REPORT

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Project # 2010-001

QUARTERLY GROUNDWATER MONITORING

5800 Christie Avenue
Emeryville, California

Submitted To:

Mr. Dennis Byrne
Alameda County Health Care Services
Hazardous Materials Division

80 Swan Way, Room 200
Oakland, CA 94621

Prepared For:

Croley & Herring Investment Company
1311 63rd Street
Emeryville, CA 94608

November 12, 1990

AWD Technologies, Inc.

49 Stevenson Street, Suite 600, San Francisco, CA 94105
Telephone: (415) 227-0822 Fax: (415) 227-0842

AWD
TECHNOLOGIES

November 16, 1990

Mr. Dick Herring
Croley and Herring Investment Company
1311 63rd Street
Emeryville, CA 94608

Dear Mr. Croley,

Subject: **Quarterly Report for Groundwater Monitoring**
5800 Christie Avenue, Emeryville, California

Enclosed please find a copy of the quarterly status report regarding the results of groundwater sampling performed on September 7, 1990 at the subject facility.

Should you have any questions regarding the subject report, please contact me.

Sincerely yours,

Walter Loo
Director of Remediation

WWL/isw

Enclosure

AWD Technologies, inc. 49 Stevenson Street Suite 600 San Francisco California 94105 Telephone 415 227 0822 Telecopier 415 227 0842

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1.0 INTRODUCTION

AWD Technologies, Inc. (AWD) was retained by Croley and Herring Investment Company (CHIC) to perform the fourth quarterly groundwater monitoring for a facility located at 5800 Christie Street in Emeryville, California. The subject facility is currently leased to an electronic merchandise retailer. Prior to leasing, soil contamination was identified at the subject facility. The contaminated soil was removed with the exception of those underlying a building because of safety concern. The removed soil was remediated onsite and properly disposed of with the approval of the regulatory agencies.

There is a vapor extraction system installed immediately adjacent to the northeastern side of the building to mitigate the residual volatile hydrocarbons contained in the soil. As part of the site closure plan, a quarterly groundwater monitoring program is currently implemented. Three previous quarterly monitoring events were performed on November 6, 1989, February 20, 1990, and May 31, 1990, respectively. The fourth quarterly monitoring activities was conducted on September 7, 1990. Water samples were taken from the monitoring wells and sent to a State-certified laboratory for analysis under proper chain-of-custody procedures.

This report presents the results of the fourth quarterly groundwater monitoring activities including groundwater movement analysis, laboratory analytical results, summary of findings, and conclusions and discussions.

2.0 GROUNDWATER MOVEMENT ANALYSIS

Prior to sample collection of this quarterly sampling, depth to water table in each of the three existing monitoring wells at the facility was measured for the analysis of groundwater movement. Table 1 presents a summary of the water levels in the three wells (EW-1, MW-2, and MW-3) from the four rounds of sampling events.

From the result of the water level measurements on September 7, 1990, elevation of water levels in the three wells slightly decreased, as compared to the data collected in May 1990. Nevertheless, the groundwater flow direction remains in the same direction, flowing toward south (Figure 1). The hydraulic gradient was 0.0115 feet per horizontal foot.

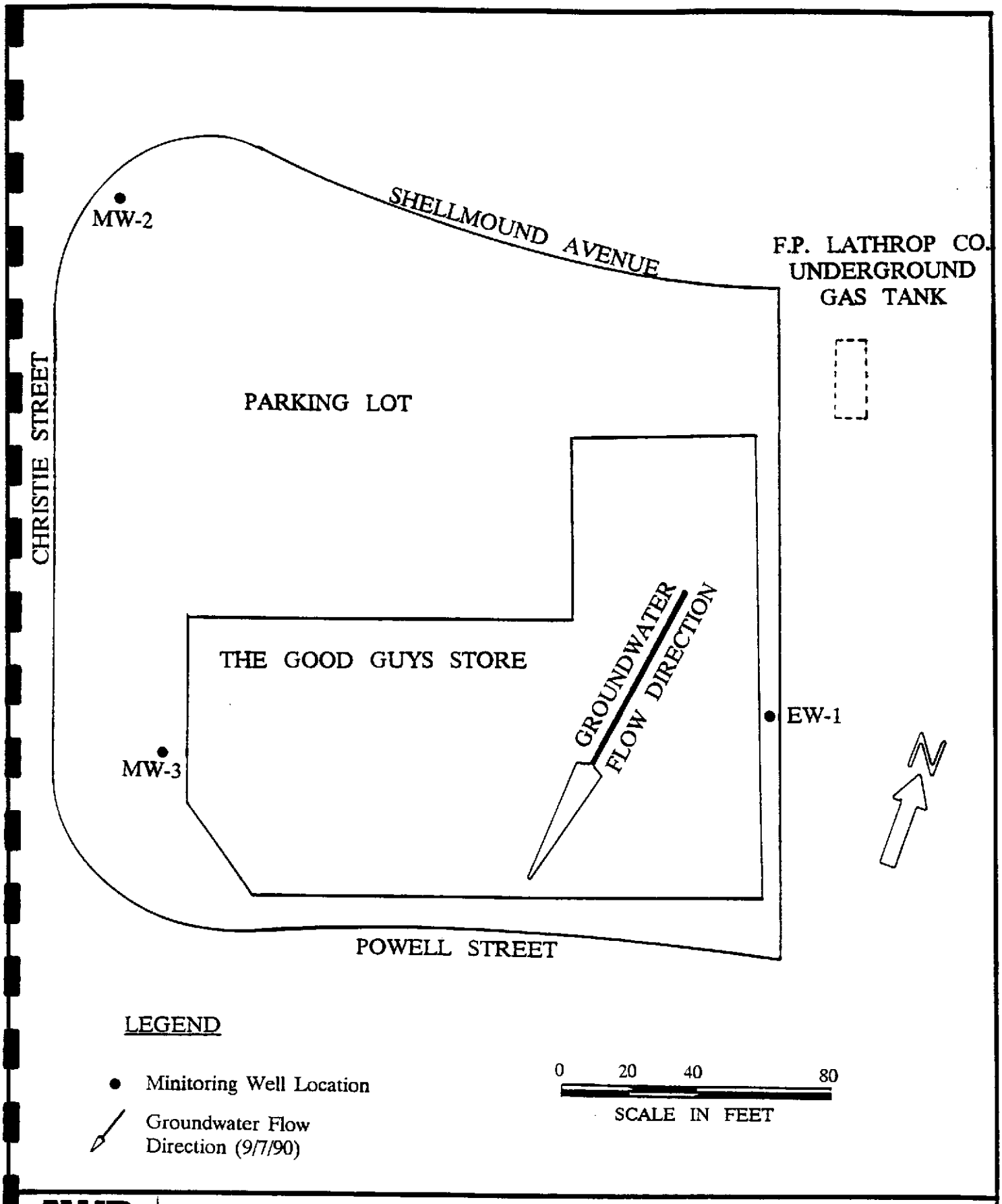
TABLE 1

SUMMARY OF WATER LEVEL DATA

WELL ID	Elev. of TOC (Ft-MSL)	11/6/89 DTW Ft	11/6/89 SWL Ft	2/20/90 DTW Ft	2/20/90 SWL Ft	5/31/90 DTW Ft	5/31/90 SWL Ft	9/7/90 DTW Ft	9/7/90 SWL Ft
EW-1	8.62	6.15	2.47	5.93	2.69	5.86	2.76	6.30	2.32
MW-2	7.42	4.37	3.05	4.26	3.16	4.26	3.16	4.60	2.82
MW-3	6.42	5.10	1.32	5.42	1.00	4.93	1.49	5.15	1.17

Note:

TOC is top of casing
DTW is depth to water table
SWL is static water level above MSL
MSL is mean sea level



AWD TECHNOLOGIES

SITE LOCATION MAP
5800 Christie Street, Emeryville, CA

FIGURE 1

3.0 GROUNDWATER QUALITY

On September 7, 1990, AWD field personnel visited the facility and collected water samples from each of the three monitoring wells for analysis. These groundwater samples were sent to a State-certified laboratory for analyses of halocarbons using EPA method 601, total petroleum hydrocarbons (TPH) as gasoline and gasoline constituents benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA method 602. During water sampling, field parameters as water temperature, electric conductivity, and pH were measured and recorded.

From the results of the laboratory analysis (Appendix A), none of the water samples collected from Wells MW-2 and MW-3 contain detectable concentration of the above analytes on this sampling event. However, water sample taken from Well EW-1 detected with some volatile organic compounds having concentration higher than those which were detected in the third quarterly monitoring event. The compounds detected in Well EW-1 from the September 7, 1990 sampling episode are listed as following:

TPH	25,000 ppb
Benzene	1,100 ppb
Toluene	800 ppb
Ethylbenzene	<25 ppb
Xylenes	42 ppb
1,1 DCE	36 ppb
1,2 DCE	2,400 ppb
1,1 DCA	1,300 ppb
1,2 DCA	53 ppb
1,1,1 TCA	510 ppb
1,1,2 TCA	<0.5 ppb
TCE	490 ppb
Chloroethane	150 ppb
Methylene Chloride	22 ppb
Vinyl Chloride	1,700 ppb
Temperature	72°F
EC	14.68 millimhos/cm
pH	6.4

4.0 SUMMARY OF FINDINGS

Groundwater movement across the facility remains in a similar pattern, as compared to the result from the previous sampling event in May 1990. Data of flow direction and hydraulic gradient are summarized as following:

Date of Sampling	4/25/89	11/6/89	2/20/90	5/31/90	9/7/90
Flow Direction	Southwest	South	South	South	South
Hydraulic gradient	0.00145	0.012	0.016	0.0125	0.0115

None of the water samples collected from Wells MW-2 and MW-3 contained hydrocarbons at concentration above detection limits. However, analytical results of groundwater in Well EW-1 indicated that concentrations of benzene and 1,2 DCE slightly increased and concentrations of toluene, 1,1,1-TCA, and vinyl chloride decreased since last sampling period (May 1990). The trend of water quality in Well EW-1 is shown on Table 2.

There are several major factors that affect the changes in the hydrocarbons concentration. These factors are soil desorption due to variation of water table, chemical breakdown due to natural degradation, and unidentified sources. It is AWD's opinion that changes of halocarbons concentrations are caused by the combination of soil desorption and the natural degradation process. The presence of gasoline constituents is likely caused by a suspect upgradient source, the former F.P. Lathrop underground gasoline tank (Figure 1). AWD will recommend to Alameda County Health Services that potential responsible party/parties (PRP) for the gasoline contamination at this facility be identified. Once the PRP is identified, AWD will then recommend that a groundwater extraction system be implemented in the source area to reverse the groundwater movement and remediate the gasoline plume.

TABLE 2

SUMMARY OF QUARTERLY MONITORING RESULTS OF HAZARDOUS ORGANIC COMPOUNDS EW-1

	CONCENTRATIONS IN PPB				
COMPOUNDS	5/8/89	11/6/89	2/20/90	5/31/90	9/7/90
TPH as Gasoline	NT	740	12,000	24,000	25,000
Benzene	ND	180	1,300	56	1,100
Toluene	190	39	3,600	6,100	800
Xylenes	170	67	47	140	42
Ethylbenzene	ND	0.8	7.1	17	<25
TCE	640	~~740~~ 720	1,100	830	490
1,1 DCE	78	2.3	14	69	36
1,2 DCE	ND	350	2,500	110	2,400
1,1,1 TCA	ND	26	550	1,200	510
1,1 DCA	ND	34	460	1,900	1,300
1,2 DCA	ND	4.8	34	33	53
Vinyl Chloride	ND	29	ND	2,600	1,700
Chloroethane	ND	ND	29	94	150
Methylene Chloride	ND	ND	14	40	22

ND: Not Detected

APPENDIX A

GROUNDWATER ANALYSIS REESULTS

MOBILE CHEM LABS – CENTRAL VALLEY

351 N. Walnut Road, No. 4 • Turlock, CA 95381
Phone (209) 632-2210 • Fax (209) 632-2209

AWD Technologies
49 Stevenson, Suite 600
San Francisco, CA 94105
Attn: Isen Wang
Project Manager

Date Sampled: 09-07-90
Date Received: 09-07-90
Date Reported: 09-14-90

Sample Number	Sample Description
090007	Project No.: 2010-004 Project Name: CHIC EW-1 WATER

ANALYSIS

	*Detection Limit	Sample Results
	ppb	ppb
Total Petroleum Hydrocarbons as Gasoline	2,500	25,500
Benzene	25	1,100
Toluene	25	800
Xylenes	25	42
Ethylbenzene	25	<25

*NOTE: Detection limits raised due to the matrix of the sample.

Note: Analysis was performed using EPA methods 5030 and 602.

MOBILE CHEM LABS

Ronald G. Evans
Lab Director

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AWD Technologies
49 Stevenson, Suite 600
San Francisco, CA 94105
Attn: Isen Wang
Project Manager

Date Sampled: 09-07-90
Date Received: 09-07-90
Date Reported: 09-14-90

Sample Number	Sample Description
090008	Project No.: 2010-004 Project Name: CHIC MW-2 WATER

ANALYSIS

	Detection Limit	Sample Results
	ppb	ppb
Total Petroleum Hydrocarbons as Gasoline	50	<50
Benzene	0.5	<0.5
Toluene	0.5	<0.5
Xylenes	0.5	<0.5
Ethylbenzene	0.5	<0.5

QA/QC: Blank is none detected.
Spike Recovery is 102%.
Duplicate Deviation is 1%.

Note: Analysis was performed using EPA methods 5030 and 602.

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AWD Technologies
49 Stevenson, Suite 600
San Francisco, CA 94105
Attn: Isen Wang
Project Manager

Date Sampled: 09-07-90
Date Received: 09-07-90
Date Reported: 09-14-90

Sample Number	Sample Description
090009	Project No.: 2010-004 Project Name: CHIC MW-3 WATER

ANALYSIS

	Detection Limit	Sample Results
	ppb	ppb
Total Petroleum Hydrocarbons as Gasoline	50	<50
Benzene	0.5	<0.5
Toluene	0.5	<0.5
Xylenes	0.5	<0.5
Ethylbenzene	0.5	<0.5

Note: Analysis was performed using EPA methods 5030 and 602.

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Lab Director

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AWD Technologies
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San Francisco, CA 94105
Attn: Isen Wang
Project Manager

Date Sampled: 09-07-90
Date Received: 09-07-90
Date Reported: 09-14-90

Sample Number	Sample Description
090007	Project No.: 2010-004 Project Name: CHIC EW-1 WATER

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS

results in ppb

Benzene	--	trans-1,2-Dichloroethene	2400
Bromomethane	<2.0	1,2-Dichloropropane	<0.5
Bromodichloromethane	<0.5	1,3-Dichloropropene	46
Bromoform	<4.0	Ethylbenzene	--
Carbon tetrachloride	<0.5	Methylene chloride	22
Chlorobenzene	<1.0	1,1,2,2-Tetrachloroethane	3.0
Chloroethane	150	Tetrachloroethene	<0.5
2-Chloroethylvinyl ether	<2.0	1,1,1-Trichloroethane	510
Chloroform	<0.5	1,1,2-Trichloroethane	<0.5
Chloromethane	<4.0	Trichloroethene	490
Dibromochloromethane	<0.5	Toluene	--
1,1-Dichloroethane	1300	Vinyl chloride	1700
1,2-Dichloroethane	53	Total Xylenes	--
1,1-Dichloroethene	36		

MOBILE CHEM LABS

Ronald G. Evans
Lab Director

NOTE: Analysis was performed using method 601.

MOBILE CHEM LABS — CENTRAL VALLEY

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AWD Technologies
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Attn: Isen Wang
Project Manager

Date Sampled: 09-07-90
Date Received: 09-07-90
Date Reported: 09-14-90

Sample Number	Sample Description
090008	Project No.: 2010-004 Project Name: CHIC MW-2 WATER

PRIORITY POLLUTANTS
VOLATILE ORGANIC COMPOUNDS

results in ppb

Benzene	--	trans-1,2-Dichloroethene	<0.5
Bromomethane	<2.0	1,2-Dichloropropane	<0.5
Bromodichloromethane	<0.5	1,3-Dichloropropene	<0.5
Bromoform	<4.0	Ethylbenzene	--
Carbon tetrachloride	<0.5	Methylene chloride	<0.5
Chlorobenzene	<1.0	1,1,2,2-Tetrachloroethane	<0.5
Chloroethane	<2.0	Tetrachloroethene	<0.5
2-Chloroethylvinyl ether	<2.0	1,1,1-Trichloroethane	<0.5
Chloroform	<0.5	1,1,2-Trichloroethane	<0.5
Chloromethane	<4.0	Trichloroethene	<0.5
Dibromochloromethane	<0.5	Toluene	--
1,1-Dichloroethane	<0.5	Vinyl chloride	--
1,2-Dichloroethane	<0.5	Total Xylenes	--
1,1-Dichloroethene	<0.5		

QA/QC: Blank is none detected.
Spike Recovery is 105%.
Duplicate Deviation is 2.3%.

MOBILE CHEM LABS

Ronald G. Evans
Lab Director

NOTE: Analysis was performed using method 601.

MOBILE CHEM LABS — CENTRAL VALLEY

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AWD Technologies
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Attn: Isen Wang
Project Manager

Date Sampled: 09-07-90
Date Received: 09-07-90
Date Reported: 09-14-90

Sample Number	Sample Description
090009	Project No.: 2010-004 Project Name: CHIC MW-3 WATER

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS

results in ppb

Benzene	--	trans-1,2-Dichloroethene	<0.5
Bromomethane	<2.0	1,2-Dichloropropane	<0.5
Bromodichloromethane	<0.5	1,3-Dichloropropene	<0.5
Bromoform	<4.0	Ethylbenzene	--
Carbon tetrachloride	<0.5	Methylene chloride	<0.5
Chlorobenzene	<1.0	1,1,2,2-Tetrachloroethane	<0.5
Chloroethane	<2.0	Tetrachloroethene	<0.5
2-Chloroethylvinyl ether	<2.0	1,1,1-Trichloroethane	<0.5
Chloroform	<0.5	1,1,2-Trichloroethane	<0.5
Chloromethane	<4.0	Trichloroethene	<0.5
Dibromochloromethane	<0.5	Toluene	--
1,1-Dichloroethane	<0.5	Vinyl chloride	--
1,2-Dichloroethane	<0.5	Total Xylenes	--
1,1-Dichloroethene	<0.5		

MOBILE CHEM LABS

Ronald G. Evans
Lab Director

NOTE: Analysis was performed using method 601.

AWD TECHNOLOGIES

SHIPMENT NO.: _____

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

DATE 9/7/90

PROJECT NAME: CHIC

PROJECT NO.: 2010-004

Sample Number	Location	Type of Sample		Type of Container	Type of Preservation		Analysis Required*
		Material	Method		Temp	Chemical	
EW-1	EW-1	Water	Grab	2 x 40 ml/vial	iced	None	EPA 601 & 602
MW-2	MW-2	Water	Grab	2 x 40 ml	Iced	None	EPA 601 & 602
MW-3	MW-3	Water	Grab	2 x 40 ml	Iced	None	601 & 602

Total Number of Samples Shipped: 3 | Sampler's Signature:

Relinquished By:	Received By:	Date / Time
Signature: [signature]	Signature: [signature]	Date: 9/7/90
Printed Name: I-sen Wang	Printed Name: Dave Rheume	
Company: AWD Tech.	Company: Mobile Chemical Labs	Time: 0940
Reason: Chemical Analysis		
Relinquished By:	Received By:	Date / Time
Signature:	Signature:	Date: / /
Printed Name:	Printed Name:	
Company:	Company:	Time:
Reason:		
Relinquished By:	Received By:	Date / Time
Signature:	Signature:	Date: / /
Printed Name:	Printed Name:	
Company:	Company:	Time:
Reason:		
Relinquished By:	Received By:	Date / Time
Signature:	Signature:	Date: / /
Printed Name:	Printed Name:	
Company:	Company:	Time:
Reason:		

Special Shipment / Handling / Storage Requirements:

* Note — This does not constitute authorization to proceed with analysis