09-41-291409

6-5-92 SED

A REPORT OF AN
UNDERGROUND STORAGE TANK
CLOSURE ASSESSMENT AT
ACME GALVANIZING INC.
2730 S. 19TH STREET
MILWAUKEE, WISCONSIN 53215

PREPARED FOR:
MR. JIM WEISE
ACME GALVANIZING INC.
2730 SOUTH 19TH STREET
MILWAUKEE, WISCONSIN 53215

PREPARED BY:
MICHAEL J. FELTES
STAFF SCIENTIST
SIGMA ENVIRONMENTAL SERVICES, INC.
9555 SOUTH HOWELL AVENUE
OAK CREEK, WISCONSIN 53154

PROJECT REFERENCE #1082

SEPTEMBER 4, 1992

Michael J. Feltes
Michael J. Feltes
Staff Scientist

Mark H. K
Mark H. Krueger
Project Scientist

Thomas C. Sweet
Thomas C. Sweet
Vice President/General Manager

EXECUTIVE SUMMARY

Sigma Environmental Services, Inc. (Sigma) of Oak Creek, Wisconsin has been retained by Mr. Jim Weise of Acme Galvanizing, Inc. to perform an underground storage tank (UST) closure assessment at the facility located at 2730 South 19th Street, Milwaukee, Wisconsin.

The closure included the excavation of one (1) 1,000-gallon gasoline underground tank, piping and associated overburden, soil sampling from within the excavation, observation and documentation of the field activities, and transportation and disposal of the tank and its contents. The overall purpose of the closure assessment was to comply with Wisconsin Department of Natural Resources (WDNR) guidelines established September, 1990.

Soils identified within the excavation consisted of imported fills and natural occurring glacial sediments. Groundwater was not encountered within the excavation.

Petroleum impacted soils were not identified at the base or sidewalls of the excavation or beneath the dispenser island.

The absence of petroleum hydrocarbons within the soils surrounding the UST system has prompted Sigma to recommend that clean site closure be granted by the Wisconsin Department of Natural Resources and the Department of Industry, Labor and Human Relations.

TABLE OF CONTENTS

		Page
	EXECUTIVE SUMMARY	i
1.	INTRODUCTION	1
2.	PURPOSE AND SCOPE OF WORK	1
	2.1 General Purpose of Work	1
	2.2 Scope of Work	1
	2.3 Contractor/Personnel Performing Work	2
3.	SITE DESCRIPTION AND BACKGROUND	2
	3.1 Site Location/Setting	2
	3.2 Site Description	2
	3.3 Site History/Background	3
4.	FIELD OBSERVATIONS	3
	4.1 General Observations	4
	4.2 Excavation Geology/Hydrogeology	4
	4.3 Site Topography and Drainage	4
	4.4 Underground Utilities	4
5.	FIELD PROCEDURES/METHODOLOGIES	4
	5.1 Field Screening/Sample Selection	4
	5.2 Sample Collection Techniques	5
	5.3 Decontamination Procedures	5
	5.4 Tank Cleaning and Removal	6
6.	LABORATORY ANALYSIS/WISCONSIN REGULATIONS	6
	6.1 Confirmatory Soil Sample Analysis	6
	6.2 Wisconsin Soil Quality Regulations	7
7.	SUMMARY AND CONCLUSION	7
8.	RECOMMENDATIONS	8
9.	LIMITATIONS OF INVESTIGATION	9

TABLE OF CONTENTS (CONT.)

LIST OF TABLES

Table		Page
1.	PID Values / Laboratory Results	6

LIST OF FIGURES

Figure		Follows Page
1.	Site Location Map	2
2.	Site Plan Location Map	3

APPENDICES

Appendix

A. Soil Sample Laboratory Analysis Results and Chain-of-Custody Document

B. Laboratory Methodology

1. INTRODUCTION

Sigma Environmental Services, Inc. has been retained by Mr. Jim Weise, Acme Galvanizing Inc., to conduct an underground storage tank (UST) closure assessment at the facility located at 2730 South 19th Street, Milwaukee, Wisconsin. The purpose of this report is to provide documentation of the closure assessment services performed on June 5, 1992. The report identifies the personnel involved with the project, and details the appropriate site information, field procedures, observations and all laboratory analysis required by Wisconsin Department of Natural Resources (WDNR) regulations. The report also presents recommendations for site closure.

2. PURPOSE AND SCOPE OF WORK

2.1 General Purpose of Work. The purpose of the subsurface closure assessment was to determine if the UST system had an adverse impact on the surrounding native soils and/or groundwater. Notification of the removal of the UST and associated piping run was given to the City of Milwaukee Fire Department.

2.2 Scope of Work. The following tasks were performed pertinent to the excavation and removal of one (1), one-thousand gallon UST system.

- Visual inspection of the excavation for indications of petroleum hydrocarbon impacts.
- Field screening of the backfill material and native soils for sample selection.
- Collection of soil samples and laboratory analysis for Gasoline Range Organics (GRO) and percent moisture.
- Documentation of the excavation geology, tank system integrity, and underground utilities.
- Documentation of the transportation and disposal of the UST.

- Preparation of this assessment report which discusses observations, procedures and recommendations for the site.

2.3 Contractor/Personnel Performing Work. The following personnel were involved in the UST closure assessment:

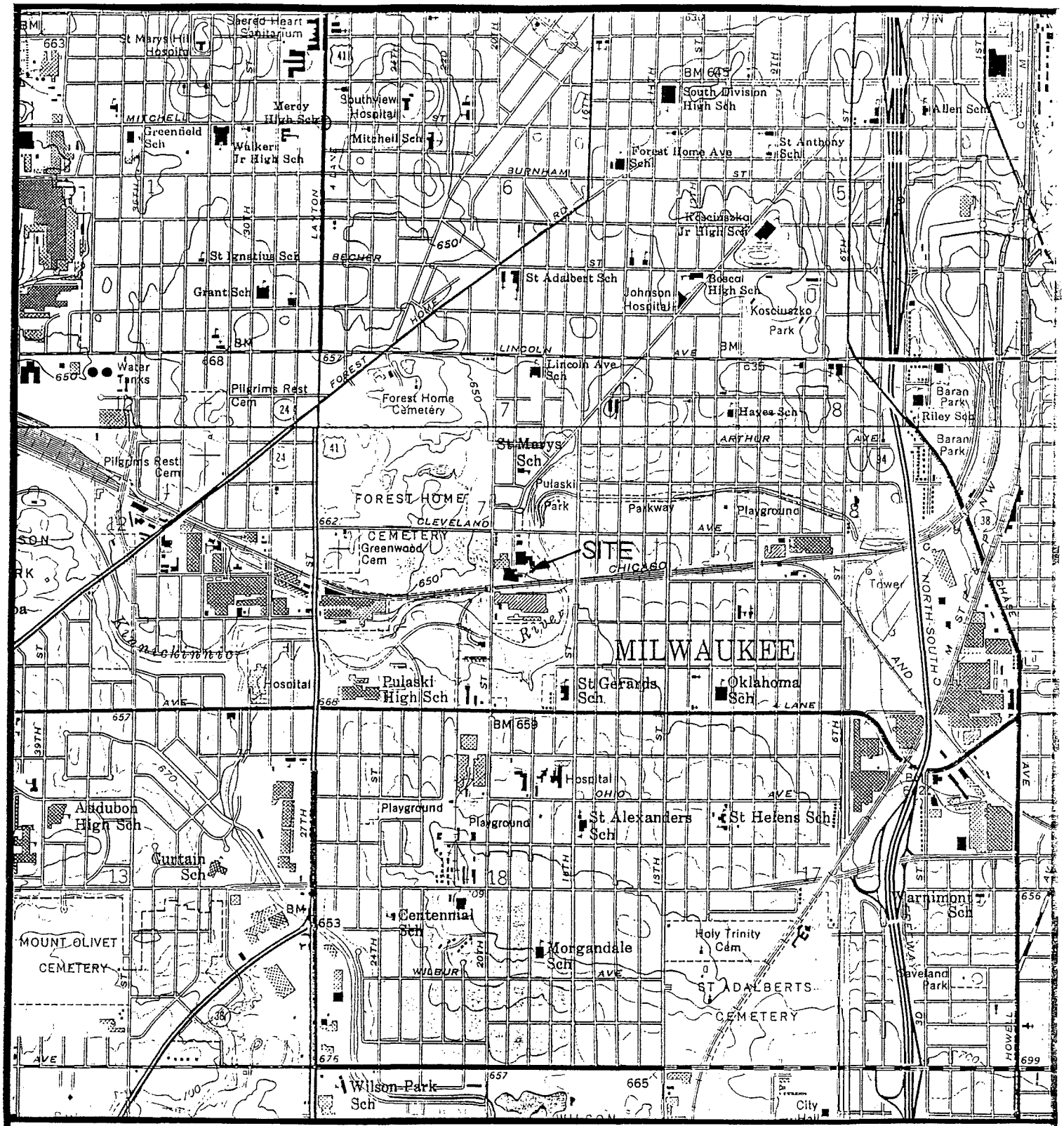
Environmental Consulting Firm
Sigma Environmental Services, Inc.
9555 South Howell Avenue, Suite 100
Oak Creek, Wisconsin 53154
Staff Scientist: Mike Feltes
DILHR Certification #02598
Phone: (414) 768-7144

Laboratory Services
CBC Environmental Laboratories
140 East Ryan Road
Oak Creek, Wisconsin 53154
WDNR Certification #241283020
Phone: (414) 764-7005

Excavating Contractor / Tank Cleaning and Disposal Contractor
OSI Environmental, Inc.
7625 60th Street
Kenosha, Wisconsin 53142
Phone: (414) 857-6772

3. SITE DESCRIPTION AND BACKGROUND

3.1 Site Location/Setting. The site is located in the Northwest ¼ of the Southeast ¼ of Section 7, Township 6 North, Range 22 East, City of Milwaukee, Milwaukee County, Wisconsin, specifically at 2730 South 19th Street, City of Milwaukee, Wisconsin (see Figure 1). The site is located in a predominately residential and industrial area of the City of Milwaukee. The site is bordered on the north by small industries and Cleveland Avenue, to the west by South 19th Street and small industries, to the east by the Kinnickinnic River and 16th Street, and to the south by railroad tracks and a small industry.



ACME GALVANIZING INC.
SITE LOCATION MAP

2730 South 19th Street
Milwaukee, Wisconsin

SCALE
1 inch=2000 feet

FIGURE 1

SIGMA
ENVIRONMENTAL SERVICES INC

ADAPTED FROM USGS GREENDALE, WIS QUADRANGLE 1958 1971 1976

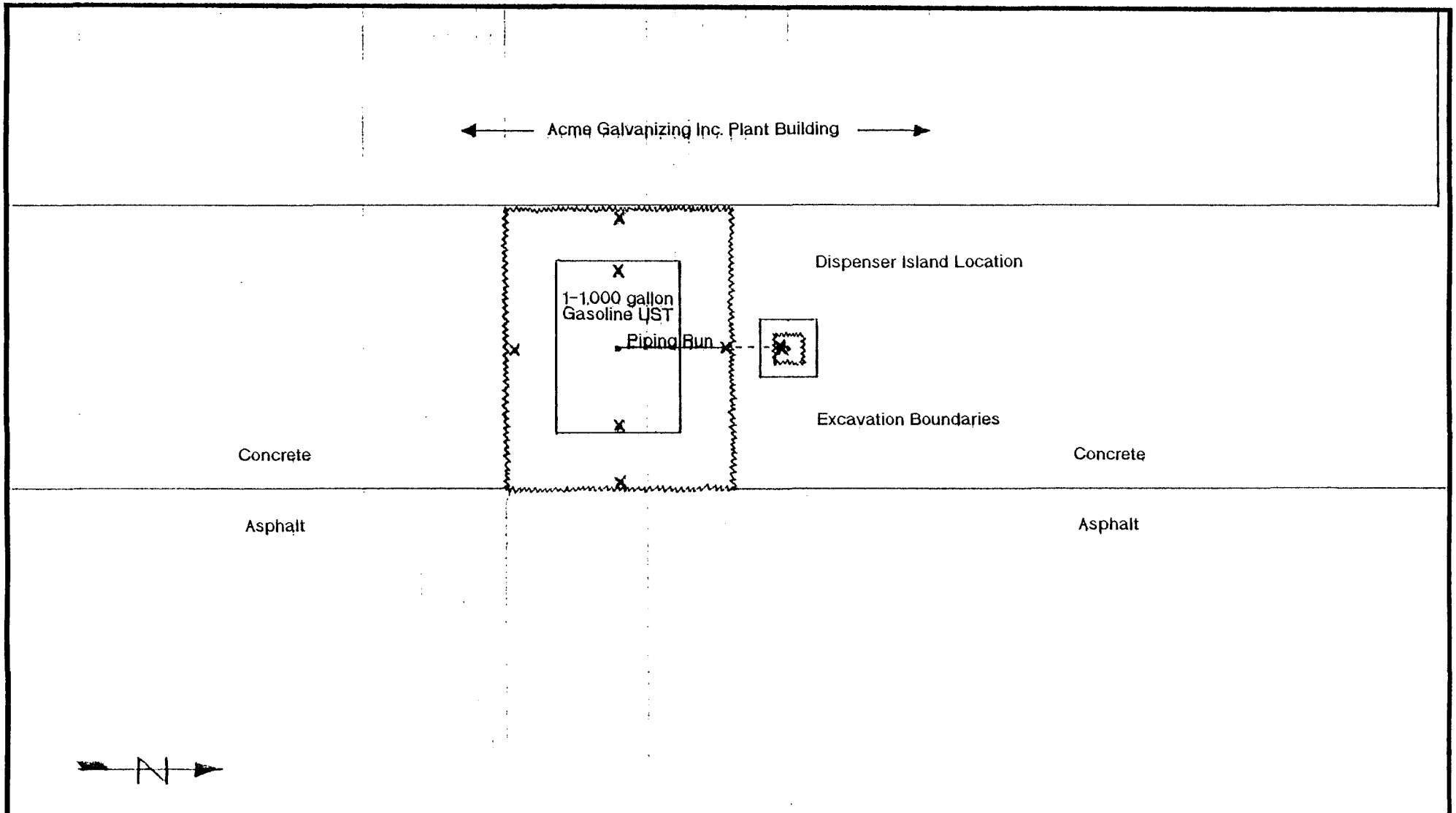
3.2 Site Description. The site is approximately 4½ acres in size, and contains two factory buildings. The facility is supplied by overhead electrical and telephone service. The majority of the site is covered by concrete and asphalt. The site layout and locations of significant features are presented in the Site Plan Location Map (see Figure 2).

3.3 Site History/Background. According to Jim Weise, the facility has been in operation for approximately 50 years, and has conducted industrial operations. One (1) 1,000-gallon UST was installed for the purpose of refueling fleet vehicles with gasoline, but was never used or filled with gasoline. The tank was installed in the early 1970s, and was constructed of steel.

4. FIELD OBSERVATIONS

4.1 General Observations. On June 5, 1992, Sigma personnel observed the excavation and removal of one (1) 1,000-gallon gasoline UST and associated piping. The ambient temperature was approximately 70 degrees with cloudy skies. Clean overburden was removed with a backhoe and staged on-site for future use as backfill material. The UST was found buried approximately 2 feet below ground surface (bgs). The UST was orientated in an east/west direction, perpendicular to the facility. The piping was buried one foot below ground surface, and ran from the supply island south towards the UST. Since no product was ever stored within the one (1) 1,000 gallon gasoline UST, there was no product or sludge to remove or clean out. The UST was removed from the excavation intact and visually inspected for its structural integrity. The tank was observed to be in good condition, completely dry inside, with slight rust and no visible signs of pitting or corrosion. The piping appeared to be in good shape, with no visual indications of leakage.

The overall dimensions of the excavation was 8 feet wide, 10 feet long, and 8 feet deep. The excavation was inspected, and no evidence of impacted or stained soil was noted. Additionally, no petroleum odors were emanating from the excavation.



Soil sample locations are indicated by the symbol " X ".

SIGMA
ENVIRONMENTAL SERVICES INC.

SCALE: 1 inch=5 feet	APPROVED BY:	DRAWN BY MLF
DATE: 7/24/92		REVISED

ACME GALVANIZING INC.
2730 South 19th Street Milwaukee, Wisconsin

SITE PLAN LOCATION MAP

DRAWING NUMBER
FIGURE 2

West Allis Blueprint G-196-M1C 542221

4.2 Excavation Geology/Hydrogeology. The stratigraphy, as evidenced during excavation, consists of three distinct stratigraphic units.

- The upper unit consists of a 4-inch thick slab of concrete.

- Underlying the concrete slab lies a tan loamy sand fill material within the original UST excavation, extending from immediately beneath the concrete slab to 8 feet bgs. The walls of the original UST excavation are comprised of black loamy silty soil comprising fill material, also extending from immediately beneath the concrete slab to 8 feet bgs.

- Beneath these units lies a gray-brown sandy clay unit, which extends beyond the depth that excavation was terminated at 8 feet bgs.

- Groundwater was not present within the excavation.

4.3 Site Topography and Drainage. The overall topography of the site is classified as flat; however, there are hills to the east of the site property. Surficial drainage is toward the east, and is controlled by storm sewers.

4.4 Underground Utilities. The site is served with electricity, water and sewer lines. Water lines, natural gas lines, and sewer laterals enter the site from the west along South 19th Street, and extend into the facility. The buried utilities do not provide a transport mechanism for contaminant migration.

5. FIELD PROCEDURES/METHODOLOGIES

5.1 Sample Collection Techniques. Soil samples were collected in locations required by the WDNR from within the excavation and along the piping run. The WDNR specifies that soil samples be collected from native soils in the following areas:

- One to three feet below each end of the UST.

- One to three feet below each island on the supply side.

- One sample, one to three feet below every twenty feet of piping, preferably at elbows or swing joints.

- Five feet below remote fill pipe openings.

Samples were collected in the excavation walls, base and dispenser island-supply side, utilizing a hand trowel and backhoe bucket for safety considerations. Two (2) samples were collected from each sampling location and immediately containerized. Preferential sample collection was given to areas visibly stained or where odors were evident; however, neither strong odors nor visible staining were noted. The first sample was contained in a four ounce glass jar and sealed with a teflon-lined screw on cap. The sample jar was filled to the top, so that no headspace remained. Each sample was properly labeled and placed in a cooler packed with ice for transport to the laboratory for analysis. The second sample was contained in a clean, four ounce glass jar sealed with a screw-on cap. The sample jar was filled approximately ½ to ¾ full to allow for headspace screening. Soil sample locations are presented in Figure 2.

5.2 Field Screening. A Microtip Photoionization Detector (PID) was used to screen each soil sample for the presence of Volatile Organic Compounds by means of headspace analysis. The PID utilized a 10.6 electron volt (eV) lamp, calibrated in the field for direct response to 100 parts per million isobutylene. Prior to headspace analysis, each soil sample was allowed to equilibrate to approximately 70°F, and vigorously agitated to break up large clumps and facilitate vapor release. Soil sample headspace analysis results are summarized on Table 1.

5.3 Decontamination Procedures. All soil samples were collected with clean, decontaminated trowels. Sigma's standard protocol for decontamination includes washing the trowels in Alconox soap, rinsing with clean tap water, spraying with hexane, and triple rinsing with deionized water. The trowels were then wrapped in aluminum foil for transport to the site.

5.4 Tank Cleaning and Removal. As previously noted, the UST was removed intact from the excavation. Since the UST has never been used at the site,

it has never contained product or sludges; therefore, tank cleaning was not necessary, and was not performed.

The UST and associated piping was removed from the site by OSI Environmental, Inc. and cut into pieces for scrap metal.

6. LABORATORY ANALYSIS/WISCONSIN REGULATIONS

6.1 Confirmatory Soil Sample Analysis. Seven (7) soil samples were collected from the excavation walls, base and dispenser island. Three (3) samples, accompanied with a Chain-of-Custody, were submitted to CBC Environmental Laboratories for analysis of GRO and Percent Moisture. Laboratory analysis results indicate that petroleum hydrocarbon contamination was not present in the native soils surrounding the UST system. The laboratory results are included as Appendix A, and summarized in Table 1. Laboratory methodologies are included as Appendix B.

TABLE 1
PID VALUES / LABORATORY RESULTS

Location	Depth (bgs)	PID Values	Laboratory Results % Moisture	GRO
North Wall	5	1.6	NT	NT
South Wall	5	0.7	NT	NT
East Wall	5	1.3	15	NT
West Wall	5	0.9	NT	NT
East Base	8	3.5	19	<6.2
West Base	8	3.3	32	<7.5
Dispenser Island - Supply Side	3	9.6	8.0	9.9

KEY: Depth in feet below ground surface
PID Values in parts per million equivalents as calibrated to 100 ppm isobutylene
All concentrations are expressed in parts per million on a dry weight basis, except % moisture.
NT = Not tested

6.2 Wisconsin Soil Quality Regulations. The WDNR reviews each case individually to determine if additional investigation or some type of remediation is necessary. Currently, the WDNR is enforcing a cleanup guideline of 10 ppm for petroleum hydrocarbons (TPH) in soil. GRO concentration in each of the three (3) soil samples which were submitted for laboratory analysis were below the WDNR established guideline.

7. SUMMARY AND CONCLUSION

The following project summary is based on the observations and data collected during the UST closure assessment performed on June 5, 1992 at Acme Galvanizing Inc. facility located at 2930 South 19th Street, Milwaukee, Wisconsin. The purpose of the closure assessment was to determine if petroleum contamination existed around the UST system.

- One (1) 1,000-gallon gasoline UST was removed in accordance with state and local regulations. Since no product was ever stored within the UST, there was no product or sludge to remove or clean out. The UST was constructed of steel, and was believed to be installed in the early 1970s.

- The UST appeared to be structurally intact, with slight rust and no evidence of corrosion or pitting. The piping was found to be intact.

- The site stratigraphy consists of imported fill material, consisting of tan loamy sand within the original UST excavation, that extends from immediately beneath a 4-inch thick concrete slab at the surface to 8 feet bgs. The walls of the original UST excavation are comprised of black loamy silty soils extending from immediately beneath the concrete slab to 8 feet bgs. Beneath these units lies a gray-brown sandy clay unit, which extends beyond the depth that excavation was terminated at 8 feet bgs.

- Underground utilities were not noted entering the excavation.

- Native soils and backfill material were screened utilizing a PID.

- Seven (7) soil samples were collected from the following locations as specified by the WDNR: one (1) sample beneath each end of the UST, one (1) sample at each excavation wall, and one (1) sample at the dispenser island's supply side.

- The three (3) soil samples submitted for GRO laboratory analysis demonstrated GRO concentrations below the 10 ppm WDNR cleanup standard for petroleum impacted soils.

- The UST and piping were cut into pieces for scrap metal.

- The excavation was backfilled with gravel and compacted to grade.

8. RECOMMENDATIONS

Based upon observations and data obtained during the removal of the underground storage tank and associated piping, at the Acme Galvanizing Inc. facility in Milwaukee, Wisconsin, Sigma Environmental recommends no further investigation. Furthermore, clean closure is requested from the WDNR and the Wisconsin Department of Industry, Labor, and Human Relations.

9. LIMITATIONS OF INVESTIGATION

This report was prepared under constraints of cost, time, and scope, and reflects a limited assessment and evaluation rather than a full, total, complete or extensive assessment and evaluation.

Our assessment was performed using the degree of care and skill ordinarily exercised, under similar circumstances, by Professional Consultants practicing in this or similar localities. No other warranty or guarantee, expressed or implied, is made as to the conclusion and professional advice included in this report.

The findings of this report are valid as of the present date of the assessment. However, changes in the conditions of a property can occur with the passage of time, whether due to natural processes or the works of man on this or adjacent

properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation, from the broadening of knowledge, or from other reasons. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control.

The interpretations and conclusions contained in this report are based upon the result of independent laboratory tests and analysis intended to detect the presence and/or concentrations of certain chemical constituents in samples taken from the subject property. Sigma Environmental Services, Inc. has no control over such testing and analysis and therefore, disclaims any responsibility for any errors and omissions arising therefrom.

This report is issued with the understanding that it is the responsibility of the owner(s) to ensure that the information and recommendations contained herein are brought to the attention of the appropriate regulatory agency(ies).

This document contains proprietary and confidential information which is the sole and exclusive property of Sigma Environmental Services, Inc. and Acme Galvanizing Inc. This document may not be used or duplicated in any manner without the express written consent of Sigma Environmental Services, Inc. and Acme Galvanizing Inc.

© Copyright, Sigma Environmental Services, Inc.

Candice
clean
closure for
your log
Kathy

APPENDIX A

SOIL SAMPLE LABORATORY ANALYSIS RESULTS
AND
CHAIN-OF-CUSTODY DOCUMENT

CHEM-BIO CORPORATION

ENVIRONMENTAL SERVICES

140 E. RYAN RD.
OAK CREEK, WI 53154
(414) 764-7005
1-800-365-3840

CHAIN OF CUSTODY

No. 41893

PLEASE PRESS FIRMLY WHEN WRITING

CLIENT: Sigma Environmental Services

PROJECT LOCATION: Acme Galvanizing

QUOTE NUMBER: 1082

SAMPLER (Signature)	AFFILIATION	DATE	TIME
Mike Feltes	Staff Scientist	6/5/92	1100

PURPOSE OF ANALYSIS: GRO, % Moisture (Soils)

ITEM NUMBER	NUMBER AND SIZE OF CONTAINERS	DESCRIPTION	TRANSFER NUMBER 1	2	3	4	5
1-2	1-60ml glass jar, 1 plastic jar	East Wall / 5 Ft / 1.3					
2-2	↓	East Base / 8 Ft / 3.5					
3-2	↓	West base / 8 Ft / 3.3					
4-2	↓	Dispenser Island - Supply Side / 3 Ft / 9.6					
5-1	1-60ml glass jar	Blank					
	RDJ	Route Results to Mike Feltes by 6/17/92 — Samples Submitted On Ice					

TRANSFER NUMBER	ITEM NUMBER	RELINQUISHED BY (Signature)	ACCEPTED BY (Signature)	DATE	TIME
1	1-2 5-1	Michael J. Feltes	D. Ann Seager	6/5/92	12:15
2					
3					
4					
5					

CHEM-BIO CORPORATION

ENVIRONMENTAL LABORATORIES

06/09/92

LABORATORY REPORT

C739 8474438 W61

SIGMA ENVIRONMENTAL SERVICES, INC.
9555 S. HOWELL AVE.
OAK CREEK ,WI 53154
ATTN: MIKE FELTES

CHAIN OF CUSTODY

SAMPLE 92157-C11535 EAST WALL/5'/1.3/SOIL/ACME GALVANIZING/1082
DATE COLLECTED 06/05/92 DATE RECEIVED 06/05/92
PRESERVED: YES TEMPERATURE: ON ICE
CONT. INTEGRITY: MEETS STANDARD SAMPLE INTEG: MEETS STANDARD

TEST NAME	RESULT	UNITS	ANALYZED	METHOD	LIMIT
% MOISTURE	15	%	06/05/92	SW846 5030	

PLEASE CONTACT CLIENT SERVICES WITH ANY QUESTIONS. WATER SAMPLES ARE DISPOSED OF 30 DAYS AFTER RECEIPT; SOIL SAMPLES WILL BE DISPOSED OF 6 WEEKS AFTER RECEIPT; WASTE SAMPLES (NON-WATER, NON-SOIL) WILL BE RETURNED 6 WEEKS AFTER RECEIPT. N/T = NOT TESTED, N/A = NOT APPLICABLE, N/D = NOT DETECTED.
@ = ELEVATED DETECTION LIMIT DUE TO MATRIX INTERFERENCE. # = ELEVATED DETECTION LIMIT DUE TO SAMPLE CONCENTRATION.
$ = ELEVATED DETECTION LIMIT DUE TO SAMPLE QUANTITY. + = ELEVATED DETECTION LIMIT DUE TO EXTRACT VOLUME.

AIHA ACCREDITED

APPROVAL Kmr

140 East Ryan Road, Oak Creek, WI 53154-4599 • 414-764-7005 • FAX 414-764-0486 • 1-800-~~365-3840~~ 422-2195
Client Services Direct Line 414-768-7460 • WI DNR Lab Certification #241283020 • IEPA Lab Certification #100243

CHEM-BIO CORPORATION

ENVIRONMENTAL LABORATORIES

06/15/92

LABORATORY REPORT

C739 8474438 W61

SIGMA ENVIRONMENTAL SERVICES, INC.
9555 S. HOWELL AVE.
OAK CREEK ,WI 53154
ATTN: MIKE FELTES

CHAIN OF CUSTODY

SAMPLE 92157-C11536 EAST BASE/8'/3.5/SOIL/ACME GALVANIZING/1082
DATE COLLECTED 06/05/92 DATE RECEIVED 06/05/92
PRESERVED: YES TEMPERATURE: ON ICE
CONT. INTEGRITY: MEETS STANDARD SAMPLE INTEG: MEETS STANDARD

TEST NAME	RESULT	UNITS	ANALYZED	METHOD	LIMIT
% MOISTURE	19	%	06/05/92	SW846 5030	

TEST NAME	WET RESULT	DRY RESULT	UNITS	ANALYZED	METHOD
GASOLINE RANGE ORGANICS	<5.0	<6.2	MG/KG	06/10/92	WDNR MOD. GRO

PLEASE CONTACT CLIENT SERVICES WITH ANY QUESTIONS. WATER SAMPLES ARE DISPOSED OF 30 DAYS AFTER RECEIPT; SOIL SAMPLES WILL BE DISPOSED OF 6 WEEKS AFTER RECEIPT; WASTE SAMPLES (NON-WATER, NON-SOIL) WILL BE RETURNED 6 WEEKS AFTER RECEIPT. N/T = NOT TESTED, N/A = NOT APPLICABLE, N/D = NOT DETECTED.
@ = ELEVATED DETECTION LIMIT DUE TO MATRIX INTERFERENCE. # = ELEVATED DETECTION LIMIT DUE TO SAMPLE CONCENTRATION.
$ = ELEVATED DETECTION LIMIT DUE TO SAMPLE QUANTITY. + = ELEVATED DETECTION LIMIT DUE TO EXTRACT VOLUME.

AIHA ACCREDITED

APPROVAL

140 East Ryan Road, Oak Creek, WI 53154-4599 • 414-764-7005 • FAX 414-764-0486 • 1-800-~~365-3840~~ 422-2195
Client Services Direct Line 414-768-7460 • WI DNR Lab Certification #241283020 • IEPA Lab Certification #100243

CHEM-BIO CORPORATION

ENVIRONMENTAL LABORATORIES

06/15/92

LABORATORY REPORT

C739 8474438 W61

SIGMA ENVIRONMENTAL SERVICES, INC.
9555 S. HOWELL AVE.
OAK CREEK ,WI 53154
ATTN: MIKE FELTES

CHAIN OF CUSTODY

SAMPLE 92157-C11538 DISPENSER ISLAND-SUPPLY SIDE/3'/9.6/SOIL/ACME GALVANIZING/1082
DATE COLLECTED 06/05/92 DATE RECEIVED 06/05/92
PRESERVED: YES TEMPERATURE: ON ICE
CONT. INTEGRITY: MEETS STANDARD SAMPLE INTEG: MEETS STANDARD

TEST NAME	RESULT	UNITS	ANALYZED	METHOD	LIMIT
% MOISTURE	8.0	%	06/05/92	SW846 5030	

TEST NAME	WET RESULT	DRY RESULT	UNITS	ANALYZED	METHOD
GASOLINE RANGE ORGANICS	9.1	9.9	MG/KG	06/10/92	WDNR MOD. GRO

PLEASE CONTACT CLIENT SERVICES WITH ANY QUESTIONS. WATER SAMPLES ARE DISPOSED OF 30 DAYS AFTER RECEIPT; SOIL SAMPLES WILL BE DISPOSED OF 6 WEEKS AFTER RECEIPT; WASTE SAMPLES (NON-WATER, NON-SOIL) WILL BE RETURNED 6 WEEKS AFTER RECEIPT. N/T = NOT TESTED, N/A = NOT APPLICABLE, N/D = NOT DETECTED.
@ = ELEVATED DETECTION LIMIT DUE TO MATRIX INTERFERENCE. # = ELEVATED DETECTION LIMIT DUE TO SAMPLE CONCENTRATION.
$ = ELEVATED DETECTION LIMIT DUE TO SAMPLE QUANTITY. + = ELEVATED DETECTION LIMIT DUE TO EXTRACT VOLUME.

AIHA ACCREDITED

APPROVAL

140 East Ryan Road, Oak Creek, WI 53154-4599 • 414-764-7005 • FAX 414-764-0486 • 1-800-~~366-3840~~ 422-2195
Client Services Direct Line 414-768-7460 • WI DNR Lab Certification #241283020 • IEPA Lab Certification #100243

CHEM-BIO CORPORATION

ENVIRONMENTAL LABORATORIES

06/15/92 LABORATORY REPORT PAGE 1

C739 8474438 W61

SIGMA ENVIRONMENTAL SERVICES, INC.
9555 S. HOWELL AVE.
OAK CREEK ,WI 53154
ATTN: MIKE FELTES

CHAIN OF CUSTODY

SAMPLE 92157-C11539 BLANK/ACME GALVANIZING/1082
DATE COLLECTED 06/05/92 DATE RECEIVED 06/05/92
PRESERVED: YES TEMPERATURE: ON ICE
CONT. INTEGRITY: MEETS STANDARD SAMPLE INTEG: MEETS STANDARD

TEST NAME	RESULT	UNITS	ANALYZED	METHOD	LIMIT
GASOLINE RANGE ORGANICS	<5.0	MG/KG	06/10/92	WDNR MOD. GRO	

PLEASE CONTACT CLIENT SERVICES WITH ANY QUESTIONS. WATER SAMPLES ARE DISPOSED OF 30 DAYS AFTER RECEIPT; SOIL SAMPLES WILL BE DISPOSED OF 6 WEEKS AFTER RECEIPT; WASTE SAMPLES (NON-WATER, NON-SOIL) WILL BE RETURNED 6 WEEKS AFTER RECEIPT. N/T = NOT TESTED, N/A = NOT APPLICABLE, N/D = NOT DETECTED.
@ = ELEVATED DETECTION LIMIT DUE TO MATRIX INTERFERENCE. # = ELEVATED DETECTION LIMIT DUE TO SAMPLE CONCENTRATION.
$ = ELEVATED DETECTION LIMIT DUE TO SAMPLE QUANTITY. + = ELEVATED DETECTION LIMIT DUE TO EXTRACT VOLUME.

AIHA ACCREDITED APPROVAL bURS

140 East Ryan Road, Oak Creek, WI 53154-4599 • 414-764-7005 • FAX 414-764-0486 • 1-800-~~365-3840~~ 422-2195
Client Services Direct Line 414-768-7460 • WI DNR Lab Certification #241283020 • IEPA Lab Certification #100243

CHEM-BIO CORPORATION

ENVIRONMENTAL LABORATORIES

06/15/92 LABORATORY REPORT

C739 8474438 W61

SIGMA ENVIRONMENTAL SERVICES, INC.
9555 S. HOWELL AVE.
OAK CREEK ,WI 53154
ATTN: MIKE FELTES

CHAIN OF CUSTODY

SAMPLE 92157-C11537 WEST BASE/8'/3.3/SOIL/ACME GALVANIZING/1082
DATE COLLECTED 06/05/92 DATE RECEIVED 06/05/92
PRESERVED: YES TEMPERATURE: ON ICE
CONT. INTEGRITY: MEETS STANDARD SAMPLE INTEG: MEETS STANDARD

TEST NAME	RESULT	UNITS	ANALYZED	METHOD	LIMIT
% MOISTURE	32	%	06/05/92	SW846 5030	

TEST NAME	WET RESULT	DRY RESULT	UNITS	ANALYZED	METHOD
GASOLINE RANGE ORGANICS	<5.1 $	<7.5	MG/KG	06/10/92	WDNR MOD. GRO

NET SAMPLE WEIGHT = 24.54 GRAMS.

PLEASE CONTACT CLIENT SERVICES WITH ANY QUESTIONS. WATER SAMPLES ARE DISPOSED OF 30 DAYS AFTER RECEIPT; SOIL SAMPLES WILL BE DISPOSED OF 6 WEEKS AFTER RECEIPT; WASTE SAMPLES (NON-WATER, NON-SOIL) WILL BE RETURNED 6 WEEKS AFTER RECEIPT. N/T = NOT TESTED, N/A = NOT APPLICABLE, N/D = NOT DETECTED.
@ = ELEVATED DETECTION LIMIT DUE TO MATRIX INTERFERENCE. # = ELEVATED DETECTION LIMIT DUE TO SAMPLE CONCENTRATION.
$ = ELEVATED DETECTION LIMIT DUE TO SAMPLE QUANTITY. + = ELEVATED DETECTION LIMIT DUE TO EXTRACT VOLUME.

AIHA ACCREDITED APPROVAL Emu/LWR

140 East Ryan Road, Oak Creek, WI 53154-4599 • 414-764-7005 • FAX 414-764-0486 • 1-800-~~365-3840~~ 422-2195
Client Services Direct Line 414-768-7460 • WI DNR Lab Certification #241283020 • IEPA Lab Certification #100243

ENVIRONMENTAL LABORATORIES INC.

08/28/92 LABORATORY REPORT

C739 8476716 W61

SIGMA ENVIRONMENTAL SERVICES, INC.
9555 S. HOWELL AVE.
OAK CREEK ,WI 53154
ATTN: MIKE FELTES

CHAIN OF CUSTODY

wrong report?

SAMPLE 92234-C11528 SOIL/CITY OF MILWAUKEE/ABANDONED FIREBOAT STATION/ TCS1379
DATE COLLECTED 08/21/92 DATE RECEIVED 08/21/92
PRESERVED: YES TEMPERATURE: ON ICE
CONT. INTEGRITY: MEETS STANDARD SAMPLE INTEG: MEETS STANDARD

TEST NAME	RESULT	UNITS	ANALYZED	METHOD	LIMIT
FREE LIQUIDS	0	%	08/21/92	SW846 9095	
FLASH POINT (OPEN CUP)	>210	DEG F	08/25/92	ASTM D92	
PH (UNITS)	8.5		08/21/92	SW846 9045	2.0-12.5
	PH MEASURED AS SOLID IN WATER.				
% MOISTURE	4.6	%	08/21/92	SW846 5030	

TEST NAME	WET RESULT	DRY RESULT	UNITS	ANALYZED	METHOD
LEAD - TOTAL	25	26	PPM	08/24/92	SW846 6010
REACTIVE CYANIDE	<10	<10	PPM	08/24/92	EPA 335.3
REACTIVE SULFIDE	<2	<2.1	PPM	08/24/92	SW846 7.3.4.2
DRO EXTRACTION - SOIL	COMPLETE			08/23/92	SW846 3540
BENZENE	<0.002 @	<0.0021	PPM	08/25/92	SW846 8020
DIESEL RANGE ORGANICS	<4.0	<4.2	MG/KG	08/25/92	WDNR MOD. DRO
BLANK CONCENTRATION	<4.0	<4.2	MG/KG	08/25/92	WDNR MOD. DRO
DIESEL	N/A		MG/KG	08/25/92	WDNR MOD. DRO
	NOT APPLICABLE; NO DIESEL PATTERN MATCH.				

PLEASE CONTACT CLIENT SERVICES WITH ANY QUESTIONS. WATER SAMPLES ARE DISPOSED OF 30 DAYS AFTER RECEIPT; SOIL SAMPLES WILL BE DISPOSED OF 6 WEEKS AFTER RECEIPT; WASTE SAMPLES (NON-WATER, NON-SOIL) WILL BE RETURNED 6 WEEKS AFTER RECEIPT. N/T = NOT TESTED, N/A = NOT APPLICABLE, N/D = NOT DETECTED.
@ = ELEVATED DETECTION LIMIT DUE TO MATRIX INTERFERENCE. # = ELEVATED DETECTION LIMIT DUE TO SAMPLE CONCENTRATION.
$ = ELEVATED DETECTION LIMIT DUE TO SAMPLE QUANTITY. + = ELEVATED DETECTION LIMIT DUE TO EXTRACT VOLUME.

AIHA ACCREDITED APPROVAL Eric M. T.

140 East Ryan Road, Oak Creek, WI 53154-4599 • 414-764-7005 • FAX 414-764-0486 • 1-800-422-2195
Client Services Direct Line 414-768-7460 • WI DNR Lab Certification #241283020 • IEPA Lab Certification #100243

ENVIRONMENTAL LABORATORIES INC.

08/28/92 LABORATORY REPORT PAGE 1

C739 8476711 W61

SIGMA ENVIRONMENTAL SERVICES, INC.
9555 S. HOWELL AVE.
OAK CREEK ,WI 53154
ATTN: MIKE FELTES

CHAIN OF CUSTODY

SAMPLE 92234-C11525 SOIL/APPLETON ELECTRIC/1201
DATE COLLECTED 08/21/92 DATE RECEIVED 08/21/92
PRESERVED: YES TEMPERATURE: ON ICE
CONT. INTEGRITY: MEETS STANDARD SAMPLE INTEG: MEETS STANDARD

TEST NAME	RESULT	UNITS	ANALYZED	METHOD	LIMIT
FREE LIQUIDS	0	%	08/21/92	SW846 9095	
FLASH POINT (OPEN CUP)	>210	DEG F	08/25/92	ASTM D92	
PH (UNITS)	7.9		08/21/92	SW846 9045	2.0-12.5
	PH MEASURED AS SOLID IN WATER.				
% MOISTURE	10	%	08/21/92	SW846 5030	

TEST NAME	WET RESULT	DRY RESULT	UNITS	ANALYZED	METHOD
LEAD - TOTAL	43	48	PPM	08/24/92	SW846 6010
REACTIVE CYANIDE	<10	<11	PPM	08/24/92	EPA 335.3
REACTIVE SULFIDE	<2	<2.2	PPM	08/24/92	SW846 7.3.4.2
BENZENE	<0.002 @	<0.0022	PPM	08/25/92	SW846 8020
GASOLINE RANGE ORGANICS	13	14	MG/KG	08/26/92	WDNR MOD. GRO

PLEASE CONTACT CLIENT SERVICES WITH ANY QUESTIONS. WATER SAMPLES ARE DISPOSED OF 30 DAYS AFTER RECEIPT; SOIL SAMPLES WILL BE DISPOSED OF 6 WEEKS AFTER RECEIPT; WASTE SAMPLES (NON-WATER, NON-SOIL) WILL BE RETURNED 6 WEEKS AFTER RECEIPT. N/T = NOT TESTED, N/A = NOT APPLICABLE, N/D = NOT DETECTED.
@ = ELEVATED DETECTION LIMIT DUE TO MATRIX INTERFERENCE. # = ELEVATED DETECTION LIMIT DUE TO SAMPLE CONCENTRATION.
$ = ELEVATED DETECTION LIMIT DUE TO SAMPLE QUANTITY. + = ELEVATED DETECTION LIMIT DUE TO EXTRACT VOLUME.

AIHA ACCREDITED APPROVAL Kmk/MJ

140 East Ryan Road, Oak Creek, WI 53154-4599 • 414-764-7005 • FAX 414-764-0486 • 1-800-422-2195
Client Services Direct Line 414-768-7460 • WI DNR Lab Certification #241283020 • IEPA Lab Certification #100243

ENVIRONMENTAL LABORATORIES INC.

08/28/92

LABORATORY REPORT

C739 8476711 W61

SIGMA ENVIRONMENTAL SERVICES, INC.
9555 S. HOWELL AVE.
OAK CREEK ,WI 53154
ATTN: MIKE FELTES

CHAIN OF CUSTODY

SAMPLE 92234-C11527 METHANOL BLANK/APPLETON ELECTRIC/1201
DATE COLLECTED 08/21/92 DATE RECEIVED 08/21/92
PRESERVED: YES TEMPERATURE: ON ICE
CONT. INTEGRITY: MEETS STANDARD SAMPLE INTEG: MEETS STANDARD

TEST NAME	RESULT	UNITS	ANALYZED	METHOD	LIMIT
GASOLINE RANGE ORGANICS	<5.0	MG/KG	08/26/92	WDNR MOD. GRO	

PLEASE CONTACT CLIENT SERVICES WITH ANY QUESTIONS. WATER SAMPLES ARE DISPOSED OF 30 DAYS AFTER RECEIPT; SOIL SAMPLES WILL BE DISPOSED OF 6 WEEKS AFTER RECEIPT; WASTE SAMPLES (NON-WATER, NON-SOIL) WILL BE RETURNED 6 WEEKS AFTER RECEIPT. N/T = NOT TESTED, N/A = NOT APPLICABLE, N/D = NOT DETECTED.
@ = ELEVATED DETECTION LIMIT DUE TO MATRIX INTERFERENCE. # = ELEVATED DETECTION LIMIT DUE TO SAMPLE CONCENTRATION.
$ = ELEVATED DETECTION LIMIT DUE TO SAMPLE QUANTITY. + = ELEVATED DETECTION LIMIT DUE TO EXTRACT VOLUME.

AIHA ACCREDITED

APPROVAL M.Fu

140 East Ryan Road, Oak Creek, WI 53154-4599 • 414-764-7005 • FAX 414-764-0486 • 1-800-422-2195
Client Services Direct Line 414-768-7460 • WI DNR Lab Certification #241283020 • IEPA Lab Certification #100243

APPENDIX B

LABORATORY METHODOLOGY

CHEM-BIO CORPORATION

ENVIRONMENTAL LABORATORIES

GASOLINE RANGE ORGANICS (GRO)

METHOD SUMMARY

1. Summary of Method

The method for determining Gasoline Range Organics (GRO) is as follows:

Samples are introduced into the GC using purge-and-trap (Method 5030). A temperature program is used in the gas chromatograph to separate the organic compounds. Detection is achieved by a Flame Ionization Detector (FID).

Petroleum Volatile Organic Compounds (PVOC) are detected by Photo Ionization Detector (PID). These eight compounds range from Methyl Tert Butyl Ether (MTBE) to 1,2,4-Trimethylbenzene.

2. Scope and Application

SW-846 EPA Method 8020 is used to determine the concentration of various aromatic volatile organic compounds.

Analyte	Practical Quantitation Limit
Methyl Tert Butyl Ether (MTBE)	1.0
Benzene	1.0
Toluene	1.0
Ethyl Benzene	1.0
m, p-Xylene (Co-elute)	1.0
o-Xylene	1.0
1,3,5-Trimethylbenzene	1.0
1,2,4-Trimethylbenzene	1.0

3. Quality Control

a. Five point calibration as necessary.

b. Calibration check standard*

c. Method blank*

d. Matrix spike*

140 East Ryan Road, Oak Creek, WI 53154-4599 • 414-764-7005 • FAX 414-764-0486 • 1-800-365-3840
Client Services Direct Line 414-768-7460 • WI DNR Lab Certification =241283020 • IEPA Lab Certification =100243

e. Matrix spike duplicate*

*Per set of ten or less samples using the internal standard method of quantitation.

4. Preparatory Methods

a. SW-846 EPA Method 8000 Chromatographic Conditions.

b. SW-846 EPA Method 5030 Purge-and-Trap.

5. Interferences

a. Samples can be contaminated by diffusion of volatile organics (particularly methylene chloride and fluorocarbons) through the septum seal of the sample vial during shipment and storage. A trip blank prepared from organic-free reagent water and carried through sampling and handling protocols serves as a check on such contamination.

b. Contamination by carryover can occur whenever high-concentration and low-concentration samples are analyzed sequentially. Whenever an unusually concentrated sample is analyzed, it should be followed by an analysis of organic-free reagent water to check for cross-contamination. The trap and other parts of the system are subject to contamination. Therefore, frequent bake-out and purging of the entire system may be required.

6. Modifications

a. SW-846 EPA Method 8000 Section 4.2 states "other packed or capillary (open-tubular) columns may be used if the requirements of Section 8.4 are met."

b. Section 8.4 of this method is a series of events which must be performed to prove equivalency, of a substituted column, in this case.

c. CBC Environmental Laboratories has satisfied Section 8.4 in its substitution of an open-tubular column (Rt_x 502.2, 60 meters, 0.53 mm ID) for the recommended packed column in SW-846 EPA Method 8020.

7. Sample Collection, Handling and Preservation

a. For all samples, refer to SW-846, Chapter Four (4), Section 4.1.2, "Sample Handling and Preservation," and Table 4-1, "Recommended Sample Containers, Preservation Techniques, and Holding Times" enclosed.

b. CBC Environmental Laboratories prefers a quantity of four (4) VOA vials per sample to facilitate quality control and possible reruns.

Notes

a. CBC Environmental Laboratories employs Method 5030 whenever possible. Direct inject is only used on high level solvent samples or high level non-solvent samples using a methanol extraction technique.

b. The Method Detection Limits (MDLs) is determined periodically. For this reason, the actual MDLs may vary slightly over a period of time. CBC Environmental Laboratories reports the Practical Quantitation Limits (PQLs) to allow for daily variance in instrument operating conditions. This allows us greater confidence in the limit we report to our clients. MDLs and PQLs are reported as ug/L (ppb), herein.

c. Xylenes (ortho, meta and para isomers) may be reported as a "total" value.