Aroclor-1221	<0.05	ug/L	03/19/1992	mmk	8080 (1)
Aroclor-1232	<0.05	ug/L	03/19/1992	mmk	8080 (1)
Aroclor-1242	<0.05	ug/L	03/19/1992	mmk	8080 (1)
Aroclor-1248	<0.05	ug/L	03/19/1992	mmk	8080 (1)
Aroclor-1254	<0.05	ug/L	03/19/1992	mmk	8080 (1)
Aroclor-1260	<0.05	ug/L	03/19/1992	mmk	8080 (1)

Bruce E. Brown
Project Manager

92.1185

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353 SOUTH SAGINAW STREET • SIXTH FLOOR • FLINT, MICHIGAN 48502
PHONE: (313) 238-9190 • FAX: (313) 238-9195

CHAIN OF CUSTODY RECORD

LABORATORY: NET

PROJECT #: 2018 DC

PROJECT: BOC

SAMPLERS (Signature): [signature]

SAMPLE NUMBER	DATE	TIME	MATRIX	NO. CONTAINERS	ANALYSIS REQUIRED: PCB - 8060										Turn Around Time	PRESERVATION / SPECIFY CHEMICAL ADDED AND FINAL pH IF KNOWN
C.B.6.0	3/6/92		liquid		x										10 day	
C.B.12.0	3/6/92		liquid		x											

Relinquished by: (Signature) (1)	Date / Time	Received by: (Signature)	Relinquished by: (Signature) (4)	Date / Time	Shipped via:
[signature]	3/9/92 900A	[signature] 3/9/92 9:00			
Relinquished by: (Signature) (2)	Date / Time	Received by: (Signature)	Received for Laboratory by: (Signature)	Date / Time	Shipping Ticket No.
			[signature]	3/9/92 11:30AM	
Relinquished by: (Signature) (3)	Date / Time	Received by: (Signature)	Remarks:		

NET NATIONAL ENVIRONMENTAL TESTING, INC.

NET Midwest, Inc.
Auburn Hills Division
1700 Harmon Road
Auburn Hills, MI 48326

Tel: (313) 391-2050
Fax: (313) 391-9698

FAX TRANSMISSION NOTICE

Date: 3/23/92

Time: 2:10

To: Keith Edwards

Company: Advanced

Sender: B. Brown

You should receive 4 pages, including this notice.

If you do not receive all pages, please call the sender immediately.

This transmission includes:

_____ letter
_____ memo
_X_ analytical report(s): sample # and client description

Our FAX machine is: Group II or Group III compatible

Our FAX number is: (313) 391-0337

Comments:

PLEASE CALL (313) 391-2050 IF YOU HAVE ANY DIFFICULTY RECEIVING THIS FACSIMILE.

Thank you.

MAY 5 1992
Page 1

Advanced Environmental
352 South Saginaw Street
Sixth Floor
Flint, MI 48502

Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1256
Matrix of Sample Logged : Water
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-WW-T
-PROJECT NO: 2018
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<0.01	ppm
PCB (Arochlor 1221)	<0.01	ppm
PCB (Arochlor 1232)	<0.01	ppm
PCB (Arochlor 1242)	<0.01	ppm
PCB (Arochlor 1248)	<0.01	ppm
PCB (Arochlor 1254)	0.29	ppm
PCB (Arochlor 1260)	<0.01	ppm

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

Analytic & Biological Laboratories, Inc.
24350 INDOPLEX CIRCLE FARMINGTON HILLS, MICHIGAN 48335 (313) 477-6666 FAX (313) 477-8644

MAY 4 1992
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Advanced Environmental
352 South Saginaw Street
Sixth Floor
Flint, MI 48502

Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1257
Matrix of Sample Logged : Water
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-WW-M
-PROJECT NO: 2018
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<0.01	ppm
PCB (Arochlor 1221)	<0.01	ppm
PCB (Arochlor 1232)	<0.01	ppm
PCB (Arochlor 1242)	<0.01	ppm
PCB (Arochlor 1248)	<0.01	ppm
PCB (Arochlor 1254)	<0.01	ppm
PCB (Arochlor 1260)	<0.01	ppm

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

MAY 4 1992
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Advanced Environmental
352 South Saginaw Street
Sixth Floor
Flint, MI 48502

Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1258
Matrix of Sample Logged : Water
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-WW-B
-PROJECT NO: 2018
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<0.01	ppm
PCB (Arochlor 1221)	<0.01	ppm
PCB (Arochlor 1232)	<0.01	ppm
PCB (Arochlor 1242)	<0.01	ppm
PCB (Arochlor 1248)	<0.01	ppm
PCB (Arochlor 1254)	0.02	ppm
PCB (Arochlor 1260)	<0.01	ppm

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

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Advanced Environmental
352 South Saginaw Street
Sixth Floor
Flint, MI 48502

Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1259
Matrix of Sample Logged : Water
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-EW-B
-PROJECT NO: 2018
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<0.01	ppm
PCB (Arochlor 1221)	<0.01	ppm
PCB (Arochlor 1232)	<0.01	ppm
PCB (Arochlor 1242)	<0.01	ppm
PCB (Arochlor 1248)	<0.01	ppm
PCB (Arochlor 1254)	<0.01	ppm
PCB (Arochlor 1260)	<0.01	ppm

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

Analytic & Biological Laboratories, Inc.
24350 INDOPLEX CIRCLE FARMINGTON HILLS, MICHIGAN 48335 (313) 477-6666 FAX (313) 477-4604

ADVANCED ENVIRONMENTAL, INC.

ENVIRONMENTAL MANAGEMENT CONSULTANTS

352 SOUTH SAGINAW STREET • SIXTH FLOOR • FLINT, MICHIGAN 48502

PHONE: (313)238-9190 • FAX: (313)238-9195

LABORATORY: A & B

PROJECT #: 2018

CHAIN OF CUSTODY RECORD

PROJECT: 840

SAMPLERS: (Signature) Michael W. Cox

SAMPLE NUMBER	DATE	TIME	MATRIX	NO. CONTAINERS	ANALYSIS REQUIRED: PCBs (Aroclors)	TURN AROUND TIME	PRESERVATION: ICED	PRESERVATION: SPECIFY CHEMICAL ADDED AND FINAL pH IF KNOWN
WW-T	4/23/92		Water	1				
WW-M								
WW-B								
EW-B								

RELINQUISHED BY: (Signature) (1) Mike Fry	DATE 4-28-92	TIME 1055A	RECEIVED BY: (Signature) Joe Soore	RELINQUISHED BY: (Signature) (4) Joe Soore	DATE 4-28-92	TIME 3:30P	SHIPPED (via)
RELINQUISHED BY: (Signature) (2)	DATE	TIME	RECEIVED BY: (Signature)	RECEIVED FOR LABORATORY BY:	DATE	TIME	SHIPPING TKT. #
RELINQUISHED BY: (Signature) (3)	DATE	TIME	RECEIVED BY: (Signature)	REMARKS:			

Analytical
Inc.

MAY 5 1992

Advanced Environmental
352 South Saginaw Street
Sixth Floor
Flint, MI 48502

Dear Jeff Raleigh

Thank you for providing Analytic & Biological Laboratories the opportunity to serve your analytical needs. The samples received by this laboratory have been analyzed as requested. The results are compiled in the enclosed report.

If you have any questions regarding the results or if we may be of further assistance to you, please call me at the published telephone number.

Yours very truly,

Janine Reagan

Martine Hurwitz
Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

FBM/mjh

MAY 4 1992
Page 1

Advanced Environmental
352 South Saginaw Street
Sixth Floor
Flint, MI 48502

Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1224
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W1
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

MAY 4 1992
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Advanced Environmental
352 South Saginaw Street
Sixth Floor
Flint, MI 48502

Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1225
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W2
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

Analytic & Biological Laboratories, Inc.
24350 INDOPLEX CIRCLE FARMINGTON HILLS, MICHIGAN 48335 (313) 477-6666 FAX (313) 477-4604

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Advanced Environmental
352 South Saginaw Street
Sixth Floor
Flint, MI 48502

Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1226
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W3
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result Units
PCB (Arochlor 1016)	<10 ug/sample
PCB (Arochlor 1221)	<10 ug/sample
PCB (Arochlor 1232)	<10 ug/sample
PCB (Arochlor 1242)	<10 ug/sample
PCB (Arochlor 1248)	<10 ug/sample
PCB (Arochlor 1254)	<10 ug/sample
PCB (Arochlor 1260)	<10 ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

MAY 4 1992
Page 1

Advanced Environmental
352 South Saginaw Street
Sixth Floor
Flint, MI 48502

Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1227
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W4
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

MAY 4 1992
Page 1

Advanced Environmental
352 South Saginaw Street
Sixth Floor
Flint, MI 48502

Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1228
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W5
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<50	ug/sample
PCB (Arochlor 1221)	<50	ug/sample
PCB (Arochlor 1232)	<50	ug/sample
PCB (Arochlor 1242)	<50	ug/sample
PCB (Arochlor 1248)	<50	ug/sample
PCB (Arochlor 1254)	112.8	ug/sample
PCB (Arochlor 1260)	<50	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

MAY 4 1992
Page 1

Advanced Environmental
352 South Saginaw Street
Sixth Floor
Flint, MI 48502

Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1229
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W6
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result Units
PCB (Arochlor 1016)	<10 ug/sample
PCB (Arochlor 1221)	<10 ug/sample
PCB (Arochlor 1232)	<10 ug/sample
PCB (Arochlor 1242)	<10 ug/sample
PCB (Arochlor 1248)	<10 ug/sample
PCB (Arochlor 1254)	<10 ug/sample
PCB (Arochlor 1260)	<10 ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Project Managers

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Advanced Environmental
352 South Saginaw Street
Sixth Floor
Flint, MI 48502

Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1230
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W8
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Advanced Environmental
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Sixth Floor
Flint, MI 48502

Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1231
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W9
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1232
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W10
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1233
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W11
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1234
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W12
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1235
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W13
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Project Managers

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352 SOUTH SAGINAW STREET • SIXTH FLOOR • FLINT, MICHIGAN 48502
PHONE: (313)238-9190 • FAX: (313)238-9195

LABORATORY: A&B

PROJECT #: 2018DC

CHAIN OF CUSTODY RECORD

PROJECT: B40

SAMPLERS: (Signature)

SAMPLE NUMBER	DATE	TIME	MATRIX	NO. CONTAINERS	ANALYSIS REQUIRED: PCBs (Aroclors)	TURN AROUND TIME	PRESERVATION: ICED	PRESERVATION: SPECIFY CHEMICAL ADDED AND FINAL pH IF KNOWN
W1	4-28-92		Wipe	1	X	Std		Hexane
W2					X			
W3					X			
W4					X			
W5					X			
W6					X			
W8					X			
W9					X			
W10					X			
W11					X			
W12					X			
W13					X			

RELINQUISHED BY: (Signature) (1)	DATE	TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature) (4)	DATE	TIME	SHIPPED (via)
	4-28-92	10:55A			4-28-92	3:30p	
RELINQUISHED BY: (Signature) (2)	DATE	TIME	RECEIVED BY: (Signature)	RECEIVED FOR LABORATORY BY:	DATE	TIME	SHIPPING TKT. #
RELINQUISHED BY: (Signature) (3)	DATE	TIME	RECEIVED BY: (Signature)	REMARKS:			

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1236
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W14
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1237
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W15
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1238
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W16
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1239
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W17
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Analytic & Biological Laboratories, Inc.
24350 INDOPLEX CIRCLE FARMINGTON HILLS, MICHIGAN 48335 (313) 477-6666 FAX (313) 477-4604

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1240
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W18
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1241
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W23
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1242
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W24
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1243
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W25
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<50	ug/sample
PCB (Arochlor 1221)	<50	ug/sample
PCB (Arochlor 1232)	<50	ug/sample
PCB (Arochlor 1242)	<50	ug/sample
PCB (Arochlor 1248)	<50	ug/sample
PCB (Arochlor 1254)	56.4	ug/sample
PCB (Arochlor 1260)	<50	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1244
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W26
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<50	ug/sample
PCB (Arochlor 1221)	<50	ug/sample
PCB (Arochlor 1232)	<50	ug/sample
PCB (Arochlor 1242)	<50	ug/sample
PCB (Arochlor 1248)	<50	ug/sample
PCB (Arochlor 1254)	57.9	ug/sample
PCB (Arochlor 1260)	<50	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1245
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W27
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<150	ug/sample
PCB (Arochlor 1221)	<150	ug/sample
PCB (Arochlor 1232)	<150	ug/sample
PCB (Arochlor 1242)	<150	ug/sample
PCB (Arochlor 1248)	<150	ug/sample
PCB (Arochlor 1254)	811.4	ug/sample
PCB (Arochlor 1260)	<150	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1246
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W28
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1247
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W29
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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352 SOUTH SAGINAW STREET • SIXTH FLOOR • FLINT, MICHIGAN 48502
PHONE: (313)238-9190 • FAX: (313)238-9195

LABORATORY: A & B

PROJECT #: 2018

CHAIN OF CUSTODY RECORD

PROJECT: B 40

SAMPLERS: (Signature) Michael L. Key

SAMPLE NUMBER	DATE	TIME	MATRIX	NO. CONTAINERS	ANALYSIS REQUIRED: PCB's (Aroclors)	TURN AROUND TIME	PRESERVATION: ICED	PRESERVATION: SPECIFY CHEMICAL ADDED AND FINAL pH IF KNOWN
W 14	4-23-92		Wipe	1	X	std		Hexane
W 15					X			
W 16					X			
W 17					X			
W 18					X			
W 23					X			
W 24					X			
W 25					X			
W 26					X			
W 27					X			
W 28					X			
W 29					X			

RELINQUISHED BY: (Signature) (1)	DATE	TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature) (4)	DATE	TIME	SHIPPED (via)
	4-28-92	10:55A			4-28-92	3:30p	
RELINQUISHED BY: (Signature) (2)	DATE	TIME	RECEIVED BY: (Signature)	RECEIVED FOR LABORATORY BY:	DATE	TIME	SHIPPING TKT. #
RELINQUISHED BY: (Signature) (3)	DATE	TIME	RECEIVED BY: (Signature)	REMARKS:			

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1248
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W30
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1249
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W31
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1250
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W32
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

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Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1251
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W33
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

MAY 5 1992
Page 1

Advanced Environmental
352 South Saginaw Street
Sixth Floor
Flint, MI 48502

Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1252
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W38
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

MAY 5 1992
Page 1

Advanced Environmental
352 South Saginaw Street
Sixth Floor
Flint, MI 48502

Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1253
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W39
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	35.7	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

Analytic & Biological Laboratories, Inc.
24350 INDOPLEX CIRCLE FARMINGTON HILLS, MICHIGAN 48335 (313) 477-6666 FAX (313) 477-4604

MAY 5 1992

Advanced Environmental
352 South Saginaw Street
Sixth Floor
Flint, MI 48502

Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1254
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W40
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

MAY 5 1992
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Advanced Environmental
352 South Saginaw Street
Sixth Floor
Flint, MI 48502

Attention: Jeff Raleigh

Laboratory Sample Number: 92/04:1255
Matrix of Sample Logged : Wipe Sample
Date sample submitted : 920428

Information we received for the sample consisted of the following:

-W41
-PROJECT NO: 2018DC
-PROJECT B40

The results obtained are as follows:

Description	Result	Units
PCB (Arochlor 1016)	<10	ug/sample
PCB (Arochlor 1221)	<10	ug/sample
PCB (Arochlor 1232)	<10	ug/sample
PCB (Arochlor 1242)	<10	ug/sample
PCB (Arochlor 1248)	<10	ug/sample
PCB (Arochlor 1254)	<10	ug/sample
PCB (Arochlor 1260)	<10	ug/sample

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

Analytic & Biological Laboratories, Inc.
24350 INDOPLEX CIRCLE FARMINGTON HILLS, MICHIGAN 48335 (313) 477-6666 FAX (313) 477-4604

ADVANCED ENVIRONMENTAL, INC.

ENVIRONMENTAL MANAGEMENT CONSULTANTS

352 SOUTH SAGINAW STREET • SIXTH FLOOR • FLINT, MICHIGAN 48502
PHONE: (313)238-9190 • FAX: (313)238-9195

LABORATORY: A & B

PROJECT #: 2018

CHAIN OF CUSTODY RECORD

PROJECT: B40

SAMPLERS: (Signature) [signature]

SAMPLE NUMBER	DATE	TIME	MATRIX	NO. CONTAINERS	ANALYSIS REQUIRED: PCBs (Aroclors)	TURN AROUND TIME	PRESERVATION: ICED	PRESERVATION: SPECIFY CHEMICAL ADDED AND FINAL pH IF KNOWN
W30	4-23-92		Wipe	1	X	STD		Hexane
W31					X			
W32					X			
W33					X			
W38					X			
W39					X			
W40					X			
W41					X			

RELINQUISHED BY: (Signature) (1) [signature]	DATE 4-28-92	TIME 10:55A	RECEIVED BY: (Signature) [signature]	RELINQUISHED BY: (Signature) (4) [signature]	DATE 4-28-92	TIME 3:30p	SHIPPED (via)
RELINQUISHED BY: (Signature) (2) [signature]	DATE	TIME	RECEIVED BY: (Signature)	RECEIVED FOR LABORATORY BY:	DATE	TIME	SHIPPING TKT. #
RELINQUISHED BY: (Signature) (3)	DATE	TIME	RECEIVED BY: (Signature)	REMARKS:			

GMPT Materials Engineering

Lab #	Results Requested By	Results Estimated By	Page
27668	27 AUG 92	25 AUG 92	1 of 1

Card Date	Prefix	Project #	Part #	Part Name	Customer
11 AUG 92	V		1	OIL SAMPLE 40 BASEMENT	25

Lot #	# Samples	Sample	Source
	1	DISPOSE	40 BASEMENT

Report To	Telephone	Requested By	
P. BARTH	6-4220	P. BARTH	

Specifications

Taken from oil floating on the water within the tunnel below 40 basement at about 8:00a on 8/11/92.

Sample History

same as above

Work Requested

Analyze for PCB.
IDENTIFY THE OIL COMPONENT.

Area	Initials	Human Time	Machine Time	Date Completed	Methods Used
MS	PVH	6	6	18 AUG 92	
CM	MJM	1.0		17 AUG 92	

Results

CHEMISTRY:

VISCOSITY @ 100°C = 0.1019 x 56.9 sec = 5.80 cSt
VISCOSITY @ 40°C = 0.1023 x 431.3 sec = 44.12 cSt
VISCOSITY INDEX = 57

Based on the viscosity, the oil appears to consist mostly of LK-402 hydraulic oil.

MJM 17 AUG 92 01:54PM

Two samples of the oil taken on different days were analyzed for PCB. Each sample was acid treated, cleaned over fluorosil, diluted 1:10 in hexane and analyzed by GC/ECD.

Sample Date	* PCB as Aroclor 1254	Detection Limit
8/11/92	100 PPM (Milligrams/Liter)	5 PPM
8/17/92	127 PPM (milligrams/Liter)	5 PPM

* Value is the average of four major peaks of Aroclor 1254.

PVH 18 AUG 92 09:47PM

GM Powertrain Division - Flint
902 East Hamilton
Building #85, Mail Code 8507
Flint, MI 48550

Card Completed 18 AUG 92

GMPT Materials Engineering

Lab #	Results Requested By	Results Estimated By	Page
27933	31 AUG 92	10 SEP 92	1 of 1

Card Date	Prefix	Project #	Part #	Part Name	Customer
26 AUG 92	V		1	OIL SAMPLES	10

Lot #	# Samples	Sample	Source
	2	DISPOSE	CHIP SYSTEM SUMPS

Report To	Telephone	Requested By
TOM WYNN	6-7752	TOM WYNN

Specifications

WASTE OIL SAMPLES FROM SUMPS IN PLANT 10 EAST BASEMENT

Sample History

SAMPLES:
SS-SOUTH CHIP SYSTEM
NS-NORTH CHIP SYSTEM

Work Requested

ANALYSIS FOR THE PRESENCE OF PCBS

Area	Initials	Human Time	Machine Time	Date Completed	Methods Used
MS	PVH	2	4	26 AUG 92	

Results

The samples were mixed with water, acid treated, cleaned over fluorosil, diluted 1:10 with hexane, and analyzed by GC/ECD. The SS sample did not contain a detectable level of PCB, the NS sample was reduced to approximately 1 mL of oil and this oil contained 56 PPM Aroclor 1242.

Sample	PCB as Aroclor 1242	Detection Limit
NS (Residual Oil)	56 mg/L (PPM)	5 mg/L
SS (Residual Oil)	None Detected	5 mg/L

The Quantitative results are based on the average of 4 major components in Aroclor 1242.

PVH 26 AUG 92 04:40PM

GM Powertrain Division - Flint
902 East Hamilton
Building #86, Mail Code 8507
Flint, MI 48550

Card Completed 26 AUG 92

ADVANCED ENVIRONMENTAL, INC.
ENVIRONMENTAL MANAGEMENT CONSULTANTS

October 1, 1992

Mr. Paul Barth
Environmental Engineer
Flint Automotive Division
BOC Group
General Motors Corporation
902 East Hamilton Avenue
Flint, Michigan 48550

RE: SAMPLE ANALYTICAL RESULTS
Building 40
Advanced Project No. 2018DC

Dear Mr. Barth:

Enclosed is a copy of the sample analytical results of the tunnel water collected below the basement of Building 40. The results have been summarized in the attached Table 1. Analytical & Biological Laboratories, Inc. (A&B), was contacted and asked to confirm the levels of 1,1,-dichloroethane. A&B re-analyzed the sample output and verified the results. Please call me at 238-9190 if you have any questions or require any additional information. at 238-9190.

Sincerely,

ADVANCED ENVIRONMENTAL, INC.

Mark W. Keyes, R.G.
Project Consultant

MWK:j

Enclosure

352 SOUTH SAGINAW STREET • SUITE 600
FLINT, MICHIGAN 48502
(313) 238-9190 • FAX: (313) 238-9195

TABLE 1

GENERAL MOTORS BOC - B40

TUNNEL - ANALYTICAL RESULTS

Advanced Project No. 2018DC

SAMPLE ID	ANALYTICAL PARAMETERS					
	Method 8010/8020 Solvent Scan (ppb)		Polynuclear Aromatic Hydrocarbons (ppb)		PCBs (Aroclors) (ppm)	
EW Middle	1,1-Dichloroethane	3.2	All Parameters	<10	All Parameters	<0.01
EW Bottom	All Parameters	<5	Benzo(a)anthracene Chrysene Naphthalene Pyrene	208.9 271.2 352.8 115.0	1254 1260	0.05 0.01
WW Middle	1,1-Dichloroethane	3.3	All Parameterws	<10	All Parameters	<0.01
WW Bottom	All Parameters	<5	Benzo(a)anthracene	141.8	1254 1260	0.06 0.01

Note:

Method 8010/8020 - Method Detection Level in Water: 1 ppb
PNAH - Method Detection Level in Water: 10 ppb
PCBs - Method Detection Level in Water: 0.01 ppm

nalytic & Biological
aboratories, Inc.

4350 INDOPLEX CIRCLE
RMINGTON HILLS, MICHIGAN 48335

313) 477-6666
X (313) 477-4604

AUG 3 1 1992

August 27, 1992

Mr. Mark Keyes
Advanced Environmental, Inc.
352 South Saginaw St., 6th Floor
Flint, MI 48502

Dear Mark:

Thank you for providing Analytic & Biological Laboratories the opportunity to serve your analytical needs. The samples received by this laboratory have been analyzed as requested. The results are compiled in the enclosed report.

If you have any questions regarding the results or if we may be of further assistance to you, please call me at the published telephone number.

Yours very truly,

Janine Reagan

Martine Hurwitz
Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

ERTIFICATIONS

Advanced Environmental, Inc.
352 South Saginaw St., 6th Floor
Flint, MI 48502

Attention: Mark Keyes

Laboratory Sample Number: L1520-1
Matrix of Sample Logged : Water
Date sample submitted : 920820

Information we received for the sample consisted of the following:

-EW-Middle, 8-17-92, Project #2018DC & #GM BOC-B40

The results obtained are as follows:

Description	Result	Units
PURGEABLE HALOCARBONS:		
Bromodichloromethane	<1	ppb
Bromoform	<1	ppb
Bromomethane	<1	ppb
Carbon tetrachloride	<1	ppb
Chlorobenzene	<1	ppb
Chloroethane	<1	ppb
2-Chloroethylvinyl ether	<1	ppb
Chloroform	<1	ppb
Chloromethane	<1	ppb
Dibromochloromethane	<1	ppb
1,2-Dichlorobenzene	<1	ppb
1,3-Dichlorobenzene	<1	ppb
1,4-Dichlorobenzene	<1	ppb
Dichlorodifluoromethane	<1	ppb
1,1-Dichloroethane	3.2	ppb
1,2-Dichloroethane	<1	ppb
1,1-Dichloroethene	<1	ppb
trans-1,2-Dichloroethene	<1	ppb
1,2-Dichloropropane	<1	ppb

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

Advanced Environmental, Inc.
352 South Saginaw St., 6th Floor
Flint, MI 48502

Attention: Mark Keyes

Laboratory Sample Number: L1520-1
Matrix of Sample Logged : Water
Date sample submitted : 920820

Information we received for the sample consisted of the following:

-EW-Middle, 8-17-92, Project #2018DC & #GM BOC-B40

The results obtained are as follows:

Description	Result	Units
cis-1,3Dichloropropene	<1	ppb
trans-1,3Dichloropropene	<1	ppb
Methylene chloride	<1	ppb
1,1,2,2Tetrachloroethane	<1	ppb
Tetrachloroethene	<1	ppb
1,1,1-Trichloroethane	<1	ppb
1,1,2-Trichloroethane	<1	ppb
Trichloroethene	<1	ppb
Trichlorofluoromethane	<1	ppb
Vinyl chloride	<1	ppb
PURGEABLE AROMATICS:		
Benzene	<1	ppb
Chlorobenzene	<1	ppb
1,2-Dichlorobenzene	<1	ppb
1,3-Dichlorobenzene	<1	ppb
1,4-Dichlorobenzene	<1	ppb
Ethylbenzene	<1	ppb
Toluene	<1	ppb

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

AUGUST 27, 1992

Advanced Environmental, Inc.
352 South Saginaw St., 6th Floor
Flint, MI 48502

Attention: Mark Keyes

Laboratory Sample Number: L1520-1
Matrix of Sample Logged : Waste Water
Date sample submitted : 920820

Information we received for the sample consisted of the following:

-EW-Middle, 8-17-92, Project #2018DC & #GM BOC-B40

The results obtained are as follows:

Description	Result	Units
POLYNUCLEAR AROMATICS:		
Acenaphthene	<10	ppb
Acenaphthylene	<10	ppb
Anthracene	<10	ppb
Benzo (a) anthracene	<10	ppb
Benzo (a) pyrene	<10	ppb
Benzo (b) fluoranthene	<10	ppb
Benzo (ghi) perylene	<10	ppb
Benzo (k) fluoranthene	<10	ppb
Chrysene	<10	ppb
Dibenzo (a,h) anthracene	<10	ppb
Fluoranthene	<10	ppb
Fluorene	<10	ppb
Indeno(1,2,3-cd)pyrene	<10	ppb
Naphthalene	<10	ppb
Phenanthrene	<10	ppb
Pyrene	<10	ppb

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

AUGUST 27, 1992

Advanced Environmental, Inc.
352 South Saginaw St., 6th Floor
Flint, MI 48502

Attention: Mark Keyes

Laboratory Sample Number: L1520-1
Matrix of Sample Logged : Water
Date sample submitted : 920820

Information we received for the sample consisted of the following:

-EW-Middle, 8-17-92, Project #2018DC & #GM BOC B40

The results obtained are as follows:

Description	Result	Units
PCB (Aroclor 1016)	<0.01	ppm
PCB (Aroclor 1221)	<0.01	ppm
PCB (Aroclor 1232)	<0.01	ppm
PCB (Aroclor 1242)	<0.01	ppm
PCB (Aroclor 1248)	<0.01	ppm
PCB (Aroclor 1254)	<0.01	ppm
PCB (Aroclor 1260)	<0.01	ppm

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

Advanced Environmental, Inc.
352 South Saginaw St., 6th Floor
Flint, MI 48502

Attention: Mark Keyes

Laboratory Sample Number: L1520-2
Matrix of Sample Logged : Water
Date sample submitted : 920820

Information we received for the sample consisted of the following:

-EW-Bottom, 8-17-92, Project #2018DC & #GM BOC-B40

The results obtained are as follows:

Description	Result	Units
PURGEABLE HALOCARBONS:		
Bromodichloromethane	<5	ppb
Bromoform	<5	ppb
Bromomethane	<5	ppb
Carbon tetrachloride	<5	ppb
Chlorobenzene	<5	ppb
Chloroethane	<5	ppb
2-Chloroethylvinyl ether	<5	ppb
Chloroform	<5	ppb
Chloromethane	<5	ppb
Dibromochloromethane	<5	ppb
1,2-Dichlorobenzene	<5	ppb
1,3-Dichlorobenzene	<5	ppb
1,4-Dichlorobenzene	<5	ppb
Dichlorodifluoromethane	<5	ppb
1,1-Dichloroethane	<5	ppb
1,2-Dichloroethane	<5	ppb
1,1-Dichloroethene	<5	ppb
trans-1,2-Dichloroethene	<5	ppb
1,2-Dichloropropane	<5	ppb

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

Advanced Environmental, Inc.
352 South Saginaw St., 6th Floor
Flint, MI 48502

Attention: Mark Keyes

Laboratory Sample Number: L1520-2
Matrix of Sample Logged : Water
Date sample submitted : 920820

Information we received for the sample consisted of the following:

-EW-Bottom, 8-17-92, Project #2018DC & #GM BOC-B40

The results obtained are as follows:

Description	Result	Units
cis-1,3Dichloropropene	<5	ppb
trans-1,3Dichloropropene	<5	ppb
Methylene chloride	<5	ppb
1,1,2,2Tetrachloroethane	<5	ppb
Tetrachloroethene	<5	ppb
1,1,1-Trichloroethane	<5	ppb
1,1,2-Trichloroethane	<5	ppb
Trichloroethene	<5	ppb
Trichlorofluoromethane	<5	ppb
Vinyl chloride	<5	ppb
PURGEABLE AROMATICS:		
Benzene	<5	ppb
Chlorobenzene	<5	ppb
1,2-Dichlorobenzene	<5	ppb
1,3-Dichlorobenzene	<5	ppb
1,4-Dichlorobenzene	<5	ppb
Ethylbenzene	<5	ppb
Toluene	<5	ppb

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

Advanced Environmental, Inc.
352 South Saginaw St., 6th Floor
Flint, MI 48502

Attention: Mark Keyes

Laboratory Sample Number: L1520-2
Matrix of Sample Logged : Waste Water
Date sample submitted : 920820

Information we received for the sample consisted of the following:

-EW-Bottom, 8-17-92, Project #2018DC & #GM BOC-B40

The results obtained are as follows:

Description	Result	Units
POLYNUCLEAR AROMATICS:		
Acenaphthene	<100	ppb
Acenaphthylene	<100	ppb
Anthracene	<100	ppb
Benzo (a) anthracene	208.9	ppb
Benzo (a) pyrene	<100	ppb
Benzo (b) fluoranthene	<100	ppb
Benzo (ghi) perylene	<100	ppb
Benzo (k) fluoranthene	<100	ppb
Chrysene	271.2	ppb
Dibenzo (a,h) anthracene	<100	ppb
Fluoranthene	<100	ppb
Fluorene	<100	ppb
Indeno(1,2,3-cd)pyrene	<100	ppb
Naphthalene	352.8	ppb
Phenanthrene	<100	ppb
Pyrene	115.0	ppb

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

Advanced Environmental, Inc.
352 South Saginaw St., 6th Floor
Flint, MI 48502

Attention: Mark Keyes

Laboratory Sample Number: L1520-2
Matrix of Sample Logged : Water
Date sample submitted : 920820

Information we received for the sample consisted of the following:

-EW-Bottom, 8-17-92, Project #2018DC & #GM BOC B40

The results obtained are as follows:

Description	Result	Units
PCB (Aroclor 1016)	<0.01	ppm
PCB (Aroclor 1221)	<0.01	ppm
PCB (Aroclor 1232)	<0.01	ppm
PCB (Aroclor 1242)	<0.01	ppm
PCB (Aroclor 1248)	<0.01	ppm
PCB (Aroclor 1254)	0.05	ppm
PCB (Aroclor 1260)	0.01	ppm

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

Advanced Environmental, Inc.
352 South Saginaw St., 6th Floor
Flint, MI 48502

Attention: Mark Keyes

Laboratory Sample Number: L1520-3
Matrix of Sample Logged : Water
Date sample submitted : 920820

Information we received for the sample consisted of the following:

-WW-Middle, 8-17-92, Project #2018DC & #GM BOC-B40

The results obtained are as follows:

Description	Result	Units
PURGEABLE HALOCARBONS:		
Bromodichloromethane	<1	ppb
Bromoform	<1	ppb
Bromomethane	<1	ppb
Carbon tetrachloride	<1	ppb
Chlorobenzene	<1	ppb
Chloroethane	<1	ppb
2-Chloroethylvinyl ether	<1	ppb
Chloroform	<1	ppb
Chloromethane	<1	ppb
Dibromochloromethane	<1	ppb
1,2-Dichlorobenzene	<1	ppb
1,3-Dichlorobenzene	<1	ppb
1,4-Dichlorobenzene	<1	ppb
Dichlorodifluoromethane	<1	ppb
1,1-Dichloroethane	3.3	ppb
1,2-Dichloroethane	<1	ppb
1,1-Dichloroethene	<1	ppb
trans-1,2-Dichloroethene	<1	ppb
1,2-Dichloropropane	<1	ppb

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

Advanced Environmental, Inc.
352 South Saginaw St., 6th Floor
Flint, MI 48502

Attention: Mark Keyes

Laboratory Sample Number: L1520-3
Matrix of Sample Logged : Water
Date sample submitted : 920820

Information we received for the sample consisted of the following:

-WW-Middle, 8-17-92, Project #2018DC & #GM BOC-B40

The results obtained are as follows:

Description	Result	Units
cis-1,3Dichloropropene	<1	ppb
trans-1,3Dichloropropene	<1	ppb
Methylene chloride	<1	ppb
1,1,2,2Tetrachloroethane	<1	ppb
Tetrachloroethene	<1	ppb
1,1,1-Trichloroethane	<1	ppb
1,1,2-Trichloroethane	<1	ppb
Trichloroethene	<1	ppb
Trichlorofluoromethane	<1	ppb
Vinyl chloride	<1	ppb
PURGEABLE AROMATICS:		
Benzene	<1	ppb
Chlorobenzene	<1	ppb
1,2-Dichlorobenzene	<1	ppb
1,3-Dichlorobenzene	<1	ppb
1,4-Dichlorobenzene	<1	ppb
Ethylbenzene	<1	ppb
Toluene	<1	ppb

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

AUGUST 27, 1992
Page 1

Advanced Environmental, Inc.
352 South Saginaw St., 6th Floor
Flint, MI 48502

Attention: Mark Keyes

Laboratory Sample Number: L1520-3
Matrix of Sample Logged : Waste Water
Date sample submitted : 920820

Information we received for the sample consisted of the following:

-WW-Middle, 8-17-92, Project #2018DC & #GM BOC-B40

The results obtained are as follows:

Description	Result	Units
POLYNUCLEAR AROMATICS:	.	
Acenaphthene	<10	ppb
Acenaphthylene	<10	ppb
Anthracene	<10	ppb
Benzo (a) anthracene	<10	ppb
Benzo (a) pyrene	<10	ppb
Benzo (b) fluoranthene	<10	ppb
Benzo (ghi) perylene	<10	ppb
Benzo (k) fluoranthene	<10	ppb
Chrysene	<10	ppb
Dibenzo (a,h) anthracene	<10	ppb
Fluoranthene	<10	ppb
Fluorene	<10	ppb
Indeno(1,2,3-cd)pyrene	<10	ppb
Naphthalene	<10	ppb
Phenanthrene	<10	ppb
Pyrene	<10	ppb

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

Advanced Environmental, Inc.
352 South Saginaw St., 6th Floor
Flint, MI 48502

Attention: Mark Keyes

Laboratory Sample Number: L1520-3
Matrix of Sample Logged : Water
Date sample submitted : 920820

Information we received for the sample consisted of the following:

-WW-Middle, 8-17-92, Project #2018DC & #GM BOC B40

The results obtained are as follows:

Description	Result Units
PCB (Aroclor 1016)	<0.01 ppm
PCB (Aroclor 1221)	<0.01 ppm
PCB (Aroclor 1232)	<0.01 ppm
PCB (Aroclor 1242)	<0.01 ppm
PCB (Aroclor 1248)	<0.01 ppm
PCB (Aroclor 1254)	<0.01 ppm
PCB (Aroclor 1260)	<0.01 ppm

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

Advanced Environmental, Inc.
352 South Saginaw St., 6th Floor
Flint, MI 48502

Attention: Mark Keyes

Laboratory Sample Number: L1520-4
Matrix of Sample Logged : Water
Date sample submitted : 920820

Information we received for the sample consisted of the following:

-WW-Bottom, 8-17-92, Project #2018DC & #GM BOC-B40

The results obtained are as follows:

Description	Result	Units
PURGEABLE HALOCARBONS:		
Bromodichloromethane	<5	ppb
Bromoform	<5	ppb
Bromomethane	<5	ppb
Carbon tetrachloride	<5	ppb
Chlorobenzene	<5	ppb
Chloroethane	<5	ppb
2-Chloroethylvinyl ether	<5	ppb
Chloroform	<5	ppb
Chloromethane	<5	ppb
Dibromochloromethane	<5	ppb
1,2-Dichlorobenzene	<5	ppb
1,3-Dichlorobenzene	<5	ppb
1,4-Dichlorobenzene	<5	ppb
Dichlorodifluoromethane	<5	ppb
1,1-Dichloroethane	<5	ppb
1,2-Dichloroethane	<5	ppb
1,1-Dichloroethene	<5	ppb
trans-1,2-Dichloroethene	<5	ppb
1,2-Dichloropropane	<5	ppb

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

Advanced Environmental, Inc.
352 South Saginaw St., 6th Floor
Flint, MI 48502

Attention: Mark Keyes

Laboratory Sample Number: L1520-4
Matrix of Sample Logged : Water
Date sample submitted : 920820

Information we received for the sample consisted of the following:

-WW-Bottom, 8-17-92, Project #2018DC & #GM BOC-B40

The results obtained are as follows:

Description	Result	Units
cis-1,3Dichloropropene	<5	ppb
trans-1,3Dichloropropene	<5	ppb
Methylene chloride	<5	ppb
1,1,2,2Tetrachloroethane	<5	ppb
Tetrachloroethene	<5	ppb
1,1,1-Trichloroethane	<5	ppb
1,1,2-Trichloroethane	<5	ppb
Trichloroethene	<5	ppb
Trichlorofluoromethane	<5	ppb
Vinyl chloride	<5	ppb
PURGEABLE AROMATICS:		
Benzene	<5	ppb
Chlorobenzene	<5	ppb
1,2-Dichlorobenzene	<5	ppb
1,3-Dichlorobenzene	<5	ppb
1,4-Dichlorobenzene	<5	ppb
Ethylbenzene	<5	ppb
Toluene	<5	ppb

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

Advanced Environmental, Inc.
352 South Saginaw St., 6th Floor
Flint, MI 48502

Attention: Mark Keyes

Laboratory Sample Number: L1520-4
Matrix of Sample Logged : Waste Water
Date sample submitted : 920820

Information we received for the sample consisted of the following:

-WW-Bottom, 8-17-92, Project #2018DC & #GM BOC-B40

The results obtained are as follows:

Description	Result	Units
POLYNUCLEAR AROMATICS:		
Acenaphthene	<100	ppb
Acenaphthylene	<100	ppb
Anthracene	<100	ppb
Benzo (a) anthracene	141.8	ppb
Benzo (a) pyrene	<100	ppb
Benzo (b) fluoranthene	<100	ppb
Benzo (ghi) perylene	<100	ppb
Benzo (k) fluoranthene	<100	ppb
Chrysene	<100	ppb
Dibenzo (a,h) anthracene	<100	ppb
Fluoranthene	<100	ppb
Fluorene	<100	ppb
Indeno(1,2,3-cd)pyrene	<100	ppb
Naphthalene	<100	ppb
Phenanthrene	<100	ppb
Pyrene	<100	ppb

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

AUGUST 27, 1992

Advanced Environmental, Inc.
352 South Saginaw St., 6th Floor
Flint, MI 48502

Attention: Mark Keyes

Laboratory Sample Number: L1520-4
Matrix of Sample Logged : Water
Date sample submitted : 920820

Information we received for the sample consisted of the following:

-WW-Bottom, 8-17-92, Project #2018DC & #GM BOC B40

The results obtained are as follows:

Description	Result	Units
PCB (Aroclor 1016)	<0.01	ppm
PCB (Aroclor 1221)	<0.01	ppm
PCB (Aroclor 1232)	<0.01	ppm
PCB (Aroclor 1242)	<0.01	ppm
PCB (Aroclor 1248)	<0.01	ppm
PCB (Aroclor 1254)	0.06	ppm
PCB (Aroclor 1260)	0.01	ppm

Source: US EPA SW 846 Methodology
Note: "<" Denotes less than the Level of Detection
"N.D." Denotes None Detected

Martine Hurwitz / Janine Reagan
Project Managers

Francis B. McLaughlin, FAIC
Director of Laboratories

ADVANCED ENVIRONMENTAL, INC.

ENVIRONMENTAL MANAGEMENT CONSULTANTS

352 SOUTH SAGINAW STREET • SIXTH FLOOR • FLINT, MICHIGAN 48502
PHONE: (313)238-9190 • FAX: (313)238-9195

CHAIN OF CUSTODY RECORD

PROJECT MANAGER: Mark L. Iceyes

LABORATORY: A&B

PROJECT #: 2018 Dr.

PROJECT: GM Boc - B40

SAMPLERS: (Signature) Mark L. Is

SAMPLE NUMBER	DATE	TIME	MATRIX	NO. CONTAINERS	ANALYSIS REQUIRED: 6010 / 8020	PNA	PCB	TURN AROUND TIME	PRESERVATION: ICED	SPECIFY CHEMICAL ADDED AND FINAL pH IF KNOWN
EW - Middle	8/17/92		H_2O	4	X	X	X	5-day 8/26/92	X	
EW - Bottom					X	X	X			
WW - Middle					X	X	X			
WW - Bottom					X	X	X			

RELINQUISHED BY: (Signature) (1)	DATE	TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature) (4)	DATE	TIME	SHIPPED (via)
	8-19-92	1:39					
RELINQUISHED BY: (Signature) (2)	DATE	TIME	RECEIVED BY: (Signature)	RECEIVED FOR LABORATORY BY:	DATE	TIME	SHIPPING TKT. #
RELINQUISHED BY: (Signature) (3)	DATE	TIME	RECEIVED BY: (Signature)	REMARKS:			

GMPT Materials Engineering
Laboratory Test Requisition & Report

Lab #	Results Requested By	Results Estimated By	Page
32237	09 JUL 93	09 JUL 93	1 of 1

Card Date	Prefix	Project #	Part #	Part Name	Customer
24 JUN 93	V			SAMPLES	25

Lot #	# Samples	Sample	Source
	2	DISPOSE	TUNNEL BLDG 40

Report To	Telephone	Requested By
P. BARTH	64220	P. BARTH

Specifications
look for pcb

Sample History
samples taken on 6/7/93

Work Requested
look for pcb

Area	Initials	Human Time	Machine Time	Date Completed	Methods Used
MS	MJM	4	2	30 JUN 93	PCB ANALYSIS

Results (NOTE: Results relate only to the item(s) tested. Not to be reproduced, except in full, without written approval.)

#1: 70.9 grams of absorbent material was sonicated in hexane to extract the oil. 25 ml of oil was extracted, acid treated, cleaned in fluorosil, diluted 1:10 in hexane, and analyzed by GC/ECD. The oil contains about 23 micrograms per milliliter of Aroclor 1254. The entire absorbent material contains about 8 micrograms of Aroclor 1254 per gram of sample.

#2: 30.0 grams of silt sludge was sonicated in hexane, cleaned in fluorosil, concentrated to 1 ml, and analyzed by GC/ECD. The sample contains about 0.4 micrograms of Aroclor 1254 per gram of sample.

Sample	PCB (Aroclor 1254)
#1: Oil only	23 µg/ml (23 ppm)
Entire sample	8 µg/g (8 ppm by weight)
#2: Silt sludge	0.4 µg/g (0.4 ppm by weight)

MJM 01 JUL 93 08:21AM

GM Powertrain Division - Flint
902 East Hamilton
Building #85, Mail Code 8507
Flint, MI 48550

Card Completed 01 JUL 93

Lab Number: 32237 Part Number: Part Name: SAMPLES Card Date: 24 JUN 1993

STATUS REPORT
BUILDING 40 MONITORING WELLS
902 EAST HAMILTON
FLINT, MICHIGAN

Advanced Project Number 3143CE
January 13, 1994

TABLE OF CONTENTS

FIGURES

TABLES

EXHIBITS

1.0 INTRODUCTION

Advanced Environmental, Inc. (Advanced), was retained by General Motors Corporation - CLCD North (GM CLCD), to install five groundwater monitoring wells adjacent to Building 40, located at 902 East Hamilton, Flint, Michigan. The following Status Report summarizes and documents the groundwater investigation performed by Advanced and the proposed site remediation.

2.0 FIELD INVESTIGATION

On December 16 and 17, 1993, Advanced personnel supervised the drilling of a total of five soil borings adjacent to Building 40 to identify soil types and conditions, and depth to groundwater. The soil borings were converted into groundwater monitoring wells.

2.1 Soil Borings

On December 16 and 17, 1993, Advanced retained Young's Environmental Cleanup, Inc. (Young's) to drill five soil borings (B1 - B5). The soil borings were drilled using a truck-mounted drill rig to depths ranging from 11 to 17 feet below grade. The soil boring locations are illustrated in Figure 1. The borings B1 and B2 were drilled in Division Street on the west side of Building 40; boring B3 was drilled in the railroad tracks east of Building 40; and, borings B4 and B5 were drilled on the east side of Building 40 adjacent to the loading ramp. Variations in the subsurface soils were logged in the field by Advanced personnel. The soil types encountered in the soil borings ranged from brown sand to grey clays. A copy of the soil boring logs is included as Exhibit A.

2.1.1 Soil Boring Sample Collection

Soil samples from the five soil borings were collected and logged at two and one-half foot intervals using standard split-spoon sampling methods. Two soil samples were collected from each of the soil borings for laboratory analysis. One sample from each soil boring was selected from the soil immediately above the first occurrence of groundwater and the second sample was selected based on elevated field screening readings. The depth of each sample is included in the Sample ID of Table 1. The samples selected were analyzed for polychlorinated biphenyls (PCBs) using EPA Method 8080.

The samples were placed in unpreserved four-ounce glass containers and sealed with Teflon®-lined lids, labeled and placed in a cooler at four degrees Celsius (4°C). The samples were transported to Environmental Quality Laboratories,Inc. (EQL), 44075 Phoenix Drive, Sterling Heights, Michigan, using chain-of-custody procedures.

2.1.2 Soil Boring Analytical Results

The analytical results from the soil sampling indicated non-detectable levels of PCBs in the ten soil samples. A summary of the analytical results is included in Table 1 and a copy of the laboratory data is included in Exhibit B.

2.1.3 Field Screening

The soil samples were field screened using an hnu® Model PI 101 photoionization detector (PID). The meter has the capability of detecting concentrations of total volatile organic compounds (VOCs) having an ionization potential of 10.2 eV or less. Screening of the samples was performed by placing the tip of the probe into the headspace of the sample container to measure the VOC concentration in the soil gas. Results were recorded in isobutylene units. The field screening measurements are noted in the boring logs included as Exhibit A.

2.2 Groundwater Investigation

The five soil borings were converted into monitoring wells. The depth to groundwater varied in each of the soil borings and is noted on the soil borings logs. Monitoring well locations are illustrated on Figure 1.

2.2.1 Monitoring Well Installation

The monitoring wells were constructed of two-inch diameter, Schedule 40 PVC risers with threaded five foot, 0.01 inch slotted PVC screens. A coarse silica sand was placed in the annular space around the screen to approximately one foot above the top of the screen. A granular bentonite seal, a minimum of one foot thick was placed above the sand pack and hydrated. Bentonite grout was

used to fill the remaining annular space of each well. The riser and protective steel casing were cemented flush at the surface. Advanced personnel maintained logs of the monitoring wells installed which are included in Exhibit B.

2.2.2 Monitoring Well Development and Sample Collection

On December 20, 1993, Advanced developed each of the newly constructed wells (MW1 - MW5) using a pneumatic development pump and a stainless steel bailer until water clarity stabilized. Approximately 20 gallons were removed from each of the wells and placed in 55-gallon drums pending disposal.

On December 22, 1993, approximately 48 hours following well development, Advanced personnel collected water samples from the monitoring wells. A minimum of three well volumes was purged prior to sample collection.

The water samples collected for laboratory analysis were analyzed for PCBs using EPA Method 8080. A field blank was prepared by placing deionized water into an unused bailer. A trip blank was prepared by the laboratory and accompanied the sample containers. The water samples were placed in a one-liter unpreserved amber bottle, labeled and kept at approximately 4°C. The samples were delivered using chain-of-custody procedures to EQL.

2.2.3 Analytical Results

The results of the water sample analysis indicated non-detectable levels of PCBs in each of the samples. A summary of the data is illustrated on Table 2 and a copy of the laboratory analytical results is included in Exhibit B.

2.2.4 Well Survey and Groundwater Flow Direction

On December 22, 1993 Advanced surveyed the wells (MW1 - MW5) to determine the groundwater elevations and groundwater flow direction. Top of casing, top of riser and static water levels within each well were measured. The manhole access to the tunnel beneath Building 40 and an adjacent storm drain catch basin within Division Street were also surveyed. Surveyed elevations were measured to the nearest hundredth of a foot. The survey point of each well was scribed on the casing. The same point was used for static water level

measurements. Surveyed elevations of each well were referenced to a fixed reference point. Water levels within each well were measured with an electric water level indicator to determine the well volume. Figure 2 illustrates the static water level elevations.

2.3 Decontamination

During the subsurface investigation and sample collection, the augers were steam-cleaned before and between each boring. The split-spoon samplers used to collect soil samples were cleaned with Alconox® detergent followed by a double water rinse.

3.0 SUMMARY

On December 16 and 17, 1993, Advanced supervised the drilling of five soil borings at the GM CLCD-Building 40 site to identify soil conditions and install groundwater monitoring wells adjacent to the tunnel beneath Building 40. Each of the soil borings was converted into monitoring wells.

Ten soil samples were collected from the five soil borings and analyzed for PCBs. Analytical results indicated non-detectable levels of PCBs in each of the soil samples. Water samples collected from the monitoring wells were analyzed for PCBs. Analytical results indicated non-detectable levels of PCBs in each of the water samples. Static water levels were measured in each of the five monitoring wells, a storm drain catch basin and the manhole access to the tunnel beneath Building 40. The apparent groundwater flow direction is to the east; however, due to the depth of the basement and tunnel of Building 40, the true flow direction may be different.

4.0 SIGNATURE BLOCK

The information contained in this report is based on existing site conditions disclosed or discovered during the current site investigation activities.

Prepared by: _____

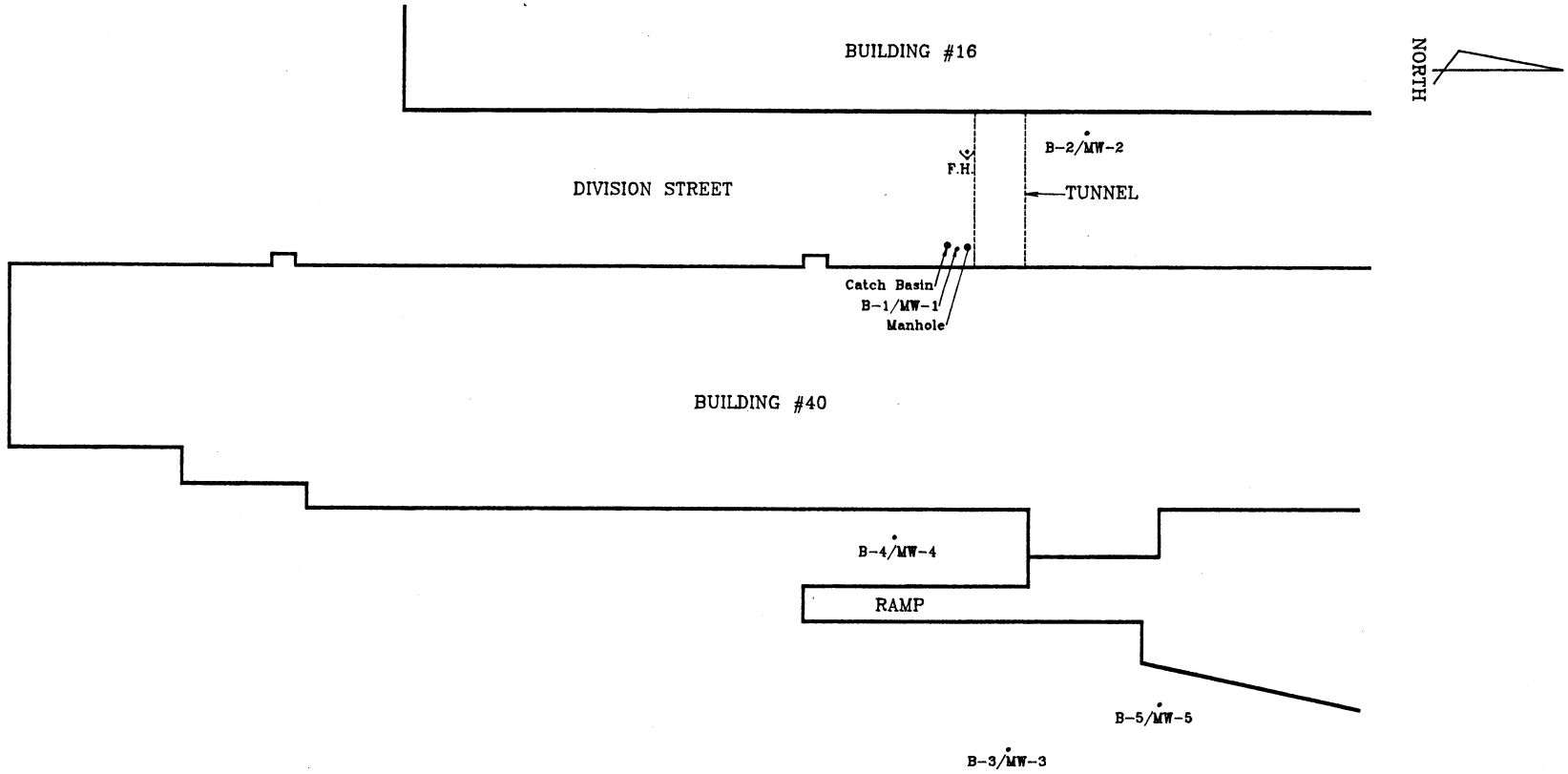
Mark W. Keyes, R.G., Geologist

Reviewed by: _____

Mark C. Matheny, Sr. Project Manager

Date: January 13, 1994

FIGURES



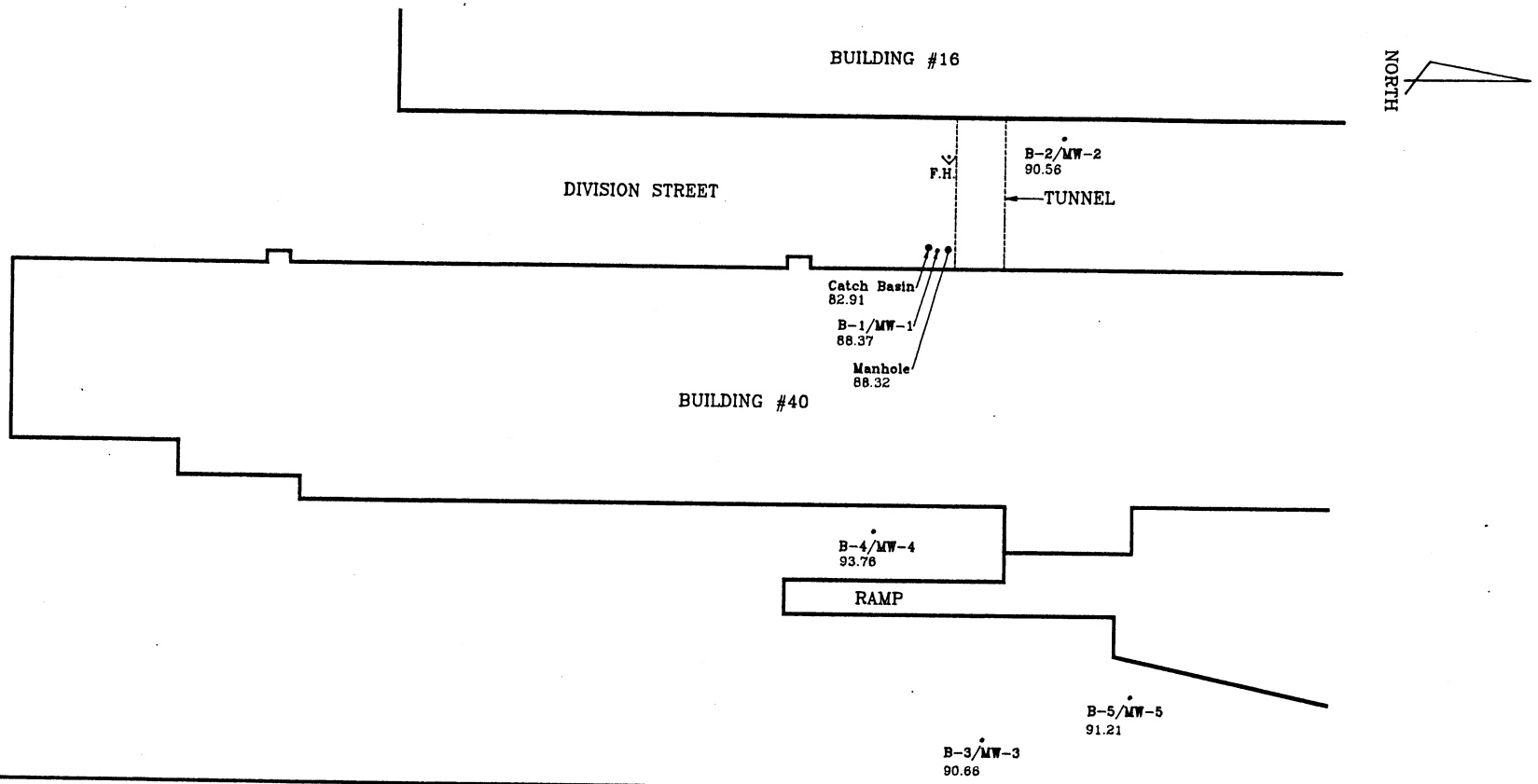
LEGEND:

- ⊕ Soil Boring/Monitoring Well Locations
- F.H. Fire Hydrant Location with Guardrails

GM – CLCD NORTH

TITLE: SOIL BORING/MONITORING WELL LOCATIONS BUILDING #40 402 E. HAMILTON – FLINT, MICHIGAN	
DATE: 1/11/94	APPROVED BY: M.W.K.
SCALE: 1"=40' Reduced	PREPARED BY: C.G.S.
FIGURE NUMBER: 1	PROJECT NUMBER: 3143CE

ADVANCED ENVIRONMENTAL, INC.
ENVIRONMENTAL MANAGEMENT CONSULTANTS



LEGEND:

- ◓ Soil Boring/Monitoring Well Locations
- F.H. Fire Hydrant Location with Guardrails

GM – CLCD NORTH

TITLE: STATIC WATER LEVEL ELEVATIONS BUILDING #40 402 E. HAMILTON – FLINT, MICHIGAN	
DATE: 1/11/94	APPROVED BY: M.W.K.
SCALE: 1"=40' Reduced	PREPARED BY: C.G.S.
FIGURE NUMBER: 2	PROJECT NUMBER: 3143CE

ADVANCED ENVIRONMENTAL, INC.
ENVIRONMENTAL MANAGEMENT CONSULTANTS

TABLES

TABLE 1

PCB SOIL SAMPLE ANALYTICAL RESULTS

GM CLCD NORTH
BUILDING 40

Advanced Project No. 3143CE

Sample ID	Analytical Results PCB
	PCB (μg/kg)
B1 (9' - 11')	ND
B1 (14' - 16')	ND
B2 (9' - 11')	ND
B2 (11.5' - 13.5')	ND
B3 (8' - 10')	ND
B3 (11.5' - 13.5')	ND
B4 (6.5' - 8.5')	ND
B4 (9' - 11')	ND
B5 (1' - 2')	ND
B5 (11.5' - 13.5')	ND

Notes:

- PCBs Method 8080
- Method detection level 330 μg/kg

TABLE 2

PCB WATER SAMPLE ANALYTICAL RESULTS

GM CLCD NORTH
BUILDING 40

Advanced Project No. 3143CE

Sample ID	Analytical Results
	PCB (μg/L)
MW-1	ND
MW-2	ND
MW-3	ND
MW-4	ND
MW-5	ND
Trip Blank	ND
Field Blank	ND

Notes:

- PCBs Method 8080
- Method detection level 0.2 μg/L (Aroclor - 1232 0.4 μg/L)

TABLE 3

ELEVATIONS

GM CLCD NORTH
BUILDING 40

Advanced Project No. 3143CE

Description	Top of Casing (feet)	Top of Well Riser (feet)	Static Water Level (feet)	Bottom of Well (feet)
MW-1	97.48	96.71	88.37	79.71
MW-2	98.17	97.6	90.56	86.11
MW-3	95.47	94.48	90.66	84.48
MW-4	96.45	96.01	93.76	87.71
MW-5	96.56	96.14	91.21	86.24
Tunnel MH	97.34	97.34	88.32	78.89
Storm CB	97.41	97.41	82.91	76.78

EXHIBIT A

Advanced Environmental, Inc.
352 South Saginaw Street
Suite 600
Flint, Michigan 48502
Tel: (313) 238-9190
Fax: (313) 238-9195

SOIL BORING LOG - B-1/MW-1

Date:	12/16/93	Project:	GM CLCD B40	No:	3143IE
Drilling Contractor:	Young's	Location:			
Prepared By:	JLW	Twp/Sec.:			
Time Started:	9:10	Total Depth Drilled:	17'		
Time Completed:		Hole Diameter:	8.25"		
Length Coring Device:	5'	Dia. Coring Device:	4.5"		
Drilling Fluid Used:	None				
Driller:	Scott Smith				
Helper:	Ken Scholls				
Hammer Weight:	140 lbs.				
Hammer Drop:	30"				

Boring Methods

- X Hollow Stem Auger
- Hand Auger
- Other

Ground Water Observations

- GW Encountered at
- Monitor Wells Installed
- Yes_X___See Monitoring Well Log
- No___

Penetration Blows per 6"	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	PID	GC
		1					
		2					
		3					
		4					
3	SS		SW	Sand	Brown, Moist, Fine/Medium		
2	SS	5					
3	SS		CL	Clay	Mixed Fill		
3	SS	6				ND	
3	SS	7					
3	SS						
3	SS	8					
4	SS						
		9				ND	
2	SS-[X]				Gray/Brown		
2	SS-[X]	10					
3	SS-[X]						
3	SS-[X]	11			Tar like substance mixed in cuttings	5	
3	SS	12					
3	SS						
4	SS	13			Black, Wet	3	
3	SS						
		14				ND	
1	SS-[X]						
1	SS-[X]	15					
1	SS-[X]						
2	SS-[X]	16					
	SS	17					
			E.O.B.	End of Boring 17'			
		18					
		19					
		20					

SS-Split Spoon
NR-No Recovery
RB-Rock Bit

E.O.B.-End of Boring
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample

PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
FS-Field Screening Container

ADVANCED ENVIRONMENTAL

352 South Saginaw Street
Suite 600
Flint, Michigan
Tel: (313) 238-9190
Fax: (313) 238-9195

Monitoring Well:	MW-1	Project:	GMCLCD-B#40
Date:	12/16/93	Project No.:	3143CE
Drilling Contractor:	Young's	Location:	902 E. Hamilton
Prepared By:	JLW	Twp/Range/Sec.:	Flint, MI
Time Started:		Total Depth Drilled:	17'
Time Completed:		Hole Diamater:	8.25"
Lgth Coring Device:	5'	Dia. Coring Device:	4.5"

Boring Methods

X Hollow Stem Auger
Hand Auger
Other

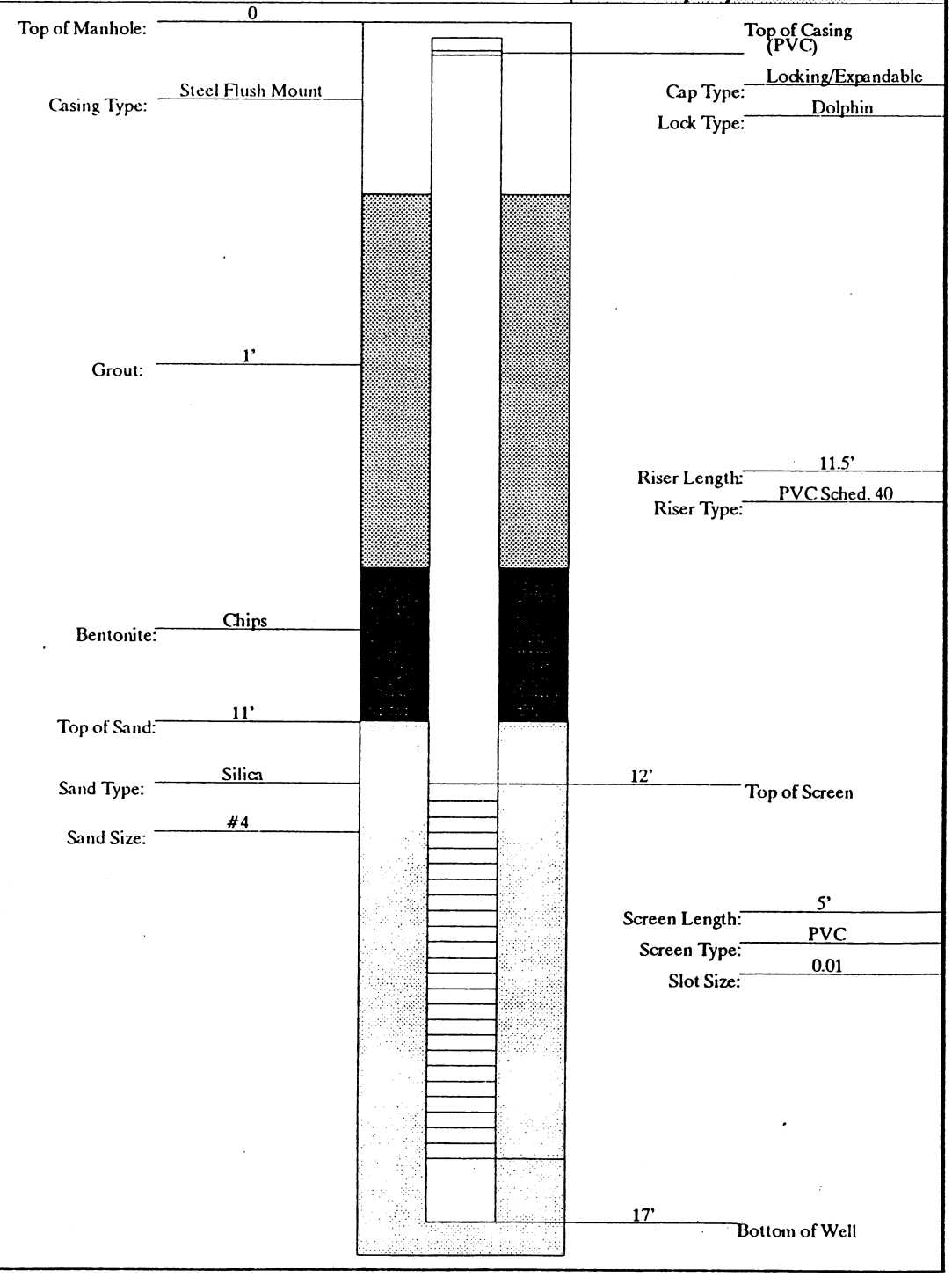
Ground Water Observations

Depth to Water From TOC:
Depth to Bottom of Well from TOC:
Height of Water Column:
Water Volume:
Purged Volume:

Drilling Fluid Used:	None
Driller:	Scott
Helper:	Ken
Well Material:	PVC
Well Diameter:	2"

Remarks

Pipe Specifications



Advanced Environmental, Inc.
352 South Saginaw Street
Suite 600
Flint, Michigan 48502
Tel: (313) 238-9190
Fax: (313) 238-9195

SOIL BORING LOG – B-2/MW-2

Date:	12/16/93	Project:	GM CLCD B40	No:	3143IE
Drilling Contractor:	Young's	Location:			
Prepared By:	JLW	Twp/Sec.:			
Time Started:	1:35	Total Depth Drilled:	16'		
Time Completed:		Hole Diameter:	8.25"		
Length Coring Device:	5'	Dia. Coring Device:	4.5"		

Boring Methods		Ground Water Observations	Drilling Fluid Used:	None
X	Hollow Stem Auger	GW Encountered at	Driller:	Scott Smith
	Hand Auger	Monitor Wells Installed	Helper:	Ken Scholls
	Other	Yes_X__See Monitoring Well Log	Hammer Weight:	140 lbs.
		No__	Hammer Drop:	30"

Penetration Blows per 6"	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	PID	GC
		1					
		2					
		3					
		4					
4	SS		SW	Sand	Brown, Moist, Fine/Medium		
5	SS	5					
6	SS		SC	Sandy Clay			
6	SS	6				ND	
4	SS	7					
5	SS						
6	SS	8					
8	SS		CL	Clay		ND	
		9					
4	SS-[X]		SC	Sandy Clay	Brown/Gray, Wet, Strong Odor		
5	SS-[X]	10					
7	SS-[X]		CL	Clay	Gray		
8	SS-[X]	11				7	
16	SS-[X]	12					
18	SS-[X]						
20	SS-[X]	13					
30+	SS-[X]					20	
		14					
30	SS						
40+	SS	15					
	SS						
	SS	16				ND	
			E.O.B.	End of Boring 16'			
		17					
		18					
		19					
		20					

SS-Split Spoon
NR-No Recovery
RB-Rock Bit

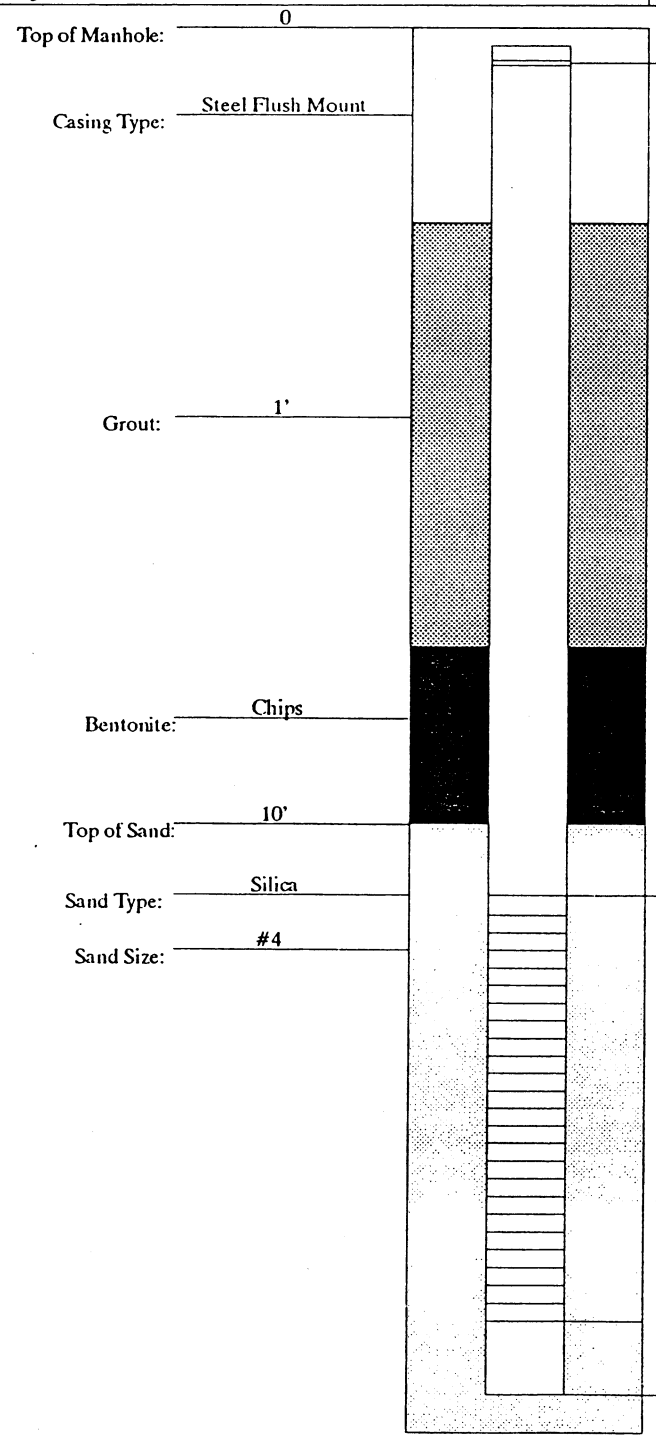
E.O.B.-End of Boring
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample

PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
FS-Field Screening Container

ADVANCED ENVIRONMENTAL
352 South Saginaw Street
Suite 600
Flint, Michigan
Tel: (313) 238-9190
Fax: (313) 238-9195

Monitoring Well:	MW-2	Project:	GMCLCD-B#40
Date:	12/16/93	Project No.:	3143CE
Drilling Contractor:	Young's	Location:	902 E. Hamilton
Prepared By:	JLW	Twp/Range/Sec.:	Flint, MI
Time Started:		Total Depth Drilled:	16'
Time Completed:		Hole Diamater:	8.25"
Lgth Coring Device:	5'	Dia. Coring Device:	4.5"

Boring Methods		Ground Water Observations		
X	Hollow Stem Auger	Depth to Water From TOC:	Drilling Fluid Used:	None
	Hand Auger	Depth to Bottom of Well from TOC:	Driller:	Scott
	Other	Height of Water Column:	Helper:	Ken
		Water Volume:	Well Material:	PVC
Remarks		Purged Volume:	Well Diameter:	2"
			Pipe Specifications	



Advanced Environmental, Inc.
352 South Saginaw Street
Suite 600
Flint, Michigan 48502
Tel: (313) 238-9190
Fax: (313) 238-9195

SOIL BORING LOG - B-3/MW-3

Date:	12/17/93	Project:	GM CLCD B40	No: 3143IE
Drilling Contractor:	Young's	Location:		
Prepared By:	JLW	Twp/Sec.:		
Time Started:	7:50	Total Depth Drilled:	13'	
Time Completed:		Hole Diameter:	8.25"	
Length Coring Device:	5'	Dia. Coring Device:	4.5"	
Drilling Fluid Used:	None			
Driller:	Scott Smith			
Helper:	Ken Scholls			
Hammer Weight:	140 lbs.			
Hammer Drop:	30"			

Boring Methods

X	Hollow Stem Auger
	Hand Auger
	Other

Ground Water Observations

GW Encountered at
Monitor Wells Installed
Yes_X__See Monitoring Well Log
No__

Penetration Blows per 6"	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	PID	GC
				Limestone	Railroad Ballast		
		1					
3	SS	2	SW	Sand	Brown, Moist, Fine/Medium		
4	SS						
4	SS	3	SC	Sandy Clay			
5	SS					ND	
		4					
4	SS		CL	Clay	Brown/Gray		
5	SS	5					
7	SS						
8	SS	6				ND	
7	SS	7					
9	SS				Gray		
10	SS	8					
12	SS		GP	Sand & Gravel	Brown, Very Moist, Coarse/Medium	ND	
		9					
12	SS		SC	Silty Clay			
18	SS	10					
27	SS		CL	Clay	Moist		
40+	SS	11			Gray	ND	
40+	SS	12					
40+	SS						
40+	SS	13					
			E.O.B.	End of Boring 13'			
		14					
		15					
		16					
		17					
		18					
		19					
		20					

SS-Split Spoon
NR-No Recovery
RB-Rock Bit

E.O.B.-End of Boring
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample

PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
FS-Field Screening Container

DVANCED ENVIRONMENTAL
352 South Saginaw Street
Suite 600
Flint, Michigan
Tel: (313) 238-9190
Fax: (313) 238-9195

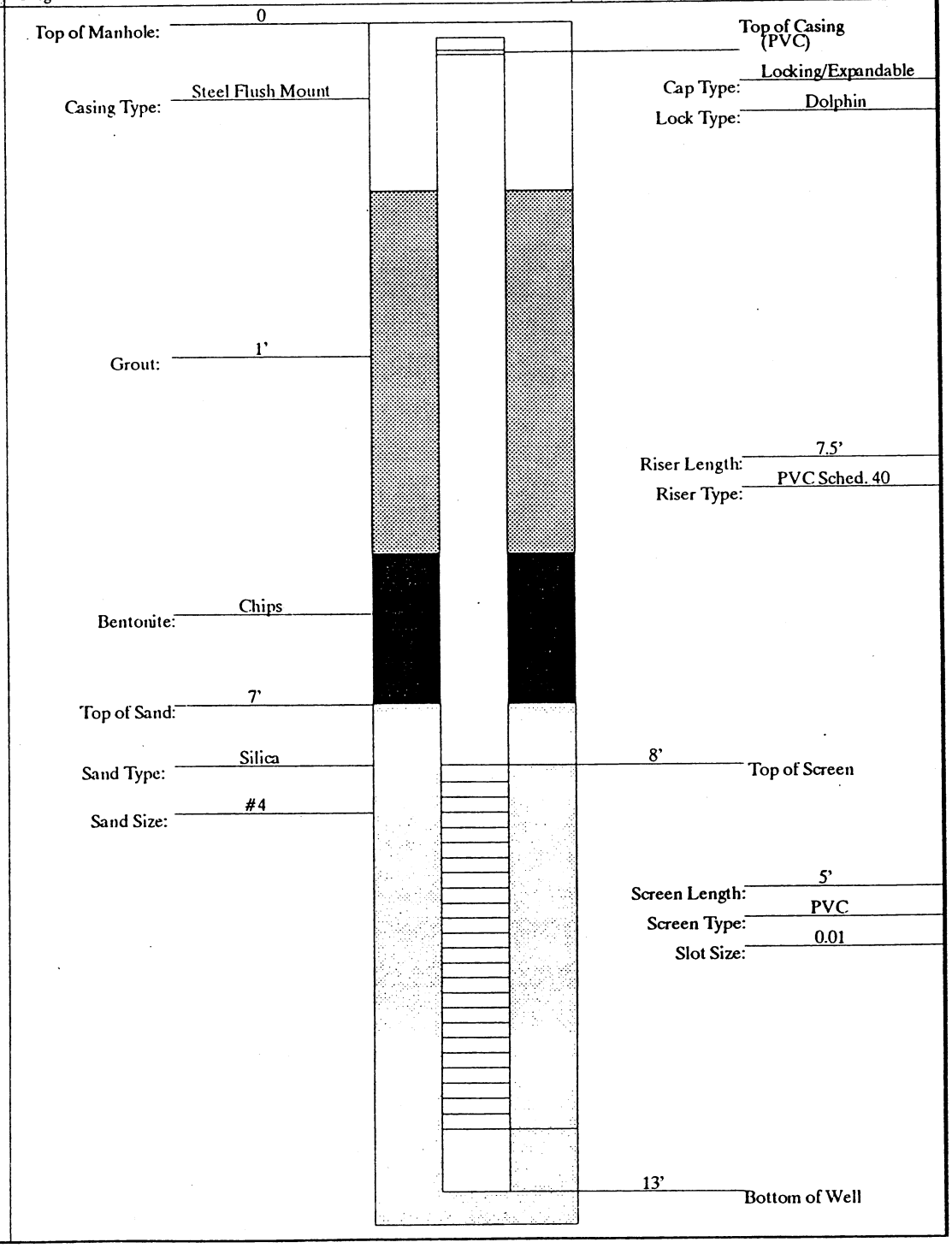
Monitoring Well:	MW-3	Project:	GMCLCD-B#40
Date:	12/16/93	Project No.:	3143CE
Drilling Contractor:	Young's	Location:	902 E. Hamilton
Prepared By:	JLW	Twp/Range/Sec.:	Flint, MI
Time Started:		Total Depth Drilled:	13'
Time Completed:		Hole Diamater:	8.25"
Lgth Coring Device:	5'	Dia. Coring Device:	4.5"
		Drilling Fluid Used:	None
		Driller:	Scott
		Helper:	Ken
		Well Material:	PVC
		Well Diameter:	2"

Boring Methods
X Hollow Stem Auger
Hand Auger
Other

Ground Water Observations
Depth to Water From TOC:
Depth to Bottom of Well from TOC:
Height of Water Column:
Water Volume:
Purged Volume:

Remarks

Pipe Specifications



Advanced Environmental, Inc.
352 South Saginaw Street
Suite 600
Flint, Michigan 48502
Tel: (313) 238-9190
Fax: (313) 238-9195

SOIL BORING LOG – B-4/MW-4

Date:	12/17/93	Project:	GM CLCD B40	No:	3143IE
Drilling Contractor:	Young's	Location:			
Prepared By:	JLW	Twp/Sec.:			
Time Started:		Total Depth Drilled:	11'		
Time Completed:		Hole Diameter:	8.25"		
Length Coring Device:	5'	Dia. Coring Device:	4.5"		
		Drilling Fluid Used:	None		
		Driller:	Scott Smith		
		Helper:	Ken Scholls		
		Hammer Weight:	140 lbs.		
		Hammer Drop:	30"		

Boring Methods		Ground Water Observations
X	Hollow Stem Auger	GW Encountered at
	Hand Auger	Monitor Wells Installed
	Other	Yes_X__See Monitoring Well Log
		No__

Penetration Blows per 6"	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	PID	GC
				Concrete			
		1					
				No Recovery			
		2					
		3					
		4					
4	SS		GP	Sand & Gravel	Brown, Wet, Coarse, Strong Odor		
5	SS	5					
7	SS						
3	SS	6					
5	SS-[X]	7			Very little recovery (strong Odor)		
5	SS-[X]						
6	SS-[X]	8					
27	SS-[X]		CL	Clay	Gray, Moist		
		9					
28	SS-[X]						
30	SS-[X]	10					
35	SS-[X]						
40+	SS-[X]	11					
			E.O.B.	End of Boring 11'			
		12					
		13					
		14					
		15					
		16					
		17					
		18					
		19					
		20					

SS-Split Spoon
NR-No Recovery
RB-Rock Bit

E.O.B.-End of Boring
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample

PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
FS-Field Screening Container

ADVANCED ENVIRONMENTAL
352 South Saginaw Street
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Flint, Michigan
Tel: (313) 238-9190
Fax: (313) 238-9195

Monitoring Well:	MW-4	Project:	GMCLCD-B#40
Date:	12/16/93	Project No.:	3143CE
Drilling Contractor:	Young's	Location:	902 E. Hamilton
Prepared By:	JLW	Twp/Range/Sec.:	Flint, MI
Time Started:		Total Depth Drilled:	11'
Time Completed:		Hole Diamater:	8.25"
Lgth Coring Device:	5'	Dia. Coring Device:	4.5"
		Drilling Fluid Used:	None
		Driller:	Scott
		Helper:	Ken
		Well Material:	PVC
		Well Diameter:	2"

Boring Methods

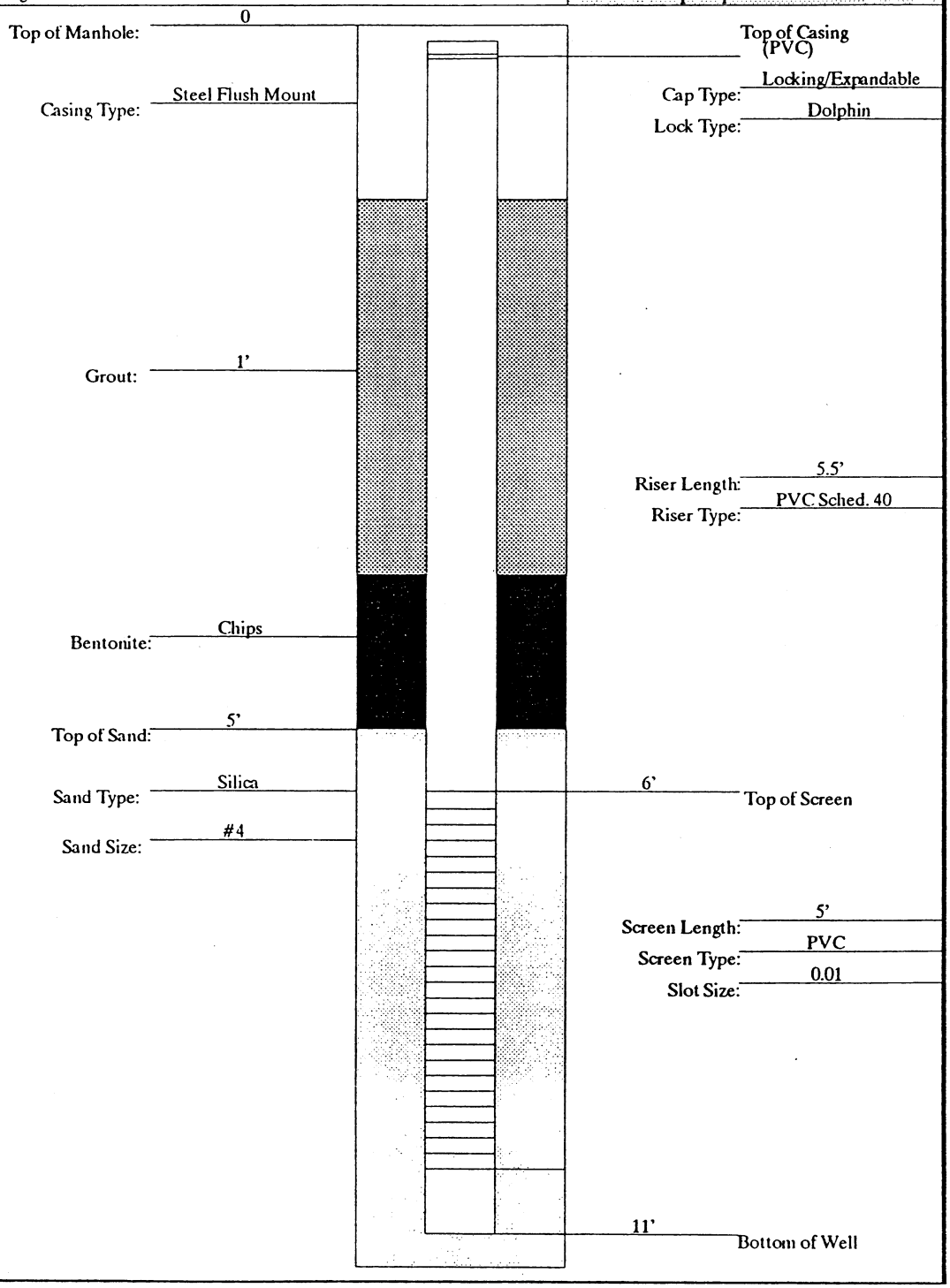
X Hollow Stem Auger
Hand Auger
Other

Ground Water Observations

Depth to Water From TOC:
Depth to Bottom of Well from TOC:
Height of Water Column:
Water Volume:
Purged Volume:

Remarks

Pipe Specifications



Advanced Environmental, Inc.
352 South Saginaw Street
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Flint, Michigan 48502
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SOIL BORING LOG – B-5/MW-5

Date:	12/17/93	Project:	GM CLCD B40	No:	3143IE
Drilling Contractor:	Young's	Location:			
Prepared By:	JLW	Twp/Sec.:			
Time Started:	12:45	Total Depth Drilled:	13.5'		
Time Completed:		Hole Diameter:	8.25"		
Length Coring Device:	5'	Dia. Coring Device:	4.5"		
Drilling Fluid Used:	None				
Driller:	Scott Smith				
Helper:	Ken Scholls				
Hammer Weight:	140 lbs.				
Hammer Drop:	30"				

Boring Methods	
X	Hollow Stem Auger
	Hand Auger
	Other

Ground Water Observations
GW Encountered at
Monitor Wells Installed
Yes_X__See Monitoring Well Log
No__

Penetration Blows per 6"	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	PID	GC
		1	GP	Gravel	Black, Moist, Coarse		
	SS-[X]						
	SS-[X]	2	SC	Sandy Clay	Brown, Moist		
	SS						
	SS	3					
	SS						
		4					
	SS		CL	Clay	Gray/Green, Odor		
	SS	5					
	SS						
	SS	6					
	SS-[X]	7			Wet		
	SS-[X]						
	SS-[X]	8			Brown/Gray, Moist		
	SS-[X]						
		9					
	SS						
	SS	10					
	SS						
	SS	11					
	SS	12			Gray/Brown, Fractured		
	SS						
	SS	13					
	SS						
		14	E.O.B.	End of Boring 13.5'			
		15					
		16					
		17					
		18					
		19					
		20					

SS-Split Spoon
NR-No Recovery
RB-Rock Bit

E.O.B.-End of Boring
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample

PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
FS-Field Screening Container

ADVANCED ENVIRONMENTAL
352 South Saginaw Street
Suite 600
Flint, Michigan
Tel: (313) 238-9190
Fax: (313) 238-9195

Monitoring Well:	MW-5	Project:	GMCLCD-B#40
Date:	12/16/93	Project No.:	3143CE
Drilling Contractor:	Young's	Location:	902 E. Hamilton
Prepared By:	JLW	Twp/Range/Sec.:	Flint, MI
Time Started:		Total Depth Drilled:	13.5'
Time Completed:		Hole Diamater:	8.25"
Lgth Coring Device:	5'	Dia. Coring Device:	4.5"

Boring Methods

X Hollow Stem Auger
Hand Auger
Other

Ground Water Observations

Depth to Water From TOC:
Depth to Bottom of Well from TOC:
Height of Water Column:
Water Volume:
Purged Volume:

Drilling Fluid Used:	None
Driller:	Scott
Helper:	Ken
Well Material:	PVC
Well Diameter:	2"

Remarks

Pipe Specifications

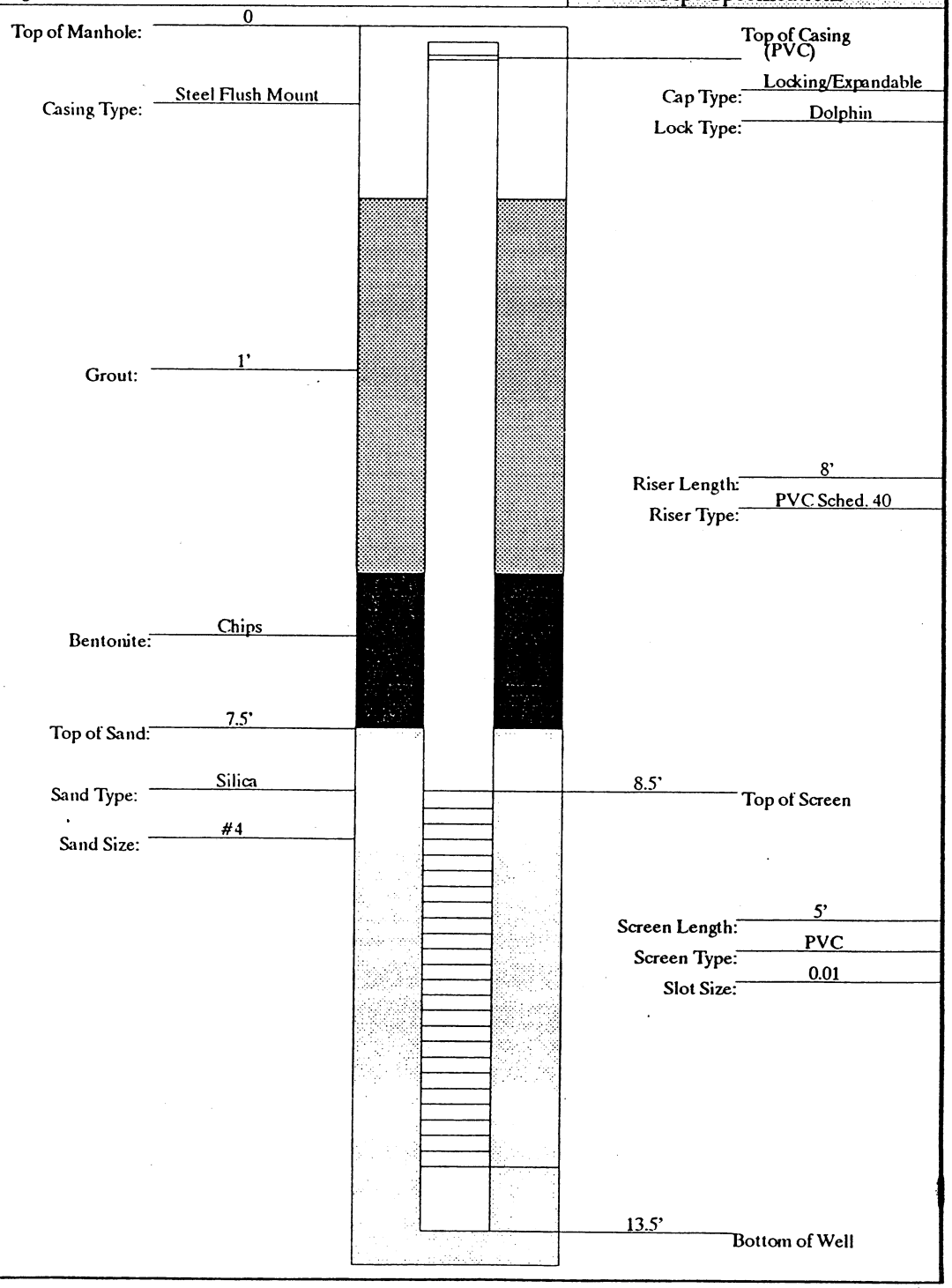

EXHIBIT B

ENVIRONMENTAL QUALITY LABORATORIES, INC.

44075 Phoenix Drive
Sterling Heights, Michigan 48314-1420
810-731-1818
Outside Michigan Dial 1-800- 368-5227
Fax Line 810-731-2590
Federal I.D. # 38-2291504

VANCED ENVIRONMENTAL INC.
52 S. SAGINAW ST. 6TH FLOOR
INT, MI 48502

RECEIVED: 12/23/93
REPORTED: 12/27/93

SAMPLE DESCRIPTION FOR LAB ORDER NUMBER: 13254
PROJECT: PROJ. #3143 CE CLCD-B40
B1 -9-11' SOIL

8080 PCB'S (1)
ANALYZED BY: DATE ANALYZED:

ANALYTE	RESULT	
Aroclor-1016	< 330.0	PPB
Aroclor-1221	< 330.0	PPB
Aroclor-1232	< 330.0	PPB
Aroclor-1242	< 330.0	PPB
Aroclor-1248	< 330.0	PPB
Aroclor-1254	< 330.0	PPB
Aroclor-1260	< 330.0	PPB

OTE: "<" Denotes Less Than the Detection Limit of the Test.

Thomas S. Megna
Laboratory Manager

Chris Bloom
Laboratory Supervisor

ENVIRONMENTAL QUALITY LABORATORIES, INC.

44075 Phoenix Drive
Sterling Heights, Michigan 48314-1420
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Federal I.D. # 38-2291504

VANCED ENVIRONMENTAL INC.
52 S. SAGINAW ST. 6TH FLOOR
INT, MI 48502

RECEIVED: 12/23/93
REPORTED: 12/27/93

SAMPLE DESCRIPTION FOR LAB ORDER NUMBER: 13255
PROJECT: PROJ. #3143 CE CLCD-B40
B1 -14-16' SOIL

8080 PCB'S (1)
ANALYZED BY: DATE ANALYZED:

ANALYTE	RESULT	
Aroclor-1016	< 330.0	PPB
Aroclor-1221	< 330.0	PPB
Aroclor-1232	< 330.0	PPB
Aroclor-1242	< 330.0	PPB
Aroclor-1248	< 330.0	PPB
Aroclor-1254	< 330.0	PPB
Aroclor-1260	< 330.0	PPB

NOTE: "<" Denotes Less Than the Detection Limit of the Test.

Thomas S. Megna
Laboratory Manager

C. Bloom
Chris Bloom
Laboratory Supervisor

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VANCED ENVIRONMENTAL INC.
52 S. SAGINAW ST. 6TH FLOOR
INT, MI 48502

RECEIVED: 12/23/93
REPORTED: 12/27/93

SAMPLE DESCRIPTION FOR LAB ORDER NUMBER: 13256
PROJECT: PROJ. #3143 CE CLCD-B40
B2 -9-11' SOIL

8080 PCB'S (1)
ANALYZED BY: DATE ANALYZED:

ANALYTE	RESULT	
Aroclor-1016	< 330.0	PPB
Aroclor-1221	< 330.0	PPB
Aroclor-1232	< 330.0	PPB
Aroclor-1242	< 330.0	PPB
Aroclor-1248	< 330.0	PPB
Aroclor-1254	< 330.0	PPB
Aroclor-1260	< 330.0	PPB

NOTE: "<" Denotes Less Than the Detection Limit of the Test.

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Laboratory Manager

Chris Bloom
Laboratory Supervisor

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Federal I.D. # 38-2291504

)VANCED ENVIRONMENTAL INC.
52 S. SAGINAW ST. 6TH FLOOR
'LINT, MI 48502

RECEIVED: 12/23/93
REPORTED: 12/27/93

SAMPLE DESCRIPTION FOR LAB ORDER NUMBER: 13257
PROJECT: PROJ. #3143 CE CLCD-B40
B2 -11.5-13.5' SOIL

8080 PCB'S (1)
ANALYZED BY: DATE ANALYZED:

ANALYTE	RESULT	
Aroclor-1016	< 330.0	PPB
Aroclor-1221	< 330.0	PPB
Aroclor-1232	< 330.0	PPB
Aroclor-1242	< 330.0	PPB
Aroclor-1248	< 330.0	PPB
Aroclor-1254	< 330.0	PPB
Aroclor-1260	< 330.0	PPB

IOTE: "<" Denotes Less Than the Detection Limit of the Test.

Thomas S. Megna
Laboratory Manager

C. Bloom
Chris Bloom
Laboratory Supervisor

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VANCED ENVIRONMENTAL INC.
52 S. SAGINAW ST. 6TH FLOOR
INT, MI 48502

RECEIVED: 12/23/93
REPORTED: 12/27/93

SAMPLE DESCRIPTION FOR LAB ORDER NUMBER: 13258
PROJECT: PROJ. #3143 CE CLCD-B40
B3 -8-10' SOIL

8080 PCB'S (1)
ANALYZED BY: DATE ANALYZED:

ANALYTE	RESULT	
Aroclor-1016	< 330.0	PPB
Aroclor-1221	< 330.0	PPB
Aroclor-1232	< 330.0	PPB
Aroclor-1242	< 330.0	PPB
Aroclor-1248	< 330.0	PPB
Aroclor-1254	< 330.0	PPB
Aroclor-1260	< 330.0	PPB

NOTE: "<" Denotes Less Than the Detection Limit of the Test.

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Laboratory Manager

Chris Bloom
Laboratory Supervisor

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52 S. SAGINAW ST. 6TH FLOOR
INT, MI 48502

RECEIVED: 12/23/93
REPORTED: 12/27/93

SAMPLE DESCRIPTION FOR LAB ORDER NUMBER: 13259
PROJECT: PROJ. #3143 CE CLCD-B40
B3 -11.5-13.5' SOIL

8080 PCB'S (1)
ANALYZED BY: DATE ANALYZED:

ANALYTE	RESULT	
Aroclor-1016	< 330.0	PPB
Aroclor-1221	< 330.0	PPB
Aroclor-1232	< 330.0	PPB
Aroclor-1242	< 330.0	PPB
Aroclor-1248	< 330.0	PPB
Aroclor-1254	< 330.0	PPB
Aroclor-1260	< 330.0	PPB

OTE: "<" Denotes Less Than the Detection Limit of the Test.

Thomas S. Megna
Laboratory Manager

Chris Bloom
Laboratory Supervisor

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)VANCED ENVIRONMENTAL INC.
352 S. SAGINAW ST. 6TH FLOOR
"LINT, MI 48502

RECEIVED: 12/23/93
REPORTED: 12/27/93

SAMPLE DESCRIPTION FOR LAB ORDER NUMBER: 13260
PROJECT: PROJ. #3143 CE CLCD-B40
B4 -6.5-8.5' SOIL

8080 PCB'S (1)
ANALYZED BY: DATE ANALYZED:

ANALYTE	RESULT	
Aroclor-1016	< 330.0	PPB
Aroclor-1221	< 330.0	PPB
Aroclor-1232	< 330.0	PPB
Aroclor-1242	< 330.0	PPB
Aroclor-1248	< 330.0	PPB
Aroclor-1254	< 330.0	PPB
Aroclor-1260	< 330.0	PPB

NOTE: "<" Denotes Less Than the Detection Limit of the Test.

Thomas S. Megna
Laboratory Manager

C. Bloom
Chris Bloom
Laboratory Supervisor

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Federal I.D. # 38-2291504

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52 S. SAGINAW ST. 6TH FLOOR
'LINT, MI 48502

RECEIVED: 12/23/93
REPORTED: 12/27/93

SAMPLE DESCRIPTION FOR LAB ORDER NUMBER: 13261
PROJECT: PROJ. #3143 CE CLCD-B40
B4 -9-11' SOIL

8080 PCB'S (1)
ANALYZED BY: DATE ANALYZED:

ANALYTE	RESULT	
Aroclor-1016	< 330.0	PPB
Aroclor-1221	< 330.0	PPB
Aroclor-1232	< 330.0	PPB
Aroclor-1242	< 330.0	PPB
Aroclor-1248	< 330.0	PPB
Aroclor-1254	< 330.0	PPB
Aroclor-1260	< 330.0	PPB

IOTE: "<" Denotes Less Than the Detection Limit of the Test.

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Laboratory Manager

C. Bloom
Chris Bloom
Laboratory Supervisor

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Sterling Heights, Michigan 48314-1420
810-731-1818
Outside Michigan Dial 1-800- 368-5227
Fax Line 810-731-2590
Federal I.D. # 38-2291504

)VANCED ENVIRONMENTAL INC.
152 S. SAGINAW ST. 6TH FLOOR
'INT, MI 48502

RECEIVED: 12/23/93
REPORTED: 12/27/93

SAMPLE DESCRIPTION FOR LAB ORDER NUMBER: 13262
PROJECT: PROJ. #3143 CE CLCD-B40
B5 -1-2' SOIL

8080 PCB'S (1)
ANALYZED BY: DATE ANALYZED:

ANALYTE	RESULT	
Aroclor-1016	< 330.0	PPB
Aroclor-1221	< 330.0	PPB
Aroclor-1232	< 330.0	PPB
Aroclor-1242	< 330.0	PPB
Aroclor-1248	< 330.0	PPB
Aroclor-1254	< 330.0	PPB
Aroclor-1260	< 330.0	PPB

NOTE: "<" Denotes Less Than the Detection Limit of the Test.

Thomas S. Megna
Laboratory Manager

C. Bloom
Chris Bloom
Laboratory Supervisor

ENVIRONMENTAL QUALITY LABORATORIES, INC.

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Sterling Heights, Michigan 48314-1420
810-731-1818
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Federal I.D. # 38-2291504

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352 S. SAGINAW ST. 6TH FLOOR
FLINT, MI 48502

RECEIVED: 12/23/93
REPORTED: 12/27/93

SAMPLE DESCRIPTION FOR LAB ORDER NUMBER: 13263
PROJECT: PROJ. #3143 CE CLCD-B40
B5 -11.5-13.5' SOIL

8080 PCB'S (1)
ANALYZED BY:

DATE ANALYZED:

ANALYTE	RESULT	
Aroclor-1016	< 330.0	PPB
Aroclor-1221	< 330.0	PPB
Aroclor-1232	< 330.0	PPB
Aroclor-1242	< 330.0	PPB
Aroclor-1248	< 330.0	PPB
Aroclor-1254	< 330.0	PPB
Aroclor-1260	< 330.0	PPB

NOTE: "<" Denotes Less Than the Detection Limit of the Test.

Thomas S. Mégna
Laboratory Manager

Chris Bloom
Laboratory Supervisor

ADVANCED ENVIRONMENTAL, INC.

ENVIRONMENTAL MANAGEMENT CONSULTANTS

352 SOUTH SAGINAW STREET • SIXTH FLOOR • FLINT, MICHIGAN 48502
PHONE: (313)238-9190 • FAX: (313)238-9195

CHAIN OF CUSTODY RECORD

PROJECT MANAGER: MWK

LABORATORY: EQL

PROJECT #: 3143 CE

PROJECT: CLCD - B40

SAMPLERS: (Signature) JEW

SAMPLE NUMBER	DATE	TIME	MATRIX	NO. CONTAINERS	ANALYSIS REQUIRED: PCBs (8080)	TURN AROUND TIME	PRESERVATION: ICED	PRESERVATION: SPECIFY CHEMICAL ADDED AND FINAL pH IF KNOWN
B1 - (9-11)	12/16		SOIL	1	X	Standard		13254
B1 - (14-16)	12/16				X			55
B2 - (9-11)	12/16				X			56
B2 - (11.5-13.5)	12/16				X			57
B3 - (8-10)	12/17				X			58
B3 (11.5-13.5)					X			59
B4 (6.5-8.5)					X			60
B4 (9-11)					X			61
B5 (1-2)					X			62
B5 (11.5-13.5)					X			13 63

RELINQUISHED BY: (Signature) (1)	DATE	TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature) (4)	DATE	TIME	SHIPPED (via)
[signature]	12/23/93	1100A	[signature]				
RELINQUISHED BY: (Signature) (2)	DATE	TIME	RECEIVED BY: (Signature)	RECEIVED FOR LABORATORY BY:	DATE	TIME	SHIPPING TKT. #
RELINQUISHED BY: (Signature) (3)	DATE	TIME	RECEIVED BY: (Signature)	REMARKS:			

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Sterling Heights, Michigan 48314-1420
810-731-1818
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Fax Line 810-731-2590
Federal I.D. # 38-2291504

CLIENT: ADVANCED ENVIRONMENTAL
PROJECT NAME AND NUMBER: #3143 CE CLCD-B40

DATE RECEIVED: 12-23-93
LAB NO.'S IN BATCH: 13254-13263
MATRIX: SOIL

SPIKE SUMMARY

METHOD 8080	METHOD ANALYTE SPIKED	MATRIX SPIKE	MATRIX SPIKE DUP	% RECOV SURRO	% RECOV	% RPD	SAMPLE RECEV SPIKE	ANALYSIS DATE	TRIP/ METHOD BLANK RESULT	ANALY INITI	REF. CHECK STD REC
		ppM	ppM								
	AROCLOR 1254	1.10	0.92	N/A	101	18	N/A	12-23-93	<RDL	LHK	N/A

COMMENTS/CRITERIA:
- METHOD AND TRIP BLANK CONCENTRATIONS MUST BE BELOW REPORTABLE DETECTION LIMITS
- REFERENCE CHECK STANDARD IS METHOD DEPENDENT

Chris Bloom, Lab Supervisor C. Bloom

Thomas S Megna, Lab Manager Thomas S Megna (CJ)

tsc

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Federal I.D. # 38-2291504

VANCED ENVIRONMENTAL INC.
52 S. SAGINAW ST. 6TH FLOOR
INT, MI 48502

RECEIVED: 12/23/93
REPORTED: 01/04/94

SAMPLE DESCRIPTION FOR LAB ORDER NUMBER: 13264
PROJECT: PROJ. #3143 IE GM CLCD
MW -1 WATER

8080 PCB'S (1)
ANALYZED BY:

DATE ANALYZED:

ANALYTE	RESULT		
Aroclor-1016	<	0.2	PPB
Aroclor-1221	<	0.2	PPB
Aroclor-1232	<	0.4	PPB
Aroclor-1242	<	0.2	PPB
Aroclor-1248	<	0.2	PPB
Aroclor-1254	<	0.2	PPB
Aroclor-1260	<	0.2	PPB

OTE: "<" Denotes Less Than the Detection Limit of the Test.

Thomas S. Megna
Laboratory Manager

C. Bloom
Chris Bloom
Laboratory Supervisor

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VANCED ENVIRONMENTAL INC.
52 S. SAGINAW ST. 6TH FLOOR
INT, MI 48502

RECEIVED: 12/23/93
REPORTED: 01/04/94

SAMPLE DESCRIPTION FOR LAB ORDER NUMBER: 13265
PROJECT: PROJ. #3143 IE GM CLCD
MW -2 WATER

8080 PCB'S (1)
ANALYZED BY:

DATE ANALYZED:

ANALYTE	RESULT		
Aroclor-1016	<	0.2	PPB
Aroclor-1221	<	0.2	PPB
Aroclor-1232	<	0.4	PPB
Aroclor-1242	<	0.2	PPB
Aroclor-1248	<	0.2	PPB
Aroclor-1254	<	0.2	PPB
Aroclor-1260	<	0.2	PPB

OTE: "<" Denotes Less Than the Detection Limit of the Test.

Thomas S. Megna
Laboratory Manager

C. Bloom
Chris Bloom
Laboratory Supervisor

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VANCED ENVIRONMENTAL INC.
52 S. SAGINAW ST. 6TH FLOOR
INT, MI 48502

RECEIVED: 12/23/93
REPORTED: 01/04/94

SAMPLE DESCRIPTION FOR LAB ORDER NUMBER: 13266
PROJECT: PROJ. #3143 IE GM CLCD
MW -3 WATER

8080 PCB'S (1)
ANALYZED BY: DATE ANALYZED:

ANALYTE	RESULT		
Aroclor-1016	<	0.2	PPB
Aroclor-1221	<	0.2	PPB
Aroclor-1232	<	0.4	PPB
Aroclor-1242	<	0.2	PPB
Aroclor-1248	<	0.2	PPB
Aroclor-1254	<	0.2	PPB
Aroclor-1260	<	0.2	PPB

OTE: "<" Denotes Less Than the Detection Limit of the Test.

Thomas S. Megna
Laboratory Manager

Chris Bloom
Laboratory Supervisor

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VANCED ENVIRONMENTAL INC.
52 S. SAGINAW ST. 6TH FLOOR
INT, MI 48502

RECEIVED: 12/23/93
REPORTED: 01/04/94

SAMPLE DESCRIPTION FOR LAB ORDER NUMBER: 13267
PROJECT: PROJ. #3143 IE GM CLCD
MW -4 WATER

8080 PCB'S (1)
ANALYZED BY: DATE ANALYZED:

ANALYTE	RESULT		
Aroclor-1016	<	0.2	PPB
Aroclor-1221	<	0.2	PPB
Aroclor-1232	<	0.4	PPB
Aroclor-1242	<	0.2	PPB
Aroclor-1248	<	0.2	PPB
Aroclor-1254	<	0.2	PPB
Aroclor-1260	<	0.2	PPB

OTE: "<" Denotes Less Than the Detection Limit of the Test.

Thomas S. Megna
Laboratory Manager

Chris Bloom
Laboratory Supervisor

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VANCED ENVIRONMENTAL INC.
52 S. SAGINAW ST. 6TH FLOOR
INT, MI 48502

RECEIVED: 12/23/93
REPORTED: 01/04/94

SAMPLE DESCRIPTION FOR LAB ORDER NUMBER: 13268
PROJECT: PROJ. #3143 IE GM CLCD
MW -5 WATER

8080 PCB'S (1)
ANALYZED BY: DATE ANALYZED:

ANALYTE	RESULT		
Aroclor-1016	<	0.2	PPB
Aroclor-1221	<	0.2	PPB
Aroclor-1232	<	0.4	PPB
Aroclor-1242	<	0.2	PPB
Aroclor-1248	<	0.2	PPB
Aroclor-1254	<	0.2	PPB
Aroclor-1260	<	0.2	PPB

OTE: "<" Denotes Less Than the Detection Limit of the Test.

Thomas S. Megna
Laboratory Manager

C. Bloom
Chris Bloom
Laboratory Supervisor

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VANCED ENVIRONMENTAL INC.
52 S. SAGINAW ST. 6TH FLOOR
INT, MI 48502

RECEIVED: 12/23/93
REPORTED: 01/04/94

SAMPLE DESCRIPTION FOR LAB ORDER NUMBER: 13269
PROJECT: PROJ. #3143 IE GM CLCD
TRIP BLANK WATER

8080 PCB'S (1)
ANALYZED BY: DATE ANALYZED:

ANALYTE	RESULT		
Aroclor-1016	<	0.2	PPB
Aroclor-1221	<	0.2	PPB
Aroclor-1232	<	0.4	PPB
Aroclor-1242	<	0.2	PPB
Aroclor-1248	<	0.2	PPB
Aroclor-1254	<	0.2	PPB
Aroclor-1260	<	0.2	PPB

OTE: "<" Denotes Less Than the Detection Limit of the Test.

Thomas S. Megna
Laboratory Manager

C. Bloom
Chris Bloom
Laboratory Supervisor

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VANCED ENVIRONMENTAL INC.
52 S. SAGINAW ST. 6TH FLOOR
INT, MI 48502

RECEIVED: 12/23/93
REPORTED: 01/04/94

SAMPLE DESCRIPTION FOR LAB ORDER NUMBER: 13270
PROJECT: PROJ. #3143 IE GM CLCD
FIELD BLANK WATER

8080 PCB'S (1)
ANALYZED BY:

DATE ANALYZED:

ANALYTE	RESULT		
Aroclor-1016	<	0.2	PPB
Aroclor-1221	<	0.2	PPB
Aroclor-1232	<	0.4	PPB
Aroclor-1242	<	0.2	PPB
Aroclor-1248	<	0.2	PPB
Aroclor-1254	<	0.2	PPB
Aroclor-1260	<	0.2	PPB

OTE: "<" Denotes Less Than the Detection Limit of the Test.

Thomas S. Megna
Laboratory Manager

Chris Bloom
Laboratory Supervisor

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Fax Line 810-731-2590
Federal I.D. # 38-2291504

CLIENT: AVANCED ENVIRONMENTAL
PROJECT NAME AND NUMBER: 3143 IE CM CLCD

DATE RECEIVED: 12-23-93
LAB NO.'S IN BATCH: 13264-13270
MATRIX: WATER

SPIKE SUMMARY

UNITS: ppM

METHOD	METHOD ANALYTE SPIKED	MATRIX SPIKE	MATRIX SPIKE DUP	% RECOV SURRO	% RECOV	% RPD	SAMPLE RECEV SPIKE	ANALYSIS DATE	TRIP/ METHOD BLANK RESULT	ANALYST INITIAL	REF. CHECK STD REC
		KNOWN	OBSERVED								
8080	AROCLOR 1254	1.0	1.1	N/A	110	N/A	N/A	12-29-93	< RDL	LHK	N/A

COMMENTS/CRITERIA: -METHOD AND TRIP BLANK CONCENTRATIONS MUST BE BELOW REPORTABLE DETECTION LIMITS
-REFERENCE CHECK STANDARD IS METHOD DEPENDENT

THOMAS S. MEGNA, LABORATORY MANAGER Thomas S. Megna (for)

CHRIS BLOOM, LABORATORY SUPERVISOR C. Bloom

tsc

ADVANCED ENVIRONMENTAL, INC.
ENVIRONMENTAL MANAGEMENT CONSULTANTS
352 SOUTH SAGINAW STREET • SIXTH FLOOR • FLINT, MICHIGAN 48502
PHONE: (313)238-9190 • FAX: (313)238-9195

CHAIN OF CUSTODY RECORD

LABORATORY: EQL

PROJECT #: 3143IE

PROJECT: GM CLCD

SAMPLERS: (Signature) [signature]

SAMPLE NUMBER	DATE	TIME	MATRIX	NO. CONTAINERS	ANALYSIS REQUIRED: PCB								TURN AROUND TIME	ICED	PRESERVATION: SPECIFY CHEMICAL ADDED AND FINAL pH IF KNOWN
MW1	12/22/93	-	Liquid	3	X							13264	Standard		None
MW2	↓	-	↓		↓							65	↓		↓
MW3	↓	-	↓		↓							66	↓		↓
MW4	↓	-	↓		↓							67	↓		↓
MW5	↓	-	↓		↓							68	↓		↓
T. B.	↓	-	↓		↓							69	↓		↓
Field Blank	↓	-	↓		↓							13270	↓		↓

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE	TIME	SHIPPED (via)
① [signature]	12/23/93	11[00]	[signature]	④			
②	DATE	TIME	RECEIVED BY: (Signature)	RECEIVED FOR LABORATORY BY:	DATE	TIME	SHIPPING TKT. #
③	DATE	TIME	RECEIVED BY: (Signature)	REMARKS:			

ADVANCED ENVIRONMENTAL, INC.
ENVIRONMENTAL MANAGEMENT CONSULTANTS

June 22, 1994

Mr. Paul Barth, Environmental Engineer
General Motors Corporation
CLCD/North
902 East Hamilton
Flint, Michigan 48550-8503

RE: 3rd QUARTERLY MONITORING REPORT
Building 40
GM-CLCD/North
Flint, Michigan
Advanced Project No. 3143IE

Dear Mr. Barth:

Advanced Environmental, Inc. (Advanced), has completed the 3rd Quarterly Monitoring of the groundwater monitoring well at Building 40. A spreadsheet summarizing the analytical results and laboratory data sheets are included in the report. A review of the previous static water levels identified an error in the calculations. The revised static water levels are presented in the enclosed Table 1.

During the sampling conducted by Advanced on June 3, 1994, the following observations were noted:

- No signs of free product were noted in MW1, and the oil absorbent pad was replaced.

Please call me at 238-9190 if you have any questions or require any additional information.

Sincerely,

ADVANCED ENVIRONMENTAL, INC.

Mark W. Keyes, P.G.
Project Manager

MWK:j

Enclosure

352 South Saginaw Street • Suite 600 • Flint, Michigan 48502
(810) 238-9190 • Fax: (810) 238-9195
1-800-423-2043

3RD QUARTERLY MONITORING REPORT
BUILDING 40 - CLCD NORTH
FLINT, MICHIGAN

Advanced Environmental, Inc., Project Number 3143IE

June 22, 1994

TABLE 1

PCB WATER SAMPLE ANALYTICAL RESULTS

THIRD QUARTERLY MONITORING

GM/CLCD NORTH
BUILDING 40
FLINT, MICHIGNA

Advanced Environmental, Inc., Project No. 3143IE

Sample ID	Analytical Results
	PCB (μg/L)
MW-1	ND
MW-2	ND
MW-3	ND
MW-4	ND
MW-5	ND
Trip Blank	ND
Field Blank	ND

Notes:

- PCBs EPA Method 8080
- Method detection level 0.2 μg/L (Aroclor - 1232 0.4 μg/L)
- Date sampled June 3, 1994

TABLE 2

STATIC WATER LEVEL ELEVATION SUMMARY

THIRD QUARTERLY MONITORING

GM/CLCD NORTH
BUILDING 40
FLINT, MICHIGAN

Advanced Environmental, Inc., Project No. 3143IE

Description	1st Quarter December 22, 1993	2nd Quarter March 1, 1994	3rd Quarter June 3, 1994
MW-1	88.37	88.58	88.96
MW-2	90.56	91.16	91.06
MW-3	90.62	90.35	90.84
MW-4	93.72	93.36	93.17
MW-5	91.17	91.05	91.20

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810-731-1818
Outside Michigan Dial 1-800- 368-5227
Fax Line 810-731-2590
Federal I.D. # 38-2291504

CLIENT: ADVANCED ENVIRONMENTAL
352 S. SAGINAW, STE 600
FLINT, MI 48502

LAB NO. 5730

SAMPLE DESCRIPTION: PROJ. #3143IE GM BLD, 40 WELLS
MW-1 WATER

DATE REPORTED: 06/14/94
DATE RECEIVED: 06/06/94
DATE EXTRACTED: 06/08/94
DATE ANALYZED: 06/11/94
ANALYZED BY: LHK

ORGANICS ANALYSIS DATA SHEET
METHOD 8080
PCB's

CAS NO.	COMPOUND NAME	CONCENTRATION
	AROCHLOR 1221	*LESS THAN 0.20 ppBILLION
	AROCHLOR 1016	LESS THAN 0.20 ppBILLION
	AROCHLOR 1232	LESS THAN 0.40 ppBILLION
	AROCHLOR 1242	LESS THAN 0.20 ppBILLION
	AROCHLOR 1248	LESS THAN 0.20 ppBILLION
	AROCHLOR 1254	LESS THAN 0.20 ppBILLION
	AROCHLOR 1260	LESS THAN 0.20 ppBILLION

***NOTE: TERM "LESS THAN" DENOTES THAT ANALYTE RESULT IS BELOW THE REPORTED REGULATORY DERIVED TARGET LIMIT OF DETECTION.**

CHRIS BLOOM, LABORATORY MANAGER C. Bloom

ALLEN LUEBKE, ASSISTANT LABORATORY SUPERVISOR Allen K Luebke
laf

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Federal I.D. # 38-2291504

CLIENT: ADVANCED ENVIRONMENTAL
352 S. SAGINAW, STE 600
FLINT, MI 48502

LAB NO. 5731

SAMPLE DESCRIPTION: PROJ. #3143IE GM BLD, 40 WELLS
MW-2 WATER

DATE REPORTED: 06/14/94
DATE RECEIVED: 06/06/94
DATE EXTRACTED: 06/08/94
DATE ANALYZED: 06/11/94
ANALYZED BY: LHK

ORGANICS ANALYSIS DATA SHEET
METHOD 8080
PCB's

CAS NO.	COMPOUND NAME	CONCENTRATION
	AROCHLOR 1221	*LESS THAN 0.20 ppBILLION
	AROCHLOR 1016	LESS THAN 0.20 ppBILLION
	AROCHLOR 1232	LESS THAN 0.40 ppBILLION
	AROCHLOR 1242	LESS THAN 0.20 ppBILLION
	AROCHLOR 1248	LESS THAN 0.20 ppBILLION
	AROCHLOR 1254	LESS THAN 0.20 ppBILLION
	AROCHLOR 1260	LESS THAN 0.20 ppBILLION

***NOTE:** **TERM "LESS THAN" DENOTES THAT ANALYTE RESULT IS BELOW THE REPORTED REGULATORY DERIVED TARGET LIMIT OF DETECTION.**

CHRIS BLOOM, LABORATORY MANAGER C. Bloom

ALLEN LUEBKE, ASSISTANT LABORATORY SUPERVISOR Allen E Luebke
laf

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CLIENT: ADVANCED ENVIRONMENTAL
352 S. SAGINAW, STE 600
FLINT, MI 48502

SAMPLE NO. 5939

SAMPLE DESCRIPTION: PROJ. #3134-IE, GM BLDG. 40 WELLS
MW -3 WATER

DATE REPORTED: 6-18-94
DATE RECEIVED: 6-9-94
DATE EXTRACTED: 6-13-94
DATE ANALYZED: 6-14-94
ANALYZED BY: LHK

ORGANICS ANALYSIS DATA SHEET
METHOD 8080
PCB's

CAS NO.	COMPOUND NAME	CONCENTRATION
	AROCHLOR 1221	*LESS THAN 0.2 ppBILLION
	AROCHLOR 1016	LESS THAN 0.2 ppBILLION
	AROCHLOR 1232	LESS THAN 0.4 ppBILLION
	AROCHLOR 1242	LESS THAN 0.2 ppBILLION
	AROCHLOR 1248	LESS THAN 0.2 ppBILLION
	AROCHLOR 1254	LESS THAN 0.2 ppBILLION
	AROCHLOR 1260	LESS THAN 0.2 ppBILLION
	AROCHLOR 1268	LESS THAN 0.2 ppBILLION

***NOTE:** **TERM "LESS THAN" DENOTES THAT ANALYTE RESULT IS BELOW THE REPORTED REGULATORY DERIVED TARGET LIMIT OF DETECTION.**

CHRIS BLOOM, LABORATORY MANAGER C. Bloom

ALLEN LUEBKE, ASSISTANT LABORATORY SUPERVISOR Allen Luebke (CB)
sd

ENVIRONMENTAL QUALITY LABORATORIES, INC.

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CLIENT: ADVANCED ENVIRONMENTAL
352 S. SAGINAW, STE 600
FLINT, MI 48502

LAB NO. 5732

SAMPLE DESCRIPTION: PROJ. #3143IE GM BLD, 40 WELLS
MW-4 WATER

DATE REPORTED: 06/14/94
DATE RECEIVED: 06/06/94
DATE EXTRACTED: 06/08/94
DATE ANALYZED: 06/11/94
ANALYZED BY: LHK

ORGANICS ANALYSIS DATA SHEET
METHOD 8080
PCB's

CAS NO.	COMPOUND NAME	CONCENTRATION
	AROCHLOR 1221	*LESS THAN 0.20 ppBILLION
	AROCHLOR 1016	LESS THAN 0.20 ppBILLION
	AROCHLOR 1232	LESS THAN 0.40 ppBILLION
	AROCHLOR 1242	LESS THAN 0.20 ppBILLION
	AROCHLOR 1248	LESS THAN 0.20 ppBILLION
	AROCHLOR 1254	LESS THAN 0.20 ppBILLION
	AROCHLOR 1260	LESS THAN 0.20 ppBILLION

***NOTE: TERM "LESS THAN" DENOTES THAT ANALYTE RESULT IS BELOW THE REPORTED REGULATORY DERIVED TARGET LIMIT OF DETECTION.**

CHRIS BLOOM, LABORATORY MANAGER C. Bloom

ALLEN LUEBKE, ASSISTANT LABORATORY SUPERVISOR Allen E Luebke
laf

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Federal I.D. # 38-2291504

CLIENT: ADVANCED ENVIRONMENTAL
352 S. SAGINAW, STE 600
FLINT, MI 48502

LAB NO. 5733

SAMPLE DESCRIPTION: PROJ. #3143IE GM BLD, 40 WELLS
MW-5 WATER

DATE REPORTED: 06/14/94
DATE RECEIVED: 06/06/94
DATE EXTRACTED: 06/08/94
DATE ANALYZED: 06/11/94
ANALYZED BY: LHK

ORGANICS ANALYSIS DATA SHEET
METHOD 8080
PCB's

CAS NO.	COMPOUND NAME	CONCENTRATION
	AROCHLOR 1221	*LESS THAN 0.20 ppBILLION
	AROCHLOR 1016	LESS THAN 0.20 ppBILLION
	AROCHLOR 1232	LESS THAN 0.40 ppBILLION
	AROCHLOR 1242	LESS THAN 0.20 ppBILLION
	AROCHLOR 1248	LESS THAN 0.20 ppBILLION
	AROCHLOR 1254	LESS THAN 0.20 ppBILLION
	AROCHLOR 1260	LESS THAN 0.20 ppBILLION

***NOTE:** **TERM "LESS THAN" DENOTES THAT ANALYTE RESULT IS BELOW THE REPORTED REGULATORY DERIVED TARGET LIMIT OF DETECTION.**

CHRIS BLOOM, LABORATORY MANAGER C. Bloom

ALLEN LUEBKE, ASSISTANT LABORATORY SUPERVISOR Allen K Luebke
laf

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CLIENT: ADVANCED ENVIRONMENTAL
352 S. SAGINAW, STE 600
FLINT, MI 48502

LAB NO. 5734

SAMPLE DESCRIPTION: PROJ. #3143IE GM BLD, 40 WELLS
TRIP BLANK WATER

DATE REPORTED: 06/14/94
DATE RECEIVED: 06/06/94
DATE EXTRACTED: 06/08/94
DATE ANALYZED: 06/11/94
ANALYZED BY: LHK

ORGANICS ANALYSIS DATA SHEET
METHOD 8080
PCB's

CAS NO.	COMPOUND NAME	CONCENTRATION
	AROCHLOR 1221	*LESS THAN 0.20 ppBILLION
	AROCHLOR 1016	LESS THAN 0.20 ppBILLION
	AROCHLOR 1232	LESS THAN 0.40 ppBILLION
	AROCHLOR 1242	LESS THAN 0.20 ppBILLION
	AROCHLOR 1248	LESS THAN 0.20 ppBILLION
	AROCHLOR 1254	LESS THAN 0.20 ppBILLION
	AROCHLOR 1260	LESS THAN 0.20 ppBILLION

***NOTE:** **TERM "LESS THAN" DENOTES THAT ANALYTE RESULT IS BELOW THE REPORTED REGULATORY DERIVED TARGET LIMIT OF DETECTION.**

CHRIS BLOOM, LABORATORY MANAGER C. Bloom

ALLEN LUEBKE, ASSISTANT LABORATORY SUPERVISOR Allen Luebke
laf

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Federal I.D. # 38-2291504

CLIENT: ADVANCED ENVIRONMENTAL
352 S. SAGINAW, STE 600
FLINT, MI 48502

LAB NO. 5735

SAMPLE DESCRIPTION: PROJ. #3143IE GM BLD, 40 WELLS
EQUIP BLANK WATER

DATE REPORTED: 06/14/94
DATE RECEIVED: 06/06/94
DATE EXTRACTED: 06/08/94
DATE ANALYZED: 06/11/94
ANALYZED BY: LHK

ORGANICS ANALYSIS DATA SHEET
METHOD 8080
PCB's

CAS NO.	COMPOUND NAME	CONCENTRATION
	AROCHLOR 1221	*LESS THAN 0.20 ppBILLION
	AROCHLOR 1016	LESS THAN 0.20 ppBILLION
	AROCHLOR 1232	LESS THAN 0.40 ppBILLION
	AROCHLOR 1242	LESS THAN 0.20 ppBILLION
	AROCHLOR 1248	LESS THAN 0.20 ppBILLION
	AROCHLOR 1254	LESS THAN 0.20 ppBILLION
	AROCHLOR 1260	LESS THAN 0.20 ppBILLION

***NOTE:** **TERM "LESS THAN" DENOTES THAT ANALYTE RESULT IS BELOW THE REPORTED REGULATORY DERIVED TARGET LIMIT OF DETECTION.**

CHRIS BLOOM, LABORATORY MANAGER C. Bloom

ALLEN LUEBKE, ASSISTANT LABORATORY SUPERVISOR Allen Luebke
laf

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Federal I.D. # 38-2291504

ı1.x41
:LIENT: ADVANCED ENVIRONMENTAL
?ROJECT NAME & NUMBER: PROJ. #3143IE
GM BLD 40 WELLS

DATE RECEIVED: 6-6-94
LAB NO.'S IN BATCH: 5730-5735
MATRIX: WATER

SPIKE SUMMARY

METHOD	METHOD ANALYTE SPIKED	MATRIX SPIKE KNOWN	MATRIX SPIKE OBSERVED	% RECOV SURRO	% RECOV	% RPD	SAMPLE RECEV. SPIKE	ANALYSIS DATE	TRIP/ METHOD BLANK RESULT	ANALY INITI	REF. CHECK STD REC
		ppM	ppM								
8080	AROCLOR 1242	5.00	5.70	N/A	114.0	N/A	5795	6-11-94	<RDL	LHK	N/A

:OMMENTS/CRITERIA:
- METHOD AND TRIP BLANK CONCENTRATIONS MUST BE BELOW REPORTABLE DETECTION LIMITS
- REFERENCE CHECK STANDARD IS METHOD DEPENDENT

.llen K. Luebke, Assistant Lab Supervisor: Allen K Luebke

:hris Bloom, Lab Manager: C. Bloom
.hk

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CLIENT: ADVANCED ENVIRONMENTAL
PROJECT NAME & NUMBER: PROJ. #3134-IE

DATE RECEIVED: 6-9-94
LAB NO.'S IN BATCH: 5939
MATRIX: WATER

SPIKE SUMMARY

METHOD	METHOD ANALYTE SPIKED	METHOD SPIKE KNOWN	METHOD SPIKE OBSERVED	% RECOV SURRO	% RECOV	% RPD	SAMPLE RECEV. SPIKE	ANALYSIS DATE	TRIP/ METHOD BLANK RESULT	ANALY INITI	REF. CHECK STD REC
		ppM	ppM								
8080	AROCLOR 1254	0.20	0.19	N/A	95.0	N/A	N/A	6-14-94	<RDL	LHK	N/A

COMMENTS/CRITERIA:
- METHOD AND TRIP BLANK CONCENTRATIONS MUST BE BELOW REPORTABLE DETECTION LIMITS
- REFERENCE CHECK STANDARD IS METHOD DEPENDENT

Allen K. Luebke, Assistant Lab Supervisor: A. K. Luebke (as)

Chris Bloom, Lab Manager: C. Bloom

lhk

ADVANCED ENVIRONMENTAL, INC.
ENVIRONMENTAL MANAGEMENT CONSULTANTS
352 SOUTH SAGINAW STREET • SIXTH FLOOR • FLINT, MICHIGAN 48502
PHONE: (313)238-9190 • FAX: (313)238-9195

CHAIN OF CUSTODY RECORD

LABORATORY: EQL

PROJECT #: 3143IE

PROJECT: GM Bld. 40 Wells

SAMPLERS: (Signature) [signature]

SAMPLE NUMBER	DATE	TIME	MATRIX	NO. CONTAINERS	ANALYSIS REQUIRED: PCB's (8080)	TURN AROUND TIME	PRESERVATION: ICED	SPECIFY CHEMICAL ADDED AND FINAL pH IF KNOWN
MW1	6/3/94		Liquid	1	X	STANDARD 5730	X	NONE
MW2	↓		↓		↓	5731	↓	↓
~~MW 3~~								
MW4	↓		↓		↓	5732	↓	↓
MW5	↓		↓		↓	5733	↓	↓
Trip BLANK	↓		↓		↓	5734	↓	↓
Equip. BLANK	↓		↓		↓	5735	↓	↓

*NOTE: Bottom Fell off of MW-3 sample / contacted [illegible] → she will call to arrange for another sample p/u if needed, proceed with other analyses.

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE	TIME	SHIPPED (via)
(1) [signature]	6/6/94	4 pm	[signature]	(4)			
(2)				RECEIVED FOR LABORATORY BY:			SHIPPING TKT. #
(3)				REMARKS:			

ADVANCED ENVIRONMENTAL, INC.

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PHONE: (313)238-9190 • FAX: (313)238-9195

LABORATORY: EQL

PROJECT #: 3134IE

CHAIN OF CUSTODY RECORD

PROJECT: GM Bldg. 40 Wells

SAMPLERS: (Signature) J. McWilliams

SAMPLE NUMBER	DATE	TIME	MATRIX	NO. CONTAINERS	ANALYSIS REQUIRED: PCB's (8080)	TURN AROUND TIME	PRESERVATION: ICED	PRESERVATION: SPECIFY CHEMICAL ADDED AND FINAL pH IF KNOWN
MW3	6/8/94		Liquid		X	Standard 5939	X	None

RELINQUISHED BY: (Signature) (1)	DATE	TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature) (4)	DATE	TIME	SHIPPED (via)
Bradley Clark	6/9/94	1130A	Jim Meyers				
RELINQUISHED BY: (Signature) (2)	DATE	TIME	RECEIVED BY: (Signature)	RECEIVED FOR LABORATORY BY:	DATE	TIME	SHIPPING TKT. #
RELINQUISHED BY: (Signature) (3)	DATE	TIME	RECEIVED BY: (Signature)	REMARKS:			

ADVANCED ENVIRONMENTAL, INC.
ENVIRONMENTAL MANAGEMENT CONSULTANTS

September 21, 1994

Mr. Paul Barth, Environmental Engineer
General Motors Corporation
CLCD/North
902 East Hamilton
Flint, Michigan 48550-8503

RE: 4th QUARTERLY MONITORING REPORT
Building 40
GM-CLCD/North
Flint, Michigan
Advanced Project No. 3143IE

Dear Mr. Barth:

Advanced Environmental, Inc. (Advanced), has completed the 4th Quarterly Monitoring of the groundwater monitoring well at Building 40. Table 1 summarizes the analytical results and the laboratory data sheets are attached. The revised static water levels are presented in the enclosed Table 2.

During the sampling conducted by Advanced on September 1, 1994, the following observation was noted:

- No signs of free product were noted in MW1, and the oil absorbent pad was replaced.

Please call me at 238-9190 if you have any questions or require any additional information.

Sincerely,

ADVANCED ENVIRONMENTAL, INC.

Mark W. Keyes, P.G.
Project Manager

MWK:r:j

Enclosure

352 South Saginaw Street • Suite 600 • Flint, Michigan 48502 • (800) 423-2043 • (810) 238-9190 • Fax (810) 238-9195
500 Cascade West Parkway S.E. • Grand Rapids, Michigan 49546 • (616) 940-0026 • FAX (616) 940-3044

TABLE 1

PCB WATER SAMPLE ANALYTICAL RESULTS

FOURTH QUARTERLY MONITORING

GM/CLCD NORTH
BUILDING 40
FLINT, MICHIGAN

Advanced Environmental, Inc., Project No. 3143IE

Sample ID	Analytical Results
	PCB (µg/L)
MW-1	ND
MW-2	ND
MW-3	ND
MW-4	ND
MW-5	ND
Trip Blank	ND
Field Blank	ND

Notes:

- PCBs EPA Method 8080
- Method detection level 0.2 µg/L (Aroclor - 1232 0.4 µg/L)
- Date sampled September 1, 1994

TABLE 2

STATIC WATER LEVEL

FOURTH QUARTERLY MONITORING

GM/CLCD NORTH
BUILDING 40
FLINT, MICHIGAN

Advanced Environmental, Inc., Project No. 3143IE

Sample ID	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
MW-1	88.37	88.58	88.96	89.24
MW-2	90.56	91.16	91.06	89.90
MW-3	90.62	90.35	90.84	90.74
MW-4	93.72	93.36	93.17	93.11
MW-5	91.17	91.05	91.20	90.06

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Federal I.D. # 38-2291504

CLIENT: ADVANCED ENVIRONMENTAL
352 L. SAGINAW SUITE 600
FLINT, MI 48502

SAMPLE NO. 9430

SAMPLE DESCRIPTION: 3143 IE GM-BLD 40 WELLS
WATER SAMPLE MW-1

DATE REPORTED: 09-12-94
DATE RECEIVED: 09-02-94
DATE EXTRACTED: 09-06-94
DATE ANALYZED: 09-07-94
ANALYZED BY: LHK

ORGANICS ANALYSIS DATA SHEET
METHOD 8080
PCB's

CAS NO.	COMPOUND NAME	CONCENTRATION
	AROCHLOR 1016	*LESS THAN 0.2 ppBILLION
	AROCHLOR 1221	LESS THAN 0.2 ppBILLION
	AROCHLOR 1232	LESS THAN 0.4 ppBILLION
	AROCHLOR 1242	LESS THAN 0.2 ppBILLION
	AROCHLOR 1248	LESS THAN 0.2 ppBILLION
	AROCHLOR 1254	LESS THAN 0.2 ppBILLION
	AROCHLOR 1260	LESS THAN 0.2 ppBILLION

***NOTE:** **TERM "LESS THAN" DENOTES THAT ANALYTE RESULT IS BELOW THE REPORTED REGULATORY DERIVED TARGET LIMIT OF DETECTION.**

CHRIS BLOOM, LABORATORY MANAGER C. Bloom

ALLEN LUEBKE, ASSISTANT LABORATORY SUPERVISOR Allen K Luebke
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CLIENT: ADVANCED ENVIRONMENTAL
352 L. SAGINAW SUITE 600
FLINT, MI 48502

SAMPLE NO. 9431

SAMPLE DESCRIPTION: 3143 IE GM-BLD 40 WELLS
WATER SAMPLE MW-2

DATE REPORTED: 09-12-94
DATE RECEIVED: 09-02-94
DATE EXTRACTED: 09-06-94
DATE ANALYZED: 09-07-94
ANALYZED BY: LHK

ORGANICS ANALYSIS DATA SHEET
METHOD 8080
PCB's

CAS NO.	COMPOUND NAME	CONCENTRATION
	AROCHLOR 1016	*LESS THAN 0.2 ppBILLION
	AROCHLOR 1221	LESS THAN 0.2 ppBILLION
	AROCHLOR 1232	LESS THAN 0.4 ppBILLION
	AROCHLOR 1242	LESS THAN 0.2 ppBILLION
	AROCHLOR 1248	LESS THAN 0.2 ppBILLION
	AROCHLOR 1254	LESS THAN 0.2 ppBILLION
	AROCHLOR 1260	LESS THAN 0.2 ppBILLION

***NOTE: TERM "LESS THAN" DENOTES THAT ANALYTE RESULT IS BELOW THE REPORTED REGULATORY DERIVED TARGET LIMIT OF DETECTION.**

CHRIS BLOOM, LABORATORY MANAGER C. Bloom

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CLIENT: ADVANCED ENVIRONMENTAL
352 L. SAGINAW SUITE 600
FLINT, MI 48502

SAMPLE NO. 9432

SAMPLE DESCRIPTION: 3143 IE GM-BLD 40 WELLS
WATER SAMPLE MW-3

DATE REPORTED: 09-12-94
DATE RECEIVED: 09-02-94
DATE EXTRACTED: 09-06-94
DATE ANALYZED: 09-07-94
ANALYZED BY: LHK

ORGANICS ANALYSIS DATA SHEET
METHOD 8080
PCB's

CAS NO.	COMPOUND NAME	CONCENTRATION
	AROCHLOR 1016	*LESS THAN 0.2 ppBILLION
	AROCHLOR 1221	LESS THAN 0.2 ppBILLION
	AROCHLOR 1232	LESS THAN 0.4 ppBILLION
	AROCHLOR 1242	LESS THAN 0.2 ppBILLION
	AROCHLOR 1248	LESS THAN 0.2 ppBILLION
	AROCHLOR 1254	LESS THAN 0.2 ppBILLION
	AROCHLOR 1260	LESS THAN 0.2 ppBILLION

***NOTE: TERM "LESS THAN" DENOTES THAT ANALYTE RESULT IS BELOW THE REPORTED REGULATORY DERIVED TARGET LIMIT OF DETECTION.**

CHRIS BLOOM, LABORATORY MANAGER C. Bloom

ALLEN LUEBKE, ASSISTANT LABORATORY SUPERVISOR Allen R Luebke
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CLIENT: ADVANCED ENVIRONMENTAL
352 L. SAGINAW SUITE 600
FLINT, MI 48502

SAMPLE NO. 9433

SAMPLE DESCRIPTION: 3143 IE GM-BLD 40 WELLS
WATER SAMPLE MW-4

DATE REPORTED: 09-12-94
DATE RECEIVED: 09-02-94
DATE EXTRACTED: 09-06-94
DATE ANALYZED: 09-07-94
ANALYZED BY: LHK

ORGANICS ANALYSIS DATA SHEET
METHOD 8080
PCB's

CAS NO.	COMPOUND NAME	CONCENTRATION
	AROCHLOR 1016	*LESS THAN 0.2 ppBILLION
	AROCHLOR 1221	LESS THAN 0.2 ppBILLION
	AROCHLOR 1232	LESS THAN 0.4 ppBILLION
	AROCHLOR 1242	LESS THAN 0.2 ppBILLION
	AROCHLOR 1248	LESS THAN 0.2 ppBILLION
	AROCHLOR 1254	LESS THAN 0.2 ppBILLION
	AROCHLOR 1260	LESS THAN 0.2 ppBILLION

***NOTE: TERM "LESS THAN" DENOTES THAT ANALYTE RESULT IS BELOW THE REPORTED REGULATORY DERIVED TARGET LIMIT OF DETECTION.**

CHRIS BLOOM, LABORATORY MANAGER C. Bloom

ALLEN LUEBKE, ASSISTANT LABORATORY SUPERVISOR Allen R Luebke
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Federal I.D. # 38-2291504

CLIENT: ADVANCED ENVIRONMENTAL
352 L. SAGINAW SUITE 600
FLINT, MI 48502

SAMPLE NO. 9434

SAMPLE DESCRIPTION: 3143 IE GM-BLD 40 WELLS
WATER SAMPLE MW-5

DATE REPORTED: 09-12-94
DATE RECEIVED: 09-02-94
DATE EXTRACTED: 09-06-94
DATE ANALYZED: 09-07-94
ANALYZED BY: LHK

ORGANICS ANALYSIS DATA SHEET
METHOD 8080
PCB's

CAS NO.	COMPOUND NAME	CONCENTRATION
	AROCHLOR 1016	*LESS THAN 0.2 ppBILLION
	AROCHLOR 1221	LESS THAN 0.2 ppBILLION
	AROCHLOR 1232	LESS THAN 0.4 ppBILLION
	AROCHLOR 1242	LESS THAN 0.2 ppBILLION
	AROCHLOR 1248	LESS THAN 0.2 ppBILLION
	AROCHLOR 1254	LESS THAN 0.2 ppBILLION
	AROCHLOR 1260	LESS THAN 0.2 ppBILLION

***NOTE: TERM "LESS THAN" DENOTES THAT ANALYTE RESULT IS BELOW THE REPORTED REGULATORY DERIVED TARGET LIMIT OF DETECTION.**

CHRIS BLOOM, LABORATORY MANAGER C. Bloom

ALLEN LUEBKE, ASSISTANT LABORATORY SUPERVISOR Allen K Luebke
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CLIENT: ADVANCED ENVIRONMENTAL
352 L. SAGINAW SUITE 600
FLINT, MI 48502

SAMPLE NO. 9435

SAMPLE DESCRIPTION: 3143 IE GM-BLD 40 WELLS
WATER SAMPLE FIELD BLANK

DATE REPORTED: 09-12-94
DATE RECEIVED: 09-02-94
DATE EXTRACTED: 09-06-94
DATE ANALYZED: 09-07-94
ANALYZED BY: LHK

ORGANICS ANALYSIS DATA SHEET
METHOD 8080
PCB's

CAS NO.	COMPOUND NAME	CONCENTRATION
	AROCHLOR 1016	*LESS THAN 0.2 ppBILLION
	AROCHLOR 1221	LESS THAN 0.2 ppBILLION
	AROCHLOR 1232	LESS THAN 0.4 ppBILLION
	AROCHLOR 1242	LESS THAN 0.2 ppBILLION
	AROCHLOR 1248	LESS THAN 0.2 ppBILLION
	AROCHLOR 1254	LESS THAN 0.2 ppBILLION
	AROCHLOR 1260	LESS THAN 0.2 ppBILLION

***NOTE: TERM "LESS THAN" DENOTES THAT ANALYTE RESULT IS BELOW THE REPORTED REGULATORY DERIVED TARGET LIMIT OF DETECTION.**

CHRIS BLOOM, LABORATORY MANAGER C. Bloom

ALLEN LUEBKE, ASSISTANT LABORATORY SUPERVISOR Allen L Luebke
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CLIENT: ADVANCED ENVIRONMENTAL
352 L. SAGINAW SUITE 600
FLINT, MI 48502

SAMPLE NO. 9436

SAMPLE DESCRIPTION: 3143 IE GM-BLD 40 WELLS
WATER SAMPLE TRIP BLANK

DATE REPORTED: 09-12-94
DATE RECEIVED: 09-02-94
DATE EXTRACTED: 09-06-94
DATE ANALYZED: 09-07-94
ANALYZED BY: LHK

ORGANICS ANALYSIS DATA SHEET
METHOD 8080
PCB's

CAS NO.	COMPOUND NAME	CONCENTRATION
	AROCHLOR 1016	*LESS THAN 0.2 ppBILLION
	AROCHLOR 1221	LESS THAN 0.2 ppBILLION
	AROCHLOR 1232	LESS THAN 0.4 ppBILLION
	AROCHLOR 1242	LESS THAN 0.2 ppBILLION
	AROCHLOR 1248	LESS THAN 0.2 ppBILLION
	AROCHLOR 1254	LESS THAN 0.2 ppBILLION
	AROCHLOR 1260	LESS THAN 0.2 ppBILLION

***NOTE:** **TERM "LESS THAN" DENOTES THAT ANALYTE RESULT IS BELOW THE REPORTED REGULATORY DERIVED TARGET LIMIT OF DETECTION.**

CHRIS BLOOM, LABORATORY MANAGER C. Bloom

ALLEN LUEBKE, ASSISTANT LABORATORY SUPERVISOR Allen A Luebke
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ADVANCED ENVIRONMENTAL, INC.
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PHONE: (313)238-9190 • FAX: (313)238-9195

[signature] 9/2/94

CHAIN OF CUSTODY RECORD

PROJECT MANAGER: MWK

LABORATORY: EQL

PROJECT #: 3143IE

PROJECT: GM- Bld. 40 Wells

SAMPLERS: (Signature) [signature]

SAMPLE NUMBER	DATE	TIME	MATRIX	NO. CONTAINERS	ANALYSIS REQUIRED: PCB's 8080	TURN AROUND TIME		ICED	SPECIFY CHEMICAL ADDED AND FINAL pH IF KNOWN
MW1	9-1-94		Liqued 1		X	STANDARD	9430	X	None
MW2	↓		↓		↓	↓	9431	↓	↓
MW3	↓		↓		↓	↓	9432	↓	↓
MW4	↓		↓		↓	↓	9433	↓	↓
MW5	↓		↓		↓	↓	9434	↓	↓
Field Blank	↓		↓		X		9435		
Trip Blank	↓		↓		X		9436		

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE	TIME	SHIPPED (via)
① [signature]	9/2/94	10:20	[signature]	④			

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	RECEIVED FOR LABORATORY BY:	DATE	TIME	SHIPPING TKT. #
②							

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	REMARKS:
③				


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