Beling Consultants
MEMORANDUM

DATE: January 14, 1998

TO: FFTU REMEDIATION FILE

FROM: K.E. MEIER and M.E. ARP NEWELL

SUBJECT: F.F.T.U.
CONTAMINATED SOILS FROM
BUILDINGS 106 AND 1600A
BIOPILE MONITORING UPDATE
PROJECT #29947 AND 29886

The following is an update regarding bio-pile monitored for BTEX, PNAs, temperature, pH, and moisture content at the F.F.T.U. site.

BTEX and PNA sampling was conducted on December 11, 1997 by Beling personnel. The purpose of the sampling was to determine interim petroleum contamination concentrations. A total of two (2) soil samples were collected from Building #103 contaminated soils and two (2) from Building #1600A contaminated soils. Six (6) samples were collected from the FFTU biopiles. The samples were collected from established test points (TP-1 through TP-10). The samples were collected from a contaminated soil layer within each bio-pile test point area. The collected samples were packed with zero headspace, placed on ice and sent for laboratory analysis.

The laboratory reports attached to this transmittal indicate that concentrations of regulated petroleum compounds do not exceed the TACO Tier 1 allowable limits for the residential standard, at the ten sample points.

Interim bio-pile monitoring of pH and moisture content has also been evaluated. The interim results were within anticipated microbial growth ranges as established in the Corrective Action Work Plan. The interim monitoring results for biopiles 1 through 10 are provided as follows:

TABLE - 1
Interim Monitoring Results (12-11-97)
FFTU SITE
BIOPILE MONITORING
DATE DECEMBER 11, 1997
AMBIENT TEMPERATURE 28° F

Biopile	Soil Source	Bio-Soil Temperature	pH	Moisture
1	FFTU Soils	36°	6.5	70%
2	FFTU Soils	50°	5.8	75%
3	FFTU Soils	43°	6.0	90%
4	FFTU Soils	50°	5.8	80%
5	FFTU Soils	52°	6.8	90%
6	Bldg. 1600A	52°	6.5	80%
7	Bldg. 1600A	45°	6.5	70%
8	Bldg. 103	38°	6.5	85%
9	Bldg. 103	60°	6.0	72%
10	Bldg. 103	40	6.0	75%

Test points, TP#1 through TP#10, correlate to the Biopile number identified on the attached map, Figure 1 Biopile map. Evaluation of on-site monitoring of biopile temperatures and apparent moisture, pH, etc. indicates that the biodegradation program is proceeding as planned.

TOLTEST, INC.

Founded in 1927
Toledo, Ohio • Detroit, Michigan • Monroe, Michigan • Pittsburgh, Pennsylvania

TEST REPORT

CLIENT: TolTest, Inc.
1915 N. 12th Street
Toledo, Ohio 43624-1305

DATE: Decemeber 23, 1997

ATTN: Mr. Gary Vogelsong

Project No.: 35659.03

Lab Receiving No.: 9712000138

Date Received: Decmeber 12, 1997

Date Sampled: December 11, 1997

Project Location: Great Lakes Naval Training Center
Building 3304, Bio-Pile

Sample Point(s): BPIS-01, BPIS-02, BPIS-03, BPIS-04, BPIS-05, BPIS-06, BPIS-07, BPIS-08, BPIS-09, BPIS-10

Analysis Performed: BTEX, PNAs 8270

DISCLAIMER

This report is "PROPRIETARY AND CONFIDENTIAL" and delivered to, and intended for the exclusive use of the above named client only. TolTest, Inc., assumes no responsibility or liability for the reliance hereon or use hereof by anyone other than the above named client.

Reviewed and Approved by: _____ Date: 12/23/97
Jeffrey J. Fesko
Manager, Analytical Services

ANALYTICAL NARRATIVE

The note(s) below pertain to the sample(s) and analytical data reported herein:

The sample(s) received by the laboratory under chain of custody met EPA guidelines for container type, labeling and preservation technique.

The PNAs surrogate(s) for sample point(s) BPIS-02, BPIS-03 and BPIS-10 could not be determined due to matrix interferences and therefore are not reported.

The laboratory is accredited or approved by the following agencies:

State of Ohio; Certification No.: 7016
State of Tennessee; Division of UST
U.S. Army Corps of Engineers
City of Toledo
AIHA; Certification No.: 384
NVLAP; Certification No.: 101594-0

AROMATIC VOLATILE ORGANICS by GC
ANALYTICAL RESULTS

PROJECT No.:	35659.03	UNITS:	mg/kg
METHOD No.:	8020	BATCH No.:	2GCV036397

TACO SOIL TIER 1

SAMPLE ID:	METHOD BLANK	BPIS-01	BPIS-02	BPIS-03	BPIS-04	BPIS-05	BPIS-06	BPIS-07
SAMPLE No.:		59453	59454	59455	59456	59457	59458	59459
Benzene .03 mg/kg	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Toluene 12.00	<0.005	<0.005	<0.005	<0.005	<0.005	**0.011**	<0.005	**0.008**
Ethylbenzene 13	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Xylenes 150	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

SAMPLE ID:	METHOD BLANK	BPIS-08	BPIS-09	BPIS-10				
SAMPLE No.:		59460	59461	59462				
Benzene	<0.005	<0.005	<0.005	<0.005				
Toluene	<0.005	**0.017**	<0.005	<0.005				
Ethylbenzene	<0.005	**0.068**	<0.005	<0.005				
Xylenes	<0.005	**0.312**	<0.005	<0.005				

POLYNUCLEAR AROMATIC HYDROCARBONS
ANALYTICAL RESULTS

PROJECT No.:	35659.03	UNITS:	mg/kg
METHOD No.:	8270	BATCH No.:	2MSS036697

TACO SOIL TIER 1

SAMPLE ID:		METHOD BLANK	BPIS-01	BPIS-02	BPIS-03	BPIS-04	BPIS-05	BPIS-06	BPIS-07
SAMPLE No.:			59453	59454	59455	59456	59457	59458	59459
Acenaphthene	570	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330
Acenaphthylene	No MCL	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330
Anthracene	12000	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330
Benzo(a)anthracene	2	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330
Benzo(b)fluoranthene	5	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330
Benzo(k)fluoranthene	49	<0.330	<0.330	**0.375**	<0.330	<0.330	<0.330	<0.330	<0.330
Benzo(g,h,i)perylene	No MCL	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330
Benzo(a)pyrene	8	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330
Chrysene	160	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330
Dibenzo(a,h)anthracene	2	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330
Fluoranthene	4300	<0.330	<0.330	**0.523**	<0.330	<0.330	<0.330	<0.330	<0.330
Fluorene	560	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330
Indeno(1,2,3-c,d)pyrene	14	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330
Naphthalene	84	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330	<0.330
Phenanthrene	No MCL	<0.330	<0.330	**1.06**	<0.330	<0.330	**0.779**	<0.330	<0.330
Pyrene	4200	<0.330	<0.330	<0.330	**0.440**	<0.330	<0.330	<0.330	<0.330

POLYNUCLEAR AROMATIC HYDROCARBONS
ANALYTICAL RESULTS

PROJECT No.:	35659.03	UNITS:	mg/kg
METHOD No.:	8270	BATCH No.:	2MSS036697

SAMPLE ID:	METHOD BLANK	BPIS-08	BPIS-09	BPIS-10				
SAMPLE No.:		59460	59461	59462				
Acenaphthene	<0.330	<0.330	<0.330	<0.330				
Acenaphthylene	<0.330	<0.330	<0.330	<0.330				
Anthracene	<0.330	<0.330	<0.330	<0.330				
Benzo(a)anthracene	<0.330	<0.330	<0.330	<0.330				
Benzo(b)fluoranthene	<0.330	<0.330	<0.330	<0.330				
Benzo(k)fluoranthene	<0.330	<0.330	<0.330	<0.330				
Benzo(g,h,i)perylene	<0.330	<0.330	<0.330	<0.330				
Benzo(a)pyrene	<0.330	<0.330	<0.330	<0.330				
Chrysene	<0.330	<0.330	<0.330	<0.330				
Dibenzo(a,h)anthracene	<0.330	<0.330	<0.330	<0.330				
Fluoranthene	<0.330	<0.330	<0.330	<0.330				
Fluorene	<0.330	<0.330	<0.330	<0.330				
Indeno(1,2,3-c,d)pyrene	<0.330	<0.330	<0.330	<0.330				
Naphthalene	<0.330	**1.65**	<0.330	<0.330				
Phenanthrene	<0.330	**0.514**	<0.330	<0.330				
Pyrene	<0.330	<0.330	<0.330	<0.330				

REPORT KEY

ASTM	=	American Society of Testing and Materials
BTU/lb	=	British Thermal Units per pound
CV	=	Conventionals
Deg. C	=	Degrees Celsius
EP TOX	=	Extraction Procedure Toxicity
EPA/CE-81-1	=	Technical Report: Procedures for Handling and Chemical Analysis of Sediment and Water Samples
GC	=	Gas Chromatograph Instrument
GC/MS	=	Gas Chromatography/Mass Spectrometer Instrument
HPLC	=	High Performance Liquid Chromatography
IR	=	Infrared Instrument
mE/100grams	=	milliequivalent/100 grams soil
mg/m^3	=	milligram per cubic meter
mg/kg	=	milligram per kilogram (ppm)
mg/L	=	milligram per liter (ppm)
mg/W	=	milligram per wipe
MTM	=	Michigan Test Method
mV	=	milliVolts
n/a	=	not applicable
PCB	=	Polychlorinated Biphenyls (PCBs)
pCi/L	=	picocurie per liter
ppb	=	parts per billion
ppm	=	parts per million
RCRA	=	Resource Conservation and Recovery Act
SM	=	Standard Method, 18th Edition
std	=	result is relative to standard pH units
TCLP	=	Toxicity Characteristic Leaching Procedure
SPLP	=	Synthetic Precipitation Leaching Procedure
µg/kg	=	microgram per kilogram (ppb)
µg/L	=	microgram per liter (ppb)
µg/S	=	microgram per sample
µg/W	=	microgram per wipe
>	=	greater than
<	=	less than
%	=	percent
AAI	=	Analytical Associates, Inc.
ACZ	=	ACZ Laboratories, Inc.
FTL	=	Fore Testing Laboratories, Inc.
ATL	=	Alloway Testing Laboratory
OHM	=	OHM Corporation
ATE	=	Aqua Tech Environmental Laboratories, Inc.
BEC	=	Biological Environmental Control Laboratories, Inc.
SAI	=	Specialized Assays, Inc.
JF	=	Jeff Fesko
EA	=	Elaine Ault
BG	=	Barb Gould
SP	=	Susan Pellitieri
RR	=	Ron Recknagel
LW	=	Lorene Watts
RS	=	Roxanne Smith
DG	=	Diann Gillette

SURROGATE SUMMARY

	PESTICIDES/PCBs Method 8080 Batch No.		HERBICIDES Method 8150 Batch No.	PNAs Method 8100 Batch No.	BTEX Method 8020 Batch No. 2GCV036397
Surrogate:	Tetrachloro-m-xylene	Decachlorobiphenyl	2,4-D	2-Fluorobiphenyl	α, α, α-Trifluorotoluene
METHOD BLANK					99
METHOD SPIKE					106
MATRIX SPIKE					110
MATRIX SPIKE DUPLICATE					108
59453					106
59454					101
59455					106
59456					105
59457					120
59458					93
59459					84
59460					102
59461					116
59462					106
SURROGATE CONTROL LIMITS:	30-130%	30-130%	30-130%	50-115%	65-115%

SURROGATE SUMMARY

	SEMI-VOLATILES Method 8270 Batch No. 2MSS036697						VOLATILES Method 8240/8260 Batch No.		
Surrogates:	Phenol-d_5	2-Fluorophenol	2,4,6-Tribromophenol	Nitrobenzene-d5	2-Fluorobiphenyl	p-Terphenyl	Dibromofluoromethane	4-Bromofluorobenzene	Toluene-d8
METHOD BLANK	n/a	n/a	n/a	90	95	129			
METHOD SPIKE	n/a	n/a	n/a	83	85	111			
MATRIX SPIKE	n/a	n/a	n/a	81	87	107			
MATRIX SPIKE DUP	n/a	n/a	n/a	92	96	127			
59453	n/a	n/a	n/a	91	86	122			
59454	n/a	n/a	n/a	89	87	---			
59455	n/a	n/a	n/a	93	92	---			
59456	n/a	n/a	n/a	88	86	109			
59457	n/a	n/a	n/a	82	82	128			
59458	n/a	n/a	n/a	85	88	109			
59459	n/a	n/a	n/a	77	79	110			
59460	n/a	n/a	n/a	80	83	109			
59461	n/a	n/a	n/a	64	65	82			
59462	n/a	n/a	n/a	105	109	---			
SURROGATE CONTROL LIMITS:	50-120%	35-110%	55-125%	50-120%	55-120%	60-130%	80-120%	65-115%	75-115%

BATCH QC SUMMARY

BATCH No.	DATE EXTRACTED	DATE ANALYZED	ANALYST	BTEX PARAMETERS	% RECOVERY METHOD SPIKE	MATRIX SPIKE	MATRIX DUPLICATE	% RPD
2GCV036397	--------	12/16/97	EA	Benzene	87	106	102	4
				Toluene	86	100	94	6
				Ethylbenzene	84	97	92	5
				Xylenes	85	98	92	6

BATCH No.	DATE EXTRACTED	DATE ANALYZED	ANALYST	SEMI-VOLATILE ORGANICS PARAMETERS	% RECOVERY METHOD SPIKE	MATRIX SPIKE	MATRIX DUPLICATE	% RPD
2MSS036697	12/16/97	12/19/97	RS	Acenaphthene	75	76	85	11
				1,4-Dichlorobenzene	66	62	72	15
				2,4-Dinitrotoluene	75	77	83	8
				N-Nitrosodi-n-propylamine	74	80	80	0
				Pyrene	101	102	113	10
				1,2,4-Trichlorobenzene	82	68	78	14

TOLTEST, INC. 1916 N. 12th St., Toledo, OH 43624; Phone (419) 241-7175; FAX (419) 321-6257

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Chain of Custody Record

20862 Page 1 of 1

Job No.: 35659.03	Client: TolTest / Great Lakes Naval Training Center
P.O. No.:	Project/Location: Bldg 3304 Bio-Pile
Project Mgr.: Gary Vogelsong	TAT: STA
Phone No.: (847) 625-8083	Sampler's Name: J.P. Messier
	Sampler's Signature: JP Messier AB

Parameters

Item No.	Sample I.D.	Date Sampled	Time Sampled	Type	Matrix	Sample Location	Total No. of Containers	BTEX 8020	PNA 8270						Preserved Yes/No	Remarks
1	BPIS-01	11DEC97	AM	G	Soil	Bldg 3304	1	X	X						N	59453
2	BPIS-02					Bio Piles	1	X	X						N	59454
3	BPIS-03						1	X	X						N	59455
4	BPIS-04						1	X	X						N	59456
5	BPIS-05						1	X	X						N	59457
6	BPIS-06						1	X	X						N	59458
7	BPIS-07						1	X	X						N	59459
8	BPIS-08						1	X	X						N	59460
9	BPIS-09						1	X	X						N	59461
10	BPIS-10						1	X	X						N	59462

12/12/97 [signature]

Item No.	Relinquished By:	Date / Time	Received By:	Date / Time
1-10	JP Messier AB	11DEC 97 / 12:54 CT	FEDEX	12/11 / 1530
	FEDEX	12/12 / —	[signature]	12/12 / —

LAB USE ONLY

Were samples delivered ____ in person ____ by courier

Were samples preserved ____ in field ____ in lab ____ N/A

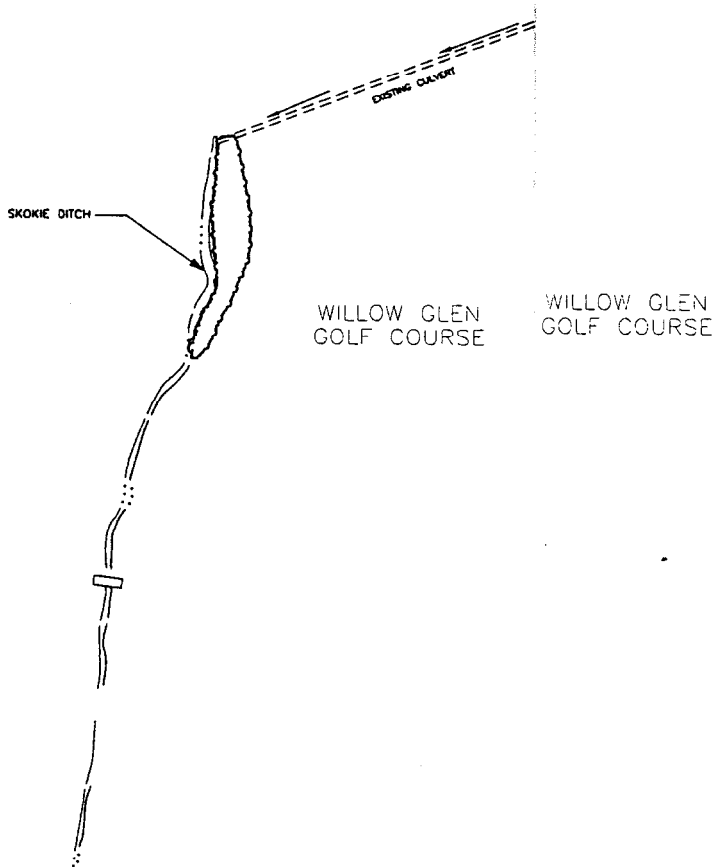
Temp inside cooler ____ °C

Did samples arrive intact and sealed? ____ yes ____ no ____ N/A

Were proper containers used? ____ yes ____ no

Comments: _____

Distribution: Original plus one accompanies shipment (white and yellow); copy to coordinator field files (pink)



LEGEND

W	WATER PIPES (Removed)
C	CAST IRON DRAIN PIPES (Removed)
T	NON-METALLIC CLAY TILE DRAIN PIPES (Removed)
G	G = GAS SUPPLY PIPE (Removed)
O	O = OIL SUPPLY PIPE (Removed)
V	V = VENT PIPE (Removed)
B.P.	BURN PIT (Removed)
CT	CHRISTMAS TREE ENCLOSURE (Removed)
WS/S	WATER SUMP (Removed)
⋈	GATE VALVE (Removed)
◇	CONTROL TOWER (Removed)
CP	CONTROL PANEL WITH MULTIPLE CONNECTIONS TO SPRINKLERS
●	CATCH BASIN
○	CLEANOUT
MH●	MANHOLE
	INLET
	UNDERGROUND STORAGE TANKS
	APPROXIMATE AREA OF JURISDICTIONAL WETLANDS.
	CHAIN LINK FENCE
	INDICATES STRUCTURE HAS BEEN REMOVED.
CMP	CORRUGATED METAL PIPE
MP	SMOOTH METAL PIPE
RCP	REINFORCED CONCRETE PIPE
	LUST SAMPLE LOCATION
	CERCLA SAMPLE LOCATION
	EXISTING (FOUND) GRID HUB OR LATH
	PIPING SEVERED AND PLUG AT THIS LOCATION
	APPROXIMATE LOCATION OF BIOPILE FFTU
	CONTAMINATED SOIL FROM 1600A SITE
	CONTAMINATED SOIL FROM 103 SITE
	OBSERVED "HOTSHOT" LOCATIONS
	APPROXIMATE SOIL EXCAVATION AREA
●	TEST POINT

NOTE: BIOPILE ARE CONCONSTRUCTED WITH CONTAMINATED SOIL FROM THE FFTU SITE UNLESS OTHERWISE NOTED.

TEST POINTS NOTES:

1. TP-1 THROUGH TP-5 ARE FFTU SOILS
2. TP-6 AND TP-7 ARE 1600A SOILS
3. TP-8 THROUGH TP-10 ARE 103 SOILS

THE NAVY CENTER LINOIS	BIOPILE MAP	SHEET: 1 OF 1
	REVISED WORKPLAN FOR EXCAVATION OF DRAINAGE PIPING, AND FIELD PILOT STUDY FOR BIOREMEDIATION OF PETROLEUM CONTAMINATED SOIL	JOB NUMBER: 29883
TION OF THE UNIT (FFTU)		DATE: JAN. 1998

DCP1 18 CADD 1/14/98 4:09 PM Fig-bio.dwg