

RAVENNA ARMY AMMUNITION PLANT

8451 State Route 5 • Ravenna, Ohio 44266-9297

28 December 1993

THRU: Contracting Officer's Representative

Ravenna Army Ammunition Plant

8451 State Route 5

Ravenna, Ohio 44266-9297

TO:

State of Ohio

Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road

Twinsburg, Ohio 44087-1969

ATTN: Mr. Reggie Brown

Subject: Formal Closure of Ravenna Army Ammunition Plant's #2 Fuel Oil Recovery Well

Located at Waterworks #3

Dear Mr. Brown:

Attached are analytical results taken from soil samples following excavation of a 500 gallon underground fuel oil storage tank. This storage tank was adjacent to the subject extraction/removal well.

The attached submission of analysis is the result of your 16 July and 28 July 1993 Site visits. The formal closure of the subject well was contingent upon the soil cleanliness of the excavation site following tank removal. Tank #51 and associated sample numbers ATS-842, ATS-843, and ATS-857 reference the subject underground storage tank adjacent to the removal well. As identified in the analytical report the chemical constituents within the tank pit soils were below action levels.

Following your review of the attached tank/soil data, Ravenna requests a formal notice from your office regarding approval to perform closure action on the well site.

This installation's point of contact is the Government's Mr. Robert J. Kasper, Commander's Representative, at telephone (216) 358-7311/7312.

Sincerely,

Mason & Hanger-Silas Mason Co. Inc.

W.B. Talmon, Jr.

Site Manager

cf: AMSMC-EQ

cc: J.M. Higgins

J. Adams

Environmental File

CLOSURE REPORT

FOR

RAVENNA ARMY AMMUNITION PLANT
8451 State Route 5
Ravenna, Ohio 44266
Portage County
(216) 297-3124

Submitted To:

Ms. Susan McCauslin RAVENNA ARSENAL INC. (216) 297-3220

Prepared By:

AUTUMN TECHNICAL SERVICES, INC. 518 Perkins-Jones Road Warren, Ohio 44483 (216) 372-5002

September 28, 1993

TABLE OF CONTENTS

Description of Facility	1
Notice to Remove	1
Tank Data	2
Tank Removal	2
Visual Site Evaluation	5
Sample Collection Procedures	5
Sample Results	ϵ
Initial Sample Locations, Depths and PID Readings	7
Remedial Efforts	7
Disposal of Contaminated Soil	8
Disposal of Contaminated Liquid	8
Disposal of Tanks	8
Reviews and Conclusions	9
Exhibit A Sample Results	. (
Exhibit B Sample Location Diagram	. 4
Exhibit C Tank Removal Permit	! 7
Exhibit D Letter Granting Permission to Overexcavate 3	;]
Exhibit E Site Feature Scoring System	; =
Exhibit F Closure Report Checklist Form	3 8

DESCRIPTION OF FACILITY

The two (2) tanks permanently removed were from the following location:

RAVENNA ARMY AMMUNITION PLANT 8451 St. Rte. 5 Ravenna, Ohio 44266 Portage County (216) 297-3124

The U.S. Army is the underground storage tanks (UST's) Owner and Operator. The facility is an inactive army facility. The one thousand (1,000) gallon tank (Tank #12) was removed from near Powerhouse #6 and the five hundred fifty (550) gallon tank (Tank #51) was removed from near the Water Works 4 Generator.

NOTICE TO REMOVE

On March 3, 1993, notification to remove the Ravenna Army Ammunition Plants two (2) tanks was directed to:

Ms. Beverly Spears
State Fire Marshal's Office
Bureau of Underground Storage Tank Regulations
7510 E. Main Street
P.O. Box 687
Reynoldsburg, Ohio 43068-0687
(614) 752-7938

Notification was directed to the local fire department:

Ravenna Arsenal, Inc. 8451 St. Rte. 5
Ravenna, Ohio 44266

On March 30, 1993, Permit No. 8476 was issued by the Bureau of Underground Storage Tank Regulations for the removal and permanent closure of two (2) underground storage tanks at the Ravenna Army Ammunition Plant.

TANK DATA

The two (2) tanks permanently removed consisted of a one thousand (1,000) gallon #2 fuel oil tank and a five hundred fifty (550) gallon #2 fuel oil tank. The one thousand (1,000) gallon tank was installed in June of 1974. The five hundred fifty (550) gallon tank was installed in August of 1976.

Tank Registration	Removal Date	Capacity	Construction	Product	Location
12	7/28/93	1,000 gallon	Steel	#2 fuel oil	Powerhouse
51	7/28/93	550 gallon	Steel	#2 fuel oil	Water Works 4 Generator

Both the one thousand (1,000) gallon tank was last used in July 1993 the five hundred fifty (550) gallon tank were last used in July 1993. The tanks contained #2 fuel oil only. The tanks were used by the Owner only.

TANK REMOVAL

On July 28, 1993 Autumn Technical Services, Inc. began preparation to remove the two tanks.

Tank #12, the one thousand (1,000) gallon #2 fuel oil tank located at Powerhouse #6 was to be removed first.

The top of the tank was uncovered to determine its exact location and orientation.

Next, the tank was checked for the potential for explosion through the use of an Industrial Scientific CMX 271 Multimeter calibrated with a .35% (25% Lower Explosive Limit [LEL]) pentane standard. The percent LEL in the tank was determined to be < 5%.

At this point, some excavation around the tank was performed and the tank was prepared for removal.

Mr. David Capara of the Bureau of Underground Storage Tank Regulations (B.U.S.T.R.) North East Field Office (N.E.F.O.) was on site to view the removal. The LEL was retested and found to still be < 5%.

The tank was then removed and placed on a piece of polyethylene sheeting. Finally, all backfill was removed and a one foot (1') additional overexcavation around the tank was completed. All soil/backfill removed during the excavation was placed on a separate piece of polyethylene sheeting.

Upon completion of all excavation activities, samples were ready to be collected. Split samples were to be collected in the following manner:

- A) Samples would be collected from each end of the tank excavation. If the tank is longer than 35 feet, an additional sample shall be collected from under the middle of the tank.
- B) Samples would be collected from every 20' of the tank's associated piping. If the piping run is less than 20' in length, no sample is required.
- C) A sample would be collected from underneath each dispensing unit. If the dispensing unit is located directly above the tank, no sample is required.
- D) A sample would be collected from below any remote fill pipe area located more than ten feet from the tank cavity excavation.
- E) A sample would be collected from any area that was visibly stained or contained a high PID reading.

An MSA Photon Gas Detector calibrated with a 98 ppm isobutylene standard was used to check the excavation to determine if any area contained a high PID (Photoionization Detector) reading, measured in ppm (parts per million) within the excavation limits.

Upon removal of the tank and completion of the one foot (1') overexcavation, visibly contaminated soil was still present in the excavation. One samples was collected to gain disposal facility acceptance and steps were taken to gain permission from the State Fire Marshal's office to perform more excavation at this location.

After removing the one thousand (1,000) gallon tank, preparations were made to remove the five hundred fifty (550) gallon tank (Tank #51).

The top of the tank was uncovered to determine its exact location and orientation.

Next, the tank was checked for the potential for explosion through the use of an Industrial Scientific CMX 271 Multimeter calibrated with a .35% (25% Lower Explosive Limit [Limit]) pentane standard. The percent LEL in the tank was determined to be < 5%.

At this point, more excavation around the tank was performed and the tank was prepared for removal.

Mr. David Capara of the B.U.S.T.R.-N.E.F.O. was on site to view the removal. The LEL was retested and found to still be < 5%.

The tank was then removed and placed on the piece of polyethylene sheeting. Finally, all backfill was removed and placed on a separate piece of polyethylene sheeting.

Upon completion of all excavation activities, samples were ready to be collected. Split samples were to be collected in the following manner.

- A) Samples would be collected from each end of the tank excavation. If the tank is longer than 35 feet, an additional sample shall be collected from under the middle of the tank.
- B) Samples would be collected from every 20' of the tank's associated piping. If the piping run is less than 20' in length, no sample is required.
- C) A sample would be collected from underneath each dispensing unit. If the dispensing unit is located directly above the tank, no sample is required.
- D) A sample would be collected from below any remote fill pipe area located more than ten feet from the tank cavity excavation.
- E) A sample would be collected from any area that was visibly stained or contained a high PID reading.

An MSA Photon Gas Detector calibrated with a 98 ppm isobutylene standard was used to check the excavation to determine if any area contained a high PID (Photoionization Detector) reading, measured in ppm (parts per million) within the excavation limits.

A total of two (2) samples were collected from the five hundred fifty (550) gallon tank for closure reporting.

One sample was collected from under each end of the tank. PID readings and sample locations can be seen later in this report. Analytical results can be seen in the section titled Sample Results.

VISUAL SITE EVALUATION

During excavation activities, the predominant soil substratum evident for both tank excavations was a silt/clayey sand mix.

Upon removal, of the one thousand (1,000) gallon tank, (Tank #12) there was still visibly contaminated soil remaining confirmed by a distinct petroleum odor within the excavation.

Upon removal of the five hundred fifty (550) gallon tank (Tank #51) and completion of the one foot (1') additional overexcavation, there was no visible signs of contamination remaining in the excavation.

SAMPLE COLLECTION PROCEDURES

All soil samples were collected with a stainless steel core sampler, with a hammer type drive. The core sampler was decontaminated prior to and between each use in the following manner:

- A. The core sampler was rinsed with distilled water.
- B. The core sampler was then scrubbed with a soft bristled brush and non-phosphate detergent (i.e., Alconox).
- C. The core sampler was again rinsed with distilled water.
- D. The core sampler was dried with a lint-free cloth rag to remove excess moisture.

Once the samples were collected, they were placed in 16 oz. wide mouth glass jars. The samples were placed in the jar in a manner to obtain zero headspace upon sealing. Screw on teflon lids were then placed on the jars. They were then placed on ice and preserved at 4° C prior to delivery to the lab.

Sample labels and a chains of custody were filled out for the samples. Information on each included project name and number, collector's name and signature, time and date of sampling, sample I.D. #, sample matrix, analyses to be performed, names and dates to whom and when samples were relinquished and preservation techniques. Sample Nos. ATS-842 through ATS-844 were collected by Barney Brown. Sample Nos. ATS-850, ATS-857 and ATS-858 were collected by Mike Maraczi. All persons collecting samples are employees of Autumn Technical Services, Inc.

SAMPLE RESULTS

Analysis	ATS-842	ATS-843	ATS-857	ATS-858*	ATS-844
TPH (Method 418.1) Detection Limit 10 ppm	16,343	70	74	16	46
BTEX (Method 8020) Detection Limit .20 ppm					
Benzene	ND	ND		ND	ND
Toluene	ND	ND	_	ND	ND
Ethyl Benzene	ND	ND		ND	ND
Xylene	ND	ND		ND	ND
PNAH's (Method 8100) Detection Limit - 2.0 ppm					
Acenapthene	6.1	ND.	ND	ND	ND
Acenapthylene	ND	ND	ND	ND	ND
Anthracene	7.6	ND	ND	ND	ND
Benzo (A) Anthracene	9.3	ND	ND	ND	
Benzo (A) Pyrene	5.8	ND	ND	ND	
Benzo (B) Fluoranthene	9.9	ND	ND	ND	
Benzo (GHI) Perylene	3.4	ND	ND	ND	
Benzo (K) Fluoranthene	ND	ND	ND	ND	
Chrysene	6.1	ND	ND	ND	
Fluoranthene	23.0	ND	ND	ND	
Flourene	6.7	ND	ND	ND	
Napthalene	ND	ND	ND	ND	
Phenanthrene	28.0	ND	ND	ND	
Pyrene	ND	ND	ND	ND	
Indeno (1,2,3-CD) Pyrene	3.8	ND	ND	ND	
Dibenzo(A,H)Anthracene	3.3	ND	ND	ND	

ND = Non-Detect

^{*}Detection Limit .002 ppm for BTEX Method 8020 .33 ppm for PNAH's Method 8100

Sample ATS-844 was analyzed for the parameters required by BFI for the disposal of contaminated soil resulting from an underground storage tank leakage.

Samples ATS-850 was a sample collected from a roll-off box containing sludges collected and solidified from all tanks on site (AST's and/or UST's).

INITIAL SAMPLE LOCATIONS, DEPTHS AND PID READINGS

Sample <u>ATS-</u>	# Location	Collection <u>Date</u>	Sample <u>Depth</u>	PID (ppm)
842	550 Gallon-East End	07/28/93	7.5'	588
843	550 Gallon-East End	07/28/93	7.5 l	73
844	1,000 Gallon-West End	07/28/93	7.5'	1,217
850	Roll-Off Box	08/30/93		9,999 +
857	550 Gallon-East End	08/27/93	9.5'	81
858	1,000 Gallon-East End	08/27/93	9.5'	22

Closure analyses required for the two (2) #2 fuel oil tanks (ATS

PNAH's (Polynuclear Aromatic Hydrocarbons)	Method	8100
TPH (Total Petroleum Hydrocarbons)	Method	418.1
BTEX (Benzene, Toluene, Ethyl Benzene, Xylene)	Method	8020

Laboratory used on this project was:

DeYor Laboratories, Inc. 7655 Market Street Youngstown, Ohio 44512 (216) 758-5788 Albert F. Vicinie, Supervisor - Industrial Lab

REMEDIAL EFFORT

There was approximately 50 cubic yards total of material that was excavated and stockpiled during the removal of both of the #2 fuel oil tanks.

Based upon the visible contamination and the petroleum odor emanating from the east end of the one thousand (1,000) gallon (Tank #12) tank excavation, a sample of the material was collected on July 28, 1993 and analyzed for the following parameters required by BFI:

TCLP Metals (plus Cu and Ni), TPH, BTEX, RCI. RCI (Reactivity, Corrosivity and Ignitability)

On September 2, 1993, approval at BFI Carbon Limestone Landfill in Poland, Ohio was granted.

On September 9, 1993, a letter from Mr. Andrew E. Lyles, Bureau Chief of the Division of the State Fire Marshal's Office, Bureau of Underground Storage Tank Regulations in Reynoldsburg granted permission to overexcavate the contaminated material remaining in the excavation for Tank #12.

After the over excavation was completed, one sample (ATS-858) was collected from the excavation. The result can be seen in the section entitled Sample Results.

DISPOSAL OF CONTAMINATED SOIL

On September 17, 1993, 107.72 tons of #2 fuel oil contaminated soil was disposed of at BFI's Carbon Limestone Landfill in Poland, Ohio, and on September 18, 1993, 37.60 tons of #2 fuel oil contaminated soil was disposed of at BFI's Carbon Limestone Landfill in Poland, Ohio for a total 145.32 tons generated and disposed of from this site.

DISPOSAL OF CONTAMINATED LIQUID

Any liquid and/or sludge generated from the cleaning of these two (2) tanks along with other tanks (UST and AST) associated with the property was bulked into a roll-off box and solidified with kiln dust. A sample (ATS-850) was collected and analyzed for the following parameters:

RCI (Reactivity, Corrosivity, Ignitability)
TCLP Metals (Plus Cu and Ni), TPH, RCI, BTEX
TCLP Volatiles, TCLP Semi-Volatiles

Approval for this material was granted September 27, 1993 and the material is scheduled to be disposed of on September 30, 1993.

DISPOSAL OF TANKS

After cleaning and removal of the tanks, the ends were cut out rendering the tanks out of service. The tanks were then taken to Warren Scrap for recycling.

REVIEW AND CONCLUSIONS

Based on a Site Feature Scoring System (SFSS), score of 65, the site falls into Category 3 for SFSS Action Levels.

Both tanks were #2 fuel oil and therefore fall into Analytical Group 2. Action levels for the group are TPH of 904, Benzene .335 ppm, Toluene 9 ppm, Ethyl Benzene 14 ppm, and Total Xylenes 67 ppm. The above action levels are for contaminated soils.

Upon completion of excavation activities of the 1,000 gallon tank (Tank #12) there was still visibly contaminated soil remaining in the excavation. A PID reading of 1217 ppm indicated that hydrocarbons were still present in the excavation. A sample was collected from the west end and analyzed for disposal parameters. The parameters included TPH, BTEX which are required for closure reporting. These results showed hydrocarbons to be present but not at the level expected based on initial indications. After overexcavation, a sample was collected and analyzed for TPH (418.1), BTEX (8020) and PNAH's (8100). The results were below the action levels for a Category 3 Analytical Group 2 soil. The results can be seen in Exhibit A, Sample Results. No further action is required for the tank location.

Upon completion of the removal of the five hundred fifty (550) gallon tank, the one foot (1') overexcavation around the tank cavity was not completed due to the fact that visible contamination After the return of the analyses for the was not present. excavation (ATS-842 and ATS-843), it was determined the sample from the east end (ATS-842) was above the action levels for a Category 3 Analytical Group 2 soil. The explanation for the high results for TPH, PNAH's was that the backfill material contained broken The one foot (1') overexcavation was then chunks of asphalt. completed and a new sample (ATS-857) was collected. The results for ATS-843 and ATS-857 were below the action levels for this tank cavity. Therefore, no further action should be required at this location.

Therefore, no further action should be required at this site.

EXHIBIT A

SAMPLE RESULTS AND CHAINS-OF-CUSTODY



COLECTION TIME

93. 608222 RECEIVED 07/29/93

UNITS

RAVENNA ARSENAL

· TEST	HES		SP THERAPEUTIC RANGE	
	NORMAL	ABNORMAL		<i>₹.</i>
i de la compania del compania de la compania del compania de la compania del compa		المعاون س	O. C.) ,
POLYAROMATIC HYDROCA				•
METHOD NUMBER	8100		All San Company of the Company of th	PPM
QUANTITATION LIMIT	2.0		र्वेद्वीत्वर्यक्ष्मेलक्ष्मेलक्ष्मेलक्ष्मेलक्ष्मेलक्ष्मेलक्ष्मेलक्ष्मेलक्ष्मेलक्ष्मेलक्ष्मेलक्ष्मेलक्ष्मेलक्ष्म	PPM
ACENAPTHENE	5 AUD 5		경 성	:
ACENAPTHYLENE	4 1ATA		함. 10	PPM
ANTHRACENE	7.6		경 숙.	PPM
BENZO (A) ANTHRACENE	9.3		· 사용	PPM 3
BENZO (A) PYRENE	5.8			PPM
BENZO(B) FLUORANTHENE	9.9			PPM
BENZO(GHI)PERYLENE	3.4		○ 	T T T T
BENZO (K) FLUORANTHENE	ND		류 - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	PPM
CHRYSENE	6.1		ିକ୍ର ଅନ୍ତି	PPM
FLUORANTHENE	23.0		70 70	PPM
FLUDRENE	6.7		T. Carlotte and the second sec	rrn
NAPTHALENE	ND		See .	224
PHENANTHRENE	28.0	1		PPM
PYRENE	17.0		· ·	PPM
INDENO(1,2,3-CD)PYR	. 3.8	i	**************************************	PPM
DIBENZ (A, H) ANTHRACEN	3.3	T.		PPM
TOT.PETRO.HYDROCARB.	16343			PFM
	ANALYSIS	PERFORMED	USING USEPA METHODS	9071/418.1
B-E-T-X				
METHOD NUMBER	8020	i		
QUANTITATION LIMIT	0.20			FFM
BENZENE	ND			
TOLUENE	ND			
ETHYLBENZENE	ND			
XYLENE	ND			
LABORATORY ANALYST	BHM LABO	RATORY	4	
See .				
u			·	
	A.I.H.A.	ACCREDITED	D ₍ LABORATORY (# 365).	•
			į	
			.1	
			: 	**
		1		

--- DIRECTORS ---Patrick K. Jaynes Ph.D. Anthony Nascallah Ph.D.



HAT PEN

AUJUMN INDUSTRIES

518 RERKINS-JONES ROAD

SCI MENTON STEEL STATE BEST

93:608223 RECEIVED 07/29/93 REPORTED -08/11/93

1231		
	Services Library	
POLYAROMATIC HYDR	OCA .	•
METHOD NUMBER		
QUANTITATION_LI	MIT	
ACENAPTHENE		
ACENAPTHYLENE		
ANTHRACENE		
BENZO (A) ANTHRAC	ENE	
BENZO (A) PYRENE		
BENZO(B)FLUORAN	ITHENE	
BENZO(GHI)PERYL	ENE	
BENZO(K) FLUORAN	ITHENE	
CHRYSENE		
FLUORANTHENE		
FLUORENE		
NAPTHALENE		
PHENANTHRENE		
PYRENE		
INDENO(1,2,3-CI	3)PYR	
DIBENZ (A,H) ANTH	IRACEN	
COT.FETRO.HYDROCA	ARE.	

:-E-T-X
METHOD NUMBER
QUANTITATION LIMIT
BENZENE
TOLUENE
ETHYLBENZENE
XYLENE
LABORATORY ANALYST

H T	RESI	JLT	REFERI	ENCE OR JTIC RANGE		UNITS .
2 0	NORMAL	ABNORMAL	200		* *	
ਹੈ ਹੈ: ਹੈ: - ਜ਼ਿ						
7) (2) (4) - 54 (6) - 54 (7)	8100 2.0 ND					PPM
1 1 1	ND ALTHUR		시 참 중			
	ND ND	A COMMENT OF THE STATE OF THE S	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)			
	ND	· 克斯 ···································		· ·		
	ND ND ND	e de la companya de l				
12	ND ND		*** *** ***			
\{ \}	ND ND		14.1 14.1 16.2			
	ND ND 70		Š.			PPM
	ANALYSIS	PERFORMED	USING	USEPA	METHODS	9071/418.1
	8020 0.20					PPM
	ND ND					
	ND ND BHM LABO	RATORY				
	A.I.H.A.	ACCREDITE	D LABOR	RATORY	(# 365)	•

- DIRECTORS --atrick K. Jaynes Ph.D. nthony Nasrallah Ph.D.



E WAEREN

AUTUMN INDUSTRIES 518 PERKINS-JONES ROAD

ATS BALL WEST END BOTTOM AND TO THE STATE OF THE STATE OF

360 64 END VIEW

COLLECTIONAIME

UNITS

TEST ·	HES		THERAPEUTIC RANGE	** (*	に (A) かり (本)
	NORMAL	ABNORMAL	₩		
		en al a la servicio	á		
TCLP EXTRACTION PROC	FINAL PH	-5.29	(2)	.* · · · · · · · · · · · · · · · · · · ·	
TCLP METALS & BIAS %	gette Plant i de de la companya de la comp	and the state of the second	7 7.		
ARSENIC	2.0.X0.12	A Company	0.0	5.0	MG/L
Spike recovery	104	ere a constant	전		7.
BARIUM	₹0.5		₩ Q.O	100.0	MG/L
Spike recovery	96		사 명,		%
CADMIUM	€0.03		§ 0.0	1.0	MG/L
Spike recovery	jj 100	4 T 1 1 1 1 1 2 2 5 1 1 1 1 1 1 1 1 1 1 1 1	0.0		% ***
CHROMIUM	रं०दि		§ 0.0	5.0	MG/L
Spike recovery	114		° 0.0		%
SELENIUM	(0.02			1.0	MG/L
Spike recovery	91	,			% ************************************
MERCURY	₹ <0.0002	44.7	0.0	0.2	MG/L
Spike recovery	94			5 0	% %
LEAD	₩ <0.2	\$1.00 m	. 0.0	5.0	MG/L
Spike recovery	38			= 0	% MG/L
SILVER	<0.05		0.0	5.0	
Spike recovery	7 101				%
TCLP SUPPL.METALS	,		,		MG/L
NICKEL	<0.2	1			7657 C
Spike recovery	100				MG/L
COPPER	<0.08				ng/L
Spike recovery	102				<i>/</i> •
B-E-T-X					
METHOD NUMBER	8020		en.		FFM
QUANTITATION LIMIT	0.005				rrv!
BENZENE	ND				
TOLUENE	- ND				
ETHYLBENZENE	ND		•		
XYLENE	ND	DATODY			
LABORATORY ANALYST	BHM LABO	KALUKT			
	··· A.I.H.A.	ACCREDITE	LABORATORY	(# 345)	_
TOT DOTTED UVERGOARD	46	+	- GRECKHICKI	3557	PPM
TOT.PETRO.HYDROCARB.			USING USEPA	METHODS	
DEACTIUTTY ECREEN	REACTIVE	1	(2.0 PFM		
REACTIVITY SCREEN	REACTIVE		(2.0 PPM		·
	CEWPITAE	3021102			

--- DIRECTORS --- PATHOLOGISTS ---

'atrick K. Jaynes Ph.D. John C. York II. M.D.
Inthony Nasrallah Ph.D. Arlington G. Kuklinca M.D. AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD

MARREN

All Alaberatories

RAVENNAMAREENA

473 4608224 RECEIVED

NORMAL

ND

ND

ABNORMAL

UNITS

PPM

CORROSIVITY SCREEN

IGNITABILITY TEST

PCB'S (SOIL) METHOD NUMBER QUANTITATION LIMIT PCB 1221 PCB 1232 PCE 1242 PCB 1248 PCB 1254 PCB 1260 PCB 1262 PCB 1016 TCLP REVIEW

ASTM D5049 METHOD D404978 METHOD B

SAMPLE IS NONCORROSIVE PH = 8.07 ASTM D4980 METHOD BEUSEPA 9040

SAMPLE HEATED TO 160F WITHOUT FLASH OR IGNITION. ASTM D4982 METHOD BEASTM D93

0803 0.5 ND=NONE DETECTED ND ND - ND ND ND

TCLP PREPARATION FOLLOWS METHOD 1311 SW-846 AS REVISED NOVEMBER 24,1992 (57FR55114) REVIEWED BY ALBERT F. VICINIE III, LAB SUPERVISOR

--- DIRECTORS ---- PATHOLOGISTS ---

atrick K. Jaynes Ph.D. John G. York II. M.D. nthony Nasrallah Ph. D. Amlington G. Kuklinca M.D. AUTUMN INDUSTRIES

318 PERKINS-JUNES ROAD

ACEREN

Chain of Custody Record

REFERRING CLIENT
AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
VARREN OH 44483



DeYor Laboratories, Inc. 7655 Market Street, Suite 2500 Youngstown, Ohio 44512 (216) 758-5788

ERKINS-JUNES RUAD

DeYor Laborate
7655 Market St
Youngstown, C

1416	216	372 5002							·	3.1	i je	
BILLING CONTROL NUMBER (FOR LAB USE ONLY)				PROJEC		_			P.O.#	7761		
						30	04	1		778		
SAMPLERS (Signature)			-	PROJEC	TNAN	_			Alsena	1		
	Barney Bro	<u>ω</u> ~			<u>a</u>	_	Cay	enna	MISON			
FOR LAB USE ONLY ACC #	1 1 1	DESCRIPTION	DATE	TIME	сомь	GRAB	# OF CONT.			SES REQUES	STED	
	ATS-847		1 1 1	,		,		PNAY	(8020)			
	Fist F.d ATS - 843	To. 4 51	7/28/53	13:45		X		TPH	(418.1)			
	ATS - 843	Sc.				X	1	PNA H BTEX	(8100) (8620)			
l	Wist E.d	To., K =5	7/28/43	13.50		^	1	TPH	(418 1)			.1
	ATS - 844	So	7/28/43 1 12 7/28/43	15:00		X	1			Fleshpe	TPH, P d, Brock	· v < S
	Wast End	Soften k. K=	12 11-0/95	13.00				U P JA	72/0= 0	PCB'S	GIS CM,	<u> </u>
										, 0 0		
												r.
							<u> </u>		 	:		
					-					· - - .		
		•										
1												
				<u></u>								
	u u											
					-		-					
		•										
Relinquished by: (Signat	ure)	Date/Time Re	eceived by: (Signatur	e) /		Red (Sig	eived	for Laborat	tory by:		Dat	te/Time
Vanen Brown	(1/1) 7/25	143 16 90	J. Jh	<u> </u>		<u> </u>						<u> </u>
Relinquished by: (Signature) Date/Time Received by: (Signature)			re)		Rer	marks	i					
Te St. 7/25/93 14:50 100 11				Nz								
Relinquished by: (Signat	(ure)	Date/Time R	eceived by: (Signatu	re)								
Relinquished by: (Signal	ture)	Date/Time R	eceived by: (Signatu	re)		-						
transquared by torginal			. . .									
	İ					L _						

NAME

APESO

037322\48 containman COLLECTIONSIMES :

जेल वर्ति है

93 621819 "RECEIVED 108/23/83 108/23/83 108/23/83

v		Ë	النفيد		10 M		-	Land 1	
3	AE		111	2.3	- 1	c =		L DA	Ł.
Ŀ	er a	∆ — ≀	444	~	-	~~		100	•

AVENNA ARSENAL	MINESON CONTRACTOR					
TEST	RESULT		REFERENCE OR THERAPEUTIC RANGE	GE	UNITS	UNITS
	NORMAL	ABNORMAL				38
		10.04) (1) (2)	and the second s		ं ूर्ड
TCLP EXTRACTION PROC	ALEGE TINAL LEU	=12.V4 (). ()				÷.
ERO HEADSPACE EXTRT		Company of the compan	andreas Manageria	o received		100 to 1
CLP METALS & BIAS X	<0.2	A STATE OF THE STA	0.0	5.0	MG/L	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
ARSENIC	110	1			*	33
Spike recovery BARIUM	0.7		÷ 0.0	100.0	MG/L	ائين. د ن
Spike recovery	94	i .	0.0		%	<u> 7</u> 2
CADMIUM	<0.03	1	§ 0.0	1.0	MG/L	2.4° 2.4°
Spike recovery	105		9		%	٦٢
CHROMIUM	<0.3		ું ૦.૦	5.0	MG/L	
Spike recovery	126	The state of the s			% MG/L	: 3 ²
SELENIUM	<u>(</u> <0.02			1.0	MG/E %	25.7
Spike recovery	2		0.0	0.2	MG/L	•
MERCURY	<0.0002	1		V . Z	%	i e
Spike recovery	94	1	0.0	5.0	MG/L	
LEAD	()	1	· · ·	3.0	×	
Spike recovery	;	1	0.0	5.0	MG/L	,
SILVER	98	1	3		%	
Spike recovery	70					
CLP SUPPL.METALS	0.25		.*		MG/L	
NICKEL	V				%	
Spike recovery : COPPER	_{ਹਿ} 105 ≲ <0.08	1			MG/L	
Spike recovery	111	1			%	
TCLP VOA'S & BIAS %						
METHOD NUMBER	· 8240)				
VINYL CHLORIDE	<0.10) 	0.0	0.2	MG/L	
Spike recovery	.4		Y. L. L.		% %	
1,1-DICHLORDETHYLENE	<0.10	1	·, 0.0	0.7	MG/L	٠
Spike recoveកូម៉ូ	82	1		200	% MG/L	
METHYL ETHYL KETONE	<1.0		0.0	200	%	
Spike recovery	108		0.0	6.0	MG/L	
CHLOROFORM	<0.10	ì	0.0	0.0	7	
Spike recovery	74	1	0.0	0.5	MG/L	
CARBON TETRACHLORIDE	<0.10 76		0.0	0.0	7.	
Spike recovery	<0.10	1	0.0	0.5	MG/L	_
BENZENE	76			- - -	%· - =	Z .
Spike recovery	,		3]			
	1.1	i				

atrick K. Jaynes Ph.D. nthony Nasrallah Rh.D.

AUTUMN INDUSTRIES 518 PERKINS UNES ROAD

MARREN

ALTERNATION FOR THE PROPERTY OF THE

वतत्वन

TEST	C _A	RES	JLT	TH	REFERENCE OR ERAPEUTIC RANGE		UNITS	
	—0.0± 0.5	NORMAL	ABNORMAL	Ś		*		
1,2-DICHLOROETHANE	₹ <u>`</u> }	<0.10	A CONTRACTOR OF THE STATE OF TH	Ā	0.0	0.5	MG/L	
-	4	78		7.			%	
Spike recoveryTRICHLOROETHYLENE	533.a		State of the state		0.0	0.5	MG/L	
	9,000€*** \$\displays	100		15 15			%	
Spike recovery	-4 <u>(π.</u> . #	<0.10			0.0	0.7	MG/L	
TETRACHLORGETHYLENE	÷, <u>.</u>	73		Ş.			%	
Spike recovery	55	446. <0.10	A STATE OF THE STA	Ş,	0.0	100.0	MG/L	
CHLOROBENZENE		74		<i>9</i> 2 ∴			*	
Spike recovery	5.45 3.45	<0.10			0.0	7.5	MG/L	
1,4-DICHLOROBENZENE	્રંગ	61					%	
Spike recovery	ŧ		•	<i>\$</i> .				
TCLP BNA'S & BIAS %	_;5	8270	- (Ď.				
METHOD NUMBER	₹. -	<0.10			0.0	5.0	MG/L	
PYRIDINE	4	66		Š			%	
Spike recovery		<0.10	1	50	0.0	200	MG/L	
o-CRESOL	271	71		2/2			%	
Spike recovery	:	<0.10			0	200	MG/L	
m-CRESOL		62	1	()	_		%	
Spike recovery	· ·	<0.10	ì	÷	0.0	200	MG/L	
p-CRESOL		62					%	
Spike recovery	:	<0.10			0.0	0.13	MG/L	
2,4-DINITROTOLUENE		67	}		3.3		%	
Spike recovery	*:	<0.10			0.0	0.50	MG/L	
HEXACHLOROBUTADIENE		67	1	:	4.5	• • • • • • • • • • • • • • • • • • • •	%	
Spike necovery		<0.10	1		0.0	3.0	MG/L	
HEXACHLOROETHANE		65	1		0.0		%	
Spike recovery			1	:	0.0	2.0	MG/L	
NITROBENZENE		' <0.10	I .		0.0	2.0	%	
Spike recovery			i	.,	0.0	100.	MG/L	
PENTACHLOROPHENOL	•	<0.10			0.0	2001	%	
Spike necovený		50			0.0	400.	MG/L	
2,4,5-TRICHLOROPHEN		<0.10	!		0.0	***************************************	%	
Spike recovery		74	1	:	0.0	2.0	MG/L	
2,4,6-TRICHLOROPHEN		<0.10	1		0.0		%	
Spike recovery		74	i	;	0.0	0.13	MG/L	
HEXACHLOROBENZENE		<0.10	0	*	0.0	ULIU	%	
Spike recovery		118		ہ خ	.o PPM	•	•	
REACTIVITY SCREEN	2.	REACTIVE	I .	5 5 5	O PPM		= = =	ļ.
		REACTIVE	SULFIDE	\Z.	V FFR			

- DIRECTORS --atrick K. Jaynes Ph.D.

AUTUMN INDUSTRIES 518 PERKINS-VONES ROAD

NAME

ATS-850

ATS-850

ATS-850

ATS-850

ATS-850

ATS-850

and the second second

SPECIMEN DATE

PEGALANTA

COLLECTION DATE:

COLLECTION DATE:

COLLECTION

93 621819 | RECEIVED | 08723793 | | REPORTED | 09713793

TEST

NORMAL ____

ASTM D5049 METHOD D7D4978 METHOD B

THERAPEUTIC RANG

(क्रिकेट्रिक)

UNITS

CORROSIVITY SCREEN

ASTM D4980 METHOD BYUSEPA 9040

IGNITABILITY TEST

SAMPLE HEATED TO 160F WITHOUT FLASH OR IGNITION.
ASTM D4982 METHOD BY ASTM D93

TOT.PETRO.HYDROCARB.

269500 PPM
ANALYSIS PERFORMED USING USEPA METHODS 9071/418.1

B-E-T-X

METHOD NUMBER

QUANTITATION LIMIT

BENZENE

TOLUENE

ETHYLBENZENE

XYLENE

LABORATORY ANALYST

0.28 0.70 4.06

8240

2.38

PPM

PPM

16.5

PPM PPM

LORI VERBKA B.S.

TCLP REVIEW

A.I.H.A. ACCREDITED LABORATORY (# 365).

TCLP PREPARATION FOLLOWS METHOD 1311 SW-846 AS REVISED NOVEMBER 24,1992 (57FR55114) REVIEWED BY ALBERT F. VICINIE III, LAB SUPERVISOR

allthong

--- DIRECTORS --Patrick K. Jaymes Ph.D.
Anthony Nasrallah Rh.D.

AUTUMN INDUSTRIES ROAD

04: 34

Chain of Custody Record



UTUMN INDUSTRIES 518 PERKINS-JONES ROAD ARREN 44483 PROJECT # ILLING CONTROL NUMBER (FOR LAB USE ONLY) 2842 30604 PROJECT NAME SAMPLERS (Signature)

	I (for Mille Maraczi)	(2)			VAL		111 211421 Fre
FOR LAB USE ONLY	SAMPLE DESCRIPTION	DATE	ПМЕ	СОМР	GRAB	# OF CONT.	ANALYSES REQUESTED
	ATS- 850						Additional Material for sample
	Sludge Material	8/30/93	15:00		×	1	# 621 819
						2	TCLP Volatiles, TCLP Semi-Vol.
		# 1 m		1381			
•							
			-				
			-,,		() () () () () ()	*	

			4517	-		1, 12	
	100				1000円	*	
				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	PASS 3	1	
ethquished by: (Signatu	Date/Time Received	(Signatur	<i>J.</i> -		Recognition	elved natur	for Laboratory by: Date/Time

Chain of Custod Record

REFERRING CLIENT
LUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
ARREN OH 44483



DeYor Laboratories, Inc. 7655 Market Street, Sulte 2500 Youngstown, Ohio 44512

· (216) 758-5788

216 372 5002 1416 ILLING CONTROL NUMBER (FOR LAB USE ONLY) 2842 30604 PROJECT NAME SAMPLERS (Signature) Rovenna nile marace GRAB # OF CONT. FOR LAB USE ONLY **ANALYSES REQUESTED** DATE TIME SAMPLE DESCRIPTION TOUP Metals + Cu + Not man 1 ATS-850 X TPH, BTEX Received for Laboratory by: (Signature) Date/Time Date/Time Received by: (Signature) elinquished by: (Signature) Remarks Date/Time elinquished by: (Signature) Received by: (Signature) Relinquished by: (Signature) Date/Time



			Commission of the commission o	lucia inferiore	
TEST		ULT	THERAPEUTIC RANGE	12 Jan 19 19 19 19 19 19 19 19 19 19 19 19 19	UNITS
The state of the s	` NORMAL	ABNORMAL			
TOT.PETRO.HYDROCARB.			A Property of the second	⊕op i en ty	PPM
101115 (VO:111101000111000111000111000111000111000111000111000111000111000111000111000111000111000111000111000	ANALYSIS	PERFORMED	USING USEPA	METHODS	9071/418.1
POLYAROMATIC HYDROCA			The state of the s		make significant and the s
METHOD NUMBER	8100				PPM
QUANTITATION LIMIT	3.33		(a) (a) (b)		rrn
ACENAPTHENE	ND		쎛		
ACENAPTHYLENE	ND	San Control of the Co	Maria Cara Cara Cara Cara Cara Cara Cara		et ses
ANTHRACENE	TO ND STORY	Newson State Control	19 51 54		
BENZO (A) ANTHRACENE SUPP BENZO (A) PYRENE	ND				
BENZO (B) FLUORANTHENE	A - AND SECTIONS	A ST SAN SERVICE CONTRACTOR	<u>\$</u>		· 建基本
BENZO (GHI) PERYLENE	ND	\$1.50 T259 April 10 10 10 10 10 10 10 10 10 10 10 10 10			• • •
BENZO (K) FLUORANTHENE	3 ND	17	- \$50 ; - 1995 - 1995		
CHRYSENE	ND		Ž.		
FLUORANTHENE	ND	A compared to the part of the contract			
FLUORENE	∰ ND		<u>.</u> .		
NAPTHALENE	ND		7.1 30		
PHENANTHRENE	ND ND				
PYRENE STANDARD	ND ND		Ser.		·
INDENO(1,2,3-CD)PYR DIBENZ(A,H)ANTHRACEN	ND				
DIREKT (W.H.) HETELEGER	. (42				
			:		
. 461			i.		
Sank "	: 1		.;		
JANN _ F	nq				
r 057	•		14 1		
FA T.	300				
80110	A		1		-
<i>H</i>			á		
- 85	1.1		*		
JANK#51 EAST E BOTTO ATS-85	•				
	•				
		1			

--- DIRECTORS ---Patrick K. Jaynes Ph.D. Anthony Nasrallah Ph.D.



TEST DESCRIPTION OF THE PERSON
AUTUMN INDUSTRIES 518 PERKINS-UDNES ROAD

SALESTA RECEIVED SALESTATES RECOIVED RECOIVED

MENNAMARBENAL

TEST	RES	ULT	REFERENCE OR UNITS
	NORMAL	ABNORMAL	
THE PROPERTY OF A STATE OF THE	G		
TOT PETRO.HYDROCARB.	16 M	a getting "	C PPM
AND PERSONAL PROPERTY OF THE PARTY OF	ANALYSIS	PERFORMED	USING USEPA METHODS 9071/418.1
>_=_T_Y			The state of the s
3-E-T-X METHOD NUMBER	8020	Const	3
	0.002		PPM
BENZENE	ND	,	\hat{eta}
TOLUENE	ND		
ETHYLBENZENE	ND		
XYLENE	IND	.¥ •.	Berger Construction of the
LABORATORY ANALYST		NALYTICAL	
	The Wall of the last of the la		
The Day III of the Control of the Co	<u></u>	1300	경
	A.I.H.A.	ACCREDITED	LABORATORY (# 365).
POLYAROMATIC HYDROCA			· ·
METHOD NUMBER	8100	ĺ	A Section of the sect
QUANTITATION LIMIT	0.33		PPM
ACENAPTHENE	ND		
ACENAPTHYLENE	ND		
ANTHRACENE	ND		ordinated the second of the se
BENZO (A) ANTHRACENE	ND		
BENZO (A) PYRENE	. ND		
BENZO (B) FLUORANTHENE	ND		
BENZO (GHI) PERYLENE	I ND		:
BENZO (K) FLUORANTHENE	ND		
CHRYSENE	ND		
FLUORANTHENE	ND		
FLUORENE	· ND		
NAPTHALENE	ND		
PHENANTHRENE	ND		•
- PYRENE	ND		
INDEND(1,2,3-CD)PYR	ND		
DIBENZ (A,H) ANTHRACEN	ND		
•			
<u>_</u>			
	<u>\$</u>		
1	e Teli		

atrick K. Jaynes Ph.D.

AUTUMN INDUSTRIES TOE SERVINS ODNES ROAD

A THE ST

Chain of Custod Record

REFERRING CLIENT AUTUMN INDUSTRIES 518 PERKINS-JONES ROAD WARREN DH 44483



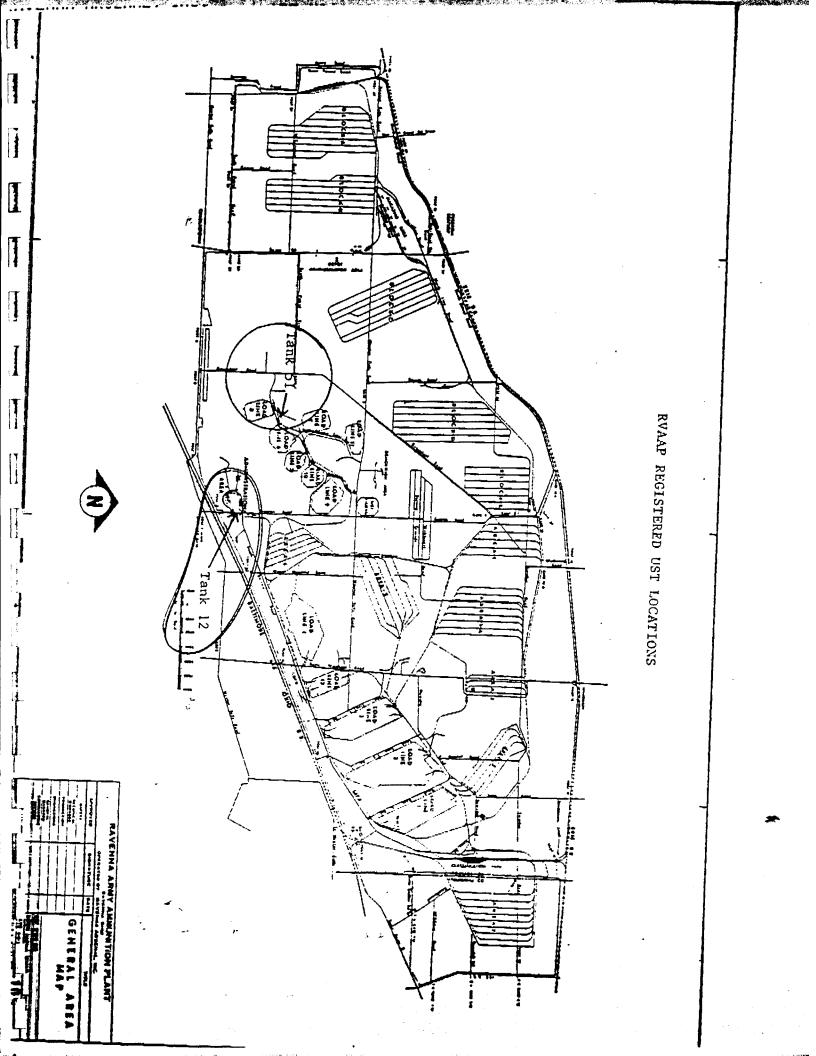
DeYor Laboratories, Inc. 7655 Market Street, Suite 2500 Youngstown, Ohio 44512

(218)**7**58-5788

216 372 5002 BILLING CONTROL NUMBER (FOR LAB USE ONLY) PROJECT # P.O.# 2858 SAMPLERS (Signatura) PROJECT NAME GRAB # OF CONT. SAMPLE DESCRIPTION DATE TIME **ANALYSES REQUESTED** TPH (418.1) ATS- 856 8/27/93 9.45 TTAH (418.1) PNIAH'S (8100) X Tal #51 N E. d Bothen Wary 8/27/93 TPH (418 1) BTEX (8020) 12:30 Tank #12 East F.d Botton PNA 11 (8100) Reinquished by: (Signature) Date/Time Received for Laboratory by: (Signature) Date/Time 500 0/3/53 Remarks Relinquished by: (Signature) Received by: (Signature) Relinquished by: (Signature) Date/Time Received by: (Signature)

EXHIBIT B

SAMPLE LOCATION DIAGRAM



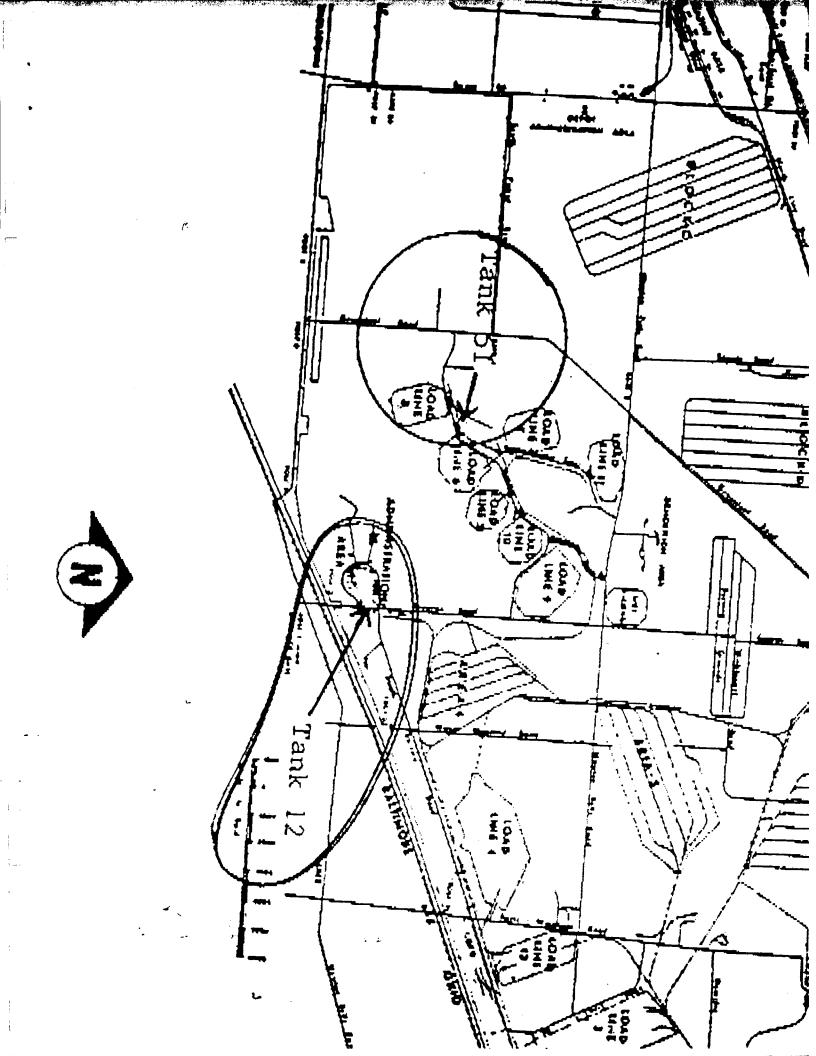


EXHIBIT C

30-DAY NOTIFICATION TANK REMOVAL PERMIT



RAVENNA ARSENAL, INC.

8451 STATE ROUTE 5, RAVENNA, OHIO 44266-9297 TELEPHONE: (216) 358-7111 • FAX: (216) 297-3216

March 3, 1993

THRU:

Contracting Officer's Representative

Ravenna Army Ammunition Plant

8451 State Route 5

Ravenna, Ohio 44266-9297

TO:

State Fire Marshall - BUSTR Permit Application Section

ATTN: Bev Spears Post Office Box 687

Reynoldsburg, Ohio 43068-0687

Subject: Permit Application to Remove Two Underground Storage

Tanks

Dear Ms. Spears:

Attached is a permit application and fee for the removal of two registered underground storage tanks at Ravenna Army Ammunition Plant. The tanks to be removed are as follows:

One 4' x 10'8" 1,000 gallon steel tank used for storing #2 Fuel Oil (PH#6 Generator)

One 4' x 6' 550 gallon steel tank used for storing #2 Fuel Oil (WW#4 Generator)

Once removed, the tanks will be rendered unreusable, cleaned, marked as scrap and sold as scrap by the tank removal contractor.

Please contact Susan McCauslin, Ravenna Arsenal, Inc., Environmental Engineer, at (216) 297-3220 if you have any questions or need further information. The Government point of contact is Robert J. Kasper, Commander's Representative, (216) 297-3124.

Sincerely,

H.R. Cooper

H.R. Cooper Plant Engineer

:bp/UST.SM

c: N. Wulff

T. Chanda

File

COM 5209 (10/92)

RAVENNA ARSENAL, INC. TEL No. 216 297 3216 Sep 27,93 7:28 7.05

STATE OF OHIO DEPARTMENT OF COMMERCE - DIVISION OF STATE FIRE MARSHAL BUREAU OF UNDERGROUND STORAGE TANK REGULATIONS 8895 EAST MAIN STREET, P.O. BOX 687 REYNOLDSBURG, OHIO 43068-0687 APPLICATION FOR UNDERGROUND STORAGE TANK PERMIT

1. OWNERSHIP OF TANKS	OWNER NO:	•	II. LOCATION OF TANKS	FACILITY NO	•
OWNER/OPERATOR NAME			FACILITY NAME		
U. S. Army			Ravenna Army Am	MUNICION TIME	
ADDRESS	-		ADDRESS	. 6	
8451 State Route 5			8451 State Rout		
CITY Ravenna	STATE OH	71F CODE 44266	CITY Ravenna	HO HO	ZIP CODE 44266
ATTN: (CONTACT PERSON)	AREA CODE-PHO	NE	AREA CODE-PHONE		YTM
Robert J. Kasper	(216) 297-		(216) 297-3124	Port	age
III. CONTRACTOR			IV. LOCAL FIRE DEPARTM	ENT	
CONTRACTOR'S NAME			FIRE DEPARTMENT NAME		
Ravenna Arsenal, In	nc.	144	Ravenna Arsen	al, Inc.	
CONTACT PERSON	AREA CODE-PHO	NE	ADDRESS		
Susan McCauslin	(216) 297-		8451 State Ro	oute 5	·
ADDRESS 8451 State Route 5			CITY Ravenna	STATE OH	ZIP CODE 44266
CITY	STATE	ZIP CODE	30-DAY NOTIFICATION LE	TTER SENT FOR REMOVAL	. OF TANK TO BUSTR
Ravenna	он	44266	DATE: March 3, 1		
V. FEE CALCULATION (NOTE: PER	MIT EXPIRES SIX	(6) MONTHS FROM	DATE OF ISSUE. FEE IS	NON-REFUNDABLE)	-
TANK INSTALLATION (INCLUDE	S PIPING)	NO. OF TAN	KS X \$75.00 PER T/	ANK •	
TANK CEMOVAL OR ABANDONMEN (THESE INCLUDE PIPING)	T (CIRCLE ONE)	NO. OF TAN			\$200.00
TANK UPGRADE		NO. OF TAN	KS X \$75.00 PER TA	ANK	
TANK REPLACEMENT		NO. OF TAN	KS X \$175.00 PER	TANK	
TANK REPAIR .		NO. OF TAN	X \$50.00 PER T	ANK = _	
PIPING INSTALLATION ONLY			X \$25.00 PER F	ACILITY	
PIPING REMOVAL ONLY OR ABA	NDONMENT ONLY (C	IRCLE ONE)	X \$100.00 PER	FACILITY = _	
PIPING UPGRADE OR REPAIR (CIRCLE ONE)		X \$25.00 PER F	ACILITY	
PIPING REPLACEMENT			X \$100.00 PER	FACILITY	**
LEAK DETECTION UPGRADE			X \$25.00 PER F	ACILITY = _	
CHANGE IN SERVICE OR TEMPO	RARY CLOSURE (CI	RCLE ONE)	X \$100.00 PER		\$200 OO
		(///-	•	TOTAL FEE:	\$200.00
SIGNATURE OF APPLICANT:	(STAN)	Mack-		DATE:	a 9-3
		BUREAU USE OF	KLY		
AMOUNT PAID:		CHECK N):	FEE NO:	
SUPERVISOR/INSPECTOR:		PERMIT	NO:	DATE ISSUED:	

INCIDENT NUMBER:_

(BUREAU USE ONLY)

STATE OF OHIO DEPARTMENT OF COMMERCE - DIVISION OF STATE FIRE MARSHAL BUREAU OF UNDERGROUND STORAGE TANK REGULATIONS 8895 EAST MAIN STREET, P.O. BOX 687 REYNOLDSBURG, OH 43068-0687

PERMIT FOR UNDERGROUND STORAGE TANKS

PERMIT NO.: 8476 ISSUE DATE: 3/39/93 II. LOCATION OF TANKS L OWNERSHIP OF TANKS INCIDENT NO. 679298-01 OWNER NO. 11595 FACILITY NO. 670501 U.S. ARMY RAVENNA ARMY AMMUNITION PLANT 8451 STRT 5 8451 ST RT 5 RAVENNA, OH 44266 PORTAGE COUNTY ROBERT J. KASPER 216-297-3124 RAVENNA, OH 44266 IV. LOCAL FIRE DEPARTMENT III. CONTRACTOR RAVENNA ARSENAL, INC. RAVENNA ARSENAL, INC. 8451 ST RT 5 SUSAN HCCAUSLIN 216-297-3220 RAVENNA, OH 44266 8451 ST RT 5 RAVENNA, OH 44266 V. PERMIT ISSUED FOR: REMOVAL OF (2) UST(S) VI. CONDITIONS (Note: Permit expires six (6) months from date of issue. Fee is non-refundable) Inspector will ask to see UST installer's proof of certification. Inspector must be present for the following Immediately before pure mig operations begin, immediately before the tank is cut open for any purpose and the actual removal of the UST system from the cut open for any purpose ground. Certified installer west be on site for the following.

A. The cleaning and pursing of the UST available: 2. The actual excavation and removal of the Ust system or any of its R. components; All testing associated with the cleaning and purging processes; C. rens al in Which components of the UST system are Any time during the D. disconnected br BUREAU USE ONLY IDNO: 10-90-1300 DATE 7-28-93

CERTIFIED INSTALLER:

INSTECTOR'S SIGNATURE /L

EXHIBIT D

LETTER -GRÄNTING PERMISSION TO OVEREXCAVATE



Ohio Department of Commerce

George V. Voinovich, Governor

Nancy Chiles Dix, Director

Division of State Fire Marshal - Bureau of Underground Storage Tank Regulations 8895 E. Main St., P.O. Box 687 • Reynoldsburg, OH 43068-0687 (614) 752-7938 • FAX (614) 752-7942

SEP 09 1933

H.R. Cooper
Engineering Manager
Ravenna Arsenal, Inc.
8451 State Route 5
Ravenna, Ohio 44266-9297

RE: Ravenna Army Ammunition Plant
1,000 gallon diesel UST;
Eastside of power plant #6
8451 State Route 5
Ravenna, Ohio 44266-9297
Portage County
Incident #679298-14

Dear Mr. Cooper:

The State Fire Marshal, Bureau of Underground Storage Tank Regulations (SFM, BUSTR) has received your letter dated July 30, 1993 requesting approval to over excavate your underground storage tank (UST) cavity to no more than five (5) feet beyond the tank cavity sidewalls and to no more than two (2) feet below the tank cavity bottom. Your justification for this request was based on test pits that were dug around the UST cavity. You stated that soils in the test pits were visually examined and were field screened with a PID field screening instrument in which both methods showed no evidence of fuel contamination.

Based on this information, SFM, BUSTR grants approval of overexcavation of the UST cavity.

If you have any questions regarding this matter, please contact Kelly Gill at (614) 752-7095.

Sincerely,

Andrew E. Lyles
Bureau Chief

AEL:KG:kkm

cc: File #679298-14

Susan McCauslin, Ravenna Arsenal, Inc.

EXHIBIT E

SITE FEATURE SCORING SYSTEM

SITE FEATURE SCORING SYSTEM

Both Tank #12 and Tank #51 are over 1,000' away from the nearest potable water supply.

The depth of groundwater is assumed to be between fifteen and thirty feet.

The predominant soil type evident in both tank cavities was a natural silt and/or clayey sand substratum.

The following distinctives are associated with Tank #12:

- 1) There is a basement or a subsurface foundation with 100' of the underground storage tank system.
- 2) There is a storm sewer with 50' of the underground storage system.
- There is a buried electrical cable main within 50' of the underground storage tank system.

The following distinctions are associated with Tank #51:

- 1) There is a storm sewer within 50' of the underground storage tank system.
- There is a sanitary sewer within 50' of the underground storage tank system.
- There is a water line main within 50' of the underground storage tank system.

<u>ئە</u> .ذ

SFH SITE FEATURE SCORING SYSTEM (SFSS) CHART (USE "SFSS GUIDELINES" TO COMPLETE THIS CHART)

I. OWNERSHIP OF TANKS

OWNER NO. 11595 U.S. ARMY 8451 STRT 5 RAVENNA, OH 44266 ROBERT J. KASPER 216-297-3124 INCIDENT NO. 679298-01
FACILITY NO. 670501
RAVENNA ARMY AMMUNITION PLANT
8451 ST RT 5
PORTAGE COUNTY
RAVENNA, OH 44266
TANK NO. 12

Site Features	COLU	MN A	COLUMN B		COLUMN C		COLUMN D	
	Score 20	Enter Score	Score 15	Enter Score	Score 10	Enter Score	Score 5	Enter Score
1. Distance of UST system from closest potable-water supply source currently in use is:	> 1000 ft.	20	300-1000 ft		< 300 ft.		Inside of designated sensitive area	
2. Depth to groundwater is:	> 50 ft.		31-50 ft.	i	15-30 ft. or unknown	10	< 15 ft.	
3. Predominant soil type of substratum is:	Clay or shale		Silt or clayey sands or fine sandstone	15	Silty sand or fine sand, un- known, or sandstone		Clean sand, gravel, or conglo- merate	
4. Natural and/or man-made conduits or receptors - See Worksheet Below	< 8		8-10	15	11-13		> 13	
Subtotals:								
	1					TOTAL SCORE	(SUBTOTALS)	60

SITE FEATURE 4 WORKSHEET:

4 points Basements or subsurface foundations within 100 feet of UST system 4 points Storm sewer within 50 feet of UST system 4 points Sanitary sewer within 50 feet of UST system 2 points Septic system leach field within 50 feet of UST system Water line main within 50 feet of UST system 1 point 1 point Natural Gas line main within 50 feet of UST system Bedrock area prone to dissolution along joints of fractures within 100 feet of UST system 1 point Faults or known fractures within 100 feet of UST system 1 point 1 point Buried telephone/television cable main within 50 feet of UST system 1 point Buried electrical cable main within 50 feet of UST system TOTAL POINTS

SSFS ACTION LEVELS (PPM)

CONSTITUENT	CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4	
TOTAL SCORE	< 31	31-50	51-70	> 71	
Soil BTEX	.006/4/6/28	.170/7/10/47	.335/9/14/67	.500/12/18/85	
Groundwater BTEX	.005/1/.700/10	.005/1/.700/10	.005/1/700/10	.005/1/.700/10	
Soil TPH (Gasoline)	105	300	450	600	
Soil TPH (Others)	380	642	904	1156	

SFM SITE FEATURE SCORING SYSTEM (SFSS) CHART

(USE "SFSS GUIDELINES" TO COMPLETE THIS CHART)

I. OWNERSHIP OF TANKS

OWNER NO. 11595 U. S. ARMY 8451 STRT 5 RAVENNA, OH 44266 ROBERT J. KASPER 216-297-3124

II. LOCATION OF TANKS

INCIDENT NO. 679298-01
FACILITY NO. 670501
RAVENNA ARMY AMMUNITION PLANT
8451 ST RT 5
PORTAGE COUNTY
RAVENNA, OH 44266
TANK NO. 51

Site Features	COLU	MN A	COLUMN B		COLUMN C		COLUMN D	
	Score 20	Enter Score	Score 15	Enter Score	Score 10	Enter Score	Score 5	Enter Score
1. Distance of UST system from closest potable-water supply source currently in use is:	> 1000 ft.	20	300-1000 ft		< 300 ft.		Inside of designated sensitive area	
2. Depth to groundwater is:	> 50 ft.		31-50 ft.		15-30 ft. or unknown	10	< 15 ft.	
3. Predominant soil type of substratum is:	Clay or shale		Silt or clayey sands or fine sandstone	15	Silty sand or fine sand, un- known, or sandstone		Clean sand, gravel, or conglo- merate	
4. Natural and/or man-made conduits or receptors - See Worksheet Below	< 8		8-10	15	11-13		> 13	
Subtotals:								
	<u> </u>	1				TOTAL SCORE	(SUBTOTALS)	60

SITE FEATURE 4 WORKSHEET:

4 points Basements or subsurface foundations within 100 feet of UST system 4 points Storm sewer within 50 feet of UST system 4 points Sanitary sewer within 50 feet of UST system 2 points Septic system leach field within 50 feet of UST system 1 point Water line main within 50 feet of UST system 1 point Natural Gas line main within 50 feet of UST system Bedrock area prone to dissolution along joints of fractures within 100 feet of UST system 1 point 1 point Faults or known fractures within 100 feet of UST system Buried telephone/television cable main within 50 feet of UST system 1 point 1 point Buried electrical cable main within 50 feet of UST system TOTAL POINTS

SSFS ACTION LEVELS (PPM)

CONSTITUENT	CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4
TOTAL SCORE	< 31	31-50	51-70	> 71
Soil BTEX	.006/4/6/28	.170/7/10/47	.335/9/14/67	.500/12/18/85
Groundwater BTEX	.005/1/.700/10		.005/1/700/10	.005/1/.700/10
Soil TPH (Gasoline)	105	300	450	600
Soil TPH (Others)	380	642	904	1156

SFH SITE FEATURE SCORING SYSTEM (SFSS) CHECKLIST

II. LOCATION OF TANKS

(SUBMIT TO SFM AS APPENDIX OR ADDENDUM TO CLOSURE REPORT)

I. OWNERSHIP OF TANKS

Owner No. 11595 U.S. Army 8451 State Route 5 Ravenna, OH 44266 Robert J. Kasper (216) 297-3124	Incident No. 679298-01 Facilit No. 670501 Ravenna Army Ammunition Plant 8451 State Route 5 Portage County Ravenna, OH 44266 Tank Nos. 12 and 51
SFSS WRITTEN REPORT MUST INCLUDE THE FOLLOWING:	
SFM USE PAGE NO.	
	de justification for site features 1 through 4 which include
 Distance of UST system from 1/4 mile. 	m closest potable-water supply source currently in use within
Average depth to groundwat	
	ubstratum in UST excavation.
	onduits/receptors near closed UST system.
	cal sample results in table format from closure report.
NOTE: DEFICIENT "SFSS REPORTS AND FOR COMPLETION. SEND THE "SFSS REPORTS COVER LETTER.	CHARTS" SUBMITTED TO OUR OFFICE WILL BE RETURNED TO THE OWNER PORT AND CHART" TO THE ADDRESS AS INDICATED ON THE ENCLOSED
Preparer Name: Joe Stock Signature:	Date: 9/29/93
	=
Owner/Operator:Signature:	Date:
BUREAU	USE ONLY
Reviewed By: Signature:	Date:

EXHIBIT F

CLOSURE REPORT CHECKLIST FORM

DIVISION OF STATE FIRE MARSHAL-BUREAU OF UNDERGROUND STORAGE TANK REGULATIONS

CLOSURE REPORT CHECKLIST FORM

OWNERSHIP OF TANKS	LOCATION OF TANKS
Owner No. 11595 U.S. Army 8451 State Route 5 Ravenna, OH 44266 Robert J. Kasper (216) 297-3124	Incident No. 679298-01 Facility No. 670501 Ravenna Army Ammunition Plant 8451 State Route 5 Portage County Ravenna, OH 44266 Tank Nos. 12 and 51

I. FILING INSTRUCTIONS

- A. In the column on the left side of the form, place either the page number or appendix designation where each item on the checklist can be found in the closure report or "N/A" (Not Applicable) for items that do not apply to your closure report. If "N/A" is indicated, you must also indicate the the page number accordingly.
- B. UST owner must sign where indicated on page 2 of this form and attach it to the Closure Report. Deficient closure reports submitted to our office will be returned to the UST owner for completion. Send the closure report checklist form and the closure report to the address as indicated on the enclosed cover letter.

NOTE: UST OWNER/OPERATORS SHALL SUBMIT ONE COPY OF THE WRITTEN CLOSURE REPORT WHICH SHALL BE RECEIVED BY THE STATE FIRE MARSHAL WITHIN 45 DAYS OF RECEIPT BY THE UST OWNER/OPERATOR OF SOIL AND/OR GROUNDWATER LABORATORY ANALYSIS BUT NOT LATER THAN 90 DAYS FROM THE DATE OF COLLECTING SOIL AND/OR GROUNDWATER SAMPLES.

II.	UST SYSTEM OWNER, OPERATOR, AND FACILITY DATA
1_	UST Owner (name; address; zip code; county; phone no.)
1	UST Operator (name; address; zip code; county; phone no.)
1	UST Facility Location (name; address; zip code; county; phone no.)
1	UST Facility Owner (name; address; zip code; county; phone no.)
III.	UST SYSTEM DATA
2	UST System(s) Age (years)
2	UST(s) Capacity (gallons)
2 2 2 2 2 1	UST System(s) Construction (i.e., steel, fiberglass, etc.)
2	Date UST System(s) Last Used
2	Person(s) Who Last Used UST System
2	Substance(s) Stored in UST(s) both past and present (i.e. gasoline, diesel fuel, used oil, etc.)
$\frac{-1}{1}$	UST System Use (i.e., retail sales, residential, farm, business, etc.)
2	UST(s) System Status (Permanently Removed or Abandoned-In-Place)
8_	Disposal of UST(s) System
IV.	WASTE DISPOSAL DATA
8_	Method of Disposal and Final Location of Excavated Soil(s) and Backfill Materials
7	Amount of Soils and Backfill Excavated (cubic yards)
8_	Disposal and final Location of any liquids from UST System or UST System Excavation
7	Locations of Soil Samples taken from Excavated Soil Waste Pile(s)
Ex A	#

	٧.	SAMPLING DATA
<u>~</u>		(Groundwater sampling data only required if groundwater encountered during closure activities)
5~	_5_	Soil and/or Groundwater Sample Collection Procedures
	5	Type of Sample Containers and Sample Preservation Techniques Used for Soil and/or Groundwater Samples
	5_	Labeling Number or Designation of Soil and/or Groundwater Sample(s) Used
-	5	Type of Sampling Equipment Used (i.e., split spoon, shelby tube, etc.)
	5	Decontamination Procedures of Sampling Equipment Used
	4	Field Screening Methodology Used for each Soil and/or Groundwater Samples Obtained
•	4	Type of Field Screening Instrument Used
	7	Listing of Field Screening Readings for each Soil and/or Groundwater Sample Obtained
•		Calibration Methodology Used for Field Screening Instrument
	- <u>7</u> 7	Locations and Depths of all Soil and/or Groundwater Samples Obtained
1	5 5 5 4 4 7 7 4 7	Copy of Chain of Custody Documentation for Soil and/or Groundwater Samples submitted to Laboratory
	<u>5</u>	Sample Collector(s) Name and Company Affiliation
		Sample Corrector(s) Name and Company (With Company)
	VT	LADOCATORY DATA
	VI.	LABORATORY DATA (Groundwater laboratory data only required if groundwater encountered during closure activities)
	Tina A	and/or Groundwater Samples
٠.	Ex A	Date Soil and/or Groundwater Samples Collected
	<u>Ex A</u>	Date Soil and/or Groundwater Samples Received by Laboratory
	$\mathbf{E}\mathbf{x}$. \mathbf{A}	Date Soil and/or Groundwater Samples Analyzed by Laboratory and type of Matrix Analyzed (soil or water)
7/	<u>Ex A</u>	Name, Address, and Phone No. of Laboratory and name of Sample Analyst
7/	Ex_A	Analytical Test Methods Used for Soil and/or Groundwater Samples
5/	<u>Ex_A</u>	Detection/Quantitation Limits Used for Laboratory Test Methods
	<u>N/A</u>	Laboratory Instrument Calibration used
	VII.	MISCELLANEOUS DATA
	m D	Site Map Accurately Depicting Dimensions of Facility Property Boundaries, Above Ground Structures, adjacent street
	EX B	
		locations, and UST Systems (no. of tanks and product lines)
		Mapped Locations of Known Private Wells, Public Water Wells, or Monitoring Wells on Facility
		Mapped Locations of Any Utilities Exposed During UST System Excavation
	5_	Description of Native Soils Encountered During UST System Excavation (i.e., sands, gravels, clays, etc.)
7/	Ex B	Mapped Depths and Locations of all Soil and/or groundwater Samples taken from Excavation
	5_	Visual Site Evaluation
	<u>Ex</u> B	Mapped Locations of UST(s) Recently or Historically Removed, Abandoned-In-Place, or have undergone a Change in Service
		Mapped Locations of Other UST Still in Service
	Ex_B	Mapped Length of UST(s) and Product Line(s)
	Ex_B	Mapped Excavation Limits
	2	Certified Fire Safety Inspector Name and Certificate Number
	1_	Local Fire Department (name; address; zip code; county; phone) with jurisdiction over UST site
	Ex C	Copy of 30 Day Closure Notification and Closure Permit
	UST(s)	Owner Signature: Date:
	. ,	DIVISION USE ONLY
	Review	ed By: Date:

closure2

CLOSURE REPORT

FOR

RAVENNA ARMY AMMUNITION PLANT
8451 State Route 5
Ravenna, Ohio 44266
Portage County
(216) 297-3124

Submitted To:

Ms. Susan McCauslin RAVENNA ARSENAL INC. (216) 297-3220

Prepared By:

AUTUMN TECHNICAL SERVICES, INC.
518 Perkins-Jones Road
Warren, Ohio 44483
(216) 372-5002

September 28, 1993

TABLE OF CONTENTS

Description of Facility	1
Notice to Remove	1
Tank Data	2
Tank Removal	2
Visual Site Evaluation	5
Sample Collection Procedures	5
Sample Results	6
Initial Sample Locations, Depths and PID Readings	7
Remedial Efforts	7
Disposal of Contaminated Soil	8
Disposal of Contaminated Liquid	8
Disposal of Tanks	8
Reviews and Conclusions	9
Exhibit A Sample Results	10
Exhibit B Sample Location Diagram	24
Exhibit C Tank Removal Permit	27
Exhibit D Letter Granting Permission to Overexcavate	31
Exhibit E Site Feature Scoring System	33
Exhibit F Closure Report Checklist Form	38

DESCRIPTION OF FACILITY

The two (2) tanks permanently removed were from the following location:

RAVENNA ARMY AMMUNITION PLANT 8451 St. Rte. 5 Ravenna, Ohio 44266 Portage County (216) 297-3124

The U.S. Army is the underground storage tanks (UST's) Owner and Operator. The facility is an inactive army facility. The one thousand (1,000) gallon tank (Tank #12) was removed from near Powerhouse #6 and the five hundred fifty (550) gallon tank (Tank #51) was removed from near the Water Works 4 Generator.

NOTICE TO REMOVE

On March 3, 1993, notification to remove the Ravenna Army Ammunition Plants two (2) tanks was directed to:

Ms. Beverly Spears
State Fire Marshal's Office
Bureau of Underground Storage Tank Regulations
7510 E. Main Street
P.O. Box 687
Reynoldsburg, Ohio 43068-0687
(614) 752-7938

Notification was directed to the local fire department:

Ravenna Arsenal, Inc. 8451 St. Rte. 5 Ravenna, Ohio 44266

On March 30, 1993, Permit No. 8476 was issued by the Bureau of Underground Storage Tank Regulations for the removal and permanent closure of two (2) underground storage tanks at the Ravenna Army Ammunition Plant.

TANK DATA

The two (2) tanks permanently removed consisted of a one thousand (1,000) gallon #2 fuel oil tank and a five hundred fifty (550) gallon #2 fuel oil tank. The one thousand (1,000) gallon tank was installed in June of 1974. The five hundred fifty (550) gallon tank was installed in August of 1976.

Tank Registration	Removal Date	Capacity	Construction	Product	<u>Location</u>
12	7/28/93	1,000 gallon	Steel	#2 fuel oil	Powerhouse
51	7/28/93	550 gallon	Steel	#2 fuel oil	Water Works 4 Generator

Both the one thousand (1,000) gallon tank was last used in July 1993 the five hundred fifty (550) gallon tank were last used in July 1993. The tanks contained #2 fuel oil only. The tanks were used by the Owner only.

TANK REMOVAL

On July 28, 1993 Autumn Technical Services, Inc. began preparation to remove the two tanks.

Tank #12, the one thousand (1,000) gallon #2 fuel oil tank located at Powerhouse #6 was to be removed first.

The top of the tank was uncovered to determine its exact location and orientation.

Next, the tank was checked for the potential for explosion through the use of an Industrial Scientific CMX 271 Multimeter calibrated with a .35% (25% Lower Explosive Limit [LEL]) pentane standard. The percent LEL in the tank was determined to be < 5%.

At this point, some excavation around the tank was performed and the tank was prepared for removal.

Mr. David Capara of the Bureau of Underground Storage Tank Regulations (B.U.S.T.R.) North East Field Office (N.E.F.O.) was on site to view the removal. The LEL was retested and found to still be < 5%.

The tank was then removed and placed on a piece of polyethylene sheeting. Finally, all backfill was removed and a one foot (1') additional overexcavation around the tank was completed. All soil/backfill removed during the excavation was placed on a separate piece of polyethylene sheeting.

Upon completion of all excavation activities, samples were ready to be collected. Split samples were to be collected in the following manner:

- A) Samples would be collected from each end of the tank excavation. If the tank is longer than 35 feet, an additional sample shall be collected from under the middle of the tank.
- B) Samples would be collected from every 20' of the tank's associated piping. If the piping run is less than 20' in length, no sample is required.
- C) A sample would be collected from underneath each dispensing unit. If the dispensing unit is located directly above the tank, no sample is required.
- D) A sample would be collected from below any remote fill pipe area located more than ten feet from the tank cavity excavation.
- E) A sample would be collected from any area that was visibly stained or contained a high PID reading.

An MSA Photon Gas Detector calibrated with a 98 ppm isobutylene standard was used to check the excavation to determine if any area contained a high PID (Photoionization Detector) reading, measured in ppm (parts per million) within the excavation limits.

Upon removal of the tank and completion of the one foot (1') overexcavation, visibly contaminated soil was still present in the excavation. One samples was collected to gain disposal facility acceptance and steps were taken to gain permission from the State Fire Marshal's office to perform more excavation at this location.

After removing the one thousand (1,000) gallon tank, preparations were made to remove the five hundred fifty (550) gallon tank (Tank #51).

The top of the tank was uncovered to determine its exact location and orientation.

Next, the tank was checked for the potential for explosion through the use of an Industrial Scientific CMX 271 Multimeter calibrated with a .35% (25% Lower Explosive Limit [Limit]) pentane standard. The percent LEL in the tank was determined to be < 5%.

At this point, more excavation around the tank was performed and the tank was prepared for removal.

Mr. David Capara of the B.U.S.T.R.-N.E.F.O. was on site to view the removal. The LEL was retested and found to still be < 5%.

The tank was then removed and placed on the piece of polyethylene sheeting. Finally, all backfill was removed and placed on a separate piece of polyethylene sheeting.

Upon completion of all excavation activities, samples were ready to be collected. Split samples were to be collected in the following manner.

- A) Samples would be collected from each end of the tank excavation. If the tank is longer than 35 feet, an additional sample shall be collected from under the middle of the tank.
- B) Samples would be collected from every 20' of the tank's associated piping. If the piping run is less than 20' in length, no sample is required.
- C) A sample would be collected from underneath each dispensing unit. If the dispensing unit is located directly above the tank, no sample is required.
- D) A sample would be collected from below any remote fill pipe area located more than ten feet from the tank cavity excavation.
- E) A sample would be collected from any area that was visibly stained or contained a high PID reading.

An MSA Photon Gas Detector calibrated with a 98 ppm isobutylene standard was used to check the excavation to determine if any area contained a high PID (Photoionization Detector) reading, measured in ppm (parts per million) within the excavation limits.

A total of two (2) samples were collected from the five hundred fifty (550) gallon tank for closure reporting.

One sample was collected from under each end of the tank. PID readings and sample locations can be seen later in this report. Analytical results can be seen in the section titled Sample Results.

VISUAL SITE EVALUATION

During excavation activities, the predominant soil substratum evident for both tank excavations was a silt/clayey sand mix.

Upon removal, of the one thousand (1,000) gallon tank, (Tank #12) there was still visibly contaminated soil remaining confirmed by a distinct petroleum odor within the excavation.

Upon removal of the five hundred fifty (550) gallon tank (Tank #51) and completion of the one foot (1') additional overexcavation, there was no visible signs of contamination remaining in the excavation.

SAMPLE COLLECTION PROCEDURES

All soil samples were collected with a stainless steel core sampler, with a hammer type drive. The core sampler was decontaminated prior to and between each use in the following manner:

- A. The core sampler was rinsed with distilled water.
- B. The core sampler was then scrubbed with a soft bristled brush and non-phosphate detergent (i.e., Alconox).
- C. The core sampler was again rinsed with distilled water.
- D. The core sampler was dried with a lint-free cloth rag to remove excess moisture.

Once the samples were collected, they were placed in 16 oz. wide mouth glass jars. The samples were placed in the jar in a manner to obtain zero headspace upon sealing. Screw on teflon lids were then placed on the jars. They were then placed on ice and preserved at 4° C prior to delivery to the lab.

Sample labels and a chains of custody were filled out for the samples. Information on each included project name and number, collector's name and signature, time and date of sampling, sample I.D. #, sample matrix, analyses to be performed, names and dates to whom and when samples were relinquished and preservation techniques. Sample Nos. ATS-842 through ATS-844 were collected by Barney Brown. Sample Nos. ATS-850, ATS-857 and ATS-858 were collected by Mike Maraczi. All persons collecting samples are employees of Autumn Technical Services, Inc.

SAMPLE RESULTS

Analysis	ATS-842	ATS-843	ATS-857	ATS-858*	ATS-844
TPH (Method 418.1) Detection Limit 10 ppm	16,343	70	74	16	46
BTEX (Method 8020) Detection Limit .20 ppm					
Benzene	ND	ND		ND	ND
Toluene	ND	ND	-	ND	ND
Ethyl Benzene	ND	ND	_	ND	ND
Xylene	ND	ND		ND	ND
PNAH's (Method 8100) Detection Limit - 2.0 ppm					
Acenapthene	6.1	ND	ND	ND	ND
Acenapthylene	ND	ND	ND	ND	ND
Anthracene	7.6	ND	ND	ND	ND
Benzo (A) Anthracene	9.3	ND	ND	ND	
Benzo (A) Pyrene	5.8	ND	ND	ND	
Benzo (B) Fluoranthene	9.9	ND	ND	ND	
Benzo (GHI) Perylene	3.4	ИĎ	ND	ДИ	
Benzo (K) Fluoranthene	ND	ND	ND	ND	
Chrysene	6.1	ND	ND	ND	
Fluoranthene	23.0	ND	ND	ND	
Flourene	6.7	ND	ND	ND	
Napthalene	ND	ND	ND	ND	
Phenanthrene "	28.0	ND	ND	ИD	
Pyrene	ND	ND	ND	ND	
Indeno (1,2,3-CD) Pyrene	3.8	ND	ND	ND	
Dibenzo(A,H)Anthracene	3.3	ND	ND	ND	

ND = Non-Detect

^{*}Detection Limit .002 ppm for BTEX Method 8020 .33 ppm for PNAH's Method 8100

Sample ATS-844 was analyzed for the parameters required by BFI for the disposal of contaminated soil resulting from an underground storage tank leakage.

Samples ATS-850 was a sample collected from a roll-off box containing sludges collected and solidified from all tanks on site (AST's and/or UST's).

INITIAL SAMPLE LOCATIONS, DEPTHS AND PID READINGS

Sample <u>ATS-</u>	# <u>Location</u>	Collection <u>Date</u>	Sample <u>Depth</u>	PID (ppm)
842 843 844 850	550 Gallon-East End 550 Gallon-East End 1,000 Gallon-West End Roll-Off Box 550 Gallon-East End	07/28/93 07/28/93 07/28/93 08/30/93 08/27/93	7.5' 7.5' 7.5' 9.5'	588 73 1,217 9,999 + 81
857 858	1,000 Gallon-East End	08/27/93	9.5'	22

Closure analyses required for the two (2) #2 fuel oil tanks (ATS

PNAH's (Polynuclear Aromatic Hydro	carbons) Method	8100
TPH (Total Petroleum Hydrocarbons)		418.1
BTEX (Benzene, Toluene, Ethyl Benzene, Xylene)	Method	8020

Laboratory used on this project was:

DeYor Laboratories, Inc.
7655 Market Street
Youngstown, Ohio 44512
(216) 758-5788
Albert F. Vicinie, Supervisor - Industrial Lab

REMEDIAL EFFORT

There was approximately 50 cubic yards total of material that was excavated and stockpiled during the removal of both of the #2 fuel oil tanks.

Based upon the visible contamination and the petroleum odor emanating from the east end of the one thousand (1,000) gallon (Tank #12) tank excavation, a sample of the material was collected on July 28, 1993 and analyzed for the following parameters required by BFI:

TCLP Metals (plus Cu and Ni), TPH, BTEX, RCI. RCI (Reactivity, Corrosivity and Ignitability)

On September 2, 1993, approval at BFI Carbon Limestone Landfill in Poland, Ohio was granted.

On September 9, 1993, a letter from Mr. Andrew E. Lyles, Bureau Chief of the Division of the State Fire Marshal's Office, Bureau of Underground Storage Tank Regulations in Reynoldsburg granted permission to overexcavate the contaminated material remaining in the excavation for Tank #12.

After the over excavation was completed, one sample (ATS-858) was collected from the excavation. The result can be seen in the section entitled Sample Results.

DISPOSAL OF CONTAMINATED SOIL

On September 17, 1993, 107.72 tons of #2 fuel oil contaminated soil was disposed of at BFI's Carbon Limestone Landfill in Poland, Ohio, and on September 18, 1993, 37.60 tons of #2 fuel oil contaminated soil was disposed of at BFI's Carbon Limestone Landfill in Poland, Ohio for a total 145.32 tons generated and disposed of from this site.

DISPOSAL OF CONTAMINATED LIQUID

Any liquid and/or sludge generated from the cleaning of these two (2) tanks along with other tanks (UST and AST) associated with the property was bulked into a roll-off box and solidified with kiln dust. A sample (ATS-850) was collected and analyzed for the following parameters:

RCI (Reactivity, Corrosivity, Ignitability)
TCLP Metals (Plus Cu and Ni), TPH, RCI, BTEX
TCLP Volatiles, TCLP Semi-Volatiles

Approval for this material was granted September 27, 1993 and the material is scheduled to be disposed of on September 30, 1993.

DISPOSAL OF TANKS

After cleaning and removal of the tanks, the ends were cut out rendering the tanks out of service. The tanks were then taken to Warren Scrap for recycling.

REVIEW AND CONCLUSIONS

Based on a Site Feature Scoring System (SFSS), score of 65, the site falls into Category 3 for SFSS Action Levels.

Both tanks were #2 fuel oil and therefore fall into Analytical Group 2. Action levels for the group are TPH of 904, Benzene .335 ppm, Toluene 9 ppm, Ethyl Benzene 14 ppm, and Total Xylenes 67 ppm. The above action levels are for contaminated soils.

Upon completion of excavation activities of the 1,000 gallon tank (Tank #12) there was still visibly contaminated soil remaining in the excavation. A PID reading of 1217 ppm indicated that hydrocarbons were still present in the excavation. A sample was collected from the west end and analyzed for disposal parameters. The parameters included TPH, BTEX which are required for closure reporting. These results showed hydrocarbons to be present but not at the level expected based on initial indications. After overexcavation, a sample was collected and analyzed for TPH (418.1), BTEX (8020) and PNAH's (8100). The results were below the action levels for a Category 3 Analytical Group 2 soil. The results can be seen in Exhibit A, Sample Results. No further action is required for the tank location.

Upon completion of the removal of the five hundred fifty (550) gallon tank, the one foot (1') overexcavation around the tank cavity was not completed due to the fact that visible contamination was not present. After the return of the analyses for the excavation (ATS-842 and ATS-843), it was determined the sample from the east end (ATS-842) was above the action levels for a Category 3 Analytical Group 2 soil. The explanation for the high results for TPH, PNAH's was that the backfill material contained broken chunks of asphalt. The one foot (1') overexcavation was then completed and a new sample (ATS-857) was collected. The results for ATS-843 and ATS-857 were below the action levels for this tank cavity. Therefore, no further action should be required at this location.

Therefore, no further action should be required at this site.

EXHIBIT A

SAMPLE RESULTS AND CHAINS-OF-CUSTODY

NAME

ATS-842 EASTEND

COLLECTION DA

TON TIME

93.608222 RECEIVED 07/29/93 REPORTED

RAVENNA ARSENAL

TEST	RES	JĻT	REFERENCE OR THERAPEUTIC RANGE	UNITS
	NORMAL	ABNORMAL		-
and the state of t			ac	
POLYAROMATIC HYDROCA	A PERSONAL PROPERTY OF STREET	AND THE REST OF THE STATE OF	The state of the s	
METHOD NUMBER	8100	, '	i i i i i i i i i i i i i i i i i i i	•
QUANTITATION LIMIT	2.0		The state of the s	PPM
ACENAPTHENE	6.1			PPM
ACENAPTHYLENE	ND 5		(1) (1)	
ANTHRACENE	7.6		후 선	PPM
BENZO (A) ANTHRACENE	9.3		(2) (2) (3) (4) (4) (4)	PPM :
BENZO (A) PYRENE	5.8		9. 3.	PPM
BENZO(B) FLUORANTHENE	9.9	-	资	PPM
BENZO (GHI) PERYLENE	3.4			PPM
BENZO (K) FLUORANTHENE	. ND		경 요 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	
CHRYSENE	6.1		4. 19.	PPM
FLUORANTHENE	23.0		99 99	PPM
FLUDRENE	6.7		보다 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	PFM
NAPTHALENE	ND		유	
PHENANTHRENE	28.0			PPM
PYRENE	17.0		in the second se	PPM
INDENO(1,2,3-CD)FYR	3.8		Marian Carlos Ca	PPM
DIBENZ(A,H)ANTHRACEN	3.3		स्ट	PPM
TOT.PETRO.HYDROCARB.	16343			PFM
	ANALYSIS	PERFORMED	USING USEPA METHODS	9071/418.1
B-E-T-X				
METHOD NUMBER	8020			B B 4
QUANTITATION LIMIT	0.20			PPM
BENZENE	ND			
TOLUENE	ND			
ETHYLBENZENE	ND			
XYLENE	ND		4.	
LABORATORY ANALYST	BHM LABO	RATURY	Time to the second of the seco	
L.				
		4000001750	ADDDATED V (# 345)	
	A.I.H.A.	ACCREDITED	LABORATORY (# 365).	
			:	
			•	
-			.4	
i i				
•			20	**

--- DIRECTORS ---Patrick K. Jaynes PhiD. Anthony Nashallah PhiD.

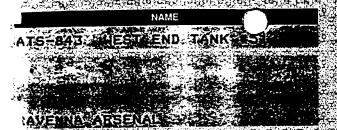


AUTUMN INDUSTRIES STA BERKINS-JONES ROAD

HARREN

CH: 4448

New York



CHOOREZES COLLECTION

COLLECTION TIME:

931608223 4 RECEIVED 107/29/93 REPORTED 108/11/93

POLYAROMATIC HYDROCA
METHOD NUMBER
QUANTITATION_LIMIT
ACENAPTHENE
ACENAPTHYLENE
ANTHRACENE
BENZO (A) ANTHRACENE
BENZO (A) PYRENE
BENZO(B)FLUORANTHENE
BENZO(GHI)PERYLENE
BENZO (K) FLUORANTHENE
CHRYSENE
FLUORANTHENE
FLUORENE
NAPTHALENE
PHENANTHRENE
FYRENE
INDENO(1,2,3-CD)FYR
DIBENZ (A, H) ANTHRACEN
COT.PETRO.HYDROCARB.

-E-T-X
METHOD NUMBER
QUANTITATION LIMIT
BENZENE
TOLUENE
ETHYLBENZENE
XYLENE
LABORATORY ANALYST
L

	RES	JLT	REFER	ENCE OR JTIC RANGE		UNITS
NORM	AL	ABNORMAL				
72 40	e america					
	8100		्र इ.			004
" - Jaka Branders	2.0	NAME OF THE PARTY	March 18			PPM ,
ND		. .)6 ()			
ND ((전))			
ND (lara j				
ND	er Barr	The Art Mark As Art				
	9703fF					
ND	-	. **				
ND*	¥a ya a il eolitii	· · · ·	為			
ND		**	्रहें. की			
ND	·		*. *. *. *. *. *. *. *. *. *. *. *. *. *			
ND						
ND		*	<u>\$</u>			
ND ND						
ND			ir			
ND			\$			
	70					PPM
ANAL	YSIS	PERFORMED	USING	USEFA	METHODS	9071/418.1
			:			
	8020					PPM
	0.20					ген
ND			Ž			
ND ND			4			
ND			."			
BHM	LABO	RATORY				
			*			

--- DIRECTORS --- atrick K. Jaynes Ph.D. nthony Nasrallah Ph.D.



AUTUMN INDUSTRIES STA PERKINS JONES ROAD

WARREN

A.I.H.A. ACCREDITED LABORATORY (# 365).

DH7 4448

MACARSENAL

	TEST ·
	RACTION PROC
	ALS & BIAS %
	p Charles Balance The Addition
•	recovery
BARIUM	
Spike	recovery
•	recovery
CHROMIUN	
	recovery
SELENIUN	
•	recover <u>ñ</u>
MERCURY	w.a.#31/38//
L EAD	uecoveuñ
	recovery
SILVER	recover g
	recovery
TCLP SUPE	
NICKEL	
	recovery
COPPER	
	recovery
B-E-T-X	-
METHOD I	NUMBER
QUANTITA	ATION LIMIT
BENZENE	
TOLUENE	
ETHYLBE	NZENE

$\varphi_i \in \mathbb{R}$	NORMAL	ABNORMAL	3	36	三日日 / 河域電影
70 30					
	FINAL PH	=5129	} } √		THE STATE OF THE SAME
o New 2	e na			5.0	MG/L
,α°	104	AND THE PROPERTY OF THE PARTY O			7.
	₹0.5	region .	0.0	100.0	MG/L
: • • • •	96	,			%
υ,	<0.03	4.2	0.0	1.0	MG/L
Girtin Girt	100	i '	-		%
ro÷. Siri	₹0.3	STOCK CONTRACTOR	e 0.0	5.0	MG/L
	114				%
ت نيان	<0.02		0.0	1.0	MG/L
-	91				%
7	<0.0002			0.2	MG/L
્રે. ૨	94		0.0		%
0.4 0.4	<0.2	Service of the service of	ું 0.0	5.0	MG/L
	28				7.
	<0.05		1 0.0	5.0	MG/L
-	101				%
	<0.2				MG/L
• •	100				7.
	<0.08				MG/L
. •	102				%
	8020		as .		
	0.005				PPM
	ND				
	ND				
	ND		•		
	ND				
	BHM LABO	RATORY			
		4000001750	(A D C C * T	00% (# 7/5)	•
	A.I.H.A.	ACCREDITED	CABURAT	URY (# 365)	PPM
	46	i			17 L. 1.1

TOT.PETRO.HYDROCARB.

LABORATORY ANALYST

REACTIVITY SCREEN

XYLENE

ANALYSIS PERFORMED USING USEFA METHODS 9071/418.1

REACTIVE CYANIDE <2.0 PPM

REACTIVE SULFIDE

RESULT

<2.0 PPM

- DIRECTORS -

- PATHOLOGISTS ---

atrick K. Jaynes Ph.D. John C. York II. M.D.

nthony Nasrallah Ph. D. Arthington G. Kuklinca M. D. AUTUMN INDUSTRIES

518 PERKINS-JONES ROAD

MARREN

* 5 T. 3 m 2 n 2 2 2 0 2 0 RAVENNAMARGENA

CORROSIVITY SCREEN

IGNITABILITY TEST

PCB 1016 TOLP REVIEW

× 93 608224 RECEIVED

PPM

ASTM DS049 METHOD DED4978 METHOD B

RESULT

NORMAL

ND

SAMPLE IS NONCORROSTVE PH = 8.07

ASTM D4980 METHOD BEUSEPA 9040

SAMPLE HEATED TO 160F WITHOUT FLASH OR IGNITION.

ASTM D4982 METHOD BEASTM D93

PCB'S (SOIL) 0808 METHOD NUMBER 0.5 QUANTITATION LIMIT ND=NONE DETECTED PCB 1221 ND PCB 1232 ND PCB 1242 -ND PCB 1248 PCB 1254 ND ND PCE 1260 PCB 1262 ND

> TCLP PREPARATION FOLLOWS METHOD 1311 SW-846 AS REVISED NOVEMBER 24,1992 (57FR55114) REVIEWED BY ALBERT F. VICINIE III, LAB SUPERVISOR

--- DIRECTORS ---

- PATHOLOGISTS ---

atrick K. Jaynes Ph.D. John C. York II. M.D. nthony Nasrallah Ph.D. Amlington G. Kuklinca M.D. AUTUMN INDUSTRIES

518 PERKING-CONES ROAD

MARREN

Chain of Custody Record

NEFERRING CLIENT AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
VARREN OH 44483

generally in



DeYor Laboratories, Inc. 7655 Market Street, Suite 2500 Youngstown, Ohio 44512 (216) 758-5788

1416		216 37	2 500	2				_							
BILLING CONTROL NUM	BER (FOR LA	B USE ONLY				PROJECT		D .			P.O.#	778			
						PROJECT	NA	u F	604	ī					
SAMPLERS (Signature)	R	R				1110020			Ray	enne	Alsen	<u> </u>			
FOR LAB USE ONLY	Baines	MPLE DESCI	RIPTION		DATE	TIME	COMP	GRAB	# OF CONT			SES REQUES	STED		
	AT 5 - 8	547	<u> </u>	0.1						PNAY	(8100)				
				•	7/28/53	13:45		X	1	TPH	(8020) (418.1)			<u>. </u>	
	ATS - 8	F.d Tc.	S	c.1						PNA 4	(8180)				
	West	FIT	V = <	1	7/28/43	13:50		X		BTEX	(8020) (418 1)				
	ATS -	844		50/	7/28/43			X	1		A STATE OF THE PROPERTY OF THE	BTEX, Fleekren	TPH, F H, Reco	iH Hocs	
	West	End BoHem	T. K	=12	1/28/93	15:00		-		400	1/21/4 1)		cte (Cu,	Nr)	
												PCB's			
	-		····											<u> </u>	
1		i													
	 														
											.i				
1															
Relinquished by: (Signat	ture)	Date/	Time	Receiv	ed y: (Signatui	re) /1			eived	for Labora	tory by:		Da	te/Time	e
RP	(011)	7/25/27	11:00		# #	\forall								-	
Relinguished by: (Signat	ture)	7/25/43 Date/	16.00 Time	Receiv	ed by: (Signatu	re)		Res	marks		<u></u>		• -	-	
The state of the s		7/25/93	14:50		9 on M	1 Lin	Na								
Relinquished by: (Signal	ture)	Date/	Time	Receiv	ed by: (Signatu	re)									
′	-			!											
Relinquished by: (Signal	ture)	Date	Time	Receiv	ed by: (Signatu	re)			* *						
I	į		·												
	1	i		ı											

NAME

CONTENT OF PARTS

SETE SE

Scott-Growthings

73 621819
PROFITED
RECEIVED

AVENNA ARSENA

TEST	RESULT		REFERENCE OR	UNITS	
	NORMAL	ABNORMAL			21
Section (Control of the Control of t			1		
TCLP EXTRACTION PROC	FINAL PH=1	2.04	5 3-3 · · ·		:
TCLP EXIMACION FROCESTAL			o		•
:ERD HEADSPACE EXTRT				and the second second	
	<0.2	and the second of the second	0.0	5.0	MG/L
ARSENIC	110		Ť.		7.
Spike recovery	0.7	:	0.0	100.0	MG/L
BARIUM	94		· · · ·		%
Spike recovery	<0.03		0.0	1.0	MG/L
CADMIUM	105	•	91 3 6		7.
Spike recovery	<0.3			5.0	MG/L
CHROMIUM	126		0.0		%
Spike recovery	<0.02		0.0	1.0	MG/L
SELENIUM	89				%
Spike recovery	<0.0002		· 0.0	0.2	MG/L
MERCURY	94		0.0		%
Spike recovery	<0.2		0.0	5.0	MG/L
LEAD	105		S.		7.
Spike recovery	<0.05		0.0	5.0	MG/L
SILVER	78				%
Spike recovery	70				
CCLP SUPPL.METALS	0.25		.*		MG/L
NICKEL	105				%
Spike recovery	<0.08				MG/L
COPPER	111		** :		7.
Spike recovery					
"CLP VOA'S & BIAS %	8240		÷		
METHOD NUMBER	<0.10		0.0	0.2	MG/L
VINYL CHLORIDE	64		, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	• • •	%
Spike recovery	<0.10		0.0	0.7	MG/L
1,1-DICHLOROETHYLENE	82				%
Spike recovery	<1.0		0.0	200	MG/L
METHYL ETHYL KETONE	108				%
Spike recovery	<0.10		0.0	6.0	MG/L
CHLOROFORM	74			- -, -	%
Spike recovery	<0.10		0.0	0.5	MG/L
CARBON TETRACHLORIDE	76				%
Spike recovery	<0.10		0.0	0.5	MG/L
BENZENE	76				% =
Spike recovery	/ Q		.:1		
	I				

atrick K. Jaynes Ph.D. nthony Nasrallah Ph.D.

AUTUMN INDUSTRIES ROAD ROAD

HATTEN

		 AND DESCRIPTION OF THE PERSON
YOUR	المسار بمناز بعند	
4		
		1 2 2 2 2 3

TEST	9	RESU	LT	SE TH	REFERENCE OR ERAPEUTIC RANGE		UNITS	
Factor of the Parties of the Control	100 L	NORMAL	ABNORMAL	G				
				- j				
TO THE STATE OF STRUCK	30	<0.10	nie ar were de la commence de la co	Ġ.	0.0	0.5	MG/L	
1.2-DICHLOROETHANE	.j.+	78		7; 2			%	
Spike recovery	2.00 2007.00	<0.10			·0.0	0.5	MG/L	
TRICHLOROETHYLENE	, ce • • •	100		5			%	
Spike recovery	lder or	<0.10		,	0.0	0.7	MG/L	
TETRACHLOROETHYLENE		73		3			%	
Spike recovery	5.5	99 496 (0.10	2.20 - 1. 1 · · ·	ું.	0.0	100.0	MG/L	
CHLOROBENZENE	3 0	74	• • • • • • • • • • • • • • • • • • •	Ú.			%	
Spike recovery	ربيد 200	<0.10		ं. दे	0.0	7.5	MG/L	
1.4-DICHLOROBENZENE	, 2 , 2	61					%	
Spike recovery	ž, <u>.</u>		•	<i>\$</i>				
TCLP BNA'S & BIAS %	, .	8270	*20	÷.				
METHOD NUMBER	, .	<0.10			0.0	5.0	MG/L	
PYRIDINE	3 ⁶⁷	66		33			%	
Spike recovery		<0.10		,	0.0	200	MG/L	
o-CRESOL	5.77 T	71		3.7			%	
Spike recovery		<0.10			0	200	MG/L	
m-CRESOL	i ,	62			_		%	
Spike recovery	7.	<0.10			0.0	200	MG/L	
p-CRESOL	*	53			3.2		%	
Spike recovery	7	<0.10			0.0	0.13	MG/L	
2.4-DINITROTOLUENE		Ī				• • • • • • • • • • • • • • • • • • • •	%	
Spike recovery	£.1	67		•	0.0	0.50	MG/L	
HEXACHLOROBUTADIENE		<0.10			4.0		%	
Spike necoveny		67			0.0	3.0	MG/L	
HEXACHLORDETHANE		<0.10			0.0	4.5	7.	
Spike recovery		65		4	0.0	2.0	MG/L	
NITROBENZENE		<0.10			0.0	2.0	%	
Spike recovery		79			0.0	100.	MG/L	
PENTACHLOROPHENOL		<0.10			0.0	10,01	%	
Spike necoveny	4.1	50			0.0	400.	MG/L	
2,4,5-TRICHLOROPHEN		<0.10			0.0	1001	%	
Spike recovery		74			0.0	2.0	MG/L	
2.4.6-TRICHLOROPHEN		<0.10			0.0		%	
Spike necovery		74			0.0	0.13	MG/L	
HEXACHLOROBENZENE		<0.10			V. U	0.10	%	
Spike recovery	, A.	118	CVANIDE	يرز	O PPM		••	
REACTIVITY SCREEN	11	REACTIVE			O PPM			=
!		REACTIVE	SULFIDE	\Ζ.	о сен		· -	

- DIRECTORS --atrick K. Jaynes Ph.D. hony Nasrallah Ph.D.

i ancerores

AUTUMN INDUSTRIES 518 PERKINS-VONES ROAD.

MARREN

CORROSIVITY SCREEN

TOT.PETRO.HYDROCARB.

QUANTITATION LIMIT

LABORATORY ANALYST

METHOD NUMBER

ETHYLBENZENE

IGNITABILITY TEST

B-E-T-X

BENZENE

TOLUENE

XYLENE

TCLP REVIEW

NORMAL 30

ASTM DS049 METHOD D7D4978 METHOD B

SAMPLE IS NONCORROSTYET PH = 10.91 ASTM D4980 METHOD BYUSEPA 9040

SAMPLE HEATED TO 140F WITHOUT FLASH OR IGNITION. ASTM D4982 METHOD BYASTM D93

> 269500 ANALYSIS PERFORMED ANALYSIS PERFORMED USING USEPA METHODS 9071/418.1

> > 8240 0.28

0.70 4.06

2.38 16.5

LORI VERBKA B.S.

PPM PPM PPM

PPM PPM

A.I.H.A. ACCREDITED LABORATORY (# 365).

TCLP PREPARATION FOLLOWS METHOD 1311 SW-846 AS REVISED NOVEMBER 24,1992 (57FR55114) REVIEWED BY ALBERT F. VICINIE III, LAB SUPERVISOR

- DIRECTORS --rick K. Jaynes Ph.D. thony Nasral Lah Ph. De

AUTUMN INDUSTRIES 518 PERKINS-UDNES ROAD

Chain of Custody Record

HEFERRING CLIENT
UTUMN INDUSTRIES
518 PERKINS-JONES ROAD
ARREN OH 44483 7



ARREN	OH 44483 #						mentality.
	*216 372 5002 h						
ILLING CONTROL NUME		PROJECT # P.O.# Z 8 4 Z PROJECT NAME					
SAMPLERS (Signature)	& (for Mille Margizi)		PROJEC	2	iver		Aisonal Inc
FOR LAB USE ONLY	SAMPLE DESCRIPTION	DATE	TIME	COMP	GRAB	OF CONT.	ANALYSES REQUESTED &
	ATS-850 Sludge Material	8/30/93	15:00		×	1	Additional Material for sample # 621819
	Steade / Interest		Ţ.			1 2	TCLP Volatiles, TCLP Somi-Vol.
				1.85 4			
		The state of the s					
			-				
					. 9.3	<i>y</i>	
			1.			-	
				•)	1000	
21.00			\$ 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1,2,700	※のまで	10 m	
	(re) Date/Time Received		2.76 2.16 3 8	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	. (a) (2)	N. S.	
elfequished by: (Signatu		dbd: (Signatur			RECUEST	netur	for Laboratory by: Date/Time
elinquished by: (Signatu	relations of Recommendations of	ed by: (Signatu	7		27/1/2	nerks	
Relinquished by: (Signate	(re) Deta/Time Recen	ed by: (Signatu	ire)	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	• '	7-11	
Relinquished by: (Signatu	ure) Ser Cate Time Se Receive	red by: (Signatu	re)		1 "		

Chain of Custod Record

REFERRING CLIENT
JUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
ARREN OH 44483



DeYor Laboratories, Inc. 7655 Market Street, Suite 2500 Youngstown, Ohio 44512

(216) 758-5788

216 372 5002 1416 P.O.# PROJECT # ILLING CONTROL NUMBER (FOR LAB USE ONLY) 30604 PROJECT NAME 2842 SAMPLERS (Signature)

Mily Manage Rovenna GRAB # OF CONT. ANALYSES REQUESTED FOR LABUSE ONLY DATE SAMPLE DESCRIPTION TOUP Metals + Cu + Nilman 1 ATS-850 X TPH, BTEX Received for Laboratory by: (Signature) Date/Time Date/Time Received by: (Signature) elinquished by: (Signature) Remarks Received by: (Signature) Date/Time Relinquished by: (Signature)

yer.

107/00 Na 18

TEST	RES	ULT	THERAPEUTIC RANGE	Talles	UNITS
	NORMAL	ABNORMAL			
		Tat Color with all to a			PPM
TOT.PETRO.HYDROCARB	The second secon	PERFORMED	USING USEPA	METHODS	
•	ANALYSIS		· •	112111000	7 07 17 (101)
POLYAROMATIC_HYDROGA			The second second	and the second of the second	· · · · · · · · · · · · · · · · · · ·
METHOD NUMBER	8100		# #		PPM
QUANTITATION LIMIT	0.33		ें इ		
ACENAPTHENE	ND		경 소		
ACENAPTHYLENE	ND	San Marie Consul	SECTION OF THE PROPERTY OF THE		e-cale
ANTHRACENE	ND		16 31		N 40
	ND + OFF	A Training of the Control of the Con	4.		
BENZO(A)PYRENE	₩ ND		(A) (A) (A)		
	ND SEED !				1 A A A
BENZO(GHI)PERYLENE	MD ND	to-	- 124 - 136		
BENZO(K)FLUORANTHENE	Z ND	V	1944 1986		
CHRYSENE	ଖୁଣ୍ଡି ND		Ţ.		
FLUORANTHENE	ND	Same and the second	\$\$		
FLUORENE	ND ND		ů		
NAPTHALENE	ND		y i		
PHENANTHRENE	ND		Mi 30		
PYRENE	ND				
INDENO(1,2,3-CD)PYR	ND				
DIBENZ(A,H)ANTHRACEN	I. ND		1		
			:		
			.;		
4 / 1	1		7		
$(v^{\#}5)$	· ·		4-		
JAnk	4.7		#.*		
78-80			.ji	-	
AID	81/5m				
	\mathcal{D}°				•
TENU	Me _i		•		
JANK#51 AT5-85 EASJ End	1.2				
- 11°					

--- DIRECTORS ---Patrick K. Jaynes Ph.D. Anthony Nasnal Yah Ph.D.



AUTUMN INDÚSTRIES . 548 PERKINS-VONES ROAD

1

TEST	RESULT		PERFERENCE OR UNITS THERAPPLITIC BANGE			
	NORMAL	ABNORMAL				
The state of the s						
TOT.PETRO.HYDROCARB.	Commission of the	- player	The second second second second second second	PPM		
	ANALYSIS	PERFORMED	USING USEPA METHODS 90	071/418.1		
3-E-T-X		A CONTRACTOR OF THE PROPERTY O	The state of the s	La Sac Sac		
METHOD NUMBER	8020		3			
QUANTITATION LIMIT	0.002		- 3	PPM		
BENZENE	ND					
TOLUENE	ND	1 ** * * * ·	Experience of the second secon			
ETHYLBENZENE	ja nd		THE STATE OF THE S			
XYLENE	ND	i e				
LABORATORY ANALYST	টি ELECTRO−≀ উন্তিট্রিক হৈ ১৫	NALYTICAL	THE STATE OF THE STANDARD SHOWS AND AND A STANDARD AS	,		
		19				
and the second of the second o		400000				
	A.I.H.A.	ACCREDITE	CLABORATORY (# 365).			
FOLYAROMATIC HYDROCA	7) 90% 379 - 10400					
METHOD NUMBER	0.33			PPM		
QUANTITATION LIMIT	ND			1 1 11		
ACENAPTHENE	ND ND					
ACENAPTHYLENE	ND ND					
ANTHRACENE BENZO(A)ANTHRACENE	ND					
BENZO (A) PYRENE	" ND					
BENZO (B) FLUORANTHENE	ND					
BENZO (GHI) PERYLENE	ND		:			
BENZO (K) FLUORANTHENE	ND					
CHRYSENE	ND					
FLUDRANTHENE	·· ND					
FLUORENE	: ND					
NAPTHALENE	· ND					
PHENANTHRENE	ND ND			•		
- FYRENE -	ND					
INDENO(1,2,3-CD)PYR	ND					
DIBENZ (A, H) ANTHRACEN	ND					
	•	1				

atrick K. Jaynes Ph.D. Inthony Nasrallah Ph.D.

AUTUMN INDUSTRIES

Chain of Custod Record

REFERRING CLIENT
AUTUMN INDUSTRIES
518 PERKINS-JONES ROAD
WARREN OH 44483



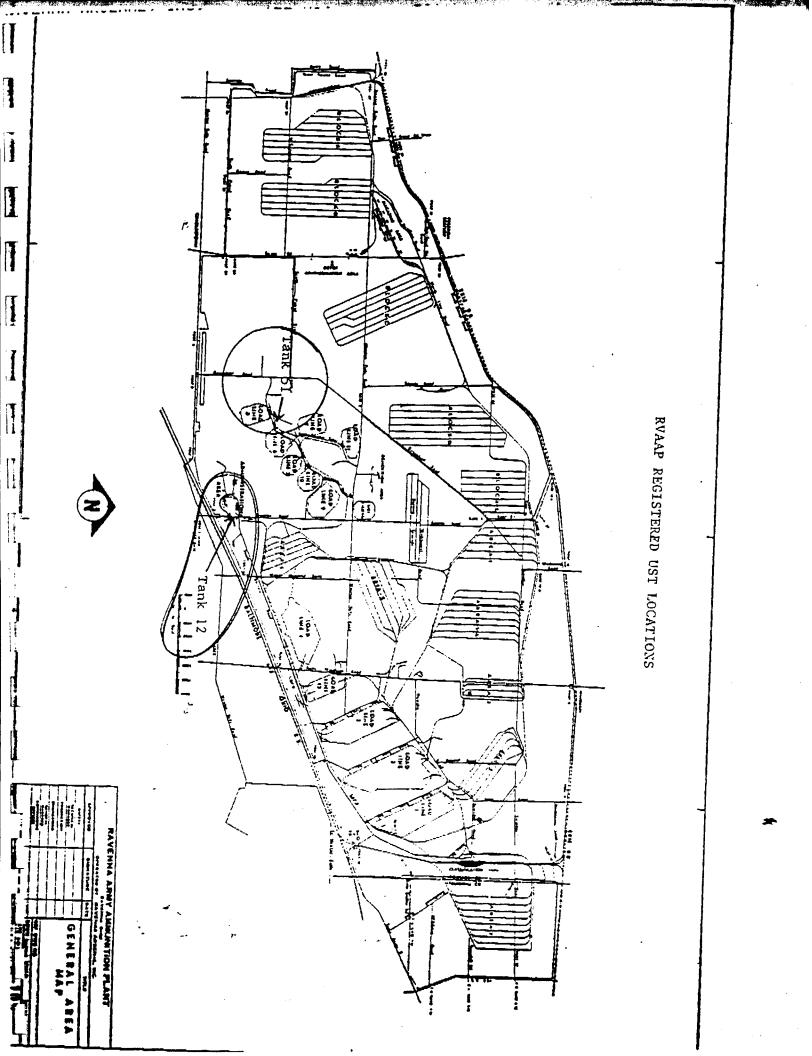
DeYor Laboratories, Inc. 7655 Market Street, Suite 2500
Youngstown, Ohio 44512

-7(2(B)758-788

💉 1416 216 372 5002								
BILLING CONTROL NUMBER (FOR LAB USE ONLY)			PROJEC	PROJECT # P.O.#				
SAMPLERS (Signatura)	4		PROJECT NAME					***************************************
- Justo	- (L. Marinis			Rounna Aisonal				
FOR LABUSE ONLY	SAMPLE DESCRIPTION	DATE	TIME	COMP	GRAB	# OF	ANALYSES REQUI	ESTED
	ATS- 856 501	14					TPH (418.1)	
	Tal #66 N.E. Come	8/27/93	9 45		У	1		
ı	AB-857 . 50.1			!	.,		TTH (418.1) PNAH'S (8100)	
	Tal #51 NEd Bothen WWY	8/27/93	14:06		X	$\perp \!\!\! \perp \!\!\! \perp$		
	ATS-856 So./ Tall #66 N.E. Comer ATS-857 So./ Tall #51 N End Rothern Webry ATS-858 So./ Tank #12 East F.d Rothern	-11-3	12.20		Y		TPH (418 1) BTEX (8020)	
	Tank #12 East Ed Rotton	* 127175	" 20	\vdash			PNA 11 (8100)	
I								
			.					
	,,,				_			
			-	\square	<u> </u>			
		-		\longrightarrow	-		1	
			*					
			445					
	tu tu							
1								*************************************
								×.,
Personal Signature of the Signature of t	Date/Time Received (y: Signature) All (fire Fire) 1/2/3 500			Received for Laboratory by: (Signature) Date/Time				
Reliaguished by: (Signatu	ura) Date/Time Receive	ed by: (Signatur	æ) /		Rem	narks		
- Lather	8/3/13 1625 15	by w	1.		ļ			
Relinquished by: (Signatu		ed by: (Signature	e)		ĺ			
					I			
Relinquished by: (Signatu	ure) Date/Time Receive	ed by: (Signatur	e)		İ .		-	

EXHIBIT B

SAMPLE LOCATION DIAGRAM



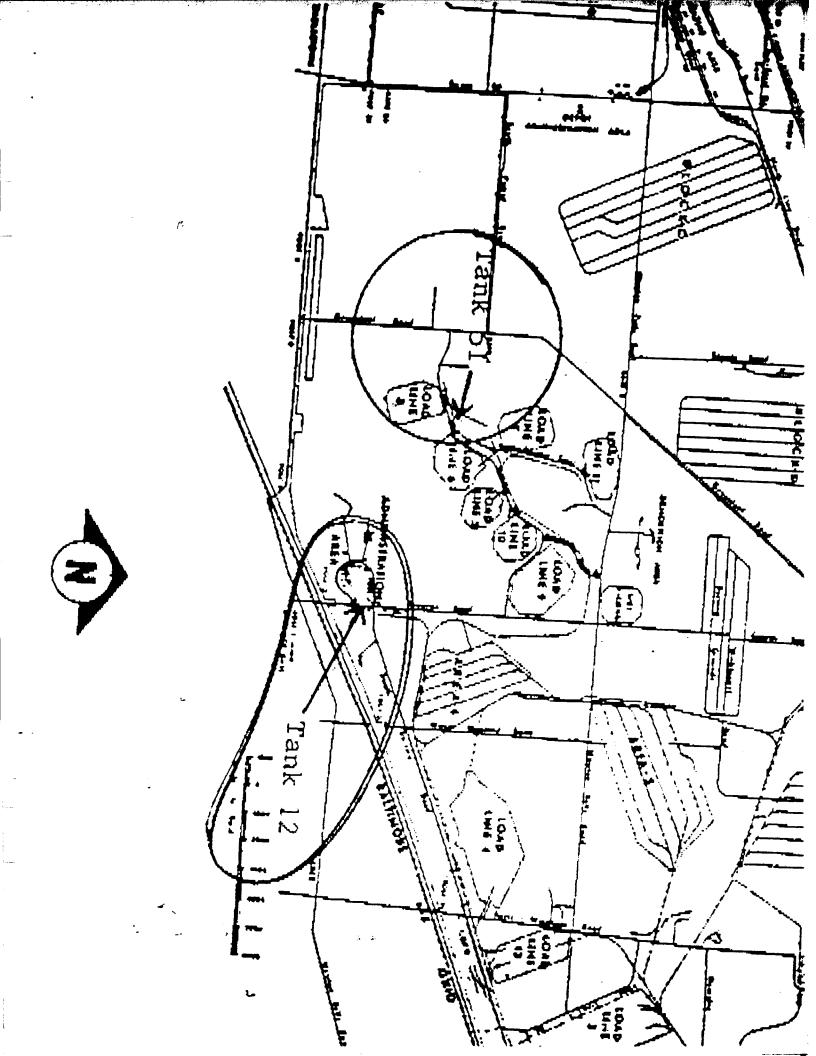


EXHIBIT C

30-DAY NOTIFICATION TANK REMOVAL PERMIT



RAVENNA ARSENAL, INC.

8451 STATE ROUTE 5. RAVENNA. OHIO 44266-9297 TELEPHONE: (216) 358-7111 • FAX: (216) 297-3216

March 3, 1993

THRU:

Contracting Officer's Representative Ravenna Army Ammunition Plant 8451 State Route 5 Ravenna, Ohio 44266-9297

TEL No.

TO:

State Fire Marshall - BUSTR Permit Application Section ATTN: Bev Spears Post Office Box 687 Reynoldsburg, Ohio 43068-0687

Permit Application to Remove Two Underground Storage Subject:

Dear Ms. Spears:

Attached is a permit application and fee for the removal of two registered underground storage tanks at Ravenna Army Ammunition Plant. The tanks to be removed are as follows:

1,000 gallon steel tank used for storing 4' x 10'8" One #2 Fuel Oil (PH#6 Generator)

550 gallon steel tank used for storing One 4' x 6' #2 Fuel Oil (WW#4 Generator)

Once removed, the tanks will be rendered unreusable, cleaned, marked as scrap and sold as scrap by the tank removal contractor.

Please contact Susan McCauslin, Ravenna Arsenal, Inc., Environmental Engineer, at (216) 297-3220 if you have any questions or need further information. The Government point of contact is Robert J. Kasper, Commander's Representative, (216) 297-3124.

Sincerely,

H.R. Cooper Plant Engineer

:bp/UST.SM

N. Wulff

T. Chanda

COM 5209 (10/92)

STATE OF OHIO DEPARTMENT OF COMMERCE - DIVISION OF STATE FIRE MARSHAL BUREAU OF UNDERGROUND STORAGE TANK REGULATIONS 8895 EAST MAIN STREET, P.O. BOX 687 REYNOLDSBURG, OHIO 43068-0687 APPLICATION FOR UNDERGROUND STORAGE TANK PERMIT

1. OWNERSHIP OF TANKS OWNER NO:	· · · · · · · · · · · · · · · · · · ·	II. LOCATION OF TANKS	FACILITY N	10.
OWNER/OPERATOR NAME		FACILITY NAME	D1	
U. S. Army		Ravenna Army Ammunition	on riant	
ADDRESS	•	ADDRESS		
8451 State Route 5		8451 State Route 5	STATE	ZIP CODE
CITY STATE Ravenna OH	44266	CITY Ravenna	ОН	44266
ATTN: (CONTACT PERSON) AREA CODE-PH		AREA CODE-PHONE		OUNTY :tage
Robert J. Kasper (216) 297	-3124	(216) 297-3124	101	cage
III. CONTRACTOR		IV. LOCAL FIRE DEPARTMENT		
CONTRACTOR'S NAME Ravenna Arsenal, Inc.	n see	FIRE DEPARTMENT NAME Ravenna Arsenal, In	c.	
CONTACT PERSON AREA CODE-PE		ADDRESS		
Susan McCauslin (216) 297	-3220	8451 State Route 5	CTATE	ZIP CODE
ADDRESS 8451 State Route 5		Ravenna	STATE OH	44266
CITY STATE Ravenna OH	ZIP CODE 44266	30-DAY NOTIFICATION LETTER SEN DATE: March 3, 1993	T FOR REMOV	AL OF TANK TO BUSTR
V. FEE CALCULATION (NOTE: PERMIT EXPIRES SIX	(6) HONTHS FROM	DATE OF ISSUE. FEE IS NON-REFU	NDABLE)	
TANK INSTALLATION (INCLUDES PIPING)				
TANK REMOVAL OR ABANDONMENT (CIRCLE ONE)	NO. OF TAN		•	+000 00
(THESE INCLUDE PIPING)	NO. OF TAN	IKS X \$100.00 PER TANK	•	\$200.00
TANK UPGRADE	NO. OF TAN	IKS X \$75.00 PER TANK	•	
TANK REPLACEMENT	NO. OF TAN	KS X \$175.00 PER TANK	=	
TANK REPAIR .	NO. OF TAN	KS X \$50.00 PER TANK	at.	
PIPING INSTALLATION ONLY		X \$25.00 PER FACILITY	•	
PIPING REMOVAL ONLY OR ABANDONMENT ONLY (CIRCLE ONE)	X \$100.00 PER FACILITY	•	
PIPING UPGRADE OR REPAIR (CIRCLE ONE)		X \$25.00 PER FACILITY	•	
PIPING REPLACEMENT		X \$100.00 PER FACILITY	=	
LEAK DETECTION UPGRADE		X \$25.00 PER FACILITY	=	
CHANGE IN SERVICE OR TEMPORARY CLOSURE (C	IRCLE ONE)	X \$100.00 PER SYSTEM	=	
Change in Sentice on Lendon Second	101-	- TO	TAL FEE:	\$200.00
SIGNATURE OF APPLICANT:	Mark-	DA	ITE: S	May 9.3
,	BUREAU USE O	NLY		
ANOUNT PAID:	CHECK N	O:F8	E NO:	
	PERMIT	NO:D/	NTE ISSUED:	
SUPERVISOR/INSPECTOR:				

INCIDENT NUMBER:

(BUREAU USE ONLY)

STATE OF OHIO DEPARTMENT OF COMMERCE - DIVISION OF STATE FIRE MARSHAL BUREAU OF UNDERGROUND STORAGE TANK REGULATIONS 8895 EAST MAIN STREET, P.O. BOX 687 REYNOLDSBURG, OH 43068-0687

PERMIT FOR UNDERGROUND STORAGE TANKS

PERMIT NO.: 8476 ISSUE DATE: 3/39/93

L OWNERSHIP OF TANKS OWNER NO. 11595 U.S. ARMY 8451 STRT 5 RAVENNA, OH 44266 ROBERT J. KASPER 216-297-3124

INCIDENT NO. 679298-01 FACILITY NO. 670501 RAVENNA ARMY ALMUNITION PLANT 8451 ST RT 5 PORTAGE COUNTY RAVENNA. OH 44266

III. CONTRACTOR

RAVENNA ARSENAL, INC. SUSAN HCCAUSLIN 216-297-3220 8451 ST RT 5 RAVENNA, OH 44266

IV. LOCAL FIRE DEPARTMENT

II. LOCATION OF TANKS

RAVENNA ARSENAL, INC. 8451 ST RT 5 RAVENNA, OH 44266

V. PERMIT ISSUED FOR:

REMOVAL OF (2) UST(S)

VI. CONDITIONS (Note: Permit expires six (6) months from date of issue. Fee is non-refundable)

- Inspector will ask to see UST installer's proof of certification. Inspector must 1. be present for the following
 - Immediately before purching operations begin, immediately before the tank is cut open for any purpose and the actual removal of the UST system from the ground.
 - he on site for the following 2.
- Certified installer pust be on-sit

 A. The cleaning and purying of

 B. The actual excavation and
 - moved the Ust system or any of its components;
 - All testing associated with the classing and purging processes; C.
 - Any time during the pen al in which components of the UST system are D. disconnected by

BUREAU USE ONLY

CERTIFIED INSTALLER:

IDNO: 10-90-1300 DATE 1-28-93

INSPECTOR'S SIGNATURE: /

EXHIBIT D

LETTER GRÄNTING PERMISSION TO OVEREXCAVATE



Ohio Department of Commerce

George V. Voinovich, Governor

Nancy Chiles Dix, Director

Division of State Fire Marshal - Bureau of Underground Storage Tank Regulations 8895 E. Main St., P.O. Box 687 - Reynoldsburg, OH 43068-0687 (614) 752-7938 - FAX (614) 752-7942

SEP 09 1933

H.R. Cooper Engineering Manager Ravenna Arsenal, Inc. 8451 State Route 5 Ravenna, Ohio 44266-9297 RE: Ravenna Army Ammunition Plant
1,000 gallon diesel UST;
Eastside of power plant #6
8451 State Route 5
Ravenna, Ohio 44266-9297
Portage County
Incident #679298-14

Dear Mr. Cooper:

The State Fire Marshal, Bureau of Underground Storage Tank Regulations (SFM, BUSTR) has received your letter dated July 30, 1993 requesting approval to over excavate your underground storage tank (UST) cavity to no more than five (5) feet beyond the tank cavity sidewalls and to no more than two (2) feet below the tank cavity bottom. Your justification for this request was based on test pits that were dug around the UST cavity. You stated that soils in the test pits were visually examined and were field screened with a PID field screening instrument in which both methods showed no evidence of fuel contamination.

Based on this information, SFM, BUSTR grants approval of overexcavation of the UST cavity.

If you have any questions regarding this matter, please contact Kelly Gill at (614) 752-7095.

Sincerely,

Andrew E. Lyles
Bureau Chief

AEL:KG:kkm

cc: File #679298-14

Susan McCauslin, Ravenna Arsenal, Inc.

EXHIBIT E

SITE FEATURE SCORING SYSTEM

SITE FEATURE SCORING SYSTEM

Both Tank #12 and Tank #51 are over 1,000' away from the nearest potable water supply.

The depth of groundwater is assumed to be between fifteen and thirty feet.

The predominant soil type evident in both tank cavities was a natural silt and/or clayey sand substratum.

The following distinctives are associated with Tank #12:

- 1) There is a basement or a subsurface foundation with 100' of the underground storage tank system.
- There is a storm sewer with 50' of the underground storage system.
- There is a buried electrical cable main within 50' of the underground storage tank system.

The following distinctions are associated with Tank #51:

- 1) There is a storm sewer within 50' of the underground storage tank system.
- There is a sanitary sewer within 50' of the underground storage tank system.
- There is a water line main within 50' of the underground storage tank system.

SFM SITE FEATURE SCORING SYSTEM (SFSS) CHART

(USE "SFSS GUIDELINES" TO COMPLETE THIS CHART)

I. OWNERSHIP OF TANKS

OWNER NO. 11595 U.S. ARMY 8451 STRT 5 RAVENNA, OH 44266 ROBERT J. KASPER 216-297-3124

II. LOCATION OF TANKS

INCIDENT NO. 679298-01
FACILITY NO. 670501
RAVENNA ARMY AMMUNITION PLANT
8451 ST RT 5
PORTAGE COUNTY
RAVENNA, OH 44266
TANK NO. 12

Site Features	COLUMN A		COLUMN B		COLUMN C		COLUMN D	
	Score 20	Enter Score	Score 15	Enter Score	Score 10	Enter Score	Score 5	Enter Score
1. Distance of UST system from closest potable-water supply source currently in use is:	> 1000 ft.	20	300-1000 ft		< 300 ft.		Inside of designated sensitive area	
2. Depth to groundwater is:	> 50 ft.		31-50 ft.		15-30 ft. or unknown	10	< 15 ft.	
Predominant soil type of substratum is:	Clay or shale		Silt or clayey sands or fine sandstone	15	Silty sand or fine sand, un- known, or sandstone		Clean sand, gravel, or conglo- merate	
4. Natural and/or man-made conduits or receptors - See Worksheet Below	< 8		8-10	15	11-13		> 13	
Subtotals:								
	 				-	TOTAL SCORE	(SUBTOTALS)	60

SITE FEATURE 4 WORKSHEET:

Basements or subsurface foundations within 100 feet of UST system
Storm sewer within 50 feet of UST system
Sanitary sewer within 50 feet of UST system
Septic system leach field within 50 feet of UST system
Water line main within 50 feet of UST system
Natural Gas line main within 50 feet of UST system
Bedrock area prone to dissolution along joints of fractures within 100 feet of UST system
Faults or known fractures within 100 feet of UST system
Buried telephone/television cable main within 50 feet of UST system
Buried electrical cable main within 50 feet of UST system

4 points	4
4 points	4
4 points	
2 points	
1 point	0
1 point	0
1 point	0
1 point	0
1 point	0
1 point	I
TOTAL POINTS	9

SSFS ACTION LEVELS (PPM)

CONSTITUENT	CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4
TOTAL SCORE	< 31	31-50	51-70	> 71
Soil BTEX	.006/4/6/28	.170/7/10/47	.335/9/14/67	.500/12/18/85
Groundwater BTEX	.005/1/.700/10	.005/1/.700/10	.005/1/700/10	.005/1/.700/10
Soil TPH (Gasoline)	105	300	450	600
Soil TPH (Others)	380	642	904	1156

SFM SITE FEATURE SCORING SYSTEM (SFSS) CHART

(USE "SFSS GUIDELINES" TO COMPLETE THIS CHART)

I. OWNERSHIP OF TANKS

OWNER NO. 11595 U. S. ARMY 8451 STRT 5 RAVENNA, OH 44266 ROBERT J. KASPER 216-297-3124

II. LOCATION OF TANKS

INCIDENT NO. 679298-01
FACILITY NO. 670501
RAVENNA ARMY AMMUNITION PLANT
8451 ST RT 5
PORTAGE COUNTY
RAVENNA, OH 44266
TANK NO. 51

Site Features	COLUMN A		COLUMN B		COLUMN C		COLUMN D	
	Score 20	Enter Score	Score 15	Enter Score	Score 10	Enter Score	Score 5	Enter Score
1. Distance of UST system from closest potable-water supply source currently in use is:	> 1000 ft.	20	300-1000 ft		< 300 ft.		Inside of designated sensitive area	
2. Depth to groundwater is:	> 50 ft.		31-50 ft.		15-30 ft. or unknown	10	< 15 ft.	
3. Predominant soil type of substratum is:	Clay or shale		Silt or clayey sands or fine sandstone	15	Silty sand or fine sand, un- known, or sandstone		Clean sand, gravel, or conglo- merate	
4. Natural and/or man-made conduits or receptors - See Worksheet Below	< 8		8-10	15	11-13		> 13	
Subtotals:								
	ı					TOTAL SCORE	(SUBTOTALS)	60

SITE FEATURE 4 WORKSHEET:

Basements or subsurface foundations within 100 feet of UST system
Storm sewer within 50 feet of UST system
Sanitary sewer within 50 feet of UST system
Septic system leach field within 50 feet of UST system
Water line main within 50 feet of UST system
Natural Gas line main within 50 feet of UST system
Bedrock area prone to dissolution along joints of fractures within 100 feet of UST system
Faults or known fractures within 100 feet of UST system
Buried telephone/television cable main within 50 feet of UST system
Buried electrical cable main within 50 feet of UST system

	0
4 points	0
4 points	4
4 points	4
2 points	
1 point	1
1 point	0
1 point	0
1 point	0
1 point	0
1 point	0
TOTAL POINTS	9

SSFS ACTION LEVELS (PPM)

CONSTITUENT	CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4
TOTAL SCORE	< 31	31-50	51-70	> 71
Soil BTEX	.006/4/6/28	.170/7/10/47	.335/9/14/67	.500/12/18/85
Groundwater 8TEX	.005/1/.700/10		.005/1/700/10	.005/1/.700/10
Soil TPH (Gasoline)	105	300	450	600
Soil TPH (Others)	380	642	904	1156

SFN SITE FEATURE SCORING SYSTEM (SFSS) CHECKLIST

(SUBMIT TO SFM AS APPENDIX OR ADDENDUM TO CLOSURE REPORT)

I. OWNERSHIP OF TANKS

II. LOCATION OF TANKS

U.S. Ari 8451 Sta Ravenna	ate Route 5 , OH 44266 J. Kasper	Incident No. 679298-0 Facilit No. 670501 Ravenna Army Ammunit: 8451 State Route 5 Portage County Ravenna, OH 44266 Tank Nos. 12 and 51	o. 670501 my Ammunition Plant e Route 5 ounty OH 44266	
		·		
SFSS WRITTEN REF	ORT MUST INCLUDE THE FOLLOWING:			
SFM USE	PAGE NO.			
	Ex E A. The completed "SFSS Chart".	Consider Consider Constitution	oo 1 through 4 which include	
	the following:	ude justification for site feature		
	 Distance of UST system fr 1/4 mile. 	rom closest potable-water supply s	ource currently in use within	
	Average depth to groundway			
		substratum in UST excavation.	auntem	
		conduits/receptors near closed UST		
	6 C. Soil and/or groundwater analymore: DEFICIENT "SFSS REPORTS AN	D CHARTS" SUBMITTED TO DUR DEFICE	WILL BE RETURNED TO THE OWNER	
	NOTE: DEFICIENT "SESS REPORTS AND FOR COMPLETION. SEND THE "SESS R COVER LETTER.	EPORT AND CHART" TO THE ADDRESS AS	INDICATED ON THE ENCLOSED	
Preparer Name:	Joe Stock Signature:	for the	Date:9/29/53	
		1		
			4	
Owner/Operator:	Signature:		Date:	
	augs.	AU UCE ONLY		
	BUREA	AU USE ONLY		
	Signature.		Date:	
Reviewed By:	Signature:		Date:	

EXHIBIT F

CLOSURE REPORT CHECKLIST FORM

DIVISION OF STATE FIRE MARSHAL-BUREAU OF UNDERGROUND STORAGE TANK REGULATIONS

CLOSURE REPORT CHECKLIST FORM

OWNERSHIP OF TANKS	LOCATION OF TANKS
Owner No. 11595 U.S. Army 8451 State Route 5 Ravenna, OH 44266 Robert J. Kasper (216) 297-3124	Incident No. 679298-01 Facility No. 670501 Ravenna Army Ammunition Plant 8451 State Route 5 Portage County Ravenna, OH 44266 Tank Nos. 12 and 51

FILING INSTRUCTIONS

- A. In the column on the left side of the form, place either the page number or appendix designation where each item on the checklist can be found in the closure report or "N/A" (Not Applicable) for items that do not apply to your closure report. If "N/A" is indicated, you must also indicate the the page number accordingly.
- B. UST owner must sign where indicated on page 2 of this form and attach it to the Closure Report. Deficient closure reports submitted to our office will be returned to the UST owner for completion. Send the closure report checklist form and the closure report to the address as indicated on the enclosed cover letter.

NOTE: UST OWNER/OPERATORS SHALL SUBMIT ONE COPY OF THE WRITTEN CLOSURE REPORT WHICH SHALL BE RECEIVED BY THE STATE FIRE MARSHAL WITHIN 45 DAYS OF RECEIPT BY THE UST OWNER/OPERATOR OF SOIL AND/OR GROUNDWATER LABORATORY ANALYSIS BUT NOT LATER THAN 90 DAYS FROM THE DATE OF COLLECTING SOIL AND/OR GROUNDWATER SAMPLES.

II.	UST SYSTEM OWNER, OPERATOR, AND FACILITY DATA
1	UST Owner (name; address; zip code; county; phone no.)
1	UST Operator (name; address; zip code; county; phone no.)
1	UST Facility Location (name; address; zip code; county; phone no.)
1	UST Facility Owner (name; address; zip code; county; phone no.)
III.	UST SYSTEM DATA
2_	UST System(s) Age (years)
2	UST(s) Capacity (gallons)
2	UST System(s) Construction (i.e., steel, fiberglass, etc.)
$\frac{\frac{2}{2}}{\frac{2}{2}}$	Date UST System(s) Last Used
2	Person(s) Who Last Used UST System
2	Substance(s) Stored in UST(s) both past and present (i.e. gasoline, diesel fuel, used oil, etc.)
1	UST System Use (i.e., retail sales, residential, farm, business, etc.)
2	UST(s) System Status (Permanently Removed or Abandoned-In-Place)
8	Disposal of UST(s) System
IV.	WASTE DISPOSAL DATA
8	Method of Disposal and Final Location of Excavated Soil(s) and Backfill Materials
7	Amount of Soils and Backfill Excavated (cubic yards)
8	Disposal and final Location of any liquids from UST System or UST System Excavation
7	Locations of Soil Samples taken from Excavated Soil Waste Pile(s)
Ex A	# c : c : c : c : c then from Everyated Soil(s) and Backfill Materials

¯₀ V.	SAMPLING DATA
* >	(Groundwater sampling data only required if groundwater encountered during closure activities)
5	Soil and/or Groundwater Sample Collection Procedures
5	Type of Sample Containers and Sample Preservation Techniques Used for Soil and/or Groundwater Samples
5	Labeling Number or Designation of Soil and/or Groundwater Sample(s) Used
5	Type of Sampling Equipment Used (i.e., split spoon, shelby tube, etc.)
5	Decontamination Procedures of Sampling Equipment Used
	Field Screening Methodology Used for each Soil and/or Groundwater Samples Obtained
_4 _	Type of Field Screening Instrument Used
- 4	Listing of Field Screening Readings for each Soil and/or Groundwater Sample Obtained
5 5 5 5 5 4 4 7 4 7	
- 4	Calibration Methodology Used for Field Screening Instrument
	Locations and Depths of all Soil and/or Groundwater Samples Obtained
<u>Ex_A</u>	Copy of Chain of Custody Documentation for Soil and/or Groundwater Samples submitted to Laboratory
5_	Sample Collector(s) Name and Company Affiliation
VI.	LABORATORY DATA
	(Groundwater laboratory data only required if groundwater encountered during closure activities)
Ex A	and the control of th
7/Ex A	Date Soil and/or Groundwater Samples Collected
	and the second s
Ex A	Date Soil and/or Groundwater Samples Analyzed by Laboratory and type of Matrix Analyzed (soil or water)
Ex.A	Name, Address, and Phone No. of Laboratory and name of Sample Analyst
7/ <u>Ex A</u>	
7/Ex_A	Analytical Test Methods Used for Soil and/or Groundwater Samples
6/ <u>Ex A</u>	Detection/Quantitation Limits Used for Laboratory Test Methods
N/A	Laboratory Instrument Calibration used
VII.	MISCELLANEOUS DATA
Ex B	Site Map Accurately Depicting Dimensions of Facility Property Boundaries, Above Ground Structures, adjacent street
<u> </u>	locations, and UST Systems (no. of tanks and product lines)
Ex B	Mapped Locations of Known Private Wells, Public Water Wells, or Monitoring Wells on Facility
	Mapped Locations of Any Utilities Exposed During UST System Excavation
5	Description of Native Soils Encountered During UST System Excavation (i.e., sands, gravels, clays, etc.)
	Mapped Depths and Locations of all Soil and/or groundwater Samples taken from Excavation
77 <u>117 1</u> 5	Visual Site Evaluation
	Mapped Locations of UST(s) Recently or Historically Removed, Abandoned-In-Place, or have undergone a Change in Service
	Mapped Locations of Other UST Still in Service
	Mapped Length of UST(s) and Product Line(s)
EX D	Mapped Excavation Limits
2_	Certified Fire Safety Inspector Name and Certificate Number
	Local Fire Department (name; address; zip code; county; phone) with jurisdiction over UST site
<u>Ex</u> C	Copy of 30 Day Closure Notification and Closure Permit
UST(s)	Owner Signature: Date:
	DIVISION USE ONLY
Review	ed By:Date:

closure2

RAVENNA ARMY AMMUNITION PLANT RAVENNA ARSENAL, INC.

INTEROFFICE MEMORANDUM

16 July 1993

TO: See Distribution

FROM: T. M. Chanda, Environmental Eng.

SUBJECT: #2 F.O. Extraction/Recovery Well at Waterworks #3; Ohio

EPA Closure Approval.

This office had made arrangements for Mr. Reggie Brown, Inspector/Field Response Coordinator for Ohio EPA's Emergency Response Commission to visit the subject site on 16 July 1993. The purpose of the visit was to get OEPA's approval to abandon/fill-in the well in conjunction with the shutdown of WW#3. Mr. Brown visited the site and extracted a water sample from the well. The sample showed oily residues still present in the well. Mr. Brown indicated that this residue may be the remaining portion of oil that's unable to be picked up by the in-line sump pump; his statement was with reservation.

Mr. Brown recommends that RVAAP do the following before he gives final consideration for closure of the well:

- 1. Pump the well down to dryness several times. Send all collected water to the on-site oil/water separator. In this drawn down cycle make some effort to remove the oily residues adhering to the interior well casing wall to avoid any further intrusion of captive residuals.
- 2. To avoid any inference of oil leaking from the near-by #2 F.O. tank supplying the WW#3 emergency generator, Brown wants to be present for the unearthing of the tank to inspect the excavated pit to assure no fuel migration has occurred.
- 3. Following the excavation and no apparent signs of oil leak/migration, Ravenna will send to Brown's office a copy of the closure notice, applicable soil analyses, along with a request to close the well. At this point, if closure indicates clean, he'll then respond from his office with an approval to close the well.

In the event, there's evidence that the underground fuel tank has a leak and in turn contributing to the oily residue in the removal well, then the well will remain open. Efforts would also require removal of all contaminated soil. The well would continue its function until such time visible proof can demonstrate no further oil migration is apparent. The proposed plan for the well's continued operation following WW#3 shutdown would be maintained via a portable generator providing the electrical service to the well pump. Frequency of well draw down would be dictated by seasonal effect.

As of now, it's been determined that the WW#3 underground fuel tank will be removed in the afternoon on 28 July 1993. This date is when the State Fire Marshal's Office will be on site to view the tank's excavation since it's a regulated tank.

Mr. Brown's office will be formally notified of the tank's expected excavation date.

T.M. Chanda

Distribution: RVAAP COR Office

N. Wulff

H. Cooper

S. McCauslin

D. Jendrisak

J. McGee

J. Mound

File