Final

Preliminary Assessment/ Site Inspection Report

Camp Allen Salvage Yard Naval Base, Norfolk, Virginia Volume II - Appendices

01.04-05/01/94-00610

Reference:
Contract
N62470-89-D-4814

CTO-0148

May 1994

Prepared For:

Department of the Navy
Atlantic Division
Naval Facilities
Engineering Command
Norfolk, Virginia

Under the

LANTDIV CLEAN Program

Comprehensive Long-Term Environmental Action Navy

Baker
Baker Environmental, Inc.

FOSTER WHEELER
FOSTER WHEELER ENVIRESPONSE, INC.

WESTON
MANAGERS DESIGNERS/CONSULTANTS

Final
Preliminary Assessment/
Site Inspection Report
Camp Allen Salvage Yard
Naval Base, Norfolk, Virginia
Volume II - Appendices

FINAL

VOLUME II - APPENDICES

PRELIMINARY ASSESSMENT/ SITE INSPECTION REPORT

CAMP ALLEN SALVAGE YARD SITE 22 NAVAL BASE, NORFOLK, VIRGINIA

CONTRACT TASK ORDER 0148

MAY 27, 1994

Prepared For:

DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES
ENGINEERING COMMAND
Norfolk, Virginia

Under the:

LANTDIV CLEAN Program
Contract N62470-89-D-4814

Prepared By:

BAKER ENVIRONMENTAL, INC.
Coraopolis, Pennsylvania

VOLUME II
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APPENDIX A
PRELIMINARY ASSESSMENT SUPPORTING DOCUMENTATION

APPENDIX A-1
REAL ESTATE INFORMATION

Information for Code 18 13 Oct 92
Background data on Camp Allen area

1. Acquired 180.18 Acres from Department of Army 17 April 1940 - Appears Army acquired the property in 1918 time frame.

2. Acquired 28.8 Acres by Condemnation - Case #6965 filed 8 Jan 1945 Owners Included:

Grayson Construction Co.
Stonwall S. Lowery
Ernest R. Beavers
L.A. Beavers
Edward W. Staley
H.S. Knight
Terminal Heights Co.
Hofheimer Construction Co.
C.F. HUNDLEY
City of Norfolk

3. Acquired 507.13 Acres by Condemnation - Case #6760 filed 6 Feb 1942. Owners Included:

Boush Creek Land Co.
Ernest Wood & Samuel F. Seay
Florence Epstein
Thresa F. Hill, et al
Norfolk Yach and Country Club
Ballentine Home for the Aged
Frank J. Gannaway
H.B. Simpson, et al
John A. Collins
George White
Mary R. Wilson
Naomi Taylor
Issac Willis
Rosa White, et al.
Josephine Collins
Sarah Peyton Lindsay
Will - Cooke Corporation
Dr. Willian H. Pearson
John Tynes
Lewis Russell
Clara E. Crawford & M.D. White
Logan Page
Jennie Foster
Minton N. Talbot
City of Norfolk
County of Norfolk
State of Virginia

APPENDIX A-2

RELEVANT CLEAN CLOSURE PLAN INFORMATION

EnSafe Environmental and Safety Designs, Inc.
901/372-7962
5724 SUMMER TREES DR. • P.O. BOX 341315 • MEMPHIS, TN 38184-1315

November 8, 1991

Ms. Sharon Waligora, code N9E1
Building N-26
Commander Naval Base
Environmental Programs Division
Norfolk, Virginia 23511

Dear Sharon:

Enclosed are five(5) copies of page 15 of the Camp Allen draft clean closure plan.

If you have any questions, please do not hesitate to call.

Very Truly Yours,

Allen Snow
Environmental Engineer

Enclosures

OPTIONAL FORM 99 (7-90)
FAX TRANSMITTAL # of pages ▶ 7

To Jeri T / Kelly S.	From Dave F
Dept./Agency Baker Enviro.	Phone # Naval Base, Norfolk
Fax # 412 269 2002	Fax #

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

N9E

6280
Ser N34/ 4409

28 JUN 1988

Mr. Ed Langford
Department of Waste Management
11th Floor, Monroe Building
101 N. 14th Street
Richmond, Virginia 23219

Dear Mr. Langford:

Please find enclosed the Commander, Naval Base, Norfolk, Revised Closure Plan for Camp Allen as requested in your letter of 25 March 1988. Please do not hesitate to contact me at (804) 444-2590.

Sincerely,

S. L. GIBSON
Director, SOH Programs
By direction of
the Commander

Encl:
(1) Hazardous Waste Closure Plan

Copy to:
LANTNAVFACENGCOM
DRMO Norfolk

DETAILED SAMPLING
AND
ANALYSIS FOR
HAZARDOUS WASTE CLOSURE PLAN

NORFOLK, VIRGINIA
NOVEMBER 1988
(SECOND MODIFICATION)

for

COMMANDER, NAVAL BASE NORFOLK
TENANT ACTIVITY
DEFENSE REUTILIZATION AND MARKETING OFFICE
CAMP ALLEN

F. Milestone Dates

Certification of closure will be submitted within 180 days by owner/operator upon the formal approval of the closure plan.

Within 90 days of final waste receipt or formal approval of closure plan, whichever is later, all hazardous waste will be removed from the site to be closed.

Within 6 months of final waste receipt or formal approval of closure plan, whichever is later, all decontamination activities will be completed in accordance with above plan.

G. Soil Analysis Plan

Prior to excavation, soil in Site A (see attached map) will be tested in accordance with Paragraph D.1.b. above. In addition to the parameters tested for in Site A, Site B will be tested for hazardous constituents identified in numbers 3-7 below since these listed wastes were stored in this area. Whenever total metals exceed Extraction Procedure (EP) limits by a factor of 10, the samples will be tested for EP metals. The following materials are known to have been stored at Camp Allen:

1. Flammable liquids (see the attached list)

2. Oil contaminated with low levels of PCBs (less than 50 PPM) and heavy metals.

3. Paint remover containing methylene chloride

4. Dichloromethane

5. 1,1,1 Trichloroethane

6. Tetrachloroethylene

7. Trichlorotrifluoroethane

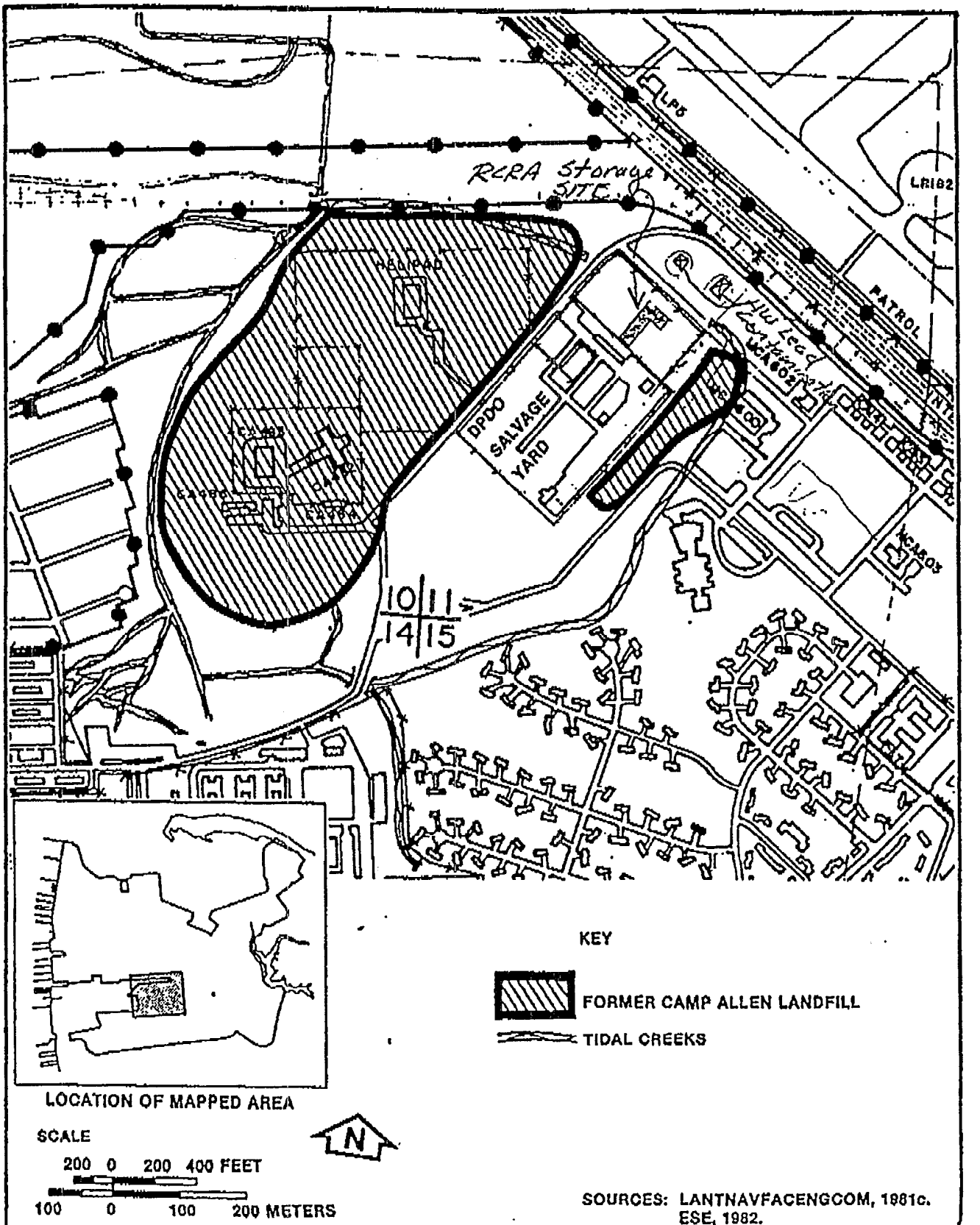
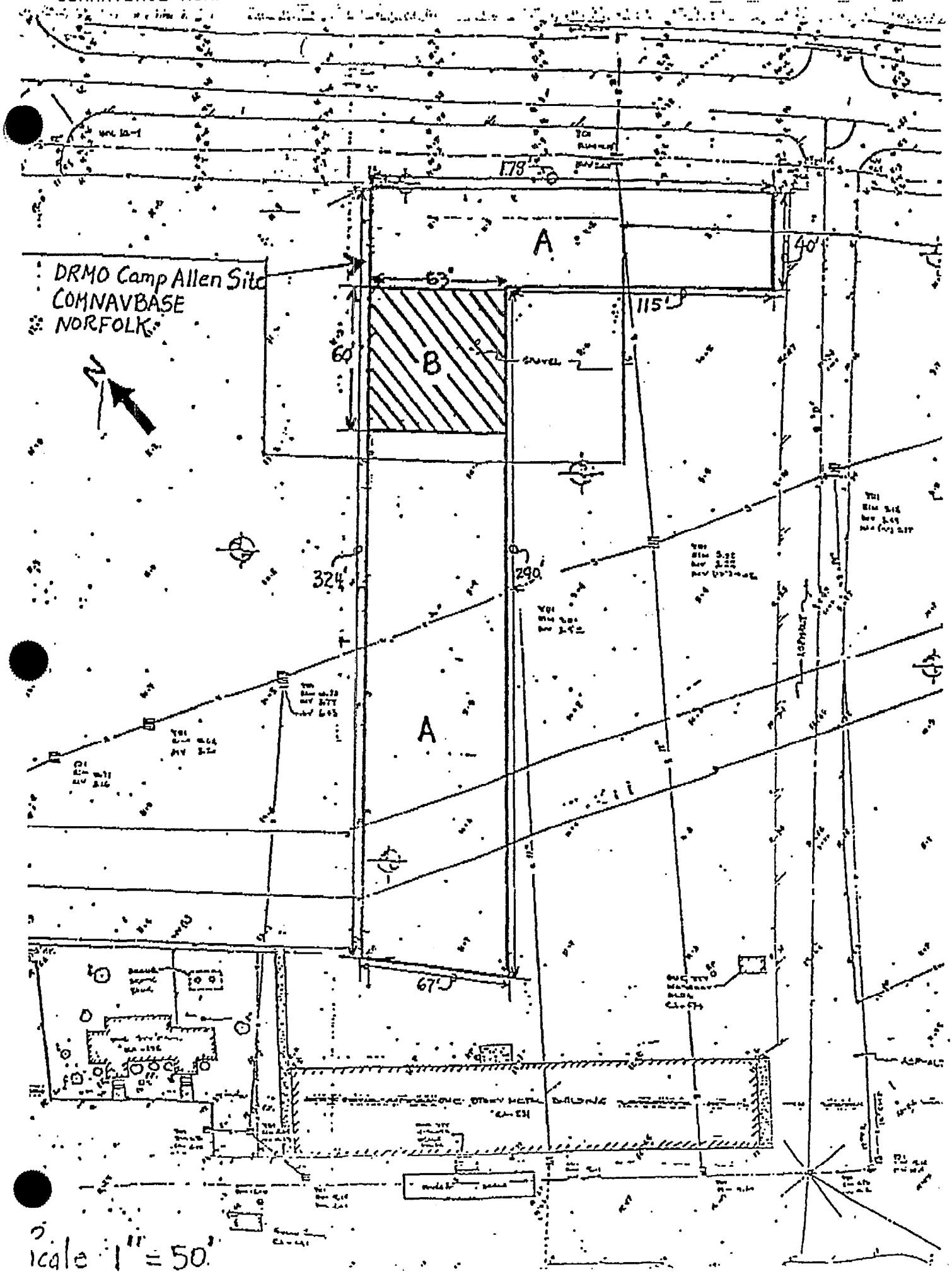


Figure 6.4-3
LOCATION OF THE CAMP ALLEN LANDFILL (SITE 1)

INITIAL ASSESSMENT STUDY
SEWELLS POINT
NAVAL COMPLEX


DRMO Camp Allen Site
COMNAVBASE
NORFOLK
N
A
B
A
178'
40'
63'
115'
60'
324'
290'
67'
Scale 1" = 50'

Commander, Naval Base, Norfolk, VA
Hazardous Waste Closure Plan for Camp Allen

FLAMMABLE LIQUID STORED AT CAMP ALLEN	DATE STORED
Waste Paint Thinner Dope	12/87
Adhesives, Flammable Liquid	12/87
Cyclohexylamine, Flammable (D001)	12/87
Potassium Dichromate	12/87
Gasoline, Flammable (D001)	1/88
Hydrochloric Acid (D002)	12/87
Clorinated Lime	12/87
Trichlorotrifluoroethane (F002)	2/86 & 6/87
Methanol & Water (F003)	7/87
Dichloromethane (F002)	9/87
Methylene Chloride & Phenols (F002)	3/86
Perchlorethylene (F002)	4/86

Enclosure (1)

APPENDIX A-3
PCB SPILL INFORMATION

MEMORANDUM

DATE: 8 JULY 92

FROM: N42A (D. Forsythe)

TO: N4

SUBJECT: POSSIBLE TOPICS FOR DRMS/ADMIRAL TOBIN MEETING

I. DRMO/PWC joint storage facility bullets

* Base cited by VDWM for storing HM at existing SDA 215 HW facility

* Agreement for new facility to be joint funded by DRMO/PWC Oct 90

* Project initially scheduled for FY 92/93 by DRMS

* EIS completed by DRMS in 1990

* May 92 telephone inquiries to DRMS reveal work schedule slid to FY 98

* Message sent 2 June 92 to DRMS to expedite project construction

* Phoncons from DRMS June 92 incorrectly state that siting and environmental Impact Statement needs to be performed prior to starting project

* Message response of 22 June 92 indicates project initiation September 92 with duration of 3 to 5 years due to siting, design, permitting, and construction

II. Camp Allen scrap metal Yard PCB contamination bullets

* Transformer PCB spill cleanup at scrap yard

* Clean up of spill unable to find edge of PCB contamination

* NSC takes 3 composite soil samples at 18 inches below grade at scrap pile in metals yard (different location from spill) 17 March 92

* Samples contain PCB concentrations as high as 370 ppm

* NEHC industrial hygienist indicates gloves and boots will prevent any health risks

* Interested parties including; COMNAVBASE, NSC, DRMO, NEHC meet to discuss situation

* Agreement from meeting for scrap yard to restrict access to known contaminated locations and personnel to wear boots/gloves

* NSC counsel Tom Lundsford notified DRMS that facility may pose a health hazard to site personnel

* DRMS health manager (Jeff Pfannes) calls for meeting of interested parties again

* COMNAVBASE indicates scrap Yard on IR Program list

* DRMS indicates desire for additional health risk assessments

* LANTNAVFACENGCOM RPM indicates lack of available funds for project and suggests DRMS procure funding

* Latest indications are that DRMS has provided $160,000 for a Preliminary Assessment/Site Investigation of the metals yard.

EFENSE LOGISTICS AGENCY
DEFENSE REUTILIZATION AND MARKETING SERVICE
DEFENSE REUTILIZATION AND MARKETING REGION COLUMBUS
926 TAYLOR STATION ROAD
BLACKLICK, OHIO 43004-9615

IN REPLY REFER TO DRMR-CD

10 SEP 1990

SUBJECT: PCB Contamination of PCB Spill Site

TO: Commanding Officer
Navy Public Works Center
ATTN: 6380 Code 640.2
Norfolk, VA 23511-6098

1. Reference:

a. Your letter, 2 Aug 90, subject: Camp Allen PCB Spill Site to DRMO Norfolk.

b. DRMR-CD letter to Commander, Norfolk Naval Base, 7 Sep 90, subject as above (enclosed).

2. Your referenced letter made several recommendations concerning the remediation of the DRMO's Camp Allen site. The purpose of this letter is to follow up on those recommendations.

a. In reference to your recommendations to investigate the steps needed for designation of the site as an Installation Restoration Site, we have asked that the Naval Base make this designation (letter enclosed). As a tenant on the installation this is the extent of our capabilities.

b. The recommendation to cap the spill site with asphalt has recently been accomplished.

c. The recommendation to cordon off the spill area and post signs has been accomplished in the following manner:

(1) Since the capped portion of Camp Allen is safer than the area which surrounds it, the area has not been cordoned off.

(2) The DRMO, however, has documented the records as to the exact location of the spill and posted a sign in the center of this site for purposes of further remediation.

3. If you have further recommendations concerning Camp Allen please contact Ms. Connie Baker, Environmental Services Branch, (AV) 850-2171.

James R Ballard

1 Encl

JAMES R. BALLARD
Colonel, USAF
Commander

cc:
DRMO Norfolk

DEFENSE LOGISTICS AGENCY
DEFE. . REUTILIZATION AND MARKETING SERVICE
DEFENSE REUTILIZATION AND MARKETING REGION COLUMBUS
926 TAYLOR STATION ROAD
BLACKLICK, OHIO 43004-9615

7 SEP 1990

IN REPLY REFER TO DRMR-CD

SUBJECT: PCB Contamination of PCB Spill Site

TO: Commander
Norfolk Naval Base
ATTN: N9E1
Norfolk, VA 23511-6002

1. Reference:

a. DRMR-CHO letter to Norfolk Public Works Center, 23 Feb 90, subject: Camp Allen PCB Spill Site (enclosed).

b. Norfolk Public Works Center letter to DRMO Norfolk, 2 Aug 90, subject: Camp Allen PCB Spill Site (enclosed).

c. Telephone conversation between Ms. Connie Baker, DRMR-CHO, and Ms. Sheryl Barnett, Norfolk Naval Base, 27 Aug 90, subject as above.

2. The purpose of this letter is to notify you that there are indications of long-term PCB contamination of the DRMO portion of Camp Allen which may require cleanup under the Installation Restoration Program. Reference 1a made this notification earlier to the Environmental Office of Norfolk Public Works Center (PWC) and reference 1b is PWC's recommendation that your office be made aware of the situation. In reference 1c we verbally requested that the DRMO portion of Camp Allen be remediated with Defense Environmental Restoration funds. This is our follow-up in writing to that conversation.

3. The Camp Allen scrap operation performs a vital service for the base and we want to do whatever is possible to prevent interruption of that service. Close communication and planning prior to any sampling or cleanup should prevent any break in the DRMO receiving operations for the Naval Base. Request that I be notified as soon as possible of milestones for the installation restoration which may affect the DRMO. Please keep me informed of your progress.

4. If there are any questions you have concerning the contamination, please contact Ms. Connie Baker, Environmental Division, at (AV)850-2171.

James R Ballard

2 Encl

JAMES R. BALLARD
Colonel, USAF
Commander

cc:
DRMS-H
DRMO Norfolk
LANT DIV

DEFENSE LOGISTICS AGENCY
DEFENSE REUTILIZATION AND MARKETING OFFICE-NORFOLK
NORFOLK NAVAL STATION POST OFFICE
POST OFFICE BOX 15068
NORFOLK, VA 23511-0068

REPLY REFER TO DRMO-XKA

21 August 1990

SUBJECT: Camp Allen PCB Spill Site

TO: Commanding Officer
Navy Public Works Center, Norfolk
ATTN: Code 640.2

1. Reference: PWC letter 6280, 2 Aug 90, subject as above.

2. Action to cap subject area as recommended in paragraph 1 b (2) has been completed by PWC.

3. Long term clean-up and establishment of Camp Allen as a possible Installation restoration site has been elevated to our Region headquarters.

KEVIN L. TOURJIE
Property Disposal Officer

DEPARTMENT OF THE NAVY

NAVY PUBLIC WORKS CENTER
NORFOLK, VIRGINIA 23511-6098

IN REPLY REFER TO
6280
Code 640.2
22 AUG 1990

From: Commanding Officer, Navy Public Works Center, Norfolk
To: Chief, Defense Reutilization and Marketing Office, Norfolk

Subj: CAMP ALLEN PCB SPILL SITE

Ref: (a) Mtg btwn DRMO (Michael Sawyer)/PWC (Merrill Ashcraft) on 12 Jul 90
(b) PWC ltr 6280 Code 640 of 25 Jan 90

Encl: (1) Copy of Analytical Results - Initial Clean-up

1. As discussed during reference (a), our Environmental Division has completed the cleanup of gross contamination at your Camp Allen PCB Spill Site. As agreed upon previously, this effort included removal of asphalt and earth followed by testing, to see if a spill boundary could be defined. The following site characterizations and recommendations are provided as a result of this work:

a. Site Characterizations:

(1) PCB spill occurred on 12 October 1989 at your Camp Allen Compound. Transformer had bushing damaged by forklift. Concentration was 491,472 ppm PCB.

(2) Our Environmental Division responded to spill and did preliminary cleanup on 12 October 1989. Site was secured and plastic placed on ground to help prevent rain water contact.

(3) Initial swipe tests were collected to determine boundary of spill. Initial area was reported to be 12 ft X 15 ft area North of CA-194. The heaviest concentration of spill occurred in an area of 4 ft X 5 ft (1 ft on northside just outside of drip pan in which the transformer sat). Reference (b) reported results and determined that no boundary limiting the area of contamination could be located.

(4) The decision was made to excavate asphalt and 10 inches of soil in the vicinity of the spill site to remove gross contamination. An area approximately 27 ft X 28 ft was excavated about one foot in depth. Soil and asphalt was drummed up and disposed of as a PCB waste.

(5) Thirty-seven samples were collected based on EPA's 560/5-85-025 "Verification of PCB Spill Cleanup By Sampling and Analysis", Aug 1985, and the results are plotted in enclosure (1). The sample analysis indicates that cleanup is not complete and that spill boundaries still cannot be identified.

(Note: A contract is in place to analyze up to 150 PCB soil samples from Camp Allen but will expire on 22 September 1990. New contracts take approximately two months to issue. (Costs are $75.00 per sample with one week turn around.)

2 AUG 1990

Subj: CAMP ALLEN PCB SPILL SITE

(6) As a result of excavation, each time it rains, water must be pumped from site and disposed of as PCB spill debris. (Concentration of the rain water exceeds 1 ppb and therefore cannot be treated at the Naval Aviation Depot's Industrial Wastewater Treatment Plant.)

b. Recommendations:

(1) The high concentrations at some sampling points significantly far away from the original spill site, indicate that contamination may be due to some unknown past practice at this location and not the current spill. We recommend that you investigate the designation of this area as an Installation Restoration Site.

(2) Recommend you consider the possibility of capping the site with plastic, clay, soil and then asphalt to prevent rain water from entering site.

(3) Recommend the boundary of the new asphalt be marked with poles on the four edges of the site and taped off to prevent public access. A PCB sign as well as another sign should be posted "No Admittance" to clearly mark original site and prevent unauthorized entry.

(4) Recommend you contact your environmental group, as well as Commander, Naval Base, Norfolk and Naval Facilities Engineering Command, Atlantic Division and possibly EPA Region III for guidance and to investigate possible remediation of Camp Allen Site for PCB's. (DERA money is available.)

2. Our point of contact should you have any questions or concerns is M. Anderson-Ashcraft or J. Thornton at (804) 445-2919.

R. W. Eitel
R. W. EITEL
By direction

Copy to:
COMNAVBASE Norfolk (Code N-9E)
LANTNAVFACENGCOM (Code 1811)

Blind copy to:
Code 640.2
600 R/F

2650 McManus Boulevard Suite 4 Newport News, VA 23602 804 874-2956 Fax 804

Microbac

DATE RECEIVED: 6-25-90
DATE REPORTED: 7-03-90
CUSTOMER PO#: N62470-90-Q-4522
LABORATORY#: 069069
INVOICE#: 1196

COMMANDING OFFICER
NAVAL SUPPLY CENTER
CODE 34 (55.4)
CHARLESTON, SC 29408-6634
ATTN: MERRIL ASHCRAFT

CERTIFICATE OF ANALYSIS

SAMPLE ID	TEST	RESULT	UNITS
CAMP ALLEN - CA 194 - 196			
0151-1	PCB	<1.7	PPM
0151-2	PCB	6	PPM
	AROCHLORS PRESENT	1260	****
0151-3	PCB	1.7	PPM
	AROCHLORS PRESENT	1260	****
0151-4	PCB	<1.5	PPM
0151-5	PCB	3	PPM
	AROCHLORS PRESENT	1260	****

RESPECTFULLY SUBMITTED,

Michelle Minshew-Wagner

MICHELLE MINSHEW-WAGNER
LABORATORY DIRECTOR

MMW/ATW

Microbac Laboratories, Inc. Microbac Mid-Atlantic Division
12650 McManus Boulevard Suite 4 Newport News, VA 23602 804 874-4930 Fax: 804 8[illegible] 563

Microbac

DATE RECEIVED: 6-25-90
DATE REPORTED: 7-11-90
CUSTOMER PO#: N62470-90-Q-4522
LABORATORY#: 069069
INVOICE#: 1219

OFFICER IN CHARGE
FACILITIES SUPPORT CONTRACTS
NAVY PUBLIC WORKS CENTER, Z-140-3
NORFOLK, VA 23511-6098
ATTN: MERRIL ASHCRAFT

CERTIFICATE OF ANALYSIS

SAMPLE ID	TEST	RESULT	UNITS
CAMP ALLEN - CA 194 - 196			
0151-6	PCB	114	PPM
0151-7	PCB	28	PPM
0151-8	PCB	18	PPM
0151-9	PCB	105	PPM
0151-10	PCB	16	PPM
0151-11	PCB	26	PPM
0151-12	PCB	28	PPM
0151-13	PCB	19	PPM
0151-14	PCB	48	PPM
0151-15	PCB	3	PPM
0151-16	PCB	22	PPM
0151-17	PCB	613	PPM
0151-18	PCB	96	PPM
0151-19	PCB	52	PPM
0151-20	PCB	2.3	PPM
0151-21	PCB	4	PPM
0151-22	PCB	<2	PPM
0151-23	PCB	17.5	PPM
0151-24	PCB	323	PPM
0151-25	PCB	240	PPM
0151-26	PCB	43	PPM
0151-27	PCB	19	PPM

RESPECTFULLY SUBMITTED,

Michelle Minshew-Wagner

MICHELLE MINSHEW-WAGNER
LABORATORY DIRECTOR

ATW

Microbac Laboratories, Inc. Microbac Mid-Atlantic Division
12650 McManus Boulevard Suite 4 Newport News, VA 23602 804/874-4930 Fax: 804/872-[illegible]

Microbac

DATE RECEIVED: 6-25-90
DATE REPORTED: 7-11-90
CUSTOMER PO#: N62470-90-Q-4522
LABORATORY#: 069069
INVOICE#: 1219

OFFICER IN CHARGE
FACILITIES SUPPORT CONTRACTS
NAVY PUBLIC WORKS CENTER, Z-140-3
NORFOLK, VA 23511-6098
ATTN: MERRIL ASHCRAFT

CERTIFICATE OF ANALYSIS

CAMP ALLEN - CA 194 - 196

SAMPLE ID	TEST	RESULT	UNITS
0151-28	PCB	45	PPM
0151-29	PCB	133	PPM
0151-30	PCB	28	PPM
0151-31	PCB	38	PPM
0151-32	PCB	43	PPM
0151-33	PCB	52	PPM
0151-34	PCB	49	PPM
0151-35	PCB	496	PPM
0151-36	PCB	27	PPM
0151-37	PCB	27	PPM

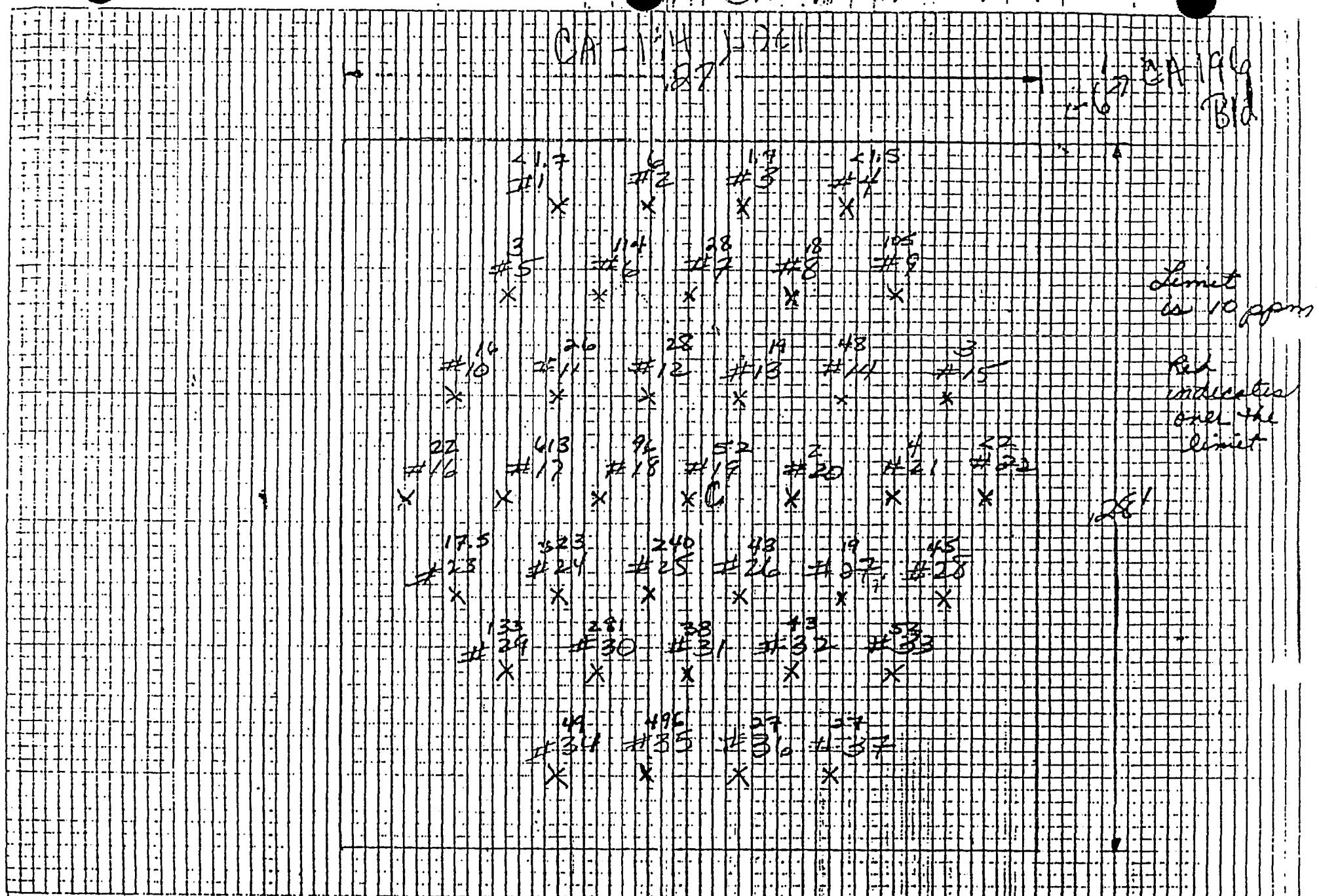
****ALL AROCHLORS PRESENT WERE 1260****

RESPECTFULLY SUBMITTED,

Michelle Minshew-Wagner

MICHELLE MINSHEW-WAGNER
LABORATORY DIRECTOR

ATW


CA-1-H-2411
127
127 CA 146 Bld
#1 1.7
#2 6
#3 1.7
#4 <1.5
#5 3
#6 114
#7 28
#8 18
#9 105
#10 14
#11 26
#12 28
#13 14
#14 48
#15 3
#16 22
#17 413
#18 96
#19 52
#20 2
#21 4
#22 <2
#23 17.5
#24 323
#25 240
#26 43
#27 19
#28 45
#29 133
#30 281
#31 38
#32 43
#33 53
#34 49
#35 496
#36 27
#37 27
Limit is 10 ppm
Red indicates over the limit
Scale 2000

DE[illegible]NTAMINATION REQUIREMENTS FOR HIGH CONCENT[illegible]TION SPILLS, & LOW CONCENTRATION SPILLS INVOLVING ≥ 1 LB. PCBs

TYPE OF CONTAMINATED ITEM			CLEANUP STANDARDS PER ACCESS AREA		
			Nonrestricted Access Areas	Restricted access areas, other than Electrical Substations	Outdoor Electrical Substations
mpervious Solid urfaces	outdoor	high contact	10 ug/100 cm^2	10 ug/100 cm^2	100 ug/100 cm^2
		low contact		100 ug/100 cm^2	
ir ludes metals, l. s, siding & aminated surfaces)	indoor	high contact	10 ug/100 cm^2	10 ug/100 cm^2	
		low contact			
onimpervious olid Surfaces	outdoor	high contact	10 ug/100 cm^2	10 ug/100 cm^2	100 ug/100 cm^2
		low contact	10 ug/100 cm^2*	100 ug/100 cm^2	
includes wood, oncrete, asphalt plasterboard)	indoor	high contact	10 ug/100 cm^2	10 ug/100 cm^2	
		low contact		10 ug/100 cm^2 *	
oil			10 ppm, minimum depth of 10" and site restored **	25 ppm	25 ppm or 50 ppm provided a notification of cleanup level is visibly posted
eplaceable Household Items			properly disposed of		

Or cleaned to 100 ug/100 cm^2 and encapsulated.

* Restored means to replace will clean soil, i.e. containing less than 1 ppm PCBs.

ll spills involving 10 pounds or more of pure PCB material must be reported to the National esponse Center (1-800-424-8802).

or guidance contact the appropriate EPA regional office (in PA, MD, DE, VA, WV, and DC call 15-597-4651/7668). All spills involving surface water, sewers, drinking water, grazing land, r vegetable gardens must be reported to the appropriate EPA regional office.

DECONTAMINATION REQUIREMENTS FOR LOW CONCENTRATION SPILLS INVOLVING < 1 LB. PCBS, OR LESS THAN 270 GALLONS OF UNTESTED MINERAL OIL

TYPE OF CONTAMINATED ITEM		CLEANUP STANDARD
* Solid Surfaces	indoor residential	10 ug/100 cm^2
	other	double wash, rinse
* Soil		All soil with visible spill traces within the spill area plus a foot buffer is to be removed, and site restored. **

* All cleanup must be completed within 48 hours after the responsible party was notified or became aware of the spill.

** restored means to replace with clean soil, i.e. containing less than 1 ppm PCBs.

SINCE 1881

FROEHLING & ROBERTSON, INC.
GEOTECHNICAL • ENVIRONMENTAL • MATERIALS
ENGINEERS • LABORATORIES
"OVER ONE HUNDRED YEARS OF SERVICE"

April 3, 1992

No: S52-36-3A
Lab: 5484

Analysis of Waste

Made For: DRMO, Norfolk
Norfolk Naval Station Post Office
PO Box 15068
Norfolk, Va. 23511-0068
Attn: Mr. Carl Vega

Sample Description:
Sample Collected By: F&R Chesapeake, David Balsley
Delivered to F&R Lab: 3-17-92 Time: 1038 a.m.
Samples Site: DRMO Waste Pile
Sample Analysis Date: 3-17 To 3-25-92
Analytical Method Used: USEPA SW846
TPH; Sonication Method SW846 Method 3550 and EPA 418.1
TCLP Method 1311
SW846-Method 8240;8270;8080,8150

Marked: (1) Sample #1, North End, 3-12-92, 1430
(2) Sample #2, West End, 3-12-92, 1430
(3) Sample #3, South East End, 3-12-92, 1430

Results:	(1)	(2)	(3)
TPH, mg/kg	1730	2243	2309
TCLP			
Arsenic (As), mg/l	<0.01	<0.01	<0.01
Barium (Ba), mg/l	0.39	0.25	0.38
Cadmium (Cd), mg/l	0.21	0.41	0.42
Chromium (Cr), mg/l	<0.2	<0.2	<0.2
Lead (Pb), mg/l	<0.2	0.23	0.22
Mercury (Hg), mg/l	<0.001	<0.001	<0.001
Selenium (Se), mg/l	<0.01	0.012	<0.01
Silver (Ag), mg/l	<0.03	<0.03	<0.03

HEADQUARTERS: 3116 DUMBARTON ROAD • BOX 27524 • RICHMOND, VA 23261-7524
TELEPHONE (804) 254-2701 • FAX (804) 254-1202

BRANCHES: ASHEVILLE, NC • BALTIMORE, MD • CHARLOTTE, NC • CHESAPEAKE, VA
CROZET, VA • FAYETTEVILLE, NC • FREDERICKSBURG, VA
GREENVILLE, SC • RALEIGH, NC • ROANOKE, VA • STERLING, VA

F&R

TCLP Volatiles, Semi-Volatiles, Pesticides/Herbicides, ug/L

	(1)	(2)	(3)
Benzene	<10.0	<10.0	<10.0
Carbon tetrachloride	<10.0	<10.0	<10.0
Chlorobenzene	<10.0	<10.0	<10.0
Chloroform	<10.0	<10.0	<10.0
1,2-Dichloroethane	<10.0	<10.0	<10.0
1,1-Dichloroethylene	<10.0	<10.0	<10.0
Hexachloroethane	<10.0	<10.0	<10.0
Methyl ethyl ketone	<10.0	<10.0	<10.0
Tetrachloroethylene	<10.0	<10.0	<10.0
Trichloroethylene	<10.0	<10.0	<10.0
Vinyl chloride	<10.0	<10.0	<10.0
o-Cresol	<50.0	<50.0	<50.0
m-Cresol	<50.0	<50.0	<50.0
p-Cresol	<50.0	<50.0	<50.0
Cresol (total)	<50.0	<50.0	<50.0
1,4-Dichlorobenzene	<50.0	<50.0	<50.0
2,4-Dinitrotoluene	<50.0	<50.0	<50.0
Hexachlorobenzene	<50.0	<50.0	<50.0
Hexachlorobutadiene	<50.0	<50.0	<50.0
Nitrobenzene	<50.0	<50.0	<50.0
Pentachlorophenol	<50.0	<50.0	<50.0
Pyridine	<50.0	<50.0	<50.0
2,4,5-Trichlorophenol	<50.0	<50.0	<50.0
2,4,6-Trichlorophenol	<50.0	<50.0	<50.0
Chlordane	<50.0	<50.0	<50.0
2,4-D	<50.0	<50.0	<50.0
Endrin	<50.0	<50.0	<50.0
Heptachlor	<50.0	<50.0	<50.0
Lindane	<50.0	<50.0	<50.0
Methoxychlor	<50.0	<50.0	<50.0
Toxaphene	<50.0	<50.0	<50.0
2,4,5 TP (Silvex)	<50.0	<50.0	<50.0
PCB, mg/kg = ppm	384.6	374.3	378.1
Total Phenols, PPM	<0.8	<0.8	<0.8

Respectfully,

August A. Thieme
Chief Chemist

Robert Wichser, R.E.P.
Manager, Chemical Services

AAT/RW/cv

CAMP ALLEN

Please Help
Camp Partners
Provide
Partner
Mediator
Yellow is
over limit

Samples
#11, 12
16, 17
22, 24
25, 35
36, 37
+ complete

Scale 2...

NCNORVA 1101.1.0 (Rev 2/90)

1. PRI	2. JOB ORDER NO.	3. AMEND NO.	4. REQUEST NO.
	1,4,2,2,1,0,9		

PART I – REQUEST (By Customer)

TO: NAVY PUBLIC WORKS CENTER Code 350

FROM: NPWC Code 640.2

5. BRIEF TITLE: PCB ANALYSIS

7. TYPE OF SERVICE REQUESTED (Check One)

- [ ] SCOPING ESTIMATE
- [ ] FUNDABLE ESTIMATE ESTIMATED FUNDING DATE _____
- [ ] MINOR WORK AUTHORIZATION M- _____
- [ ] RECURRING ESTIMATE
- [ ] CONTRACT ESTIMATE
- [ ] ENGINEERING INVESTIGATION
- [ ] SPECIAL PROJECT PREPARATION
- [X] OTHER (Specify) Reissue New Contract Simular to 89M-5698

8. FOR FURTHER INFORMATION CALL	9. PHONE	10. REQUESTOR (Signature)	11. DATE
I. Anderson-Ashcraft	5-2919		3/20/90

12. PART II – DESCRIPTION OF PROBLEM/REQUIREMENT (By Customer)

DRMO has requested that PWC provide support in the clean-up of a PCB spill at Camp Allen After initial excavation of spill site EPA requires a max of 36 samples be collected at this site. A one week oral report for the analysis is required because excavation equipment must be rented until area is determined to be clean. If all samples are then found to be free of contamination no further analysis will be needed. However if any sample shows contamination additional excavation and resampling and testing will be required. Maximum of 150 samples . See enclosed copy of earlier contract with simular requirements.

13. STATEMENT OF CONSTRAINTS

~~Oral report required within one week of sample pick-up.~~ Written report with QC/QA data to be provided in two weeks after sample pick up. Analytical laboratory must use EPA procedures for PCB analysis. Method used must be specified on written report. Sample pick-up and analysis to be provided by laboratory. Sample collection shall be done by PWC environmental. Sample pick-up location at IWTP BLD LP-178 NAS, Norfolk, VA.

14.

- [ ] SKETCH/PLAN NO. _____
- [ ] INVESTIGATION OR INSPECTION REPORT
- [ ] OTHER (Identify) _____

☆U.S. Government Printing Office: 1988—526-001/61230

DEFENSE LOGISTICS AGENCY
DEFENSE REUTILIZATION AND MARKETING SERVICE
DEFENSE REUTILIZATION AND MARKETING REGION COLUMBUS
926 TAYLOR STATION ROAD
BLACKLICK, OHIO 43004-9615

IN REPLY REFER TO DRMR-CHO (Mr. Bowell/(AV)850-2171/pca) 23 FEB 1990

SUBJECT: Camp Allen PCB Spill Site

TO: Commanding Officer
Navy Public Works Center
Code 640
ATTN: Mr. D. Buckner
Norfolk, VA 23511 6098

1. Reference:

a. Navy Public Works Center letters, 1 Dec 89 and 25 Jan 90, to Chief, Defense Reutilization and Marketing Office, Norfolk, subject as above.

b. Telephone conversation between Mr. Dave Buckner, Navy Public Works Center (NPWC) and Mr. Dan Bowell, Defense Reutilization and Marketing Region Columbus (DRMR-C), 23 Feb 90.

2. We have received a copy of reference a. and have reviewed all actions to date.

3. Per reference b. we agree that a plan of action is required for total clean up and decontamination of the area. We suggest that the plan for clean up take place in two phases.

a. NPWC cleaned up the original 12'x15' spill area except for the oil spilled on the asphalt. The clean up effort should be continued in the immediate spill area, including excavation of the oil stained asphalt. We request your assistance through our Interservice Support Agreement to complete clean up of the spill. We also request you provide to DRMR-C an estimate of the cost for clean up of the spill so that reimbursement can be made to NPWC.

b. Clean up of the contaminated area which was sampled during the "second round" of sampling by NPWC may indicate a larger problem of historical contamination instead of being related to the spill of 12 Oct 89. We believe the entire area needs to be evaluated (including additional sampling) to establish a spill boundary, and if warranted, added to the Installation Restoration program as a clean up site.

4. We will take action through DRMO Norfolk to minimize further contamination of the surrounding area including:

a. Disposal of any other PCB items presently located in storage at Camp Allen.

23 FEB 1990

b. Stop all future PCB transformer and other PCB items from being stored at Camp Allen.

c. Notify all of our employees and sales buyers of the PCB contamination at Camp Allen.

5. We appreciate your review and comments concerning the Camp Allen PCB spill/clean up and will await your response.

6. Point of contact is Mr. Dan Bowell, DRMR-CHO, (AV)850-2171.

FOR THE COMMANDER:

ROBERT L. CRAFT
LTC, USA
Acting Chief
Environmental Division

cc:
DRMO Norfolk

DEFENSE LOGISTICS AGENCY
DEFENSE REUTILIZATION AND MARKETING OFFICE-NORFOLK
NORFOLK NAVAL STATION POST OFFICE
POST OFFICE BOX 15068
NORFOLK, VA 23511-0068

IN REPLY REFER TO DRMO-XKAX

7 February 1990

SUBJECT: Camp Allen PCB Spill Site

TO: DRMR-CO

1. Reference Navy Public Works Center letters, 1 Dec 90 and 25 Jan 90, subject as above.

2. As stated in referenced letters, two samplings of the spill site have been conducted. The testing has not established a boundary for the spill site. The sampling boundary has exceeded the known area contaminated by the last spill.

3. Due to past activity at Camp Allen, it may be difficult to find a PCB free area to define the boundary of the spill.

4. Request your assistance on how to proceed on the PCB cleanup.

Joe M. Lambert
JOE M. LAMBERT
Deputy Chief (P)
DRMO Norfolk

2 Encls

cc:
Public Works Center
Code 640
ATTN: D. Buckner

6280
Code 640

25 JAN 1990

From: Commanding Officer, Navy Public Works Center, Norfolk
To: Chief, Defense Reutilization & Marketing Office, Norfolk

Subj: CAMP ALLEN PCB SPILL SITE

Ref: (a) PWC ltr 6280 Code 640 of 01 Dec 89
(b) PHONCON DRMO Norfolk (Mr. M. Sawyer)/PWC Norfolk (Mr. D. Buckner) of 27 Dec 89

Encl: (1) PCB Sampling Results

1. Enclosure (1) is a copy of the results of the second round of sampling conducted at your Camp Allen PCB spill site.

2. As discussed during reference (b), this sampling has not established a spill boundary.

3. We suggest you contact your Headquarters for assistance in further proceedings regarding cleanup of this spill and remind you that EPA regulations require PCB spills to be cleaned up in a timely manner.

4. The Navy Public Works Center, Norfolk point of contact on this matter is Mr. David H. Buckner, telephone 445-2917.

R. W. EITEL
By direction

Blind copy to:
Code 640A
640.2
600 R/F

Location: PWC Date of Receipt: 11-22-89 Turnaround: routine

Date: 12-15-89 Case No. 694 to Naval Facilities Engineering Command, Norfolk, Virginia

JTC Data Report No. 89-453 Table 1 of 1

NAVY SAMPLE ID	JTC SAMPLE ID	ANALYSIS PARAMETER							
		PCB* ug/100cm²							
403	61-3672	80	Camp Allen #1		12/15				
404	61-3673	99	Camp Allen #2						
405	61-3674	157	Camp Allen #3						
406	61-3675	10	Camp Allen #4						
407	61-3676	55	Camp Allen #5						
108	61-3677	28	Commissary Parking Lot #6						

Swipe test for PCB's not acceptable for asphalt Must actually send pieces of asphalt MEA²

* PCB as arochlor 1260

DEPARTMENT OF THE NAVY
NAVY PUBLIC WORKS CENTER
NORFOLK VIRGINIA 23511-6098

IN REPLY REFER TO
6280
Code 640
01 DEC 1989

From: Commanding Officer, Navy Public Works Center, Norfolk
To: Chief, Defense Reutilization and Marketing Office, Norfolk

Subj: CAMP ALLEN PCB SPILL SITE

Ref: (a) Mtg btwn DRMO Norfolk (Mr. J. Day)/PWC (Mr. D. Buckner Code 640) of 06 Nov 89

Encl: (1) Sketch of PCB site

1. As discussed during reference (a), the Navy Public Works Center's (PWC) Environmental Division has collected swipe samples to aid you in developing a cleanup plan for your Camp Allen Polychlorinated Biphenyl (PCB) Spill. The following preliminary information is provided to bring you up-to-date on our findings.

a. An initial set of samples was collected from locations close to the spill. All of these samples showed high levels of PCB contamination. See enclosure (1) points marked by an X.

b. Based on the results of the first set of samples, a second set of samples has been collected from new locations further from the spill area. See enclosure (1) points marked by a dot. Results of these samples will be forwarded to you immediately upon receipt from our laboratory contractor.

2. As discussed in reference (a), the first step in developing a PCB spill cleanup plan is defining the boundary of the spill. This is accomplished by sampling the spill area as we are currently doing. Once you have established the boundary of the spill you can implement a cleanup plan to remove contaminated material from the area. Special considerations for this Camp Allen site include the nature of the area and past activity in the area. The spill occurred on asphalt which can not be cleaned to remove PCB, thus your plan will need to include removal/disposal of this material. Past activity in this area included much work with equipment containing PCB, thus it may be difficult to find a PCB free area to define the boundary of the current spill. We will know more in this regard when the results of the second set of samples are received.

6280
Code 640

Subj: CAMP ALLEN PCB SPILL SITE

3. The following recommendations are provided based on observations made during site visits.

a. Improve housekeeping in the site area to minimize further contamination of the surrounding area.

b. Transfer the damaged transformer and drums of PCB to disposal contractor as soon as possible. Until this is accomplished they must be inspected weekly with inspections documented in a written log.

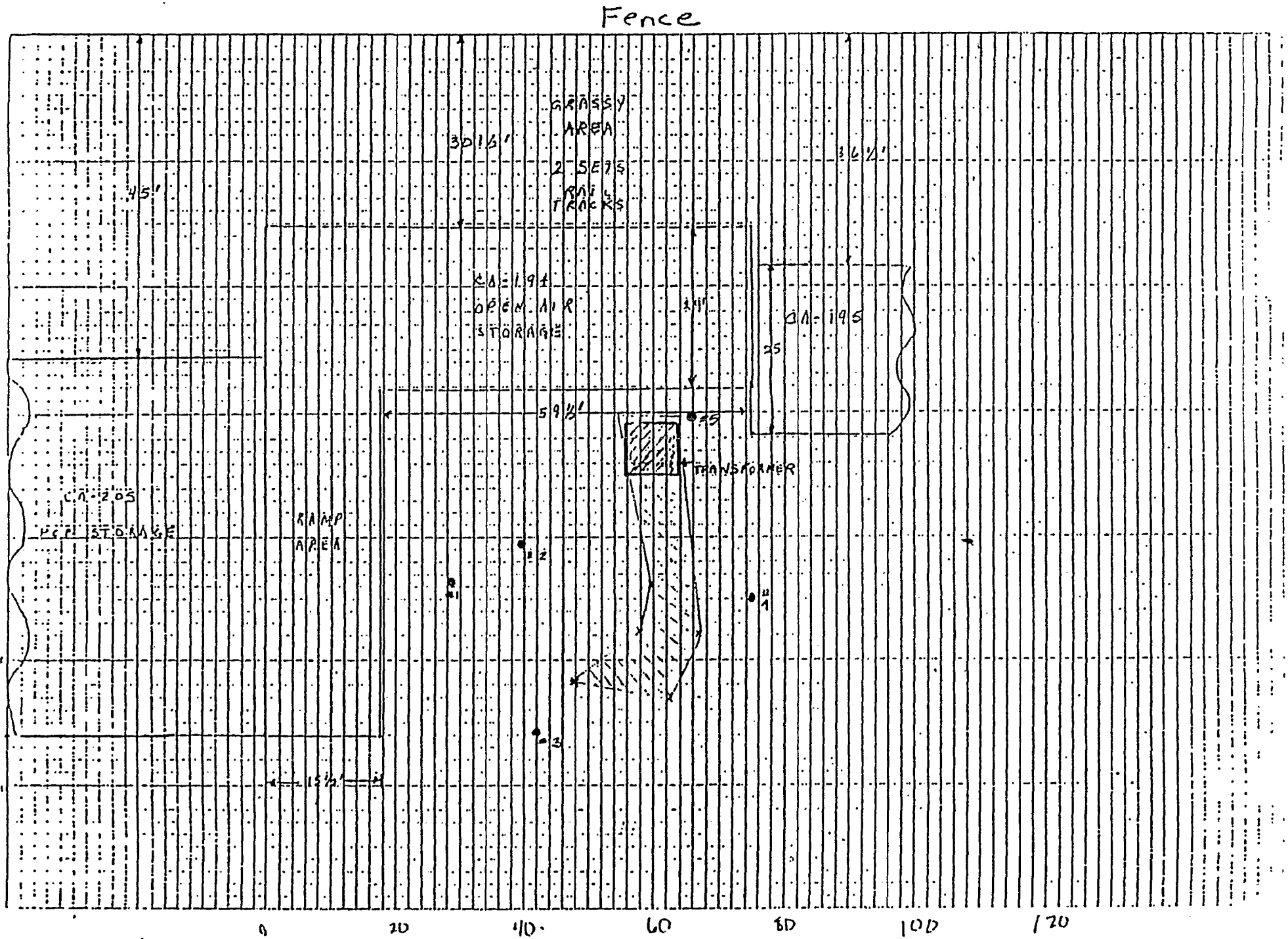
c. Initiate action to dispose of the remaining PCB transformers in the area so they will not interfere with site cleanup or cause an additional spill.

d. Document all actions taken to control/cleanup the site and keep file copies which can be provided to an EPA inspector if necessary.

4. We will advise you further on cleanup methods when the spill boundary has been defined.

5. PWC point of contact on this matter is Mr. D. H. Buckner, Director Environmental Division, telephone 445-2919.

R. W. Eitel
R. W. EITEL
By direction


Fence
GRASSY
AREA
30½'
36½'
2 SETS
RAIL
TRACKS
45'
CA-194
OPEN AIR
STORAGE
CA-195
25
59½'
TRANSFORMER
CA-205
PIPE STORAGE
RAMP
AREA
12½'
0
20
40
60
80
100
120

JTC Environmental Consultants, Inc.

Location: PWC Date of Receipt: 10-17-89 Turnaround: 10 days

Date: 10-25-89 Case No. 677 to Naval Facilities Engineering Command, Norfolk, Virgini

JTC Data Report No. 89-3775 Table 1 of 1

NAVY SAMPLE ID	JTC SAMPLE ID	ANALYSIS PARAMETER							
		PCB * ug/100cm²							
379-643	61-3545	5,800							
380-643	61-3546	24,000							
381-643	61-3547	13,000							
382-643	61-3548	27,000							
383-643	61-3549	63,000							
384-643	61-3550	62,000							

APPENDIX A-4

POLICE REPORT 1979

IMPROPER HAZARDOUS WASTE DISPOSAL

NAVAL STATION
NORFOLK, VIRGINIA 23511

IN REPLY REFER TO:
71:JWS:wh
CASE 2064-79
27 July 1979

NAVAL BASE POLICE INVESTIGATIVE REPORT

Subj: Improper disposal of hazardous materials involving employees of Naval Air Rework Facility, Naval Air Station, Norfolk, Virginia; report on

Encl: (1) Incident Report of Officers D. M. Haughney #56 and J. W. Sellars #11 of 18 July 1979
(2) Color photographs of subject area, Taussig Cans, 18 Jul 79
(3) Statement of
(4) Statement of
(5) Photographs of drums, Camp Allen Salvage Yard (black & white) 19 Jul 79
(6) Statement of J. J. Svagerko
(7) Statement of Roderick Wiley
(8) Chemical analysis, NARF Materials Lab
(9) Blk & white Photographs taken 27 Jul 79 of subj area, Taussig Cans

1. This investigation was predicated on an anonymous phone call received by Mr. William F. Vose, Naval Safety Center, on 18 July 1979, that chemicals were being dumped into an unnamed creek, a tributary of Mason Creek, east of the NM Area (Taussig Cans). Mr. Vose notified the Naval Base Police Force. This writer and Officer Haughney were detailed to investigate. We arrived at the Taussig Can Area at 1320 on 18 July 1979, approximately one minute before it started to rain. (See enclosure (1)). The following conditions existed:

a. A flow of orange colored liquid approximately 20 feet wide, 60 feet long, and 1 to 2 inches deep was running from the area west of Taussig Can V-1 where drums of chemicals were stored, into the creek east of the area. (See enclosure (2)).

b. There were 26 drums in the immediate area: six of these drums were lying on their sides, leaking their contents onto the ground through holes punched in the top. The stencils on the overturned drums read: "TURCO, TRICHLOROETHANE, TRICHLOROETHYLENE, HYDROFLUORIC ACID, and PAINT STRIPPER." (See enclosure (2)).

c. Atop one of the upright drums there was a large ballpeen hammer and chisel. (See enclosure (2)).

d. There was one 5 gal. can labeled TRICHLOROETHANE lying in the edge of the creek. This writer picked this container up to see if is was full and set it over on the bank out of the creek and found it to be empty. (See enclosure (2)).

e. There was a mass of solidified multi-colored mixed chemicals with a strong odor in the air; also, the odor was very strong on the ground to the point that when this writer smelled the odor, it burned his nostrils.

f. When the writer and Officer Haughney arrived at Taussig Cans, a black male, later identified as , departed the area with a flatbed load of 55 gallon drums.

g. There was a 5 gallon plastic container labeled "HYDROFLUORIC ACID" setting upright, smoking profusely. This condition still existed on 27 July 1979 upon inspection of area.

h. Approximately 10 metal drums labeled "CYANIDE" were open, upright, and rain was leaking into them.

2. At approximately 1400 on 18 July 1979, Police Photographer Bob Bryant arrived at the Taussig Can Area and took color photographs. (See enclosure (2)).

3. At approximately 1615 on 18 July 1979, this writer and Officer Haughney met with Mr. Sonny White, Sanitary/Environmental Engineering, LANTDIV, at the Taussig Can Area where he took samples of the chemicals from the creek and surrounding area. The results of the laboratory tests are not available in writing this date. However, preliminary tests revealed a high degree of toxic chemicals present in the area.

4. At approximately 1000 on 19 July 1979, this writer and Officer Haughney interviewed , Truck Driver, PWC Transportation Department. made a written statement outlining in detail the operation involving chemicals in the Taussig Can Area to the best of his knowledge. (See enclosure (3)).

5. At approximately 1020 on 19 July 1979, this writer and Officer Haughney interviewed , Truck Driver, PWC Transportation Department. stated that he had hauled loads of drums on more than one occasion over to the Salvage Yard to be dumped. However, on one occasion when he took them over, they refused to accept them because some were leaking and he was instructed to take them to South Annex who also refused to accept them. So he returned to Taussig Can Area with the loaded drums and he informed that nobody would accept the drums. had the drums removed and stored at Taussig Can Area. was interviewed on 27 July 1979 at Police Headquarters at which time he stated that either on 18 or 19 July 1979 he had been instructed by to haul the top soil that had been grated up from the immediate area in between the Taussig Cans to the dump off Hampton Blvd. in an area that has been provided for certain chemicals to be disposed of, but that on one of the loads he was dumping, the

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environmentalist came up to him at the dump while in process of dumping this load and instructed him saying that he would have to take this contaminated dirt back, that it could not be dumped in this area. So he hauled the dirt back over to the Taussig Cans Area and explained to what had taken place. He was then instructed by . to back up to the bank by the roadway and dump the contaminated dirt there. He carried several loads there and dumped it. The man operating the front-end loader was also instructed to dump remainder of dirt into this pile. (See enclosure (9) and see enclosure (4) for statement).

6. At approximately 1120 on 19 July 1979, this writer, Officer Haughney, , Chief of Police J. B. Hardison, Deputy Chief S. E. Cherry and P. A. Rakowski, Sonny White, and Sam Robinson of LANTDIV went to the Camp Allen Salvage Yard where identified a very large pile of drums as the ones he has hauled from the Taussig Can Area. specifically identified the drums that he had hauled from the Taussig Can Area the afternoon of 18 July 1979. Some of these drums were full, or partially full, and leaking their contents down into the pile. Many of the drums are rusted and the stencils cannot be read; however, the following stencils were legible: "TURCO, TRICHLOROETHANE, TRICHOLOROETHYYLENE, and PAINT STRIPPER." At approximately 1145, Police Photographer Bryant arrived and took black and white photographs of the drums. (See enclosure (5)). Mr. Kennedy who is the senior supervisor of the Salvage Yard stated that he had had reason to be suspicious of the substance in these containers for some time and that on one occasion approximately two months ago he had observed smoke coming from the ground in the area where the drums were stored. Mr. Kennedy stated that he also instructed Mr. Smith who is also Yard Supervisor to be sure to not accept any more drums unless they were empty. Mr. Smith also stated that in the process of bailing old drums with a machine they had observed smoke coming from the bails on occasion. The soil around the area of drums and in the puddles of water were of multiple colors and had a strong odor similar to the area where the chemicals are stored at the Taussig Cans. also stated that during the past two or three weeks he was told by . , NARF through his dispatcher, , to haul a large 3,000 to 5,000 gallon container from the taussig Can Area to 2 or 3 other places and nobody would accept the containers. He was told by to takeit back to the West side of V-28, West door of the Plating Shop, which he did. It was later removed from Plating Shop door over to an area west of LF-18 which is also a storage area for chemicals. The writer later showed the tank west of LF-18 which he idendified as the tank in question.

7. At approximately 1200 on 25 July 1979, the writer interviewed Taylor Carr, Foreman, Plating Shop, V-28. Mr. Carr stated that the aforementioned tank was brought to V-28 so the contents could later be pumped into a 5,000 gallon

tank west of V-28, for ultimate disposal by private contractor. During the time the tank was parked at V-28, a chemical analysis was taken by NARF Materials Laboratory and the tests revealed an incompatible mixture that is now producing Hydrogen Cyanide Gas . (See enclosure (8)).

8. At approximately 1240 on 25 July 1979, this writer interviewed Mr. Dave Buckner, GS-11, Chemist, SSN 208-40-7717, Bldg. LP-178, Chemical Treatment Plant. Mr. Buckner stated that he was asked by and , Code , Engineering, if he could dispose of the tank of chemicals. He said that due to the incompatible mixture, he could not.

9. At 1150 on 23 July 1979, this writer, Detective Onley, and Officer Haughney interviewed Mr. Roderick D. Wiley, SSN 242-34-3826, WG-10, Rigger, Building V-47. Mr. Wiley stated that on numerous occasions he had seen and open the 55 gallon drums and dip a stick into the drums of liquid and say "it's water." and then dump the contents to the ground. Mr. Wiley stated that the liquid was in some cases colored and had a chemical odor. Mr. Wiley further stated that on 16 or 17 July 1979, he was told by to shovel some more sand on to the existing pile of sand in the creek. He did so. See enclosure (2) for picture of sand damming up the creek and see enclosure (7) for Mr. Wiley's statement.

10. At 0945 on 23 July 1979, this writer, Detective Onley and Officer Haughney interviewed Mr. Joseph J. Svagerko, WG-10, Rigger, Bldg. V-47. Mr. Svagerko stated that he had worked the Taussig Can Area approximately 5 months and on one occasion he had accidently punctured a 55 gallon drum with a forklift. The contents of the drum ran out on the ground. No effort was made to clean it up or to prevent the contents from leaking out. He further stated that he had never emptied any drums in that area and would refuse to do so because "he knows what is out there." When this writer showed Mr. Svagerko the colored photos that were taken of the Taussig Can Area which revealed the condition of the soil and creek he said that he did not understand how that much chemical got on the ground. Mr. Svagerko made a written statement. (See enclosure (6)).

11. At 0840 on 24 July 1979, this writer, Detective Onley and Officer Haughney interviewed Mr. Willie C. Buckholts, SSN 256-5404663, WG-10, Rigger. Mr. Buckholts stated that on numerous occasions he had been instructed by to punch holes in the 55 gallon drums of chemicals to determine their contents which was done with ballpenn hammer and Chisel. At this point, or would dip a stick into the drum, then look at what dripped off the stick, and then would say it is only water and dump the contents on the ground. Mr. Buckholts further stated that on other occasions he had seen from a distance away turn drums over and spill contents on the ground. Mr. Buckholts was requested to give this writer a written statement,

but declined to do so. However, he stated that he was willing to talk about this. The information provided this writer by Mr. Buckholts was witnessed by Detective Onley and Officer Haughney.

12. Three other riggers who have worked in this area were interviewed but declined to make a statement or stated that they knew nothing at all about this specific matter. Therfore, no statements were obtained.

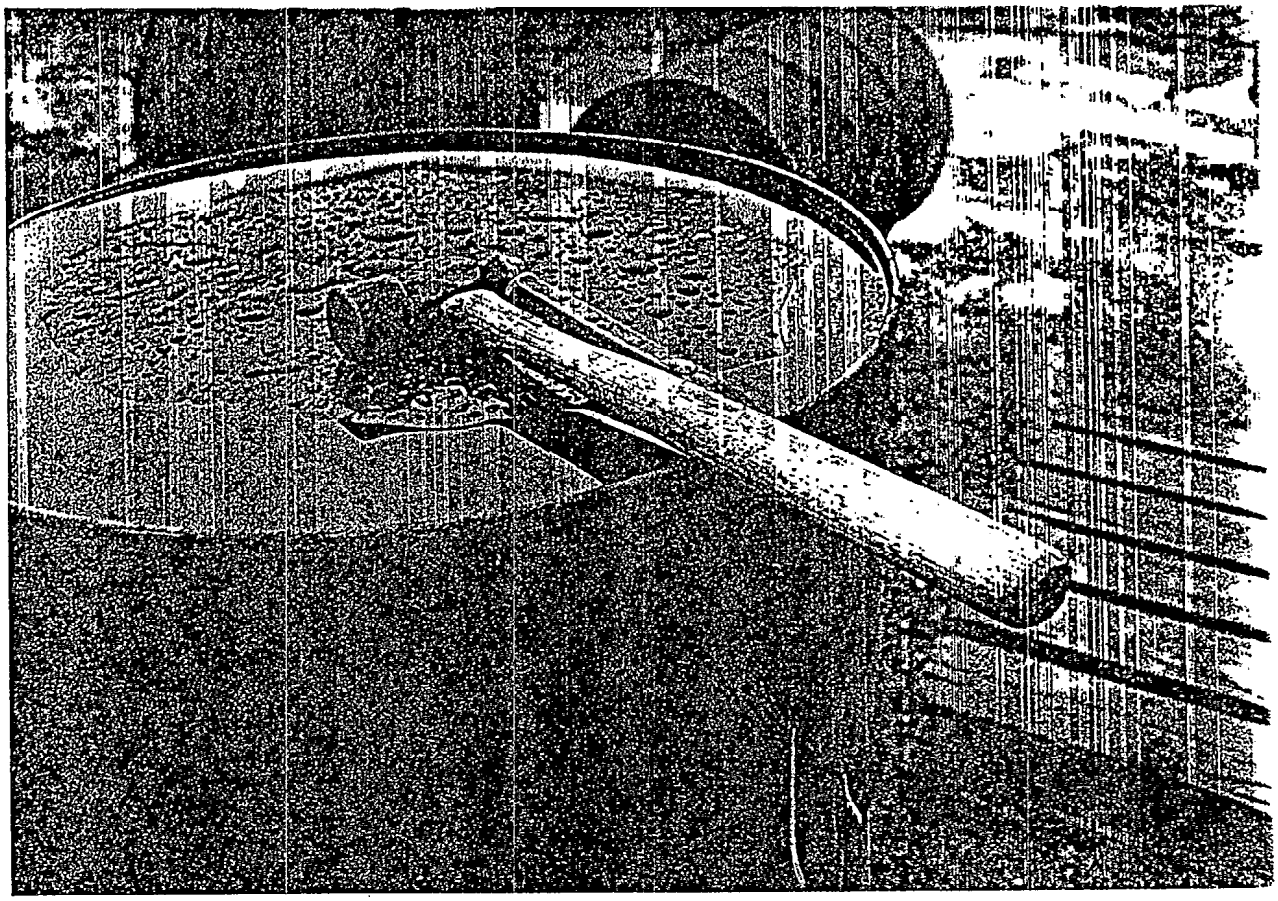
13. At 1335 on 24 July 1979, this writer, Detective Onley, and Officer Haughney attempted to interview , , , declined to sign a "Waiver of Rights" form. He stated that he and had been instructed by their supervisor, , to make no statement or sign anything. Therefore, the interviews were terminated without any questions being ask.

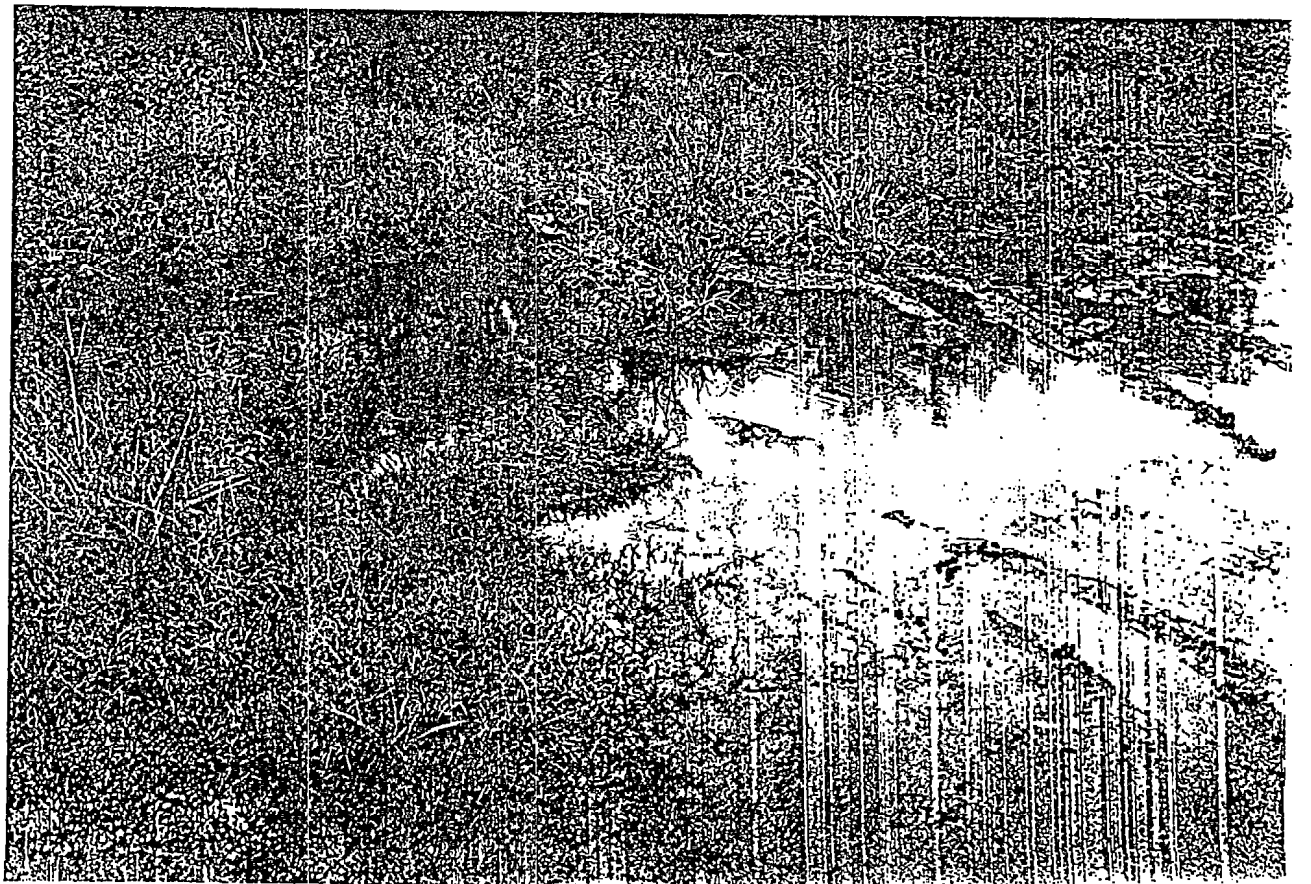
14. At 1430 on 24 July 1979, this writer, Detective Onley and Officer Haughney attempted to interview , , , declined to sign a "Waiver of Rights" form. No questions were asked of him and interview was terminated.

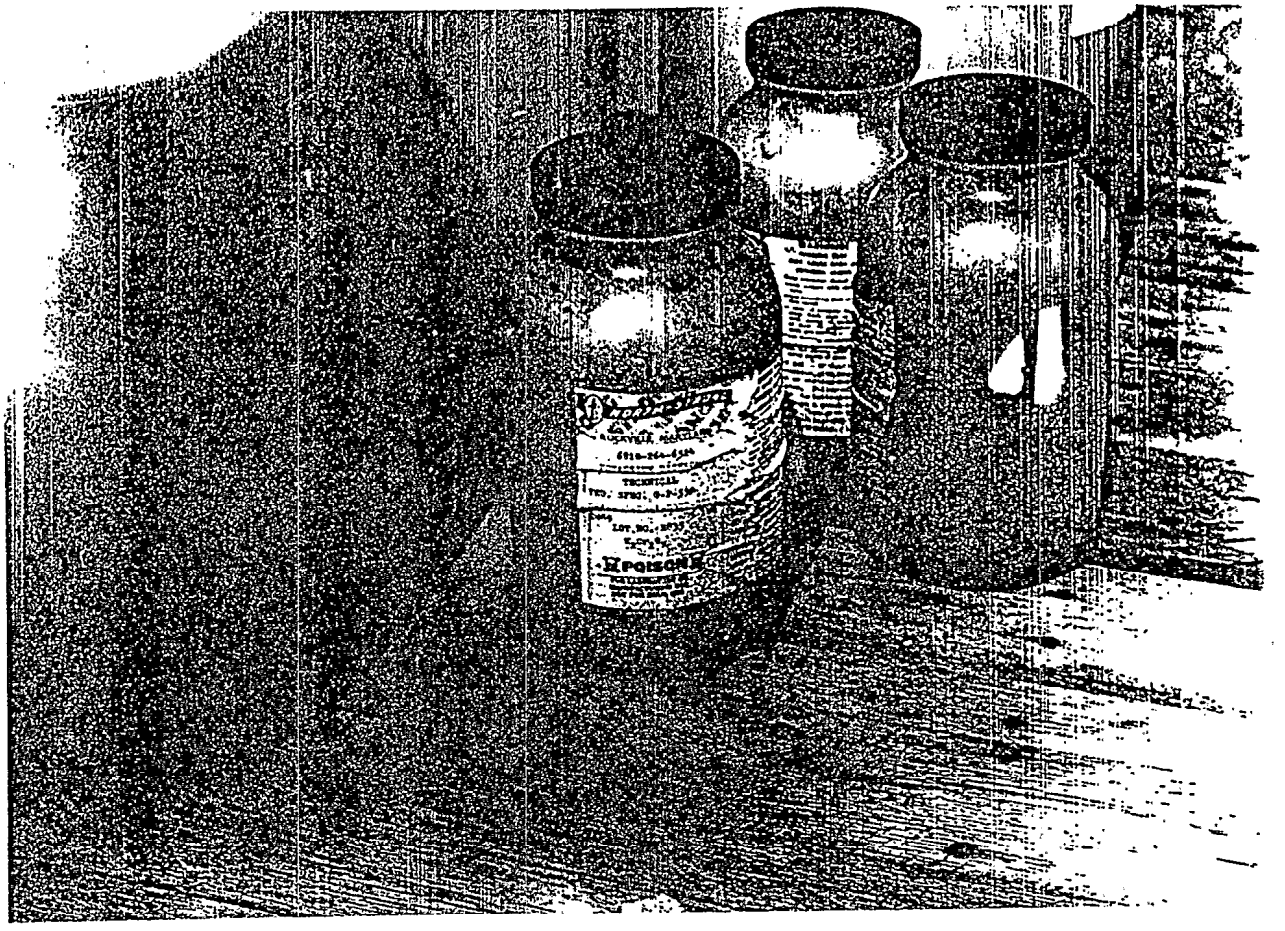
15. Information obtained during this investigation revealed that all of these contaminated chemicals and acids have been and are continuing to be transported throughout the Navy Complex and through Government Housing and on Public Highways without any Police escorts and no notification of these vehicles with dangerous materials being transported reported in any way. Evidence revealed that many of the drums were leaking their contents when loaded on to the trucks and transported over various roadways and housing projects being spilled as they were being transported up and down the roadways. Further evidence revealed that contaminated dirt was being transported in open dump trucks throughout the Naval Base Complex and also on Public Highways openly accessable to being blown throughout the area during their transportation.

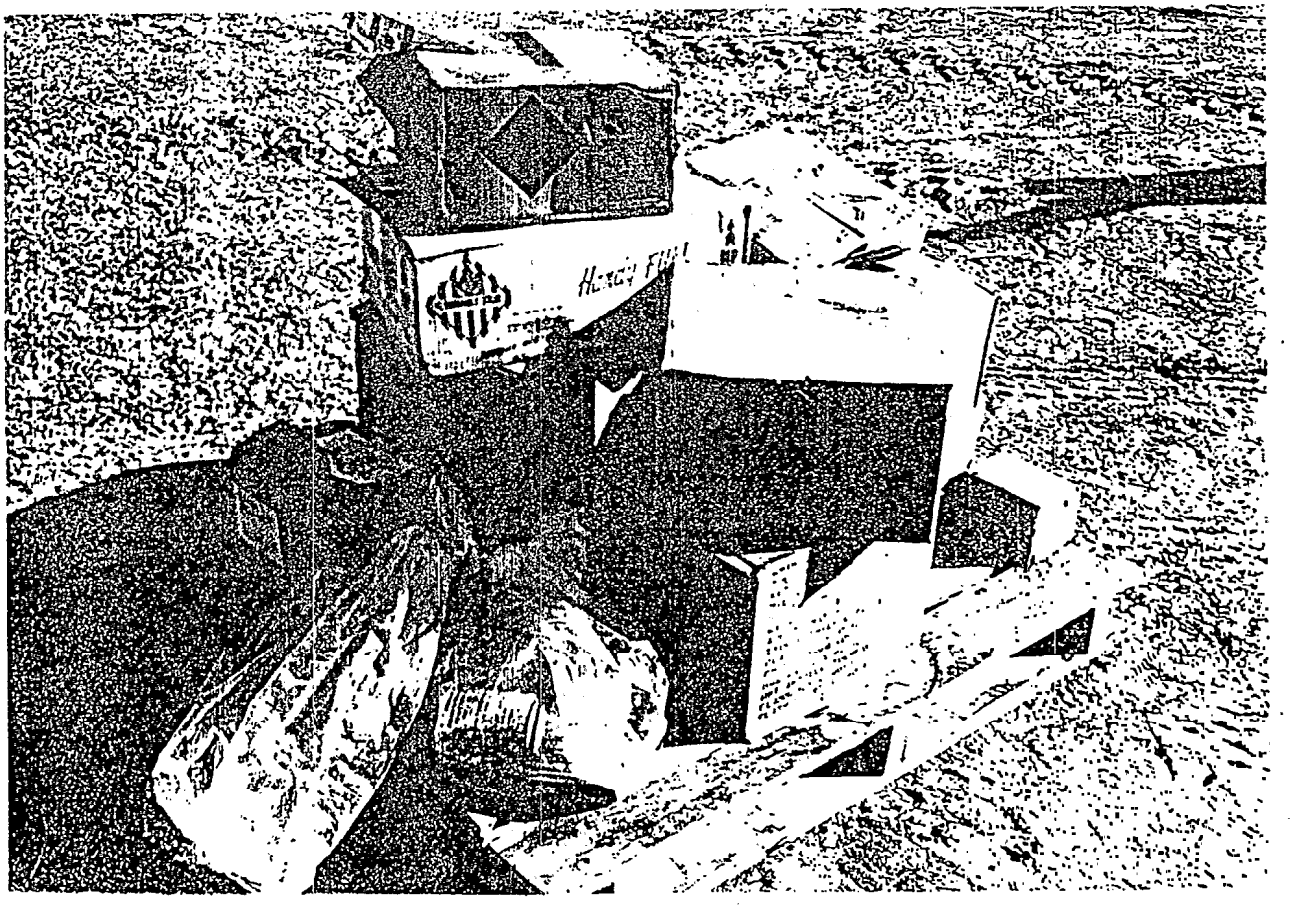
Jack W Sellars

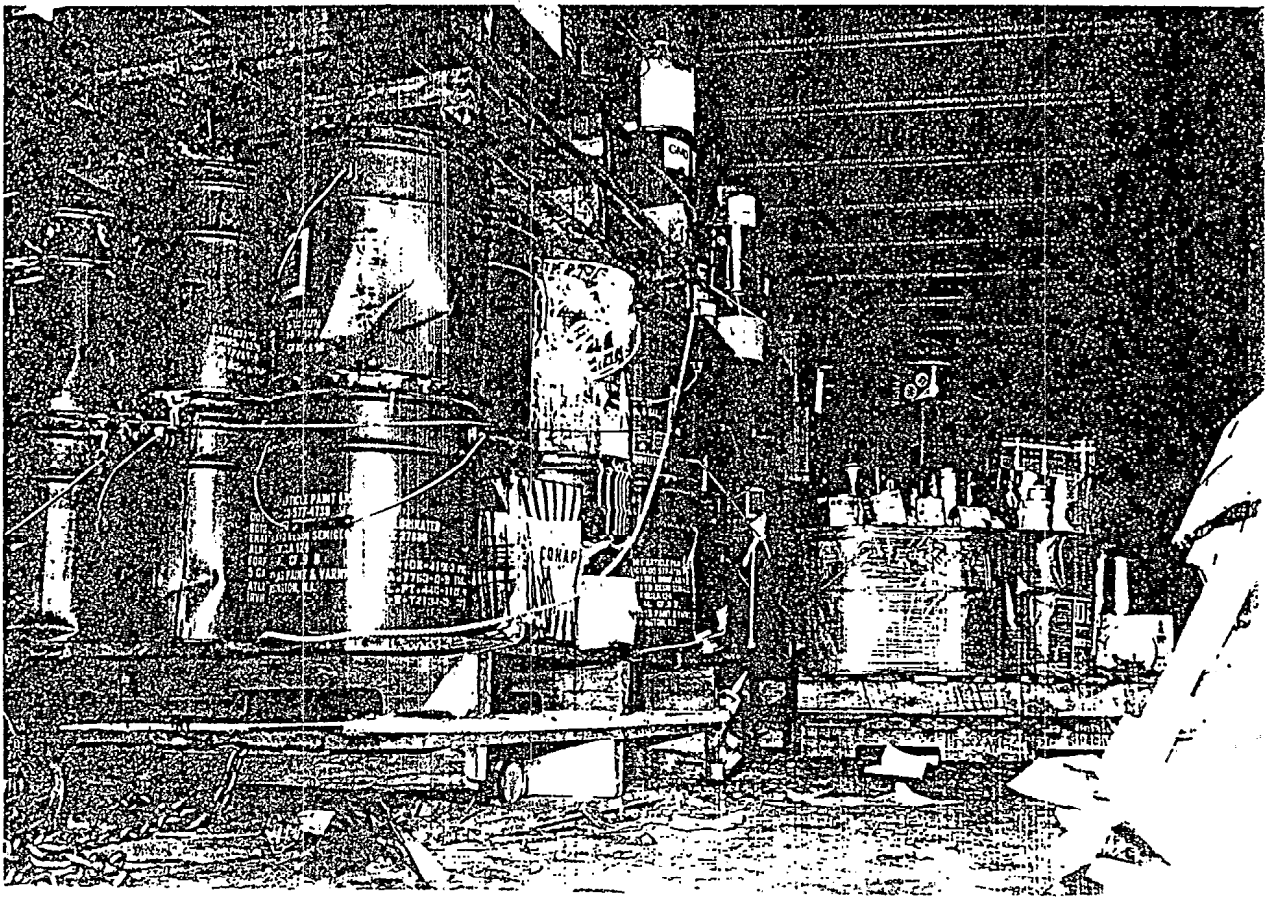
JACK W. SELLARS
Truck Investigator

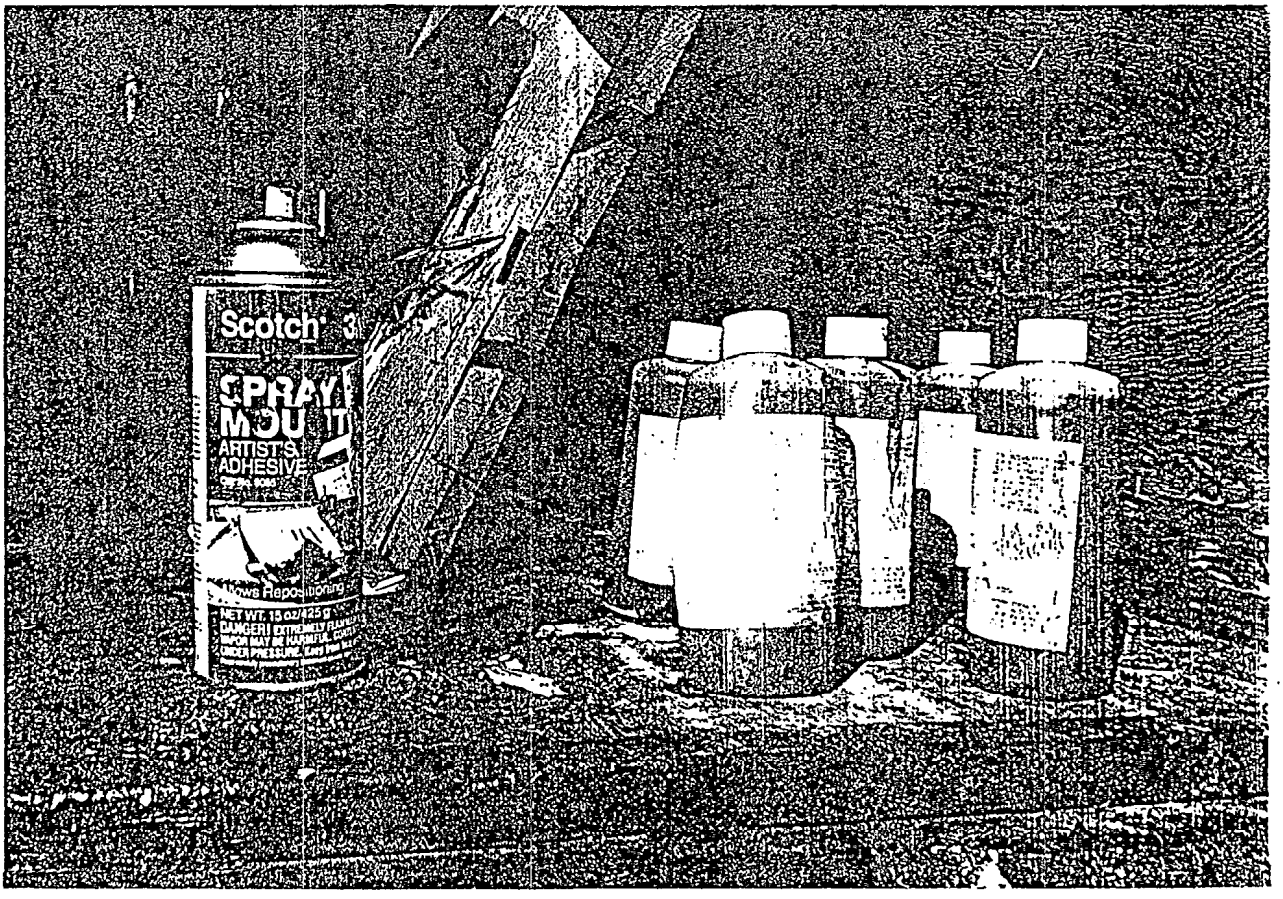





POISON






Scotch
SPRAY
MOUNT
ARTIST'S
ADHESIVE

4 MAY 1979

APPENDIX A-5
FIELD NOTEBOOK - INTERVIEWS

Camp Allen Salvage Yard
CTO #148.

Baker

John E. Zimmerman
Assistant Geologist

Baker Environmental, Inc.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108
(412) 269-6000
1-800-553-1153
FAX (412) 269-2002

Susan Hauser.
Home -

Jeri Tragiser - Home

Projects

Terry Chamberlain, 70E, ~~#45446~~
Bldg #143 444-7455

Cheryl Barnett 804 444 3009
Sharon Waligora " " "
David Forsythe " " "
Bldg# N26 Gilbert street

Steve Olson (Reg Environ Coordn)
444-3009 or 444-6700 Bldg# N26

Stan Greer 804 444-5600
(C.A.S.Y.) 444-6077

Ken Tourjie 804 444-5144
(DRMO)

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Projects (continued)

8E3 C.A.S.Y. 10/6/92 (1)

1230 Arrive at LANTDIV office and meet Susan Hauser and Terry Chamberlin.

1300 Arrive at salvage at Camp Allen. sign in. Also observed ~~to~~ 2 aereal photos of the salvage yard dated 3/22/65 and 1/92. The 1965 photo does not include Camp Elmore since the facility was constructed later. The 1992 photo does contain Camp Elmore. Also the basic extent of the salvage yard is consistant in both '65 and '92 photos

1965 Photo indicates extended salvage yard which includes currenty
1) car auction place
2) PWC parking

Historical facts:
① Rail service ended 1987
② Baling Press ended 1988
③ Smaltar operations: aluminum & lead
④ Bldg CA 193 housed PCB's (still standing)

Civilian and Navy personnel can be seen in the historical photo's working in the salvage yard. Mr Stan Greer showed and explained the photographs to the Baker and LANTDIV reps.

1335 Begin salvage yard tour. Tour is headed by Mr. Greer. 1st area visited is the MO area (property waiting to be sold scraped (dismantled) This area drains very well. In 1971 major fire occured in this particular area of the salvage yard. All potentially hazardous material that was observed in drums originates from various geographic areas near

and far. Ex. Virgin Islands, Cuba and locals around Norfolk.

Bldg 93 former place where transformers were stored/drained before shipping. Draining of transformer fluids were supervised by gov't environmental dept. List of workers at salvage yard is presented JLT compiles names.

Bldg 194 is where PCB spill occured. Dimentions are approx 28' x 28'. Spilled PCB's seemed to have flowed north from Bldg 194. Bldg 194 before the spill of PCBs occured was primarily used as a loading dock.

EWG pile: refrigerants (2' depth)

EIL pile: 300 ppm PCBs (subsurface)

Steel surface → 26 ppm PCB's light & heavy

Standing Water: South of E1L scrap pile and west of E1L scrap pile.
Meet Mr. Reagan. Will interview him later. Employee at yard since 1989.
Bldg #220 former smelter area. Standing water directly east of Bldg #220, & north of #220
E1L pile: standing water observed extream northerly corner.
No4 dirt area just ~~north~~ South of blacktop: PCB spill area not tested w/ borings
Battery Area:
Bldg #CA212 welding gas shack.
Standing water South & SE of Bldg #CA212
1425 meet Mr. Watson.
1435 Yard tour ends.
1438 Begin interview w/ Watson

1440 Return to salvage yard office. Mr. Watson begins looking through photo album of salvage yard.
Q: When were civilians 1st hired to work in salvage yard
An: Mr. Watson: about 1943 or 1944. In 1947 many groups from the area (various bases) were partially combined w/ some civilians comming to the Camp Allen Salvage yard in 1947
Q: who has lead poisoning that you can remember Mr. Watson
An: Mr. Watson: still living Wm Jenkins. Identified in July 1947 photo. Others have previously died

Over the years workers have been exposed to gases such as mustard gas and from Mr Watson said.

Chesapeake * Theodore Sherod
Norfolk * Wm. Jenkins
Franklin * John Cooper

Maps available at:
base civil engrs office
base museum

1620 Meet w/ David Forsythe and Sharon Waligora and Cheryl Barnett. Cheryl is the environmental coordinator for the Norfolk Naval Base.

NSC (Naval Supply Ctr) is owner of the salvage yard property.

Skip Gibson (Safety office) 444-2590 or 2950

1700 off-base.

JEZ

0810 Call Terry Chamberlain and set up meeting for 1300 today. Will discuss (PA) process as described in the installation restoration manual concerning the sites history

0820 Called Dave Forsythe's office. Dave was not available. I talked w/ Sharon Waligora and asked if Steve Olson was available. She suggested that I keep trying periodically

0845 Called Susan Hauser's office. She was not available. Will wait on her return call. Subject of discussion will be real estate information prior to C.A.S.Y. title office. This question will is important to answer

due to the fact that prior site ownership, operator(s) and type of ownership can be determined before C.A.S.Y. became NAVY property.

0900 Leave for C.A.S.Y. upon arrival consult w/ Stan Greer about taking pictures of salvage yard. Documentation will be recorded following the same pattern as the walk through tour conducted by Stan Greer on 10/6/92.

0915 Field documentation of C.A.S.Y. begins. Photograph # 1 is at the MO area (northern part of C.A.S.Y.) Photograph # 18 is at Bld CA # 212 (battery storage area of C.A.S.Y.)

Photograph # 1
Location: MO area
Description: property waiting to be sold/ scraped/dismantled. Surface cover is dirt & gravel
Direction of view: NW to SE

JEZ

Photograph # 2
Location: Bld # CA193
Description: Door on southwest wall of building (entrance) where PCB spill occured. Surface cover is blacktop (ashphalt)
Direction of view: SE

Photograph # 3
Location: Bld # CA194
Description: Area of PCB spill. Approximate dimension is 28' x 28'. Surface cover is blacktop (ashphalt)
Direction of view: SE

Photograph # 4
Location: Bld # CA194
Description: Standing in PCB spill area facing C.A.S.Y. administration bld. note standing water. Surface cover is partially blacktop (ashphalt) and partially dirt and gravel.
Direction of view: NW

JEZ

JEZ

Photograph #5
Location: Bld #CA194
Description: standing in PCB spill area facing C.A.S.Y. administration bld. Note standing water. Surface cover is dirt and gravel.
Direction of view: SW

Photograph #6
Location: Bld # ~~CA193~~ CA193
Description: standing just inside southwestern wall doorway. Former location where transformers were stored and drained. Surface cover inside bld. is cement.
Direction of view: NE

Photograph #7
Location: standing where PCB spill occured.
Description: E1L pile as viewed from outside Bld #CA193. NE corner of Bld #205 is on leftside of photograph. Surface cover in photograph is dirt and gravel.
Direction of view: SW

JEZ

Photograph #8

Location: NE of Bld # CA 205

Description: Southeast side of C.A.S.Y as viewed from beyond NE corner of Bld # CA 205. Surface cover is dirt & gravel

Direction of view: SE

Photograph #9

Location: Along southeast side of C.A.S.Y. directly in front of Bld # CA 195

Description: Viewing DLD pile (aluminum). Note standing water. Surface cover is dirt & gravel

Direction of view: SW

Photograph #10

Location: SE corner of C.A.S.Y. facing Bld # CA 197

Description: Drum storage. Contents of drums is: empty. Northeast corner of Bld # CA 220 is on left side of photograph. Surface cover is dirt and gravel.

Direction of view: NE

JEZ

Photograph #11
Location: NW of Bld #CA220
Description: transformer storage area. Surface cover is dirt & gravel
Direction of view: SE facing C.A.S.Y. SE fenceline.

Photograph #12
Location: NW of Bld #CA220
Description: Standing water along southwestern fenceline of C.A.S.Y.
Direction of view: SW

Photograph #13
Location: Along southwestern fenceline of C.A.S.Y.
Description: E1L pile is on rightside of photograph. To the left of the scrap pile E1L and towards the bottom of the photograph is the area where surface and subsurface test borings were completed when sampling for PCB's. (refer to p. 3). Surface cover is dirt & gravel
Direction of view: NE

JEZ

Photograph #14

Location: Along southwestern fenceline of C.A.S.Y.

Description: E1L scrap pile's northwestern side. Note the standing water. Surface cover is dirt & gravel.

Direction of View: NE

Photograph #15

Location: SW of E1L scrap pile

Description: Facing northwestern fenceline of C.A.S.Y. Note that area is comprised of "sold" merchandise surface cover is dirt & gravel

Direction of View: NW

Photograph #16

Location: NW of E1L scrap pile

Description: Facing the E1L scrap pile notice standing water at the scrap pile's base. Surface cover is dirt & gravel.

Direction of View: SE

JEJ

Photograph #17
Location: Bld. # CA 212
Description: This building is designated "Lead Storage Area." Currently all batteries at C.A.S.Y. are stored in this area. Notice in the photograph that standing water from the previous day is drying up. Surface cover is dirt and gravel.
Direction of view: NE

Photograph #18
Location: SW of Bld # CA 212
Description: Battery storage area. Surface cover is dirt and gravel
Direction of view: NE

Special Notes:
1. Bld # CA 220
   - formerly where smelter operations were designated (heavy metals)
2. all vegetated areas inside C.A.S.Y. appeared stressed.

1145 Leave C.A.S.Y.

1200 Return to hotel and check on returned calls. Appointment w/ Terry Chamberlain is confirmed for 1300

1210 Lunch break

1245 Consult w/ JLT over phone

1300 Meet w/ Terry Chamberlain at Naval Supply Facilities Department. Also consult w/ Bob Morrison who suggests I get in touch w/ Ken Tourjie over at Defense Reutilization and Marketing office Bld # 211 South Annex. He (Ken Tourjie) provided me with some information about former workers since DRMO oversees daily C.A.S.Y. operations.

1500 Meet w/ Ken Tourjie. Meeting produces

a scheduled interview session which will take place on 10/9/92 at the DRMO South Annex office beginning at 0830.

1615 Consult w/ Susan Hauser, P.E. (LANTDIV rep) about interview procedure for 10/9/92

1715 Arrive at C.A.S.Y.

1730 Interview C.A.S.Y. yard worker (Mr Jeff Reagan)

Interview Questions & Answers

Question: Mr Reagan how long have you worked at C.A.S.Y.

Answer: 3 years

Question: were you involved w/ PCB spill in 1989

Answer: yes

Question: Describe what happened

Answer: Forklift tooth punctured transformer. PCB liquid spilled in area between CA193 and CA194. Covered spill with absorbtion material. Continued working.

Question: Describe dailing C.A.S.Y. operations

Answer: Receive, separate and inventory junk.

Question: Describe job duties as yard laborer at C.A.S.Y.

Answer: vary from day to day. Inventory and separate junk.

1815 Interview completed
1830 off site
1845 Return to hotel

0810 Meet Dave Foresythe at Bld # N 26 at NAVCOM BASE.

0830 Arrive at Hampton Roads Naval Museum.

0835 Meet Lt. Todd Horvatis. Lt. Horvatis assisted me when reviewing maps in the Accession Rm. and when discussing areal photographs of Camp Allen and the naval base at large.

0845 Reviewed literature concerning the Norfolk Naval Base of which Camp Allen and (C.A.S.Y.) are part of. Time frame for the historical review ranged from Post WWI (literature addressed function of naval base during

war time) through the mid 1960's. Most information concentrated on the years 1941 to 1949 and 1959 through 1970. Areal photographs document changes in size and shape of the naval base as they occured between 1941 and 1970

1050 Consulted w/ colleague of Steve Olson's about tracking historical records about Camp Allen and C.A.S.Y. His response "He didn't find any and wished me good luck"

1055 Consulted w/ Mr Jones about tracking down records concerning history

of Camp Allen specifically C.A.S.Y. He commented that he concludes after conducting his own search that "no pertinent records are available." He is aquainted though w/ Bakers efforts at Camp Allen since beginning the C.A.L. field program.

1115 Consult w/ Dave Foresythe about historical search at the Naval Museum.

1200 Lunch break.

1300 Consult w/ JLT over phone about literature search findings

1440 Consult w/ Susan Hauser, P.E. (LANTDIV rep) about literature findings at Naval

Museum. I also ask about information concerning real estate records about C.A.S.Y. Susan will FAX records to JLT on 10/13/92 if any are available

1530 Consult w/ Dave Forcythe about entry/access to Baker site office trailer at C.A.L. Dave suggests that I call on the NAVY BRIG personnel about entry.

1600 Arrive at NAVY BRIG to make arrangements to secure entry to Baker C.A.L. site office on 10/9/92

1630 Stop at C.A.S.Y. and pick up yard site map from Stan Greer.

1645 Consult w/ JLT over phone.

1700 Begin locating former C.A.S.Y. workers in phone directory for Greater Norfolk area.

1745 Begin telephone interview w/ former C.A.S.Y. worker (R.A. Kennedy)

583-5558

Interview Questions & Answers

Question: When did you work at C.A.S.Y.

Answer: Couldn't remember when he started. Retired in 1983.

Question: What was your position at C.A.S.Y. when you retired in 1983

Answer: Yard supervisor last 11 years he worked.

Question: What types of material came into the yard.

Answer: Scrap steel (heavy & light)

oil all types, chemicals all types and metal all types

Question: How were these materials inventoried?

Answer: Not to well. Records were not kepted up and materials in yard went unaccounted for most of the time.

Question: What about the fire of 1971

Answer: What drums that didn't explode during fire were buried along SE fenceline of C.A.S.Y. No injuries occured.

Question: Was an inventory ledger ever noticed around the administration building, Records or other paperwork?

Answer: Records were only available for 11 years. Any older ones were destroyed.

1830 Begin telephone interview w/ former C.A.S.Y. worker (John Harbuck)

587-6855

Interview Questions & Answers

Question: When did you work at C.A.S.Y.

Answer: Retired in 1983

Question: What was your position at C.A.S.Y. when you retired in 1983

Answer: yard supervisor

Question: Did you ever inventory material comming into C.A.S.Y.

Answer: No. Not on paper. Oil was put in one place scrap steel in another and metal down to the smelter.

Question: What materials were stored in drums

Answer: Who knows. without

paper records its anyones guess.

Question: Did any spills occur in the yard.

Answer: On a daily basis

Question: Were they cleaned up

Answer: No, not really. Put drying agent on it thats all.

Question: Describe fire of 1971

Answer: Lucky nobody died. Drums exploded. Fire burned for 2 days then smoked for several more. Drums buried in ditch along SE fenceline

JEZ

2300 Begin telephone interview w/ former C.A.S.Y.
486-3130 worker (Claude McNeer)

Interview Questions & Answers

Question: When did you work at C.A.S.Y.

Answer: Retired in 1988

Question: What was your position at C.A.S.Y. when you retired in 1988

Answer: Yard laborer

Question: Did you ever inventory incomming materials to C.A.S.Y.

Answer: NO

Question: What do you remember comming into C.A.S.Y.

Answer: Lots of drums w/ oil and all types of chemicals

Question: What did the drums look like?

Answer: Rusted and dented.

Never new. Some were punctured

Question: How were they inventoried.

Answer: They weren't. They were just stacked.

Question: Where were the drums stored (stacked)

Answer: On the north end of C.A.S.Y.

Question: Describe the fire in 1971

Answer: Like the 4th of July. It just burned and burned for a couple of days. What didn't burn was buried in a big wide ditch east of C.A.S.Y.

Question: When transformers came into C.A.S.Y. What happened to them

Answer: Fluid was drained out.

Question: What happen to the fluid

Answer: Its all over by Blds #CA 193 and 194

JEZ

0800 Pick up Dave Foresythe at Bld #N26 at NAVCOMBASE

0810 Leave for DRMO office for scheduled interviews w/ former C.A.S.Y. workers.

0825 Arrive at DRMO and briefly consult w/ Ken Tourjie and introduce Dave Foresythe

0835 Begin scheduled interviews

444-5144 Dick Mains former C.A.S.Y. worker

Interview Questions & Answers

Question: When did you work at C.A.S.Y.

Answer: 11 months during 1986

Question: What was your position at C.A.S.Y.

Answer: Yard foreman

Question: As yard foreman what was your major responsibility

Answer: Get rid of empty drums at C.A.S.Y. Drums that contained liquid were to be separated and inventoried.

Question: Were there any other materials that needed either inventoried/separated or removed from C.A.S.Y.

Answer: Yes, alot of tires.

Question: Where the drums were stored describe that area.

Answer: Mucky area. Could see hazardous chemical liquids leaching off C.A.S.Y. to the WW fenceline and beyond.

Question: Were any steps taken to remediate this

problem

Answer: Applied the dirt & gravel cap which exists presently at C.A.S.Y.

Question: So as far as you know this was the 1st action taken of this kind at C.A.S.Y.

Answer: Yes.

Question: Where are the drum inventory records

Answer: Don't know. probably lost

0920
444-5144 Pam Whitehurst former C.A.S.Y. administrative worker (office)

Interview Questions & Answers

Question: When did you work at C.A.S.Y.

Answer: 1978 to 1990

Question: What was your position at C.A.S.Y.

Answer: Worked in office as administrative support.

Question: Were you ever in the C.A.S.Y. yard much.

Answer: No

Question: Did you do inventory of any drums.

Answer yes. with Dick Mains during 1986.

Question: Did you keep records of the inventory

Answer: yes, but I don't know where they are now.

JEZ

0940
444-5144 Rosemary Farnell
non-C.A.S.P. worker.

Interview Questions & Answers.

Question: were people who you knew or know glad to leave C.A.S.P. for other assignments
Answer: yes.
Question: Do former C.A.S.P. workers talk about the situation at Camp Allen.
Answer: Its not a popular subject. No not much
Question: what do you know about CAMP Allen.
Answer: Groundwater is bad and alot of people are sick w/ cancer

1015 Return to Bld # N26 at NAVCOMBASE and drop Dave Foresythe off.
1030 Arrive at NAVY BRIG to see about access to Bakers Camp Allen site office trailer.
1115 Access is gained through the outside gate w/ assistance from Chief King from the NAVY BRIG. I don't have the key to access the Baker trailer
1145 Lunch break
1215 consult w/ Darren Hupe
1230 conduct phone interview with George Slaton a
483-0067 former C.A.S.P. worker

Interview Questions & Answers
Question: when did you work at C.A.S.P.

Answer: 1952-1972
Question: What was your position when you retired
Answer: Yard laborer w/ smelter operations.
Question: What exactly were your job duties
Answer: Separate the lead, copper silver and brass from heavy and light steel.
Question: Were you the only smelter operator
Answer: For my 20 years yes
Question: When you melted the lead down what happened to it.
Answer: Poured ingots and sold them I guess.
Question: Was the brass, silver and copper inventoried.
Answer: Maybe, but I didn't inventory it.
Question: Describe the 1971 fire
Answer: Place almost burned down. Those drums

caused it I heard. They buried those drums right close near the east fence.

1315 Consult w/ JLT over phone

1340 Conduct phone interview w/ former C.A.S.Y. worker
622-8544 Wm Jenkins

Interview Questions & Answers
Question: When did you work at C.A.S.Y.
Answer: Started in 1930 and retired in 1960's.
Question: What was your position when you retired from C.A.S.Y.
Answer: Yard laborer. Torch man to be exact.
Question: What does a torch man do
Answer: Cuts up heavy and light steel.

Question: were you always a torch man at C.A.S.Y.

Answer: yes.

Question: How was the steel inventoried that come into camp Allen S.Y.

Answer: It wasn't. I just cut it up.

1420 Conduct phone interview with former C.A.S.Y. worker Roland Smith

857-5152

Interview Questions and Answers

Question: when did you work at C.A.S.Y.

Answer: 1952 to 1982

Question: What was your position when you retired

Answer: yard supervisor

Question: Was inventory record keeping an important activity

Answer: I don't know. I didn't do records

Question: Do you remember any spills

Answer: Oh, all the time. Just all over the place.

Question: What materials spilled

Answer: Oils and chemicals

Question: How were the spills cleaned up

Answer: They weren't. We just left it ~~dry~~ dry

Question: Over the years do you know of any people who worked at C.A.S.Y. that became sick.

Answer: Many but they are dead now.

1500 Arrive at Hampton Roads Naval Museum

to pick up photo-
copies of historical
materials from Lt.
Horvatis

1600 Check out of hotel
1630 Arrive at A/P and
turn in car rental

JEZ

1/22/93

1120 Arrive at Salvage Yard
1130 Begin locating drilling pts
on site. Sample locations
will be marked on surface
w/ yellow crayon.
1245 Finish locating sample loca-
tions
1310 PWC (utility dept.) personnel
begin utility clearance.
1420 Utility clearance completed
PWC personnel were:
① Chuck Sircey
② Mr Smith
1430 Consult w/ JLT and PAM
1500 Check into hotel
1530 Take JLT to A/P
1600 Buy field supplies
1800 Begin preparing bottles
for collecting samples
2300 End of day.

JEZ

APPENDIX A-6
TELEPHONE LOGS

Letty Savage

MICHAEL BAKER, JR., INC.

PHONE CALL REPORT

PROJECT/LOCATION: Camp Allen Salvage Yard S.O. No.: 19148-SRN

DATE: 3/12/93 11:10am

CONTRACT NO.:

To: Dave Forsythe From: Jeri Tragesser

Repres.: Navy Base Repres.: BEI

Phone No.: 804-444-3009 Phone No.: 412-269-2032

Subject: Camp Allen Closure Plan Info.

JT - Thank you for sending info - very interesting that RCRA Storage site was located on Salvage Yard property from 2/86 to 1/88. Map also indicated HW Read contaminated areas in the northern section of the yard & what is now the PWC parking lot - These areas will have to be more fully characterized during the RI/FS.

DF - We are hoping to get the SHPO to "buy off" on not doing a closure as we will be dealing w/this area in the RI/FS phase in the near future. Not used for RCRA waste now.

JT - Would you have any documentation on the 1971 fire - So far all the info is "hearsay" Navy managed SY then.

DF - I'll call the Fire Marshall & get some info if I can. Do you know what department or activity managed the facility.

JT - No - we've really had a difficult time establishing that. The real estate office does not keep records of past involvement, only current information; STAN Greer couldn't help, nor could our contact at DRMO.

DF - Try to contact some of the "old timers" previously interviewed.

PREPARED BY JRT TITLE Geol PAGE 1 OF 1

OP-3C
9/80

MICHAEL BAKER, JR., INC.

PHONE CALL REPORT

PROJECT/LOCATION: C.A.S.Y.

S.O. No.: 19148-SRN

DATE: 3-10-93 9:15am

CONTRACT NO.:

To: Stan Green

From: Jeri Tragesser

Repres.: Mgr of Salvage Yard

Repres.: BEI

Phone No.: 804-444-5700

Phone No.: X2032

Subject: Misc. information for Report

1. How many employees? 5 administrative
14 yard workers
19 TOTAL

2. We have been having difficulty in finding out what NAVY department handled the Salvage Yard prior to 1972 when DRMS took over operations.
He didn't know —

PREPARED BY JRT TITLE Geol / PM PAGE 1 OF 1

OP-3C
9/80

MICHAEL BAKER JR., INC.

PHONE CALL REPORT

PROJECT/LOCATION: Camp Allen Salvage Yard, PA/SI

S.O. No.: 19148

DATE: 3/10/93

CONTRACT NO.:

To: Janice Bradley

From: Letitia Savage

Repres.: COMNAVBASE Real Est. Office

Repres.: Baker Env.

Phone No.: 804-445-2366

Phone No.: 412-269-2030

Subject: History of Salvage Yard from 1945 - 1972

Explained the purpose of my call and told Ms. Bradley we were trying to find out who had jurisdiction of the Salvage Yard between 1945 and 1972.

She explained that the land, once it was acquired, had been turned over to the Navy. It was the responsibility of the Commander of the facility to assign areas to specific naval entities (NSC, shipyard etc.). Record cards were kept for each area but old cards were discarded as record cards were updated. Therefore the only record card on file would be the current card showing the salvage yard assignment to DRMO.

She suggested contacting Cheryl Barnett or Sharon Waligora for more information or having them contact the base civil engineer.

PREPARED BY L. Savage TITLE Env. Scientist PAGE 1 OF 1

OP-3C

MICHAEL BAKER JR., INC.

PHONE CALL REPORT

PROJECT/LOCATION: Camp Allen Salvage Yard PA/SI

S.O. No.: 19148

DATE: 3/9/93

CONTRACT NO.:

To: Dave Forsyth

Repres.: COMNAVBASE

Phone No.: 804-444-3009

From: Letitia Savage

Repres.: Baker Environmental

Phone No.: 412-269-2030

Subject: Background Info. on Salvage Yard

Would you know who had jurisdiction of the Salvage Yard before DRMO took over in 1972.

No. Perhaps John Zimmerman got that information from the long-time workers he interviewed. Otherwise, the only way to find out is to call representatives of each branch. Try Terry Chamberlain of NSC - (804-445-2299) or Dave Buckner of PWC (804-445-2917). They probably don't have a great deal of information.

Was the salvage yard operating under any permits.

There is a RCRA permit that covers NAVBASE, but the Salvage Yard is not included because it isn't supposed to handle hazardous waste. I doubt that there were any earlier permits, because environmental regulations generally weren't requiring permits before the early 1970s. There would have been no regulatory reason for the yard to have had a permit

PREPARED BY L. Savage TITLE Env. Scientist PAGE 1 OF 2

OP-3C

MICHAEL BAKER JR., INC.

PHONE CALL REPORT

PROJECT/LOCATION: _____ S.O. No.: _____

DATE: 3-9-93

CONTRACT NO.: _____

To: D Forsythe From: L. Savage

Repres.: _____ Repres.: _____

Phone No.: _____ Phone No.: _____

Subject:

Were any reports prepared for the gasoline spill in the northern area of the site in Dec. 1992?

I haven't received any reports. The PWC responded to the spill and, as I understand, they weren't required to submit a report.

PREPARED BY _____ TITLE _____ PAGE 2 OF 2

OP-3C
10/92

MICHAEL BAKER JR., INC.

PHONE CALL REPORT

PROJECT/LOCATION: PA/SI Camp Allen Salvage Yard

S.O. No.:

DATE: 3/4/93

CONTRACT NO.:

To: Kevin Tourjie

Repres.: DRMO - Norfolk

Phone No.: 804-444-5144

From: L. Savage

Repres.: Baker Env.

Phone No.: 412-269-2030

Subject: Telephone interview to locate information on waste types/quantities at salvage yard.

Explained that D. Forsyth suggested I call. Looking for info. on inventory records of materials handled at salvage yard.

Mr. Tourjie explained that DRMO has had jurisdiction over the salvage yard since 1972. Any records before that date would be Navy records. Currently DRMO has records going back to the 1980s, but there is little information beyond 1984. These records could be searched for info. on waste types/quantities but you would have to separate salvage yard materials from those from other DRMO Norfolk facilities. Mr. Tourjie said that this would be very time consuming. He did say that we could look at the materials handled now and assume that the same materials were handled historically. The yard handles the following materials now:

batteries - already drained - not smelted - shipped to recycler

scrap steel -

copper, brass, aluminum, rubber, wood

PREPARED BY _____ TITLE _____ PAGE 1 OF 2

OP-3C

MICHAEL BAKER JR., INC.

PHONE CALL REPORT

PROJECT/LOCATION: _____ S.O. No.: _____

DATE: 3/4/93

CONTRACT NO.: _____

To: Tourjie From: Savage

Repres.: _____ Repres.: _____

Phone No.: _____ Phone No.: _____

Subject: appliances
transformers - PCB free

The yard is for salvage only now -- they do not take, recycle, or reallocate pesticides, chemicals etc. They also have not taken ordnance (at least since 1972 and assume none was accepted earlier.)

DRMS does not have duplicate records, only a computer trail of material processed by stock number. You would need to have specific stock numbers of items to find out quantities.

Mr. Tourjie commented that the records were a "dead trail," but suggested that we ask for the "annual report under RCRA" from Cheryl Barnet to see what quantities are processed at the salvage yard now.

Contact for DRMO Norfolk Records Search - Mike Sawyer.
Mr. Tourjie knew of no emergencies other than the fire.

PREPARED BY _____ TITLE _____ PAGE 2 OF 2

QP-3C
10/92

MICHAEL BAKER JR., INC.

PHONE CALL REPORT

PROJECT/LOCATION: PA/SI Camp Allen Salvage yard

S.O. No.:

DATE: 3/4/93

CONTRACT NO.:

To: Dave Forsyth

Repres.: COMNAVBASE Env. Prog.

Phone No.: 804-444-3009

From: L. Savage

Repres.: Baker Env.

Phone No.: 412-269-2030

Subject: Telephone interview to locate information on waste types/quantities at salvage yard.

Explained to D. Forsyth the purpose of my call & need to identify waste types/quantities for PA. He stated that John Zimmerman had looked for similar info. during Oct. & Dave had accompanied him during onsite interviews. Told Dave I had read those field notes & wanted to pursue connection to DRMO.

Dave explained that DRMO controlled salvage yard even though the yard is on COMNAVBASE. Any inventory records would exist through DRMO and the yard may or may not have had copies. Form 1348 to manifest items sent to DRMO is used now but may not have been used in the past. He further explained that he understood that the salvage yard operated primarily for metals recovery. Transformers were taken for scrap value of steel. He understood that full drums were on the yard because they were included in shipments of empty drums. The yard did not take in

PREPARED BY Letitia Savage TITLE Environmental Scientist PAGE 1 OF 2

OP-3C

MICHAEL BAKER JR., INC.

PHONE CALL REPORT

PROJECT/LOCATION: _____ S.O. No.: _____

DATE: _____

CONTRACT NO.: _____

To: D. Forsythe From: L. Savage

Repres.: _____ Repres.: _____

Phone No.: _____ Phone No.: _____

Subject:

and redistribute drummed chemicals. He suggested we verify this with DRMO.

Dave also brought up another issue -- a RCRA closure for the northern area of the yard. They submitted a closure plan last November and are currently awaiting state comments. He expects that, if they begin closure, they will not find a defined boundry of contamination. He will send information on the closure plan in case there is information in it that we can use. Dave was not sure about details on the RCRA approach; i.e., why the closure was being conducted, what type of unit etc.

Finally, I asked if Dave was aware of any emergencies other than the fire. He was not.

PREPARED BY _____ TITLE _____ PAGE 2 OF 2

OP-3C
10/92

JWM - Prog. File
JEZ

MICHAEL BAKER, JR., INC.

PHONE CALL REPORT

PROJECT/LOCATION: Salvage Yard

S.O. No.: 19148-SRN

DATE: 12-18-92

CONTRACT NO.:

To: J. Trageser

From: T. Artman.

Repres.: BEI

Repres.: BEI - Camp Allen

Phone No.:

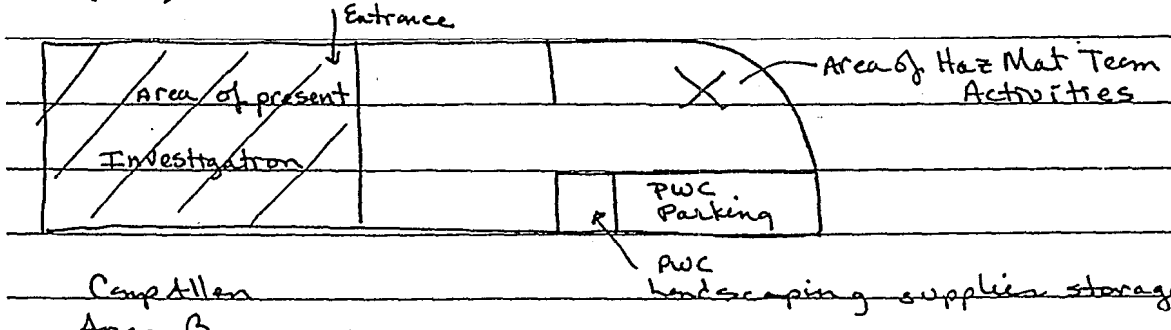
Phone No.:

Subject: Events at Salvage Yard.

Tom called to inform me that a Haz Mat team is working in an area of the salvage yard west of the PWC parking lot.

This area was recommended to be investigated during rescoping efforts in the fall, but LANTDIV decide to keep the investigation to the area between the southern fence and the warehouse building.

Perhaps we should extend the study to include the entire area again.



I will call Susan Hansen Monday regarding this as she is out of the office today.

PREPARED BY JRT TITLE Geol PAGE 1 OF 1

OP-3C
9/80

JLT Proj/F; JLT; JEZ

MICHAEL BAKER, JR., INC.

PHONE CALL REPORT

PROJECT/LOCATION: Camp Allen Salvage Yard (C.A.S.Y.) Norfolk, Va.

S.O. No.: 19184-SRN

DATE: 10/23/92

CONTRACT NO.:

To: Stan Greer

From: John Zimmerman

Repres.: Camp Allen Salvage Yard

Repres.: Baker Environmental

Phone No.: (804) 444-5600

Phone No.: Ext 2014

Subject: Buildings within Camp Allen Salvage Yard (C.A.S.Y.)

Discussed with Stan Greer buildings located within (C.A.S.Y.) and their use. Specifically, I inquired about buildings #CA245, #CA481, #CA231 and #CA192. Stan confirmed that building #CA245 functions as the (C.A.S.Y.) truck weigh scale. Building #CA481 functions as a guard house which is located at the front entrance to (C.A.S.Y.). Building #CA231 presently is utilized as a storage warehouse. Previously it was utilized as the (C.A.S.Y.) administration building before building #CA479 was constructed (new (C.A.S.Y.) administration building). Building #CA192 has been completely removed from the (C.A.S.Y.) landscape. Stan could not recall the utilization of building #CA192 before it was razed.

I asked Stan to characterize the type of surface cover within (C.A.S.Y.). His description is the following: 25% ashphalt cover, 12.5% concrete cover and 62.5% dirt and gravel cover.

Stan asked me about the status of the Baker field trailer and drums which are currently

PREPARED BY JEZ TITLE Geologist PAGE 1 OF 2

MICHAEL BAKER, JR., INC.

PHONE CALL REPORT

PROJECT/LOCATION: Camp Allen Salvage Yard (C.A.S.Y.) Norfolk, Va.

S.O. No.: 19184-SRN

DATE: 10/23/92

CONTRACT NO.:

To: Stan Greer

From: John Zimmerman

Repres.: Camp Allen Salvage Yard

Repres.: Baker Environmental

Phone No.: (804) 444-5600

Phone No.: Ext 2014.

Subject: Buildings within Camp Allen Salvage Yard (C.A.S.Y.) located along the outside SE fenceline of (C.A.S.Y.). He raised concerns to me that a security problem has developed. He believes people have been climbing the drums and scaling the SE fenceline of (C.A.S.Y.) to gain entry. I told him that I would pass along his concerns to the Camp Allen Landfill Field Team Leader and Project Manager and that I would inquire about options to remedy the problem and call him back.

PREPARED BY JEZ TITLE Geologist PAGE 2 OF 2

JEZ Proj/F; JEI; JE

MICHAEL BAKER, JR., INC.

PHONE CALL REPORT

PROJECT/LOCATION: Camp Allen Salvage Yard (C.A.S.Y.) Norfolk Naval Base, Norfolk, Va.

S.O. No.: 19148 - SRW

DATE: 10/14/92

CONTRACT NO.:

To: Jeri Trageser

Repres.: BEI

Phone No.: 2032

From: John Zimmerman

Repres.: BEI

Phone No.: 2014

Subject: Camp Allen Salvage Yard (C.A.S.Y.)

Called Stan Greer and discussed the sluice way (sub-basement) that was located under the bailing machine. Stan confirmed that when material such as grease, oils, various chemicals and pieces of metal would fall off the bailing machine apparatus the material would accumulate in the sluice way. Periodically (C.A.S.Y.) yard workers would remove debris from the sluice way. When operation of the bailing machine was discontinued in 1988 the sluice way was backfilled with various waste materials. Currently the location of the sluice way is under standing water.

Called George Slaton. He is a former (C.A.S.Y) yard worker who operated the smelter. Confirmed that waste materials that were produced by the smelter operation were "buried across the street from (C.A.S.Y.) in the landfill".

PREPARED BY JEZ TITLE Geologist PAGE 1 OF 1

OP-3
9/80

APPENDIX A-7

GROUNDWATER DATA FOR EXISTING MONITORING WELLS

APPENDIX A-7, TABLE 1

SEMIVOLATILE ORGANICS - ROUND 2 - GROUNDWATER SAMPLES
(CAMP ALLEN RI)

Sample No.	GWB-207	GWB-212	GWB-211
Date Collected	6/10/92	6/10/92	6/11/92
Units	µg/L	µg/L	µg/L
Well No.	BMW-7	BMW-8A	BMW-8B
Acenaphthene	76	10 U	10 U
Bis(2-chloroethyl)ether	10 U	10 U	10 U
Bis(2-ethylhexyl)phthalate	10 U	10 U	10 U
Dibenzofuran	7 J	10 U	10 U
Dichlorobenzene, 1,2-	10 U	10 U	10 U
Dichlorobenzene, 1, 4-	10 U	10 U	10 U
Diethylphthalate	1 J	0.7 J	10 U
Dimethylphenol, 2,4-	10 U	10 U	10 U
Fluorene	0.5 J	10 U	10 U
Methylnaphthalene, 2-	10 U	10 U	10 U
Methylphenol, 4-	10 U	10 U	10 U
Naphthalene	1 J	10 U	10 U
Nitrosodiphenylamine, N-	10 U	10 U	10 U
Oxbis(1-chloropropane), 2,2'-	10 U	10 U	10 U
Phenanthrene	10 U	10 U	10 U
Phenol	10 U	10 U	10 U
Pyrene	0.8 J	10 U	10 U

NOTE: No SMCL or VAWQS are available for the above parameters. MCLs are available for Dichlorobenzene, 1,2-- (600 µg/L) and Dichlorobenzene, 1, 4-- (75). Concentrations for both of these constituents have been measured below detection limits and well below the MCL.

APPENDIX A-7, TABLE 2

TOTAL METALS ROUND 2 - GROUNDWATER SAMPLES (CAMP ALLEN RI)

Sample No.	GWB-207	GWB-212	GBW-211		Evaluation Criteria		
Date Collected	06/10/92	06/10/92	06/11/92				
Units	µg/L	µg/L	µg/L		MCL µg/L	SMCL µg/L	VAWQS µg/L
Well No.	BMW-7	BMW-8A	BMW-8B				
Aluminum	192000	905	6200				
Antimony	28.7	18 U	18 UL		6	200	
Arsenic	17	93.6	14.8 L		50		50
Barium	704	35.6	66.3		2000		1000
Beryllium	6.7	2 U	2 U		4		
Cadmium	10.9	3 U	3 U		5		0.4
Calcium	192000	37800	147000				
Chromium	264	8 U	8 U		100		50
Cobalt	8 U	8 U	8 U				
Copper	339	5.9	2 U		1300		1000
Iron	119000	33500	26900		300		
Lead	1020	1 U	1 U		15		50

µg/L = Micrograms per Liter (ppb)
F = Denotes Filtered Samples
MCL = Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
VAWQS = Virginia Water Quality Standard
L = Denotes Bias Low
K = Denotes Bias High

APPENDIX A-7, TABLE 2

TOTAL METALS ROUND 2 - GROUNDWATER SAMPLES (CAMP ALLEN RI)

Sample No.	GWB-207	GWB-212	GBW-211		Evaluation Criteria		
Date Collected	06/10/92	06/10/92	06/11/92				
Units	µg/L	µg/L	µg/L		MCL µg/L	SMCL µg/L	VAWQS µg/L
Well No.	BMW-7	BMW-8A	BMW-8B				
Magnesium	45800	8340	5270				
Manganese	907	152	293 K			50	
Mercury	1.6	0.2 U	0.2 U		2		0.05
Nickel	107	11	11 U		100		
Potassium	39200	3200	2400				
Silver	2 U	2 U	2 U			100	
Sodium	56300	23200	15300				
Vanadium	461	4 U	48.4 K				
Zinc	1550 J	5 U	205 K			5000	

µg/L = Micrograms per Liter (ppb)
F = Denotes Filtered Samples
MCL = Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
VAWQS = Virginia Water Quality Standard
L = Denotes Bias Low
K = Denotes Bias High

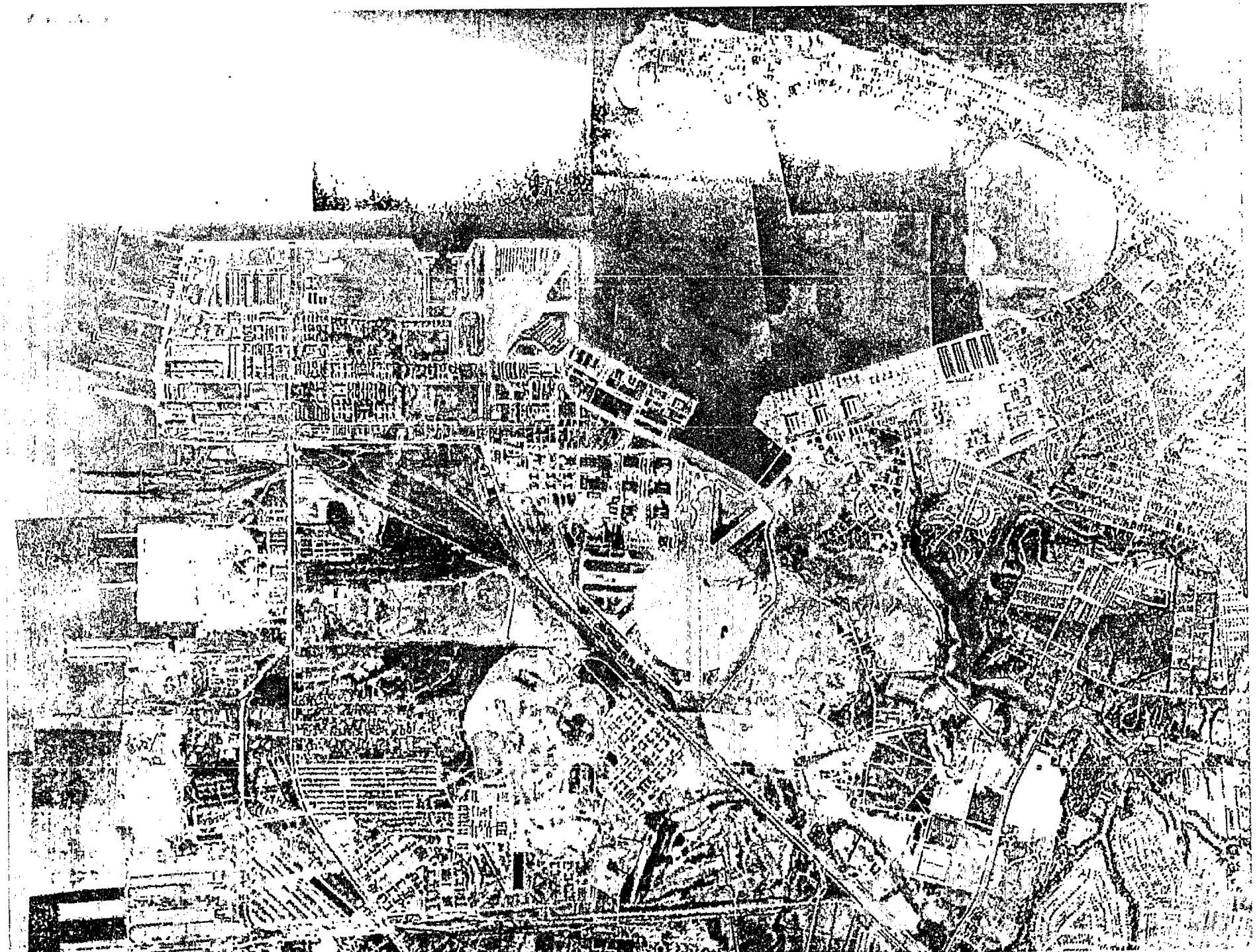
APPENDIX A-7, TABLE 3

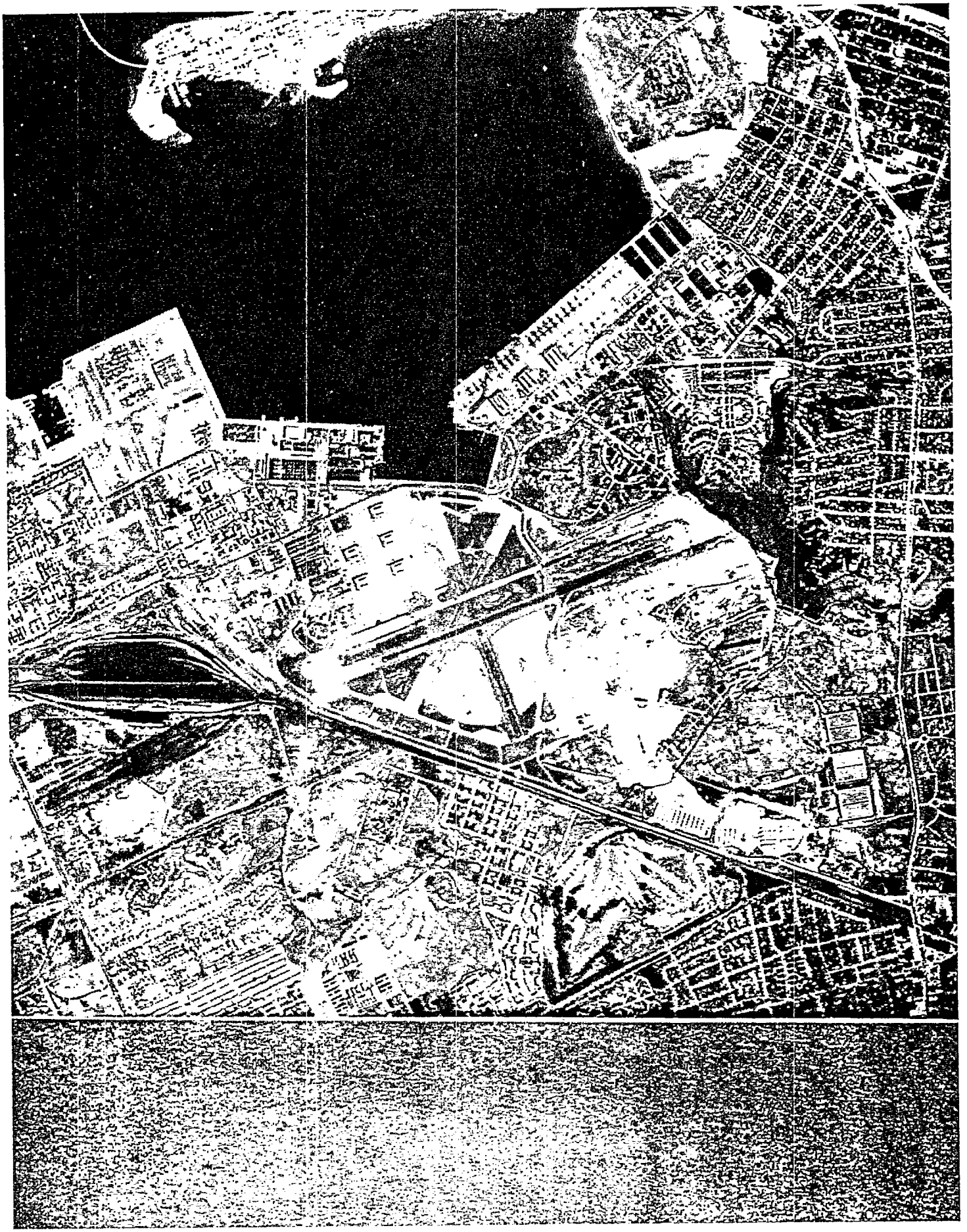
DISSOLVED METALS ROUND 2 - GROUNDWATER SAMPLES (CAMP ALLEN RI)

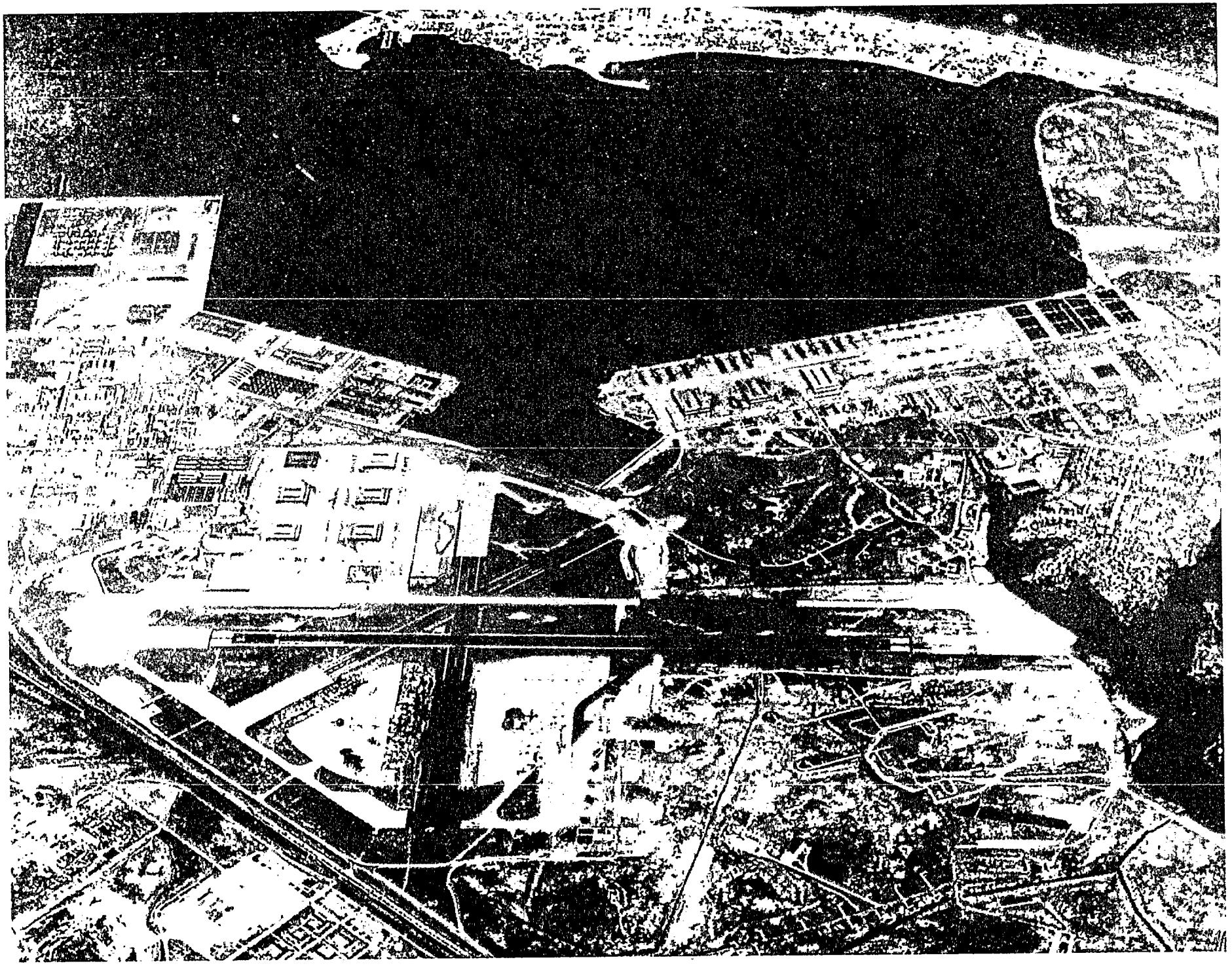
Sample No.	GWB-207F	GWB-212F	GBW-211F		Evaluation Criteria		
Date Collected	06/10/92	06/10/92	06/11/92				
Units	µg/L	µg/L	µg/L		MCL µg/L	SMCL µg/L	VAWQS µg/L
Well No.	BMW-7	BMW-8A	BMW-8B				
Aluminum	59 U	59 U	59 U				
Antimony	18 U	18 U	18 U				
Arsenic	2 U	51.1	2 U		50		50
Barium	96.5	28	29.2		2000		1000
Calcium	146000	35200	62200				
Chromium	8 U	8 U	8 U		100		50
Cobalt	8 U	8 U	8 U				
Copper	5.1	2.7	2 U		1300		1000
Iron	542	23500	10 U		300		
Magnesium	24900	7860	2220				
Manganese	247	132	29.3			50	
Potassium	20500	3050	1710				
Sodium	51400	21500	13400				
Vanadium	4 U	4 U	4				
Zinc	5 U	5 U	5 U				

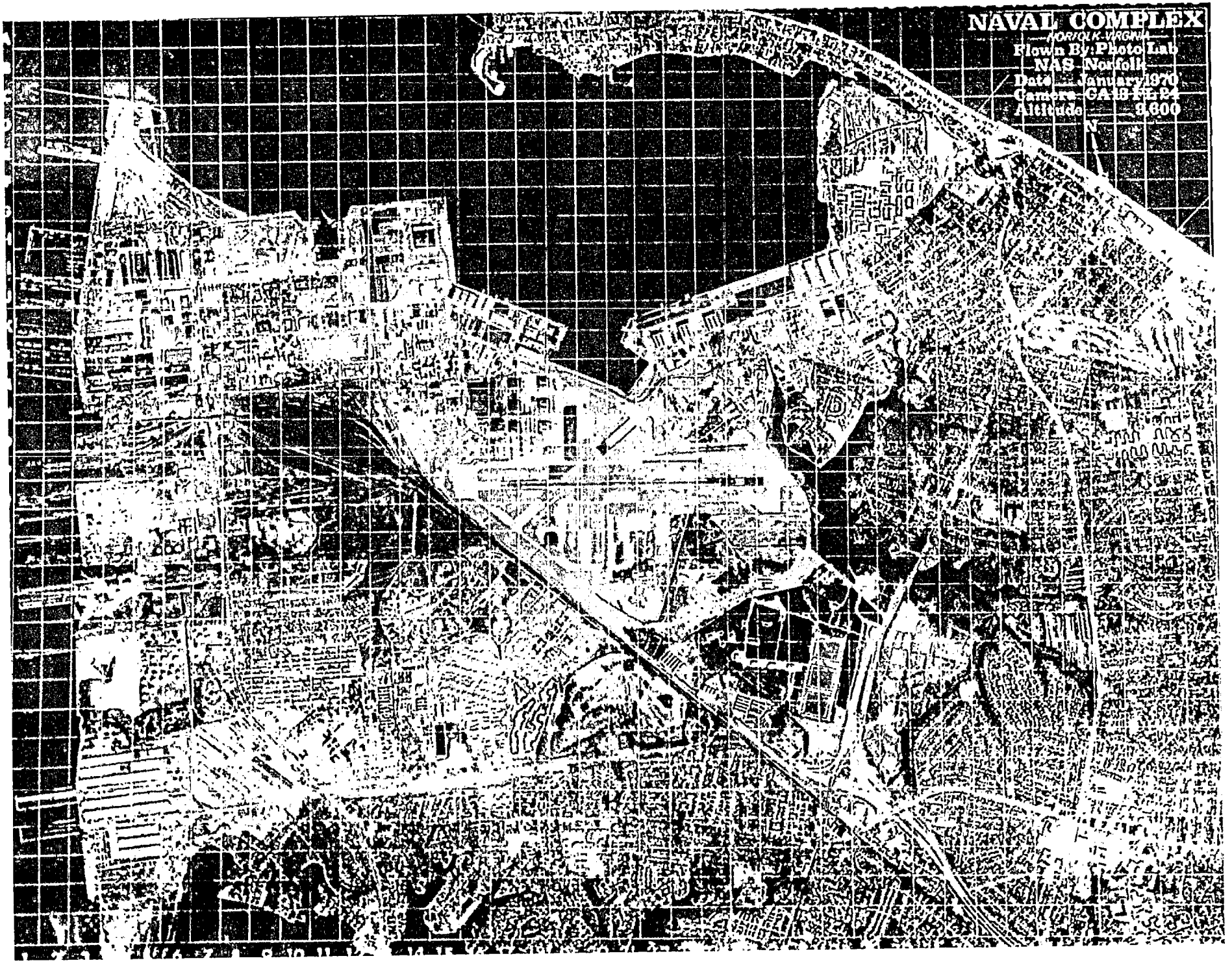
µg/L = Micrograms per Liter (ppb)
F = Denotes Filtered Samples
MCL = Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
VAWQS = Virginia Water Quality Standard

APPENDIX A-8
AERIAL PHOTOGRAPHS





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NORFOLK, VIRGINIA
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NAS Norfolk
Date: January 1970
Camera: GA 18 RC 8
Altitude: 9,600
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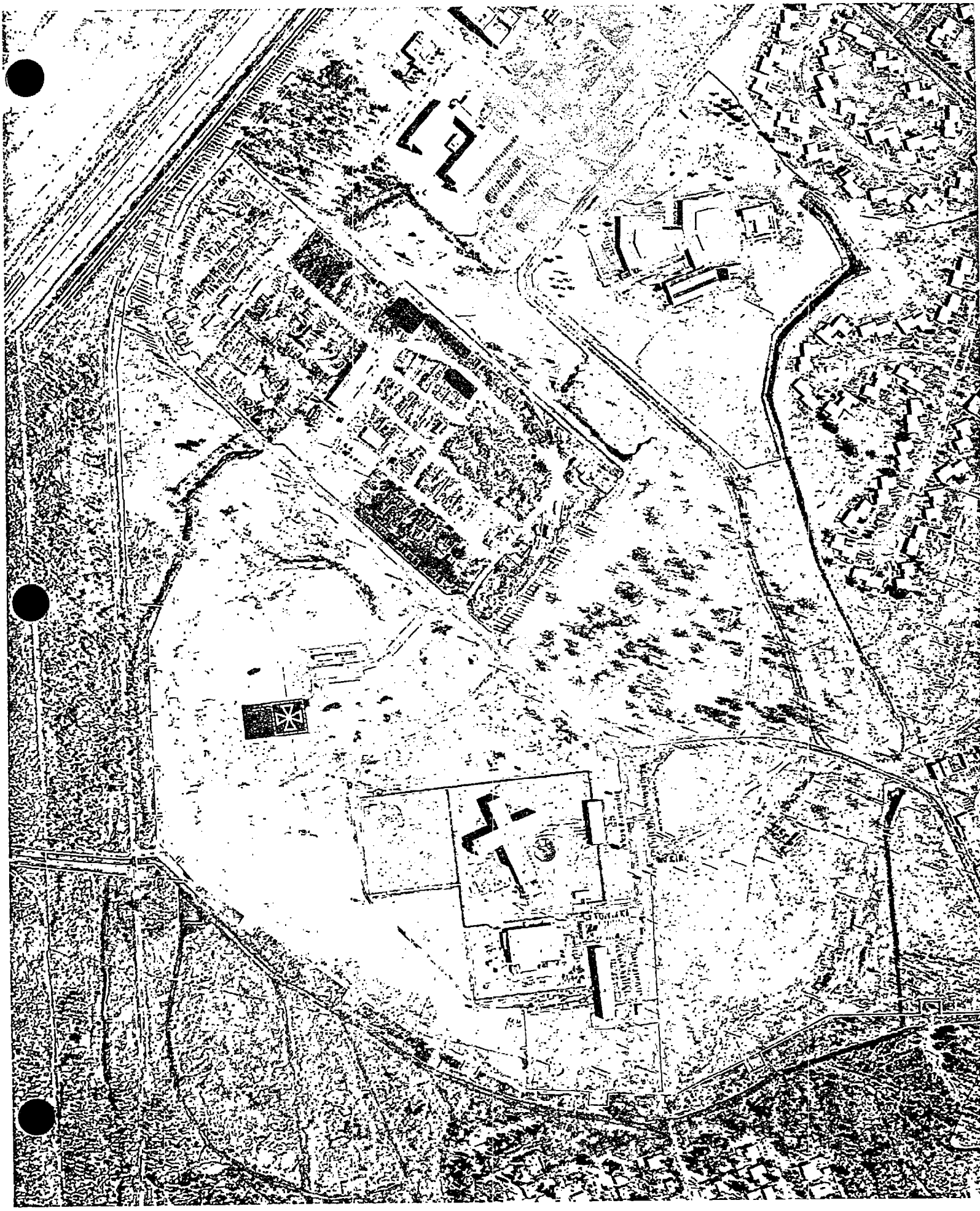


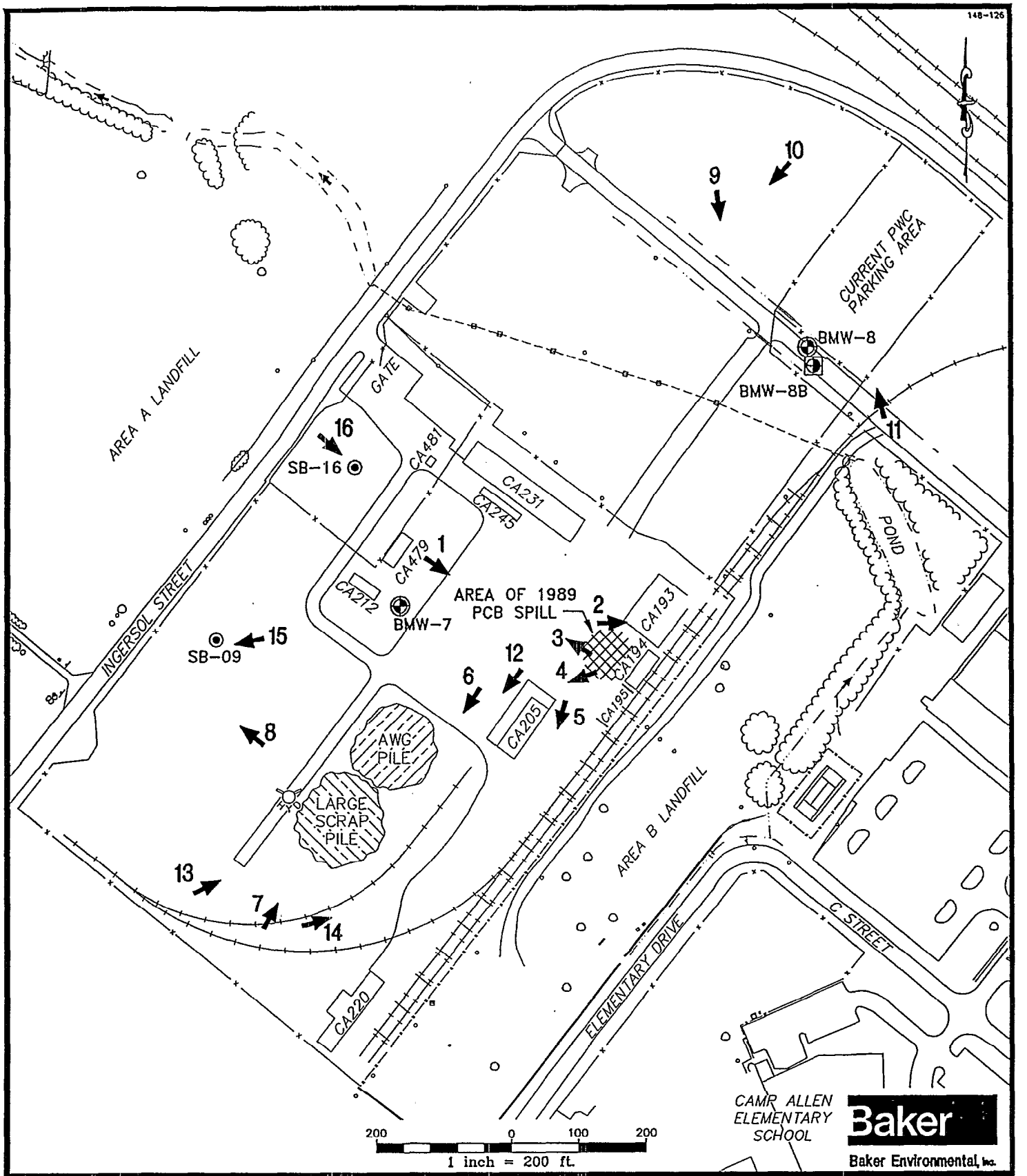
APPENDIX B

APPENDIX B
SITE INSPECTION SUPPORTING DOCUMENTATION

APPENDIX B-1
SITE PHOTOGRAPHS

CAMP ALLEN SALVAGE YARD SITE PHOTOGRAPHS

Photo #	Date	Direction of View	Description
1	10-06-92	east	From Building CA479 towards CA193 (on left) and open-sided building CA194 (on right). The 1989 PCB spill occurred to the right of the photo in front of CA194.
2	10-06-92	east	From Building CA193 entrance, shows concrete ramp, stored drums on pallets and corrugated metal walls. Transformers formerly were stored in areas to left of photograph.
3	10-06-92	west	From Building CA194, shows partial inventory of wood, metal and plastic goods. Concrete barriers identify storage rows/areas. Surface gravel cover.
4	10-06-92	southwest	From Building CA194, shows Storage Building CA205 with All White Goods (AWG) pile in the background.
5	10-06-92	south	From east of CA205, shows stockpiled materials. Driveway is asphalted.
6	10-06-92	southwest	From west of CA205, shows AWG pile. Pile is approximately 20 feet high. Note standing water in front of and to the left of AWG pile.
7	10-06-92	northeast	From southern end of site towards large scrap pile located just south of AWG pile.
8	10-06-92	west	Toward Ingersol Street. Note helipad trailers in background. Despite poor quality, this photo was included to show orderly storage of materials such as the bailed hoses shown in the foreground.
9	10-06-92	south	From the northwest corner of the site. Note the sparse vegetation. This area is soil covered.
10	01-24-93	southwest	Drilling activities at SB-20. Note metal rods and tubes stockpiled to left of photo.
11	01-24-93	northwest	From B Street toward PWC Parking Area (gravel cover). Fenced area to left is PWC landscape storage area.
12	01-24-93	southwest	From CA205 toward scrap and AWG piles. Drilling activities at SB-13. Note large area of standing water.
13	01-23-93	northeast	Close-up of scrap pile consisting of metal, wood, plastic.
14	01-23-93	east	From southeast of scrap pile. Drilling activities at SB-04.
15	01-24-93	--	Material in split spoon collected from SB-09 at a depth of 1 to 3 feet. Brick, glass shards and sand.
16	01-24-93	east	Drilling activities at SB-16. Rig mast had to be maneuvered between two rows of overhead lines.



LEGEND

SB-01 SOIL BORING LOCATION

DIRECTION OF PHOTOGRAPH

AREA OF KNOWN PCB SPILL

BMW-7 EXISTING SHALLOW (25 FEET DEEP) GROUNDWATER MONITORING WELL INSTALLED BY CH_2M HILL (1990)

BMW-8B EXISTING DEEP (65 FEET DEEP) GROUNDWATER MONITORING WELL INSTALLED BY BAKER ENVIRONMENTAL, INC. (1992)

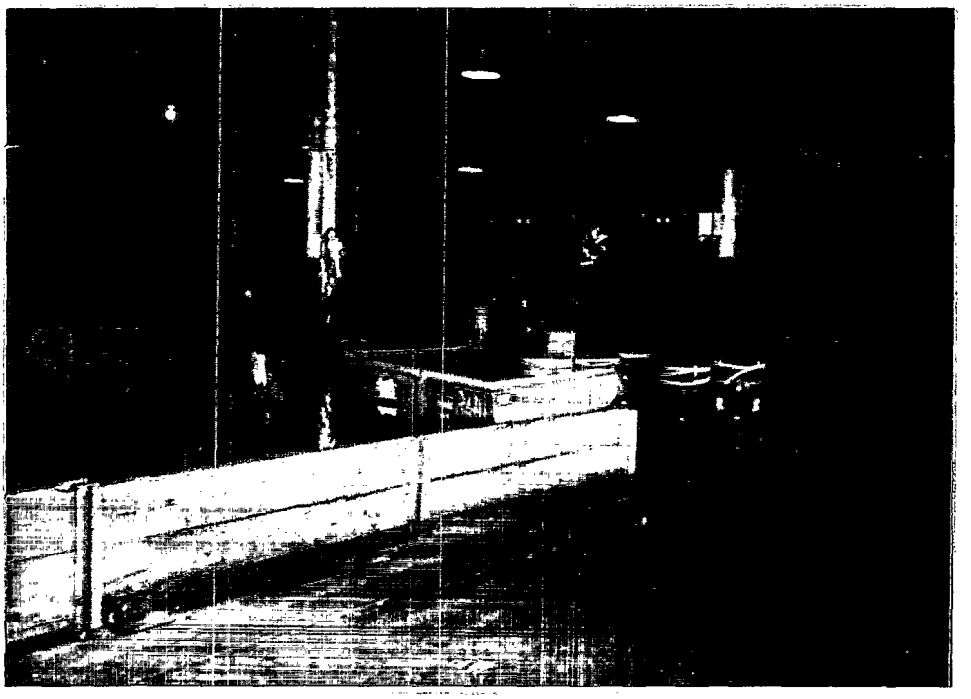
SURFACE WATER FLOW DIRECTION

SOURCE: MILLER-STEPHENSON & ASSOC. JUNE 1992

PHOTOGRAPH MAP
DIRECTION OF VIEW
CAMP ALLEN SALVAGE YARD

NORFOLK NAVAL BASE
NORFOLK, VIRGINIA

PHOTO #1



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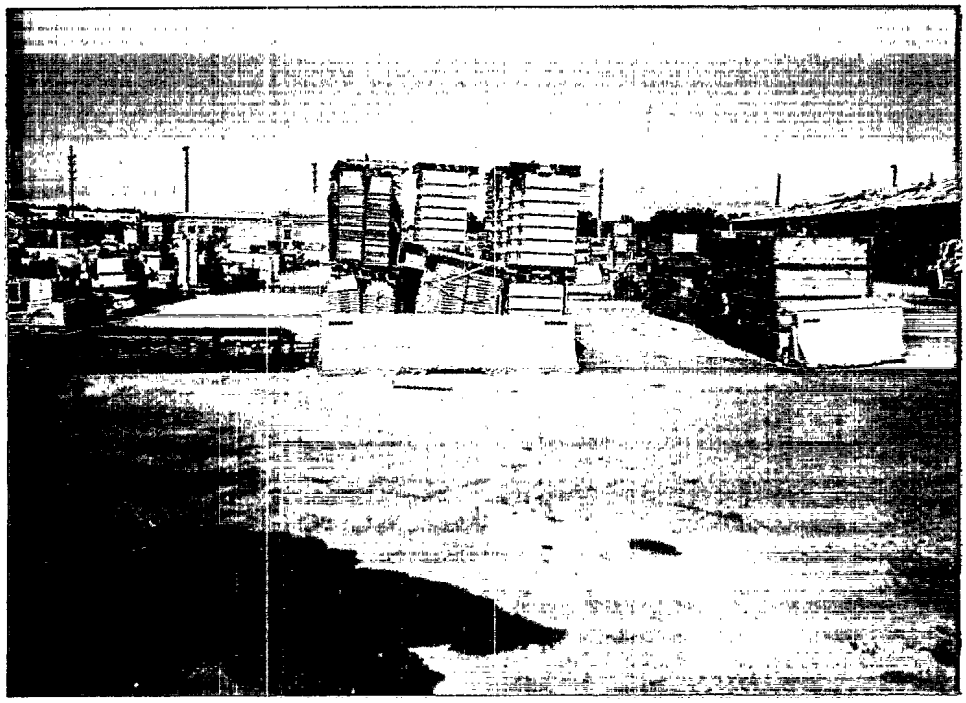


PHOTO #3

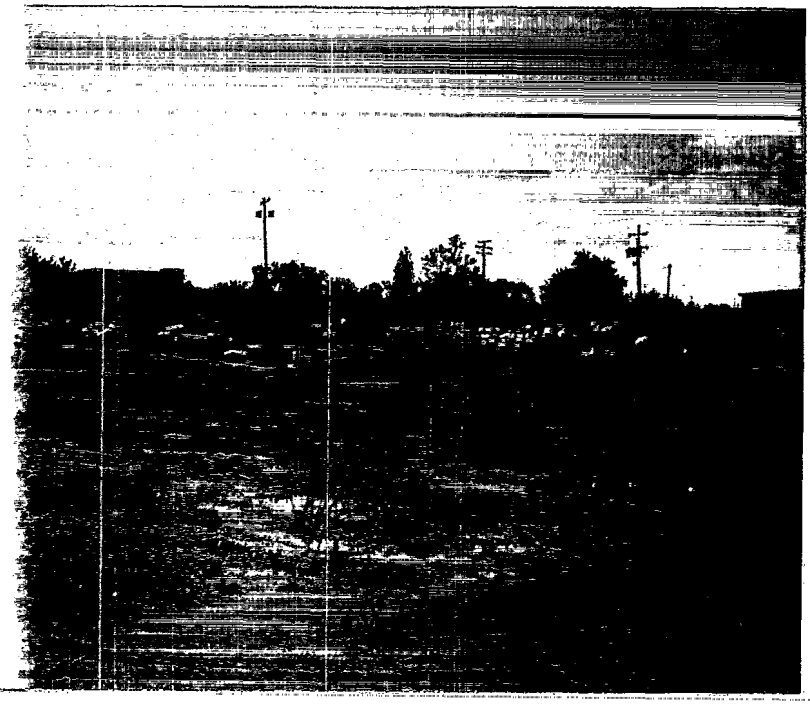
PHOTO #4

PHOTO #5

PHOTO #6

PHOTO #7

PHOTO #8



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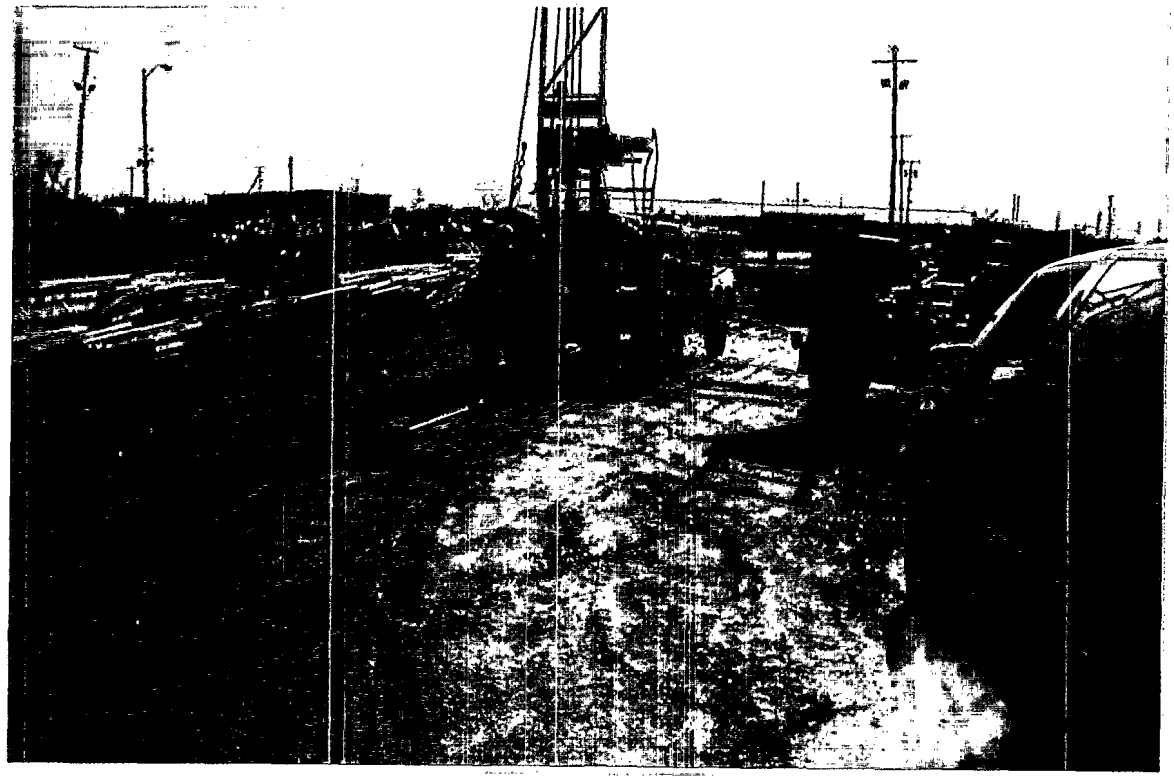

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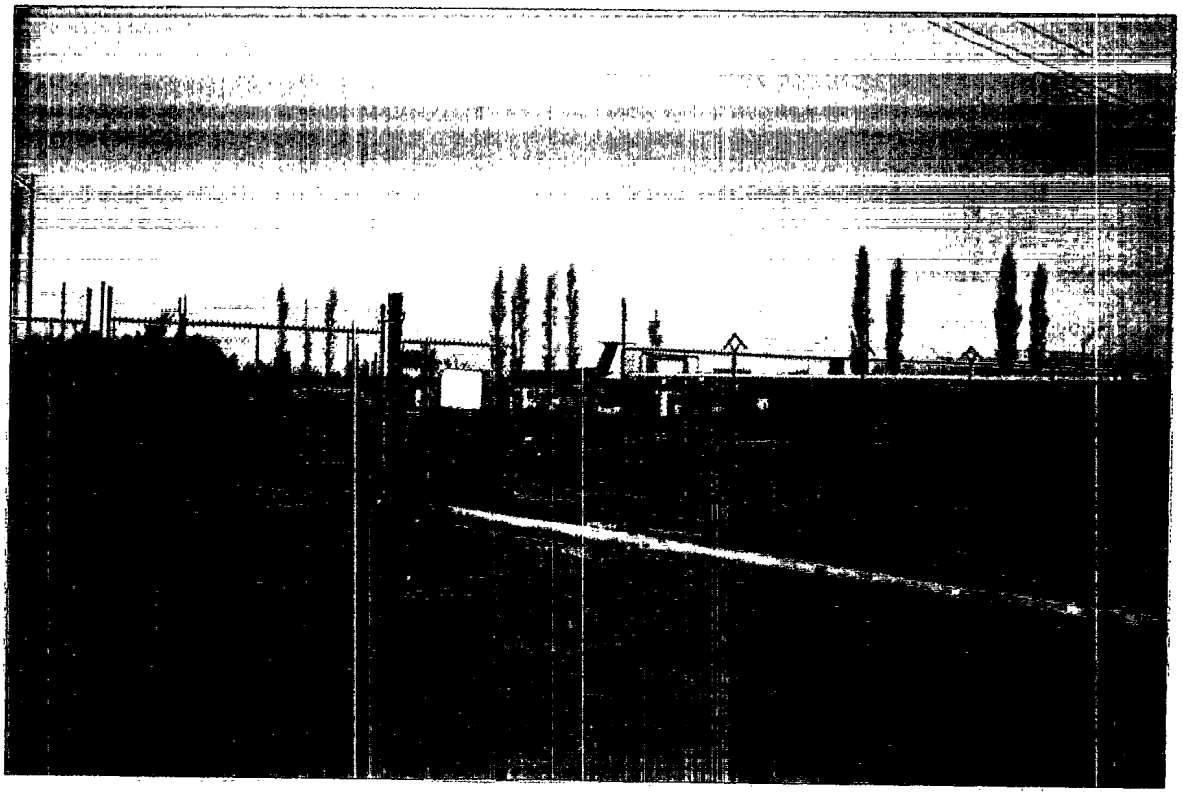

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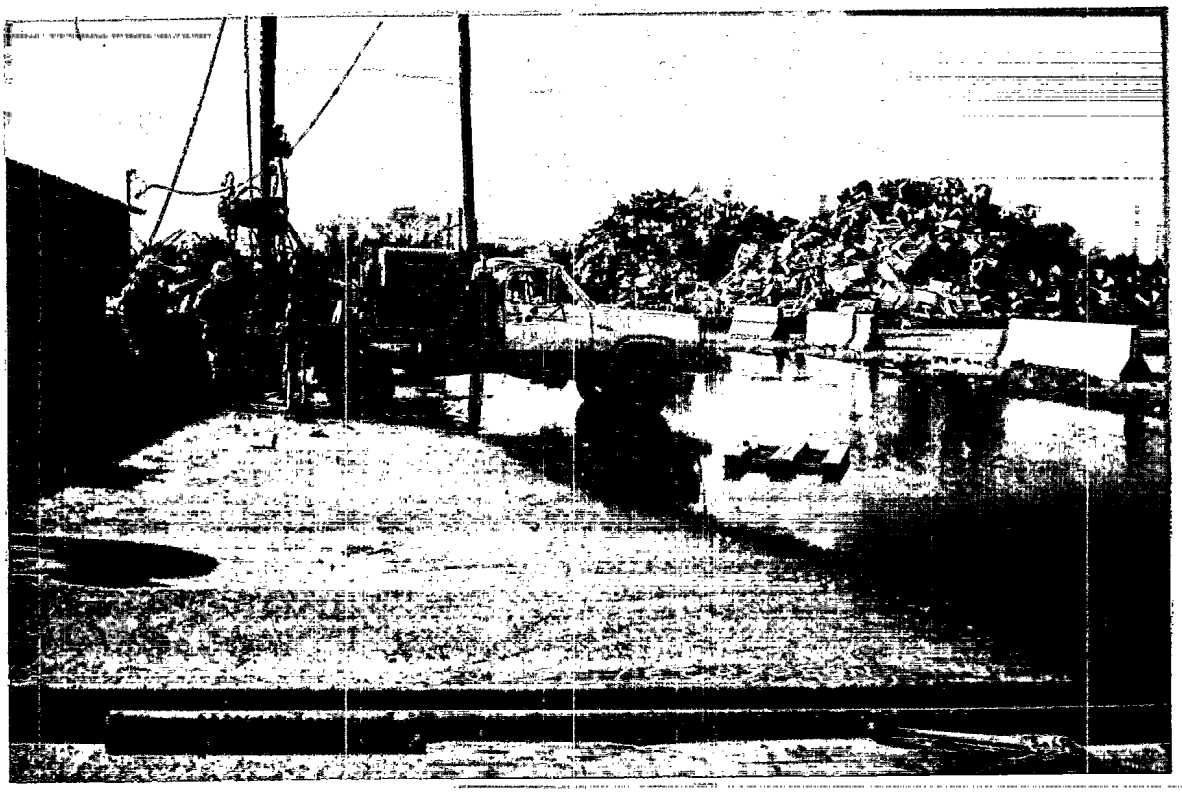

PHOTO #12

PHOTO #13

PHOTO #14

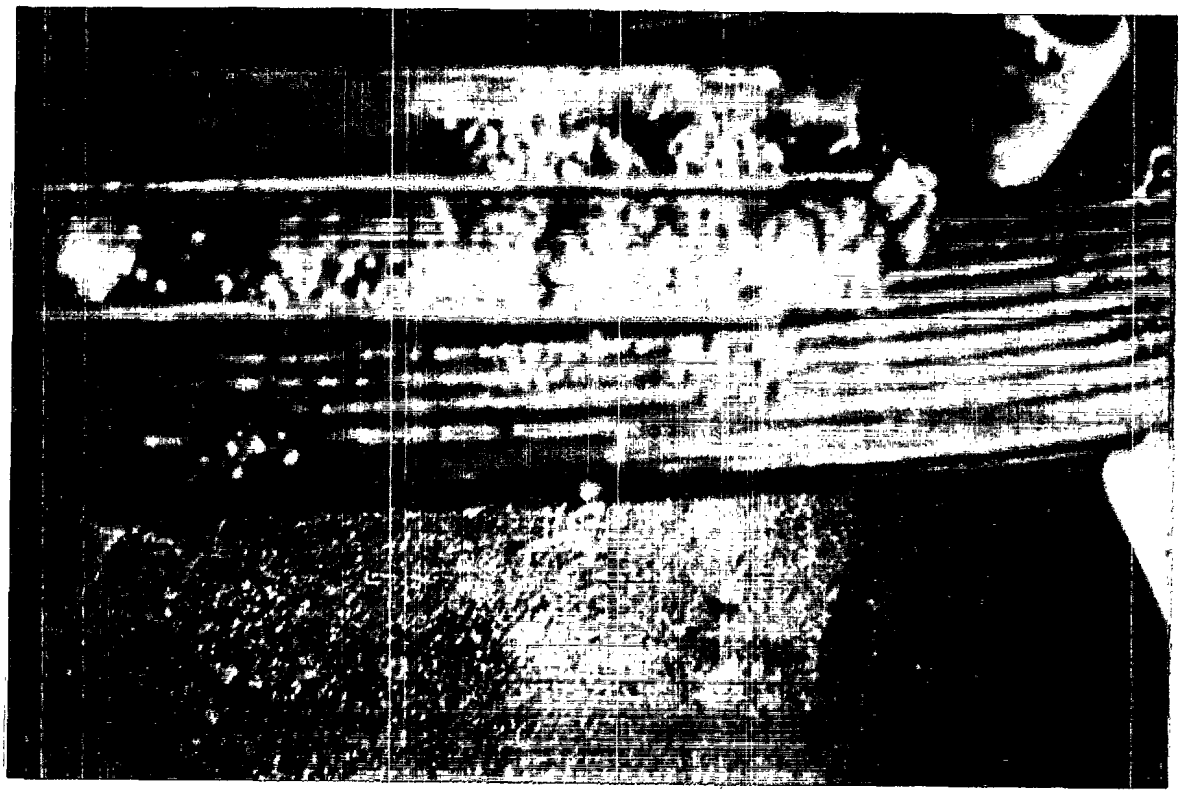

PHOTO #15

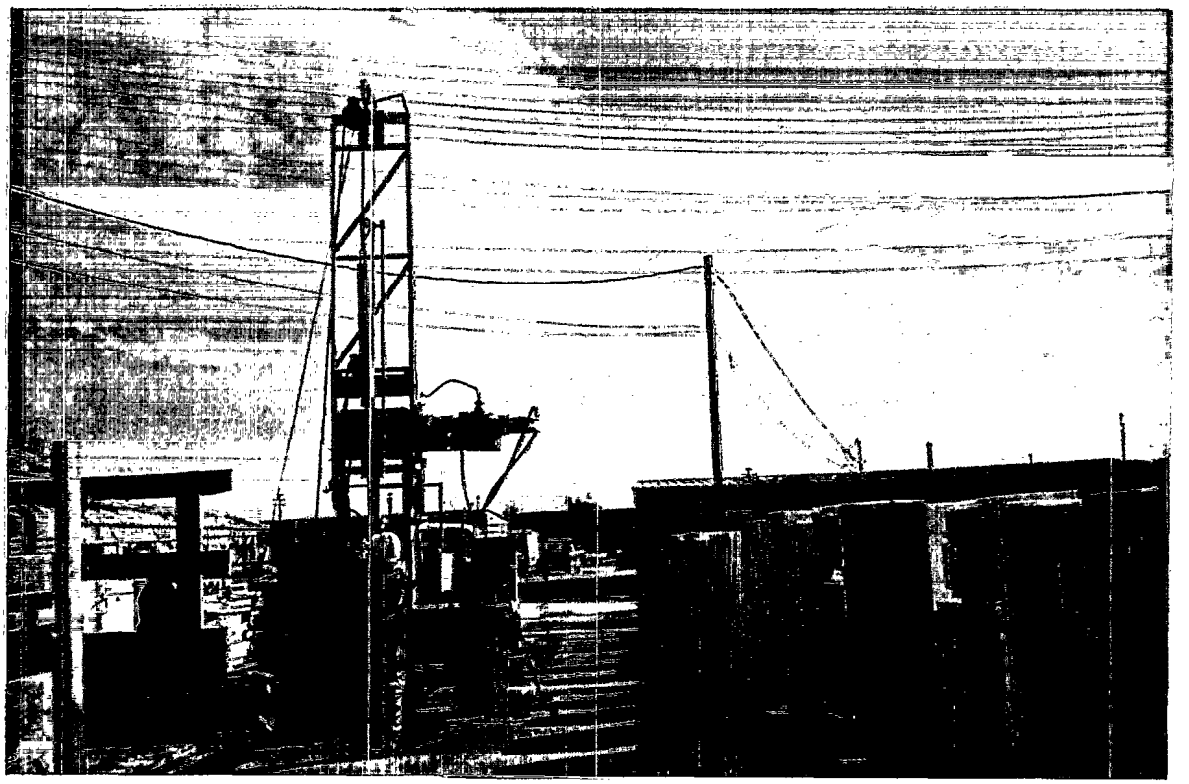

PHOTO #16

APPENDIX B-2
FIELD NOTEBOOKS

Name Peter a. Mondaf

Address 420 - Rouser Rd.
Coraopolis, PA 15108

Phone 412 - 262 - 2012

JHT Home

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(1)

1-22-93

1100 - ARRIVED ON SITE.

1120 - 1245 - CONDUCTED SOIL BORING ~~LOCATION~~ & LOCATING ACTIVITIES.

1246 - WENT TO LUNCH.

1310 PWC ON SITE
1416 PWC OFF-SITE
1. CHUCK SIRCEY
2. CHRIS SMITH

1420 TO
1436 - DISCUSSED JOB-SPECIFICS

1450 - ARRIVE AT HOTEL
1455 - 1510 - OPENED PACKAGES AND COOLERS THAT ARRIVED FROM LAB & BAKER ENV.
1710 - 2300 - PROCESSED ALL INVENTORY ITEMS, WROTE OUT ALL SAMPLE LABELS W/ JOHN ZIMMERMAN.

Peter a Monday
1-22-93

(2)

getice.
1-23-93

THINGS TO DO ~~TOD~~ P.M. TODAY.
1. ORGANIZE EQUIPMENT COOLERS.
2. LOAD VAN W/ NEEDED SUPPLIES.
3. GIVE HES BRIEFING TO BAKER & DRILLING TEAM.
4. OBTAIN CONCRETE SAMPLES.
5. START ON SOIL BORING LOCATIONS.

0630 - ARRIVED AT CAMP ALLEN SITE TRAILER

0630 - 0700 - ORGANIZED EQUIPMENT

0700 - 0830 - STAGED EQUIPMENT BY THE DECON PAD, TOOK BOTH FIELD BLANKS W/ JOHN Z.

0830 - 0840 - WALKED UP TOOLS & EQUIP TO BUILD CA193 - TO TAKE CONC SAMPLES

0845 - S10-CS-01 TAKEN 20' NE OF BUILDING CA193 DOOR.

0920 - SYD-CS-02 & Dup SYD-CS-03 TAKEN 45' NE OF BUILDING CA 193 OPEN DOOR.

0950 - LEFT BLDG. CA 193

0955 - 1030 - ORGANIZED EQUIPMENT NEEDED FOR SOIL BORINGS STAGED SOME COOLERS BY DECON PAD. CALIBRATED HNU.

1040 - ARRIVED @ SYD-SB-01 LOCATION

1050 - GAVE H&S BRIEFING TO THE CREW.

1110 - BEGAN DRILLING SYD-SB-01

DEPTH	HNU (PPM) BG	BZ	PS	TIME	RAD (MR/HR) BG	BZ	PS
0-6"	.8	.8	.8	1113	.07	.07	.08

1115 - SAMPLE SYD-SB-01S TAKEN.

1-3'	.6	.6	.7	1125	.07	.05	.05
3-5'	.6	.6	.6	1136	.11	.15	.17

1140 SAMPLE SYD-SB-01W TAKEN.

LEFT SYD-SB-01 TO GO TO SYD-SB-02

1220 - SYD-SB-02 DRILLING STARTED.

(5)

SYD-SB 02.

		HNU			RAD		
Time	Depth	BG	BZ	PS	BG	BZ	PS
1230	0-6"	.7	.7	.7	.06	.05	.05

1234 SAMPLE SYD-SB-02S TAKEN.

1241	12-36"	.7	.7	.7	.06	.05	.06

1244 SAMPLE SYD-SB-02D TAKEN

1254 - MOBILIZATION FROM SB-02 - TO SB-03

1310 - ADJUSTED SB-03 12' TO THE WEST DUE TO CONCRETE UNDER SURFACE MATERIAL

PH OF PONDED WATER NEAR SB-03 ≈ 6

(6)

		HNU			RAD
Time	Depth	BG	BZ	P.S.	P.S.
1319	0-6"	.7	.7	.7	.02

1320 - SAMPLE SYD-SB-03S TAKEN

Experiencing difficulties penetrating

1327	12-36"	.5	.6	.6	.02

1330 - SAMPLE SYD-SB-03D TAKEN

1335 - SB-03D PH ≈ 9

1345 MOVED FROM SB-03 TO SB-04

PICTURES 1-3 ARE OF DRILL RIG BY SCRAP PILE

		HNU		
Time	Depth	BG	BZ	P.S.
1349	0-6"	.6	~~.8~~ .6	.8

1352 - SAMPLE SYD-SB-04S TAKEN

HNU - LAMP FAILURE @ 1357

1400 - SAMPLE SYD-SB-040 TAKEN.

1403 - Fixed Loose screw in ion chamber on the HNU.

1408 SB-040 PH ≈ 6.

1415 - Drillers went to Decon augers.

1420 - 1440 - John & myself demoded from SB-04 to SB-05

1444 - Drilling began on SB-05

Time	Depth	BG	BZ	PS
		.6	.6	.7

1454 SAMPLES - SYD-SB-055 & SYD-SB-215 (Dupe) TAKEN.

1504 - SAMPLE FROM 1-3'-is wet/saturated

Time	Depth	BG	BZ	PS
1505	1-3'	.6	.6	.7

SAMPLES SYD-SB-05W & SYD-SB-21W (DUPE) TAKEN AT 1508.

1515 - 1530 - MOBILIZED FROM SB-05 - TO SB-06.

Time	Depth	BG	BZ	PS
1607	1-3'	.8	.8	1.0

Note SAMPLE WAS NOT ABLE TO BE RETRIEVED DUE TO LARGE AMOUNTS OF COBBLE STONES.

1610 - SAMPLE SYD-SB-065 TAKEN

Time	DEPTH	HNU BG	BZ	PS
1624	3-5'	.7	.7	1.2

1625 - SAMPLE SYD-SB-06D TAKEN

1645 - ARRIVED AT SB-07 PH ~~AT P.M.~~ NEAR SB-07 IN LARGE PONDED AREA ≈ 7.0 ~~P.M.~~

1649 - DRILLING BEGAN.

Time	DEPTH	BG	BZ	PS.
1657	0-6"	.6	.6	.6

1655 - SAMPLE SYD-SB-07S TAKEN

Time	DEPTH	HNU BG	BZ	PS
1658	1-3'	.5	.6	.6

1703 - SAMPLE SYD-SB-07D TAKEN

1705 - MOBED TO SB-08.

Time	DEPTH	HNU BG	BZ.	P.S.
1713	0-6"	.6	.6	.7

1715 - SAMPLE SYD-SB-08S TAKEN

Time	DEPTH	HNU BG	BZ	PS
1721	~~0-~~ 1-3'	.6	.6	.7

1725 SAMPLE SYD-SB-08D TAKEN

1730 - DEMOB FROM SB-08

1730 - 1800 - LOADED VAN WITH SUPPLIES LEFT AT DECON PAD

1805 - ARRIVED AT CAMPBELL SITE TRAILER.

1805 - 1830 - got organized for 1-24-93

1845 - Left site for the day

1900 - Arrived at restorant for dinner

2100 - 2130 completed Log Book entries for the day

Relax a monday
1-23-93

1-24-93

0630 - on site at camp Allen site trailer

0650 - SB-RB-02 was taken off a split spoon

0700 - mobilized to salvage yard

0723 - Drillers arrive.

0730 - Drillers begin decon. TEZ & myself moved to SB-09.

0800 - Drillers set up on SB-09.

Time	Depth	HNU B0	B2	B5
0810	0-6"	1.0	1.2	1.0

0813 - SAMPLE SYD-SB-09S TAKEN.

Time	Depth	BG	HNU BZ	PS
0818	1-3'	.9	.9	1.2

0820 - SAMPLE SYD-SB-09D TAKEN

0824 - BEGAN MOB TO SB-10

PICTURES 4 & 5 OF MATERIAL IN SPLIT SPOON FROM 1-3' ON SB-09.

0830 - DRILLING BEGAN ON SB-10

Time	Depth	BG	HNU BZ	PS
0835	0-6"	.7	.7	.7

0840
SAMPLE SYD SB10S & SYD-SB-10S MS/MSD TAKEN

pH OF 1-3' FROM SB-10 ≈ 7

Time	Depth	BG	HNU BZ	PS
0852	1-3'	.7	.7	.7

0855 - SAMPLE SYD-SB-10S + MS/MSD TAKEN.

0856 - 0903 - MOBILIZED TO SB-11

pH OF STANDING WATER AT SB-11 ≈ 11

Time	Depth	BG	HNU BZ	PS
0907	0-6"	.8	.8	.8

0910 - SAMPLE SYD-SB-11S ~~0-10m~~ TAKEN

Time	Depth	BG	HNU BZ	PS
0916	1-3'	.8	.8	.8

0920 - SAMPLE SYD-SB-11D TAKEN

0926 - MOBILIZED TO SB-12

0930 - BEGAN DRILLING SB-12
HNU

TIME	DEPTH	BG	BZ	PS
0932	0-6"	.6	.6	.7

0935 - SAMPLE SYD-SB-12S
TAKEN

HNU

TIME	DEPTH	BG	BZ	PS
0938	1-3'	.6	.6	.7

TIME	DEPTH	BG	BZ	PS
0946	3-5'	.5	.5	.6

0950 - SAMPLE SYD-SB-12W
TAKEN

1018 - MOBILIZED TO SB-13
ALSO, DRILLING STARTED
HNU

TIME	DEPTH	BG	BZ	PS
1026	0-6"	.5	.5	.6

PICTURES 7&8 OF RIG IN WATER AT SB-13

1030 SAMPLE SYD-SB-13S
TAKEN

TIME	DEPTH	BG	BZ	PS
1031	1-3'	.7	.7	.7

1034 - SAMPLE SYD-SB-13D
TAKEN.

1045 MOBILIZED TO SB-14

CONCRETE UNDER ASPHALT
AT LOCATION SB-14 MOVED
40 FT NW HIT MORE CONCRETE
MOVED 25 FT NW HIT MORE
CONCRETE, MOVED 10 FT EAST
DIGGING TO DEPTH, ~~OBTAINED SAMPLE~~ WITH POST
HOLE DIGGERS THEN WITH SS. SPOON
ABOUT 5' FROM WEST OF
R.R. TRACKS

HNU

Time	DEPTH	BG	BZ	PS
1107	0-6"	.5	.5	.5

1110 SAMPLE TAKEN SYD-SB-14S

Time	DEPTH	BG	BZ	PS
1120	36"	.5	.5	.5

← see DEPTH ↖

1125 - SAMPLE TAKEN, SYD-SB-14W

1133 - MOBILIZED TO SB-15 DRILLING BEGAN,

HNU

Time	DEPTH	BG	BZ	PS
1141	0-6"	.7	.7	.7

1145 SAMPLE SYD-SB-15St MS/MSD TAKEN.

SPLIT SPOON 1-3' REJECTED DUE TO-LARGE AMOUNTS OF RUBBLE IN SPOON.

Time	DEPTH	BG	BZ	PS
1204	2-5'	.5	.5	.7

1208 SAMPLE SYD-SB-15D & MS/MSD TAKEN

1225 - MOBILIZED TO SB-16.

1237 - BEGAN DRILLING AT SB-16.

HNU

Time	DEPTH	BG	BZ	PS
1240	0-6"	.5	.5	.6

1245 - SAMPLE SYD-SB-16S TAKEN

PICTURES 8 & 9 OF RIG NEAR POWER LINES

HNU

Time	DEPTH	BG	BZ	PS
1250	1-3'	.5	.5	.5

1253 - SAMPLE SYD-SB-16D TAKEN

1258 ~~A.M.~~ P.M. MOBILIZED TO SB-17

1305 - DRILLING BEGAN

Time	DEPTH	BG	BZ	PS
1307	0-6"	.6	.6	.6

1312 - SAMPLE SYD-SB-17S TAKEN

Time	DEPTH	BG	BZ	PS.
1318	1-3'	.5	.5	.5

1322 SAMPLE SYD-SB-17D TAKEN

1328 pH OF SB-17D ≈ 6

1340 MOBILIZED TO SB-18

Time	DEPTH	BG	BZ HNU	PS.
1346	0-6"	.6	.6	.9

1353 SAMPLES - SYD-SB-18S & SYD-SB-22S DUPE OF) TAKEN

Time	DEPTH	BG	BZ	PS
1357	1-3'	.6	.6	.6

1400 - SAMPLE SYD-SB-18W & SYD-SB-22W-DUPE) TAKEN

1420 MOBILIZED TO SB-19

1422 - DRILLING BEGAN

Time	DEPTH	BG	BZ	PS
1426	0-6"	.6	.6	.6

1430 SAMPLE SYD-SB-19S TAKEN

Time	DEPTH	BG	BZ	PS
1434	1-3'	.5	.6	.6

1438 - SAMPLE SYD-SB-18D TAKEN

1445 - MOBILIZED TO SB-20

1447 DRILLING BEGAN.

HNU

TIME	DEPTH	BG	BZ	PS
1452	0-6"	.5	.5	.6

1458 - SAMPLES SYD-SB-20S & MS/MSD TAKEN

TIME	DEPTH	BG	BZ	PS
1500	1-3'	.4	.5	.5

1505 - SAMPLES SYD-SB-20D & MS/MSD TAKEN

pH OF SYD-SB-20D ≈ 6

1507 - 1520 - CLEANED UP - MOVED FROM SITE TO DECON AREA.

1540 - 1610 - PICKED UP LUNCH FOR DRILLERS.

1630 - 1650 - JOHN Z & MYSELF DID A SITE DRIVE THROUGH TO CHECK ON GROUTING OPERATIONS

1655 - 1730 - DEMOBILIZED EQUIPMENT FROM VAN TO CAMP ALLEN SITE TRAILER.

1745 - 1945 - HELPED DRILLERS GROUT REMAINING BORINGS AND LOAD DRUMS AND STAGED THEM AT THE END OF THE CAMP ALLEN AREA "B" DRUM STORAGE AREA AT THE FAR SOUTHERN END.

1950 - BACK AT HOTEL.

2045 - 2110 - COMPLETED LOG BOOK ENTRIES FOR THE DAY.

Peter A Monday

1-24-93

(23)

1-25-93

0700 - ARRIVED AT 7/ELEVEN / PICKED UP ICE.

0720 - ON SITE AT C.A.L. TRAILER.

0720 - 1430 - PREPARED SAMPLES, FOR SHIPPING TO LAB.

1430 - LEFT SITE TRAILER FOR FED-EX

1600 - ARRIVED AT SITE TRAILER

Q'S FOR TERRY,

1. DO YOU WANT TCFM RUN ON TRIP BLANKS.

TOMORROW MEET OPERATOR AT VEHICLE GATE AT BRIG TO HAVE HIM MOVE THE DRUMS.

1600 - 1650 - OBTAINED WATER SAMPLES FOR $CaCO_3$ TEST.

1700 - 1745 - CLEANED UP AROUND SITE TRAILER

(24)

1745 - 1830 - PLACED BOLTS ON DRUMS BEHIND AREA "A".

1835 - ARRIVED AT HOTEL.

1900 - START HARDNESS TEST

2025 - 320 mg/l HARDNESS SAMPLE B1 - LOCATION WEST OF B-MW20SS.

2101 570 mg/l HARDNESS SAMPLE A2 - LOCATION 20' SOUTH OF TRAIN TRESSEL.

2142 160 mg/l HARDNESS SAMPLE B1 - LOCATION EAST CORNER BEHIND SCHOOL.

2208 175 mg/l HARDNESS SAMPLE B2 - LOCATION POND IN AREA B.

2215 - COMPLETED LOG BOOK ENTRIES FOR THE DAY.

Talk to Monday

1-24-93

1-25-93.

0630 - AT SITE TRAILER.

0630 - 0930 - TOM Z. & MYSELF CONDUCTED WATER LEVEL MEASUREMENTS IN AREAS A & B.

0930 CHIEF LORENZ, TOM Z. & MYSELF WENT TO INSPECT THE 2 DRUMS WEST OF THE BRIG. CHIEF LORENZ STATED THAT THE FORKLIFT WOULD PROBABLY GET STUCK TRYING TO GET TO THE DRUMS & THAT THE FORKLIFT DOES NOT HAVE THE CLEARANCE TO MANAGE THE TERRAIN.

0940 - DROPPED CHIEF LORENZ OFF AT SALLY PORT ENTRANCE.

0945 - 1245 TOM Z. & MYSELF COMPLETED WATER LEVEL MEASUREMENTS IN AREAS A & B.

2 WELLS WERE NOT MEASURED

1. B-MW13 - COVERED BY SAND & FILL BY CONTRACTORS REPLACING SEWER LINE BY C.A. SCHOOL.

2. A-MW5 - DID NOT HAVE THE KEY FOR THE LOCK ON THE PROTECTIVE AID.

1250 - 1330 - CLEANED UP AROUND SITE TRAILER, PACKED UP ALL REMAINING BAKER ITEMS IN COOLERS, CLEANED OUT RENTAL VEHICLE.

1330 - LEFT SITE, IN ROUTE TO CAR WASH, THEN FED-EX.

1345 - WASHED RENTAL VEHICLE

1355 - ARRIVED AT FED-EX.

1410 - LEFT FED-EX IN ROUTE TO HOTEL.

1430 - ARRIVED AT HOTEL.

1525 - RECEIVED PHONE CALL FROM TLT CONCERNING BOTTLES THAT WERE DAMAGED DURING TRANSIT A.M.

1545 - PHONE CALL FROM TLT. WILL NEED TO RESAMPLE.

1600 - JOHN Z & MYSELF IN ROUTE TO SALVAGE YARD.

1610 - SALVAGE YARD CLOSED

1630 - BACK AT HOTEL.

1635 - JOHN Z & MYSELF IN ROUTE TO AIRPORT.

1700 - ARRIVED AT AIRPORT. DISCUSSED ACTIVITIES THAT JFZ WILL NEED TO DO TOMORROW FOR REMAINING SAMPLES.

1730 - CHECKED AIR TICKET IN AT US AIR DESK.

1930 - ARRIVED IN PGH, PA. AIRPORT.

Monday

[illegible] 6-26-93

Camp Allen Salvage Yard
CTO #148.

Baker

John E. Zimmerman
Assistant Geologist

Baker Environmental, Inc.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108
(412) 269-6000
1-800-553-1153
FAX (412) 269-2002

Susan Hauser -
Home -

Geri Tragesser - Home

Projects

Terry Chamberlain, 70E, ~~#45446~~
Bldg #143 444-7455

Cheryl Barnett 804 444 3009
Sharon Waligora " " "
David Forsythe " " "
Bldg# N26 Gilbert street

Steve Olson (Reg Environ Coordn)
444-3009 or 444-6700 Bldg# N26

Stan Greer 804 444-5600
(C.A.S.Y.) 444-6077

Ken Tourjie 804 444-5144
(DRMO)

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Projects (continued)

8E3 C.A.S.Y. 10/6/92 (1)

1230 Arrive at LANTDIV office and meet Susan Hauser and Terry Chamberlin.

1300 Arrive at salvage at Camp Allen. sign in. Also observed ~~to~~ 2 aereal photos of the salvage yard dated: 3/22/65 and 1/92. The 1965 photo does not include Camp Elmore since the facility was constructed later. The 1992 photo does contain Camp Elmore. Also the basic extent of the salvage yard is consistant in both '65 and '92 photos.

1965 Photo indicates extended salvage yard which includes currenty
1) car auction place
2) PWC parking

Historical facts:
(1) Rail service ended 1987
(2) Bailing Press ended 1988
(3) Smelter operations: aluminum & lead
(4) Bldg CA 193 housed PCB's (still standing)

Civilian and Navy
personnel can be seen
in the historical photo's
working in the salvage
yard. Mr Stan Greer
showed and explained
the photographs to the
Baker and LANTDIV reps.
1335 Begin Salvage yard
tour. Tour is headed
by Mr. Greer. 1st
area visited is the
MO area (property
waiting to be sold
scraped (dismantled)
This area drains very
well. In 1971 major
fire occured in this
particular area of
the salvage yard.
All potentially hazardous
material that was
observed in drums
originates from various
geographic areas near

and far. Ex. Virgin
Islands, Cuba and locals
around Norfolk.
Bldg 193 former place where
transformers were
stored/drained befor
shipping. Draining of
transformer fluids
were supervised by
gov't environmental dept.
List of workers at
salvage yard is presented
JLT compiles names.
Bldg 194 is where PCB
spill occured. Dimentions
are approx 28' x 28'.
Spilled PCB's seemed
to have flowed north
from Bldg 194. Bldg 194
before the spill of PCBs
occured was primarily
used as a loading dock.
EWG pile:
refrigerants (2' depth)
EIL pile: 300 ppm PCB's subsurface
Steel surface → 26 ppm PCB's
light & heavy

Standing Water: South of E1L scrap pile and west of E1L scrap pile.
Meet Mr. Reagan. Will interview him later. Employee at yard since 1989.
Bldg #220 former smelter area. Standing water, directly east of Bldg #220, & north of #220
E1L pile: standing water observed extream northerly corner.
No4 dirt area just ~~north~~ South of blacktop: PCB spill area not tested w/ borings
Battery Area:
Bldg #CA212 welding gas shack.
Standing water South, SE of Bldg #CA212
1425 meet Mr. Watson.
1435 Yard tour ends.
1438 Begin interview w/ Watson

1440 Return to salvage yard office. Mr. Watson begins looking through photo album of salvage yard.
Q: When were civilians 1st hired to work in salvage yard
An: Mr. Watson: about 1943 or 1944. In 1947 many groups from the area (various bases) were partially combined w/ some civilians comming to the Camp Allen Salvage yard in 1947
Q: who has lead poisoning that you can remember Mr. Watson
An: Mr. Watson: still living Wm Jenkins. Identified in July 1947 photo. Others have previously died

Over the years workers have been exposed to gases such as mustard gas and Seon MR Watson said.

Chesapeake * Theodore Sherod
Norfolk * Wm. Jenkins
Franklin * John Cooper

Maps available at:
base civil engrs office
base museum

1620 Meet w/ David Forsythe and Sharon Waligora and Cheryl Barnett. Cheryl is the environmental coordinator for the Norfolk Naval Base.

NSC (Naval Supply Ctr) is owner of the salvage yard property.

Skip Gibson (Safety office) 444-2590 or 2950

1700 off-base.

JEZ

0810 Call Terry chamberlain and set up meeting for 1300 today. Will discuss (PA) process as described in the installation restoration manual concerning the sites history

0820 Called Dave Forsythe's office. Dave was not available. I talked w/ Sharon Waligora and asked if Steve Olson was available. She suggested that I keep trying periodically

0845 Called Susan Hauser's office. She was not available. Will wait on her return call. Subject of discussion will be real estate information prior to C.A.S.Y. title office. This question will is important to answer

due to the fact that prior site ownership, operator(s) and type of ownership can be determined before C.A.S.Y. became NAVY property.

0900 Leave for C.A.S.Y. upon arrival consult w/ Stan Greer about taking pictures of salvage yard. Documentation will be recorded following the same pattern as the walk through tour conducted by Stan Greer on 10/6/92.

0915 Field documentation of C.A.S.Y. begins. Photograph # 1 is at the MO area (northern part of C.A.S.Y.) Photograph #18 is at Bld. CA # 212 (battery storage area of C.A.S.Y.)

Photograph # 1
Location: MO area
Description: property waiting to be sold/ scraped/dismantled. Surface cover is dirt & gravel
Direction of view: NW to SE

JEZ

Photograph # 2
Location: Bld # CA193
Description: Door on southwest wall of building (entrance) where PCB spill occured. Surface cover is blacktop (ashphalt)
Direction of view: SE

Photograph # 3
Location: Bld # CA194
Description: Area of PCB spill. Approximate dimension is 28' x 28'. Surface cover is blacktop (ashphalt)
Direction of view: SE

Photograph # 4
Location: Bld # CA194
Description: Standing in PCB spill area facing C.A.S.Y. administration bld. note standing water. Surface cover is partially blacktop (ashphalt) and partially dirt and gravel.
Direction of view: NW

JEZ

JEZ

Photograph #5
Location: Bld #CA194
Description: standing in PCB spill area facing C.A.S.Y. administration bld. Note standing water. Surface cover is dirt and gravel.
Direction of view: SW

Photograph #6
Location: Bld # ~~CA193~~ CA193
Description: standing just inside southwestern wall doorway. Former location where transformers were stored and drained. Surface cover inside bld. is cement.
Direction of view: NE

Photograph #7
Location: standing where PCB spill occured.
Description: E1L pile as viewed from outside Bld #CA193. NE corner of Bld #205 is on leftside of photograph. Surface cover in photograph is dirt and gravel.
Direction of view: SW

JEZ

Photograph #8

Location: NE of Bld # CA 205

Description: Southeast side of C.A.S.Y. as viewed from beyond NE corner of Bld # CA 205. Surface cover is dirt & gravel

Direction of view: SE

Photograph #9

Location: Along southeast side of C.A.S.Y. directly in front of Bld # CA 195

Description: Viewing DLD pile (aluminum). Note standing water. Surface cover is dirt & gravel

Direction of view: SW

Photograph #10

Location: SE corner of C.A.S.Y. facing Bld # CA 197

Description: Drum storage. Contents of drums is: empty. Northeast corner of Bld # CA 220 is on left side of photograph. Surface cover is dirt and gravel.

Direction of view: NE

JEZ

Photograph #11
Location: NW of Bld #CA220
Description: transformer storage area. Surface cover is dirt & gravel.
Direction of view: SE facing C.A.S.Y. SE fenceline.

Photograph #12
Location: NW of Bld #CA220
Description: Standing water along southwestern fenceline of C.A.S.Y.
Direction of view: SW

Photograph #13
Location: Along southwestern fenceline of C.A.S.Y.
Description: E1L pile is on rightside of photograph. To the left of the scrap pile E1L and towards the bottom of the photograph is the area where surface and subsurface test borings were completed when sampling for PCB's. (refer to p. 3). Surface cover is dirt & gravel.
Direction of view: NE

JEZ

Photograph #14

Location: Along southwestern fenceline of C.A.S.Y.

Description: E1L scrap pile's northwestern side. Note the standing water.

Direction of view: NE Surface cover is dirt & gravel.

Photograph #15

Location: SW of E1L scrap pile

Description: Facing northwestern fenceline of C.A.S.Y. Note that area is comprised of "Sold" merchandise surface cover is dirt & gravel

Direction of view: NW

Photograph #16

Location: NW of E1L scrap pile

Description: Facing the E1L scrap pile notice standing water at the scrap pile's base. Surface cover is dirt & gravel.

Direction of view: SE

JEZ

Photograph #17
Location: Bld. # CA 212
Description: This building is designated "Lead Storage Area". Currently all batteries at C.A.S.Y. are stored in this area. Notice in the photograph that standing water from the previous day is drying up. Surface cover is dirt and gravel.
Direction of view: NE

Photograph #18
Location: SW of Bld # CA 212
Description: Battery storage area. Surface cover is dirt and gravel.
Direction of view: NE

Special Notes:
1. Bld # CA 220
   - formerly where smelter operations were designated (heavy metals)
2. all vegetated areas inside C.A.S.Y. appeared stressed.

1145 Leave C.A.S.Y.
1200 Return to hotel and check on returned calls. Appointment w/ Terry Chamberlain is confirmed for 1300
1210 Lunch break
1245 Consult w/ JLT over phone
1300 Meet w/ Terry Chamberlain at Naval Supply Facilities Department. Also consult w/ Bob Morrison who suggests I get in touch w/ Ken Tourjie over at Defense Reutilization and Marketing office Bld #211 South Annex. He (Ken Tourjie) provided me with some information about former workers since DRMO oversees daily C.A.S.Y. operations.
1500 Meet w/ Ken Tourjie. Meeting produces

a scheduled interview session which will take place on 10/9/92 at the DRMO South Annex office beginning at 0830.
1615 Consult w/ Susan Hauser, P.E. (LANTDIV rep) about interview procedure for 10/9/92
1715 Arrive at C.A.S.Y.
1730 Interview C.A.S.Y. yard worker (Mr Jeff Reagan)

Interview Questions & Answers

Question: Mr Reagan how long have you worked at C.A.S.Y.
Answer: 3 years
Question: were you involved w/ PCB spill in 1989
Answer: yes
Question: Describe what happened

Answer: Forklift tooth punctured transformer. PCB liquid spilled in area between CA193 and CA 194. Covered spill with absorbtion material. Continued working.

Question: Describe daily C.A.S.Y. operations

Answer: Receive, separate and inventory junk.

Question: Describe job duties as yard laborer at C.A.S.Y.

Answer: vary from day to day. Inventory and separate junk.

1815 Interview completed
1830 off site
1845 Return to hotel

0810 Meet Dave Foresythe at Bld # N 26 at NAVCOM BASE.

0830 Arrive at Hampton Roads Naval Museum.

0835 Meet Lt. Todd Horvatis. Lt. Horvatis assisted me when reviewing maps in the Accession Rm. and when discussing areal photographs of Camp Allen and the naval base at large.

0845 Reviewed literature concerning the Norfolk Naval Base of which Camp Allen and (C.A.S.Y.) are part of. Time frame for the historical review ranged from Post WWI (literature addrassed function of naval base during

war time) through the mid 1960's. Most information concentrated on the years 1941 to 1949 and 1959 through 1970. Areal photographs document changes in size and shape of the naval base as they occured between 1941 and 1970

1050 Consulted w/ colleague of Steve Olson's about tracking historical records about Camp Allen and C.A.S.Y. His response "He didn't find any and wished me good luck"

1055 Consulted w/ Mr Jones about tracking down records concerning history

of Camp Allen specifically C.A.S.Y. He commented that he concludes after conducting his own search that "no pertinent records are available." He is aquainted though w/ Bakers efforts at Camp Allen since beginning the C.A.L. field program.

1115 Consult w/ Dave Foresythe about historical search at the Naval Museum.

1200 Lunch break.

1300 Consult w/ JLT over phone about literature search findings

1440 consult w/ Susan Hauser, P.E. (LANTDIV rep) about literature findings at Naval

Museum. I also ask about information concerning real estate records about C.A.S.Y. Susan will FAX records to JLT on 10/13/92 if any are available

1530 Consult w/ Dave Foresythe about entry/access to Baker site office trailer at C.A.L. Dave suggests that I call on the NAVY BRIG personnel about entry.

1600 Arrive at NAVY BRIG to make arrangements to secure entry to Baker C.A.L. site office on 10/9/92

1630 Stop at C.A.S.Y. and pick up yard site map from Stan Greer.

1645 Consult w/ JLT over phone.

1700 Begin locating former C.A.S.Y. workers in phone directory for Greater Norfolk area.

1745 Begin telephone interview w/ former C.A.S.Y. worker (R.A. Kennedy)

583-5558

Interview Questions & Answers

Question: When did you work at C.A.S.Y.

Answer: Couldn't remember when he started. Retired in 1983.

Question: What was your position at C.A.S.Y. when you retired in 1983

Answer: Yard supervisor last 11 years he worked.

Question: What types of material came into the yard.

Answer: Scrap steel (heavy & light)

oil all types, chemicals all types and metal all types

Question: How were these materials inventoried?

Answer: Not to well. Records were not kepted up and materials in yard went unaccounted for most of the time.

Question: What about the fire of 1971

Answer: What drums that didn't explode during fire were buried along SE fenceline of C.A.S.Y. No injuries occured.

Question: Was an inventory ledger ever noticed around the administration building, Records or other paperwork?

Answer: Records were only available for 11 years. Any older ones were destroyed.

1830 Begin telephone interview w/ former C.A.S.Y. worker (John Harbuck)

587-6855

Interview Questions & Answers

Question: When did you work at C.A.S.Y.

Answer: Retired in 1983

Question: What was your position at C.A.S.Y. when you retired in 1983

Answer: yard supervisor

Question: Did you ever inventory material comming into C.A.S.Y.

Answer: No. Not on paper. Oil was put in one place scrap steel in another and metal down to the smelter.

Question: What materials were stored in drums

Answer: Who knows. Without

paper records its anyones guess.

Question: Did any spills occur in the yard

Answer: On a daily basis

Question: Were they cleaned up

Answer: No, not really. Put drying agent on it thats all.

Question: Describe fire of 1971

Answer: Lucky nobody died. Drums exploded. Fire burned for 2 days then smoked for several more. Drums buried in ditch along SE fenceline

JEZ

2300 Begin telephone interview w/ former C.A.S.Y.

486-3130 worker (Claude McNeer)

Interview Questions & Answers

Question: When did you work at C.A.S.Y.

Answer: Retired in 1988

Question: What was your position at C.A.S.Y. when you retired in 1988

Answer: Yard laborer

Question: Did you ever inventory incomming materials to C.A.S.Y.

Answer: NO

Queston: What do you remember comming into C.A.S.Y.

Answer: Lots of drums w/ oil and all types of chemicals

Question: What did the drums look like?

Answer: Rusted and dented.

Never new. Some were punctured

Question: How were they inventoried.

Answer: They weren't. They were just stacked.

Question: Where were the drums stored (stacked)

Answer: On the north end of C.A.S.Y.

Question: Describe the fire in 1971

Answer: Like the 4th of July It just burned and burned for a couple of days. What didn't burn was buried in a big wide ditch east of C.A.S.Y.

Question: When transformers came into C.A.S.Y. what happened to them

Answer: Fluid was drained out.

Question: What happen to the fluid

Answer: Its all over by Blds #CA 193 and 194

JEZ

0800 Pick up Dave Foresythe at Bld #N26 at NAVCOMBASE

0810 Leave for DRMO office for scheduled interviews w/ former C.A.S.Y. workers.

0825 Arrive at DRMO and briefly consult w/ Ken Tourjie and introduce Dave Foresythe

0835 Begin scheduled interviews

444-5144 Dick Mains former C.A.S.Y. worker

Interview Questions & Answers

Question: When did you work at C.A.S.Y.

Answer: 11 months during 1986

Question: What was your position at C.A.S.Y.

Answer: Yard foreman

Question: As yard foreman what was your major responsibility

Answer: Get rid of empty drums at C.A.S.Y. Drums that contained liquid were to be separated and inventoried.

Question: Were there any other materials that needed either inventoried/separated or removed from C.A.S.Y.

Answer: Yes, alot of tires.

Question: Where the drums were stored describe that area.

Answer: Mucky area. Could see hazardous chemical liquids leaching off C.A.S.Y. to the NW fenceline and beyond.

Question: Were any steps taken to remediate this

problem

Answer: Applied the dirt & gravel cap which exists presently at C.A.S.Y.

Question: So as far as you know this was the 1st action taken of this kind at C.A.S.Y.

Answer: Yes.

Question: Where are the drum inventory records

Answer: Don't know. Probably lost

0920
444-5144 Pam Whitehurst former C.A.S.Y. administrative worker (office)

Interview Questions & Answers

Question: When did you work at C.A.S.Y.

Answer: 1978 to 1990

Question: What was your position at C.A.S.Y.

Answer: Worked in office as administrative support.

Question: Were you ever in the C.A.S.Y. yard much.

Answer: No

Question: Did you do inventory of any drums.

Answer yes. With Dick Mains during 1986.

Question: Did you keep records of the inventory

Answer: yes, but I don't know where they are now.

JEZ

0940
444-5144 Rosemary Farnell
non-C.A.S.P. worker.

Interview Questions & Answers.

Question: were people who you knew or know glad to leave C.A.S.P. for other assignments

Answer: yes.

Question: Do former C.A.S.P. workers talk about the situation at Camp Allen.

Answer: Its not a popular subject. No not much

Question: what do you know about CAMP Allen.

Answer: Groundwater is bad and alot of people are sick w/ cancer

1015 Return to Bld # N26 at NAVCOMBASE and drop Dave Foresythe off

1030 Arrive at NAVY BRIG to see about access to Bakers Camp Allen site office trailer

1115 Access is gained through the outside gate w/ assistance from chief King from the NAVY BRIG. I don't have the key to access the Baker trailer

1145 Lunch break

1215 consult w/ Darren Hupe

1230 conduct phone interview with George Slaton a former C.A.S.P. worker
483-0067

Interview Questions & Answers

Question: when did you work at C.A.S.P.

Answer: 1952-1972
Question: What was your position when you retired
Answer: Yard laborer w/ smelter operations.
Question: What exactly were your job duties
Answer: Separate the lead, copper silver and brass from heavy and light steel.
Question: Were you the only smelter operator
Answer: For my 20 years yes
Question: When you melted the lead down what happened to it.
Answer: Poured ingots and sold them I guess.
Question: Was the brass, silver and copper inventoried.
Answer: Maybe, but I didn't inventory it.
Question: Describe the 1971 fire
Answer: Place almost burned down. Those drums

caused it I heard. They buried those drums right close near the east fence.

1315 Consult w/ JLT over phone

1340 Conduct phone interview w/ former C.A.S.Y. worker Wm Jenkins

622-8544

Interview Questions & Answers
Question: When did you work at C.A.S.Y.
Answer: Started in 1930 and retired in 1960's.
Question: What was your position when you retired from C.A.S.Y.
Answer: Yard laborer. Torch man to be exact.
Question: What does a torch man do
Answer: Cuts up heavy and light steel.

Question: were you always a torch man at C.A.S.Y.

Answer: yes.

Question: How was the steel inventoried that come into Camp Allen S.Y.

Answer: It wasn't. I just cut it up.

1420 Conduct phone interview with former C.A.S.Y.
857-5152 worker Roland Smith

Interview Questions and Answers

Question: when did you work at C.A.S.Y.

Answer: 1952 to 1982

Question: What was your position when you retired

Answer: yard supervisor

Question: Was inventory record keeping an important activity

Answer: I don't know. I didn't do records

Question: Do you remember any spills

Answer: Oh, all the time. Just all over the place.

Question: What materials spilled

Answer: Oils and chemicals

Question: How were the spills cleaned up

Answer: They weren't. We just left it ~~dry~~ dry

Question: Over the years do you know of any people who worked at C.A.S.Y. that became sick.

Answer: Many but they are dead now.

1500 Arrive at Hampton Roads Naval Museum

to pick up photo-
copies of historical
materials from Lt.
Horvatis

1600 Check out of hotel
1630 Arrive at A/P and
turn in car rental

JEZ

1/22/93

1120 Arrive at Salvage Yard
1130 Begin locating drilling pts
on site. Sample locations
will be marked on surface
w/ yellow crayon.
1245 Finish locating sample loca-
tions
1310 PWC (utility dept.) personnel
begin utility clearance.
1420 Utility clearance completed
PWC personnel were:
① Chuck Sitcey
② Mr Smith
1430 Consult w/ JLT and PAM
1500 Check into hotel
1530 Take JLT to A/P
1600 Buy field supplies
1800 Begin preparing bottles
for collecting samples
2300 End of day.

JEZ

0630 Arrive at site office. weather conditions are clear & cool (30's)

0645 Pack field truck.

0650 Leave for Salvage Yard

0655 Set-up for sample collection.

0700 Drill crew arrives. R.J. Schmon (driller)

0723 Sample FB-02 is collected (DI water). PAM asst

0800 Sample FB-01 is collected (Tap water). PAM asst

0805 After FB-01 is collected. flow meter is hooked-up to water tap inside Bld # CA231 Reading on flow meter before meter was hooked-up was 63 gal.

0825 Consult w/ PAM and drill crew concerning boring completion procedures. Drillers decon

0835 Begin decon of sampling spoons.

0900 Sample RB-01 is collected (Lab DI water)

0915 Drill crew finishes decon of augers and other drilling apparatus

1000 Drill crew begins mixing patch material to be applied to concrete sample areas inside Bldg # CA193 locations C1 & 2 and duplicate sample location C3.

1030 Drill crew finishes patching up sample locations inside Bldg #CA193. Begin mob to Soil Boring (SB) location #1

1040 Drill rig arrives at SB #1 and sets-up

1105 PAM begins Health & Safety discussion

1112 Spudding begins at SB-01

1145 Relocate to SB-02 and decon.

1233 Begin spudding SB-02

SB-01

Time	Depth	Blow Cnt	Recov	Color	Moisture	Description
1115	6"	–	–	Dk. brown	moist	SAND fine grained w/some silt. Root material present. Glass shards and cobbles throughout sample. Sample is very loose. HNu is BG (.8)
1127	1-3'	9-22 7-10	.9'	Dk. brown to Dk. grey	moist ~~to wet~~	SAND medium grained w/wood at bottom of sample. Glass shards and cobbles present. Sample is medium dense. Yellow staining w/orange streaking (top 1/2). HNu is BG (.7)
1137	3-5'	3-8 6-15	1.6'	Dk. grey	wet	SAND fine grained w/trace of very fine shell material. Sample is medium dense. HNu is BG (.6)

PAM assisting w/ monitoring and sample collection

SB-02

Time	Depth	Blow Cnt	Recov	Color	Moisture	Description
1235	6"	–	–	Dk brown	moist	SAND fine grained w/some silt. Root material present w/what appears to be fill material. Sample is very loose. HNu is BG (.6)
1243	1-3'	9-9 8-7	1.4'	grey	wet	SAND fine to medium grained w/trace shell material. Sample is medium dense. HNu is BG (.7)

PAM assisting w/ monitoring and sample collection

SB-03

Time	Depth	Blow Cnt	Recov	Color	Moisture	Description
1320	6"	–	–	Brown	wet	SAND fine grained w/some silt. Cobbles throughout sample. Sample is very loose. HNu is BG (.7). Boring is within 4" of standing water.
1327	1-3'	4-4 2-1	.8'	grey	wet	SAND fine to medium grained w/trace shell material. Sample is loose. HNu is BG (.6)

1255 Relocate to SB-03 and decon. Boring located on concrete slab. Will adjust location 12' to the west

1315 Spudding begins on SB-03

1329 Relocate to SB-04 and decon. Temp is 40's

1348 Begin spudding SB-04

1405 Drill crew decons augers

1445 Drill crew finishes decon of augers and relocates to SB-05

1454 Spudding begins on SB-05

1510 Drill crew restores area around SB-05 and locks drum. Temp is 50's

1530 Relocate to SB-06

1543 Spudding begins at SB-06. Boring is located on asphalt surface/concrete base. Location will be moved. Adjustment will be 50' to the south

1557 Spudding begins at new location for SB-06

1630 Drillers restore area around SB-06

1644 Drillers relocate to SB-07 and sets-up

1650 PAM and I consult w/ Stan Greer. Stan was not in. We made arrangments w/ acting supervisor to stay until two more borings are completed namely SB-07 & SB-08

1654 Spudding begins at SB-07

1710 Drill crew relocates to SB-08 and sets-up

1714 Spudding begins at SB-08

1730 Mobilize from SB-08 location to temporary decon area at the salvage yard.

1739 Begin loading field truck

1755 Return to Baker field trailer

1805 Unload field truck and decon sampling spoons

SB-04

Time	Depth	Blow cnt	Recov	Color	Moisture	Description
1350	6"	—	—	DK. brown	Moist	SAND fine grained w/ some silt. Fill material throughout. Cobbles present. Sample is very loose. HNu is BG (.8)
1359	1-3'	3-2 3-5	1.4'	grey to brown	wet	SAND fine to medium grained. Sample is loose. No HNu reading available

PAM assisting w/ monitoring and sample collection

SB-05

Time	Depth	Blow cnt	Recov	Color	Moisture	Description
1458	6"	—	—	Brown	Damp	SAND fine to medium grained. Sample is very loose. HNu is BG (.7) Asphalt cover on ground surface is approx 6" thick
1505	1-3'	4-5 7-6	1.5'	grey to brown	wet	SAND medium grained. Sample is medium dense. HNu is BG (.7)

PAM assisting w/ monitoring and sample collection

SB-06

Time	Depth	Blow cnt	Recov	Color	Moisture	Description
	6"	—	None	—	—	No Recovery. Since location was adjusted recovery of a 6" sample w/o only big cobbles was ~~not~~ possible
1609	1-3'	4-5 7-3	1.0'	green	Moist	SAND fine to medium w/ little shell material Sample is medium dense. HNu is (1.0)
1626	3-5' ~~2-4~~	2-1 1-2	.9'	greyish green	wet	SAND fine to medium grained w/ some silt. Sample is very loose. Plant material near bottom of sample. HNu is (1.2)

SB-07

Time	Depth	Blow Cnt	Recov	Color	Moisture
1656	6"	-	-	DK Brown to Brown	Damp
1705	1-3'	12-11 10-8	.9'	Brown to green	Moist

SB-08

Time	Depth	Blow Cnt	Recov	Color	Moisture
1718	6"	-	-	Brown	Damp
1725	1-3'	12-7 7-7	1.5'	Brown to green to black	Moist

Totals for 1-23-93
Borings Completed: 8
Footage: 28'

JEZ

Description

SAND fine to medium grained w/some silt. Cobbles and glass shards are occasional. Sample is very loose. HNu is BG (.6)

SAND fine to medium grained w/shell material throughout. Sample is medium dense. HNu is BG (.6)

PAM assisting w/monitoring and sample collection

SAND fine to medium grained w/gravel throughout. Sample is very loose. HNu is BG (.7)

SAND fine to medium grained w/shell material throughout. Sample is medium dense. HNu is BG (.7). Decomposed wood in sample appears black

JEZ

(58) 1/23/93 C.A.S.P. JEZ

1830 Consult w/ PAM about tomorrow's field activities

1855 Lock-up Baker field trailer and secure area.

1900 off site

JEZ

1/24/93 C.A.S.Y. JEZ (59)

0630 Arrive at Camp Allen field trailer (Baker's).

0650 Sample RB-02 is collected PAM asst. (lab DI water)

0700 Relocate to Salvage Yard temporary decon area. Weather conditions are clear, cool (40's) w/ a breeze.

0723 Drill crew arrives on site.

0730 Drill crew begins decon of augers. R.J. Schmon (driller)

0740 PAM/JEZ locate to SB-9. Consult about day's upcomming drilling activities.

0750 Drill crew arrives at SB-09 location. Will complete site restoration at SB-08 and move drum to SB-9

0800 Drill crew sets-up at SB-09

0807 Spudding begins at SB-09

0825 Drill crew relocates to SB-10 and sets-up. Decon spoon.

SB-09

Time	Depth	Blow Cnt	Recov	color	Moisture	Description
0809	6"	—	—	yellowish brown to Dk brown	Damp	FILL material w/ sand fine grained. Cobbles and root material are present throughout sample. Shell material is occasional. HNu is BG (1.0). Sample is very loose.
0816	1-3'	15-27 16-11	.8'	reddish to grey to brown	Damp	FILL material at top of sample (brick) w/ sand fine grained. Cobbles are present. Sample is dense. HNu is (1.2)

PAM assisting w/ monitoring and sample collection

* Measured BG is 1.0 ppm

SB-10

Time	Depth	Blow Cnt	Recov	color	Moisture	Description
0833	6"	—	—	Dk Brown	Damp	FILL material w/ sand fine grained. Cobbles are occasional w/ shell material throughout sample. Sample is very loose. HNu is BG (.7)
0846	1-3'	11-12 16-19	1.0'	v. lite brn. to lite grey to brown	Damp	SAND fine to medium grained w/ cobbles (large to small). Sample is medium dense. HNu is BG (.7)

PAM assisting w/ monitoring and sample collection

SB-11

Time	Depth	Blow Cnt	Recov	color	Moisture	Description
0906	6"	—	—	Brown	Damp	SAND fine grained w/ some silt. Fill material is traceable. Shell material is occasional w/ few cobbles. Sample is very loose. HNu is BG (.8)
0913	1-3'	9-7 14-10	.5'	Black	Damp	Fill material throughout. Charcoal flecks, decomposed wood and glass shards are present. Sample is medium dense. HNu is BG (.8)

PAM assisting w/ monitoring and sample collection

SB-12

Time	Depth	Blow Cnt	Recov	color	Moisture	Description
0930	6"	-	—	yellowish Brown to Dk Brown	Damp	SAND fine to medium grained w/ little silt. Sample is very loose. HNu is BG (.7)
0938	1-3'	12-11 15-14	1.8'	yellowish Brown to red to Black to Brown	Damp	SAND fine to medium grained. Fill material is present (brick and charcoal flecks). Sample is medium dense. HNu is BG (.7)

0831 Spudding begins on SB-10
0837 Auger rejection at 1.0' depth on SB-10. Location adjusted (to sample 1-3') 1.0' to the east.
0855 Drill crew relocates to SB-11 and sets-up. Decon spoon.
0903 Spudding begins at SB-11
0918 Drill crew relocates to SB-12 and sets-up. Decon spoon.
0927 Spudding begins at SB-12
0955 Drill crew relocates to SB-13 and sets-up Decon spoons. Drill crew positions rig for best access to boring location
1016 Spudding begins at SB-13
1028 Drill crew relocates to SB-14 and sets-up. Decon spoon. Temp 50's
1038 Spudding begins at SB-14 Boring is located on asphalt surface/concrete

base. Location is moved 25' to the Northwest. Again auger refusal occurs as location has an asphalt surface/concrete base. Location is again moved 40' SE from the original location. Posthole digging tool is used to collect sample at 6" depth and 3.0'.
1110 3.0' deep sample is collected. Due to location no blow counts are available. Posthole digging tool was used to collect deep sample.
1112 Drill crew relocates to SB-15 and sets-up
1115 Spudding begins at SB-15
1148 Drill crew relocates to SB-16 and sets-up. Decon spoon.
1205 Drill crew adjusts boom on rig

after questioning JEZ on 2-4-93 he said Post-hole digger was deconned prior to & after sampling JLT 2/4/93

SB-12 (cont)

Time	Depth	Blow Cnt	Recov	Color	Moisture
0945	3-5'	5-4 4-2	1.5'	Brown to grey	Moist to wet

SB-13

Time	Depth	Blow Cnt	Recov	Color	Moisture
1018	6"	–	–	yellowish brown	Damp
1023	1-3'	5-4 4-5	1.5'	yellowish brown to grey	Moist to wet (bottom)

SB-14

Time	Depth	Blow Cnt	Recov	Color	Moisture
1058	6"	–	–	Dk. Brown	Damp
1110	~~1.0~~ 3.0'	–	–	Brown w/ Dk. brown bands	Moist to wet (bottom)

SB-15

Time	Depth	Blow Cnt	Recov	Color	Moisture
1120	6"	–	–	Brownish grey	Dry
1132	1-3'	11-12 6-10	.8'	Black to green	Dry
1142	3-5'	3-2 1-1	1.2'	green to black	Damp to Moist

Description

SAND fine to medium grained. Shell material is present (only a trace). Sample is loose. HNu is BG (.6)

PAM assisting with monitoring and sample collection

SAND fine to medium grained w/ cobbles throughout. Sample is very loose. HNu is BG (.6)

SAND fine to medium grained. Sample is loose. HNu is BG (.7)

PAM assisting w/ monitoring and sample collection

COBBLES w/ sand fine to medium grained Sample is very loose. HNu is BG (.5). Cobbles are very large

SAND fine to medium grained. Sample is very loose. HNu is BG (.5)

PAM assisting w/ monitoring and sample collection

SAND fine grained w/ some fill material. Cobbles of intermediate size are present w/ places of glass shards. Sample is very loose HNu is BG (.7)

Recovery not suitable for sample analysis

SAND medium to fine grained w/ silty sand. Decomposed plant material at bottom of sample. Sample is very loose. HNu is BG (.7)

SB-16

Time	Depth	Blow Cnt	Recov	Color	Moisture	Description
1238	6"	—	—	Black to Dk Brown	Damp	SAND fine grained w/ cobbles throughout sample. Sample is very loose. HNu is BG (.6)
1249	1-3'	7-4 6-8	1.0'	Black to grey to green	Damp	SAND fine grained w/ fill material. Shell material bottom 1/3 of sample. Orange staining occurs in fill material. Sample is loose. HNu is BG (.5)

PAM assisting w/ monitoring and sample collection

SB-17

Time	Depth	Blow Cnt	Recov	Color	Moisture	Description
1308	6"	—	—	yellowish Brown to grey	Damp	SAND fine grained w/ cobbles (medium sized) sample is very loose. HNu is BG (.5). Cobbles are grey color
1314	1-3'	4-5 7-8	1.3'	reddish brown to grey to yellowish brown	Damp	FILL material w/ silty sand grading into fine grained sand. Sample is medium dense. Glass shards are found in fill material. Orange staining also associated w/ fill material. HNu is BG (.5)

PAM assisting w/ monitoring and sample collection

SB-18

Time	Depth	Blow Cnt	Recov	Color	Moisture	Description
1344	6"	—	—	yellowish brown to grey	Damp	SAND fine grained w/ occasional cobbles throughout. Sample is very loose. HNu is BG (.9)
1353	1-3'	5-4 4-5	1.5'	yellowish brown to green	wet	SAND fine grained grading into shell material w/ fine sand. Sample is loose. HNu is (1.6)

PAM assisting w/ monitoring and sample collection

SB-19

Time	Depth	Blow Cnt	Recov	Color	Moisture	Description
1423	6"	—	—	yellowish brown to black	Damp	SAND fine grained w/ trace charcoal flecks sample is very loose. HNu is BG (.6)
1430	1-3'	3-4 4-4	1.5'	yellowish brown	Moist	SAND fine to medium grained. Black staining at very top of sample. Sample is loose. HNu is BG (.6)

1205 (cont) so drill rig can proceed under overhead electric lines.

1237 Spudding begins at SB-16

1258 Drill crew relocates to SB-17 and sets-up

1305 Spudding begins at SB-17

1325 Drill crew relocates to temporary decon pad to decon augers. Decon spoons.

1338 Drill crew relocates to SB-18.

1341 Spudding begins at SB-18

1415 Drill crew relocates to SB-19 and sets-up

1421 Spudding begins at SB-19

1430 Drill crew relocates to SB-20 and sets-up. Decon spoons

1444 Spudding begins at SB-20

1515 Drill crew is instructed to start grouting boreholes

1530 PAM/ and I finish up decon of split spoons

1600 Inspect borehole locations to ensure grouting is satisfactory

1630 Return to Baker's site trailer and begin clean-up

1730 weather changes to light steady rain. Return to the salvage yard and contine borehole grouting and restoration operations. Assist drill crew with decon area clean-up. Disconnect flow meter which is hooked-up to water tap inside Bld # CA231. Reading on flow meter after disconnection is 75 gal. Water used: 12 gal

1845 Move generated drums from Salvage Yard to C.A.L area B drum storage area. Store separate from other C.A.L RI/FS

(70) 1/24/93 C.A.S.Y. JEZ

SB-20

Time	Depth	Blow Cnt	Recov	Color	Moisture
1450	6"	–	–	Yellowish brown to buff grey	Damp
1456	1-3'	9-8 12-10	1.0'	grayish green + reddish staining	Damp

Totals for 1-24-93

Borings Completed: 12

Footage: 40'

JEZ

1/24/93 C.A.S.Y. JEZ (71)

Description

SAND fine to medium grained w/ cobbles which are intermediate size. Sample is very loose. HNu is BG (.6)

SHELL material w/ trace fine sand. Root material at very top of sample w/ reddish stain. Sample is medium dense. HNu is BG (.5)

JEZ

Grouting operations

Completed	Boring #	NOT Completed
✓	1	
✓	2	
✓	3	
✓	4	
✓	5	
✓	6	
✓	7	
✓	8	
✓	9	
✓	10	
✓	11	
✓	12	
✓	13	
✓	14	
✓	15	
✓	16	
✓	17	
✓	18	
✓	19	
✓	20	

1845 (cont.) drums. Total drums generated by the Salvage Yard work is 8. Secure Area B

1910 Return to salvage Yard. Complete last site tour of borehole locations to inspect for grouting and restoration quality.

1921 Sign-out in Salvage Yard official Log Book inside administration building. off-site

1935 Consult w/ PAM about tomorrow's activities

2000 End of day

JEZ

0725	Arrive at Baker field trailer. Weather conditions are clear and cold w/ temp. in mid 30's
0733	Arrive at Salvage Yard and sign in at the administration bld. Survey crew is not on site yet.
0745	Survey crew arrives and signs in.
0753	SB-01 is staked
0754	SB-02 is staked
0756	SB-03 is staked
0758	SB-04 is staked
0800	SB-05 is staked
0804	SB-06 is staked
0806	SB-07 is staked
0808	SB-08 is staked
0809	SB-09 is staked
0810	SB-10 is staked
0811	SB-11 is staked
0813	SB-12 is staked
0814	SB-13 is staked
0815	SB-14 is staked

0817	SB-15 is staked
0820	SB-16 is staked
0822	SB-17 is staked
0824	SB-18 is staked
0826	SB-19 is staked
0830	SB-20 is staked
0835	Begin locating traverse pts.
0855	Set-up guns for site measurements
1015	Begin fixing flat tire on survey crew's truck (Survey crew)
1245	Check-out of Salvage Yard. Survey crew compiles horizontal reading for each of (20) borings within the Salvage Yard compound. These borings are numbered SB-01 through SB-20. Survey crew is supervised by John Combs representing Miller-Stephenson & Associates, P.C.

1300 Return to hotel.

1325 Consult w/ PAM about afternoon activities

1330 Return to Baker field trailer. Begin preparing sample coolers for shipment. Also pack-up field equipment to be sent back to the Baker office

1445 Leave for Federal Express office

1540 Return to Baker field trailer. Consult w/ PAM

1555 Begin labelling the remaining C.A.S.Y. generated drums

1630 Begin equipment procurement for drum locking bolts

1745 Return to Baker field trailer. Was unable to secure any bolts

1759 Secure Baker field, lock entrance gate to Camp Allen Area B

1805 Relocate to well site B-15WB and assist PAM with putting lock bolts on the two drums that are there.

1815 Relocate to BRIG so that PAM can confirm a time that Chief Calvert will be on duty 1/26/93

1830 Off site

1930 Assist PAM w/ water hardness testing.

2130 Day ends

JEJ

0630 Arrive on site. Weather conditions are overcast, cold (30's) and very windy

1235 Return to Baker field trailer. Clean-up and pack two coolers.

1315 Off-site

* For further explanation about time between 0630 and 1235 please refer to JEZ's Camp Allen field notebook beginning on page 153 of Vol II.

0845 Consult w/ JLT on the phone in hotel room. Discussion is about sampling activities at C.A.S.Y. to be conducted and packing procedure to be followed when sending samples to the lab.

0900 Confirm plan reservation for 3:50 PM to return to Pittsburgh.

0915 Leave hotel. Go to Home Quaters Warehouse and purchase shovel and steelwool to be used during sampling activities or during decon.

0945 Buy 20 lbs. of ice

1000 Arrive at Baker field trailer and assemble equipment needed for sampling activities at C.A.S.Y. Weather conditions are clear and mild (40's)

1035 Relocate from Baker field trailer to C.A.S.P.

1040 Arrive at C.A.S.P.

1045 Sign-in on C.A.S.P.'s daily log at Administration Bldg.

1100 Locate to SB#2

1110 Collect sample #SYD-SB-025 + PCBs and put on ice

1118 Measure distance of new sample location from original sample location. Distance is 3'. Direction is East

1125 Relocate to SB#11

1145 Collect sample #SYD-SB-11D + PCBs and put on ice

1150 Measure distance of new sample location from original sample location. Distance is 30'. Direction is East

1158 Sign-out on C.A.S.P.'s daily log at Administration Bldg.

1202 Relocate to Baker field trailer. Begin preparing cooler and samples for shipping to lab.

1245 Secure Baker field trailer and entrance to Camp Allen Area B. Leave for FED-EX

1310 Arrive at FED-EX. Drop off cooler for shipping to lab.

1330 Arrive back at hotel.

1350 Consult w/ JLT on phone. Discussion is about sampling at C.A.S.P. and packing cooler.

1450 Check-out of hotel

1520 Arrive at Norfolk A/P

1620 Flt. cancelled. I'm stand-by

1800 Next plane for Pittsburgh is full. Due to leave at 1930.

1945 Re-ticket to fly to Pittsburgh on the 28th (tomorrow)

2000 Make hotel reservation

(82) 1/28/93 C.M.S.P. JEZ

FED-EX Air Bill #'s

#	Date sent	Rec'd
5829550005	1/26/93	Darrin Hupe
5829549983	1/25/93	Kristen Brandl
5829549972	1/25/93	Kristen Brandl
5829549994	1/25/93	Darrin Hupe
5884827955	1/27/93	Kristen Brandl

APPENDIX B-3

DECLARATION OF HEALTH AND SAFETY PLAN REVIEW

12.0 DECLARATION OF HASP REVIEW

All site personnel indicated below, have reviewed and are familiar with this Health and Safety Plan. Site personnel were briefed on the contents of this HASP on 1-23-93 at 1050 a.m./p.m.

1. PETER MONDAY (Name-Print) — BAKER ENV. INC. (Company)
   Peter a Monday (Name-Sign) — 1-23-93 (Date)

2. Robert J. Schmon (Name-Print) — Rock-RAY Drilling (Company)
   Robert J. Schmon (Name-Sign) — 1-23-93 (Date)

3. TRAY SHOURDS (Name-Print) — ROCK-RAY DRILING (Company)
   Ray Shourds (Name-Sign) — 1-23-93 (Date)

4. John E Zimmerman (Name-Print) — Baker Environ Inc (Company)
   John E Zimmerman (Name-Sign) — 1-23-93 (Date)

5. _____ (Name-Print) — _____ (Company)
   _____ (Name-Sign) — _____ (Date)

6. _____ (Name-Print) — _____ (Company)
   _____ (Name-Sign) — _____ (Date)

APPENDIX B-4
INSTRUMENT CALIBRATION FORM

Baker

PHOTOIONIZATION DETECTOR (PID) CALIBRATION FORM

Manufacturer/Model: DL101 (eV probe) Equipment No.: 2680066

Client Name: LANSTOIN S.O.#: 19148

Project Site: Camp Allen Salvage Yard Project Manager: Jeri Trageser

Field Team Leader: PAM/JEZ Site Manager: PAM/JEZ

Checked with 98.2 ppm ppm of Isobutalene Calibration Gas

Benzene Equivalent Concentration of -NA-

Date	Time	Bat. Ck. (Y/N)	Initial		Adjusted		Weather Conditions	Comments	Calibrator (Initials)
			Reading (ppm)	Span	Reading (ppm)	Span			
1/23/93	1015	Y	1.2	-NA-	—	—	cool, clear	Office/Pre-Trip	PAM
1/24/93	0758	Y	.8	-NA-	—	—	cool, clear		PAM

cc: Project File (original); Equipment Manager (copy)

APPENDIX B-5
BORING LOGS

TEST BORING RECORD

Baker
Baker Environmental, Inc.

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN
BORING NO.: SB-01
COORDINATES: EAST: 2642738.26
NORTH: 224420.34
ELEVATION: SURFACE:
TOP OF STEEL CASING:

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-23-93	5.0	Clear, 30°F	4.0	
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 5'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)		Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1	1.0	A				.8	GRAVEL COVER 6"; SAND, fine grained with some silt and root material, glass shards and cobbles throughout; dark brown; very loose; moist 1.0'	
2		S	.9	9 22 7		.7	SAND, medium grained with wood, glass shards and cobbles present; dark brown to dark gray with yellow staining/ orange streaking; medium dense; moist 3.0'	
3	3.0		45%	10				
4		S	1.6	3 8 6		.6	SAND, fine grained with trace of shell material(very fine); dark gray; medium dense; wet 5.0'	▽
5	5.0		80%	15				
6							End of Boring at 5.0' Borehole screened with HNu at 0 - 6" BG	
7								
8								
9								
10								

DRILLING CO.: Rock-Ray
BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon
BORING NO.: SB-01
SHEET 1 OF 1

Baker

Baker Environmental, Inc.

TEST BORING RECORD

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN
BORING NO.: SB-02
COORDINATES: EAST: 2642841.01
NORTH: 224377.91
ELEVATION: SURFACE:
TOP OF STEEL CASING:

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-23-93	3.0	Clear, 30°F	3.0	
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 3'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1 — 1.0	A				.6	GRAVEL COVER 6"; SAND, fine grained with some silt, root and fill material (glass shards) are present; dark brown; very loose; moist — 1.0'	
2 — 3.0	S	1.4 70%	9 9 8 7		.7	SAND, fine to medium grained with trace shell material; gray; medium dense; wet — 3.0'	▽
4						End of Boring at 3.0' Borehole screened with HNu at 0 - 6" BG	
5							
6							
7							
8							
9							
10							

DRILLING CO.: Rock-Ray
BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon
BORING NO.: SB-02
SHEET 1 OF 1

TEST BORING RECORD

Baker
Baker Environmental, Inc.

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN — BORING NO.: SB-03
COORDINATES: EAST: 2642961.17 — NORTH: 224290.82
ELEVATION: SURFACE: — TOP OF STEEL CASING:

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-23-93	3.0	Clear, 30°F	3.0	
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 3'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE
S = Split Spoon — A = Auger
T = Shelby Tube — W = Wash
R = Air Rotary — C = Core
D = Denison — P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1 — 1.0	A				.7	GRAVEL COVER 6"; SAND, fine grained with some silt and cobbles; brown; very loose; wet — 1.0'	
2 — 3.0	S	.8 / 40%	4 4 2 1		.6	SAND, fine to medium grained with trace shell material; gray; loose; wet — 3.0'	▽
4						End of Boring at 3.0' Borehole screened with HNu at 0 - 6" BG	
6						* Wet condition from 0-1 foot due to recent rainfall.	
5, 7, 8, 9, 10							

DRILLING CO.: Rock-Ray — BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon — BORING NO.: SB-03 — SHEET 1 OF 1

TEST BORING RECORD

Baker
Baker Environmental, Inc.

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN — BORING NO.: SB-04
COORDINATES: EAST: 2643149.80 — NORTH: 224276.49
ELEVATION: SURFACE: — TOP OF STEEL CASING:

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-23-93	3.0	Clear, 40°F	3.0	
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 3'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE
S = Split Spoon — A = Auger
T = Shelby Tube — W = Wash
R = Air Rotary — C = Core
D = Denison — P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1 — 1.0	A				.8	GRAVEL COVER 6"; SAND, fine grained with some silt and fill material(glass shards, burned soil); cobbles are present; dark brown; very loose; wet — 1.0'	
2 — 3.0	S	1.4 70%	3 2 3 5		--	SAND, fine to medium grained; gray to brown; loose; wet — 3.0'	▽
4						End of Boring at 3.0' Borehole screened with HNu at 0 - 6" BG	
5							
6						* Wet condition from 0-1 foot due to recent rainfall.	
7							
8							
9							
10							

DRILLING CO.: Rock-Ray — BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon — BORING NO.: SB-04 — SHEET 1 OF 1

Baker

Baker Environmental, Inc.

TEST BORING RECORD

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN BORING NO.: SB-05
COORDINATES: EAST: 2643181.90 NORTH: 224085.80
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-23-93	3.0	Clear, 50°F	3.0	
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 3'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1.0	A				.7	ASPHALT COVER 6"; SAND, fine to medium grained; brown; very loose; damp 1.0'	
3.0	S	1.5 75%	4 5 7 6		.7	SAND, medium grained; gray to brown; medium dense; wet 3.0'	▽
						End of Boring at 3.0' Borehole screened with HNu at 0 - 6" BG	

1 2 3 4 5 6 7 8 9 10

DRILLING CO.: Rock-Ray BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon BORING NO.: SB-05 SHEET 1 OF 1

Baker

Baker Environmental, Inc.

TEST BORING RECORD

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN BORING NO.: SB-06
COORDINATES: EAST: 2643371.22 NORTH: 224322.17
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-23-93	5.0	Clear, 50°F	4.0	
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 5'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)		Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1	1.0	NR				--	ASPHALT COVER 6" with cement subbase(auger refusal); no recovery. Sample location adjusted. Sample only with big cobbles was possible 1.0'	
2	3.0	S	1.0 50%	4 5 7 3		1.0	SAND, fine to medium grained with little shell material; green; medium dense; moist 3.0'	
4	5.0	S	.9 45%	2 1 1 2		1.2	SAND, fine to medium grained with some silt and plant material; grayish green; very loose; wet 5.0'	▽
6							End of Boring at 5.0'	
7								
8								
9								
10								

DRILLING CO.: Rock-Ray BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon BORING NO.: SB-06 SHEET 1 OF 1

TEST BORING RECORD

Baker
Baker Environmental, Inc.

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN — BORING NO.: SB-07
COORDINATES: EAST: 2643260.35 — NORTH: 224586.05
ELEVATION: SURFACE: — TOP OF STEEL CASING:

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-23-93	3.0	Clear, 50°F		
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 3'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE
S = Split Spoon — A = Auger
T = Shelby Tube — W = Wash
R = Air Rotary — C = Core
D = Denison — P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1.0	A				.6	GRAVEL COVER 6"; SAND, fine to medium grained with some silt, occasional cobbles and glass shards; dark brown to brown; very loose; damp 1.0'	
3.0	S	.9 45%	12 11 10 8		.6	SAND, fine to medium grained with shell material; brown to green; medium dense; moist 3.0'	
						End of Boring at 3.0' Borehole screened with HNu at 0 - 6" BG	

1 2 3 4 5 6 7 8 9 10

DRILLING CO.: Rock-Ray — BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon — BORING NO.: SB-07 — SHEET 1 OF 1

Baker

Baker Environmental, Inc.

TEST BORING RECORD

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN — BORING NO.: SB-08
COORDINATES: EAST: 2643123.77 — NORTH: 224545.15
ELEVATION: SURFACE: _____ — TOP OF STEEL CASING: _____

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-23-93	3.0	Clear, 50°F		
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 3'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE
S = Split Spoon — A = Auger
T = Shelby Tube — W = Wash
R = Air Rotary — C = Core
D = Denison — P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1 — 1.0	A				.7	GRAVEL COVER 6"; SAND, fine to medium grained with gravel; brown; very loose; damp — 1.0'	
2 — 3.0	S	1.5 / 75%	12 7 7 7		.7	SAND, fine to medium grained with shell material and decomposed wood; color variable from brown to green to black; medium dense; moist — 3.0'	
4						End of Boring at 3.0' Borehole screened with HNu at 0 - 6" BG	
5							
6							
7							
8							
9							
10							

DRILLING CO.: Rock-Ray — BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon — BORING NO.: SB-08 — SHEET 1 OF 1

TEST BORING RECORD

Baker
Baker Environmental, Inc.

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN — BORING NO.: SB-09
COORDINATES: EAST: 2642952.34 — NORTH: 224647.14
ELEVATION: SURFACE: — TOP OF STEEL CASING:

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-24-93	3.0	Clear, 40°F		
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 3'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE
S = Split Spoon, A = Auger
T = Shelby Tube, W = Wash
R = Air Rotary, C = Core
D = Denison, P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1 — 1.0	A				1.0	GRAVEL COVER 6"; fill material(burned soil, glass shards) with sand, fine grained, cobbles and root material throughout, shell material occasional; color variable from yellowish brown to dark brown; very loose; damp — 1.0'	
2 — 3.0	S	.8 / 40%	15 27 16 11		1.2	FILL MATERIAL(brick, glass shards) with sand, fine grained, cobbles; color variable from red to gray to brown; dense; damp — 3.0'	
3						End of Boring at 3.0' Borehole screened with HNu at 0 - 6" BG	
4							
5							
6							
7							
8							
9							
10							

DRILLING CO.: Rock-Ray — BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon — BORING NO.: SB-09 — SHEET 1 OF 1

TEST BORING RECORD

Baker
Baker Environmental, Inc.

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN — BORING NO.: SB-10
COORDINATES: EAST: 2643024.10 — NORTH: 224795.13
ELEVATION: SURFACE: _____ — TOP OF STEEL CASING: _____

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-24-93	3.0	Clear, 40°F		
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 3'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE
S = Split Spoon — A = Auger
T = Shelby Tube — W = Wash
R = Air Rotary — C = Core
D = Denison — P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1.0	A				.7	GRAVEL COVER 6"; Fill material(burned soil, glass shards) with sand, fine grained, shell material throughout, cobbles occasional; dark brown; very loose; damp 1.0'	
3.0	S		11 12 16 9		.7	SAND, fine to medium grained with cobbles; color variable from very light brown to light gray to brown; medium dense; damp 3.0'	
						End of Boring at 3.0' Borehole screened with HNu at 0 - 6" BG	

1 2 3 4 5 6 7 8 9 10

DRILLING CO.: Rock-Ray — BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon — BORING NO.: SB-10 — SHEET 1 OF 1

TEST BORING RECORD

Baker
Baker Environmental, Inc.

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN — BORING NO.: SB-11
COORDINATES: EAST: 2643148.76 — NORTH: 224689.35
ELEVATION: SURFACE: — TOP OF STEEL CASING:

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-24-93	3.0	Clear, 40°F		
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 3'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE
S = Split Spoon — A = Auger
T = Shelby Tube — W = Wash
R = Air Rotary — C = Core
D = Denison — P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1.0	A				.8	GRAVEL COVER 6"; SAND, fine grained with some silt and trace fill material(glass shards, burned soil), shell material is occasional with cobbles; brown; very loose; damp 1.0'	
3.0	S	.5 25%	9 7 14 10		.8	FILL MATERIAL(charcoal fragments, decomposed wood and glass shards) throughout; some sand and silt; black; medium dense; damp 3.0'	
						End of Boring at 3.0' Borehole screened with HNu at 0 - 6" BG	

1 2 3 4 5 6 7 8 9 10

DRILLING CO.: Rock-Ray — BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon — BORING NO.: SB-11 — SHEET 1 OF 1

TEST BORING RECORD

Baker
Baker Environmental, Inc.

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN — BORING NO.: SB-12
COORDINATES: EAST: 2643346.08 — NORTH: 224700.37
ELEVATION: SURFACE: — TOP OF STEEL CASING:

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-24-93	5.0	Clear, 40°F	4.5	
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 5'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE
S = Split Spoon — A = Auger
T = Shelby Tube — W = Wash
R = Air Rotary — C = Core
D = Denison — P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1.0	A				.6	GRAVEL COVER 6"; SAND, fine to medium grained with little silt; yellowish brown to dark brown; very loose; damp — 1.0'	
3.0	S	1.8 / 90%	12 11 15 14		.7	SAND, fine to medium grained with fill material(brick and charcoal fragments); color variable from yellowish brown to red to black to brown; medium dense; damp — 3.0'	
5.0	S	1.5 / 75%	5 4 4 2		.7	SAND, fine to medium grained with trace shell material; brown to gray; loose; moist to wet — 5.0'	▽
						End of Boring at 5.0' Borehole screened with HNu at 0 - 6" BG	

DRILLING CO.: Rock-Ray — BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon — BORING NO.: SB-12 — SHEET 1 OF 1

Baker

Baker Environmental, Inc.

TEST BORING RECORD

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN — BORING NO.: SB-13
COORDINATES: EAST: 2643389.65 — NORTH: 224559.56
ELEVATION: SURFACE: _____ — TOP OF STEEL CASING: _____

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-24-93	3.0	Clear, 50°F	3.0	
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 3'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE

S = Split Spoon — A = Auger
T = Shelby Tube — W = Wash
R = Air Rotary — C = Core
D = Denison — P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1.0	A				.6	GRAVEL COVER 6"; SAND, fine to medium grained with cobbles; yellowish brown; very loose; damp — 1.0'	
3.0	S	1.5 / 75%	5 4 4 5		.7	SAND, fine to medium grained; yellowish brown to gray; loose; moist to wet(bottom) — 3.0'	▽
						End of Boring at 3.0' Borehole screened with HNu at 0 - 6" BG	

1 2 3 4 5 6 7 8 9 10

DRILLING CO.: Rock-Ray — BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon — BORING NO.: SB-13 — SHEET 1 OF 1

TEST BORING RECORD

Baker
Baker Environmental, Inc.

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN
BORING NO.: SB-14
COORDINATES: EAST: 2643482.47
NORTH: 224454.18
ELEVATION: SURFACE:
TOP OF STEEL CASING:

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-24-93	3.0	Clear, 50°F	3.0	
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Advanced hinged shovel device 1.0' - 3.0'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)		Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1	1.0					BG	ASPHALT COVER 6" with cement subbase(auger refusal). Location adjusted; cobbles with sand, fine to medium grained; dark brown; very loose; damp 1.0'	
2		S	--	--		BG	SAND, fine to medium grained; brown with dark brown banding; very loose; moist to wet(bottom)	
3	3.0						3.0'	▽
4							End of Boring at 3.0' Borehole screened with HNu at 0 - 6" BG	
5								
6								
7								
8								
9								
0								

DRILLING CO.: Rock-Ray
BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon
BORING NO.: SB-14
SHEET 1 OF 1

TEST BORING RECORD

Baker
Baker Environmental, Inc.

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN — BORING NO.: SB-15
COORDINATES: EAST: 2643530.31 — NORTH: 224634.04
ELEVATION: SURFACE: — TOP OF STEEL CASING:

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-24-93	5.0	Clear, 50°F		
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 5'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE
S = Split Spoon — A = Auger
T = Shelby Tube — W = Wash
R = Air Rotary — C = Core
D = Denison — P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1.0	A				.7	ASPHALT COVER 6"; SAND, fine grained with some fill material(brick, glass shards), cobbles are occasional; brownish gray; very loose; dry — 1.0'	
3.0	S	.8 / 40%	11 12 6 10		--	NO RECOVERY — 3.0'	
5.0	S	1.2 / 60%	3 2 1 1		.7	SAND, fine to medium grained with silty sand, decomposed plant material(at bottom); green to black; very loose; damp to moist — 5.0'	
						End of Boring at 5.0' Borehole screened with HNu at 0 - 6" BG	

DRILLING CO.: Rock-Ray — BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon — BORING NO.: SB-15 — SHEET 1 OF 1

TEST BORING RECORD

Baker
Baker Environmental, Inc.

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN — BORING NO.: SB-16
COORDINATES: EAST: 2643157.66 — NORTH: 224896.62
ELEVATION: SURFACE: — TOP OF STEEL CASING:

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-24-93	3.0	Clear, 50°F		
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 3'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE
S = Split Spoon — A = Auger
T = Shelby Tube — W = Wash
R = Air Rotary — C = Core
D = Denison — P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1.0	A				.6	ASPHALT COVER 6", SAND, fine grained with cobbles; black to dark brown; very loose; damp — 1.0'	
3.0	S	1.0 / 50%	7 4 6 8		BG	SAND, fine grained with fill material and shell material; color variable from black to gray to green with orange staining; loose; damp — 3.0'	
						End of Boring at 3.0' Borehole screened with HNu at 0 - 6" BG	

DRILLING CO.: Rock-Ray — BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon — BORING NO.: SB-16 — SHEET 1 OF 1

Baker

Baker Environmental, Inc.

TEST BORING RECORD

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN — BORING NO.: SB-17
COORDINATES: EAST: 2643534.74 — NORTH: 224764.77
ELEVATION: SURFACE: — TOP OF STEEL CASING:

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-24-93	3.0	Clear, 50°F		
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 3'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE

S = Split Spoon — A = Auger
T = Shelby Tube — W = Wash
R = Air Rotary — C = Core
D = Denison — P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1.0	A				BG	ASPHALT COVER 6", SAND, fine grained with cobbles; yellowish brown to gray; very loose; damp 1.0'	
3.0	S	1.3 65%	4 5 7 8		BG	FILL MATERIAL(burned soil, brick, glass shards) with silt and fine grained sand; color variable from reddish brown to gray to yellowish brown and orange staining(associated with fill material); medium dense; damp 3.0'	
						End of Boring at 3.0' Borehole screened with HNu at 0 - 6" BG	

1 2 3 4 5 6 7 8 10

DRILLING CO.: Rock-Ray — BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon — BORING NO.: SB-17 — SHEET 1 OF 1

TEST BORING RECORD

Baker
Baker Environmental, Inc.

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN — BORING NO.: SB-18
COORDINATES: EAST: 2643699.14 — NORTH: 224806.99
ELEVATION: SURFACE: — TOP OF STEEL CASING:

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-24-93	3.0	Clear, 50°F	3.0	
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 3'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE
S = Split Spoon — A = Auger
T = Shelby Tube — W = Wash
R = Air Rotary — C = Core
D = Denison — P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1 — 1.0	A				.9	GRAVEL COVER 6", SAND, fine grained with occasional cobbles; yellowish brown to gray; very loose; damp — 1.0'	
2 — 3.0	S	1.5 / 75%	5 4 4 5		1.6	SAND, fine grained with shell material; yellowish brown to green; loose; wet — 3.0'	▽
4						End of Boring at 3.0' Borehole screened with HNu at 0 - 6" BG	
5							
6							
7							
8							
10							

DRILLING CO.: Rock-Ray — BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon — BORING NO.: SB-18 — SHEET 1 OF 1

TEST BORING RECORD

Baker
Baker Environmental, Inc.

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN
BORING NO.: SB-19
COORDINATES: EAST: 2643578.49
NORTH: 225155.53
ELEVATION: SURFACE:
TOP OF STEEL CASING:

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-24-93	3.0	Clear, 50°F		
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 3'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE
S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1.0	A				.6	GRAVEL COVER 6", SAND, fine grained with trace charcoal fragments; yellowish brown to black; very loose; damp 1.0'	
3.0	S	1.5 75%	3 4 4 4		.6	SAND, fine to medium grained; yellowish brown with black staining; loose; moist 3.0'	
						End of Boring at 3.0' Borehole screened with HNu at 0 - 6" BG	

1 2 3 4 5 6 7 8 9 10

DRILLING CO.: Rock-Ray
BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon
BORING NO.: SB-19
SHEET 1 OF 1

Baker

Baker Environmental, Inc.

TEST BORING RECORD

PROJECT: Camp Allen Salvage Yard
S.O. NO.: 19148-50-SRN — BORING NO.: SB-20
COORDINATES: EAST: 2643719.06 — NORTH: 225353.28
ELEVATION: SURFACE: — TOP OF STEEL CASING:

RIG: Rock-Ray #1	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2.0"		4 1/4" ID		1-24-93	3.0	Clear, 50°F		
LENGTH	2.0'		5.0'						
TYPE	SS		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Auger to 1.0'. Continuous split spoon sample from 1' - 3'. HNu background is .5 ppm. Borehole grouted to surface.

SAMPLE TYPE
S = Split Spoon — A = Auger
T = Shelby Tube — W = Wash
R = Air Rotary — C = Core
D = Denison — P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID ppm HNu	Visual Description	Elevation
1 — 1.0	A				.6	GRAVEL COVER 6", SAND, fine to medium grained with cobbles; yellowish brown to buff gray; very loose; damp — 1.0'	
2 — 3.0	S	1.0 50%	9 8 12 10		BG	SHELL MATERIAL with trace fine sand, root material present; grayish green with reddish staining(root material); medium dense; damp — 3.0'	
4						End of Boring at 3.0' Borehole screened with HNu at 0 - 6" BG	
5							
6							
7							
8							
10							

DRILLING CO.: Rock-Ray — BAKER REP.: J. E. Zimmerman
DRILLER: R. J. Schmon — BORING NO.: SB-20 — SHEET 1 OF 1

APPENDIX B-6
SURVEY NOTES

MILLER-STEPHENSON & ASSOCIATES, P.C.
Engineering, Surveying, Planning & Environmental Sciences

Robert S. Miller, III, P.E.
Walter R. Stephenson, Jr., L.S.
Claude F. Lym, P.E.
Mary Ann Mijares, P.E.
Wayne D. McCoy
John W. Blake, II, P.E.

FAX TRANSMISSION COVER SHEET

DATE 3-23-93

TIME (VA. BEACH) 1:50 P.M.

PLEASE DELIVER THE FOLLOWING TRANSMISSION AS SOON AS POSSIBLE

TO: Baker Environmental Inc.
(Firm or Company)

ATTN: John Lovely

THIS FAX TRANSMISSION ORIGINATES FROM FAX TELEPHONE NUMBER: (804) 490-0634

FAX DESTINATION TELEPHONE NUMBER: (412) 269-2002

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(Individual(s) initiating transmission)

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(804) 490-9264

SUBJECT: Camp Allen Field Notes
MSA Project Number P104Q

5033 Rouse Drive Virginia Beach, VA 23462 (804) 490-9264 Fax: (804) 490-0634

STA.	+	HI	−	ELEV.	B.M. K 35
	5.45	120.209		114.759	114.759
	4.53	118.139	6.59	113.619	
	3.73	117.869	4.06	114.139	
	5.20	117.079	6.24	111.679	
	7.20	117.309	6.92	110.109	
	5.00	111.109	6.20	106.109	
	5.68	111.719	5.07	106.039	TBM #1
	6.97	114.309	5.78	107.339	
	4.51	114.412	5.00	109.909	TBM #2
	3.58	111.519	6.45	107.939	
	6.14	112.179	5.48	106.039	
	5.07	111.859	6.21	105.869	TBM #3
	6.07	112.179	5.73	106.109	
	6.89	114.339	4.69	107.509	
	4.89	117.009	2.28	112.119	
	5.30	118.509	3.80	113.209	
	5.98	120.189	4.50	114.209	
			5.44	114.749	

STA	+	HI	−	ELEV.	
	6.06	111.929		105.869	TBM #3 CUT "D"
	3.35	111.209	4.07	107.859	
	6.39	115.349	2.25	108.959	
	4.51	115.439	4.42	110.919	
	4.90	115.409	4.99	110.509	
	6.53	115.649	6.32	109.089	TBM #4
	4.76	115.269	5.11	110.509	
	4.50	115.499	4.89	110.999	
	7.39	111.459	6.45	109.069	
	2.69	112.139	7.01	109.449	
			6.27	105.869	

BRASS DISK IN CONC. 18.60 FROM FACE OF CURB ON THE EAST SIDE OF HAMPTON BLVD. APPROX. 82.50 NORTH OF RR TRACKS OF N.&P.R.I. RR

TBM #1 CUT "D" NORTHWEST COR OF BEECHWOOD AVE @ EVERGREEN ST. CUT "D" ON TRIPLE CATCH BASIN

TBM #2 CUT "D" TOP OF CURB @ THE END OF THE CURB ON THE NORTH SIDE OF BEECHWOOD AVE APPROX FT FROM GATE

TBM #3 CUT "D" TOP OF CURB @ THE END OF THE CURB ON THE SOUTH SIDE OF ROGERS AVE APPROX FT FROM GATE

TBM #4 CUT "D" TOP OF CONC. ABUTMENT ON THE WEST SIDE OF CREEK APPROX 10' FROM ℄ OF TRACKS TO THE NORTH OF N.&P.R.I. RR

STA	+	HI	—	ELEV.	
	7.62	116.729		109.089	TBM #4
	6.25	113.079	5.50	111.229	TBM #5
	7.24	112.599	8.15	109.929	TBM #6
	4.1	117.789	.38	113.619	TBM #7
	5.13	117.079	5.82	111.949	TBM #9
	5.25	116.929	5.40	111.679	TBM #10
	5.74	117.579	6.09	111.839	TBM #11
	2.69	115.309	4.91	112.619	TBM #12
	1.96	117.069	.20	115.169	
			5.84	111.229	TBM #5
	3.45	117.069		113.619	TBM #7
	3.50	115.669	4.90	112.169	
			3.57	112.099	TBM #13

TBM #5:

TBM #6 CUT SQUARE IN SW. CORNER OF CONCRETE PAD. W. AMY. 12

TBM #7 R.R. SPIKE IN 18" TREE E. SIDE OF INGERSOL ST @ COR. OF PARKING LT

TBM #9 CUT "T" IN CONC. ¢ OF GATE 3 ON EAST SIDE OF INGERSOL ST. APPROX. 50' SOUTH OF ¢ ROAD @ WILHELMSHAVEN WAY

TBM #10 RR SPIKE IN TREE 12" TO FORCE FROM ENTRANCE TO "A" BLDG.

TBM #11 — CUT SQUARE IN NE CORNER OF COVERED PICNIC AREA IN FRONT OF "C" BUILDING.

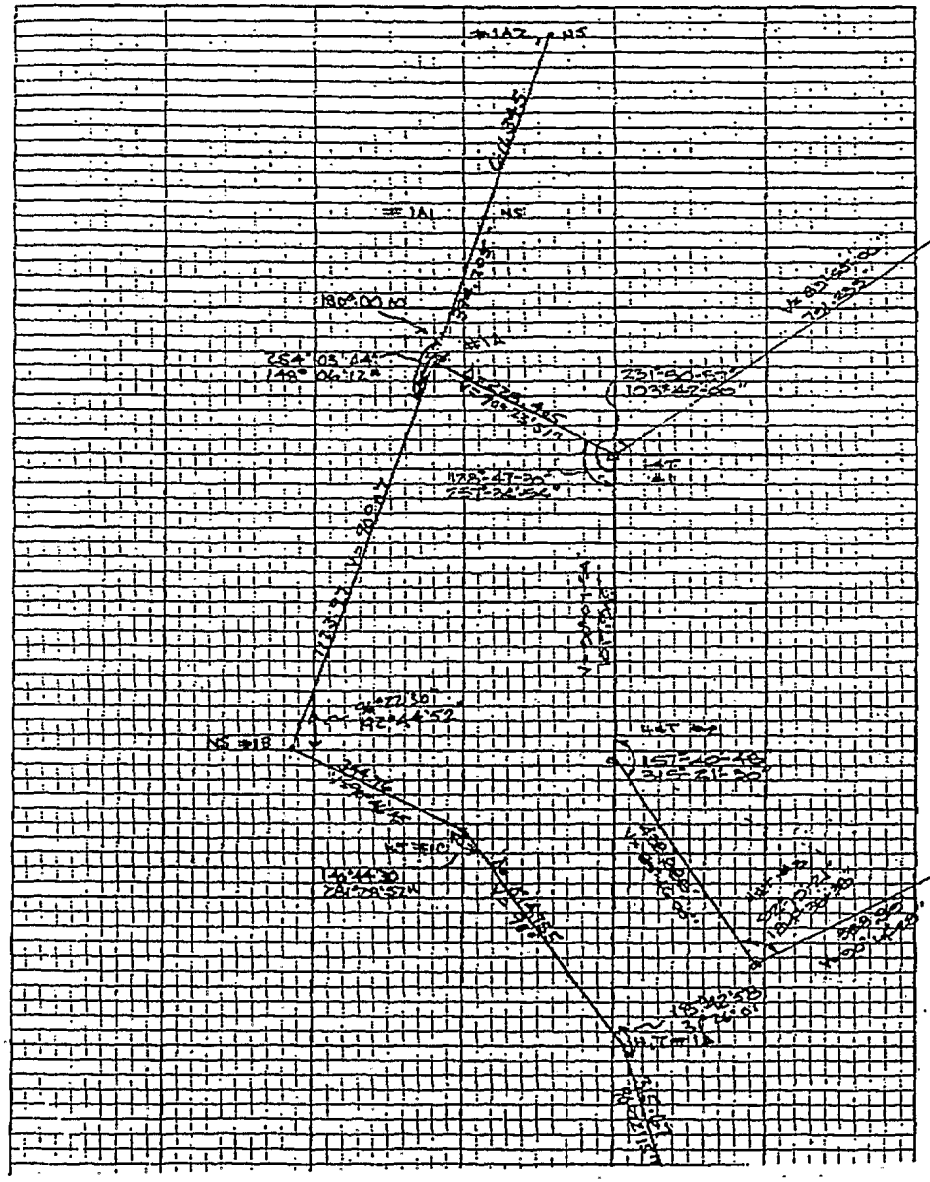
TBM #12 - CUT SQUARE IN NW CORNER OF GUARD TOWER #C-4 IN "A" BLDG.

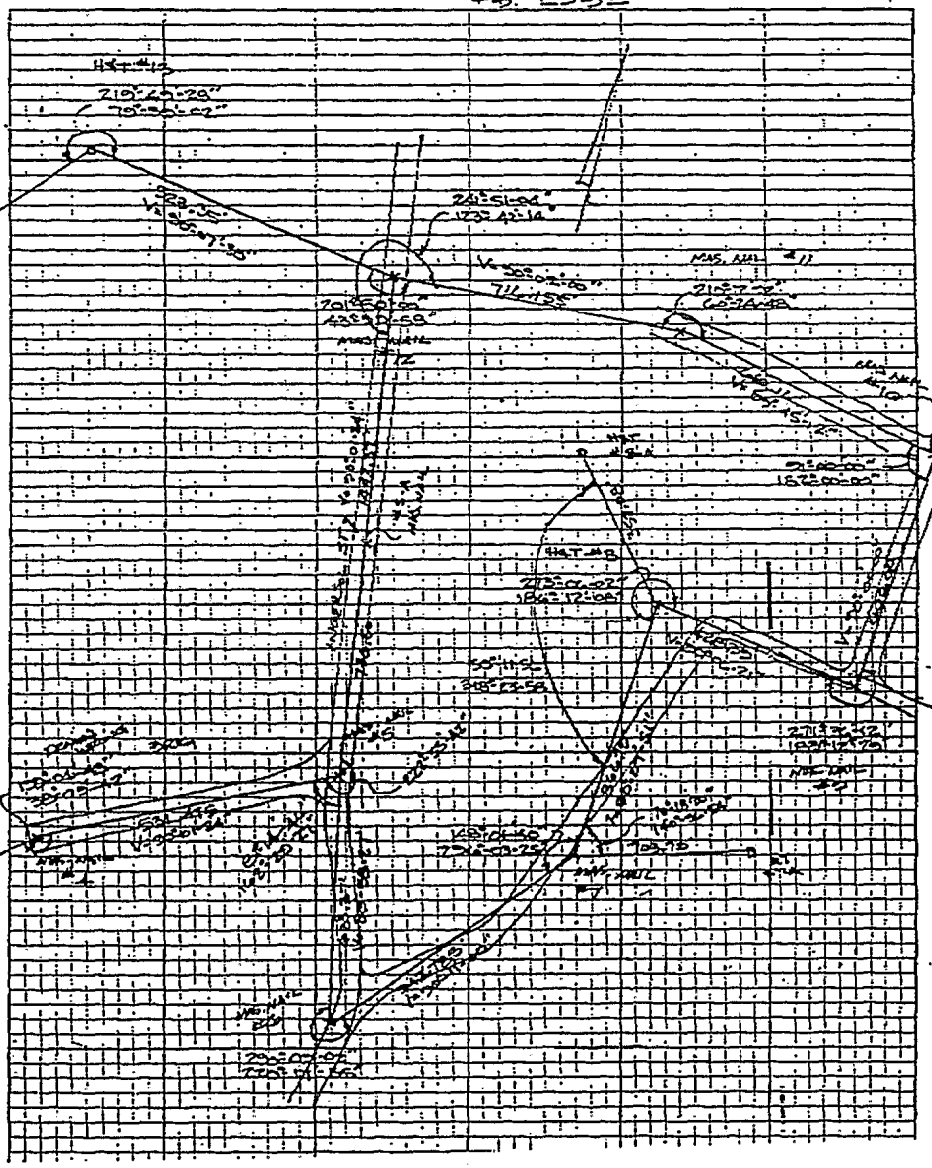
TBM #

TBM #13 CUT SQUARE ON TOP OF CURB NEAR RR TRACK AT THE END OF "R" STREET

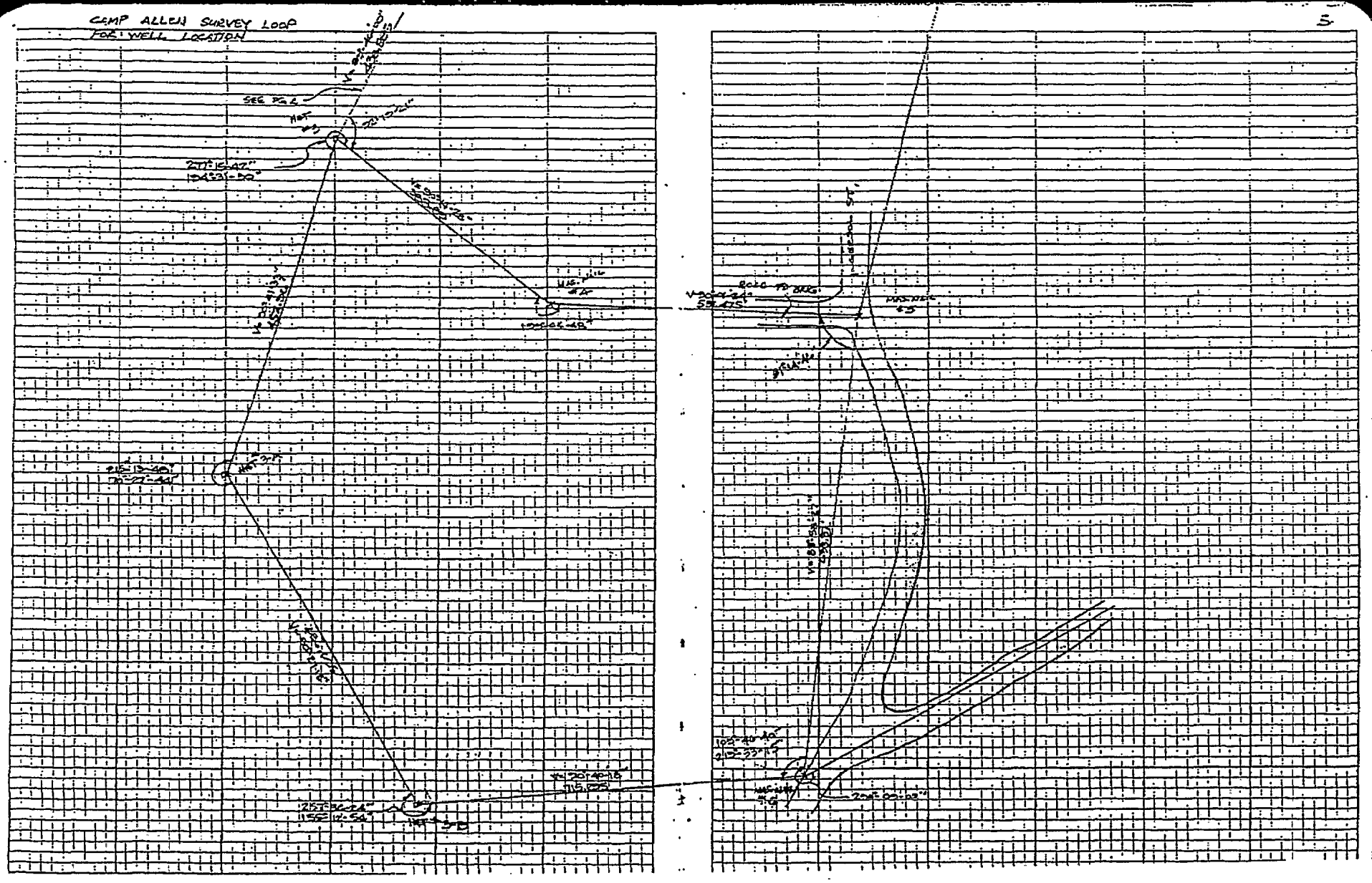
MAR 23 '93 13:48 804 490 0634 PAGE.003

03/23/1993 13:47 MILLER - STEPHENSON





CAMP ALLEN SURVEY LOOP
FOR WELL LOCATION



WELL LOCATION, CAMP ALLEN

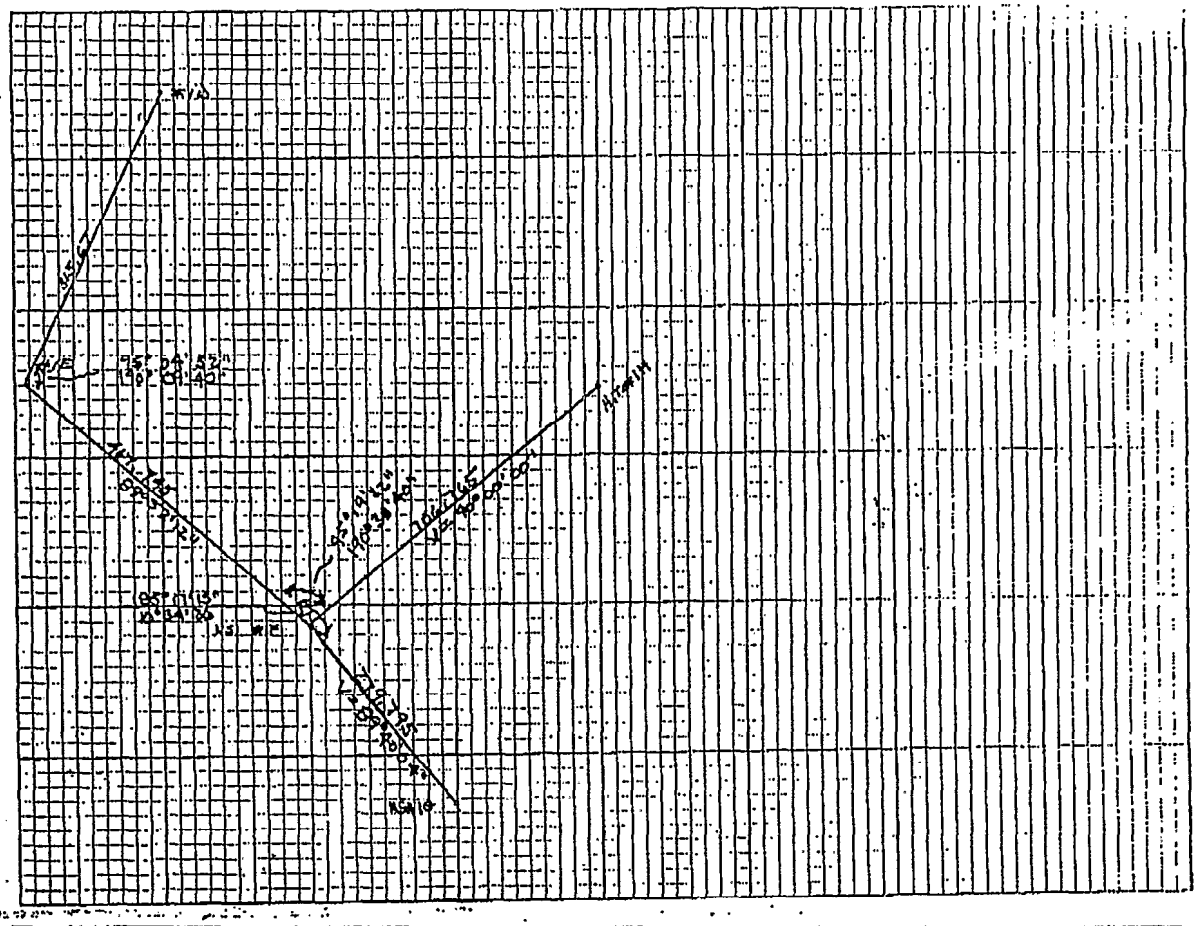
STA	ANGLE	DIST.	GROUND ELEV.	TOP OF CAP ELEV.
	⊼ ON #5 SIGHT #4 ∠ TO RT.			
1) NO NUMBER	26.52	36.50	112.37	113.60
2) NO NUMBER	81°38	255.95	111.85	113.51
3) NO NUMBER	121°25	383.00	105.44	110.79
4) NO NUMBER 3 PVC	157°28	208.50	111.70	114.59
5) TBA-05	81°57	230.50	112.01	
	⊼ ON #6 SIGHT #4 ∠ TO RT.			
1) NO NUMBER 3 PVC	75°28	378.00	111.93	114.00
2) NO NUMBER 3 PVC	46°35	266.70	111.47	114.73
3) TBA-03	10°28	216.20	112.20	
4) NO NUMBER 3 PVC	164°35	100.20	111.83	114.81
5) B-9W	163°44	271.80	112.56	114.57
6) NO NUMBER 3 PVC	167°03	417.80	112.70	114.90
7) B-11W	169°40	382.20	114.85	114.70
8) NO NUMBER 3 PVC	167°45	722.10	115.56	118.54
9) TBA-07	264°24	356.50	111.56	
10) A-MW 6A	237°40	75.83	110.80	112.88
11) NO NUMBER	232°35	67.20	110.45	112.34
12) A-MW 4B	244°24	59.40	110.48	112.83
	⊼ ON #6 SIGHT #3-B ∠ TO RT.			
1) TBA-04	86°07	49.00	112.32	
2) B-1W	107°32	201.20	111.95	112.75
3) SDA-B	288°00	165.20	104.30	
4) A-MW 5	0°00	231.00	104.52	106.32
	⊼ ON #3-B SIGHT #6A ∠ TO RT.			
1) A-MW7	175°07	274.50	105.06	107.00
2) A-MW 6B	251°06	413.30	109.50	111.32
3) A-MW 6A	257°13	204.00	109.73	110.81
	⊼ ON #10 SIGHT #9 ∠ TO RT.			
1) BMW-10	70°37	71.10	109.90	108.74

STA	ANGLE	DIST.	GROUND ELEV.	TOP OF CAP ELEV.
	⊼ ON #7 SIGHT #8 ∠ TO RT.			
1) GW-6	337°00'	385.60'	102.32'	110.46
2) SDB-1	351°14	354.60	108.48	
	⊼ ON #7A SIGHT #7 ∠ TO RT.			
1) BMW-15	210°30'	126.60'	107.60	106.87
2) BMW-16	327°31'	133.00'	107.77	107.46
	⊼ ON #3 SIGHT #8 ∠ TO RT.			
1) BMW-11B	74°03'	126.50	108.26	108.76
2) BMW-11	74°55'	130.50	109.02	108.80
3) BMW-12	120°56'	214.30	108.91	108.72
4) BMW-13	155°32'	157.20	105.18	109.00
5) BMW-14	185°07'	451.50	105.45	109.05
6) BMW-3A	20°57'	347.50	108.76	108.55
7) BMW-3B	18°48	353.50	109.78	109.72
	⊼ ON #8 SIGHT #7 ∠ TO RT.			
1) TBB-10	141°12'	304.10	109.34	
2) TBB-07	143°57'	182.20	109.57	
3) TBB-06	156°45'	111.20	109.47	
4) B-MW 2A	18°40	200.50	107.40	109.77
5) B-MW 2B	18°58'	226.40	107.88	110.25
6) TBB-03	18°29	252.70	107.68	
7) TBB-01	7°12'	518.50	108.50	
	⊼ ON #B-4 SIGHT #8 ∠ TO RT.			
1) B-MW 5B	156°23	74.10	110.51	112.65
2) GW-05	161°43'	67.50	110.67	111.34
3) GW-04	353°30	268.30	109.00	110.67
4) TBB-08	352°40'	109.50	108.86	
5) TBB-09	232°50'	100.60	109.52	
6) SDB-01	235°05'	145.50	104.30	
7) SW/SDB-01	264°16'	178.50	105.00'	
8) SW/SDB-02	255°51'	178.00	104.70	
9) SW/SDB-03	221°32'	185.00	104.30	

STA	ANGLE	DIST.	GROUND ELEV.	TOP OF CAP ELEV
	∧ on #11	SIGHT #10	< TO RT.	
1) BMW-09	347°26'	235.70	116.80	111.63
2) BMW-09B	345°50'	255.40	111.56	111.42
3) BMW-08B	172°28'	126.20	116.07	112.78
4) BMW-08	172°48'	156.30	116.07	113.42
5) SDB-4D	56°55'	52.20'	101.32	
	∧ on #5A	SIGHT #5	< TO RT	
1) GW-02	64°19'	72.50	112.80	114.33
2) TBA-01	151°15'	102.00	112.68	
	∧ on #12	SIGHT #13	< TO RT.	
1) AMW-12	2°03'	412.00	109.73	111.79
2) GW/SDA-01	12°42'	420.50'	106.75	
3) GW-03	82°29'	450.50'	111.76	115.53
4) GW/SDB-5D	41°08'	41.50'	106.90	
5) AMW-11B	301°18'	177.50'	112.73	113.68
6) AMW-11A	299°46'	181.70'	112.30	114.06
	∧ on #1	SIGHT #13	> TO RIGHT	
1) TBA-9	87°09'	257.70	111.5	
2) TBA-6	72°54'	322.50	115.7	
3) E-13W	96°45'	458.00	115.18	117.08
4) TBA-8	130°46'	310.00	109.96	
5) A-MW18	270°09'	102.00	110.85	112.16
6) GW-1	273°30'	95.24	110.78	112.11
7) A-MW16	276°53'	89.20	110.98	112.93
	∧ on #1A	SIGHT #1B	> TO right	
1) SWA-4	272°51'	TOP BOARDWALL 60.10	102.50	Top water 99.58 Bottom
2) AMW-16B	60°55'	53.50	106.69	Ground 108.30 Top Cap
3) SWA-3	94°30'	Top Boardwall 50.50	101.50	Top water 100.30 Bottom
4) SDA-18D	96°31'	Top Boardwall 264.70	102.95	Top water 100.61 Bottom
5) SDA-18	96°33'	Top Boardwall 268.80	102.95	Top water 100.45 Bottom
6) SDA-19	97°28'	Top Boardwall 61.50	102.35	Top water 99.68 Bottom
7) SDA-20	97°15'	Top Boardwall 107.00	102.55	Top water 100.47 Bottom

STA	ANGLE	DIST	Ground ELEV.	Top OF Cap ELEV
	∧ on #1B	Sight #1A	> right	
1) AMW-16A	39°12'	86.60	106.80	108.83
	∧ on #1C	SIGHT #1D	> right	
1) AMW-5B	317°31'	258.36	105.28	107.92
	∧ on #1F	Sight #1E	> right	
1) MW16B	95°58'	464.90	110.08	109.75
	∧ on #1H	Sight #1F	> right	
1) AMW10A	250°34'	117.20	105.30	107.53
2) AMW-10B	247°56'	117.00	105.70	107.98
	∧ on #1G	SIGHT #1F	> right	
1) AMW-13B	91°02'	278.20	109.66	109.44
	∧ on #1A1	SIGHT #1A	> RIGHT	
1) SWA-2 / SDA-2S	261°34'	40.60	105.3	
	∧ on #1J	SIGHT #1A	> RIGHT	
	[illegible]			
1) SDA-6D(SXO)	[illegible]	39.09	100.0	
	∧ on #1K	SIGHT #1	> RIGHT	Top of PVC
SDA-12(SXO)	289°20'-11"	199.24	107.5	101.49
MW	327°31'-51"	133.00	107.9	107.50
MW	270°35'-57"	126.60	107.8	

03/23/1993 13:58 MILLER - STEPHENSON 804 490 0634
MAR 23 '93 13:58 804 490 0634 PAGE.007



23 MAR 93 CLAMP WELL

MS
SR

X ON TP#1 BS TP#2 X RT.

	X	DIST	GROUND ELEV
TBA-10	289°26'19"	477.58'	116.94
# TBA-11	301°13'43"	436.51	113.82

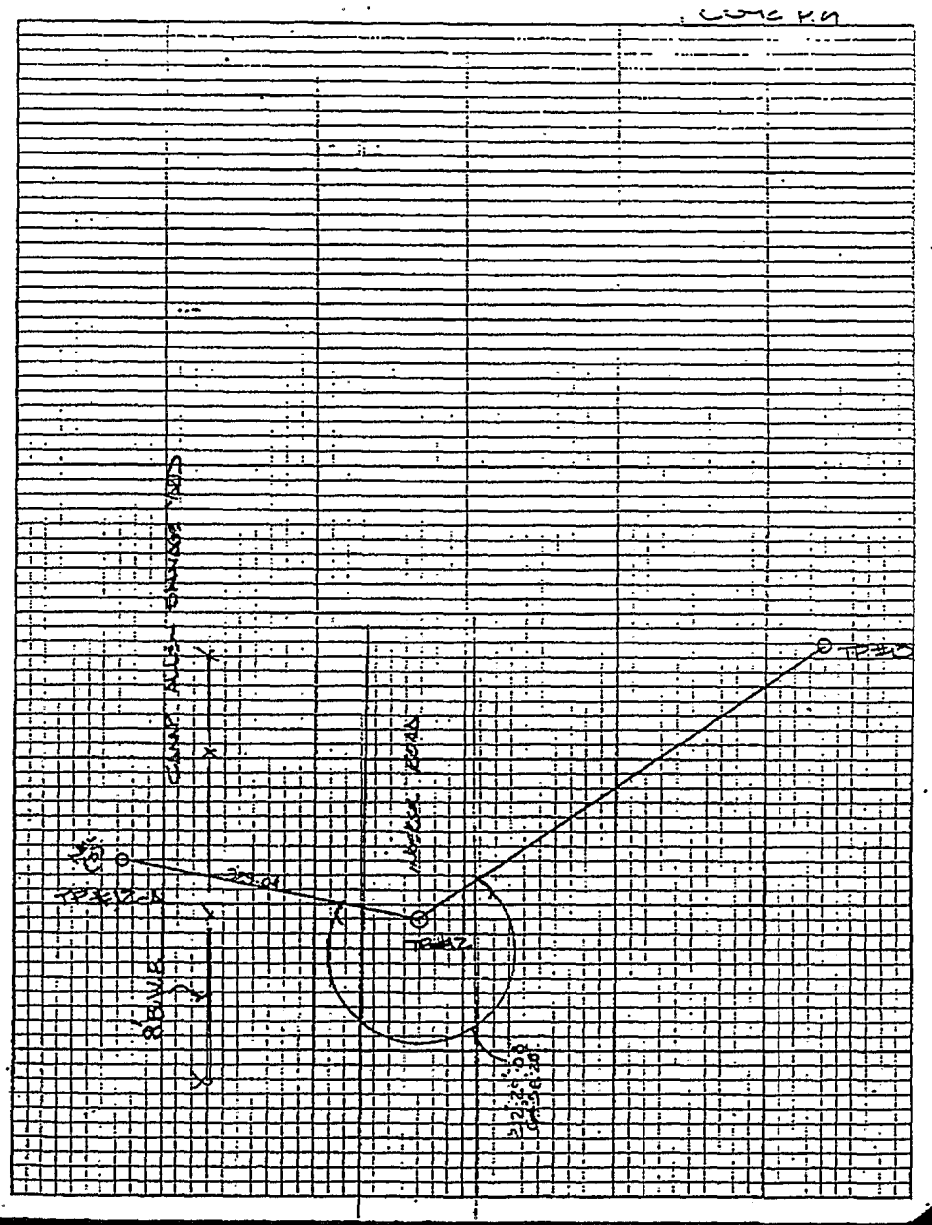
X ON TP#7 BS TP#1A X RT

	X	DIST	GROUND ELEV	TOP DECK
BMW-1	301°49'35"	606.26	108.73	109.84

X ON 12A BS 12 X RT

	X	DIST	GROUND	TOP DECK
B-MW 7	264°37'33"	455.60	112.07	111.90

THIS BORING #11 DID NOT HAVE STOVE PIPE IT APPEARS TO BE IN APPROX VICINITY OF WHERE TANK IS SUPPOSED TO BE.



30 NOV 92 CANO NLEW STATE GRID TIES PIOA 2

NS
SR
RS

#13 HAT(E)

L 14-34-15
Z 20-08-25

L 200-00-35
Z 41-21-10

L 175-32-30
Z 251-05-00

#2 HAT(P)

HCS-182 - PIN AT BACK OF CURB IN BETWEEN NT CORNER OF INTERSECTION OF GRIFFITHS & SVERDRUP.

N = 223,557.00
E = 2,040,07.94

L 164-41-55
Z 357-23-50

L 174-45-00
Z 308-38-20

HCS-180 - PIN AT FACE OF CURB IN BULGE OF TRAFFIC ISLAND @ INTERSECTION OF WAMPTON BLVD. & GLENDALE

N = 223,289.39
E = 2,037,889.80

DD HAT(P) ON TOP OF BERM

HCS-180 TO HCS-182
AZIMUTH: S 88° 20' 43" W
DISTANCE: 2216.39
ACCORDING TO CITY OF NORFOLK
HORIZONTAL CONTROL SURVEY DEPT.

HAT(P) TOP OF BERM

L 210-41-45
Z 261-23-30

HCS-182
HAT(P)

L 00-45-00
Z 1-35-15

L 287-20-50
Z 154-50-45

L 89-25-26
Z 176-40-35

L 164-46-25
Z 213-32-30

EF HAT(P)

FLEETSGATE AVE

BALLENTINE AVE

WAMPTON BLVD

PK(P) WOOD PO

CAMP ALLEN

TRAN-B SIGHT

1) TB-5	49°20	176.80	109.39
2) TB-2	20°02	452.30	109.87

APPENDIX C

APPENDIX C
DATA VALIDATION REPORTS

GLOSSARY OF DATA QUALIFIER CODES

CODES RELATING TO IDENTIFICATION

(confidence concerning presence or absence of compounds)

U = No detected. The associated number indicates approximate sample concentration necessary to be detected.

(NO CODE) = Confirmed identification.

R = Unreliable result. Analyte may or may not be present in the sample. Supporting data necessary to confirm result.

CODES RELATED TO QUANTITATION

(can be used for positive results and sample quantitation limits):

J = Analyte present. Reported value may not be accurate or precise.

UJ = Not detected, quantitation limit may be inaccurate or imprecise.

AWD TECHNOLOGIES

A Subsidiary of
The Dow Chemical Company

PGH-93-GK-299

DATE March 8, 1993

TO Ms. Jeri Trageser
Project Manager
Baker Environmental, Inc.
Airport Office Park - Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

FROM Gina Kelly
AWD Technologies, Inc.

SUBJECT Data Validation of:
Volatile Organic Chemicals
Semivolatile Organic Chemicals
Pesticides/PCBs

Re: Camp Allen Salvage Yard
Navy CLEAN Program

National Environmental Testing, Inc.
Report Number 93.00175
SDG Number 01

Samples:	SYD-SB-05S	SYD-SB-10S	
	SYD-SB-01S	SYD-SB-11S	
	SYD-SB-03S	SYD-SB-12S	
	SYD-SB-04S	SYD-SB-14S	
	SYD-SB-08S	SYD-SB-17S	
	SYD-SB-18S	SYD-SB-12W	
	SYD-SB-19S	SYD-SB-14W	
	SYD-SB-21S	SYD-SB-01W	
	SYD-SB-22S	SYD-SB-18W	
	SYD-SB-05W	SYD-SB-21W	
Field Blanks:	SYD-FB-01	SYD-FB-02	
Rinsate Blanks:	SYD-RB-01	SYD-RB-02	
Trip Blanks:	SYD-TB-01	SYD-TB-02	SYD-TB-03

Overview

This set of samples for the Camp Allen Salvage Yard contained twenty (20) soil samples. The field QC that was applied to this set of samples was included in Report No. 93.00175 SDG 02 and consisted of two (2) aqueous field blanks, two (2) aqueous rinsate blanks, and three (3) aqueous trip blanks. The samples were analyzed for volatile organic chemicals (VOAs), semivolatile organic chemicals (BNAs), and pesticides/PCBs by methods of the U.S. EPA's Contract Laboratory Program (CLP).

Summary

All compounds were successfully analyzed in all samples. The quality of organic analytical data was evaluated by the following parameters: holding times, GC/MS tuning, internal standard areas, initial calibrations, continuing calibrations, surrogate spike recovery, method blanks, field quality control (QC), matrix spike/matrix spike duplicates, compound identification, and quantitation. Validated sample analysis results are listed on the attached data summary form. Areas of concern with respect to data quality and usability are discussed below.

Minor Issues

Acetone, methylene chloride, chloroform, bromodichloromethane, 1,1,2,2-tetrachloroethane, 4-methyl-2-pentanone, and dibromochloromethane, were reported in volatile organic laboratory and/or field blanks. Therefore, positive results for acetone and methylene chloride which are less than ten (10) times the blank concentrations are qualified "J", estimated. No results for the other above mentioned analytes are qualified because there were no positive results for these analytes in any samples. Note that when acetone or methylene chloride results are less than the contract required quantitation limits (CRQLs) and are qualified due to blank contamination, the result is elevated to the CRQL and qualified "UJ", on the data summary.

The semivolatile organic percent relative standard deviation (%RSD) for 2,4-dinitrophenol exceeded the 30 percent quality control limit in the initial calibration. No results are qualified on the basis of the %RSD result because there were no positive results for 2,4-dinitrophenol in any samples.

The semivolatile organic percent difference (%D) for 3-nitroaniline, 4-nitroaniline and 3,3'-dichlorobenzidine exceeded the 25 percent quality control limit in a continuing calibration. No results are qualified on the basis of the %D results because there were no positive results for 3-nitroaniline, 4-nitroaniline and 3,3'-dichlorobenzidine in any samples.

Pesticide/PCB surrogate spike recoveries for tetrachloro-m-xylene and decachlorobiphenyl were outside quality control limits on the primary and/or confirmation columns in all samples except

SYD-SD-01W, SYD-SB-03S, and SYD-SB-04S. In addition, the laboratory narrative states that "all PEM (Performance Evaluation Mixtures) RPD and percent breakdown did not meet SOW requirements for both analytical columns." A large number of continuing calibration verification also exceeded quality control criteria. Because of the uncertainty introduced by these factors, positive pesticide/PCB results are qualified "J", estimated, and quantitation limits are qualified "UJ", estimated, in all samples.

Notes

The volatile organics analysis data sheet for sample STD-SB-05W was changed to SYD-SB-05W, per the chain of custody.

The percent recovery (%REC) for toluene and n-nitroso-di-n-proplyamine were outside quality control limits in the volatile organic matrix spike/matrix spike duplicate analyses. After close inspection of all data from the associated batch of samples, no analytical problems were found therefore no data were qualified.

The relative percent difference (%RPD) for acenaphthene and pyrene were outside quality control limits in the semivolatile organic matrix spike/matrix spike duplicate analyses. After close inspection of all data from the associated batch of samples no analytical problems were found therefore, no data were qualified.

In the semivolatile analyses, 4-methyl-3-penten-2-one was reported as a Tentatively Identified Compound (TIC) in some samples. Results for this compound have been lined out and initialed by the data validator indicating that it is considered to be a blank contaminant.

Pesticide/PCB matrix spike/matrix spike duplicate surrogate recoveries for tetrachoro-m-xylene and decachlorobiphenyl failed to meet quality control criteria. Although no data were qualified on the basis of these recoveries, close inspection of the data indicates there were matrix interferences.

Pesticide/PCB positive results for arochlor-1254, dieldrin, endosulfan sulfate, arochlor-1260, beta-BHC, 4,4'-DDT, endrin ketone, 4,4'-DDD, alpha chlordane, gamma chlordane, and endrin aldehyde in some samples were flagged "P" by the laboratory indicating that the percent differences (%Ds) in reported concentrations between the primary and confirmation columns were greater than 25 percent. No data are qualified on the basis of these %Ds. Validation guidelines do not require qualification because of differences between chromatographic columns.

The pesticide matrix spike/matrix spike duplicate percent recoveries (%REC) and percent relative difference (%RPD) for gamma-BHC (lindane), heptachlor, aldrin, dieldrin, endrin, and 4,4'-DDT were outside quality control limits. No data are qualified on the basis of the

MS/MSD results because current U.S. EPA guidelines state that data are not to be qualified on the basis of matrix spikes alone.

Pesticide GPC calibration percent recoveries (%REC) were slightly above the (80-110) quality control limits.

Pesticide analytical sequence performance value was outside QC limits for SYD-SB-01S.

The data were reviewed according to the Level C validation criteria specified in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program (NEESA 20.2-047B) and with reference to CLP method requirements and U.S. EPA National Functional Guidelines for Evaluating Organic Analyses. The data should be accepted as qualified and presented in the data summary.

Positive analyte results reported below the U.S. EPA, CLP, contract required detection limits (CRDL) but above the laboratory instrument detection limit (IDL) are qualified "J", approximate, since there is an unacceptable level of confidence in the detection and accurate reporting of concentrations less than CRDLs.

Information Regarding Report Content

Attachments:

1. Glossary of data qualifier codes.
2. Data Summary. This may include:
   a) All positive results with qualifier codes, if applicable;
   b) All unusable detection limits qualified with an "R"; and
   c) All estimated detection limits qualified with UJ.
3. Appendix A - Results as reported by the laboratory.
4. Appendix B - Tentatively Identified Compounds
5. Appendix C - Support Documentation which includes details to support the statements made in this report.

AWD TECHNOLOGIES

A Subsidiary of
The Dow Chemical Company

PGH-93-TMJ-301

DATE March 12, 1993

TO Ms. Jeri Trageser
Project Manager
Baker Environmental Inc.
420 Rouser Road
Airport Office Park, Building 3
Coraopolis, Pennsylvania 15108

FROM Thomas M. Jackman
AWD Technologies, Inc.

SUBJECT Data Validation of:
Volatile Organic Chemicals
Semivolatile Organic Chemicals
Pesticide/PCBs

RE: Camp Allen Salvage Yard
Navy CLEAN Program

National Environmental Testing Inc. Case Number 00175
SDG Number 02

Samples:

SYD-SB-20S SYD-SB-22W

Pesticides only:

SYD-SB-02S SYD-SB-11D

Field Blanks:

SYD-FB-01	SYD-FB-02	SYD-RB-01	SYD-RB-02
SYD-TB-01	SYD-TB-02	SYD-TB-03	

Overview

This set of samples for the Camp Allen Salvage Yard contained 4 soil samples and 7 aqueous field blanks. The samples were analyzed for volatile organic chemicals (VOAs), semivolatile organic chemicals, and pesticide/PCBs by methods of the U.S. EPA's Contract Laboratory Program (CLP).

Summary

All compounds were successfully analyzed in all samples. The quality of organic analytical data was evaluated by the following parameters: holding times, GC/MS tuning, internal standard performance, initial calibrations, continuing calibrations, surrogate spikes, laboratory and field blanks, compound identification, and compound quantitation. Areas of concern with respect to data usability are discussed below.

Minor Issues

Methylene chloride, acetone, 1,1,2-trichloroethane, 1,1,2,2-tetrachloroethane, bromodichloromethane, dibromochloromethane, and 4-methyl-2-pentanone were reported in laboratory and field blanks. Therefore, positive results for methylene chloride and acetone which are less than ten (10) times the blank concentrations are qualified "J". No results for the other above mentioned compounds are qualified because there were no positive results for these analytes in any samples.

The percent relative standard deviation (%RSD) for 2,4-dinitrophenol exceeded the 30 percent quality control limit in the initial calibration. No 2,4-dinitrophenol results are qualified because there were no positive results for this compound in any samples.

The percent difference (%D) for 2,4-dinitrophenol exceeded the 25 percent quality control limit in a continuing calibration. No data are qualified on the basis of the %D because there were no positive results for 2,4-dinitrophenol in any samples.

In the pesticide/PCB analysis, surrogate spike recoveries for several method blanks, most field blanks, and all soil samples failed to meet quality control criteria on the primary and/or confirmation columns. In addition, the laboratory narrative states that "all PEM (Performance Evaluation Mixtures)... did not meet SOW requirements for both analytical columns". A large number of continuing calibration verifications also exceeded quality control criteria. The laboratory attributes these problems to the sample matrix. Because of the uncertainty introduced by these factors, positive pesticide/PCB results are qualified "J", estimated, and quantitation limits are qualified "UJ", estimated, in all samples.

Notes

Several semivolatile matrix spike (MS)/matrix spike duplicate recoveries and relative percent differences (RPDs) failed to meet quality control criteria. No data are qualified on the basis of the MS/MSD results because current U.S. EPA guidelines state that data are not to be qualified on the basis of matrix spikes alone.

In the pesticide/PCB analysis, some results for Aroclor-1254 and Aroclor-1260 were flagged "P" by the laboratory on the Pesticide Organic Data Analysis Sheets (see Appendix A), indicating that these results differed by more than 25 percent on the primary and confirmation columns. No data are qualified on the basis of these differences because U.S. EPA guidelines do not require qualification at this time.

Results for bromodichloromethane, dibromochloromethane, methylene chloride, and Aroclor-1260 in some samples were flagged "J" by the laboratory because their concentrations were below Contract Required Quantitation Limits (CRQLs). The "J" qualifier has been retained after data validation and these results are qualified "J", estimated on the data summary.

The data were reviewed according to the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program and the U.S. EPA's National Functional Guidelines for Evaluating Organic Analyses.

Information Regarding Report Content

Attachments:

1. Glossary of data qualifier codes.
2. Data Summary. This may include:
   a) All positive results with qualifier codes, if applicable;
   b) All unusable detection limits qualified with an "R"; and
   c) All estimated detection limits qualified with UJ.
3. Appendix A - Results as reported by the laboratory.
4. Appendix B - Tentatively Identified Compounds (TICs).
5. Appendix C - Support Documentation which includes details to support the statements made in this report.

AWD TECHNOLOGIES

A Subsidiary of
The Dow Chemical Company

PGH-93-GK-309

DATE March 9, 1993

TO Ms. Jeri Trageser
Project Manager
Baker Environmental, Inc.
Airport Office Park - Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

FROM Gina Kelly
AWD Technologies, Inc.

SUBJECT Data Validation of:
Pesticides/PCBs

Re: Camp Allen Salvage Yard
Navy CLEAN Program

National Environmental Testing, Inc.
Report Number 93.00175
SDG Number 03

Samples:	SYD-CS-01	SYD-SB-08D
	SYD-CS-02	SYD-SB-09D
	SYD-CS-03	SYD-SB-09S
	SYD-SB-02D	SYD-SB-10D
	SYD-SB-03D	SYD-SB-13D
	SYD-SB-04D	SYD-SB-13S
	SYD-SB-06D	SYD-SB-16D
	SYD-SB-06S	SYD-SB-16S
	SYD-SB-07D	SYD-SB-17D
	SYD-SB-07S	SYD-SB-19D
Field Blanks:	SYD-FB-01	SYD-FB-02
Rinsate Blanks:	SYD-RB-01	SYD-RB-02

Overview

This set of samples for the Camp Allen Salvage Yard contained twenty (20) soil samples. The field QC that was applied to this set of samples was included in Report No. 93.00175 SDG 02 and consisted of two (2) aqueous field blanks, and two (2) aqueous rinsate blanks. The samples were analyzed for pesticides/PCBs by methods of the U.S. EPA's Contract Laboratory Program (CLP).

Summary

All compounds were successfully analyzed in all samples. The quality of organic analytical data was evaluated by the following parameters: holding times, GC/MS tuning, internal standard areas, initial calibrations, continuing calibrations, surrogate spike recovery, method blanks, field quality control (QC), matrix spike/matrix spike duplicates, compound identification, and quantitation. Validated sample analysis results are listed on the attached data summary form. Areas of concern with respect to data quality and usability are discussed below.

Minor Issues

Pesticide/PCB surrogate spike recoveries for tetrachloro-m-xylene and decachlorobiphenyl were outside quality control limits on the primary and/or confirmation columns. In addition, the laboratory narrative states that "all PEM (Performance Evaluation Mixtures) RPD and percent breakdown did not meet SOW requirements for both analytical columns." A large number of continuing calibration verification also exceeded quality control criteria. Because of the uncertainty introduced by these factors, positive pesticide/PCB results are qualified "J", estimated, and quantitation limits are qualified "UJ", estimated, in all samples.

Notes

Pesticide/PCB matrix spike/matrix spike duplicate surrogate recoveries for tetrachoro-m-xylene failed to meet control criteria. No data are qualified on the basis of the MS/MSD surrogate recoveries.

Pesticide/PCB positive results for arochlor-1254, dieldrin, aldrin, arochlor-1260, and gamma-BHC (lindane) in some samples were flagged "P" by the laboratory indicating that the percent differences (%Ds) in reported concentrations between the primary and confirmation columns were greater than 25 percent. No data are qualified on the basis of these %Ds. Validation guidelines do not require qualification because of differences between chromatographic columns.

The pesticide matrix spike/matrix spike duplicate percent recoveries (%REC) for dieldrin, endrin, and 4,4'-DDT were outside quality control limits. No data are qualified on the basis of the MS/MSD results because current U.S. EPA guidelines state that data are not to be qualified on the basis of matrix spikes alone.

Pesticide GPC calibration percent recoveries (%REC) were slightly above the (80-110) quality control limits.

Pesticide analytical sequence performance value was outside QC limits for samples SYD-CS-01, and SYD-CS-03.

The data were reviewed according to the Level C validation criteria specified in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program (NEESA 20.2-047B) and with reference to CLP method requirements and U.S. EPA National Functional Guidelines for Evaluating Organic Analyses. The data should be accepted as qualified and presented in the data summary.

Positive analyte results reported below the U.S. EPA, CLP, contract required detection limits (CRDL) but above the laboratory instrument detection limit (IDL) are qualified "J", approximate, since there is an unacceptable level of confidence in the detection and accurate reporting of concentrations less than CRDLs.

Information Regarding Report Content

Attachments:

1. Glossary of data qualifier codes.
2. Data Summary. This may include:
   a) All positive results with qualifier codes, if applicable;
   b) All unusable detection limits qualified with an "R"; and
   c) All estimated detection limits qualified with UJ.
3. Appendix A - Results as reported by the laboratory.
4. Appendix B - Support Documentation which includes details to support the statements made in this report.

AWD TECHNOLOGIES

A Subsidiary of
The Dow Chemical Company

PGH-93-GK-322

DATE March 12, 1993

TO Ms. Jeri Trageser
Project Manager
Baker Environmental, Inc.
Airport Office Park - Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

FROM Gina Kelly
AWD Technologies, Inc.

SUBJECT Data Validation of:
Trichlorofluoromethane

Re: Camp Allen Salvage Yard
Navy CLEAN Program

National Environmental Testing, Inc.
Report Number 93.00175

Samples:	SYD-SB-03S SYD-SB-08S	SYD-SB-04S
Field Blanks:	SYD-FB-01	SYD-FB-02
Rinsate Blanks:	SYD-RB-01	SYD-RB-02
Trip Blanks:	SYD-TB-01 SYD-TB-03	SYD-TB-02

Overview

This set of samples for the Camp Allen Salvage Yard contained three (3) soil samples plus two (2) aqueous field blanks, two (2) aqueous rinsate blanks, and three (3) trip blanks. The samples were analyzed for trichlorofluoromethane by methods of the U.S. EPA's Contract Laboratory Program (CLP).

Summary

All compounds were successfully analyzed in all samples. The quality of organic analytical data was evaluated by the following parameters: holding times, GC/MS tuning, initial calibrations, continuing calibrations, surrogate spike recovery, method blanks, field quality control (QC), matrix spike/matrix spike duplicates, compound identification, and quantitation. Validated sample analysis results are listed on the attached data summary form. Areas of concern with respect to data quality and usability are discussed below.

Minor Issues

Surrogate spike recovery for toluene-d8 exceeded advisory (81-117) quality control limits in sample SYD-SB-04S. Therefore, quantitation limits in SYD-SB-04S are qualified "UJ", estimated.

Notes

The data were reviewed according to the Level C validation criteria specified in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program (NEESA 20.2-047B) and with reference to CLP method requirements and U.S. EPA National Functional Guidelines for Evaluating Organic Analyses. The data should be accepted as qualified and presented in the data summary.

Information Regarding Report Content

Attachments:

1. Glossary of data qualifier codes.
2. Data Summary. This may include:
   a) All positive results with qualifier codes, if applicable;
   b) All unusable detection limits qualified with an "R"; and
   c) All estimated detection limits qualified with UJ.
3. Appendix A - Results as reported by the laboratory.
4. Appendix B - Support Documentation which includes details to support the statements made in this report.

AWD TECHNOLOGIES

A Subsidiary of
The Dow Chemical Company

PGH-93-GK-321

DATE March 12, 1993

TO Ms. Jeri Trageser
Project Manager
Baker Environmental, Inc.
Airport Office Park - Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

FROM Gina Kelly
AWD Technologies, Inc.

SUBJECT Data Validation of:
Ammonia
Total Petroleum Hydrocarbons

Re: Camp Allen Salvage Yard
Navy CLEAN Program

National Environmental Testing, Inc.
Report Number 93.00175

Samples:	SYD-SB-01S	SYD-SB-14S
	SYD-SB-01W	SYD-SB-14W
	SYD-SB-03S	SYD-SB-17S
	SYD-SB-04S	SYD-SB-18S
	SYD-SB-05S	SYD-SB-18W
	SYD-SB-05W	SYD-SB-19S
	SYD-SB-08S	SYD-SB-20S
	SYD-SB-10S	SYD-SB-21S
	SYD-SB-11S	SYD-SB-21W
	SYD-SB-12S	SYD-SB-22S
	SYD-SB-12W	SYD-SB-22W
Field Blanks:	SYD-FB-01	SYD-FB-02
Rinsate Blanks:	SYD-RB-01	SYD-RB-02

Overview

This set of samples for the Camp Allen Salvage Yard contained twenty-two (22) soil samples plus (2) aqueous field blanks, and two (2) aqueous rinsate blanks. The samples were analyzed for ammonia and total petroleum hydrocarbons by methods of the U.S. EPA's Contract Laboratory Program (CLP).

Summary

All compounds were successfully analyzed in all samples. The quality of analytical data was evaluated by the following parameters: method blanks, field quality control (QC), and matrix spike/matrix spike duplicates. Validated sample analysis results are listed on the attached data summary form. Areas of concern with respect to data quality and usability are discussed below.

Notes

Petroleum hydrocarbons matrix spike/matrix spike duplicate percent recovery (%REC) was high. No data are qualified on the basis of the MS/MSD result because current U.S EPA guidelines state that data are not to be qualified on the basis of matrix spikes alone.

The data were reviewed according to the Level C validation criteria specified in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program (NEESA 20.2-047B) and with reference to CLP method requirements and U.S. EPA National Functional Guidelines for Evaluating Organic Analyses. The data should be accepted as qualified and presented in the data summary.

Information Regarding Report Content

Attachments:

1. Glossary of data qualifier codes.
2. Data Summary. This may include:
   a) All positive results with qualifier codes, if applicable;
   b) All unusable detection limits qualified with an "R"; and
   c) All estimated detection limits qualified with UJ.
3. Appendix A - Results as reported by the laboratory.
4. Appendix B - Support Documentation which includes details to support the statements made in this report.

AWD TECHNOLOGIES

A Subsidiary of
The Dow Chemical Company

PGH-93-TMJ-313

DATE March 11, 1993

TO Ms. Jeri Trageser
Project Manager
Baker Environmental, Inc.
420 Rouser Road
Airport Office Park, Building 3
Coraopolis, Pennsylvania 15108

FROM Thomas M. Jackman
AWD Technologies, Inc.

SUBJECT Data Validation of:
TAL Metals

RE: Camp Allen Salvage Yard
Navy CLEAN Program

National Environmental Testing Report Number 93.009175

Samples:

SYD-SB-01S	SYD-SB-01W	SYD-SB-03S	SYD-SB-04S
SYD-SB-05S	SYD-SB-05W	SYD-SB-08S	SYD-SB-10S
SYD-SB-11S	SYD-SB-12S	SYD-SB-12W	SYD-SB-14S
SYD-SB-14W	SYD-SB-17S	SYD-SB-18S	SYD-SB-18W
SYD-SB-19S			

Field Blanks associated with this data set:
(but not included in this data package)

SYD-FB-02	SYD-RB-01	SYD-RB-02

Overview

This set of samples for the Camp Allen Salvage Yard contained 19 soil samples which were analyzed for TAL metals by methods of the U.S. EPA's Contract Laboratory Program (CLP).

Summary

All compounds were successfully analyzed in all samples. The quality of analytical data was evaluated by the following parameters: holding times, initial and continuing calibrations, laboratory and field blanks, laboratory control samples, and analyte quantitation. Areas of concern with respect to data usability are discussed below.

Minor Issues

Antimony, cadmium, chromium, cobalt, copper, iron, lead, manganese, nickel, selenium, silver, and vanadium were reported in laboratory and/or field blanks. Therefore, positive results less than five (5) times the highest concentrations reported in the blanks are qualified "J", estimated.

Notes

The data were reviewed according to Level C requirements of Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program (NEESA) and the U.S. EPA's National Functional Guidelines for Evaluating Inorganic Analyses.

Spiked sample, laboratory duplicate, and ICP serial dilution results failed to meet U.S. EPA quality control criteria for some analytes. The spiked sample results for copper and mercury were very low and results for these analytes would be classified unreliable (R) by U.S. EPA guidance. However, NEESA Level C guidelines do not require that data be evaluated on the basis of spiked samples, duplicates, or serial dilutions. Therefore, no data are qualified on the basis of these parameters.

AWD TECHNOLOGIES

A Subsidiary of
The Dow Chemical Company

PGH-93-GK-306

DATE March 9, 1993

TO Ms. Jeri Trageser
Project Manager
Baker Environmental, Inc.
Airport Office Park - Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

FROM Gina Kelly
AWD Technologies, Inc.

SUBJECT Data Validation of:
Pesticides/PCBs

Re: Camp Allen Salvage Yard
Navy CLEAN Program

National Environmental Testing, Inc.
Report Number 93.00175
SDG Number 04

Samples:	SYD-SB-15D SYD-SB-20D	SYD-SB-15S
Field Blanks:	SYD-FB-01	SYD-FB-02
Rinsate Blanks:	SYD-RB-01	SYD-RB-02

Overview

This set of samples for the Camp Allen Salvage Yard contained three (3) soil samples. The field QC that was applied to this set of samples was included in Report No. 93.00175 SDG 02 and consisted of two (2) aqueous field blanks, and two (2) aqueous rinsate blanks. The samples were analyzed for pesticides/PCBs by methods of the U.S. EPA's Contract Laboratory Program (CLP).

Summary

All compounds were successfully analyzed in all samples. The quality of organic analytical data was evaluated by the following parameters: holding times, GC/MS tuning, internal standard areas, initial calibrations, continuing calibrations, surrogate spike recovery, method blanks, field quality control (QC), matrix spike/matrix spike duplicates, compound identification, and quantitation. Validated sample analysis results are listed on the attached data summary form. Areas of concern with respect to data quality and usability are discussed below.

Minor Issues

Pesticide/PCB surrogate spike recoveries for tetrachloro-m-xylene and decachlorobiphenyl were outside quality control limits on the primary and/or confirmation columns in all samples. In addition, the laboratory narrative states that "all PEM (Performance Evaluation Mixtures) RPD and percent breakdown did not meet SOW requirements for both analytical columns." A large number of continuing calibration verification also exceeded quality control criteria. Because of the uncertainty introduced by these factors, positive pesticide/PCB results are qualified "J", estimated, and quantitation limits are qualified "UJ", estimated, in all samples.

Notes

Pesticide/PCB matrix spike/matrix spike duplicate surrogate recoveries for tetrachoro-m-xylene and decachlorobiphenyl failed to meet quality control criteria. Although no data were qualified on the basis of these recoveries, close inspection of the data indicates there were matrix interferences.

Pesticide/PCB positive results for 4,4'-DDT, and aldrin, in some samples were flagged "P" by the laboratory indicating that the percent differences (%Ds) in reported concentrations between the primary and confirmation columns were greater than 25 percent. No data are qualified on the basis of these %Ds. Validation guidelines do not require qualification because of differences between chromatographic columns.

The pesticide matrix spike/matrix spike duplicate percent recovery (%REC) for gamma-BHC (lindane), were outside quality control limits. No data are qualified on the basis of the MS/MSD results because current U.S. EPA guidelines state that data are not to be qualified on the basis of matrix spikes alone.

Pesticide GPC calibration percent recoveries (%REC) were slightly above the (80-110) quality control limits.

The data were reviewed according to the Level C validation criteria specified in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program (NEESA 20.2-047B) and with reference to CLP method requirements and U.S. EPA National Functional Guidelines for Evaluating Organic Analyses. The data should be accepted as qualified and presented in the data summary.

Positive analyte results reported below the U.S. EPA, CLP, contract required detection limits (CRDL) but above the laboratory instrument detection limit (IDL) are qualified "J", approximate, since there is an unacceptable level of confidence in the detection and accurate reporting of concentrations less than CRDLs.

Information Regarding Report Content

Attachments:

1. Glossary of data qualifier codes.
2. Data Summary. This may include:
   a) All positive results with qualifier codes, if applicable;
   b) All unusable detection limits qualified with an "R"; and
   c) All estimated detection limits qualified with UJ.
3. Appendix A - Results as reported by the laboratory.
4. Appendix B - Support Documentation which includes details to support the statements made in this report.

AWD TECHNOLOGIES

A Subsidiary of
The Dow Chemical Company

PGH-93-GK-312

DATE March 9, 1993

TO Ms. Jeri Trageser
Project Manager
Baker Environmental, Inc.
Airport Office Park - Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

FROM Gina Kelly
AWD Technologies, Inc.

SUBJECT Data Validation of:
TAL Metals

Re: Camp Allen Salvage Yard
Navy CLEAN Program

National Environmental Testing, Inc.
Report Number 93.00175
SDG Number 0017501

Samples:	SYD-SB-20S	SYD-SB-21S
	SYD-SB-21W	SYD-SB-22S
	SYD-SB-22W	
Field Blanks:	SYD-FB-01	SYD-FB-02
Rinsate Blanks:	SYD-RB-01	SYD-RB-02

Overview

This set of samples for the Camp Allen Salvage Yard contained five (5) soil samples, plus two (2) aqueous field blanks and two (2) aqueous rinsate blanks. The samples were analyzed for TAL metals by methods of the U.S. EPA's Contract Laboratory Program (CLP).

Summary

All compounds were successfully analyzed in all samples. The quality of inorganic analytical data was evaluated by the following parameters: holding times, initial and continuing calibrations, laboratory and field blanks, laboratory control sample, and analyte quantitation. Validated sample analysis results are listed on the attached data summary form. Areas of concern with respect to data quality and usability are discussed below.

Minor Issues

Antimony, cadmium, chromium, cobalt, copper, iron, manganese, nickel, selenium, silver and vanadium were reported in laboratory and/or field blanks. Therefore, positive results less than five (5) times the highest concentrations reported in the blanks are qualified "J", estimated.

Notes

The data were reviewed according to the Level C validation criteria specified in the Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program (NEESA 20.2-047B) and with reference to CLP method requirements and U.S. EPA National Functional Guidelines for Evaluating Inorganic Analyses. The data should be accepted as qualified and presented in the data summary.

Information Regarding Report Content

Attachments:

1. Glossary of data qualifier codes.
2. Data Summary. This may include:
   a) All positive results with qualifier codes, if applicable;
   b) All unusable detection limits qualified with an "R"; and
   c) All estimated detection limits qualified with UJ.
3. Appendix A - Results as reported by the laboratory.
4. Appendix B - Support Documentation which includes details to support the statements made in this report.

APPENDIX D

APPENDIX D
SUMMARY OF ANALYTICAL DATA

CAMP ALLEN SALVAGE YARD PA/SI MASTER SAMPLE LIST

Type of Sample	Boring No.	Sample Number	Sample Date	Sample Time	Sample Analyses
Environmental	1	SYD-SB-01S	1-23-93	1115	Full TCL/TAL, Cn, TPH
		SYD-SB-01W	1-23-93	1140	Full TCL/TAL, Cn, TPH
	2	SYD-SB-02S	1-23-93	1234	PCBs only
		SYD-SB-02D	1-23-93	1244	PCBs only
	3	SYD-SB-03S	1-23-93	1320	Full TCL/TAL, Cn, TPH, Ammonia & TCFM
		SYD-SB-03D	1-23-93	1330	PCBs only
	4	SYD-SB-04S	1-23-93	1352	Full TCL/TAL, Cn, TPH, Ammonia & TCFM
		SYD-SB-04D	1-23-93	1400	PCBs only
	5	SYD-SB-05S	1-23-93	1454	Full TCL/TAL, Cn, TPH
		SYD-SB-05W	1-23-93	1508	Full TCL/TAL, Cn, TPH
	6	SYD-SB-06S	1-23-93	1610	PCBs only
		SYD-SB-06D	1-23-93	1625	PCBs only
	7	SYD-SB-07S	1-23-93	1655	PCBs only
		SYD-SB-07D	1-23-93	1703	PCBs only
	8	SYD-SB-08S	1-23-93	1715	Full TCL/TAL, Cn, TPH, Ammonia & TCFM
		SYD-SB-08D	1-23-93	1725	PCBs only
	9	SYD-SB-09S	1-24-93	0813	PCBs only
		SYD-SB-09D	1-24-93	0820	PCBs only
	10	SYD-SB-10S	1-24-93	0840	Full TCL/TAL, Cn, TPH
		SYD-SB-10D	1-24-93	0855	PCBs only
	11	SYD-SB-11S	1-24-93	0910	Full TCL/TAL, Cn, TPH
		SYD-SB-11D	1-24-93	0920	PCBs only
	12	SYD-SB-12S	1-24-93	0935	Full TCL/TAL, Cn, TPH
		SYD-SB-12W	1-24-93	0950	Full TCL/TAL, Cn, TPH
	13	SYD-SB-13S	1-24-93	1030	PCBs only
		SYD-SB-13D	1-24-93	1034	PCBs only

CAMP ALLEN SALVAGE YARD PA/SI MASTER SAMPLE LIST

Type of Sample	Boring No.	Sample Number	Sample Date	Sample Time	Sample Analyses
Environmental	14	SYD-SB-14S	1-24-93	1110	Full TCL/TAL, Cn, TPH
		SYD-SB-14W	1-24-93	1125	Full TCL/TAL, Cn, TPH
	15	SYD-SB-15S	1-24-93	1145	PCBs only
		SYD-SB-15D	1-24-93	1208	PCBs only
	16	SYD-SB-16S	1-24-93	1245	PCBs only
		SYD-SB-16D	1-24-93	1253	PCBs only
	17	SYD-SB-17S	1-24-93	1312	Full TCL/TAL, Cn, TPH
		SYD-SB-17D	1-24-93	1322	PCBs only
	18	SYD-SB-18S	1-24-93	1353	Full TCL/TAL, Cn, TPH
		SYD-SB-18W	1-24-93	1400	Full TCL/TAL, Cn, TPH
	19	SYD-SB-19S	1-24-93	1430	Full TCL/TAL, Cn, TPH
		SYD-SB-19D	1-24-93	1438	PCBs only
	20	SYD-SB-20S	1-24-93	1458	Full TCL/TAL, Cn, TPH
		SYD-SB-20D	1-24-93	1505	PCBs only
Environmental Duplicate of Boring 5 S/W Samples		SYD-SB-21S	1-23-93	1454	Full TCL/TAL, Cn, TPH
		SYD-SB-21W	1-23-93	1508	Full TCL/TAL, Cn, TPH
Environmental Duplicate of Boring 18 S/W Samples		SYD-SB-22S	1-24-93	1353	Full TCL/TAL, Cn, TPH
		SYD-SB-22W	1-24-93	1400	Full TCL/TAL, Cn, TPH
Concrete	Bldg. 193	SYD-CS-01	1-23-93	0845	PCBs only
		SYD-CS-02	1-23-93	0920	PCBs only
Duplicate of CS-02		SYD-CS-03	1-23-93	0920	PCBs only

CAMP ALLEN SALVAGE YARD PA/SI MASTER SAMPLE LIST

Type of Sample	Boring No.	Sample Number	Sample Date	Sample Time	Sample Analyses
Rinsate Blanks	Day One	SYD-RB-01	1-23-93	0900	Full TCL/TAL, Cn, TPH
	Day Two	SYD-RB-02	1-24-93	0650	Full TCL/TAL, Cn, TPH
Field Blanks	Potable Water	SYD-FB-01	1-23-93	0800	Full TCL/TAL, Cn, TPH
	Deionized Water	SYD-FB-02	1-24-93	0723	Full TCL/TAL, Cn, TPH
Trip Blanks	Cooler 1	SYD-TB-01	1-25-93	0800	VOAs only
	Cooler 2	SYD-TB-02	1-25-93	--	VOAs only
	Cooler 3	SYD-TB-03	1-25-93	1115	VOAs only

TCL = Target Compound List constituents (including volatiles, semivolatiles, pesticides, PCBs)
TAL = Target Analyte List constituents (total metals)
Cn = Cyanide
TCFM = Trichlorofluoromethane
TPH = Total Petroleum Hydrocarbons
PCBs = Polychlorinated Biphenyls
VOA = Volatile Organic Analyses

CHAIN OF CUSTODY RECORD

PROJECT NAME [illegible]
COMPANY [illegible]
ADDRESS [illegible]
PHONE ( ) [illegible]

NATIONAL ENVIRONMENTAL TESTING, INC.

Thorofare Division, 100 Grove Road, P.O. Box 248, Thorofare, NJ 08086

SAMPLED BY

(Print Name) [illegible] Signature [illegible]

(Print Name) [illegible] Signature [illegible]

SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	CONTAINER SIZE	CONTAINER G/P	GRAB	COMP	NO OF CONTAINERS	SAMPLE MATRIX	PRESERVATIVE	Volatile Organics TCFM	Extractable Organics	Pesticides PCBs	Metals	Cyanide	Phenols	[illegible]				COMMENTS
[illegible]	[illegible]	[illegible]	[illegible]		G			3	LIQ	[illegible]	X	X	X	X	X		X				
[illegible]	[illegible]	[illegible]	[illegible]		G			[illegible]	[illegible]	[illegible]	X	X	X	X	X		X				
[illegible]	[illegible]	[illegible]	[illegible]		G			[illegible]	LIQ	[illegible]	X	X	X	X	X		X				
[illegible]	[illegible]	[illegible]	[illegible]		G			[illegible]	LIQ	[illegible]	X	X	X	X	X		X				
[illegible]	[illegible]	[illegible]	[illegible]		[illegible]			2	LIQ	[illegible]	X										

Relinquished by	Date / Time	Received by:	Relinquished by:	Date / Time	Received by.
	1240				
Relinquished by	**Date / Time**	**Received by:**	**Relinquished by:**	**Date / Time**	**Received for Laboratory by.**

Method of Shipment

Remarks: TCFM = FLUORO TRICHLOROMETHANE / CONTACT KRISTEN EARNEST

PT 1 — ORIGINAL PT 2 NET Project Manager—Yellow PT 3—Customer Copy—Pink

3

CHAIN OF CUSTODY RECORD

PROJECT NAME
COMPANY
ADDRESS
PHONE ( )

NET® NATIONAL ENVIRONMENTAL TESTING, INC.

Thorofare Division, 100 Grove Road, P.O. Box 248, Thorofare, NJ 08086

SAMPLED BY

(Print Name) Signature

(Print Name) Signature

SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	CONTAINER SIZE	CONTAINER G/P	GRAB	COMP	NO OF CONTAINERS	SAMPLE MATRIX	PRESERVATIVE	Volatile Organics	Extractable Organics	Pesticides PCBs	Metals	Cyanide	Phenols					COMMENTS
			C.H.S.X		G	X		2		N.A	X	X	X	X	X		X				
								2			X	X	X	X	X		X				
								1								X					
								1								X					
								2			X	X	X	X	X		X	X	X		
								1								X					
								2			X	X	X	X	X		X	X	X		
								1								X					
															X						
								2			X	X	X	X	X		X				
								1								X					
								1								X					
								1								X					
								1								X					
								2			X	X		X	X		X	X	X		

Relinquished by:	Date / Time	Received by:	Relinquished by:	Date / Time	Received by:
Relinquished by:	**Date / Time**	**Received by:**	**Relinquished by:**	**Date / Time**	**Received for Laboratory by:**

Method of Shipment

Remarks:
LAG
CONTACT: KRISTEN BRANDL

PT 1 — ORIGINAL PT 2 NET Project Manager—Yellow PT 3—Customer Copy—Pink

CHAIN OF CUSTODY RECORD

PROJECT NAME
COMPANY
ADDRESS
PHONE ( )

NET® NATIONAL ENVIRONMENTAL TESTING, INC.

Thorofare Division, 100 Grove Road, P.O. Box 248, Thorofare, NJ 08086

SAMPLED BY

(Print Name) Signature

(Print Name) Signature

SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	CONTAINER SIZE	CONTAINER G/P	GRAB	COMP	NO OF CONTAINERS	SAMPLE MATRIX	PRESERVATIVE	Volatile Organics	Extractable Organics	Pesticides PCBs	Metals	Cyanide	Phenols					COMMENTS
					G	X		1	SOIL	NA						X					
						X		1								X					
						X		1								X					
						X		2			X	X	X	X	X		X				
						X		1								X					
											X		X	X	X		X				
																X					
											X	X	X	X	X		X				
											X	X	X	X	X		X				
																X					
																X					
											X	X	X		X		X				
						X					X	X	X	X	X		X				
																X					
						X										X					

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Relinquished by	Date / Time	Received by:	Relinquished by:	Date / Time	Received for Laboratory by

Method of Shipment

Remarks:
LAB CONTACT - KRISTEN BRANDL

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					G						X									

Relinquished by:	Date / Time	Received by:	Relinquished by:	Date / Time	Received by:
Relinquished by	Date / Time	Received by:	Relinquished by:	Date / Time	Received for Laboratory by:

Method of Shipment

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SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	CONTAINER SIZE	CONTAINER G/P	GRAB	COMP	NO. OF CONTAINERS	SAMPLE MATRIX	PRESERVATIVE	Volatile Organics	Extractable Organics	Pesticides PCBs	Metals	Cyanide	Phenols				COMMENTS
					G	X		1		NA						X				
						X		1								X				
						X		2			X	X	X				X			
						X		1								X				
						X		2			X						X			
								2			X						X			
						X					X	X	X				X			
								1								X				
													X				X			
																X				
											X	X	X		X		X			
											X	X	X		X		X			
											X	X	X		X		X			
											X	X	X		X		X			
								1								X				

Relinquished by:	Date / Time	Received by:	Relinquished by:	Date / Time	Received by
Relinquished by	Date / Time	Received by:	Relinquished by:	Date / Time	Received for Laboratory by:

Method of Shipment

Remarks:

LAB CONTACT - KRISTEN BRANDL

PT 1 — ORIGINAL PT 2 NET Project Manager—Yellow PT 3—Customer Copy—Pink

CHAIN OF CUSTODY RECORD

PROJECT NAME
COMPANY
ADDRESS
PHONE ( )

NET® NATIONAL ENVIRONMENTAL TESTING, INC.

Thorofare Division, 100 Grove Road, P.O. Box 248, Thorofare, NJ 08086

SAMPLED BY

(Print Name) Signature

(Print Name) Signature

SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	CONTAINER SIZE	CONTAINER G/P	GRAB	COMP	NO OF CONTAINERS	SAMPLE MATRIX	PRESERVATIVE	Volatile Organics	Extractable Organics	Pesticides PCBs	Metals	Cyanide	Phenols	TCLP				COMMENTS
			(N.S.)		G	X		1									X				
					G	X		1									X				
		0.5	"		G	X		2			X										

Relinquished by	Date / Time	Received by:	Relinquished by:	Date / Time	Received by
Relinquished by	Date / Time	Received by:	Relinquished by:	Date / Time	Received for Laboratory by:

Method of Shipment

Remarks: LAB CONTACT · KRISTEN BRANDL

PT 1 — ORIGINAL PT 2 NET Project Manager—Yellow PT 3—Customer Copy—Pink

ANALYTICAL SUMMARY OF PCB CONCRETE SAMPLES
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-CS-01		SYD-CS-02		SYD-CS-03	
SAMPLE LOCATION	CA-193		CA-193		DUP/CS02	
DATE SAMPLED	2-23-93		2-23-93		2-23-93	
UNIT	ug/kg		ug/kg		ug/kg	
PCB DILUTION FACTOR	50		1		20	
Aroclor-1016	1800	UJ	34	UJ	720	UJ
Aroclor-1221	3700	UJ	70	UJ	1500	UJ
Aroclor-1232	1800	UJ	34	UJ	720	UJ
Aroclor-1242	1800	UJ	34	UJ	720	UJ
Aroclor-1248	1800	UJ	34	UJ	720	UJ
Aroclor-1254	1800	UJ	2600	J	4500	J
Aroclor-1260	8300	J	1500	J	2300	J

ANALYTICAL SUMMARY OF VOLATILE ORGANIC SOIL SAMPLES
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-01S	SYD-SB-01W	SYD-SB-03S	SYD-SB-04S	SYD-SB-05S	SYD-SB-05W	SYD-SB-08S	SYD-SB-10S
SAMPLE DEPTH	0-6"	42-48"	0-6"	0-6"	0-6"	30-36"	0-6"	0-6"
DATE SAMPLED	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-24-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
VOLATILE ORGANICS:								
Chloromethane	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
Bromomethane	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
Vinyl Chloride	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
Chloroethane	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
Methylene Chloride	11 UJ	17 UJ	12 UJ	11 UJ	11 UJ	11 UJ	11 UJ	11 UJ
Acetone	87 J	110 J	64 J	11 U	37 J	80 J	30 J	11 U
Carbon Disulfide	11 U	7 J	2 J	1 J	1 J	11 U	11 U	11 U
1,1-Dichloroethene	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
1,1-Dichloroethane	11 U	17 U	12 U	11 U	11 U	11 U	11 U	7 J
1,2-Dichloroethene (total)	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
Chloroform	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
1,2-Dichloroethane	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
2-Butanone	10 J	17 J	12 J	10 J	10 J	11 J	11 U	11 U
1,1,1-Trichloroethane	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
Carbon Tetrachloride	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
Bromodichloromethane	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
1,2-Dichloropropane	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
cis-1,3-Dichloropropene	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
Trichloroethene	11 U	17 U	12 U	3 J	11 U	11 U	11 U	10 J
Dibromochloromethane	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
1,1,2-Trichloroethane	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
Benzene	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
trans-1,3-Dichloropropene	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
Bromoform	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
4-Methyl-2-Pentanone	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
2-Hexanone	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
Tetrachloroethene	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
1,1,2,2-Tetrachloroethane	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
Toluene	1 J	17 U	1 J	1 J	11 U	1 J	1 J	11 U
Chlorobenzene	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
Ethylbenzene	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
Styrene	11 U	17 U	12 U	11 U	11 U	11 U	11 U	11 U
Xylenes (total)	11 U	17 U	2 J	11 U	11 U	11 U	11 U	11 U
Trichlorofluoromethane			12 U	11 U				

ANALYTICAL SUMMARY OF VOLATILE ORGANIC SOIL SAMPLES (CONTINUED)
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-11S	SYD-SB-12S	SYD-SB-12W	SYD-SB-14S	SYD-SB-14W	SYD-SB-17S	SYD-SB-18S	SYD-SB-18W
SAMPLE DEPTH	0-6"	0-6"	48-56"	0-6"	30-36"	0-6"	0-6"	30-36"
DATE SAMPLED	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
VOLATILE ORGANICS:								
Chloromethane	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
Bromomethane	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
Vinyl Chloride	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
Chloroethane	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
Methylene Chloride	13 J	11 UJ	11 UJ	11 UJ	12 UJ	11 UJ	11 UJ	12 UJ
Acetone	24 J	11 U	11 U	11 U	12 U	11 U	20 J	23 J
Carbon Disulfide	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
1,1-Dichloroethene	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
1,1-Dichloroethane	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
1,2-Dichloroethene (total)	11 U	11 U	4 J	11 U	12 U	11 U	11 U	12 U
Chloroform	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
1,2-Dichloroethane	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
2-Butanone	11 U	11 U	11 U	11 U	12 J	11 U	11 U	12 J
1,1,1-Trichloroethane	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
Carbon Tetrachloride	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
Bromodichloromethane	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
1,2-Dichloropropane	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
cis-1,3-Dichloropropene	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
Trichloroethene	11 U	11 U	11 U	2 J	2 J	4 J	11 U	12 U
Dibromochloromethane	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
1,1,2-Trichloroethane	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
Benzene	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
trans-1,3-Dichloropropene	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
Bromoform	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
4-Methyl-2-Pentanone	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
2-Hexanone	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
Tetrachloroethene	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
1,1,2,2-Tetrachloroethane	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
Toluene	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
Chlorobenzene	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
Ethylbenzene	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
Styrene	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
Xylenes (total)	11 U	11 U	11 U	11 U	12 U	11 U	11 U	12 U
Trichlorofluoromethane					11 U			

ANALYTICAL SUMMARY OF VOLATILE ORGANIC SOIL SAMPLES (CONTINUED)
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-19S	SYD-SB-20S	SYD-SB-21S	SYD-SB-21W	SYD-SB-22S	SYD-SB-22W
SAMPLE DEPTH	0-6"	0-6"	0-6"	30-36"	0-6"	30-36"
DATE SAMPLED	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
VOLATILE ORGANICS:						
Chloromethane	11 U	11 U	11 U	11 U	11 U	12 U
Bromomethane	11 U	11 U	11 U	11 U	11 U	12 U
Vinyl Chloride	11 U	11 U	11 U	11 U	11 U	12 U
Chloroethane	11 U	11 U	11 U	11 U	11 U	12 U
Methylene Chloride	11 UJ	12 J	11 J	12 J	11 J	17 J
Acetone	15 J	11 U	31 J	140	11 U	70 J
Carbon Disulfide	11 U	11 U	11 U	11 U	11 U	12 U
1,1-Dichloroethene	11 U	11 U	11 U	11 U	11 U	12 U
1,1-Dichloroethane	11 U	11 U	11 U	11 U	11 U	12 U
1,2-Dichloroethene (total)	11 U	11 U	11 U	11 U	11 U	12 U
Chloroform	11 U	11 U	11 U	11 U	11 U	12 U
1,2-Dichloroethane	11 U	11 U	11 U	11 U	11 U	12 U
2-Butanone	11 U	11 U	11 U	13	11 U	12 U
1,1,1-Trichloroethane	11 U	11 U	11 U	11 U	11 U	12 U
Carbon Tetrachloride	11 U	11 U	11 U	11 U	11 U	12 U
Bromodichloromethane	11 U	11 U	11 U	11 U	11 U	12 U
1,2-Dichloropropane	11 U	11 U	11 U	11 U	11 U	12 U
cis-1,3-Dichloropropene	11 U	11 U	11 U	11 U	11 U	12 U
Trichloroethene	28	11 U	11 U	11 U	11 U	12 U
Dibromochloromethane	11 U	11 U	11 U	11 U	11 U	12 U
1,1,2-Trichloroethane	11 U	11 U	11 U	11 U	11 U	12 U
Benzene	11 U	11 U	11 U	11 U	11 U	12 U
trans-1,3-Dichloropropene	11 U	11 U	11 U	11 U	11 U	12 U
Bromoform	11 U	11 U	11 U	11 U	11 U	12 U
4-Methyl-2-Pentanone	11 U	11 U	11 U	11 U	11 U	12 U
2-Hexanone	11 U	11 U	11 U	11 U	11 U	12 U
Tetrachloroethene	4 J	11 U	11 U	11 U	11 U	12 U
1,1,2,2-Tetrachloroethane	11 U	11 U	11 U	11 U	11 U	12 U
Toluene	11 U	11 U	11 U	11 U	11 U	12 U
Chlorobenzene	11 U	11 U	11 U	11 U	11 U	12 U
Ethylbenzene	11 U	11 U	11 U	11 U	11 U	12 U
Styrene	11 U	11 U	11 U	11 U	11 U	12 U
Xylenes (total)	11 U	11 U	11 U	11 U	11 U	12 U
Trichlorofluoromethane						

ANALYTICAL SUMMARY OF SEMIVOLATILE ORGANIC SOIL SAMPLES
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-01S	SYD-SB-01W	SYD-SB-03S	SYD-SB-04S	SYD-SB-05S	SYD-SB-05W	SYD-SB-08S
SAMPLE DEPTH	0-6"	42-48"	0-6"	0-6"	0-6"	30-36"	0-6"
DATE SAMPLED	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SEMIVOLATILE DILUTION FACTOR	1	1	1	1	1	1	1
Phenol	370 U	370 U	400 U	360 U	350 U	370 U	350 U
bis(2-Chloroethyl)ether	370 U	370 U	400 U	360 U	350 U	370 U	350 U
2-Chlorophenol	370 U	370 U	400 U	360 U	350 U	370 U	350 U
1,3-Dichlorobenzene	370 U	370 U	400 U	360 U	350 U	370 U	350 U
1,4-Dichlorobenzene	370 U	370 U	400 U	360 U	350 U	370 U	350 U
1,2-Dichlorobenzene	370 U	370 U	400 U	360 U	350 U	370 U	350 U
2-Methylphenol	41 J	370 U	400 U	360 U	350 U	370 U	350 U
2,2'-oxybis(1-Chloropropane)	370 U	370 U	400 U	360 U	350 U	370 U	350 U
4-Methylphenol	99 J	370 U	400 U	360 U	350 U	370 U	350 U
N-Nitroso-di-n-propylamine	370 U	370 U	400 U	360 U	350 U	370 U	350 U
Hexachloroethane	370 U	370 U	400 U	360 U	350 U	370 U	350 U
Nitrobenzene	370 U	370 U	400 U	360 U	350 U	370 U	350 U
Isophorone	370 U	370 U	400 U	360 U	350 U	370 U	350 U
2-Nitrophenol	370 U	370 U	400 U	360 U	350 U	370 U	350 U
2,4-Dimethylphenol	1600	370 U	400 U	360 U	350 U	370 U	350 U
bis(2-Chloroethoxy)methane	370 U	370 U	400 U	360 U	350 U	370 U	350 U
2,4-Dichlorophenol	370 U	370 U	400 U	360 U	350 U	370 U	350 U
1,2,4-Trichlorobenzene	120 J	370 U	400 U	360 U	350 U	370 U	350 U
Naphthalene	88 J	240 J	400 U	360 U	350 U	370 U	350 U
4-Chloroaniline	370 U	370 U	400 U	360 U	350 U	370 U	350 U
Hexachlorobutadiene	370 U	370 U	400 U	360 U	350 U	370 U	350 U
4-Chloro-3-methylphenol	370 U	370 U	400 U	360 U	350 U	370 U	350 U
2-Methylnaphthalene	94 J	150 J	400 U	360 U	350 U	370 U	350 U
Hexachlorocyclopentadiene	370 U	370 U	400 U	360 U	350 U	370 U	350 U
2,4,6-Trichlorophenol	370 U	370 U	400 U	360 U	350 U	370 U	350 U
2,4,5-Trichlorophenol	910 U	900 U	960 U	870 U	850 U	890 U	860 U
2-Chloronaphthalene	370 U	370 U	400 U	360 U	350 U	370 U	350 U
2-Nitroaniline	910 U	900 U	960 U	870 U	850 U	890 U	860 U
Dimethylphthalate	370 U	370 U	400 U	360 U	350 U	370 U	350 U
Acenaphthylene	370 U	88 J	400 U	360 U	350 U	370 U	350 U
2,6-Dinitrotoluene	370 U	370 U	400 U	360 U	350 U	370 U	350 U
3-Nitroaniline	910 U	900 U	960 U	870 U	850 U	890 U	860 U
Acenaphthene	45 J	370 U	400 U	360 U	350 U	370 U	350 U
2,4-Dinitrophenol	910 U	900 U	960 U	870 U	850 U	890 U	860 U
4-Nitrophenol	910 U	900 U	960 U	870 U	850 U	890 U	860 U

ANALYTICAL SUMMARY OF SEMIVOLATILE ORGANIC SOIL SAMPLES (CONTINUED)
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-01S	SYD-SB-01W	SYD-SB-03S	SYD-SB-04S	SYD-SB-05S	SYD-SB-05W	SYD-SB-08S
SAMPLE LOCATION	0-6"	42-48"	0-6"	0-6"	0-6"	30-36"	0-6"
DATE SAMPLED	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SEMIVOLATILE DILUTION FACTOR	1	1	1	1	1	1	1
Dibenzofuran	370 U	370 U	400 U	360 U	350 U	370 U	350 U
2,4-Dinitrotoluene	370 U	370 U	400 U	360 U	350 U	370 U	350 U
Diethylphthalate	370 U	150 J	400 U	360 U	350 U	370 U	350 U
4-Chlorophenyl-phenylether	370 U	370 U	400 U	360 U	350 U	370 U	350 U
Fluorene	64 J	52 J	400 U	360 U	350 U	370 U	350 U
4-Nitroaniline	910 U	900 U	960 U	870 U	850 U	890 U	860 U
4,6-Dinitro-2-methylphenol	910 U	900 U	960 U	870 U	850 U	890 U	860 U
N-Nitrosodiphenylamine	87 J	370 U	400 U	360 U	350 U	370 U	350 U
4-Bromophenyl-phenylether	370 U	370 U	400 U	360 U	350 U	370 U	350 U
Hexachlorobenzene	370 U	370 U	400 U	360 U	350 U	370 U	350 U
Pentachlorophenol	910 U	910 U	960 U	870 U	850 U	890 U	860 U
Phenanthrene	440	240 J	53 J	95 J	350 U	45 J	350 U
Anthracene	66 J	80 J	400 U	38 J	350 U	370 U	350 U
Carbazole	370 U	370 U	400 U	360 U	350 U	370 U	350 U
Di-n-butylphthalate	.69 J	64 J	49 J	120 J	350 U	370 U	350 U
Fluoranthene	410	240 J	72 J	180 J	350 U	100 J	350 U
Pyrene	800	350 J	68 J	290 J	350 U	78 J	350 U
Butylbenzylphthalate	370 U	370 U	400 U	220 J	350 U	370 U	350 U
3,3'-Dichlorobenzidene	370 U	370 U	400 U	360 U	350 U	370 U	350 U
Benzo(a)anthracene	220 J	170 J	400 U	120 J	350 U	370 U	350 U
Chrysene	330 J	190 J	43 J	170 J	350 U	370 U	350 U
bis(2-Ethylhexyl)phthalate	740	42 J	2000	460	350 U	370 U	350 U
Di-n-octylphthalate	370 U	370 U	400 U	360 U	350 U	370 U	350 U
Benzo(b)fluoranthene	290 J	190 J	400 U	240 J	350 U	370 U	350 U
Benzo(k)fluoranthene	190 J	130 J	400 U	180 j	350 U	370 U	350 U
Benzo(a)pyrene	210 J	180 J	400 U	140 J	350 U	370 U	350 U
Indeno(1,2,3-cd)pyrene	110 J	52 J	400 U	68 J	350 U	370 U	350 U
Dibenz(a,h)anthracene	370 U	370 U	400 U	360 U	350 U	370 U	350 U
Benzo(g,h,i)perylene	140 J	55 J	400 U	79 J	350 U	370 U	350 U

ANALYTICAL SUMMARY OF SEMIVOLATILE ORGANIC SOIL SAMPLES (CONTINUED)
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-01S	SYD-SB-01W	SYD-SB-03S	SYD-SB-04S	SYD-SB-05S	SYD-SB-05W	SYD-SB-08S
SAMPLE LOCATION	0-6"	42-48"	0-6"	0-6"	0-6"	30-36"	0-6"
DATE SAMPLED	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SEMIVOLATILE DILUTION FACTOR	1	1	1	1	1	1	1
T.I.C.s							
Alkyl Substituted Phenol	2700 J						
Dodecane, 6-methyl	1100 J						
Unknown Alkane	7400 J	1400 J	1200 J			240 J	
Trimethyl Naphthalene Isomer	1700 J	420 J	300 J				
Unknown Alkane C13H28	5700 J			180 J			
Undecane,3,6-dimethyl		880 J					
Unknown C14 H10 C14		820 J					
Heptacosane		1300 J					
Heptadecane,9-octyl		2000 J					
Docosane		1700 J					
3-Penten-2-one,4-methyl				160 BJ		220 BJ	190 BJ
Benzaldehyde				240 J			210 J
Alkyl Substituted Cyclohexane						200 J	
Undecane							
Benzene,1-chloro-2-[2-chloro							
1,1'-Biphenyl,2,2',4,4',5-Pe							
1,1-Dichloro-2,2'-bis(p-chlor							
1,1'-Biphenyl,2,2',3,3',6,6'							
1,1'-Biphenyl,hexachloro							
Benzene,1,4-dichloro-2-isocy							
Unknown Aliphatic Acid							
1,1'Biphenyl,2,3,3',4'6-pen							

ANALYTICAL SUMMARY OF SEMIVOLATILE ORGANIC SOIL SAMPLES (CONTINUED)
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-10S	SYD-SB-11S	SYD-SB-12S	SYD-SB-12W	SYD-SB-14S	SYD-SB-14W	SYD-SB-17S
SAMPLE LOCATION	0-6"	0-6"	0-6"	48-56"	0-6"	30-36"	0-6"
DATE SAMPLED	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SEMIVOLATILE DILUTION FACTOR	1	1	1	1	1	1	1
Phenol	360 U	350 U	350 U	370 U	360 U	400 U	350 U
bis(2-Chloroethyl)ether	360 U	350 U	350 U	370 U	360 U	400 U	350 U
2-Chlorophenol	360 U	350 U	350 U	370 U	360 U	400 U	350 U
1,3-Dichlorobenzene	360 U	350 U	350 U	370 U	360 U	400 U	350 U
1,4-Dichlorobenzene	150 J	350 U	350 U	370 U	360 U	400 U	350 U
1,2-Dichlorobenzene	360 U	350 U	350 U	370 U	360 U	400 U	350 U
2-Methylphenol	360 U	350 U	350 U	370 U	360 U	400 U	350 U
2,2'-oxybis(1-Chloropropane)	360 U	350 U	350 U	370 U	360 U	400 U	350 U
4-Methylphenol	360 U	350 U	350 U	370 U	360 U	400 U	350 U
N-Nitroso-di-n-propylamine	360 U	350 U	350 U	370 U	360 U	400 U	350 U
Hexachloroethane	360 U	350 U	350 U	370 U	360 U	400 U	350 U
Nitrobenzene	360 U	350 U	350 U	370 U	360 U	400 U	350 U
Isophorone	360 U	350 U	350 U	370 U	360 U	400 U	350 U
2-Nitrophenol	360 U	350 U	350 U	370 U	360 U	400 U	350 U
2,4-Dimethylphenol	37 J	350 U	350 U	370 U	360 U	400 U	350 U
bis(2-Chloroethoxy)methane	360 U	350 U	350 U	370 U	360 U	400 U	350 U
2,4-Dichlorophenol	360 U	350 U	350 U	370 U	360 U	400 U	350 U
1,2,4-Trichlorobenzene	360 U	350 U	350 U	370 U	360 U	400 U	350 U
Naphthalene	360 U	350 U	350 U	370 U	360 U	400 U	350 U
4-Chloroaniline	360 U	350 U	350 U	370 U	360 U	400 U	350 U
Hexachlorobutadiene	360 U	350 U	350 U	370 U	360 U	400 U	350 U
4-Chloro-3-methylphenol	360 U	350 U	350 U	370 U	360 U	400 U	350 U
2-Methylnaphthalene	360 U	350 U	350 U	370 U	360 U	400 U	350 U
Hexachlorocyclopentadiene	360 U	350 U	350 U	370 U	360 U	400 U	350 U
2,4,6-Trichlorophenol	360 U	350 U	350 U	370 U	360 U	400 U	350 U
2,4,5-Trichlorophenol	870 U	850 U	860 U	910 U	880 U	980 U	850 U
2-Chloronaphthalene	360 U	350 U	350 U	370 U	360 U	400 U	350 U
2-Nitroaniline	870 U	850 U	860 U	910 U	880 U	980 U	850 U
Dimethylphthalate	360 U	350 U	350 U	370 U	360 U	400 U	350 U
Acenaphthylene	360 U	350 U	350 U	370 U	41 J	400 U	350 U
2,6-Dinitrotoluene	360 U	350 U	350 U	370 U	360 U	400 U	350 U
3-Nitroaniline	870 U	850 U	860 U	910 U	880 U	980 U	850 U
Acenaphthene	360 U	350 U	350 U	100 J	360 U	400 U	350 U
2,4-Dinitrophenol	870 U	850 U	860 U	910 U	880 U	980 U	850 U
4-Nitrophenol	870 U	850 U	850 U	910 U	880 U	980 U	850 U

ANALYTICAL SUMMARY OF SEMIVOLATILE ORGANIC SOIL SAMPLES (CONTINUED)
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-10S	SYD-SB-11S	SYD-SB-12S	SYD-SB-12W	SYD-SB-14S	SYD-SB-14W	SYD-SB-17S
SAMPLE LOCATION	0-6"	0-6"	0-6"	48-56"	0-6"	30-36"	0-6"
DATE SAMPLED	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SEMIVOLATILE DILUTION FACTOR	1	1	1	1	1	1	1
Dibenzofuran	360 U	350 U	350 U	69 J	360 U	400 U	350 U
2,4-Dinitrotoluene	360 U	350 U	350 U	370 U	360 U	400 U	350 U
Diethylphthalate	360 U	350 U	350 U	370 U	360 U	400 U	350 U
4-Chlorophenyl-phenylether	360 U	350 U	350 U	370 U	360 U	400 U	350 U
Fluorene	360 U	350 U	350 U	370 U	360 U	400 U	350 U
4-Nitroaniline	870 U	850 U	860 U	910 U	880 U	980 U	850 U
4,6-Dinitro-2-methylphenol	870 U	850 U	860 U	910 U	880 U	980 U	850 U
N-Nitrosodiphenylamine	360 U	350 U	350 U	370 U	360 U	400 U	350 U
4-Bromophenyl-phenylether	360 U	350 U	350 U	370 U	360 U	400 U	350 U
Hexachlorobenzene	360 U	350 U	350 U	370 U	360 U	400 U	350 U
Pentachlorophenol	870 U	850 U	860 U	910 U	880 U	980 U	850 U
Phenanthrene	140 J	38 J	350 U	96 J	81 J	400 U	350 U
Anthracene	360 U	350 U	350 U	41 J	46 J	400 U	350 U
Carbazole	360 U	350 U	350 U	370 U	360 U	400 U	350 U
Di-n-butylphthalate	360 U	350 U	350 U	370 U	96 J	400 U	350 U
Fluoranthene	150 J	91 J	62 J	300 J	150 J	400 U	350 U
Pyrene	230 J	77 J	91 J	210 J	190 J	400 U	350 U
Butylbenzylphthalate	360 U	350 U	350 U	370 U	60 J	400 U	350 U
3,3'-Dichlorobenzidene	360 U	350 U	350 U	370 U	360 U	400 U	350 U
Benzo(a)anthracene	110 J	54 J	58 J	89 J	94 J	400 U	350 U
Chrysene	150 J	60 J	66 J	87 J	190 J	400 U	350 U
bis(2-Ethylhexyl)phthalate	360 U	58 J	350 U	370 U	400	400 U	350 U
Di-n-octylphthalate	360 U	350 U	350 U	370 U	360 U	400 U	350 U
Benzo(b)fluoranthene	170 J	60 J	57 J	64 J	350 J	400 U	350 U
Benzo(k)fluoranthene	110 J	54 J	58 J	64 J	220 J	400 U	350 U
Benzo(a)pyrene	110 J	52 J	66 J	62 J	150 J	400 U	350 U
Indeno(1,2,3-cd)pyrene	57 J	37 J	35 J	370 U	89 J	400 U	350 U
Dibenz(a,h)anthracene	360 U	350 U	350 U	370 U	39 J	400 U	350 U
Benzo(g,h,i)perylene	59 J	41 J	40 J	38 J	100 J	400 U	350 U

ANALYTICAL SUMMARY OF SEMIVOLATILE ORGANIC SOIL SAMPLES (CONTINUED)
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-10S	SYD-SB-11S	SYD-SB-12S	SYD-SB-12W	SYD-SB-14S	SYD-SB-14W	SYD-SB-17S
SAMPLE LOCATION	0-6"	0-6"	0-6"	48-56"	0-6"	30-36"	0-6"
DATE SAMPLED	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SEMIVOLATILE DILUTION FACTOR	1	1	1	1	1	1	1
T.I.C.s							
Alkyl Substituted Phenol							
Dodecane, 6-methyl							
Unknown Alkane			150 J				
Trimethyl Naphthalene Isomer							
Unknown Alkane C13H28	290 J				1700 J		
Undecane,3,6-dimethyl							
Unknown C14 H10 C14							
Heptacosane							
Heptadecane,9-octyl							
Docosane							
3-Penten-2-one,4-methyl	170 BJ	150 BJ					250 BJ
Benzaldehyde	260 J				490 J		
Alkyl Substituted Cyclohexane							
Undecane	360 J						
Benzene,1-chloro-2-[2-chloro		150 J					
1,1'-Biphenyl,2,2',4,4',5-Pe		200 J					
1,1-Dichloro-2,2'-bis(p-chlor		310 J					
1,1'-Biphenyl,2,2',3,3',6,6'		170 J					
1,1'-Biphenyl,hexachloro		200 J					
Benzene,1,4-dichloro-2-isocy					150 J		
Unknown Aliphatic Acid					400 J		
1,1'Biphenyl,2,3,3',4'6-pen					570 J		

ANALYTICAL SUMMARY OF SEMIVOLATILE ORGANIC SOIL SAMPLES (CONTINUED)
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-18S	SYD-SB-18W	SYD-SB-19S	SYD-SB-20S	SYD-SB-21S	SYD-SB-21W	SYD-SB-22S	SYD-SB-22W
SAMPLE LOCATION	0-6"	30-36"	0-6"	0-6"	0-6"	30-36"	0-6"	30-36"
DATE SAMPLED	1-24-93	1-24-93	1-24-93	1-24-93	1-23-93	1-23-93	1-24-93	1-24-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SEMIVOLATILE DILUTION FACTOR	1	1	1	1	1	1	1	1
Phenol	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
bis(2-Chloroethyl)ether	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
2-Chlorophenol	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
1,3-Dichlorobenzene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
1,4-Dichlorobenzene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
1,2-Dichlorobenzene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
2-Methylphenol	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
2,2'-oxybis(1-Chloropropane)	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
4-Methylphenol	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
N-Nitroso-di-n-propylamine	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Hexachloroethane	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Nitrobenzene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Isophorone	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
2-Nitrophenol	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
2,4-Dimethylphenol	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
bis(2-Chloroethoxy)methane	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
2,4-Dichlorophenol	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
1,2,4-Trichlorobenzene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Naphthalene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
4-Chloroaniline	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Hexachlorobutadiene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
4-Chloro-3-methylphenol	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
2-Methylnaphthalene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Hexachlorocyclopentadiene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
2,4,6-Trichlorophenol	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
2,4,5-Trichlorophenol	870 U	980 U	860 U	890 U	860 U	920 U	870 U	950 U
2-Chloronaphthalene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
2-Nitroaniline	870 U	980 U	860 U	890 U	860 U	920 U	870 U	950 U
Dimethylphthalate	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Acenaphthylene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
2,6-Dinitrotoluene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
3-Nitroaniline	870 U	980 U	860 U	890 U	860 U	920 U	870 U	950 U
Acenaphthene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
2,4-Dinitrophenol	870 U	980 U	860 U	890 U	860 U	920 U	870 U	950 U
4-Nitrophenol	870 U	980 U	850 U	890 U	850 U	920 U	870 U	950 U

ANALYTICAL SUMMARY OF SEMIVOLATILE ORGANIC SOIL SAMPLES (CONTINUED)
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-18S	SYD-SB-18W	SYD-SB-19S	SYD-SB-20S	SYD-SB-21S	SYD-SB-21W	SYD-SB-22S	SYD-SB-22W
SAMPLE LOCATION	0-6"	30-36"	0-6"	0-6"	0-6"	30-36"	0-6"	30-36"
DATE SAMPLED	1-24-93	1-24-93	1-24-93	1-24-93	1-23-93	1-23-93	1-24-93	1-24-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SEMIVOLATILE DILUTION FACTOR	1	1	1	1	1	1	1	1
Dibenzofuran	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
2,4-Dinitrotoluene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Diethylphthalate	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
4-Chlorophenyl-phenylether	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Fluorene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
4-Nitroaniline	870 U	980 U	860 U	890 U	860 U	920 U	870 U	950 U
4,6-Dinitro-2-methylphenol	870 U	980 U	860 U	890 U	860 U	920 U	870 U	950 U
N-Nitrosodiphenylamine	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
4-Bromophenyl-phenylether	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Hexachlorobenzene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Pentachlorophenol	870 U	980 U	860 U	890 U	860 U	920 U	870 U	950 U
Phenanthrene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Anthracene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Carbazole	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Di-n-butylphthalate	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Fluoranthene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Pyrene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Butylbenzylphthalate	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
3,3'-Dichlorobenzidene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Benzo(a)anthracene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Chrysene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
bis(2-Ethylhexyl)phthalate	360 U	400 U	350 U	370 U	86 J	380 U	360 U	390 U
Di-n-octylphthalate	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Benzo(b)fluoranthene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Benzo(k)fluoranthene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Benzo(a)pyrene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Indeno(1,2,3-cd)pyrene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Dibenz(a,h)anthracene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U
Benzo(g,h,i)perylene	360 U	400 U	350 U	370 U	350 U	380 U	360 U	390 U

ANALYTICAL SUMMARY OF SEMIVOLATILE ORGANIC SOIL SAMPLES (CONTINUED)
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-18S	SYD-SB-18W	SYD-SB-19S	SYD-SB-20S	SYD-SB-21S	SYD-SB-21W	SYD-SB-22S	SYD-SB-22W
SAMPLE LOCATION	0-6"	30-36"	0-6"	0-6"	0-6"	30-36"	0-6"	30-36"
DATE SAMPLED	1-24-93	1-24-93	1-24-93	1-24-93	1-23-93	1-23-93	1-24-93	1-24-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
SEMIVOLATILE DILUTION FACTOR	1	1	1	1	1	1	1	1
T.I.C.s								
Alkyl Substituted Phenol								
Dodecane, 6-methyl								
Unknown Alkane						370 J		
Trimethyl Naphthalene Isomer								
Unknown Alkane C13H28								
Undecane,3,6-dimethyl								
Unknown C14 H10 C14								
Heptacosane								
Heptadecane,9-octyl								
Docosane								
3-Penten-2-one,4-methyl	180 BJ							
Benzaldehyde								
Alkyl Substituted Cyclohexane						250 J		
Undecane								
Benzene,1-chloro-2-[2-chloro								
1,1'-Biphenyl,2,2',4,4',5-Pe								
1,1-Dichloro-2,2'-bis(p-chlor								
1,1'-Biphenyl,2,2',3,3',6,6'								
1,1'-Biphenyl,hexachloro								
Benzene,1,4-dichloro-2-isocy								
Unknown Aliphatic Acid								
1,1'Biphenyl,2,3,3',4'6-pen								

ANALYTICAL SUMMARY OF PCB SOIL SAMPLES
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-01S	SYD-SB-01W	SYD-SB-02S	SYD-SB-02D	SYD-SB-03S	SYD-SB-03D	SYD-SB-04S	SYD-SB-04D
SAMPLE DEPTH	0-6"	42-48"	0-6"	30-36"	0-6"	30-36"	0-6"	30-36"
DATE SAMPLED	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
PESTICIDE DILUTION FACTOR	30	1	25	1	1	1	1	1
Alpha-BHC	58 UJ	1.9 UJ	49 UJ	2.1 UJ	2 UJ	2.2 UJ	1.8 UJ	2 UJ
Beta-BHC	58 UJ	1.9 UJ	49 UJ	2.1 UJ	2 UJ	2.2 UJ	3.1 J	2 UJ
Delta-BHC	58 UJ	1.9 UJ	49 UJ	2.1 UJ	2 UJ	2.2 UJ	1.8 UJ	2 UJ
Gamma-BHC (Lindane)	58 UJ	1.9 UJ	49 UJ	2.1 UJ	2 UJ	2.2 UJ	1.8 UJ	2 UJ
Heptachlor	58 UJ	1.9 UJ	49 UJ	2.1 UJ	2 UJ	2.2 UJ	1.8 UJ	2 UJ
Aldrin	58 UJ	1.9 UJ	49 UJ	2.1 UJ	2 UJ	2.2 UJ	1.8 UJ	2 UJ
Heptachlor epoxide	58 UJ	1.9 UJ	49 UJ	2.1 UJ	2 UJ	2.2 UJ	1.8 UJ	2 UJ
Endosulfan I	58 UJ	1.9 UJ	49 UJ	2.1 UJ	2 UJ	2.2 UJ	1.8 UJ	2 UJ
Dieldrin	110 UJ	10 J	96 UJ	4.1 UJ	4 UJ	4.2 UJ	3.6 UJ	3.8 UJ
4,4'-DDE	110 UJ	400 J	96 UJ	4.1 UJ	4 UJ	4.2 UJ	3.6 UJ	3.8 UJ
Endrin	110 UJ	3.7 UJ	96 UJ	4.1 UJ	4 UJ	4.2 UJ	3.6 UJ	3.8 UJ
Endosulfan II	110 UJ	3.7 UJ	96 UJ	4.1 UJ	4 UJ	4.2 UJ	3.6 UJ	3.8 UJ
4,4'-DDD	110 UJ	3.7 UJ	96 UJ	4.1 UJ	4 UJ	4.2 UJ	3.6 UJ	3.8 UJ
Endosulfan sulfate	110 UJ	2.6 J	96 UJ	4.1 UJ	4 UJ	4.2 UJ	3.6 UJ	3.8 UJ
4,4'-DDT	110 UJ	240 J	96 UJ	4.1 UJ	4 UJ	4.2 UJ	3.6 UJ	3.8 UJ
Methoxychlor	580 UJ	19 UJ	490 UJ	21 UJ	20 UJ	22 UJ	18 UJ	20 UJ
Endrin Ketone	110 UJ	3.7 UJ	96 UJ	4.1 UJ	4 UJ	4.2 UJ	3.6 UJ	3.8 UJ
Endrin Aldehyde	110 UJ	6.1 J	96 UJ	4.1 UJ	4 UJ	4.2 UJ	3.6 UJ	3.8 UJ
alpha-Chlordane	58 UJ	1.9 UJ	49 UJ	2.1 UJ	2 UJ	2.2 UJ	1.8 UJ	2 UJ
gamma-Chlordane	58 UJ	1.9 UJ	49 UJ	2.1 UJ	1.7 J	2.2 UJ	4.6 J	2 UJ
Toxaphene	5800 UJ	190 UJ	4900 UJ	210 UJ	200 UJ	220 UJ	180 UJ	200 UJ
POLYCHLORINATED BIPHENYLS								
Aroclor-1016	1100 UJ	37 UJ	960 UJ	41 UJ	40 UJ	42 UJ	36 UJ	38 UJ
Aroclor-1221	2300 UJ	75 UJ	1900 UJ	84 UJ	81 UJ	85 UJ	73 UJ	77 UJ
Aroclor-1232	1100 UJ	37 UJ	960 UJ	41 UJ	40 UJ	42 UJ	36 UJ	38 UJ
Aroclor-1242	1100 UJ	37 UJ	960 UJ	41 UJ	40 UJ	42 UJ	36 UJ	38 UJ
Aroclor-1248	1100 UJ	37 UJ	960 UJ	41 UJ	40 UJ	42 UJ	36 UJ	38 UJ
Aroclor-1254	14000 J	37 UJ	28000 J	110 J	450 J	42 UJ	1700 J	38 UJ
Aroclor-1260	5600 J	37 UJ	6000 J	24 J	40 UJ	9.3 J	470 J	38 UJ

ANALYTICAL SUMMARY OF PCB SOIL SAMPLES (CONTINUED)
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-05S	SYD-SB-05W	SYD-SB-06S	SYD-SB-06D	SYD-SB-07S	SYD-SB-07D	SYD-SB-08S	SYD-SB-08D
SAMPLE DEPTH	0-6"	30-36"	0-6"	30-36"	0-6"	30-36"	0-6"	30-36"
DATE SAMPLED	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
PESTICIDE DILUTION FACTOR	1	1	1	1	1	1	1	1
Alpha-BHC	1.8 UJ	1.9 UJ	2.5 UJ	2 UJ	1.9 UJ	1.9 UJ	1.8 UJ	2 UJ
Beta-BHC	1.8 UJ	1.9 UJ	2.5 UJ	2 UJ	1.9 UJ	1.9 UJ	1.8 UJ	2 UJ
Delta-BHC	1.8 UJ	1.9 UJ	2.5 UJ	2 UJ	1.9 UJ	1.9 UJ	1.8 UJ	2 UJ
Gamma-BHC (Lindane)	1.8 UJ	1.9 UJ	2.5 UJ	2 UJ	1.9 UJ	1.9 UJ	1.8 UJ	2 UJ
Heptachlor	1.8 UJ	1.9 UJ	2.5 UJ	2 UJ	1.9 UJ	1.9 UJ	1.8 UJ	2 UJ
Aldrin	1.8 UJ	1.9 UJ	2.5 UJ	2 UJ	1.9 UJ	1.9 UJ	1.8 UJ	2 UJ
Heptachlor epoxide	1.8 UJ	1.9 UJ	2.5 UJ	2 UJ	1.9 UJ	1.9 UJ	1.8 UJ	2 UJ
Endosulfan I	1.8 UJ	1.9 UJ	2.5 UJ	2 UJ	1.9 UJ	1.9 UJ	1.8 UJ	2 UJ
Dieldrin	3.5 UJ	3.7 UJ	4.9 UJ	3.9 UJ	3.7 UJ	3.7 UJ	3.5 UJ	3.9 UJ
4,4'-DDE	3.5 UJ	3.7 UJ	4.9 UJ	3.9 UJ	3.7 UJ	3.7 UJ	69 J	3.9 UJ
Endrin	3.5 UJ	3.7 UJ	4.9 UJ	3.9 UJ	3.7 UJ	3.7 UJ	3.5 UJ	3.9 UJ
Endosulfan II	3.5 UJ	3.7 UJ	4.9 UJ	3.9 UJ	3.7 UJ	3.7 UJ	3.5 UJ	3.9 UJ
4,4'-DDD	3.5 UJ	3.7 UJ	4.9 UJ	3.9 UJ	3.7 UJ	3.7 UJ	3.5 UJ	3.9 UJ
Endosulfan sulfate	3.5 UJ	3.7 UJ	4.9 UJ	3.9 UJ	3.7 UJ	3.7 UJ	3.5 UJ	3.9 UJ
4,4'-DDT	3.5 UJ	3.7 UJ	4.9 UJ	3.9 UJ	3.7 UJ	3.7 UJ	180 J	3.9 UJ
Methoxychlor	18 UJ	19 UJ	25 UJ	20 UJ	19 UJ	19 UJ	18 UJ	20 UJ
Endrin Ketone	3.5 UJ	3.7 UJ	4.9 UJ	3.9 UJ	3.7 UJ	3.7 UJ	3.5 UJ	3.9 UJ
Endrin Aldehyde	3.5 UJ	3.7 UJ	4.9 UJ	3.9 UJ	3.7 UJ	3.7 UJ	3.5 UJ	3.9 UJ
alpha-Chlordane	1.8 UJ	1.9 UJ	2.5 UJ	2 UJ	1.9 UJ	1.9 UJ	5.6 J	2 UJ
gamma-Chlordane	1.8 UJ	1.9 UJ	2.5 UJ	2 UJ	1.9 UJ	1.9 UJ	6.8 J	2 UJ
Toxaphene	180 UJ	190 UJ	250 UJ	200 UJ	190 UJ	190 UJ	180 UJ	200 UJ
POLYCHLORINATED BIPHENYLS								
Aroclor-1016	35 UJ	37 UJ	49 UJ	39 UJ	37 UJ	37 UJ	35 UJ	39 UJ
Aroclor-1221	71 UJ	74 UJ	100 UJ	79 UJ	76 UJ	74 UJ	72 UJ	80 UJ
Aroclor-1232	35 UJ	37 UJ	49 UJ	39 UJ	37 UJ	37 UJ	35 UJ	39 UJ
Aroclor-1242	35 UJ	37 UJ	49 UJ	39 UJ	37 UJ	37 UJ	35 UJ	39 UJ
Aroclor-1248	35 UJ	37 UJ	49 UJ	39 UJ	37 UJ	37 UJ	35 UJ	39 UJ
Aroclor-1254	35 UJ	37 UJ	49 UJ	39 UJ	720 J	37 UJ	35 UJ	39 UJ
Aroclor-1260	35 UJ	37 UJ	49 UJ	39 UJ	37 UJ	37 UJ	61 J	39 UJ

ANALYTICAL SUMMARY OF PCB SOIL SAMPLES (CONTINUED)
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-09S	SYD-SB-09D	SYD-SB-10S	SYD-SB-10D	SYD-SB-10DDL	SYD-SB-11S	SYD-SB-11D	SYD-SB-12S
SAMPLE DEPTH	0-6"	30-36"	0-6"	30-36"	30-36"	0-6"	30-36"	0-6"
DATE SAMPLED	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
PESTICIDE DILUTION FACTOR	1	1	1	1	20	1	1	1
Alpha-BHC	2 UJ	2.1 UJ	1.8 UJ	1.8 UJ	36 UJ	1.8 UJ	1.8 UJ	1.8 UJ
Beta-BHC	2 UJ	2.1 UJ	1.8 UJ	1.8 UJ	36 UJ	1.8 UJ	1.8 UJ	1.8 UJ
Delta-BHC	2 UJ	2.1 UJ	1.8 UJ	1.8 UJ	36 UJ	1.8 UJ	1.8 UJ	1.8 UJ
Gamma-BHC (Lindane)	2 UJ	2.1 UJ	1.8 UJ	1.8 UJ	36 UJ	1.8 UJ	1.8 UJ	1.8 UJ
Heptachlor	2 UJ	2.1 UJ	1.8 UJ	1.8 UJ	36 UJ	1.8 UJ	1.8 UJ	1.8 UJ
Aldrin	2 UJ	2.1 UJ	1.8 UJ	1.8 UJ	36 UJ	1.8 UJ	1.8 UJ	1.8 UJ
Heptachlor epoxide	2 UJ	2.1 UJ	1.8 UJ	1.8 UJ	36 UJ	1.8 UJ	1.8 UJ	1.8 UJ
Endosulfan I	2 UJ	2.1 UJ	1.8 UJ	1.8 UJ	36 UJ	1.8 UJ	1.8 UJ	1.8 UJ
Dieldrin	3.9 UJ	4 UJ	9.3 J	3.5 UJ	69 UJ	3.5 UJ	3.5 UJ	3.5 UJ
4,4'-DDE	3.9 UJ	4 UJ	4.7 J	3.5 UJ	69 UJ	3.5 UJ	3.5 UJ	3.5 UJ
Endrin	3.9 UJ	4 UJ	3.6 UJ	3.5 UJ	69 UJ	3.5 UJ	3.5 UJ	3.5 UJ
Endosulfan II	3.9 UJ	4 UJ	3.6 UJ	3.5 UJ	69 UJ	3.5 UJ	3.5 UJ	3.5 UJ
4,4'-DDD	3.9 UJ	4 UJ	3.6 UJ	3.5 UJ	69 UJ	3.5 UJ	3.5 UJ	3.5 UJ
Endosulfan sulfate	3.9 UJ	4 UJ	3.6 UJ	3.5 UJ	69 UJ	3.5 UJ	3.5 UJ	3.5 UJ
4,4'-DDT	3.9 UJ	4 UJ	5.5 J	3.5 UJ	69 UJ	3.5 UJ	3.5 UJ	3.5 UJ
Methoxychlor	20 UJ	21 UJ	18 UJ	18 UJ	360 UJ	18 UJ	18 UJ	18 UJ
Endrin Ketone	3.9 UJ	4 UJ	1.9 J	3.5 UJ	69 UJ	3.5 UJ	3.5 UJ	3.5 UJ
Endrin Aldehyde	3.9 UJ	4 UJ	3.6 UJ	3.5 UJ	69 UJ	3.5 UJ	3.5 UJ	3.5 UJ
alpha-Chlordane	2 UJ	2.1 UJ	2.8 J	1.8 UJ	36 UJ	1.8 UJ	1.8 UJ	1.8 UJ
gamma-Chlordane	2 UJ	2.1 UJ	1.8 UJ	1.8 UJ	36 UJ	3.6 J	1.8 UJ	1.8 UJ
Toxaphene	200 UJ	210 UJ	180 UJ	180 UJ	3600 UJ	180 UJ	180 UJ	180 UJ
POLYCHLORINATED BIPHENYLS								
Aroclor-1016	39 UJ	40 UJ	36 UJ	35 UJ	690 UJ	35 UJ	35 UJ	35 UJ
Aroclor-1221	79 UJ	82 UJ	73 UJ	71 UJ	1400 UJ	72 UJ	71 UJ	72 UJ
Aroclor-1232	39 UJ	40 UJ	36 UJ	35 UJ	690 UJ	35 UJ	35 UJ	35 UJ
Aroclor-1242	39 UJ	40 UJ	36 UJ	35 UJ	690 UJ	35 UJ	35 UJ	35 UJ
Aroclor-1248	39 UJ	40 UJ	36 UJ	35 UJ	690 UJ	35 UJ	35 UJ	35 UJ
Aroclor-1254	39 UJ	40 UJ	36 UJ	35 UJ	690 UJ	1600 J	200 J	140 J
Aroclor-1260	39 UJ	40 UJ	55 J	35 UJ	1600 J	35 UJ	70 J	37 J

ANALYTICAL SUMMARY OF PCB SOIL SAMPLES (CONTINUED)
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-12W	SYD-SB-13S	SYD-SB-13D	SYD-SB-14S	SYD-SB-14W	SYD-SB-15S	SYD-SB-15D	SYD-SB-16S
SAMPLE DEPTH	48-56"	0-6"	30-36"	0-6"	30-36"	0-6"	30-36"	0-6"
DATE SAMPLED	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
PESTICIDE DILUTION FACTOR	1	1	1	1	1	1	1	1
Alpha-BHC	1.9 UJ	1.8 UJ	1.9 UJ	1.4 J	2.1 UJ	1.8 UJ	2.3 UJ	1.8 UJ
Beta-BHC	1.9 UJ	1.8 UJ	1.9 UJ	1.9 UJ	2.1 UJ	1.8 UJ	2.3 UJ	1.8 UJ
Delta-BHC	1.9 UJ	1.8 UJ	1.9 UJ	1.9 UJ	2.1 UJ	1.8 UJ	2.3 UJ	1.8 UJ
Gamma-BHC (Lindane)	1.9 UJ	1.8 UJ	1.9 UJ	1.9 UJ	2.1 UJ	1.8 UJ	2.3 UJ	1.8 UJ
Heptachlor	1.9 UJ	1.8 UJ	1.9 UJ	1.9 UJ	2.1 UJ	1.8 UJ	2.3 UJ	1.8 UJ
Aldrin	1.9 UJ	1.8 UJ	1.9 UJ	1.9 UJ	2.1 UJ	1.8 UJ	2.3 UJ	1.8 UJ
Heptachlor epoxide	1.9 UJ	1.8 UJ	1.9 UJ	1.9 UJ	2.1 UJ	1.8 UJ	2.3 UJ	1.8 UJ
Endosulfan I	1.9 UJ	1.8 UJ	1.9 UJ	1.9 UJ	2.1 UJ	1.8 UJ	2.3 UJ	1.8 UJ
Dieldrin	3.7 UJ	3.5 UJ	3.6 UJ	3.6 UJ	4 UJ	3.4 UJ	4.4 UJ	3.5 UJ
4,4'-DDE	3.7 UJ	3.5 UJ	3.6 UJ	3.6 UJ	4 UJ	3.4 UJ	4.4 UJ	3.5 UJ
Endrin	3.7 UJ	3.5 UJ	3.6 UJ	3.6 UJ	4 UJ	1.7 J	4.4 UJ	3.5 UJ
Endosulfan II	3.7 UJ	3.5 UJ	3.6 UJ	3.6 UJ	4 UJ	3.4 UJ	4.4 UJ	3.5 UJ
4,4'-DDD	0.8 J	3.5 UJ	3.6 UJ	3.6 UJ	4 UJ	3.4 UJ	4.4 UJ	3.5 UJ
Endosulfan sulfate	3.7 UJ	3.5 UJ	3.6 UJ	3.6 UJ	4 UJ	3.4 UJ	4.4 UJ	3.5 UJ
4,4'-DDT	3.7 UJ	3.5 UJ	3.6 UJ	260 J	4 UJ	25 J	2.8 J	3.5 UJ
Methoxychlor	19 UJ	18 UJ	19 UJ	19 UJ	21 UJ	18 UJ	23 UJ	18 UJ
Endrin Ketone	3.7 UJ	3.5 UJ	3.6 UJ	3.6 UJ	4 UJ	3.4 UJ	4.4 UJ	3.5 UJ
Endrin Aldehyde	3.7 UJ	3.5 UJ	3.6 UJ	3.6 UJ	4 UJ	3.4 UJ	4.4 UJ	3.5 UJ
alpha-Chlordane	1.9 UJ	1.8 UJ	1.9 UJ	1.9 UJ	2.1 UJ	1.8 UJ	2.3 UJ	1.8 UJ
gamma-Chlordane	1.9 UJ	1.8 UJ	1.9 UJ	1.9 UJ	2.1 UJ	1.8 UJ	2.3 UJ	1.8 UJ
Toxaphene	190 UJ	180 UJ	190 UJ	190 UJ	210 UJ	180 UJ	230 UJ	180 UJ
POLYCHLORINATED BIPHENYLS								
Aroclor-1016	37 UJ	35 UJ	36 UJ	36 UJ	40 UJ	34 UJ	44 UJ	35 UJ
Aroclor-1221	76 UJ	71 UJ	74 UJ	74 UJ	82 UJ	69 UJ	89 UJ	72 UJ
Aroclor-1232	37 UJ	35 UJ	36 UJ	36 UJ	40 UJ	34 UJ	44 UJ	35 UJ
Aroclor-1242	37 UJ	35 UJ	36 UJ	36 UJ	40 UJ	34 UJ	44 UJ	35 UJ
Aroclor-1248	37 UJ	35 UJ	36 UJ	36 UJ	40 UJ	34 UJ	44 UJ	35 UJ
Aroclor-1254	37 UJ	190 J	36 UJ	4000 J	62 J	510 J	44 UJ	35 UJ
Aroclor-1260	37 UJ	35 UJ	36 UJ	980 J	18 J	190 J	44 UJ	82 J

ANALYTICAL SUMMARY OF PCB SOIL SAMPLES (CONTINUED)
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-16D	SYD-SB-17S	SYD-SB-17D	SYD-SB-18S	SYD-SB-18W	SYD-SB-19S	SYD-SB-19D	SYD-SB-20S
SAMPLE DEPTH	30-36"	0-6"	30-36"	0-6"	30-36"	0-6"	30-36"	0-6"
DATE SAMPLED	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
PESTICIDE DILUTION FACTOR	1	1	1	1	1	1	1	1
Alpha-BHC	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ	1.8 UJ	1.8 UJ	1.9 UJ
Beta-BHC	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ	1.8 UJ	1.8 UJ	1.9 UJ
Delta-BHC	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ	1.8 UJ	1.8 UJ	1.9 UJ
Gamma-BHC (Lindane)	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ	1.8 UJ	1.8 UJ	1.9 UJ
Heptachlor	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ	1.8 UJ	1.8 UJ	1.9 UJ
Aldrin	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ	1.8 UJ	1.8 UJ	1.9 UJ
Heptachlor epoxide	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ	1.8 UJ	1.8 UJ	1.9 UJ
Endosulfan I	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ	1.8 UJ	1.8 UJ	1.9 UJ
Dieldrin	3.9 UJ	3.5 UJ	4 UJ	3.6 UJ	4 UJ	3.5 UJ	3.6 UJ	3.7 UJ
4,4'-DDE	3.9 UJ	3.5 UJ	4 UJ	3.6 UJ	4 UJ	3.5 UJ	3.6 UJ	3.7 UJ
Endrin	3.9 UJ	3.5 UJ	4 UJ	3.6 UJ	4 UJ	3.5 UJ	3.6 UJ	3.7 UJ
Endosulfan II	3.9 UJ	3.5 UJ	4 UJ	3.6 UJ	4 UJ	3.5 UJ	3.6 UJ	3.7 UJ
4,4'-DDD	3.9 UJ	3.5 UJ	4 UJ	3.6 UJ	4 UJ	3.5 UJ	3.6 UJ	3.7 UJ
Endosulfan sulfate	3.9 UJ	3.5 UJ	4 UJ	3.6 UJ	4 UJ	3.5 UJ	3.6 UJ	3.7 UJ
4,4'-DDT	3.9 UJ	3.5 UJ	4 UJ	13 J	4 UJ	3.5 UJ	3.6 UJ	3.7 UJ
Methoxychlor	20 UJ	18 UJ	20 UJ	18 UJ	20 UJ	18 UJ	18 UJ	19 UJ
Endrin Ketone	3.9 UJ	3.5 UJ	4 UJ	3.6 UJ	4 UJ	3.5 UJ	3.6 UJ	3.7 UJ
Endrin Aldehyde	3.9 UJ	3.5 UJ	4 UJ	3.6 UJ	4 UJ	3.5 UJ	3.6 UJ	3.7 UJ
alpha-Chlordane	2 UJ	0.69 J	2 UJ	1.8 UJ	2 UJ	1.8 UJ	1.8 UJ	1.9 UJ
gamma-Chlordane	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ	1.8 UJ	1.8 UJ	1.9 UJ
Toxaphene	200 UJ	180 UJ	200 UJ	180 UJ	200 UJ	180 UJ	180 UJ	190 UJ
POLYCHLORINATED BIPHENYLS								
Aroclor-1016	39 UJ	35 UJ	40 UJ	36 UJ	40 UJ	35 UJ	36 UJ	37 UJ
Aroclor-1221	80 UJ	71 UJ	81 UJ	73 UJ	81 UJ	72 UJ	73 UJ	74 UJ
Aroclor-1232	39 UJ	35 UJ	40 UJ	36 UJ	40 UJ	35 UJ	36 UJ	37 UJ
Aroclor-1242	39 UJ	35 UJ	40 UJ	36 UJ	40 UJ	35 UJ	36 UJ	37 UJ
Aroclor-1248	39 UJ	35 UJ	40 UJ	36 UJ	40 UJ	35 UJ	36 UJ	37 UJ
Aroclor-1254	39 UJ	35 UJ	40 UJ	36 UJ	40 UJ	35 UJ	36 UJ	37 UJ
Aroclor-1260	39 UJ	20 J	52 J	9.8 J	40 UJ	35 UJ	36 UJ	9.4 J

ANALYTICAL SUMMARY OF PCB SOIL SAMPLES (CONTINUED)
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-20D	SYD-SB-21S	SYD-SB-21W	SYD-SB-22S	SYD-SB-22W
SAMPLE DEPTH	30-36"	0-6"	30-36"	0-6"	30-36"
DATE SAMPLED	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
PESTICIDE DILUTION FACTOR	1	1	1	1	1
Alpha-BHC	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ
Beta-BHC	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ
Delta-BHC	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ
Gamma-BHC (Lindane)	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ
Heptachlor	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ
Aldrin	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ
Heptachlor epoxide	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ
Endosulfan I	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ
Dieldrin	1.8 J	3.5 UJ	3.8 UJ	3.6 UJ	3.9 UJ
4,4'-DDE	3.8 UJ	3.5 UJ	3.8 UJ	3.6 UJ	3.9 UJ
Endrin	3.8 UJ	3.5 UJ	3.8 UJ	3.6 UJ	3.9 UJ
Endosulfan II	3.8 UJ	3.5 UJ	3.8 UJ	3.6 UJ	3.9 UJ
4,4'-DDD	3.8 UJ	3.5 UJ	3.8 UJ	3.6 UJ	3.9 UJ
Endosulfan sulfate	3.8 UJ	3.5 UJ	3.8 UJ	3.6 UJ	3.9 UJ
4,4'-DDT	2.2 J	3.5 UJ	3.8 UJ	7.3 J	3.9 UJ
Methoxychlor	20 UJ	18 UJ	20 UJ	18 UJ	20 UJ
Endrin Ketone	3.8 UJ	3.5 UJ	3.8 UJ	3.6 UJ	3.9 UJ
Endrin Aldehyde	3.8 UJ	3.5 UJ	3.8 UJ	3.6 UJ	3.9 UJ
alpha-Chlordane	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ
gamma-Chlordane	2 UJ	1.8 UJ	2 UJ	1.8 UJ	2 UJ
Toxaphene	200 UJ	180 UJ	200 UJ	180 UJ	200 UJ
POLYCHLORINATED BIPHENYLS					
Aroclor-1016	38 UJ	35 UJ	38 UJ	36 UJ	39 UJ
Aroclor-1221	78 UJ	72 UJ	77 UJ	73 UJ	79 UJ
Aroclor-1232	38 UJ	35 UJ	38 UJ	36 UJ	39 UJ
Aroclor-1242	38 UJ	35 UJ	38 UJ	36 UJ	39 UJ
Aroclor-1248	38 UJ	35 UJ	38 UJ	36 UJ	39 UJ
Aroclor-1254	38 UJ	35 UJ	38 UJ	36 UJ	39 UJ
Aroclor-1260	38 UJ	35 UJ	38 UJ	7.4 J	39 UJ

ANALYTICAL SUMMARY OF INORGANIC SOIL SAMPLES
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER		SYD-SB-01S	SYD-SB-01W	SYD-SB-03S	SYD-SB-04S	SYD-SB-05S	SYD-SB-05W	SYD-SB-08S	SYD-SB-10S
SAMPLE DEPTH		0-6"	42-48"	0-6"	0-6"	0-6"	30-36"	0-6"	0-6"
PERCENT SOLIDS		88%	89.1%	82.9%	92.3%	93.5%	90.1%	92.8%	91.6%
DATE SAMPLED		1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-24-93
UNIT		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
INORGANIC DILUTION FACTOR	CRDL								
Aluminum	200	4260	4240	4080	3420	6200	4930	4690	3740
Antimony	60	21.1 J	3 U	4.1 U	42.5 J	3.7 J	2.9 U	4.1 J	3.9 U
Arsenic	10	5.1	5.2	4.8	14.8	1.9	3.8	2.6	25.1
Barium	200	166	115	53.7	132	21	42.2	49.1	140
Beryllium	5	0.36	0.33	0.23	0.42	0.21	0.32	0.35	0.66
Cadmium	5	22.4	25.3	5.9	15.6	0.41 J	0.48 J	1.6 J	1.5 J
Calcium	5000	12700	41300	15200	5860	343	610	2260	60500
Chromium	10	85.3	17.8	15	57.7	8.4	7.2	9.2	14.8
Cobalt	50	66.2	1.2 J	1.8 J	4.8	1.4 J	2.1 J	3.4	3.5
Copper	25	558	54.5	31.9	463	5.6	5.3	39	135
Iron	100	87300	11100	6000	14100	5330	6150	9170	12800
Lead	5	734	200	53.6	708	16	32.2	54.3	393
Magnesium	5000	2800	2540	521	2880	378	393	1640	1300
Manganese	15	354	94.4	44.6	143	14	26.7	142	169
Mercury	0.2	3.9	0.21	0.26	1.5	0.05 U	0.06 U	0.06	1.6
Nickel	40	63.7	8.7 J	8.6 J	39.2	4.7 J	4.3 J	6.5 J	11.6
Potassium	5000	442	419	611	366	429	321	1400	648
Selenium	5	0.17 J	0.17 J	0.18 J	0.21 U	0.19 J	0.22 J	0.19 J	1.2
Silver	10	10.3	0.33 U	7.5	2.3 J	1 J	0.64 J	1.1 J	0.44 U
Sodium	5000	163	385	274	70.8	38.1	43	71.7	534
Thallium	10	0.52 U	0.52 U	0.54 U	0.63 U	0.58 U	0.67 U	0.56 U	0.66 U
Vanadium	50	26.2	12.7	12.7	19.4	11.3	11.5	14.3	21
Zinc	20	1490	255	104	1530	7.4	17.4	119	264
Cyanide	10	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U

ANALYTICAL SUMMARY OF INORGANIC SOIL SAMPLES (CONTINUED)
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER		SYD-SB-11S	SYD-SB-12S	SYD-SB-12W	SYD-SB-14S	SYD-SB-14W	SYD-SB-17S	SYD-SB-18S	SYD-SB-18W
SAMPLE DEPTH		0-6"	0-6"	48-56"	0-6"	30-36"	0-6"	0-6"	30-36"
PERCENT SOLIDS		93.5%	93.2%	87.9%	90.6%	82.2%	94.3%	91.7%	82.5%
DATE SAMPLED		1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93
UNIT		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
INORGANIC DILUTION FACTOR	CRDL								
Aluminum	200	3670	3890	1080	4430	375	5480	2690	1040
Antimony	60	3.4 U	6.6 J	3.8 U	21.9 J	8.6 J	12.2 J	6.1 J	4.3 U
Arsenic	10	5.2	4.7	5.4	3.6	0.95	1.7	2.6	3.4
Barium	200	69.2	118	10.5	86.2	8.3	37.6	26.4 B**	9.1
Beryllium	5	0.38	0.29	0.21	0.64	0.23 U	0.16	0.15 U	0.24
Cadmium	5	3.8	1 J	0.21 U	43.5	2.8 J	0.66 J	0.46 J	0.24 U
Calcium	5000	23500	9970	79100	2250	196	570	3610	80000
Chromium	10	9.9	12.2	5.7 J	85.9	3.9 J	8.4	7.8	6.7 J
Cobalt	50	0.94 J	1.9 J	0.63 U	8.6	0.93 J	1.8 J	0.61 J	0.72 U
Copper	25	30	131	2.7 J	5860	7.9	15.1	17.5	1.7 J
Iron	100	4420	10700	6980	15100	2090	6980	7270	6820
Lead	5	80	1390	7.8	620	12.2	882	349	2.4
Magnesium	5000	791	556	1220	1930	137	610	213	1040
Manganese	15	108	129	86.4	264	12.5	52.4	6.6	54.2
Mercury	0.2	0.17	0.17	0.08 U	2	0.11 U	0.07 U	0.08 U	0.09
Nickel	40	2.8 J	8.9	0.84 U	121	3.7 J	4.3 J	2 J	0.96 U
Potassium	5000	648	359	434	1670	161	464	381	433
Selenium	5	0.17 J	0.2 J	0.22 U	0.18 J	0.24 U	0.21 J	0.22 J	0.19 J
Silver	10	0.38 U	0.72 J	0.42 U	9	0.46 J	0.49 J	0.3 U	0.48 U
Sodium	5000	272	153	689	55.1	42.9 U	44.4	191	688
Thallium	10	0.52 U	0.61 U	0.67 U	0.55 U	0.72 U	0.63 U	0.65 U	0.56 U
Vanadium	50	12.4	16.2	4.6 J	26.6	2.8 J	10.9	7.3	4.3 J
Zinc	20	146	292	9.7	1040	51.4	32.2	14.8	8.6
Cyanide	10	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U	1.2 U

ANALYTICAL SUMMARY OF INORGANIC SOIL SAMPLES (CONTINUED)
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER		SYD-SB-19S	SYD-SB-20S	SYD-SB-21S	SYD-SB-21W	SYD-SB-22S	SYD-SB-22W
SAMPLE DEPTH		0-6"	0-6"	0-6"	30-36"	0-6"	30-36"
PERCENT SOLIDS		92.6%	90.9%	92.6%	87.3%	92.1%	84.5%
DATE SAMPLED		1-24-93	1-24-93	1-23-93	1-23-93	1-24-93	1-24-94
UNIT		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
INORGANIC DILUTION FACTOR	CRDL						
Aluminum	200	6780	7340	3220	2850	2770	904
Antimony	60	3.2 U	4.4 J	4.7 J	5.1 J	8.9 J	4 U
Arsenic	10	1.9	2	2	4.1	2	2.6
Barium	200	39.3	37.4	19.2	39.9	22.3	6.7
Beryllium	5	0.35 J	0.22	0.21	0.2	0.21 U	0.22
Cadmium	5	0.35	0.66 J	0.21 J	0.59 J	0.41 J	0.22 U
Calcium	5000	284	754	399	1110	2240	74900
Chromium	10	8	10.6	5.3 J	5.5 J	8.1 J	4.9 J
Cobalt	50	2.5 J	2 J	0.86 J	1.8 J	0.83 J	0.67 U
Copper	25	3.9 J	9.9	31.2	7.2	14.1	1.3 J
Iron	100	5760	2640	3280	7060	6800	6210
Lead	5	14	29	11	34.4	267	3.5
Magnesium	5000	543	606	257	257	220	895
Manganese	15	71	36.5	13.3	46	6.4	47.3
Mercury	0.2	0.07 U	0.11 U	0.05 U	0.15	0.09 U	0.09 U
Nickel	40	4.6 J	5.5	2.6 J	3.1 J	1.7 J	0.89 U
Potassium	5000	328	512	309	236	344	397
Selenium	5	0.16 U	0.22 J	0.2 J	0.18 J	0.2 J	0.23 U
Silver	10	0.89 J	0.66 J	0.43 J	0.39 J	0.41 J	0.45 U
Sodium	5000	33.3	46.6	39.6 U	36.2 U	165	644
Thallium	10	0.47 U	0.66 U	0.61 U	0.53 U	0.59 U	0.7 U
Vanadium	50	12.4	8.6	6.2	9.8	7.4	3.6 J
Zinc	20	11.7	12.8	4.5	19.8	5.6	7.1
Cyanide	10	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U

ANALYTICAL SUMMARY OF AMMONIA SAMPLES
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-03S	SYD-SB-04S	SYD-SB-08S
SAMPLE DEPTH	0-6"	0-6"	0-6"
DATE SAMPLED	1-23-93	1-23-93	1-23-93
UNIT	mg/kg	mg/kg	mg/kg
Ammonia Nitrogen (Method 350.2)	9.1	5.6	10

ANALYTICAL SUMMARY OF TPH SOIL SAMPLES
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-SB-01S	SYD-SB-01W	SYD-SB-03S	SYD-SB-04S	SYD-SB-05S	SYD-SB-05W	SYD-SB-08S
SAMPLE DEPTH	0-6"	42-48"	0-6"	0-6"	0-6"	30-36"	0-6"
DATE SAMPLED	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93
UNIT	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TPH(Method 418.1)	7000	1500	390	740	11 U	11 U	590

SAMPLE NUMBER	SYD-SB-11S	SYD-SB-12S	SYD-SB-12W	SYD-SB-14S	SYD-SB-14W	SYD-SB-17S	SYD-SB-18S
SAMPLE DEPTH	0-6"	0-6"	48-56"	0-6"	30-36"	0-6"	0-6"
DATE SAMPLED	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93
UNIT	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TPH(Method 418.1)	190	54	11 U	240	12 U	550	11 U

SAMPLE NUMBER	SYD-SB-18W	SYD-SB-19S	SYD-SB-20S	SYD-SB-21S	SYD-SB-21W	SYD-SB-22S	SYD-SB-22W
SAMPLE DEPTH	30-36"	0-6"	0-6"	0-6"	30-36"	0-6"	30-36"
DATE SAMPLED	1-24-93	1-24-93	1-24-93	1-23-93	1-23-93	1-24-93	1-24-93
UNIT	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
TPH(Method 418.1)	12 U	11 U	11 U	32	11 U	11 U	12 U

ANALYTICAL SUMMARY OF VOLATILE ORGANIC QA/QC SAMPLES
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-FB-01	SYD-FB-02	SYD-RB-01	SYD-RB-02	SYD-TB-01	SYD-TB-02	SYD-TB-03
SAMPLE DESCRIPTION	Potable	Delonized	Day 1	Day 2	Cooler 1	Cooler 2	Cooler 3
DATE SAMPLED	1-23-93	1-24-93	1-23-93	1-24-93	1-25-93	1-25-93	1-25-93
UNIT	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
VOLATILE ORGANICS:							
Chloromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	10 U	10 U	2 J	2 J	10 U	10 U	10 U
Acetone	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	31	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	9 J	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	2 J	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichlorofluoromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U

ANALYTICAL SUMMARY OF SEMI-VOLATILE ORGANIC QA/QC SAMPLES
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-FB-01	SYD-FB-02	SYD-RB-01	SYD-RB-02
SAMPLE DESCRIPTION	Potable	Delonized	Day 1	Day 2
DATE SAMPLED	1-23-93	1-24-93	1-23-93	1-24-93
UNIT	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE DILUTION FACTOR	1	1	1	1
Phenol	10 U	10 U	11 U	10 U
bis(2-Chloroethyl)ether	10 U	10 U	11 U	10 U
2-Chlorophenol	10 U	10 U	11 U	10 U
1,3-Dichlorobenzene	10 U	10 U	11 U	10 U
1,4-Dichlorobenzene	10 U	10 U	11 U	10 U
1,2-Dichlorobenzene	10 U	10 U	11 U	10 U
2-Methylphenol	10 U	10 U	11 U	10 U
2,2'-oxybis(1-Chloropropane)	10 U	10 U	11 U	10 U
4-Methylphenol	10 U	10 U	11 U	10 U
N-Nitroso-di-n-propylamine	10 U	10 U	11 U	10 U
Hexachloroethane	10 U	10 U	11 U	10 U
Nitrobenzene	10 U	10 U	11 U	10 U
Isophorone	10 U	10 U	11 U	10 U
2-Nitrophenol	10 U	10 U	11 U	10 U
2,4-Dimethylphenol	10 U	10 U	11 U	10 U
bis(2-Chloroethoxy)methane	10 U	10 U	11 U	10 U
2,4-Dichlorophenol	10 U	10 U	11 U	10 U
1,2,4-Trichlorobenzene	10 U	10 U	11 U	10 U
Naphthalene	10 U	10 U	11 U	10 U
4-Chloroaniline	10 U	10 U	11 U	10 U
Hexachlorobutadiene	10 U	10 U	11 U	10 U
4-Chloro-3-methylphenol	10 U	10 U	11 U	10 U
2-Methylnaphthalene	10 U	10 U	11 U	10 U
Hexachlorocyclopentadiene	10 U	10 U	11 U	10 U
2,4,6-Trichlorophenol	10 U	10 U	11 U	10 U
2,4,5-Trichlorophenol	25 U	26 U	26 U	25 U
2-Chloronaphthalene	10 U	10 U	11 U	10 U
2-Nitroaniline	25 U	26 U	26 U	25 U
Dimethylphthalate	10 U	10 U	11 U	10 U
Acenaphthylene	10 U	10 U	11 U	10 U
2,6-Dinitrotoluene	10 U	10 U	11 U	10 U
3-Nitroaniline	25 U	26 U	26 U	25 U
Acenaphthene	10 U	10 U	11 U	10 U
2,4-Dinitrophenol	25 U	26 U	26 U	25 U
4-Nitrophenol	25 U	26 U	26 U	25 U

ANALYTICAL SUMMARY OF SEMI-VOLATILE ORGANIC QA/QC SAMPLES (CONTINUED)
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-FB-01	SYD-FB-02	SYD-RB-01	SYD-RB-02
SAMPLE DESCRIPTION	Potable	Deionized	Day 1	Day 2
DATE SAMPLED	1-23-93	1-24-93	1-23-93	1-24-93
UNIT	ug/L	ug/L	ug/L	ug/L
SEMIVOLATILE DILUTION FACTOR	1	1	1	1
Dibenzofuran	10 U	10 U	11 U	10 U
2,4-Dinitrotoluene	10 U	10 U	11 U	10 U
Diethylphthalate	10 U	10 U	11 U	10 U
4-Chlorophenyl-phenylether	10 U	10 U	11 U	10 U
Fluorene	10 U	10 U	11 U	10 U
4-Nitroaniline	25 U	26 U	26 U	25 U
4,6-Dinitro-2-methylphenol	25 U	26 U	26 U	25 U
N-Nitrosodiphenylamine	10 U	10 U	11 U	10 U
4-Bromophenyl-phenylether	10 U	10 U	11 U	10 U
Hexachlorobenzene	10 U	10 U	11 U	10 U
Pentachlorophenol	25 U	26 U	26 U	25 U
Phenanthrene	10 U	10 U	11 U	10 U
Anthracene	10 U	10 U	11 U	10 U
Carbazole	10 U	10 U	11 U	10 U
Di-n-butylphthalate	10 U	10 U	11 U	10 U
Fluoranthene	10 U	10 U	11 U	10 U
Pyrene	10 U	10 U	11 U	10 U
Butylbenzylphthalate	10 U	10 U	11 U	10 U
3,3'-Dichlorobenzidene	10 U	10 U	11 U	10 U
Benzo(a)anthracene	10 U	10 U	11 U	10 U
Chrysene	10 U	10 U	11 U	10 U
bis(2-Ethylhexyl)phthalate	10 U	10 U	11 U	10 U
Di-n-octylphthalate	10 U	10 U	11 U	10 U
Benzo(b)fluoranthene	10 U	10 U	11 U	10 U
Benzo(k)fluoranthene	10 U	10 U	11 U	10 U
Benzo(a)pyrene	10 U	10 U	11 U	10 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	11 U	10 U
Dibenz(a,h)anthracene	10 U	10 U	11 U	10 U
Benzo(g,h,i)perylene	10 U	10 U	11 U	10 U
T.I.C.s				
Benzaldehyde		7 J		
Hydroxymethoxybenzaldehyde		13 J		

ANALYTICAL SUMMARY OF PESTICIDE AND PCB QA/QC SAMPLES
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-FB-01		SYD-FB-02		SYD-RB-01		SYD-RB-02	
SAMPLE DESCRIPTION	Potable		Delonized		Day 1		Day 2	
DATE SAMPLED	1-23-93		1-24-93		1-23-93		1-24-93	
UNIT	ug/L		ug/L		ug/L		ug/L	
PESTICIDE DILUTION FACTOR	1		1		1		1	
Alpha-BHC	0.051	UJ	0.05	UJ	0.052	UJ	0.048	UJ
Beta-BHC	0.051	UJ	0.05	UJ	0.052	UJ	0.048	UJ
Delta-BHC	0.051	UJ	0.05	UJ	0.052	UJ	0.048	UJ
Gamma-BHC (Lindane)	0.051	UJ	0.05	UJ	0.052	UJ	0.048	UJ
Heptachlor	0.051	UJ	0.05	UJ	0.052	UJ	0.048	UJ
Aldrin	0.051	UJ	0.05	UJ	0.052	UJ	0.048	UJ
Heptachlor epoxide	0.051	UJ	0.05	UJ	0.052	UJ	0.048	UJ
Endosulfan I	0.051	UJ	0.05	UJ	0.052	UJ	0.048	UJ
Dieldrin	0.1	UJ	0.1	UJ	0.1	UJ	0.096	UJ
4,4'-DDE	0.1	UJ	0.1	UJ	0.1	UJ	0.096	UJ
Endrin	0.1	UJ	0.1	UJ	0.1	UJ	0.096	UJ
Endosulfan II	0.1	UJ	0.1	UJ	0.1	UJ	0.096	UJ
4,4'-DDD	0.1	UJ	0.1	UJ	0.1	UJ	0.096	UJ
Endosulfan sulfate	0.1	UJ	0.1	UJ	0.1	UJ	0.096	UJ
4,4'-DDT	0.1	UJ	0.1	UJ	0.1	UJ	0.096	UJ
Methoxychlor	0.51	UJ	0.5	UJ	0.52	UJ	0.48	UJ
Endrin Ketone	0.1	UJ	0.1	UJ	0.1	UJ	0.096	UJ
Endrin aldehyde	0.1	UJ	0.1	UJ	0.1	UJ	0.096	UJ
alpha-Chlordane	0.051	UJ	0.05	UJ	0.052	UJ	0.048	UJ
gamma-Chlordane	0.051	UJ	0.05	UJ	0.052	UJ	0.048	UJ
Toxaphene	5.1	UJ	5	UJ	5.2	UJ	4.8	UJ
POLYCHLORINATED BIPHENYLS								
Aroclor-1016	1	UJ	1	UJ	1	UJ	0.96	UJ
Aroclor-1221	2	UJ	2	UJ	2.1	UJ	1.9	UJ
Aroclor-1232	1	UJ	1	UJ	1	UJ	0.96	UJ
Aroclor-1242	1	UJ	1	UJ	1	UJ	0.96	UJ
Aroclor-1248	1	UJ	1	UJ	1	UJ	0.96	UJ
Aroclor-1254	1	UJ	1	UJ	1	UJ	0.96	UJ
Aroclor-1260	1	UJ	1	UJ	1	UJ	0.96	UJ

ANALYTICAL SUMMARY OF INORGANIC QA/QC SAMPLES
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-FB-01		SYD-FB-02		SYD-RB-01		SYD-RB-02	
SAMPLE DESCRIPTION	Potable		Deionized		Day 1		Day 2	
DATE SAMPLED	1-23-93		1-24-93		1-23-93		1-24-93	
UNIT	ug/L		ug/L		ug/L		ug/L	
Aluminum	35	U	35	U	35	U	35	U
Antimony	19	J	33		41		40	
Arsenic	2	U	2	U	2	U	2	U
Barium	24		8	U	8	U	8	U
Beryllium	1	U	1	U	1	U	1	U
Cadmium	1	U	1	U	1	U	1	
Calcium	16100		199	U	199	U	199	U
Chromium	3	U	3		3		4	
Cobalt	3	U	3	U	3	U	3	U
Copper	12	J	4	U	4	U	4	U
Iron	355		5	U	5	U	30	
Lead	1		1	U	1	U	1	U
Magnesium	2440		184	U	184	U	184	U
Manganese	24		1	U	1	U	1	
Mercury	0.2	U	0.2	U	0.2	U	0.2	U
Nickel	4	U	4	U	4	U	4	U
Potassium	2530		202	U	202	U	202	U
Selenium	1	U	1	U	1	U	1	U
Silver	2	U	2	U	2	U	2	U
Sodium	7990		185	U	185	U	185	U
Thallium	3	U	3	U	3	U	3	U
Vanadium	3	U	3	U	3	U	3	U
Zinc	494		4	U	4	U	4	U
Cyanide	10	U	10	U	10	U	10	U

ANALYTICAL SUMMARY OF AMMONIA QA/QC SAMPLES
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-FB-01	SYD-FB-02	SYD-RB-01	SYD-RB-02
SAMPLE DESCRIPTION	Potable	Deionized	Day 1	Day 2
DATE SAMPLED	1-23-93	1-24-93	1-23-93	1-24-93
UNIT	mg/L	mg/L	mg/L	mg/L
Ammonia Nitrogen (Method 350.2)	0.1 U	0.1 U	0.1 U	0.1 U

ANALYTICAL SUMMARY OF TPH QA/QC SAMPLES
CAMP ALLEN SALVAGE YARD PA/SI

SAMPLE NUMBER	SYD-FB-01	SYD-FB-02	SYD-RB-01	SYD-RB-02
SAMPLE DESCRIPTION	Potable	Delonized	Day 1	Day 2
DATE SAMPLED	1-23-93	1-24-93	1-23-93	1-24-93
UNIT	mg/L	mg/L	mg/L	mg/L
TPH(Method 418.1)	0.1 U	0.1 U	0.1 U	0.1 U

APPENDIX E

APPENDIX E
TOXICITY PROFILES

Date of Last Revision: 7/23/93
Revisor: Joy Marshall

ANTIMONY

INTRODUCTION

Chemical Name: Antimony
CAS Number (1): 7440-36-0
Molecular Formula (1): Sb
Molecular Weight (1): 151.18 g/mole

Antimony is a silvery or gray lustrous metal that comes from the ores stibnite, dermasite, tetrahedrite, livingstonite, and jamisonite (1). Stibnite is the most common naturally occurring form of antimony. Antimony is used as a hardening alloy for lead, solder, sheet and pipe, semiconductor technology, production of fireproofing chemicals, ceramics, glassware, and pigments, and pyrotechnics (2,3). Antimony exists in four valence states (-3, 0, +3, and +5) (4). Antimony is a common air pollutant from industrial emissions but exposure in the general population is largely from food (3).

FATE AND TRANSPORT

Antimony occurs as a soluble oxide or as antinomite (+3) salt in most natural water systems. It may change to volatile stibine in a reducing environment. Stibine is very soluble in water, but it is not stable in under aerobic conditions. Sediment beds offer a reducing environment allowing for remobilization of antimony previously removed from solution. Sorption to clays and minerals is the most important mechanism resulting in the removal of antimony from solution. Insoluble forms of antimony compounds may be formed when heavy metals in solution react with antimonite or antimonate. Bioaccumulation represents a minor fate process for antimony. (4)

PHARMACOKINETICS

Antimony is slowly absorbed from the gastrointestinal tract. The metal accumulates in lung tissue when humans are exposed to antimony dust in an occupational setting. Trivalent

antimony is concentrated in red blood cells and the liver. Pentavalent antimony is mostly found in plasma. Both trivalent and pentavalent antimony are excreted in feces and urine. More trivalent antimony is excreted in the urine, where more pentavalent antimony is excreted in the feces (3).

HUMAN HEALTH EFFECTS

Noncarcinogenic Effects

Studies have reported that antimony trioxide, antimony trichloride, and antimony pentachloride may be mutagenic. Reproductive studies have indicated that female workers exposed to metallic antimony dust, antimony trioxide, and pentoxide had an increase in incident of gynecological disorders and late spontaneous abortions. Antimony was found in the breast milk, placental tissue, amniotic tissue, and blood of the umbilical cord in exposed workers. Intrapertoneal administration of antimony in rats supported the findings of the human reproductive effects (4).

Cardiovascular effects in humans consist of changes in electrocardiograms, cardiac edema, myocardial fibrosis, and other signs of myocardial structural damage when exposed to either trivalent or pentavalent antimonial compounds. Animal studies have supported these findings (4).

Antimony and/or its compounds are known to cause pneumoconiosis upon inhalation exposure. Chronic exposure by inhalation causes rhinitis, pharyngitis, tracheitis, and bronchitis. Dermatitis may occur in humans dermally exposed to antimony (4). Also transient skin eruptions, termed "antimony spots", may occur in workers with chronic exposure to antimony (3).

Carcinogenic Effects

Antimony production workers have demonstrated higher incidences of lung cancer. Also, animal studies involving rats have indicated that antimony trioxide may produce lung and liver tumors (4).

ENVIRONMENTAL HEALTH EFFECTS

Aquatic

Although criteria have not been established for antimony, the lowest values known to be toxic in aquatic organisms have been reported. These values are as follows (5):

Freshwater:

Acute toxicity: 9,000 µg/L

Chronic toxicity: 1,600 µg/L

Marine:

Acute toxicity: Not available

Chronic toxicity: Not available

These values were established from a study involving the exposure of antimony potassium tartrate and antimony trichloride to Daphnia magna. The LC_{50} and EC_{50} values for Daphnia magna and the fathead minnow ranged from 9,000 to 21,900 µg/L. The chronic value for the fathead minnow and Daphnia magna are 1,600 and 5,400 µg/L, respectively. No detectable bioconcentration of antimony by the bluegill was observed (4).

Terrestrial and Avian

Studies regarding the toxicity of antimony to wildlife and domestic animals were not located in the available literature (4).

REGULATORY LEVELS AND CRITERIA

Ambient Water Quality Criteria:	146 µg/L
NIOSH TWA:	0.5 mg/m^3 (antimony and all antimony compounds except stibine)
OSHA TWA:	0.5 mg/m^3
ACGIH TLV:	0.5 mg/m^3 (antimony and its compounds as Sb)

SUMMARY OF CRITERIA

The Oral RfD for antimony is 4.0×10^{-4} (7). The study supporting this value involved the exposure of 5 ppm of antimony potassium tartrate in drinking water to rats (6).

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Revisor: Susan C. Johnston

COPPER

INTRODUCTION

Chemical Name: Copper

Synonyms (1): Bronze Powder, C.I. 77400

CAS Number (1): 7440-50-8

Molecular Formula: Cu

Molecular Weight (1): 63.546 g/mole

Chemical Structure:

Copper is a reddish colored metal that occurs naturally in rock, soil, water, sediment, and air. Also, copper occurs naturally in plants and animals. A concentration of approximately 50 ppm can be found in the earth's crust. Copper is considered to be ductile and an excellent conductor. The primary uses of copper consist of use as the metal or alloy in the manufacture of wire, sheet metal, pipe, and other metal products. Copper compounds occur both naturally and are man-made and exhibit a characteristic blue-green color. Copper compounds are used in agriculture to treat plant diseases, for water treatment, and as preservatives for wood, leather, and fabrics (1,2,3).

FATE AND TRANSPORT

Fish BCF (4): 200 L/kg

Solubility(3): In Water : Insoluble

Density (3): 8.92

The largest release of copper to the environment is to the land with an estimated 97% deposited to this media. Tailings and overburdens from copper mines and tailings from mills are the primary contributors. It is also released through mining operations, agriculture, solid waste, and sludge from publicly-owned treatment works. The majority of copper deposited in the soil is strongly adsorbed and remains in the upper few centimeters of soil. The copper

adsorbs to organic matter, carbonate minerals, clay minerals, or hydrous iron and manganese oxides (3).

Copper is released to water bodies primarily through natural weathering of soil and discharges from industries and sewage treatment plants. The majority of copper in water is found in the form of particulates. Approximately 2.4% of total copper released to the environment is attributed to release into a waterway. An estimated 68% of release to water is associated with natural weathering or disturbed soil. Copper sulfate use represents 13% of releases to water. Only 2% is contributed by urban runoff. The copper discharged into waterways is in the form of particulate matter. The particulate matter either settles out, precipitates out, or adsorbs in organic matter, hydrous iron and manganese oxides, and clay in sediment. When copper is present as the Cu(I) ion, it tends to disproportionate to Cu(II) and copper metal. The concentration of dissolved copper depends on factors such as pH, the oxidation-reduction potential of the water, and the presence of competing cations, anions of insoluble cupric salts and organic and inorganic complexing agents (3).

Copper emitted to the air occurs from windblown dust, volcanos, and manufacturing processes such as primary copper smelters and ore processing facilities. An estimated 0.04% of all copper released to the environment is to the air. Copper is released to the atmosphere in the form of particulate matter or adsorbed to particulate matter. Gravitational settling accounts for the removal of particles that are >5 µm while smaller particles are removed by either dry deposition or washout by rain. Deposition rates in urban areas are 0.119 and 0.164 kg/ha/yr for dry and wet deposition, respectively. It is assumed that copper transformations in the atmosphere exist as oxides. As the oxides age, sulfatization may occur (3).

PHARMACOKINETICS

No data were located that studied absorption of copper through inhalation or dermal exposure. However, via oral exposure, copper is absorbed in the stomach and small intestine. In humans, approximately 60% of an oral dose of Cu^{64} as copper acetate was absorbed from the gastrointestinal tract. Once absorbed from the gastrointestinal tract, copper forms ionic copper or binds to amino acids. The factors which may affect copper absorption include: competition with other metals, the amount of copper in the stomach, certain dietary components, and forms of copper. High dietary ascorbic acid has been shown to impair copper absorption (3).

Studies regarding distribution of copper through inhalation and dermal exposure are not available. Through oral exposure, copper is distributed by loosely binding to plasma albumen and amino acids in the portal blood and transported to the liver. Studies have also shown that copper binds to transcuprein, a plasma protein. Once in the liver, copper is incorporated into ceruloplasmin and released into the plasma (3).

Copper is metabolized mainly by its transfer to and from various organic ligands. Several binding proteins for copper have been identified that are important in the uptake, storage, and release of copper from tissues (3).

Oral exposure is the only pathway which has been studied with regard to excretion. The major pathway for the excretion of copper is through bile following oral exposure. Studies have shown that 72% of ingested radioactive copper was excreted as copper acetate in the feces. Reabsorption of biliary copper is negligible; however, a fraction of fecal copper is of endogenous biliary origin (3).

HUMAN HEALTH EFFECTS

Noncarcinogenic Effects

Wilson's disease (hepatolenticular degeneration), is the only significant manifestation of copper toxicity in humans. Death has been reported upon ingestion of large amounts of copper and attributed to extensive hepatic centrilobular necrosis (3).

Systemic effects induced by copper ingestion include gastrointestinal irritation, manifested as vomiting, nausea, diarrhea, and anorexia. In individuals totally poisoned from copper, centrilobular necrosis of the liver and vecrosis and sloughing of tubular cells in the kidney have been observed (3).

Immunological effects in humans have been exhibited as allergic dermatitis upon contact with copper. Additionally, inhalation studies in mice have found that after exposure to copper, an impaired immune function is present (3).

Neurological effects are manifested as Wilson's disease. Wilson's disease affects the central nervous system and includes symptoms of poor coordination, psychological impairment,

tremor, disturbed gait, and rigidity. Increased copper levels in the brain have been observed in humans with Wilson's disease and in animals exposed to high levels of copper (3).

Mice, mink, and hamsters injected with copper or fed a diet high in copper have shown developmental effects. These effects include fetal mortality and developmental abnormalities. No developmental effects have been reported in humans; however, there is a possibility that there may be an increased incidence of spontaneous abortion and miscarriage in women exposed to high levels of copper. Developmental effects have not been observed in healthy humans or in the offspring of mothers with Wilson's disease (3).

In humans, reproductive effects have not been reported when exposed to high levels of copper. Mink did not exhibit adverse effects when fed a diet high in copper. However, when a copper wire was inserted into the vas deferens or uterus of monkeys, rats, hamsters, and rabbits prior to conception or at gestational day 3, decreased fertility was observed (3).

The Drinking Water Criteria Document concluded toxicity data were inadequate for calculation of an RfD for copper.

Carcinogenic Effects

The EPA carcinogen classification for copper is Group D-inadequate evidence of carcinogenicity. An elevated incidence of cancer has not been observed in humans or animals exposed to copper via inhalation, oral, or dermal route of exposure (3).

Although there are no data on the mutagenicity of copper in humans, in vivo and in vitro studies of mammalian systems suggest that copper is a potential human mutagen (3).

ENVIRONMENTAL HEALTH EFFECTS

Aquatic

Available data are not adequate for establishing water quality criteria. However, the bioconcentration factor of copper in fish has been developed. The results of these studies indicate a low potential for bioconcentration with a range of factors for fish of 10-100. The bioconcentration factor for molluscs, such as oysters was considerably higher at a peak of 30,000. Evidence suggests that there is no biomagnification of copper in the food chain. The

biomagnification ratio in fish studied from lakes that were known to have received elevated loadings of copper, revealed that the ratio was <1 (3).

Terrestrial and Avian

In bioaccumulation studies of pollutant concentrations in the muscle and livers of 10 mammal species in Donana National Park in Spain, no evidence of bioaccumulation was obtained. No evidence of copper biomagnification in the food chain was observed (3).

REGULATORY LEVELS AND CRITERIA

OSHA PEL (transitory):

Fumes (3): 0.1 mg/m^3

Dusts and Mists (3): 1.0 mg/m^3

OSHA TWA (PEL)

Fumes (3): 0.1 mg/m^3

Dusts and Mists (3): 1.0 mg/m^3

EPA SMCL (3): 1.0 mg/L

MCL (3): 1.3 mg/L

MCLG (3): 1.3 mg/L

EPA Reportable Quantity (3): 5000 lbs

ACGIH TLV TWA:

Fumes (3): 0.2 mg/m^3

Dusts and Mists (3): 1.0 mg/m^3

NIOSH Occupational Exposure Limit:

Fumes (3): 0.1 mg/m^3

Dusts and Mists (3): 1.0 mg/m^3

Ambient Water Quality Criterion (3): 1.0 mg/L

1-Day Health Advisory (3): 1.3 mg/L

SUMMARY OF CRITERIA

Oral RfD (5): 3.7×10^{-2} mg/kg/day (chronic and subchronic) (current drinking water standard)

EPA Carcinogenicity Classification (3): Group D-Inadequate evidence of carcinogenicity

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Revisor: Joy L. Marshall

DDT SERIES PESTICIDES

INTRODUCTION

Technical DDT is a mixture containing 65-80% p,p'-DDT, 15-20% o,-p' DDT and up to 4% p,p'-DDD plus other trace materials. The metabolites of DDT include p,p'-DDE and o,p'-DDD. DDT isomers and their metabolites are usually found together and generally have the similar properties, therefore DDT has been referenced as the total combination of isomers and metabolites. However, specific differences between isomers are identified.

DDT, along with it's metabolites, are organochlorine pesticides which are very persistent in the environment. Historically, DDT was released to the environment during its formulation and extensive use as a pesticide in agricultural and vector control applications. It was banned from use in the United States in 1972, but is still used in other areas of the world. These compounds have been shown to be carcinogenic in mice and chronic exposure primarily cause liver and lung tumors and lymphomas. In addition, the nervous system appears to be one of the primary target organs for DDT toxicity in humans (6). In general, organochlorine pesticides are highly toxic to aquatic organisms, in addition to being responsible for a decreased population of many bird species (1).

Chemical Name:

p,p'-DDT: p,p'-1,1,1-Trichloro-2,2-bis(4-chlorophenyl)ethane

p,p'-DDD: p,p'-1,1-Dichloro-2,2-bis(4-chlorophenyl)-ethane

p,p'-DDE: p,p'-1,1-Dichloro-2,2-bis(4-chlorophenyl)-ethene

CAS Number(1):

p,p'-DDT: 50-29-3

p,p'-DDD: 72-54-8

p,p'-DDE: 72-55-9

Molecular Formula (1):

p,p'-DDT: $C_{14}H_9Cl_5$

p,p'-DDD: $C_{13}H_{10}Cl_4$

p,p'-DDE: $C_{14}H_8Cl_4$

Molecular Weight (1):

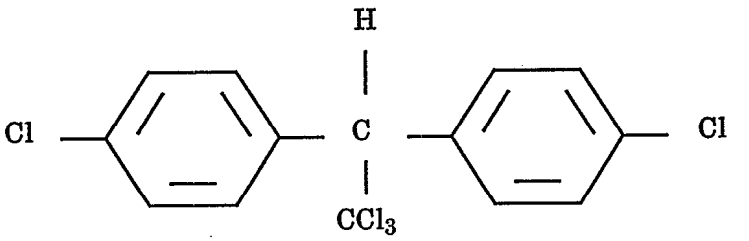
p,p'-DDT: 354.5 g/mole

p,p'-DDD: 320 g/mole

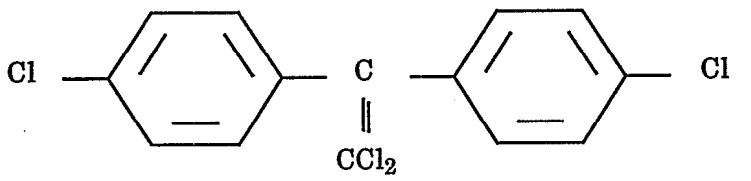
p,p'-DDE: 318 g/mole

Chemical Structure (6):

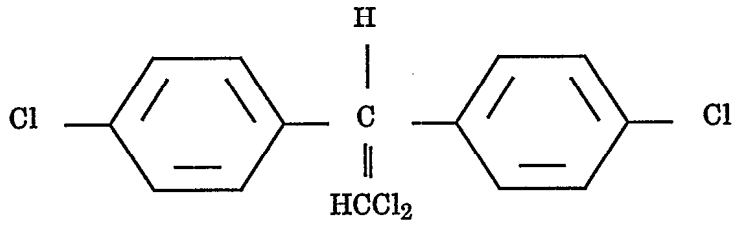
DDT:



DDE:



DDD:



FATE AND TRANSPORT

Chemical and Physical Properties

Log K_{ow} (6):

p,p'-DDT: 6.19

p,p'-DDD: 6.20

p,p'-DDE: 7.00

Log K_{oc} (6):

p,p'-DDT: 5.4

p,p'-DDD: 5.9

p,p'-DDE: 6.6

Boiling Point (1):

p,p-DDT: 260^{0}C

Melting Point:

DDT: 109^{0}C

DDD: 112^{0}C

DDE: 90^{0}C

Solubility in Water @ 25^{0}C (6):

p,p'-DDT: 3.4 µg/L

p,p'-DDD: 160 µg/L

p,p'-DDE: 120 µg/L

Solubility in Organics (1):

p,p'-DDT: Soluble in acetone, benzene, cyclohexane, morpholine, pyridine, and dioxane

Vapor Pressure (1):

p,p'-DDT: 1.9E^{-7} mm Hg at 25^{0}C

p,p'-DDD: 1.0E^{-6} mm Hg at 30^{0}C

p,p'-DDE: 6.5E^{-6} mm Hg at 20^{0}C

TRANSPORT AND PARTITIONING

DDT and its metabolites may be transported from one medium to another by the processes of solubilization, adsorption, bioaccumulation, or volatilization. Each of these processes will be discussed in the following paragraphs. Studies of DDT transformations in soils predict prolonged persistence. During these extended periods of time, these compounds undergo extensive adsorption to soil particles, as predicted by their organic carbon partition coefficients (K_{oc}) of 2.4×10^5, 4.4×10^6, and 7.7×10^5, for DDT, DDE and DDD, respectively. DDT, DDE and DDD are only slightly soluble in water (solubilities of 0.0034, 0.12, and 0.160 mg/L at 25°C, respectively). Therefore, loss of these compounds in runoff is primarily due to transport of particulates to which these compounds are bound. Since they are bound strongly to soil, they are not easily displaced from their site of application, nor do they tend to leach to groundwater, and appreciable amounts may remain in the soil for extended periods of time. When DDT is released to water, it quickly adsorbs to particles and is subject to sedimentation, or may bioconcentrate in microorganisms and can become part of the food chain.(6)

Volatilization of DDT and DDE is known to account for considerable losses of these compounds from solids and water. Their tendency to volatilize can be predicted by their Henry's Law Constants, 5.13×10^{-4} and 6.8×10^{-5} atm-m^3/mol, respectively, and their vapor pressures, 5.5×10^{-6} and 6.5×10^{-6} Torr, respectively. The tendency of DDD to volatilize is approximately three-fold less than that of DDT or DDE. Estimates of the rate of evaporative losses of DDT from water range from several hours to 50 hours. Laboratory studies of the air/water partition coefficient of DDE indicate that it will volatilize from seawater 10 to 20 times faster than from freshwater. The authors suggest that this process may be related to interaction at the bubble-water surface (6).

Small particles which carry DDT or its degradation products may also be distributed through the atmosphere. Once volatilized or airborne, transport of these compounds into the ambient atmosphere of North America is facilitated by a circulation pattern which brings moisture form the Gulf of Mexico into the Midwest and airflow patterns across the eastern seaboard. Residues are removed from the atmosphere by precipitation, diffusion into large bodies of water, and chemical transformation. Precipitation is believed to account for the greatest rate of removal (6).

DDT, DDE, and DDD are highly lipid soluble, as reflected by their log octanol-water partition coefficients (log K_{ow}) of 6.19, 7.00, and 6.20, respectively. This lipophilic property, combined

with an extremely long half-life, has resulted in bioaccumulation (levels in organisms exceed those levels occurring in the surrounding environment). When they are present in ambient water, DDT and its metabolites are concentrated in freshwater and marine plankton, insects, mollusks, other invertebrates, and fish. As these organisms become part of the food chain, a progressive accumulation of residues may result in high levels of residues in organisms at the top of the food chain. In some cases, man may be the ultimate consumer of these contaminated organisms. The bioconcentration factor (BCF) is defined as the ratio at equilibrium between the concentration of the chemical in the organism or tissue of the organism, and the concentration of the chemical in the surrounding media. There are numerous measurements and estimates of BCFs in fish. Oliver and Niimi estimated the steady-state BCF in rainbow trout as 12000.

TRANSFORMATION AND DEGRADATION

The dominant mechanism for removal of DDT from the atmosphere is believed to be via precipitation and secondarily, particulate fallout. Under simulated atmospheric conditions, both DDT and DDE decompose to form carbon dioxide and hydrochloric acid (6).

AIR

In air and sunlight, DDT is subject to direct photooxidation and reaction with photochemically produced hydroxyl radicals. The latter process has an estimated half-life of two days. Since DDT residues are ubiquitous in the atmosphere, it seems likely that photodegradation must occur at a slow rate. DDT which reaches the photochemically active ionosphere may be rapidly destroyed by solar irradiation as indicated under laboratory conditions (6).

WATER

DDT present in water may be partitioned, transported, or converted in several ways: adsorption to sediments, bioconcentration in aquatic organisms, volatilization, photodegradation, and biodegradation. DDT in water is photodegradable by wavelengths of light which are present in the troposphere. DDT in excess of water solubility limits is adsorbed onto sediments which act as the primary reservoir for excess quantities of DDT. There it is available for ingestion by organisms. Biodegradation is reported to be a minor source of transformation (6).

SOIL

Four mechanisms have been suggested to account for most losses of DDT residues from soils: (1) volatilization, (2) removal by harvest of organic matter, (3) water runoff and (4) chemical transformation. DDT is subject to volatilization, with an estimated half-life of 100 days. Photoxidation of DDT is known to occur on soil surfaces; however, DDT is not known to hydrolyze. Biodegradation may occur under both aerobic and anaerobic conditions in the presence of certain microorganisms. Under aerobic conditions, slow conversion to DDE normally occurs, whereas, under anaerobic conditions, conversion to DDD results and is much more rapid than the aerobic conversion to DDE. Under aerobic conditions, dehydrochlorination is the dominant reaction, while under anaerobic conditions, reductive dechlorination occurs. Both metabolites are very resistant to further transformation. Due to the prolonged half-life of DDE, average levels of DDT are expected to decline slowly while the ratio of DDE to DDT is expected to increase. Estimates of the half-life for DDT biodegraded in soil range from 2 to >15 years (6).

PHARMACOKINETICS

Absorption of DDT by the lung is considered to be a minor route of entry. Due to the large particle size, it does not enter into the smaller spaces of the lung, but is deposited in the upper respiratory tract, and due to the action of the mucociliary apparatus it is eventually swallowed. However, some particles may be small enough to enter the tracheal system. No studies have been located that quantify the rate or extent of absorption of DDT, DDD or DDE (6).

Absorption following ingestion of DDT, DDE and DDD is evident in humans from measurements of serum and adipose tissue concentrations of these chemicals after occupational exposure. Gastrointestinal absorption is evidenced by the presence of DDT and metabolites measured in bile and the induction of tumors in animals following oral administration of the compounds. Approximately 70-90% of the dose has been absorbed following oral exposure to DDT in vegetable oils (6).

Dermal absorption of DDT in humans is considered to be limited, but can be inferred by observation of toxicity following dermal application of DDT. Acute toxicity studies have shown that toxicity is less when DDT is applied dermally than when given by gavage or injection (6).

The distribution and storage of DDT in humans and animals has been extensively studied. DDT and its metabolites are lipid soluble compounds, and once absorbed readily distribute to all body tissues in proportion to respective tissue lipid content (6).

HUMAN HEALTH EFFECTS

Carcinogenic Effects

DDT has been classified as a B2 carcinogen, a probable human carcinogen, however, the existing epidemiological human health research data for carcinogenicity are inadequate . The basis for the B2 classification is the observation of tumors (generally liver tumors) in various mouse strains and in three studies of rats. In addition, DDT is structurally similar to other probable carcinogens such as DDD and DDE. Lung tumors have also been observed in chronic studies of mice, while increased tumor incidence in hamsters have also been observed (2).

DDT has produced both negative and positive responses in tests for genotoxicity (2).

An oral slope factor (CSF) has been set at $3.4E^{-1}$ mg/kg-d by the United States Environmental Protection Agency (USEPA). An inhalation unit risk number has also been set at $9.7E^{-5}$ $\mu g/m^3$ (2).

Noncarcinogenic Effects

Increased hepatocellular hypertrophy, cytoplasmic oxyphilia and peripheral basophilic cytoplasmic granules were observed in chronic rat studies where rats were fed commercial DDT. Liver lesions were also seen in one 2 year rat study. In addition, DDT-induced liver effects were observed in mice, hamsters and dogs. One three generation rat reproduction study showed offspring mortality at all administered doses. Three other rat studies showed no reproductive effects at much higher dose levels (2).

An oral reference dose (RfD) of $5E^{-4}$ mg/kg-d has been set by the USEPA. The Lowest Observed Adverse Effects Level for the study in which the RfD was derived was 0.25 mg/kg-d. The study from which the RfD was derived was chosen for the following reasons; male rats were used in the study (male rats are more sensitive than female rats to DDT), the study was

of sufficient length to observe toxic effects and several doses were administered in the diet over the range of the dose-response curve (2).

ENVIRONMENTAL HEALTH EFFECTS

Aquatic

DDT has been extensively studied in freshwater invertebrates and fish and is quite toxic to most species. Saltwater species are even more sensitive than freshwater species (1).

Ambient Water Quality Criteria (AWQC) have been set for DDT, however, criteria have not been set for DDD and DDE, the Lowest Observed Adverse Effects Level (LOAEL) have been reported as a guideline for aquatic adverse effects for these two compounds (3).

DDT: (AWQC)
Freshwater Acute: 1.1 µg/L
Freshwater Chronic: 0.001 µg/L
Marine Acute: 0.13 µg/L
Marine Chronic: 0.001 µg/L

DDD: (LOAEL)
Freshwater Acute: 0.6 µg/L
Marine Acute: 3.6 µg/L

DDE: (LOAEL)
Freshwater Acute: 1,050 µg/L
Marine Acute: 14 µg/L

Terrestrial and Avian

DDT, DDD and DDE and other persistent organochlorine pesticides are primarily responsible for the great decrease in the reproductive capabilities and consequently in the populations of fish-eating birds, such as the bald eagle, brown pelican, and osprey. DDT has also been shown to decrease the populations of numerous other species of waterbirds, raptors, and passerines significantly (1).

OCCUPATIONAL REGULATORY LEVELS AND CRITERIA

Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL), Time-weighted average for DDT: 1 mg/m^3, skin (5).

American Conference of Governmental Industrial Hygienist (ACGIH) Time-Weighted Average Threshold Limit Value (TLV) for DDT: 1 mg/m^3 (4).

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Revisor: Rich Hoff

LEAD

INTRODUCTION

Chemical Name: Lead
CAS Number: 7439-92-1
Molecular Formula: Pb
Molecular Weight: 207 g/mole
Chemical Structure: Pb

Elemental lead is a heavy, ductile, bluish-gray solid at ambient conditions. It is used widely in industry because of its softness, resistance to corrosion and radiation, and high density. Lead is also used as a paint pigment, in solder, and in storage batteries.

FATE AND TRANSPORT

Degradation Products: None
Solubility: Lead is insoluble in water and organic solvents. It does dissolve in dilute nitric acid (2), and hot, concentrated sulfuric acid (3).
Specific Gravity (2): 11.35 @ 20°C

Lead and lead compounds can be present in air, water, and soil and are extremely persistent in water and soil (4). Metallic lead and common lead minerals are insoluble in water while manufactured alkyl lead compounds are water soluble. A major transport process for inorganic and organic lead compounds is atmospheric dispersion as particulate matter. Lead is removed from air by either wet or dry deposition. Photolysis of atmospheric organic lead compounds occurs rapidly (3). The average residence time of atmospheric lead is 7 to 30 days (4).

Natural lead compounds are not mobile in normal surface and groundwater because lead leached from ore is adsorbed by ferric hydroxide. It also readily combines with hydroxide, carbonate, and sulfate ions to form insoluble compounds. These compounds precipitate and

settle in the bed sediment. Lead is not volatile, therefore, volatilization is not an important transport process from aquatic environments (3).

Sorption is a dominant effect on the distribution of lead in soil. Lead readily adsorbs to inorganic solids, organic material and hydrous iron and manganese oxides. Because of its affinity for other materials and its solubility characteristics, the mobility of lead in soil is low. (3). Most lead is retained in soil and not transported via leaching or runoff to surface water (4).

Lead is not readily taken up by plants. Consequently, its availability to terrestrial life forms is limited (3). Lead does not appear to significantly bioaccumulate in most fish (4). Microcosm studies indicate that lead is not biomagnified through the food chain (3).

PHARMACOKINETICS

Lead primarily enters the body by inhalation and ingestion. For all practical purposes, it will not enter the body by dermal contact. Approximately 30-50 percent of all inhaled lead particulate is deposited in the respiratory tract. Almost all of the lead present will be absorbed by the lungs. The primary site of absorption by ingestion in children is the gastrointestinal tract. Fifty percent of all dietary lead ingested by children is absorbed, whereas only 8-15 percent is absorbed by adults. Studies have also demonstrated that transplacental transfer of lead is possible.

Lead is not homogeneously distributed upon entering the body. It concentrates in the following three organs: bone, blood, and soft tissue. The lead in each of these compartments has a different rate of intercompartmental movement and residence time (4).

Inorganic lead is not metabolized in the body; rather it is absorbed, distributed and excreted. However, organic alkyl lead is metabolized in the liver via an oxidative dealkylation reaction which is catalyzed by cytochrome P-450 in animals (4).

Lead that is not absorbed by the respiratory or gastrointestinal tract is excreted in the feces. Blood lead not retained by the body is eliminated by the kidney or bile (4).

HUMAN HEALTH EFFECTS

Systemic Effects

Numerous studies have been conducted on the toxic effects of lead. The data present dose effect relationships and are expressed in terms of internal exposure measured in blood lead levels (4).

Lead affects various systems of the body. The endpoints elicited at low level exposure are neurobehavioral impairment, growth retardation in children, and hypertension in middle-aged men. High exposure levels produce encephalopathy, gastrointestinal effects, anemia, nephropathy, and electrocardiographic abnormalities (4).

Lead affects the hematopoietic system by interfering with heme biosynthesis and ferrochelatase. This interference results in a reduction of the hemoglobin concentration in blood and an increase in erythrocyte (red blood cell) destruction. The combination of these two effects produce hypochromic, normocytic anemia with associated reticulocytosis. The impairment of heme synthesis has a far ranging impact that is not limited to the hematopoietic system.

Lead exposure also affects the central nervous system. Overt neurological signs have been documented in adults with blood lead levels ranging as low as 40 to 60 µg/dl. Encephalopathy can occur at blood lead levels of 100 to 200 µg/dl and 80 to 100 µg/dl for adults and children, respectively. As indicated by these levels, children are much more sensitive to neurological effects of lead. Death or irreversible health effects may occur as a result of central nervous system impairment (4).

The cardiovascular system is also impacted by lead exposure. Common effects from high level exposure include cardiac lesions and electrocardiographic abnormalities. Hypertension has been clearly related to lead exposure. Studies suggest that high blood pressure resulting from lead exposure may be mediated through effects on the kidney (4).

A direct relationship has been drawn between blood lead level and children's height, weight, and chest circumference. The strongest relationship was drawn with height. As the blood lead level increases the child's growth is retarded (4).

Exposure to lead has significantly effected the human reproductive system. Because lead accumulates in the bones and is sporadically released into the blood, exposure prior to pregnancy may affect the fetus. Blood lead reaches the fetus by crossing through the placental barrier. It was observed in animals that exposure to lead by non-natural routes (e.g., intravenous or intraperitonael injection) resulted in malformations of the fetus (4).

In the body, lead can interact with other chemicals. Calcium and phosphorus reduce the amount of lead taken up by the body while zinc helps to reduce the toxic effects of lead. Cadmium increases the toxic effects of lead; and lead increases the toxic effects of mercury. Due to the effect of lead on the hemapoietic system, iron deficiency increases as blood lead increases (4).

Derivation of Oral Reference Dose for Lead

U.S. EPA has not promulgated an oral reference dose (RfD) or air inhalation reference concentration (RfC) for lead (1).

Carcinogenic Effects

The EPA has stated that "little can be concluded from available epidemiological studies" concerning the carcinogenic potential of lead (4). However, the carcinogenicity of lead salts (primarily phosphates and acetates) administered via injection or the oral route has been demonstrated in rats and mice in several studies. In most of the investigations, the carcinogenic response has been demonstrated only at the highest dose. Although the EPA has stated that animal data are sufficient to conclude carcinogenicity in animals, the Agency has further stated that available toxicity data on metallic lead and lead compounds are inadequate for quantitative risk assessment (1).

ENVIRONMENTAL HEALTH EFFECTS

Aquatic

Freshwater species are more sensitive to lead contamination in soft water than hard water for both acute and chronic exposure. The ambient water quality criteria for aquatic life are as follows (5):

Four-day average concentration that should not be exceeded more than one time per year.

Freshwater	Salt Water
$e^{(1.273 (\ln (\text{hardness}))-4.705)}$ µg/L	5.6 µg/L
3.2 µg/L	

One-hour average concentration that should not be exceeded more than one time per year.

Freshwater	Salt Water
$e^{(1.273 (\ln (\text{hardness}))-4.460)}$ µg/L	140 µg/L
82 µg/L	

The BCF for saltwater species ranges from 17.5 to 2570 µg/L (3).

Terrestrial

Lead occurs in the tissues of many wildlife species. Lead poisoning has also been reported for a variety of domestic animals including cattle, horses, dogs, and cats. Cattle appear to experience lead poisoning more often because of their indiscriminate eating habits (3).

REGULATORY LEVELS AND CRITERIA

Ambient Air Quality Standard (4):	1.5 µg/m^3
OSHA Action Level (4);	30 µg/m^3
PEL (4):	50 µg/m^3
MCL:	Treatment Technology
Reportable Quantity (metallic) (4):	1 lb
NIOSH REL-TWA (4):	0.10 mg/m^3
ACGIH TLV-TWA (4):	0.15 mg/m^3 (inorganic lead, dust, and fumes)
	0.15 mg/m^3 (lead arsenate)
	0.05 mg/m^3 (lead chromate)
Ambient Water Quality Criterion:	50 µg/L

SUMMARY OF CRITERIA

EPA Carcinogenic Classification (4):	Group B2-possible human carcinogen
RfD (oral) (1):	Not Available
RfC (inhalation) (1):	Not Available
Cancer Slope Factor (oral, inhalation) (1):	Not Available

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POLYCHLORINATED BIPHENYLS (PCBS)

INTRODUCTION

Chemical Name: Polychlorinated Biphenyls (PCBs)

Synonyms and Trade Names: Aroclor, Kanechlor, Clophen

CAS Numbers: Aroclor 1242: 53469-21-9

Aroclor 1248: 12672-29-6

Aroclor 1254: 11097-69-1

Aroclor 1260: 001336-36-3

Molecular Formula: $C_6H_xCl_xC_6H_xClx$

Molecular Weights: Aroclor 1242: 266.5 g/mole

Aroclor 1248: 299.5 g/mole

Aroclor 1254: 328.4 g/mole

Aroclor 1260: 377.8 g/mole

The term polychlorinated biphenyls (PCBs) commonly refers to a variety of mixtures of individual biphenyl isomers, each consisting of two joined benzene rings and up to ten chlorine atoms. Mixtures of these isomers are known by their commercial designation of Aroclor. This trade name is followed by a four-digit number; the first two numbers indicate the type of isomer mixture and the last two numbers indicate the approximate weight percent of chlorine in the mixture (3).

PCBs are man-made chemicals that were used widely in transformers, electrical equipment and as lubricants (2). Because of their persistence and toxicity in the environment, their manufacture was discontinued in the United States in 1977 (1). However, PCB equipment manufactured before 1977 is currently still being used in the U.S. and this use is being regulated by the Environmental Protection Agency.

PCBs are very stable chemically and tend to be persistent in the environment. Persistence and bioaccumulation in living organisms also occur due to the high lipophilicity of these compounds (2).

CHEMICAL AND PHYSICAL PROPERTIES

Aroclor	1242	1248	1254	1260
Log K_{oc}	3.8	5.75	5.51	6.3
Log K_{ow} (2):	5.6	6.11	6.03	7.15
Henry's Law Constant(2): (atm-m^3/mol at 25° C)	5.7×10^{-4}	3.5×10^{-3}	8.4×10^{-3}	7.1×10^{-3}
Water Solubility (mg/L):	0.24	0.054	0.012	0.0027
Vapor Pressure(2): (mm Hg at 25° C)	4.06×10^{-4}	4.94×10^{-4}	7.71×10^{-5}	4.0×10^{-5}
Density (2):	1.35	1.41	1.50	1.57

FATE AND TRANSPORT

PCBs can be found in the atmosphere, water, and soil. Adsorption to sediments is the major fate process for PCBs in water. Because of lower water solubilities and higher octanol-water partition coefficients, higher chlorinated isomers will adsorb more strongly than the lower chlorinated isomers. This also indicates that significant leaching should not occur in soil under most conditions (2).

For PCBs that exist in the dissolved state in water, volatilization becomes the primary fate process. Therefore, the volatilization process is the major removal mechanism of PCBs from water sources. However, the rate of volatilization is dependent upon PCB adsorption to sediment (2).

In the atmosphere, PCBs exist in the vapor phase and can be removed by wet and dry deposition. A typical range of PCB concentrations in the atmosphere is between 1 and 250 µg/L (2).

Degradation of PCBs in the environment is dependent upon the degree of chlorination. Generally, the more chlorinated the PCB molecule, the more persistent it will be in the environment. Factors which determine biodegradability include the amount of chlorination, concentration, type of microbial population, available nutrients, and temperature (2). The

dominant degradation process in the atmosphere is dependent upon the vapor phase reaction of PCBs with hydroxyl radicals (2).

Photolysis is thought to be the only transformation process in the aquatic environment. However, the process is extremely slow. It appears the hydrolysis and oxidation do not degrade PCBs (2).

In the atmosphere, typical airborne concentrations of PCBs are as follows (2):

Location	Concentration Range (mg/m^3)
Urban	0.5 to 30
Rural	0.1 to 2.0
Great Lakes	0.4 to 3.0
Marine	0.05 to 2.0
Remote	0.02 to 0.5

The concentrations of PCBs in the open waters of oceans and lakes are shown below (2):

Location	Concentration Range (µg/L)
North Pacific	0.04 to 0.59
Antarctic	0.035 to 0.069
North Atlantic	0.02 to 0.20
Lake Superior	0.63 to 3.30
Lake Michigan	3.0 to 9.0
Lake Huron	0.49 to 17.15

PCBs are found in the soils from different areas of the world in the following concentrations (2):

Location	Concentration Range (ppb)
Great Britain	2.3 to 444
South Wales/Scotland	4.5 to 47.7
Japan	<10 to 100
United States	
Everglades National Forest, Florida	<1 to 33
U.S. Urban areas	0.02 to 11.94
Rocky Mountain National Park	0.098 to 0.54
Great Lakes	2.5 to 251.7

PHARMACOKINETICS

PCBs are absorbed primarily through inhalation and dermal contact in occupational environments. However, the general public absorbs PCBs primarily through oral exposure, such as the ingestion of PCB contaminated fish (2).

Animal studies have shown that PCBs are readily absorbed, but studies to quantify the rate of absorption are needed. Studies indicate that PCBs are absorbed by the gastrointestinal tract, and have been found in the serum and breast milk of woman orally exposed to PCBs (2).

PCBs accumulate in human plasma and adipose tissue with the extent of accumulation dependent on the positions of chlorines on the PCB congeners. Congeners with chlorines in both 4 positions as opposed to the 3 ,4 positions were found in greater concentrations (2). Also, PCBs have been shown to accumulate in human breast milk. The extent of accumulation is approximately 4 to 10 times less than the concentration in maternal blood (2).

Animal studies have indicated maximum concentrations in the liver, brain, and adipose tissue. Studies show that distribution occurs in a biphasic manner. First, PCBs accumulate in the liver and muscle from the blood stream. Following this accumulation, PCBs are either

stored in the adipose tissue or metabolized by the liver. It has been suggested that PCBs concentrate in the adipose tissue regardless of the route of exposure (2).

The metabolism of PCBs depends on chlorine content and on the site of chlorination. The major metabolic products are phenolic in nature. Other identified end products are sulfur-containing compounds, trans-dehydrodiols, polyhydroxylated PCBs and methyl ether derivatives (2).

Data regarding the excretion of PCBs following inhalation or dermal exposure are not available. When oral exposure occurs, excretion is dependent upon the metabolism of PCBs to more polar compounds (2).

HUMAN HEALTH EFFECTS

Noncarcinogenic Effects

The evaluation of the toxicity of PCBs is complicated by a number of factors including differences in isomer/congener/mixture composition, differences in species susceptibility, quantitatively inconsistent data, and varying degrees of contamination from other chemicals such as chlorinated dibenzofurans. Also, it should be noted that because of changes in congener and impurity composition resulting from environmental and/or biological transformations, PCBs currently in the environment may differ from the original PCB mixture (2).

Inhalation Exposure

There are no human data available regarding the lethality/decreased longevity of humans due to acute or chronic inhalation exposure. However, the primary target organs associated with PCB inhalation are the liver and cutaneous tissue. Occupational exposure has been associated with elevated serum levels in the liver and enzyme and dermatologic effects such as chloracne and skin rashes (2).

Human developmental studies have proved inconclusive and lack monitoring data. However, there were suggestions that mothers occupationally exposed to PCBs exhibited a slight decrease in birth weight and gestational age of offspring. No animal studies were available concerning developmental toxicity (2).

In animals, the liver and skin are unequivocal targets of PCB toxicity, especially in terms of chronic toxicity. The range of toxicity for dermal and hepatic effects is from 0.007 to 11.0 mg/m^3 (2).

Oral Exposure

There are no studies which address oral PCB exposure in humans. However, animal studies have established a single dose LD50s for rats and mice. The levels are 1,010 mg/kg for Aroclor 1254 and 750 mg/kg for Aroclor 1221, respectively (2).

Systemic effects in animals include perturbations of the liver and cutaneous tissues. Rats fed 0, 4, 8, and 16 ppm of Aroclor 1254 for 4 days resulted in an increase in liver weight at concentrations greater than 8 ppm and an increase of serum HDL cholesterol levels at 16 ppm. A lowest observed adverse effect level (LOAEL) of 5 ppm was identified in rats based on hepatic effects. At this level, hepatic microsomal enzyme activities increased, production of liver lipid content increased, and frank degenerative liver alterations were observed (2).

Developmental effects in humans from oral exposure to PCB contaminated fish include effects on birth weight, head circumference, gestational age and/or neonatal behavior. For animals, a LOAEL of 50 ppm in female rats has been identified based on fetotoxicity. At this level, effects such as reduced litter size, ultrastructural lesions in the thyroid follicular cells of neonates and weanlings and reduced serum levels of thyroid hormone were observed (2).

The only study relating PCBs to reproduction demonstrated that doses of >2 ppm Aroclor 1254 administered to mink for 4 months prior to mating and during gestation were lethal to fetuses and caused reproductive failure (2).

Dermal Exposure

Dermal exposure is a major route of PCB absorption. However, the current data does not allow for the quantification of dermal absorption to the total body burden of PCBs (2).

A study involving capacitor workers does not show clear evidence of liver disease. However, a correlation can be made between the PCB exposure and liver enzyme induction in the workers.

It is not clear to what extent the dermal absorption affected the hepatic changes since inhalation exposure also occurred (2).

A study involving dermal exposure of Aroclor 1260 to a female New Zealand rabbits for 5 days/week at a dose of 118 mg/day for 38 days produced degenerative lesions of the liver and kidneys, increased fetal porphyrin elimination and hyperplasia and hyperkeratosis of the follicular and epidermal epithelium (2). Other studies indicate that the median lethal dose for single dermal exposure for rabbits was >1269 mg/kg for Aroclor 1242 and 1248 to <3,169 for Aroclor 1221 (2).

No studies have been located which address immunological, neurological, developmental or reproductive effects of PCBs on humans or animals (2).

Carcinogenic Effects

The EPA has classified PCBs as a Group B2 carcinogen - a probable human carcinogen. This classification is based on the evidence of hepatocellular carcinomas in three strains of rats and two strains of mice. There is suggestive evidence that links PCBs to liver cancer in humans by the ingestion, inhalation, or dermal pathways. However, this evidence is inadequate due to confounding factors and lack of exposure quantification (4).

There have been several studies attempting to associate PCB exposure with carcinogenicity. In New Jersey, a petrochemical plant reported a statistically significant increase in malignant melanomas among 31 research and development employees and 41 refinery workers. Because the study failed to report quantified exposure levels and to identify the presence of other potential or known carcinogens, it was discredited (4).

Two outbreaks of poisoning following accidental consumption of PCB-contaminated rice oil (also containing polychlorinated dibenzofurans and polychlorinated quinones) occurred in Japan in 1968 (Yusho) and in Taiwan in 1979 (Yu-Cheng). A 16-year mortality study was completed which identified an increase in liver cancer in both males and females. There is strong evidence indicating the health effects were attributable to the polychlorinated dibenzofurans in the oil as opposed to the PCBs. Therefore, this study only suggests carcinogenicity of PCBs (4).

ENVIRONMENTAL HEALTH EFFECTS

Aquatic

PCBs have the capability to bioaccumulate and biomagnify. For rainbow trout, bluegills and channel catfish, the 96-hour LC50 values were around 20 mg/liter. When the exposure was increased to 10 to 20 days, the average LC50 value was 0.1 mg/liter. Studies indicate that juvenile organisms appear to be more susceptible to PCBs than either eggs or adults (3).

A study which experimentally determined the bioconcentration factors of various Aroclors in aquatic species found bioconcentration factors ranging from 26,000 to 660,000 (2).

In a study conducted by the U.S. Fish and Wildlife Service, 315 fish from 107 stations nationwide were analyzed for PCBs. Results showed that 94% of all fish were found to contain PCB residues. The geometric mean concentration of all Aroclors was found to be 0.53 µg/g. It should be noted that this study included the analyses of whole fish samples which include both the edible and nonedible portions of the fish. Therefore, the concentration will not reflect the actual human exposure through oral consumption (2).

Subsequent studies have shown PCB levels in fish collected and analyzed from Lake Huron to contain 600 to 72,000 µg/g PCBs on a lipid basis. Analyses of 62 samples of commercial fish collected from Lake Ontario revealed PCB levels ranging from 0.11 to 4.90 ppm (2).

The Ambient Water Quality Criteria for the protection of aquatic organisms are as follows (3):

Freshwater:

Acute toxicity: 2.0 µg/L

Chronic toxicity: 0.014 µg/L

Marine:

Acute toxicity: 10.0 µg/L

Chronic toxicity: 0.030 µg/L

Terrestrial and Avian

PCBs can affect terrestrial wildlife in three primary ways: mortality, adversely affecting reproduction, and changing behavior. Behavior effects include increased activity, decreased avoidance response, and decreased nesting (3).

In sensitive bird species, PCB levels of greater than 200 ppm in the diet or 10 mg/kg body weight caused some mortality. When the doses were increased to 1,500 ppm or 100 mg/kg body weight, extensive mortality was exhibited (3).

In studies in which chicken were fed levels of 20 ppm PCBs in the diet, lower egg production, deformities, decreased hatchability, lower growth, and survival were observed (3).

REGULATORY LEVELS AND CRITERIA

OSHA Advisory TWA (2): Aroclor 1242 - 1.0 mg/m3
Aroclor 1254 - 0.5 mg/m3

FDA Temporary Tolerances (2): Foods - 0.2-3.0 ppm
Packaging - 10.0 ppm

NIOSH: REL-TWA (2): 1.0 µg/m3

ACGIH (2):

TLV-TWA for Aroclor 1242: 1.0 mg/m3

TLV-TWA for Aroclor 1254: 0.5 mg/m3

Ambient Water Quality Criteria (2): 0.79 to 0.0079 ng/L for carcinogenicity at 10-5 to 10-7 risk levels

Drinking Water Criteria (2): 0.5 to 0.005 µg/L for carcinogenicity at 10-4 to 10-6 risk levels

Reportable Quantity (2): 10 lbs. (statutory)
1 lb. (proposed)

SUMMARY OF TOXICOLOGICAL INDICES

EPA Carcinogenic Classification (4) Group: B2-Probable human carcinogen

Noncarcinogenic Effects:

Oral RfD (4):	Not Available
Inhalation RfC (4):	Not Available

Carcinogenic Effects:

Oral CSF(4):	7.7 $(mg/kg/day)^{-1}$
Inhalation CSF (4):	Not Available.

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TRICHLOROETHENE

INTRODUCTION

Chemical Name: Trichloroethene

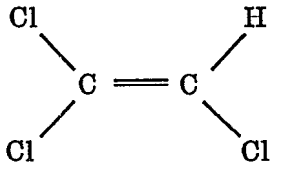
CAS Number: 79-01-6

Common Names: Trichloroethene; 1,2,2-Trichloroethylene; TCE

Molecular Formula: C_2HCl_3

Molecular Weight: 131.40 g/mole

Chemical Structure:



Trichloroethene (TCE) is a colorless liquid at standard temperature and pressure. It is a man-made chemical primarily used as a solvent in degreasing operations (1).

FATE AND TRANSPORT

Log K_{oc} (9): 2.10

Log K_{ow}: 2.29 (3)

2.42(1)

$t_{1/2}$ (1): Surface Water: 1-28 days

Henry's Law Constant (1): 0.02 atm-m3/mole @ 20°C

0.01 atm-m3/mole @ 25°C

Fish Bioaccumulation Factor (BCF) (1): 17

Degradation Products:

In Water: Dichloroethylene and vinyl chloride

In Air: Phosgene, dichloroacetyl chloride, and formyl chloride (1); hydrochloric acid, carbon monoxide, carbon dioxide and carboxylic acid (3).

Solubility:

In Water (1):	1.07 g/kg @ 20°C
	1,366 mg/L @ 25°C
In Organics (1):	Miscible with many common organic solvents such as ether, alcohol and chloroform
Vapor Pressure (1):	59 mm Hg @ 20°C
	74 mm Hg @ 25°C
Specific Gravity (1):	1.465 @ 20°C

TCE rapidly volatilizes into the atmosphere. Consequently, the atmosphere is the primary recipient of TCE releases. The average half-life of atmospheric TCE is approximately 3.7 days (1). In the atmosphere, the dominant transformation process is the reaction of TCE with hydroxyl radicals. Various degradation products result from this photooxidation process including hydrochloric acid, carbon monoxide, carbon dioxide, carboxylic acid, phosgene, dichloroacetyl chloride and formyl chloride (3, 4).

TCE readily volatilizes from surface water into the atmosphere. This is the primary migration pathway of TCE from surface water. Once TCE enters the atmosphere, it degrades by the process described above (1).

Slow degradation of TCE in soil occurs under anaerobic conditions. The Koc value indicates that TCE is quite mobile in soil and will readily leach into groundwater (1).

Once TCE has entered the groundwater, it remains there for years since volatilization is not a viable migration pathway. TCE in groundwater degrades primarily into dichloroethylene. To a lesser degree, it will degrade to vinyl chloride (1). TCE may be present in groundwater as a degradation product of perchloroethylene (4).

TCE, unlike other chlorinated compounds, has a low potential for bioaccumulation in fish, animals, and the food chain (4).

PHARMACOKINETICS

TCE is primarily absorbed into the body via inhalation and ingestion. To a lesser degree, it can be absorbed into the body by direct dermal contact (1).

The primary target organs for inhaled TCE are the central nervous system (CNS), liver, kidney, and hematological system. Principal organs targeted by oral exposure include the liver, kidney, and immunological system (1).

TCE distributes throughout all tissues but tends to concentrate in the fat, kidney, adrenals, vas deferens, epididymis, brain, and liver (4). Once in the body, TCE undergoes extensive metabolism. Numerous metabolites such as trichloroethanol, Trichloroethene-glucuronide, trichloroacetic acid, chloral hydrate (hypnotic agent), Trichloroethene oxide, trichloroacetaldehyde, and chloroacetic acid are generated (1, 4).

There are two primary routes of excretion for TCE. Unmetabolized TCE is excreted by exhalation while TCE metabolites are excreted in the urine (1). Other routes of excretion include sweat, feces, and saliva, but occur to a much lesser extent (4).

HUMAN HEALTH EFFECTS

Noncarcinogenic Effects

Adverse effects to the CNS, kidney, liver, and immune system due to TCE exposure have been documented.

Animal studies show that inhalation of TCE impairs neurological functions such as limb movement control, perception and reaction time. It is expected that larger quantities of TCE by oral exposure are required to create similar effects on the CNS as those experienced by inhalation. This is hypothesized since ingested TCE is subject to first pass elimination by the liver and lungs. It has been demonstrated that the trichloroethanol metabolite is three times as effective as the parent compound in inducing adverse effects on CNS (1). A relationship between exposure and renal effects has also been established in chronic animal studies. Inhalation and/or ingestion of TCE produced histological alterations characterized by renal tubular alterations and/or toxic nephropathy (1). Other chronic studies have identified an

association between TCE exposure and deficiencies of the immune system. The effects of TCE on the immune system are similar to those generated by other chlorinated hydrocarbons (1).

It has been documented that acute inhalation exposure to high TCE concentrations have caused severe liver damage. However, it is unlikely that long-term exposure to ambient air concentrations will adversely effect the liver. The most common hepatic effect in TCE-exposed animals is liver enlargement. Histological alterations characterized by cellular hypertrophy were associated with the liver enlargement (1).

Developmental effects from exposure to TCE result from ingestion but not inhalation. Animal studies on the ingestion of TCE indicate that there are reproductive effects such as reduced testis and epididymis weight and sperm mortality (1).

The EPA has not derived an inhalation RfD for TCE.

Carcinogenic Effects

TCE is classified by the EPA as a B2 carcinogen - Probable Human Carcinogen. This means there is sufficient evidence of carcinogenicity in animals; however, evidence of carcinogenicity in humans is inadequate (5).

Animal studies indicate that TCE exposure produced liver and lung tumors in mice and kidney adenocarcinomas, testicular leydig cell tumors, and possibly leukemia in rats (1).

Studies are being conducted to determine if TCE metabolites are involved in cancer development. It is known that trichloroacetic acid and dichloroacetic acid (both metabolites of TCE) are complete carcinogens in the male mouse liver (1). Although the liver appears to be the main site of TCE, there is evidence for extrahepatic TCE metabolism which may be responsible for extrahepatic sites of toxicity.

An inhalation cancer slope factor of 6.0×10^{-3} $(mg/kg/day)^{-1}$ has been provided by Roy Smith of the Technical Support Section at EPA Region III.

Based on two gavage studies, an oral cancer slope factor of 1.1×10^{-2} $(mg/kg/day)^{-1}$ was derived for TCE. B6C3F1 male and female mice were exposed to 0, 1169, or 2339 mg/kg/day and 0, 869 or 1,739 mg/kg/day, respectively, 5 days per week for 8 weeks. The researchers noted a

statistically significant increase in hepatocellular carcinomas in male mice at both dose levels and in female mice at the highest dose level. In another study, TCE administration to B6C3F1 male and female mice resulted in an increased incidence of hepatocellular carcinonomas. These results are consistent with those found in the previous B6C3F1 mice cancer bioassay (1).

ENVIRONMENTAL HEALTH EFFECTS

Aquatic

Although ambient water quality criteria have not been established for TCE, the lowest values known to cause toxicity in aquatic organisms have been reported. These values are as follows (3, 6):

Freshwater:

Acute toxicity:	45,000 µg/L
Chronic toxicity:	Not available

Marine:

Acute toxicity:	2,000 µg/L
Chronic toxicity:	Not available

REGULATORY LEVELS AND CRITERIA

MCLG (1):	0 mg/L
MCL (1):	5 µg/L
OSHA PEL-TWA (8):	50 ppm
OSHA STEL (8):	200 ppm
ACGIH TLV-TWA (2):	50 ppm
ACGIH TLV-STEL (2):	200 ppm
Reportable Quantity:	1,000 lbs

WQC (6)

Ingestion of Water and Organisms:	2.7 µg/L
Ingestion of Organisms Only:	8.0 µg/L

SUMMARY OF TOXICOLOGICAL INDICES

EPA Carcinogenic Classification (1):	Group B2-probable human carcinogen
Noncarcinogenic Effects:	
Oral RfD (7):	6.0×10^{-3} mg/kg/day
Inhalation RfC (7):	Not Available
Carcinogenic Effects (7):	
Oral CSF (7):	1.1×10^{-2} mg/kg/day
Inhalation CSF (7):	6.0×10^{-3} mg/kg/day

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8. OSHA. Title 29 Code of Federal Regulations, Part 1910.1000, Table Z-1-A. 1992.

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APPENDIX F

APPENDIX F
RISK SUMMARY

SITE: Camp Allen - Salvage Yard
LOCATION: Norfolk, Virginia
CTO#: 19148
DATE: May 18, 1994
DERMAL CONTACT AND INGESTION OF SITE SOILS BY ONSITE WORKERS.
LOCATION: SURFACE SOILS - UPPER 95% CI VALUES. soila.wk1

PURPOSE: TO ESTIMATE THE ADVERSE HUMAN HEALTH RISKS ASSOCIATED WITH EXPOSURE TO AFFECTED SOILS.
LOGICAL, YET CONSERVATIVE ASSUMPTIONS ARE USED TO DETERMINE THE POTENTIAL RISKS ASSOCIATED WITH DERMAL CONTACT AND INGESTION.
INCREMENTAL CANCER RISKS (ICRs) AND HAZARD INDICES (HIs) ARE PRESENTED IN THE SPREADSHEET.

RELEVENT EQUATIONS:

1. CARCINOGENS

CDI derm = (CS)(SA)(AD)(ABS)(EF)(ED)(CF)/(BW)(AT)

WHERE: CS = THE CHEMICAL CONCENTRATION (mg/Kg)
SA = THE EXPOSED SURFACE AREA OF THE SKIN (cm^2)
AD = THE DERMAL ADHERENCE CONSTANT (mg/cm^2 d)
ABS = THE ABSORBED FRACTION (unitless)
EF = THE EXPOSURE FREQUENCY (d/yr)
ED = THE EXPOSURE DURATION (years)
CF = CONVERSION FACTOR (10^-6 Kg/mg)
BW = THE AVERAGE RECEPTOR BODY WEIGHT (Kg)
AT = THE AVERAGING TIME (70yrs x 365d/yr)

CDI ing = (CS)(IR)(CF)(EF)(ED)/(BW)(AT)

WHERE: CS = THE CONCENTRATION IN SOIL (mg/Kg)
CF = THE CONVERSION FACTOR (10^-6 Kg/mg)
IR = THE INGESTION RATE (mg/d)
EF = THE EXPOSURE FREQUENCY (d/yr)
ED = THE EXPOSURE DURATION (yr)
BW = BODY WEIGHT (Kg)
AT = THE AVERAGING TIME (70yrs x 365d/yr)

ICR = SUM(ICRi * CPFi) (linear)

TOTAL ICR = ICR derm + ICR ing

2. NONCARCINOGENS

CDI derm = (CS)(SA)(AD)(ABS)(EF)(ED)(CF)/(BW)(AT)

WHERE: CS = THE CONCENTRATION IN SOIL (mg/Kg)
SA = THE EXPOSED SURFACE AREA OF THE SKIN (cm^2)
AD = THE DERMAL ADHERENCE CONSTANT (mg/cm^2 d)
ABS = THE ABSORBED FRACTION (unitless)
EF = THE EXPOSURE FREQUENCY (d/yr)
ED = THE EXPOSURE DURATION (years)
CF = CONVERSION FACTOR (10^-6 Kg/mg)
BW = THE AVERAGE RECEPTOR BODY WEIGHT (Kg)
AT = THE AVERAGING TIME (ED x 365d/yr)

CDI ing = (CS)(IR)(CF)(EF)(ED)/(BW)(AT)

WHERE: CS = THE CONCENTRATION IN SOIL (mg/Kg)
CF = THE CONVERSION FACTOR (10^-6 Kg/mg)
IR = THE INGESTION RATE (mg/d)
EF = THE EXPOSURE FREQUENCY (d/yr)
ED = THE EXPOSURE DURATION (yr)
BW = BODY WEIGHT (Kg)
AT = THE AVERAGING TIME (ED x 365d/yr)

HAZARD INDEX = SUM(DOSEi / RfDi)

TOTAL HI = HI derm + HI ing

SITE: Camp Allen - Salvage Yard
LOCATION: Norfolk, Virginia
CTO#: 19148
DATE: May 18, 1994
DERMAL CONTACT AND INGESTION OF SITE SOILS BY ONSITE WORKERS.
LOCATION: SURFACE SOILS - UPPER 95% CI VALUES. soila.wk1

PURPOSE: TO ESTIMATE THE ADVERSE HUMAN HEALTH RISKS ASSOCIATED WITH EXPOSURE TO AFFECTED SOILS.
LOGICAL, YET CONSERVATIVE ASSUMPTIONS ARE USED TO DETERMINE THE POTENTIAL RISKS ASSOCIATED WITH DERMAL CONTACT AND INGESTION.
INCREMENTAL CANCER RISKS (ICRs) AND HAZARD INDICES (HIs) ARE PRESENTED IN THE SPREADSHEET.

CONSTITUENTS	CS (mg/Kg)	AD (mg/cm^2 d)	CF (10^-6 Kg/mg	SA (cm^2)	EF (d/yr)	ED (yrs)	ABS	BW (Kg)	AT CARC.(d)	AT NCARC.(	DERMAL CARC.	DERMAL NONCAR	CPF (Kg-d/mg)	RfD (mg/Kg-d)	DERMAL ICR	DERMAL HI	PERCENT CARC.	PERCENT HAZARD
Trichloroethene	0.009	1	1.00E-06	2000	250	25	0.01	70	25550	9125	6.3E-10	1.8E-09	0.011	0.006	6.92E-12	2.9E-07	0.00	0.02
4,4'-DDT	0.0475	1	1.00E-06	2000	250	25	0.01	70	25550	9125	3.3E-09	9.3E-09	0.34	0.0005	1.13E-09	1.9E-05	0.04	1.40
4,4'-DDE	0.01	1	1.00E-06	2000	250	25	0.01	70	25550	9125	7.0E-10	2.0E-09	0.34		2.38E-10	0.0E+00	0.01	0.00
PCB-1254	4.72	1	1.00E-06	2000	250	25	0.01	70	25550	9125	3.3E-07	9.2E-07	7.7		2.54E-06	0.0E+00	79.12	0.00
PCB-1260	1.243	1	1.00E-06	2000	250	25	0.01	70	25550	9125	8.7E-08	2.4E-07	7.7		6.69E-07	0.0E+00	20.84	0.00
Copper	1146.59	1	1.00E-06	2000	250	25	0.001	70	25550	9125	8.0E-06	2.2E-05		0.0371	0.00E+00	6.0E-04	0.00	45.70
Antimony	14.3	1	1.00E-06	2000	250	25	0.001	70	25550	9125	1.0E-07	2.8E-07		0.0004	0.00E+00	7.0E-04	0.00	52.87
DERMAL CONTACT TOTAL															3.21E-06	0.0013	100.00	100.00

Constituents	CS (mg/Kg)	IR (mg/d)	EF (d/yr)	ED (yr)	BW (Kg)	AT Carc. (d)	AT Ncarc. (d)	INGESTION CARC. DOSE	INGESTIO NONCARC. DOSE	CPF	RfD	INGESTIO ICR	INGESTION HI	Percent Carc. Risk	Percent Ncarc. Risk
Trichloroethene	0.009	50	250	25	70	25550	9125	1.57E-09	4.4E-09	0.011	0.006	1.7E-11	7.34E-07	0.00	0.00
4,4'-DDT	0.0475	50	250	25	70	25550	9125	8.30E-09	2.3E-08	0.34	0.0005	2.8E-09	4.65E-05	0.04	0.14
4,4'-DDE	0.01	50	250	25	70	25550	9125	1.75E-09	4.9E-09	0.34		5.9E-10	0.00E+00	0.01	0.00
PCB-1254	4.72	50	250	25	70	25550	9125	8.25E-07	2.3E-06	7.7		6.4E-06	0.00E+00	79.12	0.00
PCB-1260	1.243	50	250	25	70	25550	9125	2.17E-07	6.1E-07	7.7		1.7E-06	0.00E+00	20.84	0.00
Copper	1146.59	50	250	25	70	25550	9125	2.00E-04	5.6E-04		0.0371	0.0E+00	1.51E-02	0.00	46.30
Antimony	14.3	50	250	25	70	25550	9125	2.50E-06	7.0E-06		0.0004	0.0E+00	1.75E-02	0.00	53.56
INGESTION TOTAL												8.0E-06	0.033	100.00	100.00
TOTAL												1.1E-05	0.034		

ssoila.wk1

SITE: Camp Allen - Salvage Yard
LOCATION: Norfolk, Virginia
CTO#: 19148
DATE: May 16, 1994
INHALATION OF FUGATIVE DUST BY ONSITE WORKERS FROM VEHICLE TRAFFIC. vehicle.wq1

PURPOSE: TO DETERMINE THE RISK POSED TO AN ONSITE WORKER THROUGH THE INHALATION OF FUGATIVE DUST RAISED BY VEHICLE TRAFFIC.
USING THE NEAR FIELD BOX MODEL. DISTANCE IS 10 m FROM THE POTENTIAL SOURCE EMISSION.

REFERENCES: COWHERD et al.,(1984)
PASQUILL, (1975)
HORST, (1979)

PERTINENT EQUATIONS:

Q = [a*E*SE]*CF

where: Q = THE EMISSION RATE OF PARTICLES 10um AND SMALLER (mg/sec)
a = THE MASS FRACTION OF CONTAMINANTS IN THE PARTICLE EMISSIONS (ppm)
E = THE EMISSION FACTOR FOR PARTICLES 10um AND SMALLER (Kg/vKm)
SE = THE SOURCE EXTENT (vKm/yr)
CF = 3.18E-8 yrs/sec
and:
SE = (trips/month)*(2 vehiles/trip)*(200 ft./vehicle)*(mile/5250 ft)*(12 months/yr)

E = 0.85 * (s/10) * (S/24)^0.8 * (W/7)^0.3 * (w/6)^1.2 * (365-p/365)

where: s = THE SILT CONTENT OF THE SOIL (%)
S = MEAN VEHICLE SPEED "industrial" (Km/hr)
W = MEAN VEHICLE WEIGHT (Mg)
w = MEAN NUMBER OF VEHICLE YEARS ()
p = DAYS WITH A MINIMUM 0.01 in. OF PRECIP. (d)

Ca = Q/H*W*U

where: Ca = CONCENTRATION OF CONTAMINANTS IN AMBIENT AIR (mg/m3)
H = DOWN WIND BOX HEIGHT (m) @ 10m
W = THE DOWN WIND WIDTH OF THE BOX (m)
U = THE AVERAGE WIND SPEED THROUGH THE BOX (m/s)

U = 0.22([u])*ln(2.5H)

CARCINOGENIC CONTAMINANTS

DOSE = Ca*RR*AB*D*ED*EV/BW*70*365

NONCARCINOGENIC CONSTITUENTS

DOSE = Ca*RR*AB*D/BW

where: RR = THE RESPIRATION RATE (m^3/hr)
AB = THE ABSORBED FRACTION
D = THE LENGTH OF A WORKDAY (hr/d)
ED = THE EXPOSURE DURATION (yrs)
EV = THE EVENTS PER YEAR (d/yr)
BW = THE RECEPTOR BODY WEIGHT (Kg)

SITE: Camp Allen - Salvage Yard
LOCATION: Norfolk, Virginia
CTO#: 19148
DATE: May 18, 1994
INHALATION OF FUGATIVE DUST BY ONSITE WORKERS FROM VEHICLE TRAFFIC. vehicle.wq1

PURPOSE: TO DETERMINE THE RISK POSED TO AN ONSITE WORKER THROUGH THE INHALATION OF FUGATIVE DUST RAISED BY VEHICLE TRAFFIC.
USING THE NEAR FIELD BOX MODEL. DISTANCE IS 10 m FROM THE POTENTIAL SOURCE EMISSION.

REFERENCES: COWHERD et al.,(1984)
PASQUILL, (1975)
HORST, (1979)

CONSTITUENT	a mg/Kg	p	[u] m/s	s (%)	S Km/hr	W Mg	w ()	E Kg/vKm	(trips/mo.)	(vehic./ trip)	(lt/vehic.)	mi/lt	SE vKm/yr	Q mg/s	H (x = 10) m	W m	U m/s	Ca mg/m^3
PCB-1254	4.72	130	3.06	8	20	15	6.00	0.48	50	2	100	1.89E-04	22.73	1.62E-06	1.4	25	0.84	2.44E-05
PCB-1260	1.243	130	3.06	8	20	15	6.00	0.48	50	2	100	1.89E-04	22.73	4.26E-07	1.4	25	0.84	6.41E-06
4,4'-DDT	0.048	130	3.06	8	20	15	6.00	0.48	50	2	100	1.89E-04	22.73	1.64E-08	1.4	25	0.84	2.48E-07
4,4'-DDE	0.01	130	3.06	8	20	15	6.00	0.48	50	2	100	1.89E-04	22.73	3.43E-09	1.4	25	0.84	5.16E-08
Trichloroethene	0.009	130	3.06	8	20	15	6.00	0.48	50	2	100	1.89E-04	22.73	3.08E-09	1.4	25	0.84	4.64E-08
Antimony	14.3	130	3.06	8	20	15	6.00	0.48	50	2	100	1.89E-04	22.73	4.90E-06	1.4	25	0.84	7.38E-05
Copper	1146.59	130	3.06	8	20	15	6.00	0.48	50	2	100	1.89E-04	22.73	3.93E-04	1.4	25	0.84	5.92E-03

SITE: Camp Allen - Salvage Yard
LOCATION: Norfolk, Virginia
CTO#: 19148
DATE: May 18, 1994
INHALATION OF FUGATIVE DUST BY ONSITE WORKERS FROM VEHICLE TRAFFIC. vehicle.wq1

PURPOSE: TO DETERMINE THE RISK POSED TO AN ONSITE WORKER THROUGH THE INHALATION OF FUGATIVE DUST RAISED BY VEHICLE TRAFFIC.
USING THE NEAR FIELD BOX MODEL. DISTANCE IS 10 m FROM THE POTENTIAL SOURCE EMISSION.

REFERENCES: COWHERD et al.,(1984)
PASQUILL, (1975)
HORST, (1979)

CONSTITUENT	RR m^3/hr	AB	D hr/d	ED yrs	EV d/yrs	BW Kg	CARC. DOSE	NONCAR DOSE	CPF Kg-d/mg	RfD mg/Kg d	ICR	HI
PCB-1254	2.5	1	8	25	250	70	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00
PCB-1260	2.5	1	8	25	250	70	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00
4,4'-DDT	2.5	1	8	25	250	70	1.73E-08	0.00E+00	0.34	NA	5.89E-09	0.00E+00
4,4'-DDE	2.5	1	8	25	250	70	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00
Trichloroethene	2.5	1	8	25	250	70	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00
Antimony	2.5	1	8	25	250	70	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00
Copper	2.5	1	8	25	250	70	0.00E+00	0.00E+00	NA	NA	0.00E+00	0.00E+00
TOTAL											5.89E-09	0.00E+00

adust.wk1

NA - NOT ONLINE IRIS. NOT IN HEAST.

Camp Allen Salvage Yard - Volatile Organic Statistical Summary for Surface Soils

SAMPLE NUMBER	SYD-SB-01S	SYD-SB-03S	SYD-SB-04S	SYD-SB-05S	SYD-SB-06S	SYD-SB-10S	SYD-SB-11S	SYD-SB-12S	SYD-SB-14S	SYD-SB-17S	SYD-SB-18S	SYD-SB-19S	SYD-SB-20S	SYD-SB-21S	SYD-SB-22S	Number	Maximum	Arithmetic	Standard	Upper 95	US
SAMPLE LOCATION	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	of	Value	Average	Deviation	Confidence	
DATE SAMPLED	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-23-93	1-24-93	Samples				Value	
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg		ug/kg	ug/kg	ug/kg	ug/kg	mg/kg
Trichloroethene	5.5	6	3	5.5	5.5	5	5.5	5.5	2	4	5.5	28	5.5	5.5	5.5	15	28	6.5	5.85	9.18	0.0092

Camp Allen Salvage Yard - Pesticide and PCB Statistical Summary for Surface Soils

SAMPLE NUMBER	SYD-SB-01S	SYD-SB-02S	SYD-SB-03S	SYD-SB-04S	SYD-SB-05S	SYD-SB-06S	SYD-SB-07S	SYD-SB-08S	SYD-SB-09S	SYD-SB-10S	SYD-SB-11S	SYD-SB-12S	SYD-SB-13S	SYD-SB-14S	SYD-SB-15S
SAMPLE DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"
DATE SAMPLED	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
4,4'-DDE	1.8	2	2	1.8	1.8	2.5	1.9	69	2	4.7	1.8	1.8	1.8	1.8	1.7
4,4'-DDT	1.8	2	2	1.8	1.8	2.5	1.9	180	2	5.5	1.8	1.8	1.8	260	25
PCB-1254	14000	28000	450	1700	17.5	25	720	18	20	18	1600	140	190	4000	510
PCB-1260	5600	6000	20	470	17.5	25	18	61	20	55	17.5	37	18	960	190

SAMPLE NUMBER	SYD-SB-16S	SYD-SB-17S	SYD-SB-18S	SYD-SB-19S	SYD-SB-20S	SYD-SB-21S	SYD-SB-22S	Arithmetic Average	Standard Deviation	Number of Samples	Degrees of Freedom	t (21,0.95)	Upper 95% Value	Maximum Detected Value	CS
SAMPLE DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"								
DATE SAMPLED	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-23-93	1-24-93								
UNIT	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg				ug/kg	ug/kg	(mg/Kg)
4,4'-DDE	1.8	1.8	1.8	1.8	1.8	1.8	1.8	5.045	14.298	22	21	1.721	10.292	69	0.010
4,4'-DDT	1.8	1.8	13	1.8	1.8	1.8	7.3	23.682	64.953	22	21	1.721	47.514	260	0.048
PCB-1254	18	18	18	18	19	18	18	2342.523	6479.888	22	21	1.721	4720.113	28000	4.720
PCB-1260	82	20	9.8	18	9.4	18	7.4	622.436	1691.334	22	21	1.721	1243.018	6000	1.243

Camp Allen Salvage Yard Inorganic Statistical Summary for Surface Soils

SAMPLE NUMBER	SYD-SB-01S	SYD-SB-03S	SYD-SB-04S	SYD-SB-05S	SYD-SB-06S	SYD-SB-10S	SYD-SB-11S	SYD-SB-12S	SYD-SB-14S	SYD-SB-17S	SYD-SB-18S	SYD-SB-19S	SYD-SB-20S	SYD-SB-21S	SYD-SB-22S	Geometric Mean	Arithmetic Mean	Standard Deviation	Number of Samples	t (14,0.95)	Upper 95% Value	Maximum Value	CS (mg/Kg)
SAMPLE DEPTH	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"								
DATE SAMPLED	1-23-93	1-23-93	1-23-93	1-23-93	1-23-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-24-93	1-23-93	1-24-93								
PERCENT SOLIDS	88	82.9	92.3	93.5	92.8	91.6	93.5	93.2	90.8	94.3	91.7	92.6	90.9	92.6	92.1								
UNIT	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg								
INORGANIC CONSTITUENTS																							
Antimony	21.1	2	42.5	3.7	4.1	2	1.7	3.3	21.9	12.2	6.1	1.6	4.4	4.7	8.9	5.55	9.35	10.90	15	1.761	14.30	42.5	14.30
Chromium	85.3	15	57.7	8.4	9.2	14.8	9.9	12.2	85.9	8.4	7.8	8	10.6	5.3	8.1	14.28	23.11	27.35	15	1.761	35.54	85.9	35.54
Copper	558	31.9	463	5.6	39	135	30	131	5860	15.1	17.5	3.9	9.9	31.2	14.1	49.35	489.68	1444.74	15	1.761	1148.59	5860	1148.59
Lead	734	53.6	708	16	54.3	393	80	1390	620	882	349	14	29	11	257	144.17	373.39	400.35	15	1.761	555.43	1390	555.43
Nickel	63.7	4.3	39.2	2.9	3.3	11.6	2.8	8.9	121	2.2	2	4.6	5.5	2.6	1.7	6.55	18.42	32.12	15	1.761	33.02	121	33.02
Zinc	1490	104	1530	7.4	119	264	146	292	1040	32.2	14.8	11.7	12.8	4.5	5.6	69.65	336.27	524.67	15	1.761	578.83	1530	578.83