ANALYTICAL REPORT

ARMY CREEK SITE
New Castle, Del.

September 26, 1988

EPA Work Assignment No. 1-123
Project No. 3347-01-01-1123
EPA Contract No. 68-03-3482

Submitted to
D. Charters
EPA-ERT

Gary Buchanan 9/26/88
Gary Buchanan — Date
Task Leader

Analysis by:
Intech, Weston Analytics
REAC

Antonio Lo Surdo 9/26/88
Antonio Lo Surdo — Date
S&A Section Chief

Prepared by:
M. Murphy

W. Scott Butterfield 9/26/88
W. Scott Butterfield — Date
Project Manager

Reviewed by:
Y. Hua Lin

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SECTION I

INTRODUCTION

On August 2, 1986, nine water samples and eight sediment samples were received from the Army Creek Site in New Castle, Del. The analyses requested were: volatile organics(VOA), base/neutral and acid extractables(BNA), metals, cyanide and phenol for both matrices. In addition, alkalinity, hardness and total suspended solids(TSS) were requested on the water samples and grain size on the sediments. There were two additional water samples for VOA analysis only.

The alkalinity, hardness, cyanide, phenol, TSS and grain size analyses were subcontracted to Intech Biolabs, in East Brunswick, N.J. The VOA, BNA, metals analyses were performed by REAC personnel. Due to instrumental difficulties with the AA furnace, the metal samples for arsenic, selenium, antimony and lead were subcontracted to Weston Analytics in Lyonville, Pa.

The metals results are not included in this report, they will be submitted in an appendix report.

ANALYTICAL PROCEDURES

Volatile Organics(VOA):

The VOAs in water were analyzed according to purge and trap Method 624 protocols. The sediment samples were analyzed according to CLP procedures using low level and medium level analyses procedures. The soils were extracted with methanol and were preserved at 4 C0 until analyzed. The medium level concentrations were found to be lower for some analytes than the low level concentrations. Table 1 A&B lists the results of the VOA analyses.

Base/Neutral Acid Extractables(BNA):

The BNAs were analyzed according to CLP protocols. The soil samples were soxhlet extracted and the waters were shake extracted. The analysis of both matrices followed CLP protocols. Table 2 A&B lists the BNA results for both sediments and water.

Inorganic Analyses:

The cyanide, phenol, alkalinity, hardness, total suspended solids(TSS) and total organic carbon(TOC) were all analyzed in accordance with methodology found in the "EPA Methods for Evaluating Solid Wastes, Sept. 1987." The results of these analyses can be found in Table 3. The grain size analysis was performed in accordance with ASTM methodology. The results are listed in Table 4. Both hydrometer and sieve analysis were requested, but due to the matrix of the sample, most of the samples could not be analyzed by hydrometer. A letter from the lab stating the difficulties incurred in the analysis is included in Section III.

[illegible] Results of Volatile Analysis of Water
Concentrations reported as ug/L

Project No. 1123 Farm, Creek

Dilution Factor (DF)	1.0000	1.0000	1.0000	1.0000	
Sample No.	1872	1874	1875	1876	Detection Limit ug/L adj for Dilution @
Data File	>A0318	>A0319	>A0320	>A0321	
COMPOUND					
Chloromethane	NC	NC	NC	NC	10
Bromomethane	NC	NC	NC	NC	10
Vinyl Chloride	NC	NC	NC	NC	10
Chloroethane	NC	NC	NC	NC	10
Methylene Chloride	ND	ND	NC	NC	5
Acetone	ND	ND	NC	NC	10
Carbon Disulfide	NC	ND	ND	NC	5
1,1-Dichloroethene	ND	NC	NC	NC	5
1,1-Dichloroethane	ND	ND	ND	ND	5
1,2-Dichloroethene (total)	ND	ND	ND	NC	5
Chloroform	ND	ND	ND	NC	5
1,2-Dichloroethane-d4	47	48	48	50	5
1,2-Dichloroethane	ND	ND	2	5	5
2-Butanone	ND	NC	ND	ND	10
1,1,1-Trichloroethane	ND	ND	ND	ND	5
Carbon Tetrachloride	ND	ND	ND	ND	5
Vinyl Acetate	ND	ND	ND	ND	10
Bromodichloromethane	ND	ND	ND	ND	5
1,2-Dichloropropane	ND	ND	ND	ND	5
cis-1,3-Dichloropropene	ND	ND	ND	ND	5
Trichloroethene	ND	ND	ND	ND	5
Dibromochloromethane	ND	ND	ND	ND	5
1,1,2-Trichloroethane	ND	ND	ND	ND	5
Benzene	ND	ND	ND	ND	5
Trans-1,3-Dichloropropene	ND	ND	ND	ND	5
Bromoform	ND	ND	ND	ND	5
4-Methyl-2-Pentanone	ND	ND	ND	ND	10
2-Hexanone	ND	ND	ND	ND	10
Tetrachloroethene	ND	ND	ND	ND	5
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	5
Toluene	ND	ND	ND	ND	5
Toluene-d8	51	52	50	50	5
Chlorobenzene	ND	ND	ND	ND	5
Ethylbenzene	ND	ND	ND	ND	5
Styrene	ND	ND	ND	ND	5
Xylene (total)	ND	ND	ND	ND	5
Bromofluorobenzene	52	53	53	52	5

Results are Blank Substracted
Concentrations in Microgram per Liter
@ MDL (Minimum Detection Limit) = DL x DF

Table 14. Results of Volatile Organics in Water (Cont.
Concentrations reported as ug/L

Project No. 1127 Army Creek

Dilution Factor (DF)	1.0000	1.0000	1.0000	1.0000	
Sample No.	1677	1678	1679	1680	Detection
Data File	>H0322	>H032A	>H0325	>H032B	Limit (L
					with DF
COMPOUND					Dilution)
Chloromethane	ND	ND	ND	ND	5
Bromomethane	ND	ND	ND	ND	5
Vinyl Chloride	ND	ND	ND	ND	5
Chloroethane	ND	ND	ND	ND	5
Methylene Chloride	ND	ND	ND	ND	5
Acetone	ND	52	17	148	10
Carbon Disulfide	ND	ND	ND	ND	5
1,1-Dichloroethene	ND	ND	ND	ND	5
1,1-Dichloroethane	ND	ND	ND	ND	5
1,2-Dichloroethene (total)	ND	ND	ND	ND	5
Chloroform	ND	ND	ND	ND	5
1,2-Dichloroethane-d4	49	51	52	50	5
1,2-Dichloroethane	ND	ND	ND	ND	5
2-Butanone	ND	ND	ND	ND	10
1,1,1-Trichloroethane	ND	ND	ND	ND	5
Carbon Tetrachloride	ND	ND	ND	ND	5
Vinyl Acetate	ND	ND	ND	ND	10
Bromodichloromethane	ND	ND	ND	ND	5
1,2-Dichloropropane	ND	ND	ND	ND	5
cis-1,3-Dichloropropene	ND	ND	ND	ND	5
Trichloroethene	ND	ND	ND	ND	5
Dibromochloromethane	ND	ND	ND	ND	5
1,1,2-Trichloroethane	ND	ND	ND	ND	5
Benzene	ND	ND	ND	ND	5
Trans-1,3-Dichloropropene	ND	ND	ND	ND	5
Bromoform	ND	ND	ND	ND	5
4-Methyl-2-Pentanone	ND	ND	ND	ND	10
2-Hexanone	ND	ND	ND	ND	10
Tetrachloroethene	ND	ND	ND	ND	5
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	5
Toluene	ND	ND	ND	ND	5
Toluene-d8	51	50	52	53	5
Chlorobenzene	ND	ND	ND	ND	5
Ethylbenzene	ND	ND	ND	ND	5
Styrene	ND	ND	ND	ND	5
Xylene (total)	ND	ND	ND	ND	5
Bromofluorobenzene	55	53	52	53	5

Results are Blank Substracted
Concentrations in Microgram per Liter
MDL (Minimum Detection Limit) = DL x DF

Table 1A. Results of Volatile Organics in Water Tests
Concentrations reported as ug L

Project No. 1123 Army Creek

Dilution Factor (DF)	1.0010	1.0000	1.0000	1.0000	
Sample No.	1881	1883	1884	.....	Detection
Data File	>A0317	>H0329	>H0329	.....	Limit (DL) with no Dilution D
COMPOUND					
Chloromethane	ND	ND	ND	ND	10
Bromomethane	ND	ND	ND	ND	10
Vinyl Chloride	ND	ND	ND	ND	10
Chloroethane	ND	ND	ND	ND	10
Methylene Chloride	ND	ND	ND	ND	5
Acetone	37	39	51	ND	10
Carbon Disulfide	ND	ND	ND	ND	5
1,1-Dichloroethene	ND	ND	ND	ND	5
1,1-Dichloroethane	ND	1	ND	ND	5
1,2-Dichloroethene (total)	ND	ND	ND	ND	5
Chloroform	ND	ND	ND	ND	5
1,2-Dichloroethane-d4	51	52	51	ND	5
1,2-Dichloroethane	ND	9	ND	ND	5
2-Butanone	ND	ND	ND	ND	10
1,1,1-Trichloroethane	ND	ND	ND	ND	5
Carbon Tetrachloride	ND	ND	ND	ND	5
Vinyl Acetate	ND	ND	ND	ND	10
Bromodichloromethane	ND	ND	ND	ND	5
1,2-Dichloropropane	ND	ND	ND	ND	5
cis-1,3-Dichloropropene	ND	ND	ND	ND	5
Trichloroethene	ND	2	ND	ND	5
Dibromochloromethane	ND	ND	ND	ND	5
1,1,2-Trichloroethane	ND	ND	ND	ND	5
Benzene	5	25	ND	ND	5
Trans-1,3-Dichloropropene	ND	ND	ND	ND	5
Bromoform	ND	ND	ND	ND	5
4-Methyl-2-Pentanone	ND	ND	ND	ND	10
2-Hexanone	ND	ND	ND	ND	10
Tetrachloroethene	ND	ND	ND	ND	5
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	5
Toluene	ND	ND	ND	ND	5
Toluene-d8	52	56	53	ND	5
Chlorobenzene	2	15	ND	ND	5
Ethylbenzene	ND	4	ND	ND	5
Styrene	ND	ND	ND	ND	5
Xylene (total)	ND	ND	ND	ND	5
Bromofluorobenzene	53	55	54	ND	5

Results are Blank Substracted
Concentrations in Microgram per Liter
MDL (Minimum Detection Limit) = DL x DF

Table 18. Results of Volatile Organics in Soil
Concentrations reported as ug/kg

Project No. 1123 Army Creek

Dilution Factor (DF)	1.0000	1.0000	1.0000	1.0000	
Sample No.	18728	18746	18755	18765	Detection
Data File	>A0342	>A0358	>A0344	>A0345	Limit DL
					also on
COMPOUND					Dilution 1
Chloromethane	ND	ND	ND	ND	10
Bromomethane	ND	ND	ND	ND	10
Vinyl Chloride	ND	ND	ND	ND	10
Chloroethane	ND	ND	ND	ND	10
Methylene Chloride	ND	ND	ND	ND	5
Acetone	25	275	206	719	10
Carbon Disulfide	ND	ND	ND	ND	5
1,1-Dichloroethene	ND	ND	ND	ND	5
1,1-Dichloroethane	ND	ND	ND	ND	5
1,2-Dichloroethene (total)	ND	ND	ND	ND	5
Chloroform	ND	ND	ND	ND	5
1,2-Dichloroethane-d4	45	48	45	50	5
1,2-Dichloroethane	ND	ND	ND	ND	5
2-Butanone	4	18	11	6	10
1,1,1-Trichloroethane	ND	ND	ND	ND	5
Carbon Tetrachloride	ND	ND	ND	ND	5
Vinyl Acetate	ND	ND	ND	ND	10
Bromodichloromethane	ND	ND	ND	ND	5
1,2-Dichloropropane	ND	ND	ND	ND	5
cis-1,3-Dichloropropene	ND	ND	ND	ND	5
Trichloroethene	ND	ND	ND	ND	5
Dibromochloromethane	ND	ND	ND	ND	5
1,1,2-Trichloroethane	ND	ND	ND	ND	5
Benzene	ND	ND	ND	ND	5
Trans-1,3-Dichloropropene	ND	ND	ND	ND	5
Bromoform	ND	ND	ND	ND	5
4-Methyl-2-Pentanone	ND	ND	ND	ND	10
2-Hexanone	ND	ND	ND	ND	10
Tetrachloroethene	ND	ND	ND	ND	5
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	5
Toluene	ND	ND	ND	ND	5
Toluene-d8	53	54	53	59	5
Chlorobenzene	ND	ND	ND	ND	5
Ethylbenzene	ND	ND	ND	ND	5
Styrene	ND	ND	ND	ND	5
Xylene (total)	ND	ND	ND	ND	5
Bromofluorobenzene	47	44	46	43	5

Results are Blank Substracted
Concentrations in Microgram per Kilogram
MDL (Minimum Detection Limit) = DL x DF

Table 18. Results of Volatile Organics in Soil (Cont.)
Concentrations reported as ug/kg

Project No. 1123 Army Creek

Dilution Factor (DF)	1.0000	1.0000	1.0000	1.0000	
Sample No.	19784	19785	19795	19806	Detection Limit In
Data File	>A0346	>A0347	>A0349	>A0349	with no Dilution @
COMPOUND					
Chloromethane	ND	ND	ND	ND	10
Bromomethane	ND	ND	ND	ND	10
Vinyl Chloride	ND	ND	ND	ND	10
Chloroethane	ND	ND	ND	ND	10
Methylene Chloride	ND	ND	ND	ND	5
Acetone	500	124	144	44	10
Carbon Disulfide	ND	ND	ND	ND	5
1,1-Dichloroethene	ND	ND	ND	ND	5
1,1-Dichloroethane	ND	ND	ND	ND	5
1,2-Dichloroethene (total)	ND	ND	ND	ND	5
Chloroform	ND	ND	ND	ND	5
1,2-Dichloroethane-d4	53	52	54	49	5
1,2-Dichloroethane	ND	ND	ND	ND	5
2-Butanone	29	ND	ND	ND	10
1,1-Trichloroethane	ND	ND	ND	ND	5
Carbon Tetrachloride	ND	ND	ND	ND	5
Vinyl Acetate	ND	ND	ND	ND	10
Bromodichloromethane	ND	ND	ND	ND	5
1,2-Dichloropropane	ND	ND	ND	ND	5
cis-1,3-Dichloropropene	ND	ND	ND	ND	5
Trichloroethene	ND	ND	ND	ND	5
Dibromochloromethane	ND	ND	ND	ND	5
1,1,2-Trichloroethane	ND	ND	ND	ND	5
Benzene	ND	ND	ND	ND	5
Trans-1,3-Dichloropropene	ND	ND	ND	ND	5
Bromoform	ND	ND	ND	ND	5
4-Methyl-2-Pentanone	ND	ND	ND	ND	10
2-Hexanone	ND	ND	ND	ND	10
Tetrachloroethene	ND	ND	ND	ND	5
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	5
Toluene	ND	9	33	ND	5
Toluene-d8	58	53	54	49	5
Chlorobenzene	ND	ND	ND	ND	5
Ethylbenzene	ND	ND	ND	ND	5
Styrene	ND	ND	ND	ND	5
Xylene (total)	ND	ND	2'	ND	5
Bromofluorobenzene	41	52	47	53	5

esults are Blank Substracted
oncentrations in Microgram per Kilogram
@ MDL (Minimum Detection Limit) = DL x DF

Table 24. Results of Base Neutrals and Acid Extractables in Water
Concentrations reported as ug/L

PARAMETER	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Phenol	U	U	U	U	U	10.0
Bis (2-Chloroethyl) Ether	U	[illegible] J	U	[illegible] J	U	10.0
2-Chlorophenol	U	U	U	U	U	10.0
1,3-Dichlorobenzene	U	U	U	U	U	10.0
1,4-Dichlorobenzene	U	U	U	U	U	10.0
Benzyl Alcohol	U	U	U	U	U	10.0
1,2-Dichlorobenzene	U	U	U	U	U	10.0
2-Methylphenol	U	U	U	U	U	10.0
Bis (2-Chloroisopropyl) Ether	U	U	U	U	U	10.0
4-Methylphenol	U	U	U	U	U	10.0
N-Nitroso-Di-n-Propylamine	U	U	U	U	U	10.0
Hexachloroethane	U	U	U	U	U	10.0
Nitrobenzene	U	U	U	U	U	10.0
Isophorone	U	U	U	U	U	10.0
2-Nitrophenol	U	U	U	U	U	10.0
2,4-Dimethylphenol	U	U	U	U	U	10.0
Benzoic Acid	U	U	U	U	U	10.0
Bis (2-Chloroethoxy) Methane	U	U	U	U	U	10.0
2,4-Dichlorophenol	U	U	U	U	U	10.0
1,2,4-Trichlorobenzene	U	U	U	U	U	10.0
Naphthalene	U	U	U	U	U	10.0
4-Chloroaniline	U	U	U	U	U	10.0*
Hexachlorobutadiene	U	U	U	U	U	10.0
4-Chloro-3-Methylphenol	U	U	U	U	U	10.0
2-Methylnaphthalene	U	U	U	U	U	10.0
Hexachlorocyclopentadiene	U	U	U	U	U	10.0
2,4,6-Trichlorophenol	U	U	U	U	U	10.0
2,4,5-Trichlorophenol	U	U	U	U	U	10.0
2-Chloronaphthalene	U	U	U	U	U	10.0
2-Nitroaniline	U	U	U	U	U	10.0
Dimethyl Phthalate	U	U	U	U	U	10.0
Acenaphthylene	U	U	U	U	U	10.0
2,6-Dinitrotoluene	U	U	U	U	U	10.0
3-Nitroaniline	U	U	U	U	U	10.0
Acenaphthene	U	U	U	U	U	10.0
2,4-Dinitrophenol	U	U	U	U	U	10.0
4-Nitrophenol	U	U	U	U	U	10.0
Dibenzofuran	U	U	U	U	U	10.0
2,4-Dinitrotoluene	U	U	U	U	U	10.0
Diethyl Phthalate	U	U	U	U	U	10.0
4-Chlorophenylphenyl ether	U	U	U	U	U	10.0
Fluorene	U	U	U	U	U	10.0
4-Nitroaniline	U	U	U	U	U	10.0
2-Methyl-4,6-Dinitrophenol	U	U	U	U	U	10.0
N-Nitrosodiphenylamine	U	U	U	U	U	10.0
4-Bromophenylphenyl ether	U	U	U	U	U	10.0
Hexachlorobenzene	U	U	U	U	U	10.0
Pentachlorophenol	U	U	U	U	U	10.0
Phenanthrene	U	U	U	U	U	10.0
Anthracene	U	U	U	U	U	10.0
Di-n-Butylphthalate	1.00 J	U	U	2.70 J	2.60 J	10.0
Fluoranthene	U	U	U	U	U	10.0
Pyrene	U	U	U	U	U	10.0
Butylbenzylphthalate	U	U	U	U	U	10.0
3,3'-Dichlorobenzidine	U	U	U	U	U	10.0
Benzo a Anthracene	U	U	U	U	U	10.0
Chrysene	U	U	U	U	U	10.0
Bis 2-Ethylhexyl Phthalate	8.10 J	3.80 J	11.00	U	12.80	10.0
Di-n-Octyl Phthalate	8.60 J	U	U	17.50	36.20	10.0
Benzo b Fluoranthene	U	U	U	U	U	10.0
Benzo k Fluoranthene	U	U	U	U	U	10.0
Benzo a Pyrene	U	U	U	U	U	10.0
Indeno 1,2,3-cd Pyrene	U	U	U	U	U	10.0
Dibenzo a,h Anthracene	U	U	U	U	U	10.0
Benzo g,h,i Perylene	U	U	U	U	U	10.0

U - The compound was analyzed for but not detected at indicated level of 10.0 ug/L.
J - Data indicates the presence of a compound that meets the identification criteria.
The result is less than the specified detection of 10.0 ug/L limit but greater than zero.
The concentration is given as an approximate value.
* - [illegible]

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Table [illegible] Results in Base Neutral and Acid Extractable Organics
Part 1
Concentrations reported as ug/L

PARAMETER	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Phenol						
Bis (2-Chloroethyl)Ether	J	[illegible] J	18.00			
2-Chlorophenol						
1,3-Dichlorobenzene						
1,4-Dichlorobenzene			4.40 J			
Benzyl Alcohol						
1,2-Dichlorobenzene						
2-Methylphenol						
Bis (2-Chloroisopropyl) Ether						
4-Methylphenol						
N-Nitroso-Di-n-Propylamine						
Hexachloroethane						
Nitrobenzene						
Isophorone						
2-Nitrophenol						
2,4-Dimethylphenol						
Benzoic Acid						
Bis (2-Chloroethoxy) Methane						
2,4-Dichlorophenol						10.0
1,2,4-Trichlorobenzene						10.0
Naphthalene						10.0
4-Chloroaniline						10.0
Hexachlorobutadiene						10.0
4-Chloro-3-Methylphenol						10.0
2-Methylnaphthalene						10.0
Hexachlorocyclopentadiene						10.0
2,4,6-Trichlorophenol						10.0
2,4,5-Trichlorophenol						10.0
2-Chloronaphthalene						10.0
2-Nitroaniline						
Dimethyl Phthalate						
Acenaphthylene						
2,6-Dinitrotoluene						10.0
3-Nitroaniline						
Acenaphthene						
2,4-Dinitrophenol						
4-Nitrophenol						
Dibenzofuran						
2,4-Dinitrotoluene						10.0
Diethyl Phthalate						10.0
4-Chlorophenylphenyl ether						10.0
Fluorene						10.0
4-Nitroaniline						10.0
2-Methyl-4,6-Dinitrophenol						10.0
N-Nitrosodiphenylamine						10.0
4-Bromophenylphenyl ether						10.0
Hexachlorobenzene						10.0
Pentachlorophenol						10.0
Phenanthrene						10.0
Anthracene						10.0
Di-n-Butylphthalate	2.50 J U					10.0
Fluoranthene						10.0
Pyrene						10.0
Butylbenzylphthalate						10.0
3,3'-Dichlorobenzidine						10.0
Benzo(a)Anthracene						10.0
Chrysene						10.0
Bis(2-Ethylhexyl)Phthalate	16.40	24.60				
Di-n-Octyl Phthalate	7.50 J	31.30	13.90	1.80 J		
Benzo(b)Fluoranthene	U	U				
Benzo(k)Fluoranthene						10.0
Benzo(a)Pyrene						10.0
Indeno(1,2,3-cd)Pyrene						10.0
Dibenz(a,h)Anthracene	J					10.0
Benzo(g,h,i)Perylene						10.0

U = The compound was analyzed for but not detected at indicated level of [illegible] ug/L.

J = Data indicates the presence of a compound that meets the identification criteria.
The result is less than the specified detection or [illegible] ug/L but greater than zero.
The concentration is given as an approximate value.

[illegible] = Organic Priority Pollutants [illegible]

Table 2B. Results of Base Neutral and Acid Extractables in Soil
Concentrations reported as ug/kg

Analyte	[illegible] Conc.	[illegible]	[illegible]	[illegible]	[illegible]
Phenol	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Bis(2-Chloroethyl) Ether	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
2-Chlorophenol	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
1,3-Dichlorobenzene	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
1,4-Dichlorobenzene	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Benzyl Alcohol	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
1,2-Dichlorobenzene	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
2-Methylphenol	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Bis(2-Chloroisopropyl) Ether	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
4-Methylphenol	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
N-Nitroso-Di-n-Propylamine	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Hexachloroethane	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Nitrobenzene	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Isophorone	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
2-Nitrophenol	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
2,4-Dimethylphenol	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Benzoic Acid	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Bis(2-Chloroethoxy)Methane	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
2,4-Dichlorophenol	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
1,2,4-Trichlorobenzene	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Naphthalene	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
4-Chloroaniline	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Hexachlorobutadiene	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
4-Chloro-3-Methylphenol	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
2-Methylnaphthalene	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Hexachlorocyclopentadiene	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
2,4,6-Trichlorophenol	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
2,4,5-Trichlorophenol	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
2-Chloronaphthalene	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
2-Nitroaniline	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Dimethyl Phthalate	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Acenaphthylene	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
2,6-Dinitrotoluene	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
3-Nitroaniline	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Acenaphthene	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
2,4-Dinitrophenol	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
4-Nitrophenol	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Dibenzofuran	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
2,4-Dinitrotoluene	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Diethyl Phthalate	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
4-Chlorophenyl-phenyl ether	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Fluorene	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
4-Nitroaniline	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
2-Methyl-4,6-Dinitrophenol	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
N-Nitrosodiphenylamine	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
4-Bromophenylphenyl ether	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Hexachlorobenzene	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Pentachlorophenol	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Phenanthrene	330.00 U	554.00 U	890.00	402.00 J	882.00 U
Anthracene	330.00 U	554.00 U	130.00 J	411.00 U	882.00 U
Di-n-Butylphthalate	330.00 U	554.00 U	256.00 J	169.00 J	196.00 J
Fluoranthene	330.00 U	554.00 U	1280.00	537.00	882.00 U
Pyrene	330.00 U	554.00 U	1140.00	463.00	882.00 U
Butylbenzylphthalate	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
3,3'-Dichlorobenzidine	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Benzo(a)Anthracene	330.00 U	554.00 U	603.00	256.00 J	882.00 U
Chrysene	330.00 U	554.00 U	968.00	334.00 J	882.00 U
Bis(2-Ethylhexyl)Phthalate	4480.00	416.00 J	1230.00	811.00	910.00
Di-n-Octyl Phthalate	404.00	2070.00	289.00 J	1810.00	957.00
Benzo(b)Fluoranthene	330.00 U	554.00 U	590.00	207.00 J	882.00 U
Benzo(k)Fluoranthene	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Benzo(a)Pyrene	330.00 U	554.00 U	500.00	242.00 J	882.00 U
Indeno(1,2,3-cd)Pyrene	330.00 U	554.00 U	386.00 J	182.00 J	882.00 U
Dibenz(a,h)Anthracene	330.00 U	554.00 U	487.00 U	411.00 U	882.00 U
Benzo(ghi)Perylene	330.00 U	554.00 U	223.00 J	165.00 J	882.00 U

U = The compound was analyzed for but not detected at indicated level. . Value is different du
to varying % solids in each sample.
J = Data indicates the presence of a compound that meets the identification criteria
The result is less than the specified detection limit but greater than zero
The concentration is given as an approximate value.

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Table 10. Results of Base Neutral and Acid Extractables
Part 1
Concentrations reported as ug/kg

Analytes	1875	1876	1877	1874
Phenol	924.00 U	450.00 U	784.00 U	776.00 U
Bis(2-chloroethyl) Ether	924.00 U	450.00 U	784.00 U	776.00 U
2-Chlorophenol	924.00 U	450.00 U	784.00 U	776.00 U
1,3-Dichlorobenzene	924.00 U	450.00 U	784.00 U	776.00 U
1,4-Dichlorobenzene	924.00 U	450.00 U	784.00 U	776.00 U
Benzyl Alcohol	924.00 U	450.00 U	784.00 U	776.00 U
1,2-Dichlorobenzene	924.00 U	450.00 U	784.00 U	776.00 U
2-Methylphenol	924.00 U	450.00 U	784.00 U	776.00 U
Bis (2-Chloroisopropyl) Ether	924.00 U	450.00 U	784.00 U	776.00 U
4-Methylphenol	924.00 U	179.00 J	784.00 U	776.00 U
N-Nitroso-Di-n-Propylamine	924.00 U	450.00 U	784.00 U	776.00 U
Hexachloroethane	924.00 U	450.00 U	784.00 U	776.00 U
Nitrobenzene	924.00 U	450.00 U	784.00 U	776.00 U
Isophorone	924.00 U	450.00 U	784.00 U	776.00 U
2-Nitrophenol	924.00 U	450.00 U	784.00 U	776.00 U
2,4-Dimethylphenol	924.00 U	450.00 U	784.00 U	776.00 U
Benzoic Acid	924.00 U	450.00 U	784.00 U	776.00 U
Bis (2-Chloroethoxy) Methane	924.00 U	450.00 U	784.00 U	776.00 U
2,4-Dichlorophenol	924.00 U	450.00 U	784.00 U	776.00 U
1,2,4-Trichlorobenzene	924.00 U	450.00 U	784.00 U	776.00 U
Naphthalene	924.00 U	450.00 U	784.00 U	776.00 U
4-Chloroaniline	924.00 U	450.00 U	784.00 U	776.00 U
Hexachlorobutadiene	924.00 U	450.00 U	784.00 U	776.00 U
4-Chloro-3-Methylphenol	924.00 U	450.00 U	784.00 U	776.00 U
2-Methylnaphthalene	924.00 U	450.00 U	784.00 U	776.00 U
Hexachlorocyclopentadiene	924.00 U	450.00 U	784.00 U	776.00 U
2,4,6-Trichlorophenol	924.00 U	450.00 U	784.00 U	776.00 U
2,4,5-Trichlorophenol	924.00 U	450.00 U	784.00 U	776.00 U
2-Chloronaphthalene	924.00 U	450.00 U	784.00 U	776.00 U
2-Nitroaniline	924.00 U	450.00 U	784.00 U	776.00 U
Dimethyl Phthalate	924.00 U	450.00 U	784.00 U	776.00 U
Acenaphthylene	924.00 U	450.00 U	784.00 U	776.00 U
2,6-Dinitrotoluene	924.00 U	450.00 U	784.00 U	776.00 U
3-Nitroaniline	924.00 U	450.00 U	784.00 U	776.00 U
Acenaphthene	924.00 U	165.00 J	784.00 U	776.00 U
2,4-Dinitrophenol	924.00 U	450.00 U	784.00 U	776.00 U
4-Nitrophenol	924.00 U	450.00 U	784.00 U	776.00 U
Dibenzofuran	924.00 U	450.00 U	784.00 U	776.00 U
2,6-Dinitrotoluene	924.00 U	450.00 U	784.00 U	776.00 U
Diethyl Phthalate	924.00 U	450.00 U	784.00 U	776.00 U
4-Chlorophenyl-phenyl ether	924.00 U	450.00 U	784.00 U	776.00 U
Fluorene	924.00 U	161.00 J	784.00 U	776.00 U
4-Nitroaniline	924.00 U	450.00 U	784.00 U	776.00 U
2-Methyl-4,6-Dinitrophenol	924.00 U	450.00 U	784.00 U	776.00 U
N-Nitrosodiphenylamine	924.00 U	450.00 U	784.00 U	776.00 U
4-Bromophenyl-phenyl ether	924.00 U	450.00 U	784.00 U	776.00 U
Hexachlorobenzene	924.00 U	450.00 U	784.00 U	776.00 U
Pentachlorophenol	924.00 U	450.00 U	784.00 U	776.00 U
Phenanthrene	924.00 U	1710.00	784.00 U	776.00 J
Anthracene	924.00 U	339.00 J	784.00 U	776.00 J
Di-n-Butylphthalate	638.00	236.00 J	781.00 J	1080.00
Fluoranthene	924.00 U	1620.00	291.00 J	776.00 U
Pyrene	924.00 U	3200.00	302.00 J	776.00 U
Butylbenzylphthalate	924.00 U	450.00 U	784.00 U	776.00 U
3,3'-Dichlorobenzidine	924.00 U	450.00 U	784.00 U	776.00 U
Benzo(a)Anthracene	924.00 U	1250.00	784.00 J	776.00 U
Chrysene	924.00 U	1580.00	274.00 J	776.00 U
Bis (2-Ethylhexyl)Phthalate	533.00 J	1190.00	503.00 J	615.00 J
Di-n-Octyl Phthalate	1960.00 J	1090.00	2230.00	3520.00
Benzo b Fluoranthene	924.00 U	1330.00	422.00 J	776.00 U
Benzo(k) Fluoranthene	924.00 U	786.00	446.00 J	776.00 U
Benzo a)Pyrene	924.00 U	1070.00	784.00 U	239.00 J
Indeno(1,2,3-cd)Pyrene	924.00 U	808.00	784.00 U	776.00 U
Dibenzo(a,h)Anthracene	924.00 U	450.00 U	784.00 U	776.00 U
Benzo(ghi) Perylene	634.00 J	715.00	784.00 U	776.00 U

U - The compound was analyzed for but not detected at indicated level . Value is different due to varying % solids in each sample.
J - Data indicates the presence of a compound that meets the identification criteria. The result is less than the specified detection limit but greater than zero. The concentration is given as an appropriate value.

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Table 7. Inorganic Analysis
Concentrations reported as ug/ml

Water Samples

Parameter	Site 1 W 1872, Result	Site 2 W 1874, Result	Site 3 W 1875 Result	Detection Limit
Alkalinity	51.0 mg/l	56.0 mg/l	51.0 mg/l	1.0 mg/l
Hardness	53.0 mg/l	58.0 mg/l	61.0 mg/l	1.0 mg/l
Phenol	0.164 mg/l	0.213 mg/l	0.197 mg/l	0.05 mg/l
Total Cyanide	< 0.05 mg/l	< 0.05 mg/l	< 0.05 mg/l	0.05 mg/l
TSS	13.0 mg/l	18.0 mg/l	47.0 mg/l	10.0 mg/l

Parameter	Site 5 W 1877 Result	Site 6 W 1878 Result	Site 7 W 1879 Result	Site Well 29 W Result
Alkalinity	77.0 mg/l	41.0 mg/l	75.0 mg/l	220.0 mg/l
Hardness	105.0 mg/l	120.0 mg/l	105.0 mg/l	109.0 mg/l
Phenol	0.116 mg/l	0.164 mg/l	0.092 mg/l	1.43 mg/l
Total Cyanide	< 0.05 mg/l	< 0.05 mg/l	< 0.05 mg/l	< 0.05 mg/l
TSS	< 10.0 mg/l	21.0 mg/l	< 10.0 mg/l	28.0 mg/l

Parameter	Site 8 W 1880 Result	Site 4 W 1876 Result
Phenol	0.156 mg/l	0.108 mg/l
Total Cyanide	< 0.05 mg/l	< 0.05 mg/l
TSS	< 10.0 mg/l	< 10.0 mg/l

Table 7. Inorganic Analysis (Cont.)
Concentrations reported as ug/g

Soil Samples

Sample I.D.: Army Creek, Site 1 S 1872, 8/1/88

Parameter		Result		Detection Limit
Phenol		1.80	mg/kg	1.52 mg/kg
Total Cyanide	<	1.48	mg/kg	1.48 mg/kg
TOC		0.14	mg/kg	---

Sample I.D.: Army Creek, Site 1 2 1874, 8/1/88

Parameter		Result		Detection Limit
Phenol	<	2.16	mg/kg	2.16 mg/kg
Total Cyanide	<	2.02	mg/kg	2.02 mg/kg
TOC	<	0.01	mg/kg	0.01 mg/kg

Table 7. Inorganic Analysis (Cont.)
Concentrations reported as ug/g

Soil Samples

Sample I.D.: Army Creek, Site 3 S 1875, 8/1/88

Parameter		Result		Detection Limit
Phenol		2.4	mg/kg	2.31 mg/kg
Total Cyanide	<	2.33	mg/kg	2.33 mg/kg
TOC		0.98	mg/kg	---

Sample I.D.: Army Creek, Site 4 S 1876, 8/1/88

Parameter		Result		Detection Limit
Phenol	<	2.40	mg/kg	2.40 mg/kg
Total Cyanide	<	2.30	mg/kg	2.30 mg/kg
TOC		2.36	mg/kg	---

Sample I.D.: Army Creek, Site 5 S 1877, 8/1/88

Parameter		Result		Detection Limit
Phenol	<	1.85	mg/kg	1.85 mg/kg
Total Cyanide	<	2.02	mg/kg	2.02 mg/kg
TOC		1.03	mg/kg	---

Table 7. Inorganic Analysis (Cont.)
Concentrations reported as ug/g

Soil Samples

Sample I.D.: Army Creek, Site 6 S 1878, 8/1/88

Parameter	Result	Detection Limit
Phenol	< 1.19 mg/kg	1.19 mg/kg
Total Cyanide	< 1.34 mg/kg	1.34 mg/kg
TOC	0.23 mg/kg	---

Sample I.D.: Army Creek, Site 7 S 1879, 8/1/88

Parameter	Result	Detection Limit
Phenol	< 1.35 mg/kg	1.35 mg/kg
Total Cyanide	< 1.46 mg/kg	1.46 mg/kg
TOC	0.44 mg/kg	---

Sample I.D.: Army Creek, Site 8 S 1880, 8/1/88

Parameter	Result	Detection Limit
Phenol	< 0.848 mg/kg	0.848mg/kg
Total Cyanide	< 1.19 mg/kg	1.19 mg/kg
TOC	0.05 mg/kg	---

Table 4. Grain Size Analysis

Sample I.D.: Army Creek, Site 1 S 1872, 8/1/88

PARTICLE SIZE - SIEVE ANALYSIS

Sieve Size	% Retained
No. 4 Mesh	12.1
No. 30 Mesh	3.0
No. 50 Mesh	20.1
No. 100 Mesh	22.6
No. 200 Mesh	5.2
PASS No. 200 Mesh	37.0

ANDREASEN PIPET ANALYSIS

Diameter (mm)	% Passing
.075	37.0
.050	35.0
.030	32.3
.012	27.6
.006	21.0
.002	15.2

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Table 4. Grain Size Analysis

Sample #: 8.12710.8

Sample I.D.: Army Creek, Site 2 S 1874, 8/1/88

PARTICLE SIZE - SIEVE ANALYSIS

Sieve Size	% Retained
No. 50 Mesh	0.0
No. 100 Mesh	1.6
No. 200 Mesh	2.3
PASS No. 200 Mesh	96.1

HYDROMETER ANALYSIS

Diameter (mm)	% Passing
.075	96.1
.050	94.9
.030	93.1
.012	51.7
.006	9.8
.002	5.1

INTECH BIOLABS

158 Tices Lane East Brunswick, New Jersey 08816 (201) 257-1050

Table A. Grain Size Analysis

Sample #: 8.12712.8

Sample I.D.: Army Creek, Site 3 S 1875, 8/1/88

PARTICLE SIZE - SIEVE ANALYSIS

Sieve Size	% Retained
No. 50 Mesh	0.0
No. 100 Mesh	6.8
No. 200 Mesh	3.6
PASS No. 200 Mesh	89.6

ANDREASEN PIPET ANALYSIS

Diameter (mm)	% Passing
.075	89.6
.050	87.5
.030	86.1
.012	68.8
.006	57.5
.002	40.1

INTECH BIOLABS
158 Tices Lane East Brunswick, New Jersey 08816 (201) 257-1050

Table 4. Grain Size Analysis

Sample #: 8.12714.8

Sample I.D.: Army Creek, Site 4 S 1876, 8/1/88

PARTICLE SIZE - SIEVE ANALYSIS

Sieve Size	% Retained
No. 50 Mesh	0.0
No. 100 Mesh	1.1
No. 200 Mesh	2.0
PASS No. 200 Mesh	96.9

HYDROMETER ANALYSIS

Diameter (mm)	% Passing
.075	96.9
.050	96.3
.030	95.3
.012	64.2
.006	32.1
.002	16.0

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INTECH BIOLABS

158 Tices Lane East Brunswick, New Jersey 08816 (201) 257-1050

Table 4. Grain Size Analysis

Sample #: 8.12716.8

Sample I.D.: Army Creek, Site 5 S 1877, 8/1/88

PARTICLE SIZE - SIEVE ANALYSIS

Sieve Size	% Retained
No. 30 Mesh	0.0
No. 50 Mesh	5.3
No. 100 Mesh	6.4
No. 200 Mesh	4.8
PASS No. 200 Mesh	83.5

HYDROMETER ANALYSIS

Diameter (mm)	% Passing
.075	83.5
.050	75.6
.030	65.0
.012	41.3
.006	28.1
.002	18.8

INTECH BIOLABS

158 Tices Lane East Brunswick, New Jersey 08816 (201) 257-1050

Table 4. Grain Size Analysis

Sample #: 8.12718.8

Sample I.D.: Army Creek, Site 6 S 1878, 8/1/88

PARTICLE SIZE - SIEVE ANALYSIS

Sieve Size	% Retained
No. 4 Mesh	0.0
No. 10 Mesh	0.6
No. 30 Mesh	5.9
No. 50 Mesh	43.9
No. 100 Mesh	40.8
No. 200 Mesh	4.6
PASS No. 200 Mesh	4.2

INTECH BIOLABS
158 Tices Lane East Brunswick, New Jersey 08816 (201) 257-1050

Table 4. Grain Size Analysis

Sample #: 8.12720.8

Sample I.D.: Army Creek, Site 7 S 1879, 8/1/88

PARTICLE SIZE - SIEVE ANALYSIS

Sieve Size	% Retained
No. 4 Mesh	0.0
No. 10 Mesh	0.8
No. 30 Mesh	2.6
No. 50 Mesh	31.1
No. 100 Mesh	44.3
No. 200 Mesh	7.4
PASS No. 200 Mesh	13.8

INTECH BIOLABS

158 Tices Lane East Brunswick, New Jersey 08816 (201) 257-1050

Table 4. Grain Size Analysis

Sample #: 8.12722.8

Sample I.D.: Army Creek, Site 8 S 1880, 8/1/88

PARTICLE SIZE - SIEVE ANALYSIS

Sieve Size	% Retained
No. 4 Mesh	7.4
No. 10 Mesh	10.9
No. 30 Mesh	62.2
No. 50 Mesh	16.2
No. 100 Mesh	2.3
No. 200 Mesh	0.0
PASS No. 200 Mesh	1.0

SECTION II

C. QC PROCEDURES

Volatile Organics:

The surrogate standard recoveries for the VOA analysis are listed in Table 5. There was one recovery out of fourty-two which was the outside QC limits for the water samples and one out of thirty-six for the soil samples.

The matrix spike duplicate recoveries are listed in Tables 6A&B. The water recoveries in Table 6A were all within control limits. The soil recoveries in Table 6B were all within the QC limits.

Base/Neutral and Acid Extractables:

Table 7 A&B lists the surrogate standard recoveries for the BNA analysis. There were two recoveries outside the QC control limits for the waters and none for the soils.

Table 8A lists the matrix spike duplicate results for the water BNAs. All recoveries were within QC control limits. Table 8B lists the matrix spike results for the soil BNA samples. There were four out of twenty-two spike recoveries outside QC limits, and four out of eleven RPD values were outside control limits.

Inorganic Analyses:

There were no spike or duplicate analyses performed on the samples, but Intech provided QC analysis performed on other samples ran with the analysis set. This information can be found in Appendix D.

Table 5. Surrogate Recoveries for Volatile Organics

Water Samples

EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#
1872	101	104	93
1874	103	106	95
1875	99	106	97
1876	100	104	99
1877	103	109	99
1878	99	105	102
1879	105	104	105
1880	107	105	100
1881	104	106	102
1883	112 *	109	103
1884	107	108	102
1880MS	102	102	105
1880MSD	100	97	104
BLANK	97	99	91

Soil Samples

EPA SAMPLE NO.	S1 (TOL)#	S2 (BFB)#	S3 (DCE)#
BLANK1	101	101	86
1872s	107	94	89
1874s	109	87	95
1875s	106	93	91
1876s	118 *	85	100
1877s	116	81	106
1878s	106	105	104
1879s	107	98	109
1880s	98	105	98
1880sMS	101	101	96
1880sMSD	99	96	92
BLANK2	104	109	95

	QC LIMITS
S1 (TOL) = Toluene-d8	(88-110)
S2 (BFB) = Bromofluorobenzene	(86-115)
S3 (DCE) = 1,2-Dichloroethane-d4	(76-114)

Column to be used to flag recovery values

* Values outside of contract required QC limits

Table 8A. Matrix Spike Duplicate Recoveries for VOAs in Water
Concentrations reported as ug/L

Lab Name:WESTON REAC Contract:3347-01-01

Lab Code: NA Case No.: 1123 SAS No.: NA SDG No.: NA

Matrix Spike - EPA Sample No.: 1980

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	#	QC LIMITS REC.
1,1-Dichloroethene	50.00	0.00	48.00	96		61-145
Trichloroethene	50.00	0.00	49.00	97		71-120
Benzene	50.00	0.00	51.00	102		76-127
Toluene	50.00	0.00	51.00	102		76-125
Chlorobenzene	50.00	0.00	51.00	102		75-130

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	#	% RPD	#	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50.00	49.00	97		1		14	61-145
Trichloroethene	50.00	48.00	95		2		14	71-120
Benzene	50.00	50.00	100		1		11	76-127
Toluene	50.00	49.00	98		4		13	76-125
Chlorobenzene	50.00	50.00	99		2		13	75-130

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of qc limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

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Table 8B. Matrix Spike Recoveries for VOAs in Soil
Concentrations reported as ug/kg

Lab Name: WESTON REAC Contract: 3347-01-01

Lab Code: NA Case No.: 1123 SAS No.: NA SDG No.: NA

Matrix Spike - EPA Sample No.: 1880s Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC LIMITS REC.
1,1-Dichloroethene	50.00	0.00	56.00	112	59-172
Trichloroethene	50.00	0.00	56.00	111	62-137
Benzene	50.00	0.00	54.00	107	66-142
Toluene	50.00	0.00	50.00	100	59-139
Chlorobenzene	50.00	0.00	52.00	103	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
1,1-Dichloroethene	50.00	49.00	98	13	22	59-172
Trichloroethene	50.00	44.00	87	24	24	62-137
Benzene	50.00	44.00	87	20	21	66-142
Toluene	50.00	44.00	87	13	21	59-139
Chlorobenzene	50.00	44.00	87	16	21	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of qc limits

RPD: 0 out of 5 outside limits
Recovery: 0 out of 10 outside limits

COMMENTS: AR300300

Table 7A. Surrogate Recoveries for BNAs in Water
Concentrations reported as ug/L

SURROGATE COMPOUNDS	BLANK	1872	1874	1875
2-Fluorophenol	49.7 %	36.7 %	36.9 %	56.9 %
Phenol-d5	36.4 %	30.3 %	30.2 %	48.8 %
Nitrobenzene-d5	52.4 %	44.9 %	42.0 %	60.0 %
2-Fluorobiphenyl	46.5 %	39.4 %	55.8 %	83.0 %
2,4,6-Tribromophenol	77.6 %	46.4 %	49.8 %	79.5 %

SURROGATE COMPOUNDS	1877	1878	1879	1880	1883
2-Fluorophenol	43.1 %	74.3 %	60.1 %	98.4 %	55.9 %
Phenol-d5	32.3 %	58.2 %	46.0 %	79.8 %	29.0 %
Nitrobenzene-d5	41.1 %	85.4 %	54.0 %	100.4 %	48.4 %
2-Fluorobiphenyl	41.1 %	83.2 %	53.6 %	108.4 %	65.2 %
2,4,6-Tribromophenol	50.7 %	54.0 %	74.9 %	138.9 %	65.9 %

SURROGATE COMPOUNDS	1876	1876MS	1876MSD
2-Fluorophenol	53.1 %	61.1 %	61.3 %
Phenol-d5	40.0 %	59.9 %	55.3 %
Nitrobenzene-d5	45.9 %	62.1 %	57.9 %
2-Fluorobiphenyl	56.5 %	65.0 %	68.1 %
2,4,6-Tribromophenol	51.5 %	66.8 %	56.5 %

LIMITS
21 - 100
10 - 94
35 - 114
43 - 116
10 - 123

Table 7B. Surrogate Recoveries for BNAs in Soil
Concentrations reported as ug/KG

SURROGATE COMPOUNDS	1872	1874	1875
2-Fluorophenol	77.2 %	79.6 %	72.3 %
Phenol-d5	62.0 %	97.4 %	83.4 %
Nitrobenzene-d5	32.2 %	78.3 %	53.2 %
2-Fluorobiphenyl	72.6 %	84.8 %	93.6 %
2,4,6-Tribromophenol	77.3 %	71.6 %	72.7 %

SURROGATE COMPOUNDS	1876	1877	1878	1880
2-Fluorophenol	25.5 %	64.6 %	1.4 %	21.1 %
Phenol-d5	33.2 %	25.9 %	2.3 %	62.3 %
Nitrobenzene-d5	21.6 %	62.3 %	.8 %	16.1 %
2-Fluorobiphenyl	34.8 %	85.3 %	1.9 %	39.0 %
2,4,6-Tribromophenol	23.3 %	71.2 %		136.7 %

SURROGATE COMPOUNDS	1879	1879MS	1879MSD
2-Fluorophenol	40.9 %	46.4 %	47.2 %
Phenol-d5	52.1 %	61.0 %	59.3 %
Nitrobenzene-d5	24.8 %	41.3 %	39.6 %
2-Fluorobiphenyl	52.8 %	72.9 %	91.3 %
2,4,6-Tribromophenol	50.0 %	72.0 %	82.1 %

LIMITS
25 - 121
24 - 113
23 - 120
30 - 115
19 - 122

Table 8A. Matrix Spike Duplicate Recoveries for BNAs in Water
Concentrations reported as ug/L

Name: WESTON REAC Contract: 3347-01-01

Lab Code: JETS ER Case No.: WESTON SAS No.: NA SDG No.: NA

Matrix Spike - EPA Sample No.: 1876

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	#	QC LIMITS REC.
Phenol	100.00	0.00	48.00	47		12- 89
2-Chlorophenol	100.00	0.00	75.00	74		27-123
1,4-Dichlorobenzene	50.00	0.00	29.00	57		36- 97
N-Nitroso-di-n-prop.(1)	50.00	0.00	47.00	94		41-116
1,2,4-Trichlorobenzene	50.00	0.00	28.00	55		39- 98
4-Chloro-3-methylphenol	100.00	0.00	53.00	53		23- 97
Acenaphthene	50.00	0.00	39.00	77		46-118
4-Nitrophenol	100.00	0.00	37.00	36		10- 80
2,4-Dinitrotoluene	50.00	0.00	34.00	67		24- 96
Pentachlorophenol	100.00	0.00	57.00	56		9-103
Pyrene	50.00	0.00	45.00	90		26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	#	% RPD	#	QC LIMITS RPD	QC LIMITS REC.
Phenol	100.00	41.00	40		16		42	12- 89
2-Chlorophenol	100.00	68.00	67		9		40	27-123
1,4-Dichlorobenzene	50.00	24.00	47		19		28	36- 97
N-Nitroso-di-n-prop.(1)	50.00	47.00	94		0		38	41-116
1,2,4-Trichlorobenzene	50.00	25.00	49		11		28	39- 98
4-Chloro-3-methylphenol	100.00	49.00	48		9		42	23- 97
Acenaphthene	50.00	38.00	76		1		31	46-118
4-Nitrophenol	100.00	44.00	44		20		50	10- 80
2,4-Dinitrotoluene	50.00	38.00	76		12		38	24- 96
Pentachlorophenol	100.00	63.00	62		10		50	9-103
Pyrene	50.00	39.00	78		14		31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of qc limits

RPD: 0 out of 11 outside limits
Spike Recovery: 0 out of 22 outside limits

COMMENTS: _____

Table 3B. Matrix Spike Recoveries for BNAs in Soil
Concentrations reported as ug/KG

Name:WESTON REAC Contract:3347-01-01

Lab Code: JETS ER Case No.: WESTON SAS No.: NA SDG No.: NA

Matrix Spike - EPA Sample No.: 1279 Level:(low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC	#	QC LIMITS REC.
Phenol	4920.00	0.00	3150.00	64		26- 90
2-Chlorophenol	4920.00	0.00	3180.00	64		25-102
1,4-Dichlorobenzene	2460.00	0.00	0.00	0	*	28-104
N-Nitroso-di-n-prop.(1)	2460.00	0.00	610.00	24	*	41-126
1,2,4-Trichlorobenzene	2460.00	0.00	450.00	18	*	38-107
4-Chloro-3-methylphenol	4920.00	0.00	2350.00	47		26-103
Acenaphthene	2460.00	74.00	1250.00	47		31-137
4-Nitrophenol	4920.00	0.00	3670.00	74		11-114
2,4-Dinitrotoluene	2460.00	0.00	1740.00	70		28- 89
Pentachlorophenol	4920.00	0.00	4310.00	87		17-109
Pyrene	2460.00	1150.00	3580.00	98		35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC	#	% RPD	#	QC LIMITS RPD	QC LIMITS REC.
Phenol	4920.00	3180.00	64		0		35	26- 90
2-Chlorophenol	4920.00	2830.00	57		11		50	25-102
1,4-Dichlorobenzene	2460.00	380.00	15	*	200	*	27	28-104
N-Nitroso-di-n-prop.(1)	2460.00	1410.00	57		81	*	38	41-126
1,2,4-Trichlorobenzene	2460.00	1090.00	44		83	*	23	38-107
4-Chloro-3-methylphenol	4920.00	2140.00	43		8		33	26-103
Acenaphthene	2460.00	2100.00	82		54	*	19	31-137
4-Nitrophenol	4920.00	2920.00	59		22		50	11-114
2,4-Dinitrotoluene	2460.00	1950.00	79		12		47	28- 89
Pentachlorophenol	4920.00	3320.00	67		26		47	17-109
Pyrene	2460.00	3680.00	103		4		36	35-142

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of qc limits

RPD: 4 out of 11 outside limits
Spike Recovery: 4 out of 22 outside limits

COMMENTS: _____

SECTION III

ROY F. WESTON/REAC
GSA RARITAN DEPOT BDG.209, ANNEX
WOODBRIDGE AVENUE
EDISON, NEW JERSEY 08837

August 4, 1988

Intech Biolabs
158 Tices Lane
East Brunswick, New Jersey 08816

Attention : Bianca Buckwalter

Re: Job #1123

Dear Bianca:

This letter is to confirm the delivery of eight (8) soil samples and nine (9) water samples to your laboratory for various analyses. The table below lists the analyses requested for the samples. Please follow the methods found in the following publications: EPA Test Methods for the Evaluation of Solid Waste, September 1987, ASTM for the grainsizing and Standard Methods for the Examination of Wastewater, 15th Edition. Please perform the appropriate QA/QC per method as well as per matrix.

Quantity	Matrix	Analyses Requested	QA/QC Requested
9	water	Cyanide, Phenol	MS/MSD
8	soil	Cyanide, Phenol	
		TOC	MS/MSD
8	soil	Grainsizing	
		Seive, Hydrometer	DUP
7	water	Hardness	DUP
9	water	TSS	DUP
7	water	Alkalinity	DUP

AR300306

The data package for the analyses should include:

1. Copies of all analyst's notebook data.
2. Tabulated sample results.
3. Tabulated duplicate and/or matrix spike results.
4. Copy of standard curve used.
5. Copies of all raw data.

This analysis will be performed under purchase order # 51388. The price agreed upon for this set of samples is not to exceed $3249.00. Please sign th chain of custody form and return it to me with the final report by August 31, 1988. The results should be sent to my attention at the following address:

WESTON - REAC
GSA Raritan Depot, Bldg. 209 Annex
Woodbridge Avenue
Edison, New Jersey 08837

If there are any questions or problems concerning the analyses please call me at (201) 906-3459 or 3458.

Sincerely,

Renee Cohen

Renee G. Cohen

SSM
SPORTS, STEVENS and McCOY INC.
ENGINEERS • PLANNERS • SCIENTISTS

August 23, 1988

Intech Biolabs
158 Tices Lane
East Brunswick, NJ 08816

ATTN: JANE MURPHY

Dear Sirs:

Because of the small amount of sample you sent to us, we had to modify the methods of analysis you requested.

We did perform a Sieve Analysis on all the samples. To do a hydrometer analysis on the -200 mesh material, we normally prefer to work with about 50 grams minimum. Therefore, for those samples where insufficient amount was available for hydrometer we substituted the Andreasen pipet. This apparatus operates also on the sedimentation principle, but requires a much smaller amount of sample.

Some of the samples had a majority of coarse material and very little passed through the 200 mesh screen. Consequently, we felt that further breakdown by hydrometer or pipet was not warranted. However, if you would require more breakdown on grain size for those samples in question, we would need additional material. For some of the samples, several pounds may have to be processed to produce a sufficient portion for further analysis.

If you have any questions concerning the analysis of your samples, please contact me. We are pleased to have been of service to you.

Very truly yours,

Carl J. Wummer

CARL J. WUMMER - GROUP LEADER
LABORATORY SERVICES

CJW/rk
Attachment

REPLY TO
☐ HOME OFFICE
345 N. Wyomissing Blvd
P.O. Box 6887
Reading, PA 19610-0887

☐ ANALYTICAL LABORATORIES
30 Rooke Street
P.O. Box 6887
Reading, PA 19611-6887
(215) 375-8461

☐ LEHIGH VALLEY OFFICE
MetroPlex Office Plaza Building
3730 Lehigh Street
Allentown, PA 18103-3438
(215) 433-1188

☐ BALTIMORE OFFICE
[illegible] Fairmount Avenue
Suite 108
Baltimore, MD 21204-2515
(301) 494-0300

Roy F. ston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY REC D/LAB WORK REQUEST

No: 000669

Project Name: ARMY CREEK
Project Number: 3347-01-01-1123
RFW Contact: G. BUCHANAN Phone: Due Date:

SHEET NO OF

SAMPLE IDENTFICATION

ANALYSES REQUESTED

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative					
✓1874	2	W	8/1/88	1 l AMBER	BNA				
✓1875	3	W	8/1/88	1 l AMBER	BNA				
✓1875	3	W	8/1/88	1 l AMBER	BNA				
✓1875	3	S	8/1/88	32 oz	BNA, PP METALS, Fe				
✓1875	3	W	8/1/88	1 l POLY HNO_3	SOLUBLE METALS, Fe				
✓1875	3	W	8/1/88	3 x 40 ML	VOA				
✓1874	2	W	8/1/88	3 x 40 ML	VOA				
✓1875	3	S	8/1/88	4 oz	VOA				
✓1874	2	S	8/1/88	4 oz	VOA				
✓188	TRIP BLANK	W	8/1/88	2 x 40 ML	VOA				
✓1874	2	S	8/1/88	32 oz	BNA, PP METALS, Fe				
✓1874	2	W	8/1/88	1 l AMBER	BNA				

Matrix:
SO Soil DS- Drum Solids
WA Water DL- Drum Liquids
OL Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
Samples	Mark Fenton	Renee Cohen	8/2	1620					

Roy F. [illegible]ton, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY REC[illegible] /LAB WORK REQUEST

No: 000608

Project Name: Army Creek
Project Number: 336-01-01-1133
RFW Contact: G. Buxton Phone: Due Date:

SHEET NO 1 OF 2

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative					
1882	EQUIP BLANK	W	8/1/88	1l poly					
✓1877	5	S	8/1/88	32oz/NONE	BNA	PP METALS			
✓1877	5	W	8/1/88	3x40ML	VOA				
✓1877	5	W	8/1/88	1l poly/HNO_3	TOTAL METALS, Fe				
✓1884	EQUIP. RINSE	W	8/2/88	3x40ML	VOA				
✓1881	TRIP BLANK	W	8/1/88	3x40ML	VOA				
✓1877	5	W	8/1/88	1l AMBER/NONE	BNA				
✓1876	4	S	8/1/88	4oz/NONE	VOA				
✓1877	5	W	8/1/88	1l poly/HNO_3	SOLUBLE METALS, Fe				
✓1877	5	S	8/1/88	4oz/NONE	VOA				
✓1877	5	W	8/1/88	1l AMBER/NONE	BNA				
✓1876	4	W	8/1/88	1l poly/HNO_3	TOTAL METALS, Fe				
✓1876	4	S	8/1/88	32oz/NONE	BNA, METALS, Fe				
✓1880	8	W	8/2/88	3x40ML/NONE	VOA				
✓1880	8	W	8/2/88	1l poly/HNO_3	SOLUBLE METALS, Fe				
✓1878	6	W	8/1/88	3x40ML/NONE	VOA				
✓1878	6	S	8/1/88	4oz/NONE	VOA				
✓1878	6	S	8/1/88	32oz/NONE	BNA, PP METALS, Fe				
✓1878	6	W	8/1/88	1l poly/HNO_3	TOTAL METALS, Fe				
✓1878	6	W	8/1/88	1l poly/HNO_3	SOLUBLE METALS, Fe				

Matrix:
SO Soil DS Drum Solids
WA Water DL Drum Liquids
OL Oil X Other

Special Instructions:

Sample Possession	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
Sample	Murthwaite	Rene Colen	8/2	1620					

Roy F. [illegible]ston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY REC[illegible]D/LAB WORK REQUEST

No: 000610

SHEET NO 2 OF 2

Project Name: Army Creek
Project Number: 3347-01-01-AE 1123
RFW Contact: G. Bruton Phone: Due Date:

SAMPLE IDENTIFICATION / **ANALYSES REQUESTED**

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative					
✓1880	8	W	8/2/88	1 l AMBER/NONE	BNA				
✓1880	8	W	8/2/88	1 l POLY/HNO3	TOTAL	METALS	Fe		
✓1878	6	W	8/1/88	1 l AMBER	BNA				
✓1880	8	S	8/2/88	4 oz /NONE	VOA				
✓1878	6	W	8/1/88	1 l AMBER/NONE	BNA				
✓1880	8	W	8/2/88	1 l AMBER/NONE	BNA				
✓1880	8	S	8/2/88	32 oz /NONE	BNA, METALS		Fe		

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
Sample	Mark Huston	Rene Cole	8/2	1630					

HQ0031

Roy F. [illegible]ston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY REC[illegible]D/LAB WORK REQUEST

No: 000668

Project Name: ARMY CREEK
Project Number: 3347-01-01-1123
RFW Contact: G. BUCHANAN Phone: [illegible] Due Date [illegible]

SHEET NO 2 OF 2

SAMPLE IDENTFICATION | **ANALYSES REQUESTED**

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative					
✓ 1879	7	S	8/2/88	32oz —	BNA, PP METALS, Fe				
✓ 1883	WELL 29	W	8/2/88	3x40ML	VOA				
✓ 1879	7	S	8/2/88	4 OZ	VOA				
✓ 1879	7	W	8/2/88	3x40ML	VOA				
✓ 1875	MW 23	W	8/1/88	1 lpoly/HNO_3	TOTAL METALS, Fe				
✓ 1874	2	W	8/1/88	1 lpoly/HNO_3	TOTAL METALS, Fe				

Matrix:
SL- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
SAMPLES	Mike Hudson	Rene Cobra	8/2	1615					

2100312

Roy F. [illegible]ston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY REC[illegible] ID/LAB WORK REQUEST

No: 000666

SHEET NO 1 OF 2

Project Name: Army Creek
Project Number: 3349-01-01-7103
RFW Contact: G. Buchanan Phone: Due Date:

SAMPLE IDENTIFICATION | **ANALYSES REQUESTED**

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative					
1876	4	W	8/1/88	1 l AMBER/NONE	BNA				
1872	1	S	8/1/88	32 oz/NONE	BNA, PP METALS, Fe				
1872	1	W	8/1/88	1 l AMBER/NONE	BNA		*broke during shipment		
1872	1	S	8/1/88	4 oz /NONE	VOA				
1874	2	W	8/1/88	1 l poly / HNO_3	SOLUBLE METALS, Fe				
1872	1	W	8/1/88	1 l poly / HNO_3	SOLUBLE METALS, Fe				
1872	1	W	8/1/88	1 l poly / HNO_3	TOTAL METALS, Fe				
1876	4	W	8/1/88	1 l AMBER/NONE	BNA				
1876	4	W	8/1/88	4 x 40 ml /NONE	VOA				
1872	1	W	8/1/88	1 l AMBER/NONE	BNA				
1876	4	W	8/1/88	1 l poly / HNO_3	SOLUBLE METALS, Fe				
1872	1	W	8/1/88	4 x 40 ml	VOA				
1879	7	W	8/1/88	1 l poly / HNO_3	SOLUBLE METALS, Fe				
1883	WELL 29	W	8/2/88	1 l poly / HNO_3	TOTAL METALS, Fe				
1879	7	W	8/2/88	1 l poly / HNO_3	TOTAL METALS, Fe				
1883	WELL 29	W	8/2/88	1 l poly / HNO_3	SOLUBLE METALS, Fe				
1883	WELL 29	W	8/2/88	1 l AMBER -	BNA				
1883	WELL 29	W	8/2/88	1 l AMBER -	BNA				
1879	7	W	8/2/88	1 l AMBER -	BNA				
1879	7	W	8/2/88	1 l AMBER	BNA				

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Name/Reason	Relinquished By	Received By	Date	Time	Name/Reason	Relinquished By	Received By	Date	
SAMPLES	Mark Hinton	Rene Colon	8/2	1615					

Roy F. [illegible]ston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY REC[illegible]D/LAB WORK REQUEST

No: [illegible]3867

Project Name: [illegible]
Project Number: [illegible]
RFW Contact: [illegible] Phone: [illegible] Due Date: [illegible]

SHEET NO OF

SAMPLE IDENTFICATION					ANALYSES REQUESTED				
Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	[illegible]	[illegible]	TSS		
1874	[illegible]	W	8/1/88	[illegible]	X				
1875	[illegible]	W	8/1/88	[illegible]	X		X		
1876	[illegible]	W	8/1/88	[illegible]	X				
1876	Site 4	W	8/1/88	[illegible]			X		
1873	Well 24	W	8/1/88	[illegible]		X	X		
1872	Site 1	W	8/1/88	[illegible]		X	X		
1879	Site 7	W	8/2/88	[illegible]		X	X		
1874	Site 3	W	8/1/88	[illegible]		X	X		
1875	Site 3	W	8/1/88	[illegible]		X	X		
1878	Site 6	W	8/1/88	[illegible]		X	X		
1880	Site 8	W	8/2/88	[illegible]			X		
1877	Site 5	W	8/1/88	[illegible]		X	X		

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Name/Reason	Relinquished By	Received By	Date	Time	Name/Reason	Relinquished By	Received By	Date	
Samples	[illegible]		8/1/88	1615					

Roy F. [illegible]ston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY REC[illegible]D/LAB WORK REQUEST

No: 31[illegible]507

Project Name: Army Creek
Project Number: 3349.01.01.1123
RFW Contact: G. Sullivan Phone: [illegible]7783 Due Date:

SHEET NO 1 OF

SAMPLE IDENTIFICATION

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	CN	[illegible]	[illegible]		
1[illegible]	[illegible]	W	[illegible]	[illegible]		X			
1[illegible]	[illegible]	W	[illegible]	[illegible]	X				
1[illegible]	[illegible]	S	[illegible]	[illegible]	X	X	X		
1[illegible]	[illegible]	W	[illegible]	[illegible]	X				
1[illegible]	[illegible]	W	[illegible]	[illegible]		X			
1[illegible]	[illegible]	S	[illegible]	[illegible]	X	X	X		
1[illegible]	[illegible]	S	[illegible]	[illegible]	X	X	X		
1[illegible]	[illegible]	W	[illegible]	[illegible]					
1[illegible]	[illegible]	W	[illegible]	[illegible]	X				
1880	Site 8	W	8-2-88	1 L 2 Bj/NaOH	X				
1880	Site 8	W	8-2-88	1 L Bj/H2SO4		X			
1880	Site 8	S	8-2-88	32oz Glass	X	X	X		
1878	Site 6	W	8-1-88	1 L Bj/NaOH	X				
1878	Site 6	W	8-1-88	1 L Bj/H2SO4		X			
1878	Site 6	S	8-1-88	32oz Glass	X	X	X		
1874	Site 2	S	8-1-88	32oz Glass	X	X	X		
1874	Site 2	W	8-1-88	1 L Bj/NaOH	X				
1875	Site 3	W	8-1-88	1 L Bj/NaOH	X				
1875	Site 3	W	8-1-88	1 L Bj/H2SO4		X			
1875	Site 3	S	8-1-88	32oz Glass	X	X	X		

Matrix:
Soil DB- Drum Solids
Water DL- Drum Liquids
Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
Samples	[illegible]	[illegible]	[illegible]	[illegible]					

Roy F. [illegible]ston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY REC[illegible]D/LAB WORK REQUEST

Project Name: Army/Geek
Project Number: 3349-01-01-1123
RFW Contact: G. Buchanan Phone: Due Date:

No: 0[illegible]0 03
SHEET NO. 1 OF 1

SAMPLE IDENTIFICATION

ANALYSES REQUESTED

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	Phenol	CN	TOC	Grain Size	Herbicides
1874	Site 2	W	8.1.88	1 L Poly/H_2SO_4	X				
1883	(Site) Well [illegible]	W	8.2.88	1 L Poly/NaOH		X			
1879	Site 7 [illegible]	W	8.2.88	32oz Glass	X	X	X		
1879	Site 7 [illegible]	W	8.2.88	1 L Poly/H_2SO_4	X				
1883	Well 29	W	8.2.88	1 L Poly/H_2SO_4	X				
1879	Site 7	W	8.2.88	1 L Poly/NaOH		X			
1880	Site 8	S	8.2.88	32oz Glass				X	
1877	Site 5	S	8.1.88	32oz Glass				X	
1876	Site 4	S	8.1.88	32oz Glass				X	
1878	Site 6	S	8.1.88	32oz Glass				X	
1879	Site 7	S	8.2.88	32oz Glass				X	
1872	Site 1	S	8.1.88	32oz Glass				X	
1875	Site 3	S	8.1.88	32oz Glass				X	
1874	Site 2	S	8.1.88	32oz Glass				X	
1872	Site 1	W	8.1.88	1 L Poly/HNO_3					X
1883	(Site) Well 29	W	8.2.88	1 L Poly/HNO_3					X
1877	Site 5	W	8.1.88	1 L Poly/HNO_3					X
1875	Site 3	W	8.1.88	1 L Poly/HNO_3					X

Matrix:
S- Soil DB- Drum Solids
W- Water DL- Drum Liquids
Fb X- Other

Special Instructions:

Name/Possession	Relinquished By	Received By	Date	Time	Name/Possession	Relinquished By	Received By	Date	
Sample	[signature]		8.3.88	1600					

HR3003315

ANALYTICAL REPORT

ARMY CREEK SITE
New Castle, Del.

PART II (METALS)

October 11, 1988

EPA Work Assignment No. 1-123
Project No. 2347-01-01-1123
EPA Contract No. 68-03-3482

Submitted to
D. Charters
EPA-ERT

Gary Buchanan — Date: 10/13/88
Task Leader

Analysis by:
Weston Analytics, REAC

Antonio Lo Surdo — Date: 10/12/88
S&A Section Chief

Prepared by:
M. Murphy

W. Scott Butterfield — Date: 10/13/88
Project Manager

Reviewed by:
M. Murphy

AR300317

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FIELD INVESTIGATION

Army Creek Site
New Castle, Delaware

October 31, 1988

EPA Work Assignment No. 0-123
Weston Work Order No. 3347-01-01-1123
EPA Contract No.: 68-03-3482

FINAL REPORT

Prepared by:
Roy F. Weston, Inc.

Gary Buchanan
Task Leader

10/31/88
(Date)

Prepared for:
U.S. EPA/ERT

David W. Charters
Work Assignment Manager

W. Scott Butterfield
Project Manager

11/3/88
(Date)

eh:rd/MUNNEY/FR-ARMY

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eh:rd/MUNNEY/FR-ARMY

LIST OF TABLES

eh:rd/MUNNEY/FR-ARMY

SECTION I

INTRODUCTION

On August 1, 1988, nine water and eight sediment samples were received from the Army Creek Site in New Castle, Delaware. The analytical report of September 2a,1988 contains results of all analyses requested except metals. This report contains the metals results.

Both filtered and total metals were requested on the water samples. Due to instrumental difficulties with the AA furnace, the metal samples for arsenic, selenium, antimony, and lead were subcontracted to Weston Analytics in Lyonville, Pa.

ANALYTICAL RESULTS

Metals:

The metals analyses were performed in accordance with methodology in "Test Methods for Evaluating Solid Waste, USEPA SW-846-Third Edition, 1986." The results of the water analyses are listed in Table 1, and the results of the soil analyses are listed in Table 2.

Table 1. Results of Metals in Water
Concentrations reported as ug/ml

Parameter	1872 1 Soluble	1872 1 Total	2	1874 2 Soluble	1874 2 Total	3	1875 3 Soluble	1875 3 Total	4	1876 4 soluble	1876 4 Total	Equip. Rinse	Detection Limit
Arsenic	ND	ND		ND	ND		ND	ND		ND	ND	ND	0.010
Antimony	ND	ND		ND	ND		ND	ND		ND	ND	ND	0.060
Beryllium	ND	ND		ND	ND		ND	ND		ND	ND	ND	0.05
Cadmium	ND	ND		ND	ND		0.038	ND		0.036	ND	ND	0.01
Chromium	0.084	0.057		0.058	0.15		ND	0.083		0.06	0.093	ND	0.05
Copper	ND	ND		ND	ND		ND	ND		ND	ND	ND	0.05
Lead	ND	ND		ND	ND		ND	ND		ND	ND	ND	0.005
Mercury	ND	ND		ND	ND		ND	ND		ND	0.0002	ND	0.0002
Nickel	ND	ND		ND	0.15		ND	ND		ND	ND	ND	0.1
Selenium	ND	ND		ND	ND		ND	ND		ND	ND	ND	0.005
Silver	ND	ND		ND	ND		ND	ND		ND	ND	ND	0.1
Thallium	ND	ND		ND	0.61		ND	ND		ND	ND	ND	0.5
Zinc	0.64	0.016		0.38	ND		ND	0.024		0.031	ND	ND	0.01
Iron	0.58	2.26		ND	2.86		ND	2.61		ND	1.18	ND	0.5

ND - not detected.

Table 1. Results of Metals in Water (Cont.)
Concentrations reported as ug/l

Parameter	1977 5 Soluble	1977 5 Total	1978 6 Soluble	1978 6 Total	1979 7 Soluble	1979 7 Total	1980 8 Soluble	1980 8 Total	1982 Well 29 Soluble	1982 Well 29 Total
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Beryllium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	ND	ND	0.034	ND	0.03e	ND	0.038	ND	ND	ND
Chromium	ND	0.087	ND	ND	0.09	ND	0.072	0.064	ND	ND
Copper	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mercury	ND	ND	0.0002	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	0.025	ND	0.16	0.1	0.036	0.078	0.039	0.018	0.02	ND
Iron	ND	0.98	ND	1.16	ND	ND	ND	1.09	29.3	27.4

ND - not detected.

Table 2. Results of Metals in Soil
Concentrations reported as mg/kg

Parameter	1973 SITE 1	1974 SITE 2	1975 SITE 3	1976 SITE 4	1977 SITE 5	1978 SITE 6	1979 SITE 7	1980 SITE 8	DETECTION LIMIT
Arsenic	2.3	ND	a	4.9	5.6	1.1	1.a	1.1	0.95
Antimony	ND	ND	ND	ND	ND	ND	ND	ND	5.9
Beryllium	ND	ND	ND	ND	ND	ND	ND	ND	10
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	10
Chromium	12.5	ND	45	35.2	30.9	8.3	14.9	ND	5
Copper	13.1	ND	43.9	47.3	32.5	11.3	20.9	ND	5
Lead	21.2	6	76	90.3	97.8	45.8	59.2	ND	0.49
Mercury	0.0592	0.069	0.105	0.0492	0.1186	0.0797	0.0484	0.0459	0.01
Nickel	13.4	ND	26.4	25.4	17.7	ND	9.93	ND	10
Selenium	ND	ND	ND	ND	ND	ND	ND	ND	0.49
Silver	ND	ND	ND	ND	ND	ND	ND	ND	5
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	10
Zinc	57.1	18.9	172	273	165	49.5	102	16.4	10
Iron	20900	1830	a8800	39700	24700	7100	9960	4650	50

ND - Not detected.
a - Approximate number, below method detection limit.

SECTION II

Metals:

EMSL Performance Samples were analyzed with each day's sample set to ensure the accuracy of the calibration standards. Table 1 lists the results of these analyses. The percent recoveries ranged from 94-107%.

Tables 4 A-C list the results of the matrix spike recoveries for the water samples. The percent recoveries ranged from 77-110 % except for antimony and selenium. The recoveries for selenium were 2.8 and 1.4%, and the recoveries for antimony were 57 and 60%. The RPD values for arsenic and antimony were below 10, but the RPD for selenium was 66.

Table 5 lists the matrix spike recoveries for the soil samples. The recoveries for mercury, as well as the RPD values were acceptable. The recoveries for arsenic, selenium, antimony, and lead were higher for the matrix spike than they were for the matrix spike duplicate, therefore the RPD values were high.

Table 7. EMSL Performance Evaluation Recoveries

Date 8/27/88
ICAP 19 WP1087

Parameter	Recovered Conc.	True Value	% Recover.
Cadmium	0.94	0.94	100
Zinc	1.02	1.01	101
Beryllium	0.92	0.96	96
Nickel	0.86	1.02	84
Copper	0.99	1.03	96
Thallium	0.76	1.01	75
Chromium	1.04	1.03	101

Table 7. EMSL Performance Evaluation Recoveries (Cont.)

Date 9/28/88
ICAP 19 WP1087

Parameter	Recovered Conc.	True Value	% Recovery
Cadmium	1.25	0.94	133
Zinc	1.21	1.01	120
Beryllium	1.24	0.96	129
Nickel	1.16	1.02	114
Copper	1.18	1.03	115
Thallium	1.00	1.01	99
Chromium	1.12	1.03	109

Table 4A. Results of Matrix Spike Recoveries in Water
Concentrations reported as ug/L

Sample No. / Parameter	SPIKE CONC. MS	SPIKE CONC. MSD	RECOVERED CONC. MS	RECOVERED CONC. MSD	% RECOVERY MS	% RECOVERY MSD	RPD
8e TOTAL							
Arsenic	50	50	46.2	42.4	92.4	84.8	8.25
Selenium	50	50	1.4	0.7	2.8	1.4	66.67
Antimony	50	50	28.7	30.2	57.4	60.4	5.09

Table 4B. Results of Matrix Spike Recoveries in Water
Concentrations reported as ug/ml

02 TOTAL

Sample No. / Parameter	SAMPLE CONC.	SPIKE CONC.	RECOVERED CONC. MS	% RECOVERY MS
Beryllium	0.038	5	5.49	109
Cadmium	0.008	5	5.2	104
Chromium	0.148	5	5.42	105
Copper	0.032	5	4.82	96
Nickel	0.197	5	5.1	98
Silver	0.064	5	3.72	73
Thallium	0.97	5	4.98	80
Zinc	0.01	5	5.11	102
Iron	2.87	5	7.77	98

AR300330

Table 4C. Results of Matrix Spike Recoveries in Water
Concentrations reported as ug/ml

0.5 SOLUBLE

Sample No. / Parameter	SAMPLE CONC.	SPIKE CONC.	RECOVERED CONC. MS	% RECOVERY MS
Beryllium	ND	5	4.41	88
Cadmium	ND	5	5.1	102
Chromium	ND	5	5.51	110
Copper	ND	5	4.76	95
Nickel	ND	5	5.08	102
Silver	ND	5	3.79	76
Thallium	ND	5	5.32	106
Zinc	0.025	5	5.04	100
Iron	ND	5	4.91	98

ND - Denotes not detected.

Table 5. Results of Matrix Spike Recoveries in Soil
Concentrations reported as ug/g

Sample No. / Parameter	SPIKE CONC. MS	SPIKE CONC. MSD	RECOVERED CONC. MS	RECOVERED CONC. MSD	% RECOVERY MS	% RECOVERY MSD	RPD
ACID/							
Arsenic	50	40	39.5	1.5	79	3	201
Antimony	50	100	35.4	1.4	70.8	1.4	185
Selenium	50	10	35.3	2	70.6	20	179
Lead	50	20	31.2	1.8	62.4	9	178
SITE a/							
Mercury	5	5	4.966	5.158	99	103	2.54

SECTION III

ROY F. WESTON, INC.
Client: WESTON - REAC
RFW Sample No: 8809-598, -599, -600, -601

CASE NARRATIVE

1. Samples and digestates were received 09-10-88. All required holding times were met.
2. ICVS, CCVS and LCS stock standards were purchased from Inorganic Ventures Laboratory.
3. All initial and continuing calibration verification standards and blanks are within the control limits.
4. All preparation blanks prepared by WESTON Analytics were within control limits.
5. All LCS's prepared by WESTON Analytics were within control limits.
6. Many of the samples labelled MS/MSD appear not to have been spiked (Acid spiked MSD, PAS #2 MS/MSD, PAS 02834, #3 total metals MS/MSD).
7. 100% solids was assumed for all soil sample calculations, as these data were not supplied by REAC.
8. Matrix spike calculations, and blank spike calculations were performed using a true value of 50 ug/l. This appeared to be the level based on transmitted data from REAC.

Debra K. White
Inorganic Section Manager
WESTON Analytical Laboratories

9/19/88
Date

Roy F. [illegible] ston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY REC[illegible]D/LAB WORK REQUEST

No: 000669

SHEET NO __ OF

Project Name: ARMY CREEK
Project Number: 3347-01-01-1123
RFW Contact: S. BUCHANAN Phone: Due Date:

SAMPLE IDENTFICATION | **ANALYSES REQUESTED**

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative					
✓ 1874	2	W	8/1/88	1l AMBER	BNA				
✓ 1875	3	W	8/1/88	1l AMBER	BNA				
✓ 1875	3	W	8/1/88	1l AMBER	BNA				
✓ 1875	3	S	8/1/88	32oz	BNA, PP METALS, Fe				
✓ 1875	3	W	8/1/88	1l POLY HNO_3	SOLUBLE METALS, Fe				
✓ 1875	3	W	8/1/88	3x40ML	VOA				
✓ 1874	2	W	8/1/88	3x40ML	VOA				
✓ 1875	3	S	8/1/88	40z	VOA				
✓ 1874	2	S	8/1/88	40z	VOA				
✓ 1888	TRIP BLANK	W	8/1/88	2x40ML	VOA				
✓ 1874	2	S	8/1/88	32oz	BNA, PP METALS, Fe				
✓ 1874	2	W	8/1/88	1l AMBER	BNA				

AR300335

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
analysis	Mark Hunter	Renee Cohen	8/2	1620					

Roy F. ston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY REC ID/LAB WORK REQUEST

No: 000666

Project Name: Army Creek
Project Number: 3349-01-01-1153
RFW Contact: G. Buchanan Phone: Due Date:

SHEET NO 1 OF 2

SAMPLE IDENTFICATION

ANALYSES REQUESTED

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative					
1876	4	W	8/1/88	1 l AMBER/NONE	BNA				
1872	1	S	8/1/88	32 oz/NONE	BNA, PP METALS, Fe				
1872	1	W	8/1/88	1 l AMBER/NONE	BNA				*broke during shipment
1872	1	S	8/1/88	4 oz /NONE	VOA				
1874	2	W	8/1/88	1 l poly/HNO_3	SOLUBLE METALS, Fe				
1872	1	W	8/1/88	1 l poly/HNO_3	SOLUBLE METALS, Fe				
1872	1	W	8/1/88	1 l poly/HNO_3	TOTAL METALS, Fe				
1876	4	W	8/1/88	1 l AMBER/NONE	BNA				
1876	4	W	8/1/88	4 x 40 ml/NONE	VOA				
1872	1	W	8/1/88	1 l AMBER/NONE	BNA				
1876	4	W	8/1/88	1 l poly/HNO_3	SOLUBLE METALS, Fe				
1872	1	W	8/1/88	4/pk 3x40 ml	VOA				
1879	7	W	8/1/88	1 l poly/HNO_3	SOLUBLE METALS, Fe				
1883	WELL 29	W	8/2/88	1 l poly/HNO_3	TOTAL METALS, Fe				
1879	7	W	8/2/88	1 l poly/HNO_3	TOTAL METALS, Fe				
1883	WELL 29	W	8/2/88	1 l poly/HNO_3	SOLUBLE METALS, Fe				
1883	WELL 29	W	8/2/88	1 l AMBER -	BNA				
1883	WELL 29	W	8/2/88	1 l AMBER -	BNA				
1879	7	W	8/2/88	1 l AMBER -	BNA				
1879	7	W	8/2/88	1 l AMBER	BNA				

AR 300336

Matrix:
S Soil DS- Drum Solids
W Water DL- Drum Liquids
O Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
SAMPLES	Mark Hinton	Rene Colon	8/2	1615					

Roy F. ' :ston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY REC 1D/LAB WORK REQUEST

No: 000668

Project Name: ARMY CREEK
Project Number: 3347-01-01-1123
RFW Contact G. BUCHANAN Phone: Due Date:

SHEET NO 2 OF 2

AR300337

SAMPLE IDENTFICATION / ANALYSES REQUESTED

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative					
1879	7	S	8/2/88	32oz —	BNA, PP METALS, Fe				
1883	WELL 29	W	8/2/88	3x40ML	VOA				
1879	7	S	8/2/88	4 OZ	VOA				
1879	7	W	8/2/88	3x40ML	VOA				
1875	MW 23	W	8/1/88	1 Lpoly/HNO_3	TOTAL METALS, Fe				
1874	2	W	8/1/88	1 Lpoly/HNO_3	TOTAL METALS, Fe				

Matrix:
S Soil DS- Drum Solids
W Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
SAMPLES	Mark Huston	Rene Cohen	8/2	1615					

Roy F. ... ston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY REC / LAB WORK REQUEST

No: 000610

SHEET NO 2 OF 2

Project Name: Army Creek
Project Number: 3349-01-01-AE 1123
RFW Contact: G. Bullan Phone Due Date:

SAMPLE IDENTIFICATION					ANALYSES REQUESTED				
Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative					
✓1880	8	W	8/2/88	1L AMBER/NONE	BNA				
✓1880	8	W	8/2/88	1.0 poly / HNO3	TOTAL	METALS,	Fe		
✓1878	6	W	8/1/88	1L AMBER	BNA				
✓1880	8	S	8/2/88	4 oz NONE	VOA				
✓1878	6	W	8/1/88	1.0 AMBER/NONE	BNA				
✓1880	8	W	8/2/88	1L AMBER/NONE	BNA				
✓1880	8	S	8/2/88	320E NONE	BNA,	METALS,	Fe		

Matrix:
S Soil DS- Drum Solids
W Water DL- Drum Liquids
O Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
Samples	Mark Hutchison	Renee Cohen	8/2	1630					

Roy F. [illegible]ston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY REC[illegible]ID/LAB WORK REQUEST

No: 000608

SHEET NO 1 OF 2

Project Name: Army Creek
Project Number: 3349-01-01-1123
RFW Contact: G. Buc[illegible] Phone: Due Date:

SAMPLE IDENTFICATION | **ANALYSES REQUESTED**

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative					
1882	EQUIP BLANK	W	8/1/88	1l poly					
✓1877	5	S	8/1/88	32oz/NONE	BNA	PP METALS			
✓1877	5	W	8/1/88	3x40ML	VOA				
✓1877	5	W	8/1/88	1l poly/HNO3	TOTAL METALS, Fe				
✓1884	EQUIP. RINSE	W	8/2/88	3x40ML	VOA				
✓1881	TRIP BLANK	W	8/1/88	3x40ML	VOA				
✓1877	5	W	8/1/88	1l AMBER/NONE	BNA				
✓1876	4	S	8/1/88	4oz/NONE	VOA				
✓1877	5	W	8/1/88	1l poly/HNO3	SOLUBLE METALS, Fe				
✓1877	5	S	8/1/88	4oz/NONE	VOA				
✓1877	5	W	8/1/88	1l AMBER/NONE	BNA				
✓1876	4	W	8/1/88	1l poly/HNO3	TOTAL METALS, Fe				
✓1876	4	S	8/1/88	32oz/NONE	BNA, METALS, Fe				
✓1880	8	W	8/2/88	3x40ML/NONE	VOA				
✓1880	8	W	8/2/88	1l poly/HNO3	SOLUBLE METALS, Fe				
✓1878	6	W	8/1/88	3x40ML/NONE	VOA				
✓1878	6	S	8/1/88	4oz/NONE	VOA				
✓1878	6	S	8/1/88	32oz/NONE	BNA, PP METALS, Fe				
✓1878	6	W	8/1/88	1l poly/HNO3	TOTAL METALS, Fe				
✓1878	6	W	8/1/88	1l poly/HNO3	SOLUBLE METALS, Fe				

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Name/Reason	Relinquished By	Received By	Date	Time	Name/Reason	Relinquished By	Received By	Date	
Sample	M. McHutton	Renee Cohen	8/2	1620					

AR300336

APPENDIX C

CHAIN OF CUSTODY
FIELD DATA SHEETS
LOG BOOK TRANSCRIPTS

eh:rd/MUNNEY/FR-ARMY

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 000666

SHEET NO 1 OF 2

Project Name: Army Creek
Project Number: 3397-01-01-1123
RFW Contact: G. Buchanan Phone: Due Date:

SAMPLE IDENTFICATION / **ANALYSES REQUESTED**

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative						
1876	4	W	8/1/88	1 l AMBER/NONE	BNA					
1872	1	S	8/1/88	32 OZ/NONE	BNA, PP METALS, Fe					
1872	1	W	8/1/88	1 l AMBER/NONE	BNA					* Hold during analysis
1872	1	S	8/1/88	4 OZ/NONE	VOA					
1874	2	W	8/1/88	1 l POLY/HNO_3	SOLUBLE METALS, Fe					
1872	1	W	8/1/88	1 l POLY/HNO_3	SOLUBLE METALS, Fe					
1872	1	W	8/1/88	1 l POLY/HNO_3	TOTAL METALS, Fe					
1876	4	W	8/1/88	1 l AMBER/NONE	BNA					
1876	4	W	8/1/88	4 x 40 ML/NONE	VOA					
1872	1	W	8/1/88	1 l AMBER/NONE	BNA					
1876	4	W	8/1/88	1 l POLY/HNO_3	SOLUBLE METALS, Fe					
1872	1	W	8/1/88	4 x 3 x 40 ML	VOA					
1879	7	W	8/1/88	1 l POLY/HNO_3	SOLUBLE METALS, Fe					
1883	WELL 29	W	8/2/88	1 l POLY/HNO_3	TOTAL METALS, Fe					
1879	7	W	8/2/88	1 l POLY/HNO_3	TOTAL METALS, Fe					
1883	WELL 29	W	8/2/88	1 l POLY/HNO_3	SOLUBLE METALS, Fe					
1883	WELL 29	W	8/2/88	1 l AMBER -	BNA					
1883	WELL 29	W	8/2/88	1 l AMBER -	BNA					
1879	7	W	8/2/88	1 l AMBER -	BNA					
1879	7	W	8/2/88	1 l AMBER	BNA					

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Name/Reason	Relinquished By	Received By	Date	Time	Name/Reason	Relinquished By	Received By	Date	
SAMPLES	Mark Hunton	[illegible]	8/2	1615					

AR300341

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 000668

Project Name: ARMY CREEK
Project Number: 3347-01-01-1123
RFW Contact: G. BUCIANAN Phone: _____ Due Date: _____

SHEET NO 2 OF 2

SAMPLE IDENTFICATION | **ANALYSES REQUESTED**

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative					
1879	7	S	8/2/88	32oz —	BNA, PP METALS, Fe				
1883	WELL 29	W	8/2/88	3x40ML	VOA				
1879	7	S	8/2/88	4 OZ	VOA				
1879	7	W	8/2/88	3x40ML	VOA				
1875	MW 23	W	8/1/88	1 1pint/HNO_3	TOTAL METALS, Fe				
1874	2	W	8/1/88	1 1pint/HNO_3	TOTAL METALS, Fe				

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

ARSU0342

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
25 SAMPLES	Mark Hunter	Rene Cohen	8/2	1615					

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 000608

SHEET NO 1 OF 2

Project Name: Army Creek
Project Number: 3347-01-01-1153
RFW Contact: G. Bulanow Phone: _____ Due Date: _____

SAMPLE IDENTFICATION | **ANALYSES REQUESTED**

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative					
1882	EQUIP. BLANK	W	8/1/88	1 l poly					
✓ 1877	5	S	8/1/88	32 oz / NONE	BNA	PP METALS			
✓ 1877	5	W	8/1/88	3 x 40 ML	VOA				
✓ 1877	5	W	8/1/88	1 l poly / HNO_3	TOTAL METALS, Fe				
✓ 1884	EQUIP. RINSE	W	8/2/88	3 x 40 ML	VOA				
✓ 1881	TRIP BLANK	W	8/1/88	3 x 40 ML	VOA				
✓ 1877	5	W	8/1/88	1 l AMBER / NONE	BNA				
✓ 1876	4	S	8/1/88	4 oz / NONE	VOA				
✓ 1877	5	W	8/1/88	1 l poly / HNO_3	SOLUBLE METALS, Fe				
✓ 1877	5	S	8/1/88	4 oz / NONE	VOA				
✓ 1877	5	W	8/1/88	1 l AMBER / NONE	BNA				
✓ 1876	4	W	8/1/88	1 l poly / HNO_3	TOTAL METALS, Fe				
✓ 1876	4	S	8/1/88	32 oz / NONE	BNA, METALS, Fe				
✓ 1880	8	W	8/2/88	3 x 40 ML / NONE	VOA				
✓ 1880	8	W	8/2/88	1 l poly / HNO_3	SOLUBLE METALS, Fe				
✓ 1878	6	W	8/1/88	3 x 40 ML / NONE	VOA				
✓ 1878	6	S	8/1/88	4 oz / NONE	VOA				
✓ 1878	6	S	8/1/88	32 oz / NONE	BNA, PP METALS, Fe				
✓ 1878	6	W	8/1/88	1 l poly / HNO_3	TOTAL METALS, Fe				
✓ 1878	6	W	8/1/88	1 l poly / HNO_3	SOLUBLE METALS, Fe				

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
Sample	M Murchinton	Renee Cohen	8/2	1620					

AR300343

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY RECORD/LAB WORK REQUEST

No: 000610

SHEET NO 2 OF 2

Project Name: Army Creek
Project Number: 3747-01-01-AT1123
RFW Contact: G. Bishop Phone: Due Date:

SAMPLE IDENTFICATION | **ANALYSES REQUESTED**

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative					
✓1880	8	W	8/2/88	1 l AMBER/NONE	BNA				
✓1880	8	W	8/2/88	1.0 POLY / HNO3	TOTAL	METALS, Fe			
✓1878	6	W	8/1/88	1 l AMBER	BNA				
✓1880	8	S	8/2/88	4 oz / NONE	VOA				
✓1878	6	W	8/1/88	1.0 AMBER/NONE	BNA				
✓1880	8	W	8/2/88	1 l AMBER/NONE	BNA				
✓1880	8	S	8/2/88	320E / NONE	BNA, METALS	Fe			

Matrix:
S- Soil DS- Drum Solids
W- Water DL- Drum Liquids
O- Oil X- Other

Special Instructions:

Name/Reason	Relinquished By	Received By	Date	Time	Name/Reason	Relinquished By	Received By	Date	
Sample	Mark Huston	Rene Cohen	8/2	1620					

AR300344

Roy F. [illegible]on, Inc.
REAC, Ed[illegible], N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY REC[illegible]/LAB WORK REQUEST

No: 000669

SHEET NO 1 OF

Project Name: ARMY CREEK
Project Number: 3347-01-01-1123
RFW Contact: G. BUCHANAN Phone: Due Date:

SAMPLE IDENTFICATION

ANALYSES REQUESTED

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative					
✓1874	2	W	8/1/88	1l AMBER	BNA				
✓1875	3	W	8/1/88	1l AMBER	BNA				
✓1875	3	W	8/1/88	1l AMBER	BNA				
✓1875	3	S	8/1/88	32oz	BNA, PP METALS, FE				
✓1875	3	W	8/1/88	1l poly HNO3	SOLUBLE METALS, FE				
✓1875	3	W	8/1/88	3x40ML	VOA				
✓1874	2	W	8/1/88	3x40ML	VOA				
✓1875	3	S	8/1/88	4oz	VOA				
✓1874	2	S	8/1/88	4oz	VOA				
✓188	TRIP BLANK	W	8/1/88	2x40ML	VOA				
✓1874	2	S	8/1/88	32oz	BNA, PP METALS, FE				
✓1874	2	W	8/1/88	1l AMBER	BNA				

Matrix:
S- Soil
W- Water
O- Oil
DS- Drum Solids
DL- Drum Liquids
X- Other

Special Instructions:

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	
Analysis	Mark Hunter	Renee Cohen	8/2	1620					

R3 00345

Roy F. ston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY REC D/LAB WORK REQUEST

No: 000609

Project Name: Army Creek
Project Number: 3347-01-01-1123
RFW Contact: G. Buchanan Phone: Due Date:

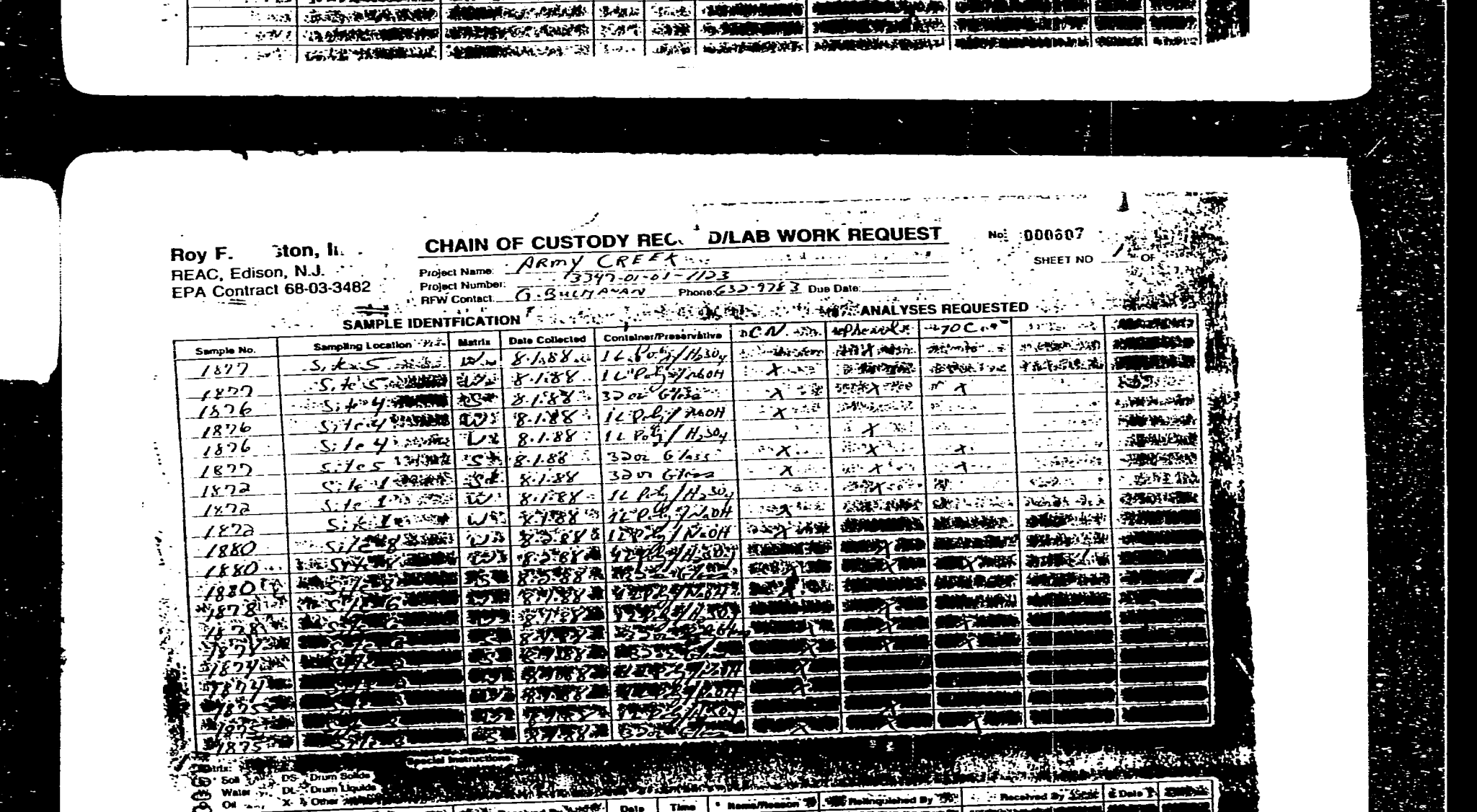
SHEET NO. 1 OF 1

SAMPLE IDENTIFICATION					ANALYSES REQUESTED				
Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	Phenol	CN	TOC	GRAIN SIZE	Hardness
1874	Site 2	W	8-1-88	1L Poly/H_2SO_4	X				
1883	(Site) Well 29	W	8-2-88	1L Poly/NaOH		X			
1879	Site 7	S	8-2-88	32oz Glass	X	X	X		
1879	Site 7	W	8-2-88	1L Poly/H_2SO_4	X				
1883	Well 29	W	8-2-88	1L Poly/H_2SO_4	X				
1879	Site 7	W	8-2-88	1L Poly/NaOH		X			
1880	Site 8	S	8-2-88	32oz Glass				X	
1877	Site 5	S	8-1-88	32oz Glass				X	
1876	Site 4	S	8-1-88	32oz Glass				X	
1878	Site 6	S	8-1-88	32oz Glass				X	
1879	Site 7	S	8-2-88	32oz Glass				X	
1872	[illegible]	[illegible]	8-1-88	32oz Glass				X	
1875	[illegible]	[illegible]	8-1-88	[illegible]				X	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				X	
1872	[illegible]	[illegible]	[illegible]	[illegible]					
1883	[illegible]	[illegible]	[illegible]	[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					
[illegible]	Site 3	[illegible]	[illegible]	[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]					

Matrix:
S - Soil DS - Drum Solids
W - Water DL - Drum Liquids
O - Oil X - Other

Special Instructions: [illegible]

Items/Reason	Relinquished By	Received By	Date	Time	Items/Reason	Relinquished By	Received By	Date	Time
Samples	G. Buchanan	[illegible]	8-2-88	1600	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]



Roy F. [illegible]ston, Jr.
REAC, Edison, N.J.
EPA Contract 68-03-3482

CHAIN OF CUSTODY REC[illegible]D/LAB WORK REQUEST

No: 000607

SHEET NO 1 OF

Project Name: ARMY CREEK
Project Number: 3347-01-01-1123
RFW Contact: G. BUCHANAN Phone: 632-9783 Due Date:

SAMPLE IDENTFICATION

ANALYSES REQUESTED

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	CN	Phenols	TOC		
1877	S.K.S	W	8.1.88	1L P.G. / H_2SO_4					
1877	S.K.S	W	8.1.88	1L P.G. / NaOH	X				
1876	S.K.4	S	8.1.88	32 oz Glass	X	X	X		
1876	S.K.4	W	8.1.88	1L P.G. / NaOH	X				
1876	S.K.4	W	8.1.88	1L P.G. / H_2SO_4		X			
1877	S.K.5	S	8.1.88	32 oz Glass	X	X	X		
1872	S.K.1	S	8.1.88	32 oz Glass	X	X	X		
1872	S.K.1	W	8.1.88	1L P.G. / H_2SO_4		X			
1872	S.K.1	W	8.1.88	1L P.G. / NaOH	X				
1880	S.K.8	W	8.2.88	1L P.G. / NaOH	X				
1880	S.K.8	W	8.2.88	1L P.G. / H_2SO_4		X	X		
1880	S.K.8	S	8.2.88	32 oz Glass			X		
1878	S.K.6	W	8.1.88	1L P.G. / NaOH	X	X	X		
1878	S.K.6	W	8.1.88	1L P.G. / H_2SO_4		X	X		
1878	S.K.6	S	8.1.88	32 oz Glass	X	X	X		
1874	S.K.3	W	8.1.88	1L P.G. / NaOH	X	X	X		
1874	S.K.3	W	8.1.88	1L P.G. / H_2SO_4		X	X		
1874	S.K.3	S	8.1.88	32 oz Glass	X	X	X		
1875	S.K.7	W	8.1.88	1L P.G. / NaOH	X	X	X		
1875	S.K.7	W	8.1.88	1L P.G. / H_2SO_4		X	X		
1875	S.K.7	S	8.1.88	32 oz Glass	X	X	X		

Matrix: S Soil, W Water, O Oil, DS Drum Solids, DL Drum Liquids, X Other

Special Instructions:

Relinquished By	Date	Time	Name/Reason	Relinquished By	Received By	Date

REAC, E . N.J.
EPA Co 68-03-3482

Project Name: Anycreek
Project Number: 3347-01-01 2
RFW Contact: G. Buchanan Phone: 103458 Due Date:

No. 000867

SHEET NO. OF

SAMPLE IDENTIFICATION / ANALYSES REQUESTED

Sample No.	Sampling Location	Matrix	Date Collected	Container/Preservative	HARDNESS	ALKALINITY	TSS		
1874	Site 2	W	8/1/88	HNO_3/1L Poly	X				
1878	Site 6	W	8-1-88	1L Poly/HNO_3	X				
1879	Site 7	W	8-2-88	1L Poly/HNO_3	X				
1876	Site 4	W	8-1-88	1L Poly/4°C			X		
1883	Well 79	W	8-2-88	1L Poly/4°C		X	X		
1873	Site 1	W	8-1-88	1L Poly/4°C		X	X		
1879	Site 7	W	8-2-88	1L Poly/4°C		X	X		
1874	Site 2	W	8-1-88	1L Poly/4°C		X	X		
1875	Site 3	W	8-1-88	1L Poly/4°C		X	X		
1878	Site 6	W	8-1-88	1L Poly/4°C		X	X		
1880	Site 8	W	8-2-88	1L Poly/4°C			X		
1877	Site 5	W	8-1-88	1L Poly/4°C		X	X		

Matrix:
S - Soil DS - Drum Solids
W - Water DL - Drum Liquids
O - Oil X - Other

Special Instructions:

Name/Reason	Relinquished By	Received By	Date	Time	Name/Reason	Relinquished By	Received By	Date
Sampler	Ken Munney		8/2/88	1615				

FIELD DATA SHEET

№ 001872

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Lab No ____ Samplers: BUCHANAN CARTERS Chain of Custody No ____
Date 8/11/88 Site Name: ARMY CREEK DE REAC Task Leader: BUCHANAN
Time 1[illegible] Sample Location: SITE #2 EPA Task Monitor: CARTERS
Project No.: 1123

SITE DESCRIPTION
landfill, industrial, commercial, residential, hedgerows, old field, wooded, farmland, gully, floodplain, upland palustrine, lowland riverine, lacustrine

SOIL TYPE
rock, clay, gravel, muck, sand, loam, silt, peat, color ____

SURFACE WATER
color ____, odor ____, flow ____, direction ____

STREAM
width [illegible], depth [illegible], velocity [illegible] cms, pools ___ %, riffles 60 %

BOTTOM
rock, silt, rubble, clay, gravel, organic, shell, other ____, sand

SAMPLE TYPE
stream/surface, groundwater, brackish, ocean/saline, sediment, soil, pond/lake, river, effluent, sludge

DEVICE
kemmerer, ponar, other ____, trowl, bucket, sugar, ekman

SAMPLE INFORMATION
color ____ pH 6.39
odor ____ ORP +0.138 v
temp 26.66°C salinity 0.0
DO 5.85 mg/l sample depth 6"
cond 42.172 tide stage ____

WEATHER PARAMETERS
ambient temp [illegible] F
barometric pressure ____
relative humidity [illegible]
weather conditions [illegible]

ANALYSES TO BE PERFORMED

TOC required? ✓ Yes ___ No
If No, explain ____

Grain size analysis required? ✓ Yes ___ No
If No, explain ____

ORGANICS
A halogenated & aromatic volatiles
B volatiles-USEPA 624
C trihalomethanes
D pesticides/PCB
E PCB
F base neutral/acid extractables-USEPA 625
G pesticides, drinking water
H herbicides, drinking water

INORGANICS
A metals, priority pollutant
B metals scan (ICP)
C metals, other FC

RCRA
A EP toxicity ___ metals ___ pesticides ___ herbicides
B ignitability
C corrosivity ___ pH ___
D reactivity

LIMITED CHEMISTRY
A total cyanide
B total phenol
C petroleum hydrocarbons
D pH
E alkalinity
F hardness
G total dissolved solids
H total suspended solids
I sulfate

OTHER ANALYSES (specify)
____
____

AIR SAMPLING
Sampling Method ____
Sample Flow Rate ____
Sampling Time ____
Volume Collected ____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
glass jar	HNO3
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	other ____

STORAGE
wet ice
dry ice
ambient

BIOASSESSMENT
See attached data sheet
See comments

Collection Media
Special Shipping Instructions ____
#Field Blanks ___ #Sample Blanks ___

COMMENTS
Station Located
Downstream of Pond
adjacent to Railroad Tracks

0348

AR300349

FIELD DATA SHEET

Nº 001874

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Lab No _____ Samplers D. Charters | K. Manney Chain of Custody No _____
Date: 8/1/88 Site Name ARMY CREEK REAC Task Leader G. BUCHANAN
Time 1510 Sample Location #2 EPA Task Monitor D. CHARTERS
Project No 1123

SITE DESCRIPTION
landfill, industrial, commercial, residential, hedgerows; old field, wooded, farmland, gully, floodplain; upland palustrine, lowland riverrine, lacustrine

SOIL TYPE
rock, gravel, sand, silt, color ____; clay, muck, loam, peat

SURFACE WATER
color ____, odor ____, flow ____, direction ____

STREAM
width ____, depth ____, velocity ____ cm/s, pools ____ %, riffles ____ %

BOTTOM
rock, rubble, gravel, sand; silt, clay, organic, shell, other Muck
Color Mixed Grey

SAMPLE TYPE
stream/surface, groundwater, brackish, ocean/saline, sediment; soil, pond/lake, river, effluent, sludge

DEVICE
kemmerer, trowl, bucket, sugai, ekman; ponar, other ____

SAMPLE INFORMATION
color ____ pH 6.33
odor ____ ORP 0.178 v
temp 29.9 °C salinity 0.0
DO 6.02 mg/l sample depth 6"
cond 0.378 tide stage ____
moderate

WEATHER PARAMETERS
ambient temp ≈ 95° F
barometric pressure ____
relative humidity ≈ 70%
weather conditions Hot

ANALYSES TO BE PERFORMED

TOC required? ✓ Yes ____ No
If No, explain ____

Grain size analysis required? ✓ Yes ____ No
If No, explain ____

ORGANICS
A halogenated & aromatic volatiles
B volatiles-USEPA 624
C trihalomethanes
D pesticides/PCB
E PCB
F base neutral/acid extractables-USEPA 625
G pesticides, drinking water
H herbicides, drinking water

INORGANICS
A metals, priority pollutant
B metals scan (ICP)
C metals, other Fe

RCRA
A. EP toxicity ____ metals ____ pesticides ____ herbicides
B. ignitability
C corrosivity ____ pH ____
D reactivity

LIMITED CHEMISTRY
A total cyanide
B total phenol
C. petroleum hydrocarbons
D pH
E alkalinity
F hardness
G total dissolved solids
H total suspended solids
I. sulfate

OTHER ANALYSES (specify)
____
____

AIR SAMPLING
Sampling Method ____
Sample Flow Rate ____
Sampling Time ____
Volume Collected ____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
glass jar	HNO3
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	other Hg SO4

STORAGE
wet ice
dry ice
ambient

BIOASSESSMENT
See attached data sheet
See comments

Collection Media ____
Special Shipping Instructions ____
#Field Blanks ____ #Sample Blanks ____

COMMENTS

no vegetation on bottom
Hydrolab Readings taken at 6" depth
total depth = 18"
Sample taken in impounded portion of Army Creek by dam

AR300350

FIELD DATA SHEET

№ 001875

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Lab No _____ Samplers D Chartier / K. Muncey Chain of Custody No _____
Date: 7-1-95 Site Name: ARMY CREEK REAC Task Leader: G BUCHANAN
Time: 1510 Sample Location: #3 EPA Task Monitor: D. CHARTERS
Project No: 1123

SITE DESCRIPTION
landfill / old field / upland palustrine
industrial / wooded / lowland riverine
commercial / farmland / lacustrine
residential / gully
hedgerows / floodplain

SOIL TYPE
rock / clay
gravel / muck
sand / loam
silt / peat
color _____

SURFACE WATER
color _____
odor _____
flow _____
direction _____

STREAM
width _____
depth _____
velocity _____ cm/s
pools _____ %
riffles _____ %

BOTTOM
rock / silt
rubble / clay
gravel / organic
shell / other Muck
sand

SAMPLE TYPE
stream/surface / soil
groundwater / pond/lake
brackish / river
ocean/saline / effluent
sediment / sludge

DEVICE
kemmerer / ponar
trowl / other _____
bucket
sugar
ekman

SAMPLE INFORMATION (Duplicate)
color _____ pH 6.33 #3
odor _____ ORP +0.178 v
temp 28.15°C salinity 0.0
DO 6.02 mg/L sample depth 6"
cond 0.278 mmho/cm tide stage _____

WEATHER PARAMETERS
ambient temp ≈ 75 °F
barometric pressure _____
relative humidity ≈ 90%
weather conditions Hot, Humid
Partly Cloudy

ANALYSES TO BE PERFORMED

TOC required? ✓ Yes ___ No
If No, explain _____

Grain size analysis required? ✓ Yes ___ No
If No, explain _____

ORGANICS
A halogenated & aromatic volatiles
B) volatiles-USEPA 624
C trihalomethanes
D pesticides/PCB
E PCB
F) base neutral/acid extractables-USEPA 625
G pesticides, drinking water
H herbicides, drinking water

INORGANICS
A metals, priority pollutant
B metals scan (ICP)
C) metals, other Fe

RCRA
A EP toxicity ___ metals ___ pesticides ___ herbicides
B ignitability
C corrosivity ___ pH ___
D reactivity

LIMITED CHEMISTRY
A) total cyanide
B total phenol
C. petroleum hydrocarbons
D pH
E) alkalinity
F. hardness
G total dissolved solids
H. total suspended solids
I. sulfate

OTHER ANALYSES (specify)
_____
_____

AIR SAMPLING
Sampling Method _____
Sample Flow Rate _____
Sampling Time _____
Volume Collected _____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
glass jar	HNO3
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	other H2SO4

STORAGE
wet ice
dry ice
ambient

BIOASSESSMENT
See attached data sheet
See comments

Collection Media _____
Special Shipping Instructions _____
#Field Blanks ___ #Sample Blanks ___

COMMENTS
Duplicate for Site #2

AR300351

FIELD DATA SHEET

№ 001876

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Chain of Custody No. _____
REAC Task Leader: G. BIKAKIS
EPA Task Monitor: P. CHARTERS
Project No.: 113

Lab No _____
Date: 8/1/88
Time: 1620
Samplers: M. HUSTON / K. MANNEY
Site Name: ARMY CREEK #4
Sample Location: _____

SITE DESCRIPTION
landfill, old field, upland, palustrine, industrial, wooded, lowland riverine, commercial, farmland, lacustrine, OR, residential, gully, hedgerows, floodplain

SOIL TYPE
rock, clay, gravel, muck, sand, loam, silt, peat, color _____

SURFACE WATER
color _____, odor _____, flow _____, direction _____

STREAM
width _____, depth _____, velocity _____ cm/s, pools _____ %, riffles _____ %

BOTTOM
rock, silt, rubble, clay, gravel, organic, shell, other Mucky, sand

SAMPLE TYPE
stream/surface, soil, groundwater, pond/lake, brackish, river, ocean/saline, effluent, sediment, sludge, ekman

DEVICE
kemmerer, ponar, trowl, other _____, bucket, sugar

SAMPLE INFORMATION
color _____, pH 6.26
odor _____, ORP 0.114
temp 27.62 °C, salinity 0
DO 6.45 mg/l, sample depth 6"
cond 0.265 mS/cm, tide stage _____

WEATHER PARAMETERS
ambient temp 30° F
barometric pressure _____
relative humidity _____
weather conditions Partly Cloudy

ANALYSES TO BE PERFORMED

TOC required? ✓ Yes ___ No
If No, explain _____

Grain size analysis required? ✓ Yes ___ No
If No, explain _____

ORGANICS
A. halogenated & aromatic volatiles
B. volatiles-USEPA 624
C. trihalomethanes
D. pesticides/PCB
E. PCB
F. base neutral/acid extractables-USEPA 625
G. pesticides, drinking water
H. herbicides, drinking water

INORGANICS
A. metals, priority pollutant
B. metals scan (ICP)
C. metals, other Fe

RCRA
A. EP toxicity ___ metals ___ pesticides ___ herbicides
B. ignitability
C. corrosivity ___ pH ___
D. reactivity

LIMITED CHEMISTRY
A. total cyanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate

OTHER ANALYSES (specify)
_____
_____

AIR SAMPLING
Sampling Method _____
Sample Flow Rate _____
Sampling Time _____
Volume Collected _____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
glass jar	HNO3
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	other H2SO4

STORAGE
wet ice, dry ice, ambient

BIOASSESSMENT
See attached data sheet
See comments

Collection Media _____
Special Shipping Instructions _____
#Field Blanks ___ #Sample Blanks ___

COMMENTS: No landmarks Alkaline Sample
West end of Pond

AR300352

FIELD DATA SHEET

№ 001877

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Chain of Custody No. _____
Lab No _____ Samplers M. HUSTON I.K. MUNN24
REAC Task Leader G. BUCHANAN
Date: 6/1/88 Site Name: ARMY CREEK
EPA Task Monitor: D. CHARTERS
Time 1745 Sample Location: #5
Project No.: #123

SITE DESCRIPTION
landfill, industrial, commercial, residential, hedgerows; old field, wooded, farmland, gully, floodplain; (upland palustrine), (lowland riverine), lacustrine

SOIL TYPE
rock, gravel, sand, silt, color; clay, (muck), loam, peat

SURFACE WATER
color BROWN, odor NONE, flow ALMOST NONE, direction EAST

STREAM /
width 15, depth 3, velocity ____ cms/s, pools ____ %, riffles ____ %

BOTTOM
rock, rubble, gravel, sand; silt, clay, (organic), shell, other ____

SAMPLE TYPE
(stream/surface), groundwater, brackish, ocean/saline, (sediment); soil, pond/lake, river, effluent, sludge

DEVICE
kemmerer, (ponar), trowl, bucket, sugar, ekman; other ____

SAMPLE INFORMATION
color BROWN, odor —, temp 26.33, DO 3.97, cond 0.427
pH 10.69, ORP 0.108, salinity 0, sample depth 6", tide stage ____

WEATHER PARAMETERS
ambient temp 90, barometric pressure ____, relative humidity ____, weather conditions ____

ANALYSES TO BE PERFORMED

TOC required? X Yes ____ No
If No, explain ____

Grain size analysis required? X Yes ____ No
If No, explain ____

ORGANICS
A. halogenated & aromatic volatiles
(B) volatiles-USEPA 624
C. trihalomethanes
D. pesticides/PCB
E. PCB
(F) base neutral/acid extractables-USEPA 625
G. pesticides, drinking water
H. herbicides, drinking water

INORGANICS
(A) metals, priority pollutant
B. metals scan (ICP)
(C) metals, other Fe

RCRA
A. EP toxicity ____ metals ____ pesticides ____ herbicides
B. ignitability
C. corrosivity ____ pH ____
D. reactivity

LIMITED CHEMISTRY
(A) total cyanide
(B) total phenol
C. petroleum hydrocarbons
D. pH
(E) alkalinity
(F) hardness
(G) total dissolved solids
(H) total suspended solids
I. sulfate

OTHER ANALYSES (specify)
____
____

AIR SAMPLING
Sampling Method ____
Sample Flow Rate ____
Sampling Time ____
Volume Collected ____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
(glass jar)	(HNO3)
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
~~glass~~ plastic	other ____

STORAGE
(wet ice), (dry ice), ambient

BIOASSESSMENT
See attached data sheet
See comments

Collection Media
Special Shipping Instructions ____
#Field Blanks ____ #Sample Blanks ____

COMMENTS:
OIL DROPLETS NOTED ON THE SURFACE
Station located in stream upstream of Army Creek Pond

AR300353

FIELD DATA SHEET

№ 001878

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Lab No.: _____ Samplers: Buchanan | Charters Chain of Custody No.: _____
Date: 8/1/88 Site Name: ARMY CREEK REAC Task Leader: G. BUCHANAN
Time: 1900 Sample Location: #6 EPA Task Monitor: D. CHARTERS
Project No.: 1123

SITE DESCRIPTION
landfill, old field, upland palustrine, industrial, wooded, lowland riverine, commercial, farmland, lacustrine, residential, gully, hedgerows, floodplain

SOIL TYPE
rock, clay, gravel, muck, sand, loam, silt, peat, color: _____

SURFACE WATER
color: Brown, odor: Septic, flow: Slow, direction: _____

STREAM
width: 1-3 meters, depth: 0.1-0.7m, velocity: — cm/s, pools: 80 %, riffles: 20 %

BOTTOM
rock, silt, rubble, clay, gravel, organic ~10%, shell, other: _____, sand ~90%

SAMPLE TYPE
stream/surface, groundwater, brackish, oceanwater, sediment, soil, pond/lake, river, effluent, sludge

DEVICE
kemmerer, ponar, trowl, other: _____, bucket, sugar, ekman

SAMPLE INFORMATION
color: _____ pH: 6.56
odor: _____ ORP: +0.137 v
temp: 28.08°C salinity: 0.0
DO: 4.64 mg/l sample depth: 0"
cond: 0.295 tide stage: —

WEATHER PARAMETERS
ambient temp: ~90°F
barometric pressure: _____
relative humidity: _____
weather conditions: Hot & Humid

ANALYSES TO BE PERFORMED

TOC required? ✓ Yes ____ No
If No, explain: _____

Grain size analysis required? ✓ Yes ____ No
If No, explain: _____

ORGANICS
A. halogenated & aromatic volatiles
B. volatiles-USEPA 624
C. trihalomethanes
D. pesticides/PCB
E. PCB
F. base neutral/acid extractables-USEPA 625
G. pesticides, drinking water
H. herbicides, drinking water

INORGANICS
A. metals, priority pollutant
B. metals scan (ICP)
C. metals, other: Fe

RCRA
A. EP toxicity ____ metals ____ pesticides ____ herbicides
B. ignitability
C. corrosivity ____ pH ____
D. reactivity

LIMITED CHEMISTRY
A. total cyanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate

OTHER ANALYSES (specify)
_____
_____

AIR SAMPLING
Sampling Method: _____ Collection Media: _____
Sample Flow Rate: _____ Special Shipping Instructions: _____
Sampling Time: _____
Volume Collected: _____ #Field Blanks: ____ #Sample Blanks: ____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
glass jar	HNO3
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	other H2SO4

STORAGE: wet ice, dry ice, ambient

BIOASSESSMENT
See attached data sheet
See comments

COMMENTS:
Stream sample behind OK 7-11 on Route 13 & 40
Septic odor evident in area
Slight petroleum odor evident upon disturbance of sediment

AR300354

FIELD DATA SHEET

№ 001879

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Lab No _____ Samplers: G. Buchanan | K. Murray Chain of Custody No. _____
Date: 8.2.88 Site Name: ARMM CREEK REAC Task Leader: G BUCHANAN
Time: 0950 Sample Location: #7 EPA Task Monitor: D. CHARTER
Project No.: 1123

SITE DESCRIPTION
landfill, industrial, commercial, residential, hedgerows; old field, wooded, farmland, gully, floodplain; upland, lowland, riverine, lacustrine, palustrine

SOIL TYPE
rock, gravel, sand, silt, clay, color _____, muck, loam, peat

SURFACE WATER
color slight Turbid, odor oil, flow slow, direction East

STREAM
width 1-1.5 meter, depth 5-10 cm, velocity — cm/s, pools — %, riffles 100 %

BOTTOM
rock, rubble, gravel, sand, silt, clay, organic, shell, other — 10-20%

SAMPLE TYPE
stream/surface, groundwater, brackish, ocean/saline, sediment; soil, pond/lake, river, effluent, sludge

DEVICE
kemmerer, ponar, other _____; trowl, bucket, sugar, ekman

SAMPLE INFORMATION
color _____ pH 6.62
odor _____ ORP +0.124 V
temp 27.3°C salinity 0.0
DO 9.79 mg/L sample depth 4"
cond 0.443 mmhos/cm tide stage —

WEATHER PARAMETERS
ambient temp ≈ 85°F
barometric pressure _____
relative humidity Humid
weather conditions Hot & Humid, Sunny

ANALYSES TO BE PERFORMED

TOC required? ✓ Yes ____ No
If No, explain _____

Grain size analysis required? ✓ Yes ____ No
If No, explain _____

ORGANICS
A. halogenated & aromatic volatiles
B. volatiles-USEPA 624
C. trihalomethanes
D. pesticides/PCB
E. PCB
F. base neutral/acid extractables-USEPA 625
G. pesticides, drinking water
H. herbicides, drinking water

INORGANICS
A. metals, priority pollutant
B. metals scan (ICP)
C. metals, other Fe

RCRA
A. EP toxicity ____ metals ____ pesticides ____ herbicides
B. ignitability
C. corrosivity ____ pH ____
D. reactivity

LIMITED CHEMISTRY
A. total cyanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate

OTHER ANALYSES (specify)
_____
_____

AIR SAMPLING
Sampling Method _____ Collection Media
Sample Flow Rate _____ Special Shipping Instructions _____
Sampling Time _____
Volume Collected _____ #Field Blanks ____ #Sample Blanks ____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
glass jar	HNO3
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	other K2SO4

STORAGE
wet ice
dry ice
ambient

BIOASSESSMENT
See attached data sheet
See comments

COMMENTS:
Site heavily vegetated (phragmites sp.)
slight oil sheen on water (patchy)
Petroleum odor evident upon sediment disturbance
Site Located ≈ 20m west (CB) end of Highway 13A

AR300355

FIELD DATA SHEET

№ 001880

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

K. Murray M. Huston

Lab No _____ Samplers: ~~CHESTERS~~ / BUCHANAN CB EJH Chain of Custody No. _____

Date 8.2.88 Site Name: Army Creek REAC Task Leader: G Buchanan

Time 1100 Sample Location: Site 8 EPA Task Monitor: D.W. Chesters

Project No.: 1123

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM
landfill	old field	upland palustrine	rock	clay	color _____	width _____	rock silt
industrial	wooded	lowland riverine	gravel	muck	odor _____	depth _____	rubble clay
commercial	farmland	lacustrine	sand	loam	flow _____	velocity _____ cm/s	gravel organic
residential	gully		silt	peat	direction _____	pools _____ %	shell other _____
hedgerows	floodplain		color _____			riffles _____ %	(sand)

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
(stream/surface)	soil	kemmerer	(none)	color _____	pH 6.44	ambient temp _____
groundwater	pond/lake	trowl	other ____	odor _____	ORP 0.192	barometric pressure _____
brackish	river	bucket		temp 24.4	salinity 0.120	relative humidity _____
ocean/saline	effluent	sugar		DO 4.52	sample depth 6"	weather conditions _____
(sediment)	sludge	ekman		cond 0.230	tide stage —	

ANALYSES TO BE PERFORMED

TOC required? ✓ Yes ____ No
If No, explain _____

Grain size analysis required? ✓ Yes ____ No
If No, explain _____

ORGANICS
- A. halogenated & aromatic volatiles
- B. volatiles-USEPA 624
- C. trihalomethanes
- D. pesticides/PCB
- E. PCB
- (F.) base neutral/acid extractables-USEPA 625
- G. pesticides, drinking water
- H. herbicides, drinking water

INORGANICS
- (A.) metals, priority pollutant
- B. metals scan (ICP)
- (C.) metals, other Fe

RCRA
- A. EP toxicity ____ metals ____ pesticides ____ herbicides
- B. ignitability
- C. corrosivity ____ pH ____
- D. reactivity

LIMITED CHEMISTRY
- (A.) total cyanide
- (B.) total phenol
- C. petroleum hydrocarbons
- D. pH
- E. alkalinity
- F. hardness
- ~~G. total dissolved solids~~
- (H.) total suspended solids
- I. sulfate

OTHER ANALYSES (specify)
_____
_____

AIR SAMPLING
Sampling Method _____ Collection Media
Sample Flow Rate _____ Special Shipping Instructions _____
Sampling Time _____
Volume Collected _____ #Field Blanks ___ #Sample Blanks ___

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
(glass jar)	(HNO3)
(plastic jar)	(MeOH)
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	(other) H_2SO_4

STORAGE
(wet ice)
dry ice
ambient

BIOASSESSMENT N/A
See attached data sheet
See comments

COMMENTS: NJ Alkalinity of Hardness
5 stations upstream & west of Route 40

AR300356

FIELD DATA SHEET

№ 001881

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Chain of Custody No _____
REAC Task Leader: Buchanan
EPA Task Monitor: Charbo
Project No.: #1123

Lab No. _____
Date: 8.1.88
Time. _____
Samplers: Buchanan
Site Name: Army Creek
Sample Location: Trip Blank

SITE DESCRIPTION
landfill, industrial, commercial, residential, hedgerows, old field, wooded, farmland, gully, floodplain, upland palustrine, lowland riverine, lacustrine

SOIL TYPE
rock, clay, gravel, muck, sand, loam, silt, peat, color

SURFACE WATER
color, odor, flow, direction

STREAM
width, depth, velocity cm/s, pools %, riffles %

BOTTOM
rock, silt, rubble, clay, gravel, organic, shell, other, sand

SAMPLE TYPE
stream/surface, groundwater, brackish, ocean/saline, sediment, soil, pond/lake, river, effluent, sludge

DEVICE
kemmerer, ponar, other, trowl, bucket, sugar, ekman

SAMPLE INFORMATION
color, odor, temp, DO, cond, pH, ORP, salinity, sample depth, tide stage

WEATHER PARAMETERS
ambient temp, barometric pressure, relative humidity, weather conditions

ANALYSES TO BE PERFORMED

TOC required? ___Yes ✓No Water
If No, explain _____

Grain size analysis required? ___Yes ✓No Water
If No, explain _____

ORGANICS
A. halogenated & aromatic volatiles
B. volatiles-USEPA 624
C. trihalomethanes
D. pesticides/PCB
E. PCB
F. base neutral/acid extractables-USEPA 625
G. pesticides, drinking water
H. herbicides, drinking water

INORGANICS
A. metals, priority pollutant
B. metals scan (ICP)
C. metals, other _____

RCRA
A. EP toxicity ___metals ___pesticides ___herbicides
B. ignitability
C. corrosivity ___pH___
D. reactivity

LIMITED CHEMISTRY
A. total cyanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate

OTHER ANALYSES (specify)
_____
_____

AIR SAMPLING
Sampling Method _____
Sample Flow Rate _____
Sampling Time _____
Volume Collected _____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
glass jar	HNO3
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	other _____

4°C

STORAGE
wet ice
dry ice
ambient

BIOASSESSMENT
See attached data sheet
See comments

Collection Media
Special Shipping Instructions _____
#Field Blanks ___ #Sample Blanks ___

COMMENTS:
Trip Blank - Distilled Water
4 VOA (40 mL)
2 in each of 2 coolers

AR300357

FIELD DATA SHEET

№ 001882

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Lab No.: _____ Samplers: Chartes
Date: 8.1.88 Site Name: ARMY CREEK
Time: 1500 Sample Location: EQUIPMENT BLANK

Chain of Custody No.: _____
REAC Task Leader: BUCHANAN
EPA Task Monitor: CHARTERS
Project No.: 1123

SITE DESCRIPTION
landfill, industrial, commercial, residential, hedgerows, old field, wooded, farmland, gully, floodplain, upland palustrine, lowland riverine, lacustrine

SOIL TYPE
rock, clay, gravel, muck, sand, loam, silt, peat, color _____

SURFACE WATER
color _____, odor _____, flow _____, direction _____

STREAM
width _____, depth _____, velocity _____ cm/s, pools _____ %, riffles _____ %

BOTTOM
rock, silt, rubble, clay, gravel, organic, shell, other _____, sand

SAMPLE TYPE
stream/surface, groundwater, brackish, ocean/saline, sediment, soil, pond/lake, river, effluent, sludge

DEVICE
kemmerer: ponar, other _____, trowl, bucket, sugar, ekman

SAMPLE INFORMATION
color _____, odor _____, temp _____, DO _____, cond _____, pH _____, ORP _____, salinity _____, sample depth _____, tide stage _____

WEATHER PARAMETERS
ambient temp _____, barometric pressure _____, relative humidity _____, weather conditions _____

ANALYSES TO BE PERFORMED

TOC required? ___Yes ✓No
If No, explain water

Grain size analysis required? ___Yes ✓No
If No, explain water

ORGANICS
A. halogenated & aromatic volatiles
B. volatiles-USEPA 624 (OB 8.2.88)
C. trihalomethanes
D. pesticides/PCB
E. PCB
F. base neutral/acid extractables-USEPA 625
G. pesticides, drinking water
H. herbicides, drinking water

INORGANICS
(A) metals, priority pollutant
B. metals scan (ICP)
(C) metals, other Fe

RCRA
A. EP toxicity ___metals ___pesticides ___herbicides
B. ignitability
C. corrosivity ___pH___
D. reactivity

LIMITED CHEMISTRY
A. total cyanide
B. total phenol
C. petroleum hydrocarbons
D. pH
E. alkalinity
F. hardness
G. total dissolved solids
H. total suspended solids
I. sulfate

OTHER ANALYSES (specify)

AIR SAMPLING
Sampling Method _____
Sample Flow Rate _____
Sampling Time _____
Volume Collected _____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
(OB) 8.2.88 glass jar	HNO3
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	other _____

STORAGE
(wet ice)
dry ice
ambient

BIOASSESSMENT
See attached data sheet
See comments

Collection Media
Special Shipping Instructions _____
#Field Blanks ___ #Sample Blanks ___

COMMENTS:
Blank - Rinsate over Field filtration apparatus after decon
Used Distilled water
1 Liter

AR300358

FIELD DATA SHEET

№ 001883

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Lab No _____ Samplers: CHARTERS
Date: 2.2.88 Site Name: Army Creek
Time: 0930 Sample Location: Well 29

Chain of Custody No. _____
REAC Task Leader G Buchanan
EPA Task Monitor: DW CHARTERS
Project No.: 1123

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland/palustrine	rock	clay	color _____	width _____	rock	silt
industrial	wooded	lowland riverine	gravel	muck	odor _____	depth _____	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow _____	velocity _____ cm/s	gravel	organic
residential	gully		silt	peat	direction _____	pools _____ %	shell	other _____
hedgerows	floodplain		color _____			riffles _____ %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS	
stream/surface	soil	kemmerer	ponar	color _____	pH _____	ambient temp _____	
groundwater	pond/lake	trowl	other Hand Collected	odor _____	ORP _____	barometric pressure _____	
effluent	river	bucket		temp _____	salinity _____	relative humidity _____	
ocean/saline	effluent	sugar		DO _____	sample depth _____	weather conditions Hot + Humid	
sediment	sludge	ekman		cond _____	tide stage _____		

ANALYSES TO BE PERFORMED

TOC required? ____Yes ✓No
If No, explain Groundwater Sample

Grain size analysis required? ____Yes ✓No
If No, explain Water Sample

ORGANICS
- A. halogenated & aromatic volatiles
- B. volatiles-USEPA 624
- C. trihalomethanes
- D. pesticides/PCB
- E. PCB
- F. base neutral/acid extractables-USEPA 625
- G. pesticides, drinking water
- H. herbicides, drinking water

INORGANICS
- A. metals, priority pollutant
- B. metals scan (ICP)
- C. metals, other Fe

RCRA
- A. EP toxicity ____metals ____pesticides ____herbicides
- B. ignitability
- C. corrosivity ____pH____
- D. reactivity

LIMITED CHEMISTRY
- A. total cyanide
- B. total phenol
- C. petroleum hydrocarbons
- D. pH
- E. alkalinity
- F. hardness
- G. total dissolved solids
- H. total suspended solids
- I. sulfate

OTHER ANALYSES (specify)
_____
_____

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
glass jar	HNO3
plastic jar	NaOH
soil/sed. core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	other 4°C

STORAGE
- wet ice
- dry ice
- ambient

BIOASSESSMENT
- See attached data sheet
- See comments

AIR SAMPLING
Sampling Method _____ Collection Media
Sample Flow Rate _____ Special Shipping Instructions _____
Sampling Time _____
Volume Collected _____ #Field Blanks ___ #Sample Blanks ___

COMMENTS:
Sample screened Soapy - Suds
Cyanide sample changed color (darkened) upon preservation
WATER SAMPLE ONLY
NO HYDROLAB READINGS
NO Hardness

AR300359

FIELD DATA SHEET

Nº 001884

Roy F. Weston, Inc.
REAC, Edison, N.J.
EPA Contract 68-03-3482

Lab No. _____ Samplers: BUCHANAN | MUNNEY Chain of Custody No. _____
Date: 8.2.88 Site Name: ARMY CREEK REAC Task Leader: Buchanan
Time: 0845 Sample Location: EQUIP. RINSATE EPA Task Monitor: Chanlon
Project No.: #1123

SITE DESCRIPTION			SOIL TYPE		SURFACE WATER	STREAM	BOTTOM	
landfill	old field	upland palustrine	rock	clay	color _____	width _____	rock	silt
industrial	wooded	lowland riverine	gravel	muck	odor _____	depth _____	rubble	clay
commercial	farmland	lacustrine	sand	loam	flow _____	velocity _____ cm/s	gravel	organic
residential	gully		silt	peat	direction _____	pools _____ %	shell	other _____
hedgerows	floodplain		color _____			riffles _____ %	sand	

SAMPLE TYPE		DEVICE		SAMPLE INFORMATION		WEATHER PARAMETERS
stream/surface	soil	kemmerer	ponar	color _____	pH _____	ambient temp _____
groundwater	pond/lake	trowl	other _____	odor _____	ORP _____	barometric pressure _____
brackish	river	bucket		temp _____	salinity _____	relative humidity _____
ocean/saline	effluent	sugar		DO _____	sample depth _____	weather conditions _____
sediment	sludge	ekman		cond _____	tide stage _____	

ANALYSES TO BE PERFORMED

TOC required? ____Yes ✓No
If No, explain Low Conc

Grain size analysis required? ____Yes ✓No
If No, explain Low Conc

ORGANICS
- A. halogenated & aromatic volatiles
- B. volatiles-USEPA 624
- C. trihalomethanes
- D. pesticides/PCB
- E. PCB
- F. base neutral/acid extractables-USEPA 625
- G. pesticides, drinking water
- H. herbicides, drinking water

INORGANICS
- A. metals, priority pollutant
- B. metals scan (ICP)
- C. metals, other _____

RCRA
- A. EP toxicity ____metals ____pesticides ____herbicides
- B. ignitability
- C. corrosivity ____pH____
- D. reactivity

LIMITED CHEMISTRY
- A. total cyanide
- B. total phenol
- C. petroleum hydrocarbons
- D. pH
- E. alkalinity
- F. hardness
- G. total dissolved solids
- H. total suspended solids
- I. sulfate

OTHER ANALYSES (specify)
_____
_____

AIR SAMPLING
Sampling Method _____ Collection Media
Sample Flow Rate _____ Special Shipping Instructions _____
Sampling Time _____
Volume Collected _____ #Field Blanks ___ #Sample Blanks ___

SAMPLE PREPARATION

CONTAINER	PRESERVATIVES
glass jar	HNO3
plastic jar	NaOH
acetate core	Zn Acetate
plastic bag	HCL
plastic bucket	Na2SO4
4L plastic	other 4°C

STORAGE
- wet ice
- dry ice
- ambient

BIOASSESSMENT
- See attached data sheet
- See comments

COMMENTS:
Rinsate off Ponar Dredge after Decon using Distilled Water
3 x 40 ml

AR300360

NORMAN CREEK

8/1 Calibrate Hydrolab & Park at 0715

ONSITE 1100

ONSITE G. Buchanan & K Manner (REAC) - Set up Decon
M Huston (TAT) & D. Charter (EPA/ERT) Segment sample sites
HNU Calibration OK.
Background = 0.3 units
Calibration Gas - 5.8 units then - slowly rising to 6.2 units - fluctuating

Charter 'Set up sample #1 through 9

HNU Readings Background = 0.3 units
Decon Area = Background
Water in Pond by Decon = Background
Sediment in Pond = Background
Water by well outfield = Background

Change in Work P/an . According to David Charter
1) Drop one of downstream stations put one in between original 2 stations
2) Only two stations in Pond
3) More upstream station further upstream
4) More Location of other 2 upstream
5) 5 stations - Total of 7 Sites + 1 water out of well
6) All sites water + sediment

meet 13
Site 1 - will be furthest downstream

Arrive 1330

Sample taken at 1350

Site 1 - # 1870
water sample taken [illegible]
Hydrolab 1355
Temp = 26.66 °C
DO = 5.35 mg/l
pH = 6.37 [illegible] units
Cond = 0.332
ORP = 0.133
Sal = 0
Probe Depth - 6"
Total Depth = 18"
Heavy vegetation [illegible]
Phragmites & Typha [illegible]
Started [illegible] 1700
stream mostly clear slight brown
- some coarse particles [illegible]
[illegible]
Floodplain = 5' [illegible]
[illegible] Bordered by Rail Road &
[illegible] Trees to the south,
HNu = Background at Railroad at stream
and off [illegible] background = 0.3 units

Site 2/3 # 1871/1875 - [illegible]

Time: 1510

Hydrolab 1515
DO : 6.02
Temp : 23.15
pH = 6.33
Cond = 10.378
ORP = 10.178
SAL = 0
[illegible] 8" [illegible]
Total depth = 2 ft.

[illegible]
[illegible] water [illegible] heavy sedimentation
35' from Shore

HNu Hydrolab got wet from
[illegible] did not
work after Site # 1

Site #4 [illegible]
Hydrolab
DO [illegible]
Temp [illegible] °C
pH [illegible]
Cond [illegible]
ORP [illegible] 0.114
SAL 0
Probe Depth 6"
Total Depth 7'

Site #2 1579
(grab site) pH : ~~6.67~~ [illegible]

Site # 3 1575
(grab site) pH : 6.50

[illegible] OR [illegible] sample
for Site #4

All soluble metal samples field
filtered through 0.45 μ filter

Site # 4 Soluble pH 6.38
#1576

Trip Blank - #1881 2 VOA's
[illegible] in Two coolers

Kevin Hansen - water supplied by
checking well flows
EQUIP Blank - #1882
Rinsate (Distilled water) on field filter eq.

1900 Site #6 D Charters & G. Buchanan
Water Sample taken - 6 Plastic, 2 Amber, 2 VOA
Oil Sheen on water & septic smell
#1878
Hydrolab Depth = 6" Total Depth = 18"
DO = 4.64 mg/L
Temp = 28.08 °C
pH = 6.56
ORP = +0.137
Cond = 0.295
Sal = 0

Cold observed
Sediment Sample - mostly sand - 5% organic some sticks & leaves - [illegible] from sample
Sand light tan to light Brown in color

Sediment pH Site 6 #1878 = 6.39

Site 6 observations - Located approximately 150 feet downstream of Routes 33 & 70 behind & downstream of old 7-11 store. Tracks in Building next to 7-11 had 4" pipe leading into wetland - septic smell source?
Stream sluggish in places
Depth 6" to 2 feet - width 1 meter to 3 meters - Flood Plain wider evidence of overflow over banks & [illegible] debris
Slight oil odor upon disturbance of sediment

Sediment
3-32 oz
1-4 oz
Water
2-VOAs
6-1L Poly
2-Amber 1L

Pack up gear & leave Site at 2010
Ice down samples at 2100 in G Buchanan's Room
Meet tomorrow at 0730
Fauna observed on site:
Green Heron
Egret - light body & feet
Cottontail Rabbits
Deer Tracks & Raccoon Tracks
Gull (?)
Bobwhite (call)

Flora:
Phragmites
[illegible]

8-2-88 Calibrate Hydrolab 0700 ARMY CREEK
Pack samples into van
Travel to Site Arrive 0730
Set up decon & sample
D. Charters Sampling Well at 0930
#1884 - EQUIP. RINSATE - off Bonar - using [illegible]
G Buchanan & K. Manning - Sampling Site [illegible]
0950
Water Sample collected [illegible] [#1877]
Water Depth [illegible]
= 1 - 1.5 [illegible]
Hydrolab
DO 4.[illegible]
Temp [illegible]
pH [illegible]
Cond 0.443
Sal [illegible]
Petroleum odor present upon sediment disturbance - Collected Sediment Sample
Sediment - mostly sand - 90% - some organic matter
Heavily vegetated stream - Mostly Phragmites sp.

SED pH - STATION # 7 6.68

Well 29 Dup - Sample #1883 - D. Chaten sample

Cyanide sample turned dark upon preservation with NaOH

Site #8 Sediment pH = 6.61

1100 T. Manney & M. Huston sampling Site #8 upstream Reference site

Sample #1880 Sediment - 90% coarse sand NO Hardness or alkalinity sample collected for Site #8

Decon Procedure 1) Soap + water wash 2) Nitric Rinse 3) Distilled water Rinse 4) Acetone Rinse 5) Distilled water Rinse

SAMPLE SUMMARY!

Site #	Date	Sample #	Notes
1	8.1	1872	- Downstream of Pond
2	8.1	1874	Pond
3	8.1	1875	- Duplicate of #2
4	8.1	1876	- NO AIK on Hand.
5	8.1	1877	- upstream of Pond
6	8.1	1878	
7	8.2	1879	
8	8.2	1880	- NO AIK on Hand
Filter Rinsate	8.1	1882	- Liter Poly
Trip Blank	8.1	1881	- 4 x 40 ml
Equip Rinsate	8.2	1884	- 3 x 40 ml