

2021 Hazardous Waste Scanning Project

File Form Naming Convention.

(File_Type).(Program).(Site_Number).(YYYY-MM-DD).(File_Name).pdf

Note 1: Each category is separated by a period "."

Note 2: Each word within category is separated by an underscore "_"

Specific File Naming Convention Label:

Report, HW, 932118, 1994-04-29, Waste_Material - Inv.pdf

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April 29, 1994

New York State Department of
Environmental Conservation
270 Michigan Avenue
Buffalo, New York 14203-2999

Attention: Mr. E. Joseph Scasia, P.E. ✓
Reference: Waste Material Investigation
ASTECO- Witmer Road Property
Niagara Falls, New York
Project No. BTA-92-273

Gentlemen:

At the request of the New York State Department of Environmental Conservation (NYSDEC), Huntingdon/Empire Soils Investigations, Inc. (Empire), has completed additional Waste Material Investigations at the ASTECO- Witmer Road Property (subject property) located in Niagara Falls, New York. The purpose of this investigation was to further delineate the extent of the waste materials located at the subject property, evaluate the ground water contamination, and determine the most likely waste stream contributing to the ground water contamination.

To accomplish this purpose, Empire completed the following tasks:

- o Re-developed the existing five (5) ground water monitoring wells at the subject property;
- o Collected ground water samples from the five (5) ground water monitoring wells and completed analytical testing for Priority Pollutant (PP) parameters;
- o Completed test pit/trench excavations to further delineate the extent of the waste materials on site;
- o Completed analytical testing of the waste materials for toxicity characteristics and PP parameters. A dioxin analysis of the resin was also completed;
- o Completed analytical testing of Gill Creek water and sediment for PP parameters and Toxicity Characteristic Leachate Procedure (TCLP) parameters, respectively; and,
- o Summarized all the analytical testing results and conclusions in this report.

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The first field explorations for this project were completed in February, 1993, and included the re-development and sampling of the five (5) ground water monitoring wells at the subject property. Refer to Drawing No. 1 presented in Attachment A for monitoring well locations. The analytical testing of the ground water samples included PP volatiles, semi-volatiles, and metals. Additional ground water sampling and analytical testing was completed in August, 1993. However, only monitoring wells GW-1, GW-2, and GW-5 were sampled in August as the analytical testing results from the February, 1993, sampling event indicated significant concentrations of contaminants in only wells GW-1, GW-2 and GW-5. A summary of the parameters detected in the ground water for each sampling event, including the summarized results from the initial May, 1990, sampling event, are listed in Table I presented in Attachment B. The analytical results do not indicate any trends in parameter concentrations.

Following ground water monitoring well sampling, test pits/trenches were excavated in March and May, 1993, to further delineate the extent of the waste materials. Four (4) distinct types of waste materials are identified on the subject property. These include a resin material, lime-like material, black material, and a black foundry sand. Refer to Drawing No. 1 presented in Attachment A for the location and illustrated extent of the waste materials. The following chart lists the estimated quantity of each waste material.

<u>WASTE MATERIAL</u>	<u>ESTIMATED QUANTITY</u>
1. Resin	75 cu. yards*
2. Lime-like material	2,420 cu. yards
3. Black material	600 cu. yards
4. Black foundry sand	50 cu. yards

* May be additional small quantities of resin between GW-2 and TP-11R

To determine if the waste materials exhibited hazardous characteristics, samples of the resin, lime-like material, and the black material were collected in March, 1993, and analyzed for TCLP volatiles, semi-volatiles, and metals. RCRA characteristics [flash point (resin, black material only), pH, and reactivity] were also determined. Due to the presence of minor concentrations of dioxin detected in the ground water in the initial May, 1990, sampling event, the resin was also analyzed for dioxin. The above analyses are summarized in Table II (Attachment B).

Coincident with the ground water sampling event completed in August, 1993, PP volatiles, semi-volatiles, metals, and PCB's/pesticides analyses were completed on each of the four (4) identified wastes to assist in identifying the waste stream contributing to the ground water contamination at the subject property. It should be noted that the TCLP concentrations for the

black foundry sand were calculated using the PP concentrations from this sampling event and the formula listed in the NYSDEC STARS Memo No. 1, dated August, 1992. Table III (Attachment B) summarizes the PP analytical testing results of the waste materials. The most recent ground water analytical testing result summary is also included in this table to facilitate convenient comparison of potential waste streams contributing to the ground water contamination.

The surface water from Gill Creek, immediately adjacent to the subject property, was sampled to determine if the contamination on the subject property is affecting the Creek water quality. Upstream, adjacent, and downstream Creek water samples were collected in May, 1993, and analyzed for PP volatiles, semi-volatiles, and metals. In addition, a downstream Creek sediment sample was collected and analyzed for TCLP volatiles, semi-volatiles, and metals. The pH of the Creek water was analyzed on-site in July, 1993. Table IV presented in Attachment B summarizes the Creek water analytical testing results.

The analytical testing data summaries of the ground water and waste material were reviewed by Empire. The following conclusions are based on the analytical data acquired for the Waste Material Investigation at the ASTECO- Witmer Road Property (Attachment C- Complete analytical testing reports) and the May, 1990, ground water data.

- o The TCLP/RCRA analytical testing results indicate that the waste materials are generally classified as non-hazardous. However, the high pH of the lime-like material (12.26 S.U.) appears to be the source material causing the high pH of the ground water sample from GW-5;
- o The resin, lime-like material, and the black material appear to be the waste streams contributing to the elevated metals concentrations in the ground water;
- o Although the black foundry sand also contained elevated metals concentrations, it is Empire's opinion that this waste is not a significant contributor to the ground water contamination at the subject property due to its location on the subject property in relation to the ground water monitoring wells and the small quantity of this waste present;
- o The resin, lime-like material, and the black material appear to be the waste streams for the the volatile and semi-volatile compound concentrations in the ground water;
- o The resin appears to be the only contributor of the phenol concentrations present in the ground water;
- o As determined in a previous meeting between Empire and the NYSDEC on July 21, 1993 the dioxin concentration in the resin of 1.015 ppb is not a significant concern as this quantity is only marginally above the EPA action level of 1.0 ppb; and,

- o The analytical testing results indicate that the contamination on the subject property is not significantly affecting the water quality or sediment of Gill Creek and appears to be confined on the subject property. It should be noted that the elevated zinc concentration in each Gill Creek water sample, including the upstream sample, indicates that the zinc concentrations are the result of off-site activities which influence the Creek water quality.

This report is presented by Empire as a summary of the work completed on the Waste Material Investigation at the ASTECO- Witmer Road Property. Please review the report and contact our office to schedule a meeting to discuss further evaluations of the subject property contamination and the waste remediation options which will be required by the NYSDEC. If you have any questions regarding this report, please contact our office.

Respectfully submitted,
HUNTINGDON/EMPIRE SOILS INVESTIGATIONS, INC.



Jeff Contino
Environmental Geologist



Donald B. Abrams
Environmental Services Manager

Attachments

cc: A. Pinchoff, Huntingdon

ATTACHMENT A

ATTACHMENT B

TABLE I
COMPARISON OF DETECTED PARAMETERS IN GROUND WATER MONITORING WELLS
DURING THE THREE (3) SAMPLING EVENTS
WASTE MATERIAL INVESTIGATION
ASTECO-WITMER ROAD PROPERTY
NIAGARA FALLS, NEW YORK

PARAMETERS	MONITORING WELL: GW-1			
	MAY, 1990 (ug/l)	FEBRUARY, 1993 (ug/l)	AUGUST, 1993 (ug/l)	NYS DEC CLASS GA+ LIMITS (ug/l)
TOTAL METALS				
Antimony	N/T	N/D	N/D	*
Arsenic	N/T	N/D	N/D	25.0
Beryllium	N/T	N/D	N/D	*
Cadmium	N/T	N/D	N/D	10.0
Chromium	N/T	N/D	N/D	50.0
Copper	N/T	19.3	N/D	200.0
Lead	N/D	7.60	8.9	25.0
Mercury	N/T	N/D	N/D	2.0
Nickle	N/T.	N/D	N/D	*
Selenium	N/T	N/D	N/D	*
Zinc	N/T	209	84.6	300.0
VOLATILES				
Acetone	N/D	N/D	180	50***

TABLE I (CONT'D)

PARAMETERS	MONITORING WELL: GW-1			
	MAY, 1990 (ug/l)	FEBRUARY, 1993 (ug/l)	AUGUST, 1993 (ug/l)	NYS DEC CLASS GA+ LIMITS (ug/l)
2-Butanone	N/D	N/D	N/D	50
4-Methyl-2-Pentanone	N/D	N/D	N/D	50
Toluene	10	N/D	N/D	5
Ethyl Benzene	710	N/D	380	5
Xylene (Total)	5,500	27	1,400	5
1,3-Dichlorobenzene	N/T	N/D	N/D	*
TCL SEMIVOLATILES				
Anthracene	N/T	N/D	N/D	*
Benzo(a)anthracene	N/T	N/D	N/D	*
Benzo(b)fluoranthene	N/T	N/D	N/D	*
Benzo(k)fluoranthene	N/T	N/D	N/D	*
Benzo(a)pyrene	N/T	N/D	N/D	ND**
Benzo(g,h,i)perylene	N/T	N/D	N/D	*
Chrysene	N/T	N/D	N/D	*
1,2-Dichlorobenzene	N/T	N/D	N/D	4.7
1,3-Dichlorobenzene	N/T	N/D	N/D	*
1,4-Dichlorobenzene	N/T	N/D	12	4.7
Fluoranthene	N/T	N/D	N/D	*

TABLE I (CONT'D)

PARAMETERS	MONITORING WELL: GW-1			
	MAY, 1990 (ug/l)	FEBRUARY, 1993 (ug/l)	AUGUST, 1993 (ug/l)	NYS DEC CLASS GA+ LIMITS (ug/l)
Fluorene	N/T	N/D	N/D	*
Indeno(1,2,3-cd)pyrene	N/T	N/D	N/D	*
Naphthalene	N/T	11	N/D	*
Phenanthrene	N/T	N/D	N/D	*
Pyrene	N/T	N/D	N/D	*
1,2,4-Trichlorobenzene	N/T	N/D	N/D	*
Carbazole	N/T	N/D	N/D	*
Benzoic Acid	N/T	N/D	N/D	50****
2-Chlorophenol	N/T	N/D	N/D	1+
2,4-Dimethyl Phenol	N/D	520	92	1+
2-Methyl Phenol	2,100	99	2,200	1+
4-Methyl Phenol	N/D	N/D	170	1+
Phenol	9,400	170	5,700	1+
TOTAL PHENOLS	N/T	N/T	N/T	1

TABLE I (CONT'D)

PARAMETERS	MONITORING WELL: GW-2			
	MAY, 1990 (ug/l)	FEBRUARY, 1993 (ug/l)	AUGUST, 1993 (ug/l)	NYS DEC CLASS GA+ LIMITS (ug/l)
TOTAL METALS				
Antimony	N/T	N/D	N/D	*
Arsenic	N/T	27.5	N/D	25.0
Beryllium	N/T	N/D	7.22	*
Cadmium	N/T	N/D	N/D	10.0
Chromium	N/T	N/D	12.8	50.0
Copper	N/T	N/D	N/D	200.0
Lead	N/D	N/D	7.10	25.0
Mercury	N/T	N/D	N/D	2.0
Nickle	N/T	N/D	N/D	*
Selenium	N/T	N/D	N/D	*
Zinc	N/T	22.1	22.7	300.0
VOLATILES				
Acetone	N/D	850	1,900	50***
2-Butanone	N/D	540	1,000	50
4-Methyl-2-Pentanone	N/D	1,100	1,800	50
Toluene	N/D	610	1,000	5

TABLE I (CONT'D)

PARAMETERS	MONITORING WELL: GW-2			
	MAY, 1990 (ug/l)	FEBRUARY, 1993 (ug/l)	AUGUST, 1993 (ug/l)	NYS DEC CLASS GA+ LIMITS (ug/l)
Ethyl Benzene	5,500	4,500	6,300	5
Xylene (Total)	40,000	28,000	37,000	5
1,3-Dichlorobenzene	N/T	N/D	N/D	*
TCL SEMIVOLATILES				
Anthracene	N/T	N/D	N/D	*
Benzo(a)anthracene	N/T	N/D	N/D	*
Benzo(b)fluoranthene	N/T	N/D	N/D	*
Benzo(k)fluoranthene	N/T	N/D	N/D	*
Benzo(a)pyrene	N/T	N/D	N/D	ND**
Benzo(g,h,i)perylene	N/T	N/D	N/D	*
Chrysene	N/T	N/D	N/D	*
1,2-Dichlorobenzene	N/T	850	N/D	4.7
1,3-Dichlorobenzene	N/T	37	N/D	*
1,4-Dichlorobenzene	N/T	66	N/D	4.7
Fluoranthene	N/T	N/D	N/D	*
Fluorene	N/T	N/D	N/D	*
Indeno(1,2,3-cd)pyrene	N/T	N/D	N/D	*
Naphthalene	N/T	25	N/D	*

TABLE I (CONT'D)

PARAMETERS	MONITORING WELL: GW-2			
	MAY, 1990 (ug/l)	FEBRUARY, 1993 (ug/l)	AUGUST, 1993 (ug/l)	NYS DEC CLASS GA+ LIMITS (ug/l)
Phenanthrene	N/T	N/D	N/D	*
Pyrene	N/T	N/D	N/D	*
1,2,4-Trichlorobenzene	N/T	30	N/D	*
Carbazole	N/T	N/D	N/D	*
Benzoic Acid	N/T	12,000	3,300	50***
2-Chlorophenol	N/T	240	N/D	1+
2,4-Dimethyl Phenol	6,000	8,000	10,000	1+
2-Methyl Phenol	21,000	25,000	33,000	1+
4-Methyl Phenol	2,200	3,500	4,500	1+
Phenol	86,000	150,000	190,000	1+
TARGET COMPOUND LIST				
A-BHC	N/T	N/T	1.4	ND**
B-BHC	N/T	N/T	0.19	ND**
D-BHC	N/T	N/T	0.24	ND**
TOTAL PHENOLS	N/T	N/T	524	1

TABLE I (CONT'D)

PARAMETERS	MONITORING WELL: GW-3			
	MAY, 1990 (ug/l)	FEBRUARY, 1993 (ug/l)	AUGUST, 1993 (ug/l)	NYS DEC CLASS GA+ LIMITS (ug/l)
TOTAL METALS				
Antimony	N/T	N/D	N/T	*
Arsenic	N/T	N/D	N/T	25.0
Beryllium	N/T	N/D	N/T	*
Cadmium	N/T	N/D	N/T	10.0
Chromium	N/T	N/D	N/T	50.0
Copper	N/T	N/D	N/T	200.0
Lead	239	N/D	N/T	25.0
Mercury	N/T	N/D	N/T	2.0
Nickle	N/T	N/D	N/T	*
Selenium	N/T	N/D	N/T	*
Zinc	N/T	N/D	N/T	300.0
VOLATILES				
Acetone	N/D	N/D	N/T	50***
2-Butanone	N/D	N/D	N/T	50
4-Methyl-2-Pentanone	N/D	N/D	N/T	50
Toluene	N/D	N/D	N/T	5

TABLE I (CONT'D)

PARAMETERS	MONITORING WELL: GW-3			
	MAY, 1990 (ug/l)	FEBRUARY, 1993 (ug/l)	AUGUST, 1993 (ug/l)	NYS DEC CLASS GA+ LIMITS (ug/l)
Ethyl Benzene	N/D	N/D	N/T	5
Xylene (Total)	12.0	N/D	N/T	5
1,3-Dichlorobenzene	N/T	N/D	N/T	*
TCL SEMIVOLATILES				
Anthracene	N/T	N/D	N/T	*
Benzo(a)anthracene	N/T	N/D	N/T	*
Benzo(b)fluoranthene	N/T	N/D	N/T	*
Benzo(k)fluoranthene	N/T	N/D	N/T	*
Benzo(a)pyrene	N/T	N/D	N/T	ND**
Benzo(g,h,i)perylene	N/T	N/D	N/T	*
Chrysene	N/T	N/D	N/T	*
1,2-Dichlorobenzene	N/T	N/D	N/T	4.7
1,3-Dichlorobenzene	N/T	N/D	N/T	*
1,4-Dichlorobenzene	N/T	N/D	N/T	4.7
Fluoranthene	N/T	N/D	N/T	*
Fluorene	N/T	N/D	N/T	*
Indeno(1,2,3-cd)pyrene	N/T	N/D	N/T	*
Naphthalene	N/T	N/D	N/T	*

TABLE I (CONT'D)

PARAMETERS	MONITORING WELL: GW-3			
	MAY, 1990 (ug/l)	FEBRUARY, 1993 (ug/l)	AUGUST, 1993 (ug/l)	NYS DEC CLASS GA+ LIMITS (ug/l)
Phenanthrene	N/T	N/D	N/T	*
Pyrene	N/T	N/D	N/T	*
1,2,4-Trichlorobenzene	N/T	N/D	N/T	*
Carbazole	N/T	N/D	N/T	*
Benzoic Acid	N/T	N/D	N/T	50***
2-Chlorophenol	N/T	N/D	N/T	1+
2,4-Dimethyl Phenol	N/D	N/D	N/T	1+
2-Methyl Phenol	N/D	N/D	N/T	1+
4-Methyl Phenol	N/D	N/D	N/T	1+
Phenol	22.0	N/D	N/T	1+
TOTAL PHENOLS	N/T	N/T	N/T	1

TABLE I (CONT'D)

PARAMETERS	MONITORING WELL: GW-4			
	MAY, 1990 (ug/l)	FEBRUARY, 1993 (ug/l)	AUGUST, 1993 (ug/l)	NYS DEC CLASS GA+ LIMITS (ug/l)
TOTAL METALS				
Antimony	N/T	N/D	N/T	*
Arsenic	N/T	N/D	N/T	25.0
Beryllium	N/T	N/D	N/T	*
Cadmium	N/T	N/D	N/T	10.0
Chromium	N/T	N/D	N/T	50.0
Copper	N/T	N/D	N/T	200.0
Lead	43.7	N/D	N/T	25.0
Mercury	N/T	N/D	N/T	2.0
Nickle	N/T	N/D	N/T	*
Selenium	N/T	N/D	N/T	*
Zinc	N/T	86.2	N/T	300.0
VOLATILES				
Acetone	N/D	N/D	N/T	50****
2-Butanone	N/D	N/D	N/T	50
4-Methyl-2-Pentanone	N/D	N/D	N/T	50
Toluene	N/D	N/D	N/T	5

TABLE I (CONT'D)

PARAMETERS	MONITORING WELL: GW-4			
	MAY, 1990 (ug/l)	FEBRUARY, 1993 (ug/l)	AUGUST, 1993 (ug/l)	NYS DEC CLASS GA+ LIMITS (ug/l)
Ethyl Benzene	N/D	N/D	N/T	5
Xylene (Total)	N/D	N/D	N/T	5
1,3-Dichlorobenzene	N/D	N/D	N/T	*
TCL SEMIVOLATILES				
Anthracene	N/T	N/D	N/T	*
Benzo(a)anthracene	N/T	N/D	N/T	*
Benzo(b)fluoranthene	N/T	N/D	N/T	*
Benzo(k)fluoranthene	N/T	N/D	N/T	*
Benzo(a)pyrene	N/T	N/D	N/T	ND**
Benzo(g,h,i)perylene	N/T	N/D	N/T	*
Chrysene	N/T	N/D	N/T	*
1,2-Dichlorobenzene	N/T	N/D	N/T	4.7
1,3-Dichlorobenzene	N/T	N/D	N/T	*
1,4-Dichlorobenzene	N/T	N/D	N/T	4.7
Fluoranthene	N/T	N/D	N/T	*
Fluorene	N/T	N/D	N/T	*
Indeno(1,2,3-cd)pyrene	N/T	N/D	N/T	*
Naphthalene	N/T	N/D	N/T	*

TABLE I (CONT'D)

PARAMETERS	MONITORING WELL: GW-4			
	MAY, 1990 (ug/l)	FEBRUARY, 1993 (ug/l)	AUGUST, 1993 (ug/l)	NYS DEC CLASS GA+ LIMITS (ug/l)
Phenanthrene	N/T	N/D	N/T	*
Pyrene	N/T	N/D	N/T	*
1,2,4-Trichlorobenzene	N/T	N/D	N/T	*
Carbazole	N/T	N/D	N/T	*
Benzoic Acid	N/T	N/D	N/T	50***
2-Chlorophenol	N/T	N/D	N/T	1+
2,4-Dimethyl Phenol	N/D	N/D	N/T	1+
2-Methyl Phenol	N/D	N/D	N/T	1+
4-Methyl Phenol	N/D	N/D	N/T	1+
Phenol	N/D	N/D	N/T	1+
TOTAL PHENOLS	N/T	N/T	N/T	1

TABLE I (CONT'D)

PARAMETERS	MONITORING WELL: GW-5			
	MAY, 1990 (ug/l)	FEBRUARY, 1993 (ug/l)	AUGUST, 1993 (ug/l)	NYS DEC CLASS GA+ LIMITS (ug/l)
TOTAL METALS				
Antimony	N/T	N/D	N/D	*
Arsenic	N/T	N/D	N/D	25.0
Beryllium	N/T	N/D	6.96	*
Cadmium	N/T	N/D	9.18	10.0
Chromium	N/T	1930	1,750	50.0
Copper	N/T	N/D	N/D	200.0
Lead	9.7	N/D	8.70	25.0
Mercury	N/T	N/D	N/D	2.0
Nickle	N/T	N/D	N/D	*
Selenium	N/T	N/D	N/D	*
Zinc	N/T	N/D	N/D	300.0
VOLATILES				
Acetone	N/D	N/D	N/T	50***
2-Butanone	N/D	N/D	N/T	50
4-Methyl-2-Pentanone	N/D	N/D	N/T	50
Toluene	N/D	N/D	N/T	5

TABLE I (CONT'D)

PARAMETERS	MONITORING WELL: GW-5			
	MAY, 1990 (ug/l)	FEBRUARY, 1993 (ug/l)	AUGUST, 1993 (ug/l)	NYS DEC CLASS GA+ LIMITS (ug/l)
Ethyl Benzene	N/D	N/D	N/T	5
Xylene (Total)	18	N/D	N/T	5
1,3-Dichlorobenzene	N/D	N/D	N/T	*
TCL SEMIVOLATILES				
Anthracene	N/T	N/D	N/T	*
Benzo(a)anthracene	N/T	N/D	N/T	*
Benzo(b)fluoranthene	N/T	N/D	N/T	*
Benzo(k)fluoranthene	N/T	N/D	N/T	*
Benzo(a)pyrene	N/T	N/D	N/T	ND**
Benzo(g,h,i)perylene	N/T	N/D	N/T	*
Chrysene	N/T	N/D	N/T	*
1,2-Dichlorobenzene	N/T	N/D	N/T	4.7
1,3-Dichlorobenzene	N/T	N/D	N/T	*
1,4-Dichlorobenzene	N/T	N/D	N/T	4.7
Fluoranthene	N/T	N/D	N/T	*
Fluorene	N/T	N/D	N/T	*
Indeno(1,2,3-cd)pyrene	N/T	N/D	N/T	*
Naphthalene	N/T	N/D	N/T	*

TABLE I (CONT'D)

PARAMETERS	MONITORING WELL: GW-5			
	MAY, 1990 (ug/l)	FEBRUARY, 1993 (ug/l)	AUGUST, 1993 (ug/l)	NYS DEC CLASS GA+ LIMITS (ug/l)
Phenanthrene	N/T	N/D	N/T	*
Pyrene	N/T	N/D	N/T	*
1,2,4-Trichlorobenzene	N/T	N/D	N/T	*
Carbazole	N/T	N/D	N/T	*
Benzoic Acid	N/T	N/D	N/T	50***
2-Chlorophenol	N/T	N/D	N/T	1+
2,4-Dimethyl Phenol	N/D	N/D	N/T	1+
2-Methyl Phenol	N/D	N/D	N/T	1+
4-Methyl Phenol	N/D	N/D	N/T	1+
Phenol	N/D	N/D	N/T	1+
TOTAL PHENOLS	N/T	N/T	N/T	1

NOTES:

1. NYSDEC Class GA + Waters are fresh ground waters.
2. Shaded values exceeded NYSDEC limit values.
3. N/D - Not detected above test method limits.
4. N/T - Parameter was not tested.
5. * - No standard listed.
6. ND** - Not detectable by analytical tests.
7. *** - NYSDEC Guidance Values.
8. ug/l - micrograms per liter.
9. Tentatively identified semi volatiles compounds (May, 1990) were not used in comparisons.
10. + Limit for Total Phenols

TABLE II
TCLP/DIOXIN RESULTS AND RCRA CHARACTERISTICS
MARCH 23, 1993 TEST PIT EXCAVATIONS
WASTE MATERIAL INVESTIGATION
ASTECO- WITMER ROAD PROPERTY
NIAGARA FALLS, NEW YORK

Dioxin Result Resin- 1.015 ppb (EPA Action Level 1.0 ppb)

TCLP Results- All waste materials passed TCLP Tests

MATERIAL	RCRA CHARACTERISTICS			
	FLASH POINT (°F)	pH (S.U.)	REACTIVE SULFIDE (mg/kg)	REACTIVE CYANIDE (mg/kg)
BLACK COMP	> 160	7.89	< 50	< 50
RESIN-2	> 160	8.16	< 50	< 50
LIME LIKE MATERIAL	N/T	12.26	< 50	< 50

NOTES:

1. °F - Degrees Fahrenheit.
2. S.U. - Standard Units.
3. mg/kg - milligrams per kilograms.
4. N/T - Not Tested.

TABLE III
PARAMETERS PRESENT ABOVE TEST METHOD DETECTION LIMITS
ADDITIONAL ANALYTICAL TESTING AUGUST 19 - 20, 1993
ASTECO-WITMER ROAD PROPERTY
TOWN OF NIAGARA, NEW YORK

	SAMPLE I.D.							
	CONCENTRATION (ug/l)				CONCENTRATION (ug/kg)			
PARAMETER	GW-1	GW-2	GW-5	NYS DEC CLASS GA+ LIMIT	RESIN	LIME	BLACK MATERIAL	BLK FOUND SAND
Metals								
Antimony	---	---	---	*	---	---	69,600	---
Arsenic	---	---	---	25.00	5,430	---	22,900	---
Beryllium	---	7.22	6.96	*	2,510	2,810	2,480	1,290
Cadmium	---	---	9.18	10.00	---	---	4,630	1,220
Chromium	---	12.8	1.750	50.00	128,000	~~(2,590,000)~~	49,500	25,100
Copper	---	---	---	200	434,000	14,500	714,000	---
Lead	8.90	7.10	8.70	25	17,500	8,510	319,000	17,900
Mercury	---	---	---	2	289	171	528	118
Nickel	---	---	---	*	23,100	13,500	38,800	---

TABLE III (CONT'D)

	SAMPLE I.D.							
	CONCENTRATION (ug/l)				CONCENTRATION (ug/kg)			
PARAMETER	GW-1	GW-2	GW-5	NYS DEC CLASS GA+ LIMIT	RESIN	LIME	BLACK MATERIAL	BLK FOUND SAND
Selenium	---	---	---	10	---	---	4,190	---
Zinc	84.6	22.7	---	300	408,000	31,500	1,660,000	21,900
Target Compound List								
A-BHC		1.4		ND**	200	---	~~40~~ ✓	---
B-BHC		0.19		ND**	---	---	~~40~~ ✓	---
D-BHC		0.24		ND**	---	---	~~30~~ ✓	---
G-BHC		---			70	---	---	---
PCB-1248		---			---	---	630	---
Semi-Volatiles								
Anthracene	---	---		*	---	---	1,100	---
Benzo(a)anthracene	---	---		*	---	---	2,300	---
Benzo(b)fluoranthene	---	---		*	---	---	1,800	---
Benzo(k)fluoranthene	---	---		*	---	---	2,200	---
Benzo(a)pyrene	---	---		ND**	---	---	2,000	---

	SAMPLE I.D.							
	CONCENTRATION (ug/l)				CONCENTRATION (ug/kg)			
PARAMETER	GW-1	GW-2	GW-5	NYS DEC CLASS GA+ LIMIT	RESIN	LIME	BLACK MATERIAL	BLK FOUND SAND
Benzo(g,h,i)perylene	---	---		*	---	---	1,100	---
Chrysene	---	---		*	---	---	2,300	---
1,2-Dichlorobenzene	---	---		4.7	30,000	---	---	---
1,4-Dichlorobenzene	12	---		4.7	26,000	---	---	---
Fluoranthene	---	---		*	---	---	4,800	---
Fluorene	---	---		*	---	---	440	---
Indeno(1,2,3-cd)pyrene	---	---		*	---	---	840	---
Naphthalene	---	---		*	71,000	---	---	---
Phenanthrene	---	---		*	---	---	4,100	---
Pyrene	---	---		*	---	---	5,600	---
1,2,4-Trichlorobenzene	---	---		*	48,000	---	---	---
Carbazole	---	---		*	---	---	370	---
Benzoic Acid	---	3,300		50**	---	---	---	---
2,4-Dimethyl Phenol	92	10,000		1***	250,000	---	---	---
2-Methyl Phenol	2,200	33,000		1***	1,500,000	---	---	---

TABLE III (CONT'D)

	SAMPLE I.D.							
	CONCENTRATION (ug/l)				CONCENTRATION (ug/kg)			
PARAMETER	GW-1	GW-2	GW-5	NYS DEC CLASS GA+ LIMIT	RESIN	LIME	BLACK MATERIAL	BLK FOUND SAND
4-Methyl Phenol	170	4,500		1***	~~120,000~~ ✓	---	---	---
Phenol	5,700	190,000		1***	~~5,800,000~~ ✓	---	---	---
Volatiles								
Acetone	180	1,900		50***	---	16	120	---
2-Butanone	---	1,000		50	---	---	~~31~~ ✓	---
4-Methyl-2-Pentanone	---	1,800		50	----	---	---	---
Toluene	---	1,000		5	~~170,000~~ ✓	---	---	---
Ethyl Benzene	380	6,300		5	~~730,000~~ ✓	---	---	---
Xylene (Total)	1,400	37,000		5	~~7,600,000~~ ✓	---	---	---
1,3-Dichlorobenzene	---	---		*	---	---	11	---
Total Phenolics	---	524		1**				

NOTES:

1. * No Standard Listed.
2. ** Limit For Total Phenols.
3. *** NYSDEC Guidance Value.

4. ND** - Not detectable by analytical tests.
5. Shaded Values Exceeded NYSDEC Limits.
6. NYSDEC GA + are fresh ground waters.

7. ug/l - micrograms per liter.
8. ug/kg - micrograms per kilogram.
9. --- Not detected above test method detection limits.

10. If blank, parameter not tested.

TABLE IV
PARAMETERS DETECTED ABOVE TEST METHOD LIMITS
SURFACE WATER SAMPLES COLLECTED FROM GILL CREEK ON MAY 19, 1993
WASTE MATERIAL INVESTIGATION
ASTECO-WITMER ROAD PROPERTY
NIAGARA FALLS, NEW YORK

CREEK LOCATION	CHROMIUM (ug/l)	NYSDEC CLASS B + LIMIT (ug/l)	ZINC (ug/l)	NYSDEC CLASS B + LIMIT (ug/l)
CREEK-UP	14.0	797.4	68.0	30.0
CREEK-GW-4	10.5	770.8	59.9	30.0
CREEK-DOWN	N/D	773.0	51.8	30.0

NOTES:

1. Class B Waters are fresh surface waters.
2. NYSDEC Class B + limits for chromium are determined on water hardness.
3. Shaded values exceeded NYDEC limit values.
4. N/D - Not detected above the test method limits.
5. N/A - Not applicable.

ATTACHMENT C

ENVIRONMENTAL ANALYTICAL REPORT

REPORT NUMBER: 93-0200

PREPARED FOR:

EMPIRE SOILS INVESTIGATIONS, INC.
S-5167 SOUTH PARK AVENUE
HAMBURG, NEW YORK 14075

RE: BTA-92-273; WITMER ROAD

PREPARED BY:

HUNTINGDON ANALYTICAL SERVICES
DIVISION OF EMPIRE SOILS INVESTIGATIONS, INC.
P.O. BOX 250
MIDDLEPORT, NEW YORK 14105
TELEPHONE: 716/735-3400; FAX: 716/735-3653

FEBRUARY 23, 1993

PAGE 1

Huntingdon
Analytical Laboratory

Analytical Services Division

HUNTINGDON ANALYTICAL SERVICES
ELAP #10833
ENVIRONMENTAL REPORT

REPORT NUMBER: 93-0200

STATEMENT OF WORK PERFORMED

I HEREBY DECLARE THAT THE WORK WAS PERFORMED UNDER MY SUPERVISION ACCORDING TO THE PROCEDURES OUTLINED BY THE FOLLOWING REFERENCES AND THAT THIS REPORT PROVIDES A CORRECT AND FAITHFUL RECORD OF THE RESULTS OBTAINED.

- 40 CFR PART 136, "GUIDELINES ESTABLISHING TEST PROCEDURES FOR THE ANALYSIS OF POLLUTANTS UNDER THE CLEAN WATER ACT", OCTOBER 26, 1984 (FEDERAL REGISTER) U. S. ENVIRONMENTAL PROTECTION AGENCY.
- U.S. ENVIRONMENTAL PROTECTION AGENCY, "TEST METHODS OF EVALUATING SOLID WASTE - PHYSICAL/CHEMICAL METHODS", OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE, SW-846, 2ND EDITION AND 3RD EDITION.

THIS REPORT CONTAINS ANALYTICAL DATA BASED ON OUR EXAMINATION OF THE SAMPLE(S) PRESENTED TO US. THIS REPORT CONTAINS (EXCEPT WHERE EXPLICITLY STATED) A COMPLETE ACCOUNT OF THE ANALYSES REQUESTED TO BE PERFORMED ON THE SAMPLE(S). INFORMATION WHICH WAS NOT REQUESTED TO BE REPORTED IS NOT INCLUDED.


ANDREW P. CLIFTON

FEBRUARY 23, 1993

ENVIRONMENTAL LABORATORY DIRECTOR

REPORT CODE LEGEND:

<DL = LESS THAN DETECTION LIMIT
ND = NOT DETECTED
NA = NOT APPLICABLE
INP = INFORMATION NOT PROVIDED
MB = METHOD BLANK

Huntingdon
Analytical Laboratory

Analytical Services Division

HUNTINGDON ANALYTICAL SERVICES

Sample ID: WITMER RD GW-5

HAS Sample #93-0200-01

Date Sampled: 2/04/93

Date Prepared: 2/10/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/L)</u>	<u>RESULT ug/L</u>
ANTIMONY	6010	2/15/93	50.0	<DL
ARSENIC	7060	2/11/93	10.0	<DL
BERYLLIUM	6010	2/15/93	5.00	<DL
CADMIUM	6010	2/15/93	5.00	<DL
CHROMIUM	6010	2/15/93	10.0	1930
COPPER	6010	2/15/93	10.0	<DL
LEAD	7421	2/11/93	5.00	<DL
MERCURY	7470	2/09/93	0.20	<DL
NICKEL	6010	2/15/93	40.0	<DL
SELENIUM	7740	2/18/93	5.00	<DL
SILVER	6010	2/15/93	10.0	<DL
THALLIUM	7841	2/18/93	10.0	<DL
ZINC	6010	2/15/93	20.0	<DL

HUNTINGDON ANALYTICAL SERVICES

Sample ID: WITMER RD GW-1

HAS Sample #93-0200-02

Date Sampled: 2/04/93

Date Prepared: 2/10/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/L)</u>	<u>RESULT ug/L</u>
ANTIMONY	6010	2/15/93	50.0	<DL
ARSENIC	7060	2/11/93	10.0	<DL
BERYLLIUM	6010	2/15/93	5.00	<DL
CADMIUM	6010	2/15/93	5.00	<DL
CHROMIUM	6010	2/15/93	10.0	<DL
COPPER	6010	2/15/93	10.0	19.3
LEAD	7421	2/11/93	5.00	7.60
MERCURY	7470	2/09/93	0.20	<DL
NICKEL	6010	2/15/93	40.0	<DL
SELENIUM	7740	2/18/93	5.00	<DL
SILVER	6010	2/15/93	10.0	<DL
THALLIUM	7841	2/18/93	10.0	<DL
ZINC	6010	2/15/93	20.0	209

HUNTINGDON ANALYTICAL SERVICES

Sample ID: WITMER RD GW-4

HAS Sample #93-0200-03

Date Sampled: 2/04/93

Date Prepared: 2/10/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/L)</u>	<u>RESULT ug/L</u>
ANTIMONY	6010	2/15/93	50.0	<DL
ARSENIC	7060	2/11/93	10.0	<DL
BERYLLIUM	6010	2/15/93	5.00	<DL
CADMIUM	6010	2/15/93	5.00	<DL
CHROMIUM	6010	2/15/93	10.0	<DL
COPPER	6010	2/15/93	10.0	<DL
LEAD	7421	2/11/93	5.00	<DL
MERCURY	7470	2/09/93	0.20	<DL
NICKEL	6010	2/15/93	40.0	<DL
SELENIUM	7740	2/18/93	5.00	<DL
SILVER	6010	2/15/93	10.0	<DL
THALLIUM	7841	2/18/93	10.0	<DL
ZINC	6010	2/15/93	20.0	86.2

HUNTINGDON ANALYTICAL SERVICES

Sample ID: WITMER RD GW-3

HAS Sample #93-0200-04

Date Sampled: 2/04/93

Date Prepared: 2/10/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/L)</u>	<u>RESULT ug/L</u>
ANTIMONY	6010	2/15/93	50.0	<DL
ARSENIC	7060	2/11/93	10.0	<DL
BERYLLIUM	6010	2/15/93	5.00	<DL
CADMIUM	6010	2/15/93	5.00	<DL
CHROMIUM	6010	2/15/93	10.0	<DL
COPPER	6010	2/15/93	10.0	<DL
LEAD	7421	2/11/93	5.00	<DL
MERCURY	7470	2/09/93	0.20	<DL
NICKEL	6010	2/15/93	40.0	<DL
SELENIUM	7740	2/18/93	5.00	<DL
SILVER	6010	2/15/93	10.0	<DL
THALLIUM	7841	2/18/93	10.0	<DL
ZINC	6010	2/15/93	20.0	<DL

HUNTINGDON ANALYTICAL SERVICES

Sample ID: WITMER RD GW-2

HAS Sample #93-0200-05

Date Sampled: 2/04/93

Date Prepared: 2/10/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/L)</u>	<u>RESULT ug/L</u>
ANTIMONY	6010	2/15/93	50.0	<DL
ARSENIC	7060	2/11/93	10.0	27.5
BERYLLIUM	6010	2/15/93	5.00	<DL
CADMIUM	6010	2/15/93	5.00	<DL
CHROMIUM	6010	2/15/93	10.0	<DL
COPPER	6010	2/15/93	10.0	<DL
LEAD	7421	2/11/93	5.00	<DL
MERCURY	7470	2/09/93	0.20	<DL
NICKEL	6010	2/15/93	40.0	<DL
SELENIUM	7740	2/18/93	5.00	<DL
SILVER	6010	2/15/93	10.0	<DL
THALLIUM	7841	2/18/93	10.0	<DL
ZINC	6010	2/15/93	20.0	22.1

HUNTINGDON ANALYTICAL SERVICES

Sample ID: METHOD BLANK

HAS Sample #93-0200-MB

Date Sampled: NA

Date Prepared: 2/10/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/L)</u>	<u>RESULT ug/L</u>
ANTIMONY	6010	2/15/93	50.0	<DL
ARSENIC	7060	2/11/93	10.0	<DL
BERYLLIUM	6010	2/15/93	5.00	<DL
CADMIUM	6010	2/15/93	5.00	<DL
CHROMIUM	6010	2/15/93	10.0	<DL
COPPER	6010	2/15/93	10.0	<DL
LEAD	7421	2/11/93	5.00	<DL
MERCURY	7470	2/09/93	0.20	<DL
NICKEL	6010	2/15/93	40.0	<DL
SELENIUM	7740	2/18/93	5.00	<DL
SILVER	6010	2/15/93	10.0	<DL
THALLIUM	7841	2/18/93	10.0	<DL
ZINC	6010	2/15/93	20.0	<DL

EPA METHOD 8240
VOLATILE ORGANICS

GW-5

GW-1

GW-4

GW-3

GW-2

METHOD
BLANK

HAS SAMPLE #930200

01

02

03

04

05

COMPOUND

RESULT
ug/L

RESULT
ug/L

RESULT

ug/L

RESULT
ug/L

RESULT
ug/L

RESULT
ug/L

DL
ug/L

CHLOROMETHANE	<10	<10	<10	<10	<200	<10	<10
BROMOMETHANE	<10	<10	<10	<10	<200	<10	<10
VINYL CHLORIDE	<10	<10	<10	<10	<200	<10	<10
CHLOROETHANE	<10	<10	<10	<10	<200	<10	<10
METHYLENE CHLORIDE	<10	<10	<10	<10	<200	<10	<10
ACETONE	<10	<10	<10	<10	850	<10	<10
TRICHLOROFLUOROMETHANE	<10	<10	<10	<10	<200	<10	<10
CARBON DISULFIDE	<10	<10	<10	<10	<200	<10	<10
1,1-DICHLOROETHENE	<10	<10	<10	<10	<200	<10	<10
1,1-DICHLOROETHANE	<10	<10	<10	<10	<200	<10	<10
1,2-DICHLOROETHENE (TOTAL)	<10	<10	<10	<10	<200	<10	<10
CHLOROFORM	<10	<10	<10	<10	<200	<10	<10
1,2-DICHLOROETHANE	<10	<10	<10	<10	<200	<10	<10
2-BUTANONE	<10	<10	<10	<10	540	<10	<10
1,1,1-TRICHLOROETHANE	<10	<10	<10	<10	<200	<10	<10
CARBON TETRACHLORIDE	<10	<10	<10	<10	<200	<10	<10
VINYL ACETATE	<10	<10	<10	<10	<200	<10	<10
BROMODICHLOROMETHANE	<10	<10	<10	<10	<200	<10	<10
1,2-DICHLOROPROPANE	<10	<10	<10	<10	<200	<10	<10
cis-1,3-DICHLOROPROPENE	<10	<10	<10	<10	<200	<10	<10
TRICHLOROETHENE	<10	<10	<10	<10	<200	<10	<10
DIBROMOCHLOROMETHANE	<10	<10	<10	<10	<200	<10	<10
1,1,2-TRICHLOROETHANE	<10	<10	<10	<10	<200	<10	<10
BENZENE	<10	<10	<10	<10	<200	<10	<10
trans-1,3-DICHLOROPROPENE	<10	<10	<10	<10	<200	<10	<10
2-CHLOROETHYL VINYL ETHER	<10	<10	<10	<10	<200	<10	<10
BROMOFORM	<10	<10	<10	<10	<200	<10	<10
4-METHYL-2-PENTANONE	<10	<10	<10	<10	1,100	<10	<10
2-HEXANONE	<10	<10	<10	<10	<200	<10	<10
TETRACHLOROETHENE	<10	<10	<10	<10	<200	<10	<10
1,1,2,2-TETRACHLOROETHANE	<10	<10	<10	<10	<200	<10	<10
TOLUENE	<10	<10	<10	<10	610	<10	<10
CHLOROBENZENE	<10	<10	<10	<10	<200	<10	<10
ETHYL BENZENE	<10	<10	<10	<10	4,500	<10	<10
STYRENE	<10	<10	<10	<10	<200	<10	<10
XYLENE (TOTAL)	<10	27	<10	<10	28,000	<10	<10
1,3-DICHLOROBENZENE	<10	<10	<10	<10	<200	<10	<10
1,2-DICHLOROBENZENE	<10	<10	<10	<10	<200	<10	<10
1,4-DICHLOROBENZENE	<10	<10	<10	<10	<200	<10	<10

DATE SAMPLED:

02-04-93

02-04-93

02-04-93

02-04-93

02-04-93

DATE RECEIVED:

02-05-93

02-05-93

02-05-93

02-05-93

02-05-93

...

DATE ANALYZED:

02-11-93

02-11-93

02-11-93

02-11-93

02-11-93

02-11-93

PAGE 2 OF 2

[illegible]

Client Name Empire Soils Investigations, Inc.
S-5167 South Park Avenue
 Address Hamburg, New York 14075

Client Contact Jeff Contino
 Phone (716)649-8110

HAS Quote # _____
 P.O. # _____

Project No.: <u>BIA-92-273</u>		Project/Site Name: <u>Witmer Rd.</u>		M		Container Size & Type		Analysis Requested/Remarks		
Samplers (Signature): <u>Jeff Contino</u>		HAS Ref. #93- <u>93-0200</u>		# of Containers						
Sample I.D.	Date	Time	Comp.	Grob Location	Seq. #	40ml	100ml	150ml	250ml	500ml
GW-5	2/4/93	1035	X	GW-5 01	W 5	XX	XX	X		
GW-1	11	1119	X	GW-1 02	W 5	XX	XX	X		
GW-4	11	1245	X	GW-4 03	W 5	XX	XX	X		
GW-3	11	1307	X	GW-3 04	W 5	XX	XX	X		
GW-2	11	1328	X	GW-2 05	W 5	XX	XX	X		
Total = 25										

Relinquished by: Jeff Contino Date/Time: 2/4/93 11530 Received by: ESF Cooler
 Relinquished by: Allen K. Miller Date/Time: 2/5/93 0930 Received by: Allen K. Miller
 Relinquished by: _____ Date/Time: _____ Received by: _____
 Relinquished by: _____ Date/Time: _____ Received by: _____

ENVIRONMENTAL ANALYTICAL REPORT

REPORT NUMBER: 93-0442

PREPARED FOR:

EMPIRE SOILS INVESTIGATIONS, INC.
S-5167 SOUTH PARK AVENUE
HAMBURG, NEW YORK 14075

RE: BTA-92-273; ASTECO - WITMER ROAD

PREPARED BY:

HUNTINGDON ANALYTICAL SERVICES
DIVISION OF EMPIRE SOILS INVESTIGATIONS, INC.
P.O. BOX 250
MIDDLEPORT, NEW YORK 14105
TELEPHONE: 716/735-3400; FAX: 716/735-3653

APRIL 14, 1993

PAGE 1

Huntingdon
Analytical Laboratory

Analytical Services Division

HUNTINGDON ANALYTICAL SERVICES
ELAP #10833
ENVIRONMENTAL REPORT

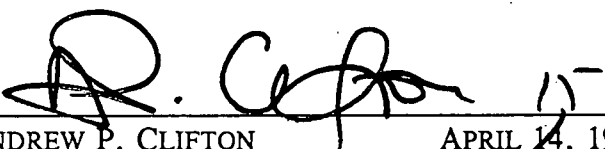
REPORT NUMBER: 93-0442

STATEMENT OF WORK PERFORMED

I HEREBY DECLARE THAT THE WORK WAS PERFORMED UNDER MY SUPERVISION ACCORDING TO THE PROCEDURES OUTLINED BY THE FOLLOWING REFERENCES AND THAT THIS REPORT PROVIDES A CORRECT AND FAITHFUL RECORD OF THE RESULTS OBTAINED.

- 40 CFR PART 136, "GUIDELINES ESTABLISHING TEST PROCEDURES FOR THE ANALYSIS OF POLLUTANTS UNDER THE CLEAN WATER ACT", OCTOBER 26, 1984 (FEDERAL REGISTER) U. S. ENVIRONMENTAL PROTECTION AGENCY.
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ANDREW P. CLIFTON

APRIL 14, 1993

ENVIRONMENTAL LABORATORY DIRECTOR

REPORT CODE LEGEND:

<DL = LESS THAN DETECTION LIMIT
ND = NOT DETECTED
NA = NOT APPLICABLE
INP = INFORMATION NOT PROVIDED
MB = METHOD BLANK

Huntingdon
Analytical Laboratory

Analytical Services Division

HUNTINGDON ANALYTICAL SERVICES

WET CHEMISTRY

SAMPLE IDENTIFICATION :

HAS SAMPLE #930442

ANALYTE	EPA METHOD	DATE ANALYZED	BLACK COMP	RESIN-2	FILL-2	LIME-2
FLASHPOINT -----	1010	4/1/93	01	02	03	04
pH -----	150.1	3/30/93				
REACTIVE SULFIDE -----	9010	3/30/93				
REACTIVE CYANIDE -----	9010	3/30/93				

DATE SAMPLED:	3/23/93	3/23/93	3/23/93	3/23/93
---------------	---------	---------	---------	---------

HUNTINGDON ANALYTICAL SERVICES

METALS ANALYSIS-TCLP DATA SHEET

Sample ID: BLACK COMP.

HAS Sample #93-0442-01

Date Sampled: 3/23/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>EPA LIMITS</u>	<u>DATE ANALYZED</u>	<u>RESULT mg/L</u>
ARSENIC	6010	5.0 mg/L	4/01/93	<0.05
BARIUM	6010	100 mg/L	4/01/93	0.22
CADMIUM	6010	1.0 mg/L	4/01/93	<0.01
CHROMIUM	6010	5.0 mg/L	4/01/93	<0.01
LEAD	6010	5.0 mg/L	4/01/93	0.05
MERCURY	7470	.2 mg/L	4/01/93	<0.0002
SELENIUM	6010	1.0 mg/L	4/01/93	<0.10
SILVER	6010	5.0 mg/L	4/01/93	<0.01

HUNTINGDON ANALYTICAL SERVICES

METALS ANALYSIS-TCLP DATA SHEET

Sample ID: RESIN - 2
HAS Sample #93-0442-02
Date Sampled: 3/23/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>EPA LIMITS</u>	<u>DATE ANALYZED</u>	<u>RESULT mg/L</u>
ARSENIC	6010	5.0 mg/L	4/01/93	<0.05
BARIUM	6010	100 mg/L	4/01/93	<0.10
CADMIUM	6010	1.0 mg/L	4/01/93	<0.01
CHROMIUM	6010	5.0 mg/L	4/01/93	<0.01
LEAD	6010	5.0 mg/L	4/01/93	<0.04
MERCURY	7470	.2 mg/L	4/01/93	<0.0002
SELENIUM	6010	1.0 mg/L	4/01/93	<0.10
SILVER	6010	5.0 mg/L	4/01/93	<0.01

HUNTINGDON ANALYTICAL SERVICES

METALS ANALYSIS-TCLP DATA SHEET

Sample ID: FILL - 2

HAS Sample #93-0442-03

Date Sampled: 3/23/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>EPA LIMITS</u>	<u>DATE ANALYZED</u>	<u>RESULT mg/L</u>
ARSENIC	6010	5.0 mg/L	4/01/93	<0.05
BARIUM	6010	100 mg/L	4/01/93	0.10
CADMIUM	6010	1.0 mg/L	4/01/93	<0.01
CHROMIUM	6010	5.0 mg/L	4/01/93	<0.01
LEAD	6010	5.0 mg/L	4/01/93	<0.04
MERCURY	7470	.2 mg/L	4/01/93	<0.0002
SELENIUM	6010	1.0 mg/L	4/01/93	<0.10
SILVER	6010	5.0 mg/L	4/01/93	<0.01

HUNTINGDON ANALYTICAL SERVICES

METALS ANALYSIS-TCLP DATA SHEET

Sample ID: LIME - 2

HAS Sample #93-0442-04

Date Sampled: 3/23/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>EPA LIMITS</u>	<u>DATE ANALYZED</u>	<u>RESULT mg/L</u>
ARSENIC	6010	5.0 mg/L	4/01/93	<0.05
BARIUM	6010	100 mg/L	4/01/93	<0.10
CADMIUM	6010	1.0 mg/L	4/01/93	<0.01
CHROMIUM	6010	5.0 mg/L	4/01/93	<0.01
LEAD	6010	5.0 mg/L	4/01/93	<0.04
MERCURY	7470	.2 mg/L	4/01/93	<0.0002
SELENIUM	6010	1.0 mg/L	4/01/93	<0.10
SILVER	6010	5.0 mg/L	4/01/93	<0.01

HUNTINGDON ANALYTICAL SERVICES

METALS ANALYSIS-TCLP DATA SHEET

Sample ID: TCLP B#1
HAS Sample #93-0442-B#1
Date Sampled: NA

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>EPA LIMITS</u>	<u>DATE ANALYZED</u>	<u>RESULT mg/L</u>
ARSENIC	6010	5.0 mg/L	4/01/93	<0.05
BARIUM	6010	100 mg/L	4/01/93	<0.10
CADMIUM	6010	1.0 mg/L	4/01/93	<0.01
CHROMIUM	6010	5.0 mg/L	4/01/93	<0.01
LEAD	6010	5.0 mg/L	4/01/93	<0.04
MERCURY	7470	.2 mg/L	4/01/93	<0.0002
SELENIUM	6010	1.0 mg/L	4/01/93	<0.10
SILVER	6010	5.0 mg/L	4/01/93	<0.01

HUNTINGDON ANALYTICAL SERVICES

EPA METHOD 8240
TCLP VOLATILE ORGANICS

SAMPLE IDENTIFICATION :

BLACK
COMP

RESIN-2

FILL-2

LIME-2

METHOD
BLANK

HAS SAMPLE #930442

01

02

03

04

REGULATORY

COMPOUND

RESULT
mg/L

RESULT
mg/L

RESULT
mg/L

RESULT
mg/L

RESULT
mg/L

DL
mg/L

LMIT
mg/L

VINYL CHLORIDE

<0.050

<0.200

<0.050

<0.050

<0.050

0.050

0.20

1,1-DICHLOROETHENE

<0.050

<0.200

<0.050

<0.050

<0.050

0.050

0.70

CHLOROFORM

<0.050

<0.200

<0.050

<0.050

<0.050

0.050

6.00

1,2-DICHLOROETHANE

<0.050

<0.200

<0.050

<0.050

<0.050

0.050

0.50

2-BUTANONE (MEK)

<0.050

0.430

<0.050

<0.050

<0.050

0.050

200

CARBON TETRACHLORIDE

<0.050

<0.200

<0.050

<0.050

<0.050

0.050

0.50

TRICHLOROETHENE

<0.050

<0.200

<0.050

<0.050

<0.050

0.050

0.50

BENZENE

<0.050

<0.200

<0.050

<0.050

<0.050

0.050

0.50

TETRACHLOROETHENE

<0.050

<0.200

<0.050

<0.050

<0.050

0.050

0.50

CHLOROBENZENE

<0.050

<0.200

<0.050

<0.050

<0.050

0.050

100

TCLP DATE:

3-30-93

3-30-93

3-30-93

3-30-93

3-30-93

DATE ANALYZED:

4-01-93

4-01-93

4-01-93

4-01-93

4-01-93

HUNTINGDON ANALYTICAL SERVICES

METHOD 8270
TCLP SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION:	BLACK-COM	RESIN-2	FILL-2	LIME-2	TCLP METHOD BLANK
------------------------	-----------	---------	--------	--------	-------------------------

HAS SAMPLE #930442	01	02	03	04	----
--------------------	----	----	----	----	------

COMPOUND	RESULT mg/L	RESULT mg/L	RESULT mg/L	RESULT mg/L	RESULT mg/L	MDL mg/L	REGULATORY LIMIT mg/L
CRESOL (TOTAL) -----	32	0.25	<0.050	<0.050	<0.050	<0.050	200
1,4-DICHLOROBENZENE -----	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	7.5
2,4-DINITROTOLUENE -----	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.13
HEXACHLOROBENZENE -----	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.13
HEXACHLOROBUTADIENE -----	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.50
HEXACHLOROETHANE -----	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	3.0
NITROBENZENE -----	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	2.0
PENTACHLOROPHENOL -----	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	100
2,4,5-TRICHLOROPHENOL -----	<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	400
2,4,6-TRICHLOROPHENOL -----	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	2.0
PYRIDINE -----	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	5.0

TCLP DATE:	3-30-93	3-30-93	3-30-93	3-30-93	3-30-93
DATE EXTRACTED:	4-6-93	4-6-93	4-6-93	4-6-93	4-6-93
DATE ANALYZED:	4-6-93	4-6-93	4-6-93	4-6-93	4-6-93

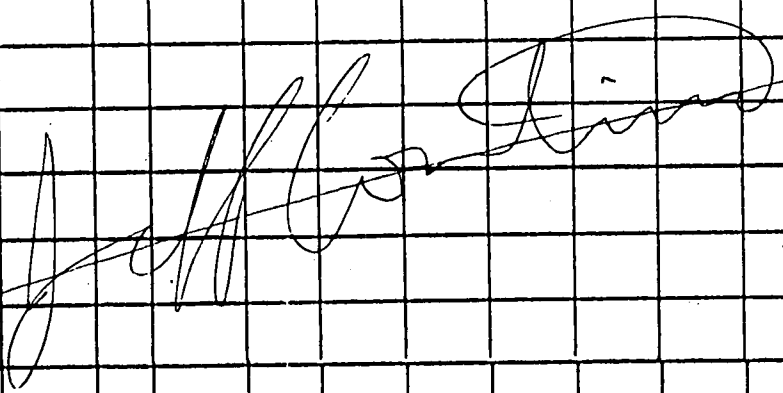
HUNTINGDON ANALYTICAL SERVICES - CHAIN-OF-CUSTODY RECORD AND ANALYTICAL REQUEST FORM

PAGE 1 OF 1

Client Name: Empire Soils Investigations, Inc.
S-5167 South Park Ave.
 Address: Hamburg, New York 14075

Client Contact Jeff Contino * Don Abrams *
 Phone (716) 649-8110

HAS Quote # _____
 P.O. # _____

Project No.: <u>BTA-92-273</u>		Project/Site Name: <u>Asarco-Wittmer Rd.</u>		HAS Ref. No. <u>93-0442</u>		M A T R I X	No. of Cont.	Container Size & Type								Analysis Requested/Remarks																			
Sample I.D.	Date	Time	Comp/Grab	Sample Location	HAS Seq. #			95ml Amber Glass	125ml	125ml	125ml	125ml	125ml	125ml	125ml	125ml	125ml																		
Black Comp	3/23/93	1045	C	Area I	01	S	2	X	X							TCLP Vol.	TCLP Vol; TCLP ACH; pH; Corr; Ignig; Reac.																		
Resin-2	"	1320	C	Area II	02	S	2	X	X							"	Same as Above																		
Fill-2	"	1320	C	" "	03	S	2	X	X							"	" " "																		
Lime-2	"	"	C	" "	04	S	2	X	X							"	" " " minus Esai																		
BTA-8																																			
																																			

Relinquished by: <u>Jeff Contino</u>	Date/Time: <u>3/23/93 1628</u>	Received by: <u>EST Cooler</u>	Relinquished by: <u>EST Cooler</u>	Date/Time: <u>3/24/93 10:10</u>	Received by: <u>Norm Roman</u>
Relinquished by: <u>Norm Roman</u>	Date/Time: <u>3/26/93 11:20</u>	Received by: <u>EST Cooler</u>	Relinquished by: <u>EST Cooler</u>	Date/Time: <u>3/26/93 11:20</u>	Received by: <u>EST Cooler</u>
Relinquished by: <u>EST Cooler</u>	Date/Time: <u>3/26/93 11:20</u>	Received by: <u>EST Cooler</u>	Relinquished by: <u>EST Cooler</u>	Date/Time: <u>3/26/93 11:20</u>	Received by: <u>EST Cooler</u>

ENVIRONMENTAL ANALYTICAL REPORT

REPORT NUMBER: 93-0443

PREPARED FOR:

EMPIRE SOILS INVESTIGATIONS, INC.
S-5167 SOUTH PARK AVENUE
HAMBURG, NEW YORK 14075

RE: BTA-92-273; ASTECO - WITMER ROAD

PREPARED BY:

HUNTINGDON ANALYTICAL SERVICES
DIVISION OF EMPIRE SOILS INVESTIGATIONS, INC.
P.O. BOX 250
MIDDLEPORT, NEW YORK 14105
TELEPHONE: 716/735-3400; FAX: 716/735-3653

APRIL 14, 1993

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Huntingdon
Analytical Laboratory

Analytical Services Division

HUNTINGDON ANALYTICAL SERVICES
ELAP #10833
ENVIRONMENTAL REPORT

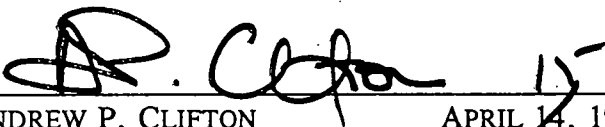
REPORT NUMBER: 93-0443

STATEMENT OF WORK PERFORMED

I HEREBY DECLARE THAT THE WORK WAS PERFORMED UNDER MY SUPERVISION ACCORDING TO THE PROCEDURES OUTLINED BY THE FOLLOWING REFERENCES AND THAT THIS REPORT PROVIDES A CORRECT AND FAITHFUL RECORD OF THE RESULTS OBTAINED.

- 40 CFR PART 136, "GUIDELINES ESTABLISHING TEST PROCEDURES FOR THE ANALYSIS OF POLLUTANTS UNDER THE CLEAN WATER ACT", OCTOBER 26, 1984 (FEDERAL REGISTER) U. S. ENVIRONMENTAL PROTECTION AGENCY.
- U.S. ENVIRONMENTAL PROTECTION AGENCY, "TEST METHODS OF EVALUATING SOLID WASTE - PHYSICAL/CHEMICAL METHODS", OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE, SW-846, 2ND EDITION AND 3RD EDITION.

THIS REPORT CONTAINS ANALYTICAL DATA BASED ON OUR EXAMINATION OF THE SAMPLE(S) PRESENTED TO US. THIS REPORT CONTAINS (EXCEPT WHERE EXPLICITLY STATED) A COMPLETE ACCOUNT OF THE ANALYSES REQUESTED TO BE PERFORMED ON THE SAMPLE(S). INFORMATION WHICH WAS NOT REQUESTED TO BE REPORTED IS NOT INCLUDED.



ANDREW P. CLIFTON APRIL 14, 1993
ENVIRONMENTAL LABORATORY DIRECTOR

REPORT CODE LEGEND:

<DL = LESS THAN DETECTION LIMIT
ND = NOT DETECTED
NA = NOT APPLICABLE
INP = INFORMATION NOT PROVIDED
MB = METHOD BLANK

Huntingdon
Analytical Laboratory

Analytical Services Division

HUNTINGDON ANALYTICAL SERVICES

WET CHEMISTRY

SAMPLE IDENTIFICATION :

LIME-3

HAS SAMPLE #930443

01

ANALYTE

EPA
METHOD

DATE
ANALYZED

RESULT

pH -----	150.1	3/30/93	12.26 S.U.
REACTIVE SULFIDE -----	9010	3/30/93	<50 mg/kg
REACTIVE CYANIDE -----	9010	3/30/93	<50 mg/kg

DATE SAMPLED:

3/24/93

HUNTINGDON ANALYTICAL SERVICES

METALS ANALYSIS-TCLP DATA SHEET

Sample ID: LINE - 3 C AREA - 3

HAS Sample #93-0443-01

Date Sampled: 3/24/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>EPA LIMITS</u>	<u>DATE ANALYZED</u>	<u>RESULT mg/L</u>
ARSENIC	6010	5.0 mg/L	4/01/93	<0.05
BARIUM	6010	100 mg/L	4/01/93	0.22
CADMIUM	6010	1.0 mg/L	4/01/93	<0.01
CHROMIUM	6010	5.0 mg/L	4/01/93	1.00
LEAD	6010	5.0 mg/L	4/01/93	<0.04
MERCURY	7470	.2 mg/L	4/01/93	<0.0002
SELENIUM	7740	1.0 mg/L	4/01/93	0.01
SILVER	6010	5.0 mg/L	4/01/93	<0.01

HUNTINGDON ANALYTICAL SERVICES

METALS ANALYSIS-TCLP DATA SHEET

Sample ID: TCLP B#2
HAS Sample #93-0443-B#2
Date Sampled: NA

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>EPA LIMITS</u>	<u>DATE ANALYZED</u>	<u>RESULT mg/L</u>
ARSENIC	6010	5.0 mg/L	4/01/93	<0.05
BARIUM	6010	100 mg/L	4/01/93	<0.10
CADMIUM	6010	1.0 mg/L	4/01/93	<0.01
CHROMIUM	6010	5.0 mg/L	4/01/93	<0.01
LEAD	6010	5.0 mg/L	4/01/93	<0.04
MERCURY	7470	.2 mg/L	4/01/93	<0.0002
SELENIUM	6010	1.0 mg/L	4/01/93	<0.10
SILVER	6010	5.0 mg/L	4/01/93	<0.01

HUNTINGDON ANALYTICAL SERVICES

EPA METHOD 8240

TCLP VOLATILE ORGANICS

SAMPLE IDENTIFICATION:

LIME-3

METHOD

BLANK

HAS SAMPLE #930443

01

--

REGULATORY

COMPOUND

RESULT

RESULT

DL

LIMIT

mg/L

mg/L

mg/L

mg/L

VINYL CHLORIDE -----

<0.050

<0.050

0.050

0.20

1,1-DICHLOROETHENE -----

<0.050

<0.050

0.050

0.70

CHLOROFORM -----

<0.050

<0.050

0.050

6.00

1,2-DICHLOROETHANE -----

<0.050

<0.050

0.050

0.50

2-BUTANONE (MEK) -----

<0.050

<0.050

0.050

200

CARBON TETRACHLORIDE -----

<0.050

<0.050

0.050

0.50

TRICHLOROETHENE -----

<0.050

<0.050

0.050

0.50

BENZENE -----

<0.050

<0.050

0.050

0.50

TETRACHLOROETHENE -----

<0.050

<0.050

0.050

0.50

CHLOROBENZENE -----

<0.050

<0.050

0.050

100

TCLP DATE:

3-30-93

3-30-93

DATE ANALYZED:

4-01-93

4-01-93

HUNTINGDON ANALYTICAL SERVICES

METHOD 8270
TCLP SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION: LIME-3 TCLP
METHOD
BLANK

HAS SAMPLE #930443 01 ---

COMPOUND	RESULT mg/L	RESULT mg/L	MDL mg/L	REGULATORY LIMIT mg/L
CRESOL (TOTAL) -----	<0.050	<0.050	<0.050	200
1,4-DICHLOROBENZENE -----	<0.050	<0.050	<0.050	7.5
2,4-DINITROTOLUENE -----	<0.050	<0.050	<0.050	0.13
HEXACHLOROBENZENE -----	<0.050	<0.050	<0.050	0.13
HEXACHLOROBUTADIENE -----	<0.050	<0.050	<0.050	0.50
HEXACHLOROETHANE -----	<0.050	<0.050	<0.050	3.0
NITROBENZENE -----	<0.050	<0.050	<0.050	2.0
PENTACHLOROPHENOL -----	<0.250	<0.250	<0.250	100
2,4,5-TRICHLOROPHENOL -----	<0.250	<0.250	<0.250	400
2,4,6-TRICHLOROPHENOL -----	<0.050	<0.050	<0.050	2.0
PYRIDINE -----	<0.050	<0.050	<0.050	5.0

TCLP DATE: 3-30-93 3-30-93
DATE EXTRACTED: 4-2-93 4-2-93
DATE ANALYZED: 4-3-93 4-3-93

REPORT OF CHEMICAL ANALYSES

Project: PCDD/PCDF ANALYSES

Prepared for:

Empire Soils Investigations, Inc
Attn: Mr. Jeffrey Contino
S-5167 South Park Avenue
P.O. Box 0913
Hamburg, NY 14075

#4410 93-1321

SUBMITTED BY:



A member of the  group of companies



twin city testing
corporation

662 CROMWELL AVENUE
ST. PAUL, MN 55114
PHONE 612/645-3601

REPORT OF: CHEMICAL ANALYSES

PROJECT: PCDD/PCDF ANALYSES

DATE: March 31, 1993

ISSUED TO: Empire Soils Investigations, Inc
Attn: Mr. Jeffrey Contino
S-5167 South Park Avenue
P.O. Box 0913
Hamburg, NY 14075

INVOICE NO: 4410 93-1321

INTRODUCTION

This report summarizes the results from the analyses performed on one sample which was submitted by a representative of Empire Soils Investigations, Inc. The sample was analyzed for the presence or absence of poly-chlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs) using a modified version of EPA Method 8290 as described below.

SAMPLE IDENTIFICATION

<u>Client ID</u>	<u>Sample Type</u>	<u>Date Received</u>	<u>TCT ID</u>
BTA-92-273	Resin	3/26/93	313047

METHODOLOGY

PCDD/PCDF Extraction

A portion of the sample was spiked with $^{13}\text{C}_{12}$ -labeled PCDD/PCDF internal standards (Table 1) and extracted with toluene in a Soxhlet extractor. The extract was quantitatively transferred to a Kuderna Danish concentrator, concentrated, and solvent exchanged to hexane. The hexane extract was then spiked with the 2,3,7,8-TCDD- $^{37}\text{Cl}_4$ enrichment efficiency standard (Table 1) and processed through the analyte enrichment procedures described below.

Analyte Enrichment for PCDD/PCDF Analyses

The extraction procedure often removes a variety of compounds, in addition to the PCDDs and PCDFs, from the sample matrix. Some of these compounds can directly interfere with the analyses while others can overload the capillary column causing degradation in chromatographic resolution or sensitivity. The analyte enrichment steps described below were used to remove interferences from the extract.

REPORT OF: CHEMICAL ANALYSES

PROJECT: PCDD/PCDF ANALYSES

DATE: March 31, 1993

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INVOICE NO: 4410 93-1321

Analyte Enrichment for PCDD/PCDF Analyses (Continued)

The sample extract was diluted with 100 mL of hexane, transferred to a separatory funnel and washed with 1 N sodium hydroxide, concentrated sulfuric acid, and distilled water as needed. The hexane layer was concentrated to 1 mL and quantitatively transferred to liquid chromatography column containing alternating layers of silica gel, 44% concentrated sulfuric acid on silica gel, and 33% 1 N sodium hydroxide on silica gel. The column was eluted with 60 mL of hexane and the entire eluate was collected and concentrated, under a gentle stream of dry nitrogen, to a volume of 1 mL.

The extract was then fractionated on a liquid chromatography column containing 4 g of activated alumina. The column was eluted with 10 mL of hexane followed by 7 mL of 2.0% methylene chloride/hexane and 35 mL of 60% methylene chloride in hexane. The 60% methylene chloride/hexane fraction was concentrated to 1 mL under a stream of dry nitrogen and applied to the top of a chromatography column containing 1 g of 5% AX-21 activated carbon on silica gel. The column was eluted with cyclohexane/methylene chloride (50:50 V/V) and cyclohexane/methanol/benzene (75:20:5 V/V) in the forward direction, and then with benzene in the reverse direction. The benzene fraction was collected, spiked with recovery standards (1,2,3,4-TCDD-¹³C₁₂ and 1,2,3,7,8,9-HxCDD-¹³C₁₂) and concentrated to a final volume of 20 μ L.

PCDD/PCDF Analyses

The extract was analyzed for the presence of PCDDs and PCDFs using combined capillary column gas chromatography/high resolution mass spectrometry (HRGC/HRMS). The instrumentation consisted of a Hewlett Packard Model 5890 gas chromatograph and a VG Model 70SE high resolution mass spectrometer. The capillary column was interfaced directly into the ion source of the mass spectrometer, thus providing the highest possible sensitivity while minimizing degradation of the chromatographic resolution.

The mass spectrometer was operated in the electron impact ionization mode at a mass resolution of 10,000-11,000 (M/ Δ M, 10 percent valley definition). This resolution is sufficient to resolve most interferences, such as PCBs, thus providing the highest level of confidence that the detected levels of PCDD/PCDF are not false positives resulting from interferences. Typical operating parameters for the HRGC/HRMS analyses are summarized in Table 2.

REPORT OF: CHEMICAL ANALYSES

PROJECT: PCDD/PCDF ANALYSES

DATE: March 31, 1993

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INVOICE NO: 4410 93-1321

PCDD/PCDF Analyses (Continued)

The data were acquired by selected-ion-recording (SIR) monitoring the groups of ion masses described in EPA method 8290. The five groups corresponded to the tetrachlorinated through octachlorinated congener classes. Each group contained three ion masses for the PCDDs (with the exception of TCDD which contained two ion masses), two ion masses for the PCDFs, the corresponding ion masses from the two isotopically labeled internal standards, and the ion mass characteristic of the polychlorinated diphenylether (PCDPE) which, if present, could cause false responses in the dibenzofuran channels. The third PCDD ion mass monitored in the pentachloro through octachlorodibenzo-p-dioxin groups prevented the possibility of misinterpretation of a polychlorinated biphenylene isomer as a PCDD. The two ion masses monitored for TCDD also fulfilled this purpose.

Each group of ion masses also contained a lock mass which was monitored during the analyses to detect suppressive interferences. It is particularly important to detect this type of interference since it can cause the quantification of congener class levels to be artificially high if it occurs during the elution of an internal standard or low if it occurs during the elution of the native analytes.

The lock mass was also used by the data system to automatically correct the mass focus of the instrument. The data system determined the centroid of the lock mass during each data acquisition cycle and corrected the mass focus of the analyte and internal standard ion masses to assure that the centers of the mass peaks were being monitored.

The criteria used to judge positive responses for the PCDD/PCDF isomer included:

- Simultaneous response at both ion masses of the PCDD or PCDF
- Signal to noise ratio equal to or greater than 2.5:1.0 for both ion masses
- Chlorine isotope ratio within 15% of the theoretical value
- Chromatographic retention time within +/- 2 seconds of the expected retention time
- Chromatographic retention times within elution windows determined from analyses of standard mixtures
- Absence of simultaneous response in the diphenylether and furan ion traces.

A list of the exact ion masses monitored for the determination of PCDD/PCDF isomers and the PCDPE interferences is presented in Table 3. Also included are the theoretical chlorine isotope ratios for the ten congener classes.

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Quantification and Calculations

The PCDD/PCDF isomers were quantified by comparison of their responses to the responses of the labeled internal standards as described in the draft version of EPA Method 8290. Relative response factors were calculated from analyses of standard mixtures containing representatives of each of the PCDD/PCDF congener classes at five concentration levels, and each of the internal standards at one concentration level, as shown in Table 4. The PCDD/PCDF response factors were calculated by comparing the sum of the responses from the two ion masses monitored for each chlorine congener class to the sum of the responses from the two ion masses of the corresponding isotopically labeled internal standard. Table 5 shows the response factor at each of the calibration levels as well as the average response factors and the relative percent deviation for each. The formula for the response factor calculation is:

$$R_f = \frac{A_n \times Q_{is}}{A_{is} \times Q_n}$$

where:

R_f = Response factor
 A_n = Sum of integrated areas for native isomer
 Q_{is} = Quantity of labeled internal standard
 A_{is} = Sum of integrated areas for labeled internal standard
 Q_n = Quantity of native isomer

The levels of PCDD/PCDF in the sample were quantified using the following equation:

$$C = \frac{A_n \times Q_{is}}{A_{is} \times W \times R_f}$$

where:

C = Concentration of target isomer or congener class
 A_n = Sum of integrated areas for the target isomer or congener class
 Q_{is} = Quantity of labeled internal standard added to the sample
 A_{is} = Sum of integrated areas for the labeled internal standard
 W = Sample weight, volume or area
 R_f = Response factor

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Quantification and Calculations (Cont.)

Each pair of ion mass peaks in the selected-ion-current chromatograms was evaluated manually to determine if it met the criteria for a PCDD or PCDF isomer. Areas of all peaks exhibiting correct ion ratios and having retention times within the correct windows were then summed for calculations of total congener concentrations. A summary of the high resolution initial calibration chlorine isotope ratios is presented in Table 6. The toxic equivalency factors (TEFs) used to calculate the 2,3,7,8-TCDD sample equivalency are listed in Table 7.

A limit of detection (LOD) based on producing a signal that is 2.5 times the noise level, was calculated for each undetected 2,3,7,8-substituted isomer of any tetra through octa chlorinated congener class. The noise heights used to calculate the detection limits were measured at the retention time of the specific isomer. The formula used for calculating the LOD is:

$$\text{LOD} = \frac{\text{Hn} \times \text{Qis} \times 2.5}{\text{His} \times \text{W} \times \text{Rf}}$$

where:

LOD = Single isomer limit of detection
Hn = Sum of noise heights at native isomer retention time
Qis = Quantity of labeled internal standard
His = Sum of peak heights for labeled internal standard
W = Sample weight, volume or surface area
Rf = Response factor

The recovery of the $^{37}\text{Cl}_4$ enrichment efficiency standard and each $^{13}\text{C}_{12}$ -labeled internal standard, relative to either 1,2,3,4-TCDD- $^{13}\text{C}_{12}$ or 1,2,3,7,8,9-HxCDD- $^{13}\text{C}_{12}$, was calculated using the following equation:

$$\%R = \frac{\text{Ais} \times \text{Qrs} \times 100\%}{\text{Rfr} \times \text{Ars} \times \text{Qis}}$$

where:

%R = Percent recovery of labeled internal standard
Ais = Sum of integrated areas of labeled internal standard
Qrs = Quantity of recovery standard
Ars = Sum of integrated areas of recovery standard
Rfr = Response factor of the specific labeled standard relative to the recovery standard
Qis = Quantity of the labeled internal standard added to the sample

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Quality Control

The quality of the sample processing steps and instrument performance are monitored on a routine basis. The procedures and criteria are summarized below.

One method blank and one laboratory spike sample are prepared with each ten samples of any given matrix. Recoveries of the native PCDD/PCDF analytes in the laboratory spike samples generally range from 70 to 130%. Recoveries of selected analytes outside this range do not invalidate the data but provide information which is used by the laboratory to monitor recovery trends and to assure optimization of the method.

Internal standards are spiked into each sample prior to extraction in order to monitor the level of recovery which is achieved for each individual sample. Acceptable recoveries range from 25 to 150 percent for the internal standards unless a deviation is due to variation in instrument response as a result of analytical interferences.

The resolution of the mass spectrometer is verified prior to each analysis to be 10,000 or greater. Hardcopies of the reference peaks are printed at the beginning and end of each analysis day. The resolving power of the DB-5 chromatographic column is checked daily by analyzing a standard solution containing 2,3,7,8-TCDD and the adjacent TCDD isomers. DB-DIOXIN column resolution is checked daily by analyzing a standard solution containing 2,3,7,8-TCDF and the adjacent TCDF isomers. Acceptable performance is achieved when 2,3,7,8-TCDD or 2,3,7,8-TCDF is resolved from the adjacent isomers by a valley of 25% or less. The group times for the selected-ion-monitoring data acquisitions are also checked daily by analyzing the column performance mix which has been modified to contain the first and last eluting isomers of each congener class. In this way one is assured of collecting data representative of the total PCDD/PCDF content and that the 2,3,7,8-substituted isomers are suitably resolved.

Initial calibrations are generated by analyzing standard solutions (see Table 4) containing target native and labeled PCDD/PCDF compounds. Response factors are calculated and averaged for each compound. These averages are used for quantification and for comparison to the daily continuing calibration. The relative standard deviation for each native compound must be 20% or less (30% or less for the labeled compounds) as specified in method 8290. A continuing calibration standard is analyzed at the beginning of each 12-hour shift on days when initial calibrations are not performed. The initial calibration is considered to be valid when the response factors from the continuing calibration analysis agree to within +/- 20% (or $\pm$ 30% for the labeled compounds) of the averages from the initial calibration.

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RESULTS

The results from the PCDD/PCDF analyses are included in the following:

- Appendix A - Chain of Custody Documentation
- Appendix B - PCDD/PCDF Analysis Results

DISCUSSION

The recoveries of the isotopically-labeled PCDD/PCDF internal standards in the sample ranged from 53-88%, indicating a level of efficiency through the extraction and enrichment steps that is considered typical for this sample matrix type. All of the internal standard recoveries obtained for the sample were within the 40-135% QC range for Method 8290. Also, since the quantifications of the native 2,3,7,8-substituted isomers are based on isotope dilution, the data are automatically corrected for variations in recovery and accurate values are obtained.

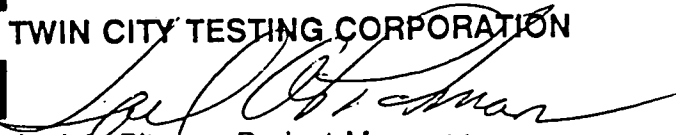
A laboratory method blank was prepared and analyzed with the sample extraction batch as part of our routine quality control/quality assurance procedures. The results, found at the beginning of Appendix B, show the blank to be free of PCDDs and PCDFs, with the exceptions of trace background levels (7-14 picograms/isomer) of HpCDF and 18 picograms of OCDD. The levels reported for the affected isomers in the resin sample were higher than the corresponding blank levels by two orders of magnitude or more, indicating that the sample processing steps did not contribute significantly to the levels reported for the resin sample.

A laboratory quality control PCDD/PCDF spike sample was also prepared with the sample batch by extracting clean sand fortified with native standard materials. The results, included at the end of Appendix B, show that the spiked compounds were recovered at levels ranging from 102-129%, indicating a high degree of accuracy for these determinations.

REMARKS

The sample extracts will be retained for a period of 60 days from the date of this report and then discarded unless other arrangements are made. The raw mass spectral data will be archived on magnetic tape for a period of not less than one year. Questions regarding the data contained in this report may be directed to the authors at the numbers provided below.

TWIN CITY TESTING CORPORATION


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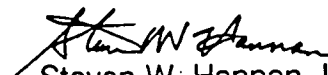

Steven W. Hannan, Lead Chemist
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TABLE 1. Spike Levels of PCDD/PCDF Standards

Internal Standards	Spike Level (ng)
2,3,7,8-TCDF- ¹³ C ₁₂	2.0
2,3,7,8-TCDD- ¹³ C ₁₂	2.0
1,2,3,7,8-PeCDF- ¹³ C ₁₂	2.0
2,3,4,7,8-PeCDF- ¹³ C ₁₂	2.0
1,2,3,7,8-PeCDD- ¹³ C ₁₂	2.0
1,2,3,4,7,8-HxCDF- ¹³ C ₁₂	2.0
1,2,3,6,7,8-HxCDF- ¹³ C ₁₂	2.0
1,2,3,7,8,9-HxCDF- ¹³ C ₁₂	2.0
2,3,4,6,7,8-HxCDF- ¹³ C ₁₂	2.0
1,2,3,4,7,8-HxCDD- ¹³ C ₁₂	2.0
1,2,3,6,7,8-HxCDD- ¹³ C ₁₂	2.0
1,2,3,4,6,7,8-HpCDF- ¹³ C ₁₂	2.0
1,2,3,4,7,8,9-HpCDF- ¹³ C ₁₂	2.0
1,2,3,4,6,7,8-HpCDD- ¹³ C ₁₂	2.0
OCDD- ¹³ C ₁₂	4.0
<u>Recovery Standards</u>	
1,2,3,4-TCDD- ¹³ C ₁₂	2.0
1,2,3,7,8,9-HxCDD- ¹³ C ₁₂	2.0
<u>Enrichment Efficiency Standard</u>	
2,3,7,8-TCDD- ³⁷ Cl ₄	0.2

**TABLE 2. High Resolution PCDD/PCDF Analyses
HRGC/HRMS Operating Parameters**

Mass Resolution	10,000-11,000 ($M/\Delta M$, 10% valley)
Electron Energy	32 electron volts
Accelerating Voltage	8,000 volts
Source Temperature	275°C
Preamplifier Gain	10^{-6} amp/volt
Multiplier Gain	$\sim 10^5$
Chromatographic Column	60 M DB-5
Transfer Line Temperature	300°C
Injection Mode	Splitless
Carrier Gas	Helium
Carrier Flow Velocity	~ 30 cm/sec

**TABLE 3. Exact Ion Masses Monitored
for the Determination of PCDDs, PCDFs, and PCDPes**

Compound	Accurate Mass			Theoretical Ratio Mass 2/Mass 3
	Mass 1	Mass 2	Mass 3	
Tetra-CDDs		319.8965	321.8936	0.77
Tetra-CDFs		303.9016	305.8987	0.77
Hexa-CDPEs	375.8364			
Penta-CDDs	353.8576	355.8546	357.8517	1.54
Penta-CDFs		339.8597	341.8567	1.54
Hepta-CDPEs	409.7974			
Hexa-CDDs	387.8187	389.8156	391.8127	1.23
Hexa-CDFs		373.8207	375.8178	1.23
Octa-CDPEs	445.7555			
Hepta-CDDs	421.7798	423.7766	425.7737	1.03
Hepta-CDFs		407.7817	409.7788	1.03
Nona-CDPEs	479.7165			
Octa-CDD	455.7409	457.7377	459.7347	0.88
Octa-CDF		441.7428	443.7398	0.88
Deca-CDPE	513.6775			

CDDs = Chlorinated Dibenzo-p-dioxins

CDFs = Chlorinated Dibenzofurans

CDPEs = Chlorinated Diphenylethers

TABLE 4. High Resolution Calibration Solutions

Native CDDs/CDFs	Concentration (pg/uL)				
	CS1	CS2	CS3	CS4	CS5
2,3,7,8-TCDD	0.5	2	10	40	200
2,3,7,8 TCDF	0.5	2	10	40	200
1,2,3,7,8-PeCDD	2.5	10	50	200	1000
1,2,3,7,8-PeCDF	2.5	10	50	200	1000
2,3,4,7,8-PeCDF	2.5	10	50	200	1000
1,2,3,4,7,8-HxCDD	2.5	10	50	200	1000
1,2,3,6,7,8-HxCDD	2.5	10	50	200	1000
1,2,3,7,8,9-HxCDD	2.5	10	50	200	1000
1,2,3,4,7,8-HxCDF	2.5	10	50	200	1000
1,2,3,6,7,8-HxCDF	2.5	10	50	200	1000
1,2,3,7,8,9-HxCDF	2.5	10	50	200	1000
2,3,4,6,7,8-HxCDF	2.5	10	50	200	1000
1,2,3,4,6,7,8-HpCDD	2.5	10	50	200	1000
1,2,3,4,6,7,8-HpCDF	2.5	10	50	200	1000
1,2,3,4,7,8,9-HpCDF	2.5	10	50	200	1000
OCDD	5.0	20	100	400	2000
OCDF	5.0	20	100	400	2000
Internal Standards					
2,3,7,8-TCDD- ¹³ C ₁₂	100	100	100	100	100
2,3,7,8-TCDF- ¹³ C ₁₂	100	100	100	100	100
1,2,3,7,8-PeCDD- ¹³ C ₁₂	100	100	100	100	100
1,2,3,7,8-PeCDF- ¹³ C ₁₂	100	100	100	100	100
2,3,4,7,8-PeCDF- ¹³ C ₁₂	100	100	100	100	100
1,2,3,4,7,8-HxCDD- ¹³ C ₁₂	100	100	100	100	100
1,2,3,6,7,8-HxCDD- ¹³ C ₁₂	100	100	100	100	100
1,2,3,4,7,8-HxCDF- ¹³ C ₁₂	100	100	100	100	100
1,2,3,6,7,8-HxCDF- ¹³ C ₁₂	100	100	100	100	100
1,2,3,7,8,9-HxCDF- ¹³ C ₁₂	100	100	100	100	100
2,3,4,6,7,8-HxCDF- ¹³ C ₁₂	100	100	100	100	100
1,2,3,4,6,7,8-HpCDD- ¹³ C ₁₂	100	100	100	100	100
1,2,3,4,6,7,8-HpCDF- ¹³ C ₁₂	100	100	100	100	100
1,2,3,4,7,8,9-HpCDF- ¹³ C ₁₂	100	100	100	100	100
OCDD- ¹³ C ₁₂	200	200	200	200	200
Recovery Standards					
1,2,3,4-TCDD- ¹³ C ₁₂	100	100	100	100	100
1,2,3,7,8,9-HxCDD- ¹³ C ₁₂	100	100	100	100	100
Enrichment Efficiency Standard					
2,3,7,8-TCDD- ³⁷ C ₁₄	0.5	2	10	40	200



TABLE 5. HRGC/HRMS Initial Calibration (2/11/93) Summary of Response Factors

Isomer	TCT Std #	CS-1	CS-2	CS-3	CS-4	CS-5	Ave RF	RSD, %
2,3,7,8-TCDF		0.9918	0.8398	0.8073	0.7688	0.8127	0.8441	9.15
2,3,7,8-TCDD		1.3289	1.0473	0.9610	0.9549	0.9885	1.0561	13.28
1,2,3,7,8-PnCdf		1.0688	0.9555	0.9324	0.9210	0.9466	0.9648	5.53
2,3,4,7,8-PnCdf		0.9865	0.8632	0.8477	0.8373	0.8644	0.8798	6.17
1,2,3,7,8-PnCDD		1.0849	0.9985	0.9824	0.9817	0.9831	1.0061	3.97
1,2,3,4,7,8-HxCDF		1.3156	1.1307	1.1099	1.0005	1.1002	1.1314	9.06
1,2,3,6,7,8-HxCDF		1.1621	1.0187	0.9786	1.0427	0.9844	1.0373	6.42
2,3,4,6,7,8-HxCDF		1.2324	1.0799	1.0192	1.0089	1.0252	1.0731	7.77
1,2,3,7,8,9-HxCDF		1.2362	1.1472	1.1218	1.0966	1.1111	1.1426	4.34
1,2,3,4,7,8-HxCDD		1.0858	0.8665	0.9737	0.7896	0.9885	0.9408	10.92
1,2,3,6,7,8-HxCDD		1.0015	1.1100	0.8735	0.9812	0.9345	0.9802	8.01
1,2,3,7,8,9-HxCDD		0.9674	1.0323	0.8577	0.9274	0.8994	0.9369	6.37
2,3,4,6,7,8-HpCDF		1.4210	1.2501	1.2174	1.1091	1.2016	1.2398	8.22
1,2,3,4,7,8,9-HpCDF		1.3119	1.1162	1.1405	1.0639	1.0949	1.1455	7.59
1,2,3,4,6,7,8-HpCDD		0.8459	0.7695	0.7399	0.7202	0.7658	0.7683	5.57
OCDF		1.5950	1.3779	1.2898	1.3607	1.3449	1.3937	7.53
OCDD		1.5652	1.2134	1.1276	1.1066	1.1465	1.2319	13.84
TOTAL PeCDFs		1.0277	0.9093	0.8900	0.8791	0.9055	0.9223	5.83
TOTAL HxCDFs		1.2366	1.0941	1.0574	1.0372	1.0552	1.0961	6.63
TOTAL HxCDDs		1.0182	1.0029	0.9016	0.8994	0.9408	0.9526	5.23
TOTAL HpCDFs		1.3664	1.1832	1.1790	1.0865	1.1482	1.1927	7.84
2,3,7,8-TCDF*		1.6266	1.5501	1.5214	1.4218	1.4911	1.5222	4.43
2,3,7,8-TCDD*		0.8029	0.9574	1.0015	0.9317	0.9721	0.9331	7.38
2,3,7,8-TCDD-37Cl4		0.9527	0.9648	1.1717	0.9533	1.0028	1.0091	8.26
1,2,3,7,8-PnCdf*		1.3738	1.2476	1.2084	1.2263	1.2354	1.2583	4.70
2,3,4,7,8-PnCdf*		1.6224	1.4919	1.4337	1.4357	1.4508	1.4869	4.77
1,2,3,7,8-PnCDD*		0.8055	0.8541	0.8404	0.7676	0.8864	0.8308	4.92
1,2,3,4,7,8-HxCDF*		1.0882	1.0974	1.1162	1.1609	1.1587	1.1243	2.70
1,2,3,6,7,8-HxCDF*		1.3745	1.5287	1.4554	1.3545	1.4341	1.4295	4.33
2,3,4,6,7,8-HxCDF*		1.2775	1.2521	1.2373	1.2139	1.3040	1.2570	2.49
1,2,3,7,8,9-HxCDF*		1.0185	0.9715	0.9703	0.9533	1.0306	0.9888	3.04
1,2,3,4,7,8-HxCDD*		0.7843	0.9605	0.8643	0.9271	0.9125	0.8898	6.87
1,2,3,6,7,8-HxCDD*		0.9445	0.9437	1.1354	0.9652	1.0734	1.0124	7.70
1,2,3,4,6,7,8-HpCDF*		1.0625	1.1336	1.1195	1.0723	1.2318	1.1239	5.37
1,2,3,4,7,8,9-HpCDF*		0.8877	1.0030	0.9759	0.9526	1.0632	0.9765	5.91
1,2,3,4,6,7,8-HpCDD*		0.9524	1.1642	1.2037	1.0938	1.2264	1.1281	8.75
OCDD*		0.5794	0.6608	0.7174	0.6517	0.7974	0.6813	10.68

* = C13 Labeled Isomer

Instrument:70-SE

Column:DB-5MS

#2549516

TABLE 6. HRGC/HRMS Initial Calibration (2/11/93) Summary of Isotope Ratios

Isomer	TCT Std #	CS-1	CS-2	CS-3	CS-4	CS-5	Limits
2,3,7,8-TCDF		0.87	0.75	0.74	0.79	0.76	0.65-0.89
2,3,7,8-TCDD		0.71	0.75	0.80	0.74	0.77	0.65-0.89
1,2,3,7,8-PnCdf		1.48	1.55	1.51	1.52	1.53	1.32-1.78
2,3,4,7,8-PnCdf		1.44	1.49	1.52	1.52	1.53	1.32-1.78
1,2,3,7,8-PnCDD		1.65	1.59	1.56	1.53	1.54	1.32-1.78
1,2,3,4,7,8-HxCDF		1.23	1.24	1.19	1.23	1.20	1.05-1.43
1,2,3,6,7,8-HxCDF		1.27	1.22	1.22	1.25	1.21	1.05-1.43
2,3,4,6,7,8-HxCDF		1.22	1.22	1.20	1.22	1.22	1.05-1.43
1,2,3,7,8,9-HxCDF		1.32	1.23	1.18	1.22	1.23	1.05-1.43
1,2,3,4,7,8-HxCDD		1.20	1.19	1.22	1.22	1.20	1.05-1.43
1,2,3,6,7,8-HxCDD		1.32	1.20	1.27	1.23	1.07	1.05-1.43
1,2,3,7,8,9-HxCDD		1.23	1.24	1.23	1.23	1.23	1.05-1.43
1,2,3,4,6,7,8-HpCDF		0.99	1.05	1.06	1.09	1.04	0.88-1.20
1,2,3,4,7,8,9-HpCDF		1.00	1.01	1.05	1.09	1.04	0.88-1.20
1,2,3,4,6,7,8-HpCDD		1.05	1.04	0.97	0.97	1.04	0.88-1.20
OCDF		0.85	0.88	0.87	0.86	0.88	0.76-1.02
OCDD		0.94	0.84	0.85	0.85	0.90	0.76-1.02
1234-TCDD-REC		0.76	0.77	0.81	0.73	0.77	0.65-0.89
123789-HxCDD-REC		1.32	1.22	1.26	1.25	1.23	1.05-1.43
2,3,7,8-TCDF*		0.80	0.77	0.80	0.73	0.77	0.65-0.89
2,3,7,8-TCDD*		0.77	0.77	0.80	0.72	0.76	0.65-0.89
2,3,7,8-TCDD-37Cl4		****	****	****	****	****	*****
1,2,3,7,8-PnCdf*		1.57	1.53	1.54	1.56	1.55	1.32-1.78
2,3,4,7,8-PnCdf*		1.60	1.55	1.55	1.54	1.54	1.32-1.78
1,2,3,7,8-PnCDD*		1.55	1.54	1.53	1.53	1.59	1.32-1.78
1,2,3,4,7,8-HxCDF*		0.53	0.52	0.53	0.52	0.51	0.43-0.59
1,2,3,6,7,8-HxCDF*		0.54	0.52	0.54	0.52	0.51	0.43-0.59
2,3,4,6,7,8-HxCDF*		0.53	0.52	0.53	0.51	0.51	0.43-0.59
1,2,3,7,8,9-HxCDF*		0.52	0.52	0.52	0.51	0.51	0.43-0.59
1,2,3,4,7,8-HxCDD*		1.27	1.23	1.24	1.23	1.24	1.05-1.43
1,2,3,6,7,8-HxCDD*		1.29	1.27	1.30	1.26	1.25	1.05-1.43
1,2,3,4,6,7,8-HpCDF*		0.43	0.46	0.44	0.43	0.43	0.37-0.51
1,2,3,4,7,8,9-HpCDF*		0.43	0.46	0.45	0.44	0.44	0.37-0.51
1,2,3,4,6,7,8-HpCDD*		1.05	1.07	1.03	1.05	0.99	0.88-1.20
OCDD*		0.89	0.83	0.91	0.85	0.89	0.76-1.02

* = C13 Labeled Isomer

Instrument:70-SE

Column:DB-5MS

#2549516

**TABLE 7. 2,3,7,8-TCDD Equivalency Factors (TEFs) for the
Polychlorinated Dibenzodioxins and Dibenzofurans**

Number	Compound(s)	TEF
1	2,3,7,8-TCDD	1.00
2	1,2,3,7,8-PeCDD	0.50
3	1,2,3,6,7,8-HxCDD	0.1
4	1,2,3,7,8,9-HxCDD	0.1
5	1,2,3,4,7,8-HxCDD	0.1
6	1,2,3,4,6,7,8-HpCDD	0.01
7	OCDD	0.001
8	* Total - TCDD	0.0
9	* Total - PeCDD	0.0
10	* Total - HxCDD	0.0
11	* Total - HpCDD	0.0
12	2,3,7,8-TCDF	0.10
13	1,2,3,7,8-PeCDF	0.05
14	2,3,4,7,8-PeCDF	0.5
15	1,2,3,6,7,8-HxCDF	0.1
16	1,2,3,7,8,9-HxCDF	0.1
17	1,2,3,4,7,8-HxCDF	0.1
18	2,3,4,6,7,8-HxCDF	0.1
19	1,2,3,4,6,7,8-HpCDF	0.01
20	1,2,3,4,7,8,9-HpCDF	0.01
21	OCDF	0.001
22	* Total - TCDF	0.0
23	* Total - PeCDF	0.0
24	* Total - HxCDF	0.0
25	* Total - HpCDF	0.0

*Excluding the 2,3,7,8-substituted congeners.

Reference: 1989 ITEFs

APPENDIX A

PAGE 1 OF 1

Client Contact Jeff Contino
Phone (716) 649-8110

HAS Quota # _____

P.O. # _____

[illegible]

APPENDIX B

 TWIN CITY TESTING CORPORATION
 *METHOD 8290 ANALYSIS RESULTS *

 Client....EMPIRE SOILS

TCT Sample ID.....BLANK-0326A
 Analysis Date.....3/30/93 18:47
 Filename.....S30330I
 Injected By.....MCH
 Total Amount Extracted...0.0101 kg
 % Moisture.....NA %
 ICAL Date.....02/11/93
 CCAL Filename.....S30330E
 Method Blank ID.....NA
 Extraction Date.....3/26/93

NATIVE ISOMERS	CONC. ng/kg	LOD ng/kg	INTERNAL STANDARDS	ng's ADDED	PERCENT RECOVERY
2378-TCDF	ND	0.87	2378-TCDF-13C....	2.00	59
TOTAL TCDF	ND	-----	2378-TCDD-13C....	2.00	56
			12378-PeCDF-13C..	2.00	64
2378-TCDD	ND	1.30	23478-PeCDF-13C..	2.00	85
TOTAL TCDD	ND	-----	12378-PeCDD-13C..	2.00	92
			123478-HxCDF-13C.	2.00	97
12378-PeCDF	ND	0.47	123678-HxCDF-13C.	2.00	81
23478-PeCDF	ND	0.24	234678-HxCDF-13C.	2.00	100
TOTAL PeCDF	ND	-----	123789-HxCDF-13C.	2.00	82
			123478-HxCDD-13C.	2.00	82
12378-PeCDD	ND	0.26	123678-HxCDD-13C.	2.00	72
TOTAL PeCDD	ND	-----	1234678-HpCDF-13C	2.00	77
			1234789-HpCDF-13C	2.00	88
123478-HxCDF	ND	0.41	1234678-HpCDD-13C	2.00	68
123678-HxCDF	ND	0.32	OCDD-13C.....	4.00	50
234678-HxCDF	ND	0.61			
123789-HxCDF	ND	0.52	1234-TCDD-13C....	2.00	NA
TOTAL HxCDF	ND	-----	123789-HxCDD-13C.	2.00	NA
123478-HxCDD	ND	0.26	2378-TCDD-37Cl4..	0.20	60
123678-HxCDD	ND	0.35			
123789-HxCDD	ND	0.23			
TOTAL HxCDD	ND	-----			
			Total 2378-TCDD Equivalence: 0.016 ng/kg (Using ITE Factors/DB-5 Data)		
1234678-HpCDF	1.4	-----			
1234789-HpCDF	ND	0.37			
TOTAL HpCDF	2.1	-----			
1234678-HpCDD	ND	0.26			
TOTAL HpCDD	ND	-----			
OCDF	ND	1.30			
OCDD	1.8	-----			

CONC= Concentration (Totals include 2378-substituted isomers.)
 LOD = Limit of Detection
 ND = Not Detected
 NA = Not Applicable

TCT Invoice Number....4410 93-1321

 TWIN CITY TESTING CORPORATION
 *METHOD 8290 ANALYSIS RESULTS *

 Client....EMPIRE SOILS

Client's Sample ID.....RESIN (3/23/93 TO 3/24/93)
 TCT Sample ID.....313047
 Analysis Date.....3/31/93 00:50
 Filename.....S303300
 Injected By.....MCH
 Total Amount Extracted...0.0011 kg
 % Moisture.....NA %
 ICAL Date.....02/11/93
 CCAL Filename.....S30330E
 Method Blank ID.....BLANK-0326A
 Extraction Date.....3/26/93

NATIVE ISOMERS	CONC. ng/kg	LOD ng/kg	INTERNAL STANDARDS	ng's ADDED	PERCENT RECOVERY
2378-TCDF	11 *	-----	2378-TCDF-13C....	2.00	75
TOTAL TCDF	220	-----	2378-TCDD-13C....	2.00	85
			12378-PeCDF-13C..	2.00	65
2378-TCDD	160	-----	23478-PeCDF-13C..	2.00	53
TOTAL TCDD	730	-----	12378-PeCDD-13C..	2.00	61
			123478-HxCDF-13C.	2.00	86
12378-PeCDF	27	-----	123678-HxCDF-13C.	2.00	77
23478-PeCDF	81	-----	234678-HxCDF-13C.	2.00	67
TOTAL PeCDF	1100	-----	123789-HxCDF-13C.	2.00	71
			123478-HxCDD-13C.	2.00	88
12378-PeCDD	660	-----	123678-HxCDD-13C.	2.00	70
TOTAL PeCDD	3800	-----	1234678-HpCDF-13C	2.00	62
			1234789-HpCDF-13C	2.00	71
123478-HxCDF	150	-----	1234678-HpCDD-13C	2.00	75
123678-HxCDF	72	-----	OCDD-13C.....	4.00	75
234678-HxCDF	160	-----			
123789-HxCDF	61	-----	1234-TCDD-13C....	2.00	NA
TOTAL HxCDF	3000	-----	123789-HxCDD-13C.	2.00	NA
123478-HxCDD	470	-----	2378-TCDD-37Cl4..	0.20	84
123678-HxCDD	1100	-----			
123789-HxCDD	1100	-----			
TOTAL HxCDD	9000	-----			
			Total 2378-TCDD		
1234678-HpCDF	940	-----	Equivalence:	1015 ng/kg	
1234789-HpCDF	96	-----	(Using ITE Factors/DB-5 Data)		
TOTAL HpCDF	2700	-----			
1234678-HpCDD	11000	-----			
TOTAL HpCDD	19000	-----			
OCDF	1300	-----			
OCDD	49000	-----			

* Value may include contributions from other TCDF isomers.

CONC= Concentration (Totals include 2378-substituted isomers.)
 LOD = Limit of Detection
 ND = Not Detected
 NA = Not Applicable

TCT Invoice Number....4410 93-1321

 TWIN CITY TESTING CORPORATION
 * PCDD/PCDF SPIKE RESULTS *

 Client....EMPIRE SOILS

TCT Sample ID.....SPIKE-0326A
 Analysis Date.....3/30/93 17:39
 Filename.....S30330H
 Sample Injected By.....MCH
 Total Amount Extracted.....0.0100 kg
 % Moisture.....NA
 ICAL Date.....02/11/93
 CCAL Filename.....S30330E
 Method Blank ID.....BLANK-0326A
 Extraction Date.....3/26/93

NATIVE ISOMERS	Qs (ng)	Qm (ng)	% REC	INTERNAL STANDARD	ng's ADDED	PERCENT RECOVERY
2378-TCDF	0.20	0.22	112	2378-TCDF-13C....	2.00	73
TOTAL TCDF	0.20	0.22	112	2378-TCDD-13C....	2.00	69
				12378-PeCDF-13C..	2.00	82
2378-TCDD	0.20	0.20	102	23478-PeCDF-13C..	2.00	107
TOTAL TCDD	0.20	0.20	102	12378-PeCDD-13C..	2.00	99
				123478-HxCDF-13C.	2.00	93
12378-PeCDF	1.00	1.13	113	123678-HxCDF-13C.	2.00	73
23478-PeCDF	1.00	1.09	109	234678-HxCDF-13C.	2.00	91
TOTAL PeCDF	2.00	2.21	111	123789-HxCDF-13C.	2.00	80
				123478-HxCDD-13C.	2.00	77
12378-PeCDD	1.00	1.12	112	123678-HxCDD-13C.	2.00	76
TOTAL PeCDD	1.00	1.12	112	1234678-HpCDF-13C	2.00	73
				1234789-HpCDF-13C	2.00	87
123478-HxCDF	1.00	1.07	107	1234678-HpCDD-13C	2.00	75
123678-HxCDF	1.00	1.18	118	OCDD-13C.....	4.00	61
234678-HxCDF	1.00	1.08	108			
123789-HxCDF	1.00	1.14	114	1234-TCDD-13C....	2.00	NA
TOTAL HxCDF	4.00	4.46	112	123789-HxCDD-13C.	2.00	NA
123478-HxCDD	1.00	1.14	114	2378-TCDD-37C14..	0.20	71
123678-HxCDD	1.00	1.04	104			
123789-HxCDD	1.00	1.03	103			
TOTAL HxCDD	3.00	3.20	107			
1234678-HpCDF	1.00	1.20	120			
1234789-HpCDF	1.00	1.13	113			
TOTAL HpCDF	2.00	2.33	117			
1234678-HpCDD	1.00	1.12	112			
TOTAL HpCDD	1.00	1.12	112			
OCDF	2.00	2.57	129			
OCDD	2.00	2.10	105			

Qs = Quantity Spiked
 Qm = Quantity Measured
 REC = Recovery (Expressed as Percent)
 NA = Not Applicable

TCT Invoice Number....4410 93-1321

ENVIRONMENTAL ANALYTICAL REPORT

REPORT NUMBER: 93-0766

PREPARED FOR:

EMPIRE SOILS INVESTIGATIONS, INC.
S-5167 SOUTH PARK AVENUE
HAMBURG, NEW YORK 14075

RE: BTA-92-273; ASTECO-WITMER ROAD

PREPARED BY:

HUNTINGDON ANALYTICAL SERVICES
DIVISION OF EMPIRE SOILS INVESTIGATIONS, INC.
P.O. BOX 250
MIDDLEPORT, NEW YORK 14105
TELEPHONE: 716/735-3400; FAX: 716/735-3653

JUNE 23, 1993

PAGE 1

Huntingdon
Analytical Laboratory

Analytical Services Division

HUNTINGDON ANALYTICAL SERVICES
ELAP #10833
ENVIRONMENTAL REPORT

REPORT NUMBER: 93-0766

STATEMENT OF WORK PERFORMED

I HEREBY DECLARE THAT THE WORK WAS PERFORMED UNDER MY SUPERVISION
ACCORDING TO THE PROCEDURES OUTLINED BY THE FOLLOWING REFERENCES AND THAT
THIS REPORT PROVIDES A CORRECT AND FAITHFUL RECORD OF THE RESULTS OBTAINED.

- 40 CFR PART 136, "GUIDELINES ESTABLISHING TEST PROCEDURES FOR THE
ANALYSIS OF POLLUTANTS UNDER THE CLEAN WATER ACT", OCTOBER 26, 1984
(FEDERAL REGISTER) U. S. ENVIRONMENTAL PROTECTION AGENCY.
- U.S. ENVIRONMENTAL PROTECTION AGENCY, "TEST METHODS OF EVALUATING
SOLID WASTE - PHYSICAL/CHEMICAL METHODS", OFFICE OF SOLID WASTE AND
EMERGENCY RESPONSE, SW-846, 2ND EDITION AND 3RD EDITION.

THIS REPORT CONTAINS ANALYTICAL DATA BASED ON OUR EXAMINATION OF THE
SAMPLE(S) PRESENTED TO US. THIS REPORT CONTAINS (EXCEPT WHERE EXPLICITLY
STATED) A COMPLETE ACCOUNT OF THE ANALYSES REQUESTED TO BE PERFORMED ON THE
SAMPLE(S). INFORMATION WHICH WAS NOT REQUESTED TO BE REPORTED IS NOT
INCLUDED.



ANDREW P. CLIFTON
ENVIRONMENTAL LABORATORY DIRECTOR

JUNE 23, 1993

REPORT CODE LEGEND:

<DL = LESS THAN DETECTION LIMIT
ND = NOT DETECTED
NA = NOT APPLICABLE
INP = INFORMATION NOT PROVIDED
MB = METHOD BLANK

Huntingdon
Analytical Laboratory

Analytical Services Division

HUNTINGDON ANALYTICAL SERVICES

Sample ID: CREEK - DOWN

HAS Sample #93-0766-01

Date Sampled: 5/19/93

Date Prepared: 6/04/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/L)</u>	<u>RESULT ug/L</u>
ANTIMONY	6010	6/07/93	50.0	<50.0
ARSENIC	7060	6/09/93	10.0	<10.0
BERYLLIUM	6010	6/07/93	5.00	<5.00
CADMIUM	6010	6/08/93	5.00	<5.00
CHROMIUM	6010	6/07/93	10.0	<10.0
COPPER	6010	6/07/93	10.0	<10.0
LEAD	7421	6/07/93	5.00	<5.00
MERCURY	7470	6/03/93	0.20	<0.20
NICKEL	6010	6/07/93	40.0	<40.0
SELENIUM	7740	6/08/93	5.00	<5.00
SILVER	6010	6/07/93	10.0	<10.0
THALLIUM	7841	6/08/93	10.0	<10.0
ZINC	6010	6/07/93	20.0	51.8

HUNTINGDON ANALYTICAL SERVICES

Sample ID: CREEK - GW-4

HAS Sample #93-0766-03

Date Sampled: 5/19/93

Date Prepared: 6/04/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/L)</u>	<u>RESULT ug/L</u>
ANTIMONY	6010	6/07/93	50.0	<50.0
ARSENIC	7060	6/09/93	10.0	<10.0
BERYLLIUM	6010	6/07/93	5.00	<5.00
CADMIUM	6010	6/08/93	5.00	<5.00
CHROMIUM	6010	6/07/93	10.0	10.5
COPPER	6010	6/07/93	10.0	<10.0
LEAD	7421	6/07/93	5.00	<5.00
MERCURY	7470	6/03/93	0.20	<0.20
NICKEL	6010	6/07/93	40.0	<40.0
SELENIUM	7740	6/08/93	5.00	<5.00
SILVER	6010	6/07/93	10.0	<10.0
THALLIUM	7841	6/08/93	10.0	<10.0
ZINC	6010	6/07/93	20.0	59.9

HUNTINGDON ANALYTICAL SERVICES

Sample ID: CREEK - UP

HAS Sample #93-0766-04

Date Sampled: 5/19/93

Date Prepared: 6/04/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/L)</u>	<u>RESULT ug/L</u>
ANTIMONY	6010	6/07/93	50.0	<50.0
ARSENIC	7060	6/09/93	10.0	<10.0
BERYLLIUM	6010	6/07/93	5.00	<5.00
CADMIUM	6010	6/08/93	5.00	<5.00
CHROMIUM	6010	6/07/93	10.0	14.0
COPPER	6010	6/07/93	10.0	<10.0
LEAD	7421	6/07/93	5.00	<5.00
MERCURY	7470	6/03/93	0.20	<0.20
NICKEL	6010	6/07/93	40.0	<40.0
SELENIUM	7740	6/08/93	5.00	<5.00
SILVER	6010	6/07/93	10.0	<10.0
THALLIUM	7841	6/08/93	10.0	<10.0
ZINC	6010	6/07/93	20.0	68.0

HUNTINGDON ANALYTICAL SERVICES

Sample ID: METHOD BLANK

HAS Sample #93-0766-MB

Date Sampled: NA

Date Prepared: 6/04/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/L)</u>	<u>RESULT ug/L</u>
ANTIMONY	6010	6/07/93	50.0	<50.0
ARSENIC	7060	6/09/93	10.0	<10.0
BERYLLIUM	6010	6/07/93	5.00	<5.00
CADMIUM	6010	6/08/93	5.00	<5.00
CHROMIUM	6010	6/07/93	10.0	<10.0
COPPER	6010	6/07/93	10.0	<10.0
LEAD	7421	6/07/93	5.00	<5.00
MERCURY	7470	6/03/93	0.20	<0.20
NICKEL	6010	6/07/93	40.0	<40.0
SELENIUM	7740	6/08/93	5.00	<5.00
SILVER	6010	6/07/93	10.0	<10.0
THALLIUM	7841	6/08/93	10.0	<10.0
ZINC	6010	6/07/93	20.0	<20.0

HUNTINGDON ANALYTICAL SERVICES

METALS ANALYSIS-TCLP DATA SHEET

Sample ID: CREEK -SED

HAS Sample #93-0766-02

Date Sampled: 5/19/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>EPA LIMITS</u>	<u>DATE ANALYZED</u>	<u>RESULT mg/L</u>
ARSENIC	6010	5.0 mg/L	6/07/93	<0.50
BARIUM	6010	100 mg/L	6/07/93	<1.00
CADMIUM	6010	1.0 mg/L	6/07/93	<0.05
CHROMIUM	6010	5.0 mg/L	6/07/93	<0.10
LEAD	6010	5.0 mg/L	6/07/93	<0.40
MERCURY	7470	.2 mg/L	6/03/93	<0.0002
SELENIUM	6010	1.0 mg/L	6/07/93	<1.00
SILVER	6010	5.0 mg/L	6/07/93	<0.10

HUNTINGDON ANALYTICAL SERVICES

METALS ANALYSIS-TCLP DATA SHEET

Sample ID: METHOD BLANK

HAS Sample #93-0766-MB

Date Sampled: NA

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>EPA LIMITS</u>	<u>DATE ANALYZED</u>	<u>RESULT mg/L</u>
ARSENIC	6010	5.0 mg/L	6/07/93	<0.50
BARIUM	6010	100 mg/L	6/07/93	<1.00
CADMIUM	6010	1.0 mg/L	6/07/93	<0.05
CHROMIUM	6010	5.0 mg/L	6/07/93	<0.10
LEAD	6010	5.0 mg/L	6/07/93	<0.40
MERCURY	7470	.2 mg/L	6/03/93	<0.0002
SELENIUM	6010	1.0 mg/L	6/07/93	<1.00
SILVER	6010	5.0 mg/L	6/07/93	<0.10

HUNTINGDON ANALYTICAL SERVICES

EPA METHOD 8240
VOLATILE ORGANICS

SAMPLE IDENTIFICATION:	CREEK- DOWN	CREEK- GW-4	CREEK- UP	METHOD BLANK
HAS SAMPLE #930766	01	03	04	--

COMPOUND	RESULT ug/L	RESULT ug/L	RESULT ug/L	RESULT ug/L	DL ug/L
CHLOROMETHANE	<10	<10	<10	<10	10
BROMOMETHANE	<10	<10	<10	<10	10
VINYL CHLORIDE	<10	<10	<10	<10	10
CHLOROETHANE	<10	<10	<10	<10	10
METHYLENE CHLORIDE	<10	<10	<10	<10	10
ACETONE	<10	<10	<10	<10	10
TRICHLOROFLUOROMETHANE	<10	<10	<10	<10	10
CARBON DISULFIDE	<10	<10	<10	<10	10
1,1-DICHLOROETHENE	<10	<10	<10	<10	10
1,1-DICHLOROETHANE	<10	<10	<10	<10	10
1,2-DICHLOROETHENE (TOTAL)	<10	<10	<10	<10	10
CHLOROFORM	<10	<10	<10	<10	10
1,2-DICHLOROETHANE	<10	<10	<10	<10	10
2-BUTANONE	<10	<10	<10	<10	10
1,1,1-TRICHLOROETHANE	<10	<10	<10	<10	10
CARBON TETRACHLORIDE	<10	<10	<10	<10	10
VINYL ACETATE	<10	<10	<10	<10	10
BROMODICHLOROMETHANE	<10	<10	<10	<10	10
1,2-DICHLOROPROPANE	<10	<10	<10	<10	10
cis-1,3-DICHLOROPROPENE	<10	<10	<10	<10	10
TRICHLOROETHENE	<10	<10	<10	<10	10
DIBROMOCHLOROMETHANE	<10	<10	<10	<10	10
1,1,2-TRICHLOROETHANE	<10	<10	<10	<10	10
BENZENE	<10	<10	<10	<10	10
trans-1,3-DICHLOROPROPENE	<10	<10	<10	<10	10
2-CHLOROETHYL VINYL ETHER	<10	<10	<10	<10	10
BROMOFORM	<10	<10	<10	<10	10
4-METHYL-2-PENTANONE	<10	<10	<10	<10	10
2-HEXANONE	<10	<10	<10	<10	10
TETRACHLOROETHENE	<10	<10	<10	<10	10
1,1,2,2-TETRACHLOROETHANE	<10	<10	<10	<10	10
TOLUENE	<10	<10	<10	<10	10
CHLOROBENZENE	<10	<10	<10	<10	10
ETHYL BENZENE	<10	<10	<10	<10	10
STYRENE	<10	<10	<10	<10	10
XYLENE (TOTAL)	<10	<10	<10	<10	10
1,3-DICHLOROBENZENE	<10	<10	<10	<10	10
1,2-DICHLOROBENZENE	<10	<10	<10	<10	10
1,4-DICHLOROBENZENE	<10	<10	<10	<10	10

DATE ANALYZED:	5-25-93	5-25-93	5-25-93	5-25-93
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HUNTINGDON ANALYTICAL SERVICES

EPA METHOD 8240
TCLP VOLATILE ORGANICS

SAMPLE IDENTIFICATION:	CREEK- SED	METHOD BLANK
HAS SAMPLE #930766	02	--

COMPOUND	RESULT mg/L	RESULT mg/L	DL mg/L	REGULATORY
				LIMIT mg/L
VINYL CHLORIDE	<0.050	<0.050	0.050	0.20
1,1-DICHLOROETHENE	<0.050	<0.050	0.050	0.70
CHLOROFORM	<0.050	<0.050	0.050	6.00
1,1,2-DICHLOROETHANE	<0.050	<0.050	0.050	0.50
2-BUTANONE (MEK)	<0.050	<0.050	0.050	200
CARBON TETRACHLORIDE	<0.050	<0.050	0.050	0.50
TRICHLOROETHENE	<0.050	<0.050	0.050	0.50
BENZENE	<0.050	<0.050	0.050	0.50
TETRACHLOROETHENE	<0.050	<0.050	0.050	0.50
CHLOROBENZENE	<0.050	<0.050	0.050	100

TCLP DATE:	5-25-93	5-25-93
DATE ANALYZED:	5-27-93	5-27-93

HUNTINGDON ANALYTICAL SERVICES

PAGE 1 OF 2

METHOD 8270
SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	CREEK-DOWN	CREEK GW-4	CREEK-UP	METHOD BLANK	
HAS SAMPLE #930766	01	03	04	----	
BASE/NEUTRAL COMPOUNDS	RESULT ug/L	RESULT ug/L	RESULT ug/L	RESULT ug/L	MDL ug/L
ACENAPHTHENE -----	<10	<10	<10	<10	<10
ACENAPHTHYLENE -----	<10	<10	<10	<10	<10
ANTHRACENE -----	<10	<10	<10	<10	<10
BENZO(a)ANTHRACENE -----	<10	<10	<10	<10	<10
BENZO(b)FLUORANTHENE -----	<10	<10	<10	<10	<10
BENZO(k)FLUORANTHENE -----	<10	<10	<10	<10	<10
BENZO(a)PYRENE -----	<10	<10	<10	<10	<10
BENZO(g,h,i)PERYLENE -----	<10	<10	<10	<10	<10
BENZYL ALCOHOL -----	<10	<10	<10	<10	<10
BIS(2-CHLOROETHOXY)METHANE ----	<10	<10	<10	<10	<10
BIS(2-CHLOROETHYL)ETHER -----	<10	<10	<10	<10	<10
BIS(2-CHLOROISOPROPYL)ETHER ----	<10	<10	<10	<10	<10
BIS(2-ETHYLHEXYL)PHTHALATE -----	<10	<10	<10	150	<10
BUTYLBENZYL PHTHALATE -----	<10	<10	<10	<10	<10
4-BROMOPHENYL-PHENYL ETHER ----	<10	<10	<10	<10	<10
4-CHLOROANILINE -----	<10	<10	<10	<10	<10
2-CHLORONAPHTHALENE -----	<10	<10	<10	<10	<10
4-CHLOROPHENYL-PHENYL ETHER ---	<10	<10	<10	<10	<10
CHRYSENE -----	<10	<10	<10	<10	<10
DIBENZ(a,h)ANTHRACENE -----	<10	<10	<10	<10	<10
DIBENZOFURAN -----	<10	<10	<10	<10	<10
DI-N-BUTYLPHTHALATE -----	<10	<10	<10	<10	<10
1,2-DICHLOROBENZENE -----	<10	<10	<10	<10	<10
1,3-DICHLOROBENZENE -----	<10	<10	<10	<10	<10
1,4-DICHLOROBENZENE -----	<10	<10	<10	<10	<10
3,3-DICHLOROBENZIDINE -----	<20	<20	<20	<20	<20
DIETHYL PHTHALATE -----	<10	<10	<10	<10	<10
DIMETHYL PHTHALATE -----	<10	<10	<10	<10	<10
2,4-DINITROTOLUENE -----	<10	<10	<10	<10	<10
2,6-DINITROTOLUENE -----	<10	<10	<10	<10	<10
DI-N-OCTYL PHTHALATE -----	<10	<10	<10	<10	<10
FLUORANTHENE -----	<10	<10	<10	<10	<10
FLUORENE -----	<10	<10	<10	<10	<10
HEXACHLOROBENZENE -----	<10	<10	<10	<10	<10
HEXACHLOROBUTADIENE -----	<10	<10	<10	<10	<10
HEXACHLOROCYCLOPENTADIENE ---	<10	<10	<10	<10	<10
HEXACHLOROETHANE -----	<10	<10	<10	<10	<10
INDENO(1,2,3-cd)PYRENE -----	<10	<10	<10	<10	<10

HUNTINGDON ANALYTICAL SERVICES

PAGE 2 OF 2

METHOD 8270
SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	CREEK-DOWN	CREEK GW-4	CREEK-UP	METHOD BLANK	
HAS SAMPLE #930766	01	03	04	----	
BASE/NEUTRAL COMPOUNDS	RESULT ug/L	RESULT ug/L	RESULT ug/L	RESULT ug/L	MDL ug/L
ISOPHORONE -----	<10	<10	<10	<10	<10
2-METHYL NAPHTHALENE -----	<10	<10	<10	<10	<10
NAPHTHALENE -----	<10	<10	<10	<10	<10
2-NITROANILINE -----	<50	<50	<50	<50	<50
3-NITROANILINE -----	<50	<50	<50	<50	<50
4-NITROANILINE -----	<50	<50	<50	<50	<50
NITROBENZENE -----	<10	<10	<10	<10	<10
N-NITROSODIPHENYLAMINE -----	<10	<10	<10	<10	<10
N-NITROS-DI-N-PROPYLAMINE -----	<10	<10	<10	<10	<10
PHENANTHRENE -----	<10	<10	<10	<10	<10
PYRENE -----	<10	<10	<10	<10	<10
1,2,4-TRICHLOROBENZENE -----	<10	<10	<10	<10	<10
CARBAZOLE -----	<10	<10	<10	<10	<10
ACID COMPOUNDS	RESULT ug/L	RESULT ug/L	RESULT ug/L	RESULT ug/L	MDL ug/L
BENZOIC ACID -----	<50	<50	<50	<50	<50
4-CHLORO-3-METHYLPHENOL -----	<10	<10	<10	<10	<10
2-CHLOROPHENOL -----	<10	<10	<10	<10	<10
2,4-DICHLOROPHENOL -----	<10	<10	<10	<10	<10
2,4-DIMETHYL PHENOL -----	<10	<10	<10	<10	<10
2,4-DINITROPHENOL -----	<50	<50	<50	<50	<50
4,6-DINITRO-2-METHYLPHENOL -----	<50	<50	<50	<50	<50
2-METHYL PHENOL -----	<10	<10	<10	<10	<10
4-METHYL PHENOL -----	<10	<10	<10	<10	<10
2-NITROPHENOL -----	<10	<10	<10	<10	<10
4-NITROPHENOL -----	<50	<50	<50	<50	<50
PENTACHLOROPHENOL -----	<50	<50	<50	<50	<50
PHENOL -----	<10	<10	<10	<10	<10
2,4,5-TRICHLOROPHENOL -----	<50	<50	<50	<50	<50
2,4,6-TRICHLOROPHENOL -----	<10	<10	<10	<10	<10
DATE EXTRACTED:	5-19-93	5-19-93	5-19-93	5-19-93	
DATE ANALYZED:	6-9-93	6-9-93	6-9-93	6-8-93	

HUNTINGDON ANALYTICAL SERVICES

METHOD 8270
TCLP SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION:

CREEK-SED

TCLP
METHOD
BLANK

HAS SAMPLE #930766

02

COMPOUND	RESULT mg/L	RESULT mg/L	MDL mg/L	REGULATORY LIMIT mg/L
CRESOL (TOTAL) -----	<0.050	<0.050	<0.050	200
1,4-DICHLOROBENZENE -----	<0.050	<0.050	<0.050	7.5
2,4-DINITROTOLUENE -----	<0.050	<0.050	<0.050	0.13
HEXACHLOROBENZENE -----	<0.050	<0.050	<0.050	0.13
HEXACHLOROBUTADIENE -----	<0.050	<0.050	<0.050	0.50
HEXACHLOROETHANE -----	<0.050	<0.050	<0.050	3.0
NITROBENZENE -----	<0.050	<0.050	<0.050	2.0
PENTACHLOROPHENOL -----	<0.250	<0.250	<0.250	100
2,4,5-TRICHLOROPHENOL -----	<0.250	<0.250	<0.250	400
2,4,6-TRICHLOROPHENOL -----	<0.050	<0.050	<0.050	2.0
PYRIDINE -----	<0.050	<0.050	<0.050	5.0

TCLP DATE:

5-24-93

5-24-93

DATE EXTRACTED:

5-28-93

5-28-93

DATE ANALYZED:

6-8-93

6-8-93

UNTINGDON ANALYTICAL SERVICES - CHAIN-OF-CUSTODY RECORD AND ANALYTICAL REQUEST FORM

Client Name: Empire Soils Investigations, Inc.
S-5167 South Park Ave.
Address: Hamburg, New York 14075

Client Contact Jeff Contino
Phone (716) 649-8110

HAS Quote # _____
P.O. # _____

Project No.: <u>BTA-92-273</u>		Project/Site Name: <u>Astecor Wiltner Rd.</u>		HAS Ref. No. <u>07692</u>		M A T R I X		No. of Cont.		Container Size & Type										Analyte Requested/Remarks				
Sample I.D.	Date	Time	Comp/Grab	Sample Location	HAS Seq. #					500ml poly	40ml	VOA Vial	1/2 Gallon	Amber Glass	125ml	50ml VOA Vial	50ml Amber	50ml Glass	500ml poly	40ml VOA	1/2 Gallon Amber	125ml soil VOA	550ml Amber	
Creek-Down	5/15/93	1400	G	Downstream of Property	01	W	4	X	XX	X									P.P. Metals	P.P. Vol.	P.P. Semi-Vol.			
Creek-Seed	11	1411	C	"	02	S	2								X	X						TCLP Vol	TCLP Semi-Vol; TCLP Met	
Creek GW-4	11	1500	G	Near GW-4	03	W	4	X	XX	X									P.P. Metals	P.P. Vol.	P.P. Semi-Vol.			
Creek-Up	11	1517	G	Upstream of Rt. 31 Bldg	04	W	4	X	XX	X									"	"	"			
					Total = 14																			

[Signature]

Relinquished by: <u>Jeff Contino</u>	Date/Time: <u>5/15/93 10:25</u>	Received by: <u>EST Co. Inc</u>	Relinquished by: <u>EST Co. Inc</u>	Date/Time: <u>5/15/93 8:50</u>	Received by: <u>Karen Krieger</u>
Relinquished by: <u>Karen Krieger</u>	Date/Time: <u>5/15/93 10:55</u>	Received by: <u>[Signature]</u>	Relinquished by: <u>[Signature]</u>	Date/Time: <u>5/15/93 10:55</u>	Received by: <u>[Signature]</u>
Relinquished by: <u>[Signature]</u>	Date/Time: <u>5/15/93 10:55</u>	Received by: <u>[Signature]</u>	Relinquished by: <u>[Signature]</u>	Date/Time: <u>5/15/93 10:55</u>	Received by: <u>[Signature]</u>

ENVIRONMENTAL ANALYTICAL REPORT

REPORT NUMBER: 93-1180

PREPARED FOR:

EMPIRE SOILS INVESTIGATIONS, INC.
S-5167 SOUTH PARK AVENUE
HAMBURG, NEW YORK 14075

RE: ASTECO - WITMER ROAD (BTA-92-273)

PREPARED BY:

HUNTINGDON ANALYTICAL SERVICES
DIVISION OF EMPIRE SOILS INVESTIGATIONS, INC.
P.O. BOX 250
MIDDLEPORT, NEW YORK 14105
TELEPHONE: 716/735-3400; FAX: 716/735-3653

SEPTEMBER 24, 1993

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Huntingdon
Analytical Laboratory

Analytical Services Division

HUNTINGDON ANALYTICAL SERVICES
ELAP #10833
ENVIRONMENTAL REPORT

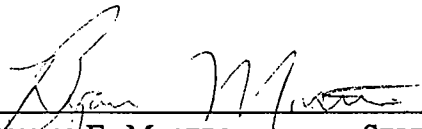
REPORT NUMBER: 93-1180

STATEMENT OF WORK PERFORMED

I HEREBY DECLARE THAT THE WORK WAS PERFORMED UNDER MY SUPERVISION ACCORDING TO THE PROCEDURES OUTLINED BY THE FOLLOWING REFERENCES AND THAT THIS REPORT PROVIDES A CORRECT AND FAITHFUL RECORD OF THE RESULTS OBTAINED.

- 40 CFR PART 136, "GUIDELINES ESTABLISHING TEST PROCEDURES FOR THE ANALYSIS OF POLLUTANTS UNDER THE CLEAN WATER ACT", OCTOBER 26, 1984 (FEDERAL REGISTER) U. S. ENVIRONMENTAL PROTECTION AGENCY.
- U.S. ENVIRONMENTAL PROTECTION AGENCY, "TEST METHODS OF EVALUATING SOLID WASTE - PHYSICAL/CHEMICAL METHODS", OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE, SW-846, 2ND EDITION AND 3RD EDITION.

THIS REPORT CONTAINS ANALYTICAL DATA BASED ON OUR EXAMINATION OF THE SAMPLE(S) PRESENTED TO US. THIS REPORT CONTAINS (EXCEPT WHERE EXPLICITLY STATED) A COMPLETE ACCOUNT OF THE ANALYSES REQUESTED TO BE PERFORMED ON THE SAMPLE(S). INFORMATION WHICH WAS NOT REQUESTED TO BE REPORTED IS NOT INCLUDED.


BRYAN E. MASTIN

SEPTEMBER 24, 1993

ENVIRONMENTAL LABORATORY DIRECTOR

REPORT CODE LEGEND:

<DL = LESS THAN DETECTION LIMIT
ND = NOT DETECTED
NA = NOT APPLICABLE
INP = INFORMATION NOT PROVIDED
MB = METHOD BLANK

Huntingdon
Analytical Laboratory

Analytical Services Division

HUNTINGDON ANALYTICAL SERVICES

WET CHEMISTRY

SAMPLE IDENTIFICATION:

GW-2

METHOD
BLANK

HAS SAMPLE #931180

06

--

ANALYTE

DATE
ANALYZED

EPA
METHOD

RESULT
mg/L

RESULT
mg/L

TOTAL CYANIDE

8/24/93

335.2

<0.01

<0.01

TOTAL PHENOLICS

8/31/93

420.1

524

<0.01

DATE SAMPLED:

8/19/93

HUNTINGDON ANALYTICAL SERVICES

Sample ID: BLK FOUNDATION SAND

HAS Sample #93-1180-01

Date Sampled: 8/19/93

Date Prepared: 8/24/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/kg)</u>	<u>RESULT ug/kg</u>
ANTIMONY	6010	9/08/93	9970	<9970
ARSENIC	7060	9/02/93	2010	<2010
BERYLLIUM	6010	9/08/93	997	1,290
CADMIUM	6010	9/08/93	997	1,220
CHROMIUM	6010	9/08/93	1990	25,100
COPPER	6010	9/08/93	1990	<1990
LEAD	7421	8/27/93	10100	17,900
MERCURY	7470	8/23/93	103	118
NICKEL	6010	9/08/93	7980	<7980
SELENIUM	7740	9/02/93	1010	<1010
SILVER	6010	9/08/93	1990	<1990
THALLIUM	7841	9/07/93	2010	<2010
ZINC	6010	9/08/93	3990	21,900

ALL SOIL/SLUDGE SAMPLE RESULTS ARE BASED UPON DRY WEIGHT.

HUNTINGDON ANALYTICAL SERVICES

Sample ID: LIME

HAS Sample #93-1180-02

Date Sampled: 8/19/93

Date Prepared: 8/24/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/kg)</u>	<u>RESULT ug/kg</u>
ANTIMONY	6010	9/08/93	14700	<14700
ARSENIC	7060	9/02/93	2890	<2890
BERYLLIUM	6010	9/08/93	1470	2810
CADMIUM	6010	9/08/93	1470	<1470
CHROMIUM	6010	9/08/93	2940	2,590,000
COPPER	6010	9/08/93	2940	14,500
LEAD	7421	8/27/93	7210	8,510
MERCURY	7470	8/23/93	149	171
NICKEL	6010	9/08/93	11800	13,500
SELENIUM	7740	9/02/93	1440	<1440
SILVER	6010	9/08/93	2940	<2940
THALLIUM	7841	9/07/93	2890	<2890
ZINC	6010	9/08/93	5880	31,500

ALL SOIL/SLUDGE SAMPLE RESULTS ARE BASED UPON DRY WEIGHT.

HUNTINGDON ANALYTICAL SERVICES

Sample ID: BLACK

HAS Sample #93-1180-03

Date Sampled: 8/19/93

Date Prepared: 8/24/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/kg)</u>	<u>RESULT ug/kg</u>
ANTIMONY	6010	9/08/93	13400	69,600
ARSENIC	7060	9/02/93	2700	22,900
BERYLLIUM	6010	9/08/93	1340	2,480
CADMIUM	6010	9/08/93	1340	4,630
CHROMIUM	6010	9/08/93	2680	49,500
COPPER	6010	9/08/93	2680	714,000
LEAD	7421	8/27/93	67500	319,000
MERCURY	7470	8/23/93	138	528
NICKEL	6010	9/08/93	10700	38,800
SELENIUM	7740	9/02/93	1350	4,190
SILVER	6010	9/08/93	2680	<2680
THALLIUM	7841	9/07/93	2700	<2700
ZINC	6010	9/08/93	5350	1,660,000

ALL SOIL/SLUDGE SAMPLE RESULTS ARE BASED UPON DRY WEIGHT.

HUNTINGDON ANALYTICAL SERVICES

Sample ID: RESIN

HAS Sample #93-1180-04

Date Sampled: 8/19/93

Date Prepared: 8/24/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/kg)</u>	<u>RESULT ug/kg</u>
ANTIMONY	6010	9/08/93	12800	<12800
ARSENIC	7060	9/02/93	4930	5,430
BERYLLIUM	6010	9/08/93	1280	2,510
CADMIUM	6010	9/08/93	1280	<1280
CHROMIUM	6010	9/08/93	2570	128,000
COPPER	6010	9/08/93	2570	434,000
LEAD	7421	8/27/93	12300	17,500
MERCURY	7470	8/23/93	128	289
NICKEL	6010	9/08/93	10300	23,100
SELENIUM	7740	9/02/93	1230	<1230
SILVER	6010	9/08/93	2570	<2570
THALLIUM	7841	9/07/93	2470	<2470
ZINC	6010	9/08/93	5130	408,000

ALL SOIL/SLUDGE SAMPLE RESULTS ARE BASED UPON DRY WEIGHT.

HUNTINGDON ANALYTICAL SERVICES

Sample ID: GW-5

HAS Sample #93-1180-05

Date Sampled: 8/19/93

Date Prepared: 8/24/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/L)</u>	<u>RESULT ug/L</u>
ANTIMONY	6010	9/08/93	50.0	<50.0
ARSENIC	7060	9/02/93	10.0	<10.0
BERYLLIUM	6010	9/08/93	5.00	6.96
CADMIUM	6010	9/08/93	5.00	9.18
CHROMIUM	6010	9/08/93	10.0	1,750
COPPER	6010	9/08/93	10.0	<10.0
LEAD	7421	8/27/93	5.00	8.70
MERCURY	7470	8/23/93	0.20	<0.20
NICKEL	6010	9/08/93	40.0	<40.0
SELENIUM	7740	9/02/93	5.00	<5.00
SILVER	6010	9/08/93	10.0	<10.0
THALLIUM	7841	9/07/93	10.0	<10.0
ZINC	6010	9/08/93	20.0	<20.0

HUNTINGDON ANALYTICAL SERVICES

Sample ID: GW-2

HAS Sample #93-1180-06

Date Sampled: 8/19/93

Date Prepared: 8/24/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/L)</u>	<u>RESULT ug/L</u>
ANTIMONY	6010	9/08/93	50.0	<50.0
ARSENIC	7060	9/02/93	10.0	<10.0
BERYLLIUM	6010	9/08/93	5.00	7.22
CADMIUM	6010	9/08/93	5.00	<5.00
CHROMIUM	6010	9/08/93	10.0	12.8
COPPER	6010	9/08/93	10.0	<10.0
LEAD	7421	8/27/93	5.00	7.10
MERCURY	7470	8/23/93	0.20	<0.20
NICKEL	6010	9/08/93	40.0	<40.0
SELENIUM	7740	9/02/93	5.00	<5.00
SILVER	6010	9/08/93	10.0	<10.0
THALLIUM	7841	9/07/93	10.0	<10.0
ZINC	6010	9/08/93	20.0	22.7

HUNTINGDON ANALYTICAL SERVICES

Sample ID: METHOD BLANK

HAS Sample #93-1180-MB

Date Sampled: NA

Date Prepared: 8/24/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/L)</u>	<u>RESULT ug/L</u>
ANTIMONY	6010	9/08/93	50.0	<50.0
ARSENIC	7060	9/02/93	10.0	<10.0
BERYLLIUM	6010	9/08/93	5.00	<5.00
CADMIUM	6010	9/08/93	5.00	<5.00
CHROMIUM	6010	9/08/93	10.0	<10.0
COPPER	6010	9/08/93	10.0	<10.0
LEAD	7421	8/27/93	5.00	<5.00
MERCURY	7470	8/23/93	0.20	<0.20
NICKEL	6010	9/08/93	40.0	<40.0
SELENIUM	7740	9/02/93	5.00	<5.00
SILVER	6010	9/08/93	10.0	<10.0
THALLIUM	7841	9/07/93	10.0	<10.0
ZINC	6010	9/08/93	20.0	<20.0

HUNTINGDON ANALYTICAL SERVICES

Sample ID: METHOD BLANK (SOIL)

HAS Sample #93-1180-MB

Date Sampled: NA

Date Prepared: 8/24/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/kg)</u>	<u>RESULT ug/kg</u>
ANTIMONY	6010	9/08/93	10000	<10000
ARSENIC	7060	9/02/93	2000	<2000
BERYLLIUM	6010	9/08/93	1000	1,190
CADMIUM	6010	9/08/93	1000	<1000
CHROMIUM	6010	9/08/93	2000	<2000
COPPER	6010	9/08/93	2000	<2000
LEAD	7421	8/27/93	1000	<1000
MERCURY	7470	8/23/93	100	<100
NICKEL	6010	9/08/93	8000	<8000
SELENIUM	7740	9/02/93	1000	<1000
SILVER	6010	9/08/93	2000	<2000
THALLIUM	7841	9/07/93	2000	<2000
ZINC	6010	9/08/93	4000	6,580

ALL SOIL/SLUDGE SAMPLE RESULTS ARE BASED UPON DRY WEIGHT.

HUNTINGDON ANALYTICAL SERVICES

METHOD 8080
ORGANOCHLORINE PESTICIDES
POLYCHLORINATED BIPHENYLS

SAMPLE IDENTIFICATION	Blk Found Sand	Lime	Black	Resin	METHOD BLANK	
HAS SAMPLE #931180	01	02	03	04	----	
COMPOUND	RESULT ug/g	RESULT ug/g	RESULT ug/g	RESULT ug/g	RESULT ug/g	MDL ug/g
ALDRIN	<0.010	<0.010	<0.030 *	<0.100 *	<0.010	0.010
A-BHC	<0.010	<0.010	0.040	0.200	<0.010	0.010
B-BHC	<0.010	<0.010	0.040	<0.060 *	<0.010	0.010
D-BHC	<0.010	<0.010	0.030	<0.010	<0.010	0.010
G-BHC	<0.010	<0.010	<0.010	0.070	<0.010	0.010
CHLORDANE	<0.10	<0.10	<0.10	<0.10	<0.10	0.10
4,4-DDD	<0.020	<0.020	<0.020	<0.050 *	<0.020	0.020
4,4-DDE	<0.020	<0.020	<0.020	<0.020	<0.020	0.020
4,4-DDT	<0.020	<0.020	<0.020	<0.040 *	<0.020	0.020
DIELDRIN	<0.020	<0.020	<0.020	<0.020	<0.020	0.020
ENDOSULFAN I	<0.010	<0.010	<0.010	<0.010	<0.010	0.010
ENDOSULFAN II	<0.020	<0.020	<0.020	<0.070 *	<0.020	0.020
ENDOSULFAN SULFATE ..	<0.020	<0.020	<0.020	<0.030 *	<0.020	0.020
ENDRIN	<0.020	<0.020	<0.020	<0.020	<0.020	0.020
ENDRIN ALDEHYDE	<0.020	<0.020	<0.020	<0.070 *	<0.020	0.020
HEPTACHLOR	<0.010	<0.010	<0.020 *	<0.010	<0.010	0.010
HEPTACHLOR EPOXIDE ..	<0.010	<0.010	<0.010	<0.010	<0.010	0.010
TOXAPHENE	<0.20	<0.20	<0.20	<0.20	<0.20	0.20
PCB-1016	<0.20	<0.20	<0.20	<0.20	<0.20	0.20
PCB-1221	<0.20	<0.20	<0.20	<0.20	<0.20	0.20
PCB-1232	<0.20	<0.20	<0.20	<0.20	<0.20	0.20
PCB-1242	<0.20	<0.20	<0.20	<0.20	<0.20	0.20
PCB-1248	<0.20	<0.20	0.63	<0.20	<0.20	0.20
PCB-1254	<0.20	<0.20	<0.20	<0.20	<0.20	0.20
PCB-1260	<0.20	<0.20	<0.20	<0.20	<0.20	0.20
DATE EXTRACTED:	8-25-93	8-25-93	8-25-93	8-25-93	8-25-93	
DATE ANALYZED:	8-30-93	8-30-93	9-09-93	9-09-93	8-30-93	

* Detection limit elevated due to matrix interferences.

HUNTINGDON ANALYTICAL SERVICES

METHOD 608
TARGET COMPOUND LIST

SAMPLE IDENTIFICATION	GW-2	METHOD BLANK
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HAS SAMPLE #931180	09	--
--------------------	----	----

ANALYTE	RESULT ug/L	RESULT ug/L	MDL ug/L
ALDRIN	<0.10 *	<0.05	<0.05
A-BHC	1.4	<0.05	<0.05
B-BHC	0.19	<0.05	<0.05
D-BHC	0.24	<0.05	<0.05
G-BHC	<0.10 *	<0.05	<0.05
CHLORDANE	<0.50	<0.50	<0.50
4,4-DDD	<0.10	<0.10	<0.10
4,4-DDE	<0.10	<0.10	<0.10
4,4-DDT	<0.10	<0.10	<0.10
DIELDRIN	<0.10	<0.10	<0.10
ENDOSULFAN I	<0.05	<0.05	<0.05
ENDOSULFAN II	<0.10	<0.10	<0.10
ENDOSULFAN SULFATE --	<0.10	<0.10	<0.10
ENDRIN	<0.10	<0.10	<0.10
ENDRIN ALDEHYDE	<0.10	<0.10	<0.10
HEPTACHLOR	<0.05	<0.05	<0.05
HEPTACHLOR EPOXIDE --	<0.05	<0.05	<0.05
TOXAPHENE	<1.0	<1.0	<1.0
METHOXYCHLOR	<0.50	<0.50	<0.50
ENDRIN KETONE	<0.10	<0.10	<0.10
PCB-1016	<0.50	<0.50	<0.50
PCB-1221	<0.50	<0.50	<0.50
PCB-1232	<0.50	<0.50	<0.50
PCB-1242	<0.50	<0.50	<0.50
PCB-1248	<0.50	<0.50	<0.50
PCB-1254	<1.0	<1.0	<1.0
PCB-1260	<1.0	<1.0	<1.0

DATE EXTRACTED:	8-25-93	8-25-93
DATE ANALYZED:	8-30-93	8-30-93

* Detection limit elevated due to matrix interferences.

HUNTINGDON ANALYTICAL SERVICES

PAGE 1 OF 2

METHOD 8270
SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	GW-2	GW-1	METHOD BLANK	
HAS SAMPLE #931180	07	10	----	
BASE/NEUTRAL COMPOUNDS	RESULT ug/L	RESULT ug/L	RESULT ug/L	MDL ug/L
ACENAPHTHENE -----	<500	<10	<10	10
ACENAPHTHYLENE -----	<500	<10	<10	10
ANTHRACENE -----	<500	<10	<10	10
BENZO(a)ANTHRACENE -----	<500	<10	<10	10
BENZO(b)FLUORANTHENE -----	<500	<10	<10	10
BENZO(k)FLUORANTHENE -----	<500	<10	<10	10
BENZO(a)PYRENE -----	<500	<10	<10	10
BENZO(g,h,i)PERYLENE -----	<500	<10	<10	10
BENZYL ALCOHOL -----	<500	<10	<10	10
BIS(2-CHLOROETHOXY)METHANE ----	<500	<10	<10	10
BIS(2-CHLOROETHYL)ETHER -----	<500	<10	<10	10
BIS(2-CHLOROISOPROPYL)ETHER ----	<500	<10	<10	10
BIS(2-ETHYLHEXYL)PHTHALATE ----	<500	<10	<10	10
BUTYLBENZYL PHTHALATE -----	<500	<10	<10	10
4-BROMOPHENYL-PHENYL ETHER ---	<500	<10	<10	10
4-CHLOROANILINE -----	<500	<10	<10	10
2-CHLORONAPHTHALENE -----	<500	<10	<10	10
4-CHLOROPHENYL-PHENYL ETHER ---	<500	<10	<10	10
CHRYSENE -----	<500	<10	<10	10
DIBENZ(a,h)ANTHRACENE -----	<500	<10	<10	10
DIBENZOFURAN -----	<500	<10	<10	10
DI-N-BUTYLPHTHALATE -----	<500	<10	<10	10
1,2-DICHLOROBENZENE -----	<500	<10	<10	10
1,3-DICHLOROBENZENE -----	<500	<10	<10	10
1,4-DICHLOROBENZENE -----	<500	12	<10	10
3,3-DICHLOROBENZIDINE -----	<1,000	<20	<20	20
DIETHYL PHTHALATE -----	<500	<10	<10	10
DIMETHYL PHTHALATE -----	<500	<10	<10	10
2,4-DINITROTOLUENE -----	<500	<10	<10	10
2,6-DINITROTOLUENE -----	<500	<10	<10	10
DI-N-OCTYL PHTHALATE -----	<500	<10	<10	10
FLUORANTHENE -----	<500	<10	<10	10
FLUORENE -----	<500	<10	<10	10
HEXACHLOROBENZENE -----	<500	<10	<10	10
HEXACHLOROBUTADIENE -----	<500	<10	<10	10
HEXACHLOROCYCLOPENTADIENE ---	<500	<10	<10	10
HEXACHLOROETHANE -----	<500	<10	<10	10
INDENO(1,2,3-cd)PYRENE -----	<500	<10	<10	10

HUNTINGDON ANALYTICAL SERVICES

PAGE 2 OF 2

METHOD 8270
SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION:	GW-2	GW-1	METHOD BLANK	
HAS SAMPLE #931180	07	10	----	
BASE/NEUTRAL COMPOUNDS	RESULT ug/L	RESULT ug/L	RESULT ug/L	MDL ug/L
ISOPHORONE -----	<500	<10	<10	10
2-METHYL NAPHTHALENE -----	<500	<10	<10	10
NAPHTHALENE -----	<500	<10	<10	10
2-NITROANILINE -----	<2,500	<50	<50	50
3-NITROANILINE -----	<2,500	<50	<50	50
4-NITROANILINE -----	<2,500	<50	<50	50
NITROBENZENE -----	<500	<10	<10	10
N-NITROSODIPHENYLAMINE -----	<500	<10	<10	10
N-NITROS-DI-N-PROPYLAMINE -----	<500	<10	<10	10
PHENANTHRENE -----	<500	<10	<10	10
PYRENE -----	<500	<10	<10	10
1,2,4-TRICHLOROBENZENE -----	<500	<10	<10	10
CARBAZOLE -----	<500	<10	<10	10
ACID COMPOUNDS	RESULT ug/L	RESULT ug/L	RESULT ug/L	MDL ug/L
BENZOIC ACID -----	3,300	<50	<50	50
4-CHLORO-3-METHYLPHENOL -----	<500	<10	<10	10
2-CHLOROPHENOL -----	<500	<10	<10	10
2,4-DICHLOROPHENOL -----	<500	<10	<10	10
2,4-DIMETHYL PHENOL -----	10,000	92	<10	10
2,4-DINITROPHENOL -----	<2,500	<50	<50	50
4,6-DINITRO-2-METHYLPHENOL -----	<2,500	<50	<50	50
2-METHYL PHENOL -----	33,000	2,200	<10	10
4-METHYL PHENOL -----	4,500	170	<10	10
2-NITROPHENOL -----	<500	<10	<10	10
4-NITROPHENOL -----	<2,500	<50	<50	50
PENTACHLOROPHENOL -----	<2,500	<50	<50	50
PHENOL -----	190,000	5,700	<10	10
2,4,5-TRICHLOROPHENOL -----	<2,500	<50	<50	50
2,4,6-TRICHLOROPHENOL -----	<500	<10	<10	10
DATE EXTRACTED:	8-24-93	8-24-93	8-24-93	
DATE ANALYZED:	8-25-93	8-26-93	8-25-93	

HUNTINGDON ANALYTICAL SERVICES

EPA METHOD 8240
VOLATILE ORGANICS
LOW LEVEL

SAMPLE IDENTIFICATION :	BLK FOUND. SAND	LIME	BLACK	METHOD BLANK	
HAS SAMPLE #931180	01	02	03	--	
COMPOUND	RESULT ug/Kg	RESULT ug/Kg	RESULT ug/Kg	RESULT ug/Kg	DL ug/Kg
CHLOROMETHANE -----	<10	<10	<10	<10	10
BROMOMETHANE -----	<10	<10	<10	<10	10
VINYL CHLORIDE -----	<10	<10	<10	<10	10
CHLOROETHANE -----	<10	<10	<10	<10	10
METHYLENE CHLORIDE -----	<10	<10	<10	<10	10
ACETONE -----	<10	16	120	<10	10
TRICHLOROFLUOROMETHANE -----	<10	<10	<10	<10	10
CARBON DISULFIDE -----	<10	<10	<10	<10	10
1,1-DICHLOROETHENE -----	<10	<10	<10	<10	10
1,1-DICHLOROETHANE -----	<10	<10	<10	<10	10
1,2-DICHLOROETHENE (TOTAL) -----	<10	<10	<10	<10	10
CHLOROFORM -----	<10	<10	<10	<10	10
1,2-DICHLOROETHANE -----	<10	<10	<10	<10	10
2-BUTANONE -----	<10	<10	31	<10	10
1,1,1-TRICHLOROETHANE -----	<10	<10	<10	<10	10
CARBON TETRACHLORIDE -----	<10	<10	<10	<10	10
VINYL ACETATE -----	<10	<10	<10	<10	10
BROMODICHLOROMETHANE -----	<10	<10	<10	<10	10
1,2-DICHLOROPROPANE -----	<10	<10	<10	<10	10
cis-1,3-DICHLOROPROPENE -----	<10	<10	<10	<10	10
TRICHLOROETHENE -----	<10	<10	<10	<10	10
DIBROMOCHLOROMETHANE -----	<10	<10	<10	<10	10
1,1,2-TRICHLOROETHANE -----	<10	<10	<10	<10	10
BENZENE -----	<10	<10	<10	<10	10
trans-1,3-DICHLOROPROPENE -----	<10	<10	<10	<10	10
2-CHLOROETHYL VINYL ETHER -----	<10	<10	<10	<10	10
BROMOFORM -----	<10	<10	<10	<10	10
4-METHYL-2-PENTANONE -----	<10	<10	<10	<10	10
2-HEXANONE -----	<10	<10	<10	<10	10
TETRACHLOROETHENE -----	<10	<10	<10	<10	10
1,1,2,2-TETRACHLOROETHANE -----	<10	<10	<10	<10	10
TOLUENE -----	<10	<10	<10	<10	10
CHLOROBENZENE -----	<10	<10	<10	<10	10
ETHYL BENZENE -----	<10	<10	<10	<10	10
STYRENE -----	<10	<10	<10	<10	10
XYLENE (TOTAL) -----	<10	<10	<10	<10	10
1,3-DICHLOROBENZENE -----	<10	<10	11	<10	10
1,2-DICHLOROBENZENE -----	<10	<10	<10	<10	10
1,4-DICHLOROBENZENE -----	<10	<10	<10	<10	10
DATE ANALYZED:	8-25-93	8-25-93	8-25-93	8-25-93	

HUNTINGDON ANALYTICAL SERVICES

EPA METHOD 8240
VOLATILE ORGANICS
MEDIUM LEVEL

SAMPLE IDENTIFICATION: RESIN METHOD
BLANK

HAS SAMPLE #931180 04 --

COMPOUND	RESULT ug/Kg	RESULT ug/Kg	DL ug/Kg
CHLOROMETHANE -----	<160,000	<1,200	1,200
BROMOMETHANE -----	<160,000	<1,200	1,200
VINYL CHLORIDE -----	<160,000	<1,200	1,200
CHLOROETHANE -----	<160,000	<1,200	1,200
METHYLENE CHLORIDE -----	<160,000	<1,200	1,200
ACETONE -----	<160,000	<1,200	1,200
TRICHLOROFLUOROMETHANE -----	<160,000	<1,200	1,200
CARBON DISULFIDE -----	<160,000	<1,200	1,200
1,1-DICHLOROETHENE -----	<160,000	<1,200	1,200
1,1-DICHLOROETHANE -----	<160,000	<1,200	1,200
1,2-DICHLOROETHENE (TOTAL) -----	<160,000	<1,200	1,200
CHLOROFORM -----	<160,000	<1,200	1,200
1,2-DICHLOROETHANE -----	<160,000	<1,200	1,200
2-BUTANONE -----	<160,000	<1,200	1,200
1,1,1-TRICHLOROETHANE -----	<160,000	<1,200	1,200
CARBON TETRACHLORIDE -----	<160,000	<1,200	1,200
VINYL ACETATE -----	<160,000	<1,200	1,200
BROMODICHLOROMETHANE -----	<160,000	<1,200	1,200
1,2-DICHLOROPROPANE -----	<160,000	<1,200	1,200
cis-1,3-DICHLOROPROPENE -----	<160,000	<1,200	1,200
TRICHLOROETHENE -----	<160,000	<1,200	1,200
DIBROMOCHLOROMETHANE -----	<160,000	<1,200	1,200
1,1,2-TRICHLOROETHANE -----	<160,000	<1,200	1,200
BENZENE -----	<160,000	<1,200	1,200
trans-1,3-DICHLOROPROPENE -----	<160,000	<1,200	1,200
2-CHLOROETHYL VINYL ETHER -----	<160,000	<1,200	1,200
BROMOFORM -----	<160,000	<1,200	1,200
4-METHYL-2-PENTANONE -----	<160,000	<1,200	1,200
2-HEXANONE -----	<160,000	<1,200	1,200
TETRACHLOROETHENE -----	<160,000	<1,200	1,200
1,1,2,2-TETRACHLOROETHANE -----	<160,000	<1,200	1,200
TOLUENE -----	170,000	<1,200	1,200
CHLOROBENZENE -----	<160,000	<1,200	1,200
ETHYL BENZENE -----	730,000	<1,200	1,200
STYRENE -----	<160,000	<1,200	1,200
XYLENE (TOTAL) -----	7,600,000	<1,200	1,200
1,3-DICHLOROBENZENE -----	<160,000	<1,200	1,200
1,2-DICHLOROBENZENE -----	<160,000	<1,200	1,200
1,4-DICHLOROBENZENE -----	<160,000	<1,200	1,200

DATE ANALYZED: 8-26-93 8-26-93

HUNTINGDON ANALYTICAL SERVICES

EPA METHOD 8240
VOLATILE ORGANICS

SAMPLE IDENTIFICATION:	GW-2	GW-1	METHOD BLANK	
HAS SAMPLE #931180	06	08	--	
COMPOUND	RESULT ug/L	RESULT ug/L	RESULT ug/L	DL ug/L
CHLOROMETHANE -----	<1,000	<100	<10	10
BROMOMETHANE -----	<1,000	<100	<10	10
VINYL CHLORIDE -----	<1,000	<100	<10	10
CHLOROETHANE -----	<1,000	<100	<10	10
METHYLENE CHLORIDE -----	<1,000	<100	<10	10
ACETONE -----	1,900	180	10	10
TRICHLOROFLUOROMETHANE -----	<1,000	<100	<10	10
CARBON DISULFIDE -----	<1,000	<100	<10	10
1,1-DICHLOROETHENE -----	<1,000	<100	<10	10
1,1-DICHLOROETHANE -----	<1,000	<100	<10	10
1,2-DICHLOROETHENE (TOTAL) -----	<1,000	<100	<10	10
CHLOROFORM -----	<1,000	<100	<10	10
1,2-DICHLOROETHANE -----	<1,000	<100	<10	10
2-BUTANONE -----	1,000	<100	<10	10
1,1,1-TRICHLOROETHANE -----	<1,000	<100	<10	10
CARBON TETRACHLORIDE -----	<1,000	<100	<10	10
VINYL ACETATE -----	<1,000	<100	<10	10
BROMODICHLOROMETHANE -----	<1,000	<100	<10	10
1,2-DICHLOROPROPANE -----	<1,000	<100	<10	10
cis-1,3-DICHLOROPROPENE -----	<1,000	<100	<10	10
TRICHLOROETHENE -----	<1,000	<100	<10	10
DIBROMOCHLOROMETHANE -----	<1,000	<100	<10	10
1,1,2-TRICHLOROETHANE -----	<1,000	<100	<10	10
BENZENE -----	<1,000	<100	<10	10
trans-1,3-DICHLOROPROPENE -----	<1,000	<100	<10	10
2-CHLOROETHYL VINYL ETHER -----	<1,000	<100	<10	10
BROMOFORM -----	<1,000	<100	<10	10
4-METHYL-2-PENTANONE -----	1,800	<100	<10	10
2-HEXANONE -----	<1,000	<100	<10	10
TETRACHLOROETHENE -----	<1,000	<100	<10	10
1,1,2,2-TETRACHLOROETHANE -----	<1,000	<100	<10	10
TOLUENE -----	1,000	<100	<10	10
CHLOROBENZENE -----	<1,000	<100	<10	10
ETHYL BENZENE -----	6,300	380	<10	10
STYRENE -----	<1,000	<100	<10	10
XYLENE (TOTAL) -----	37,000	1,400	<10	10
1,3-DICHLOROBENZENE -----	<1,000	<100	<10	10
1,2-DICHLOROBENZENE -----	<1,000	<100	<10	10
1,4-DICHLOROBENZENE -----	<1,000	<100	<10	10
DATE ANALYZED:	8-24-93	8-24-93	8-24-93	

HUNTINGDON ANALYTICAL SERVICES ENVIRONMENTAL

PAGE 1 OF 2

METHOD 8270
SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	BLK FOUND SAND	LIME	BLACK	RESIN	METHOD BLANK	
HAS SAMPLE #931180	01	02	03	04	----	
BASE/NEUTRAL COMPOUNDS	RESULT ug/kg	RESULT ug/kg	RESULT ug/kg	RESULT ug/kg	RESULT ug/kg	MDL ug/kg
ACENAPHTHENE -----	<330	<330	<330	<17,000	<330	330
ACENAPHTHYLENE -----	<330	<330	<330	<17,000	<330	330
ANTHRACENE -----	<330	<330	1,100	<17,000	<330	330
BENZO(a)ANTHRACENE -----	<330	<330	2,300	<17,000	<330	330
BENZO(b)FLUORANTHENE -----	<330	<330	1,800	<17,000	<330	330
BENZO(k)FLUORANTHENE -----	<330	<330	2,200	<17,000	<330	330
BENZO(a)PYRENE -----	<330	<330	2,000	<17,000	<330	330
BENZO(g,h,i)PERYLENE -----	<330	<330	1,100	<17,000	<330	330
BENZYL ALCOHOL -----	<330	<330	<330	<17,000	<330	330
BIS(2-CHLOROETHOXY)METHANE ----	<330	<330	<330	<17,000	<330	330
BIS(2-CHLOROETHYL)ETHER -----	<330	<330	<330	<17,000	<330	330
BIS(2-CHLOROISOPROPYL)ETHER ----	<330	<330	<330	<17,000	<330	330
BIS(2-ETHYLHEXYL)PHTHALATE -----	<330	<330	<330	<17,000	<330	330
BUTYLBENZYL PHTHALATE -----	<330	<330	<330	<17,000	<330	330
4-BROMOPHENYL-PHENYL ETHER ----	<330	<330	<330	<17,000	<330	330
4-CHLOROANILINE -----	<330	<330	<330	<17,000	<330	330
2-CHLORONAPHTHALENE -----	<330	<330	<330	<17,000	<330	330
4-CHLOROPHENYL-PHENYL ETHER ---	<330	<330	<330	<17,000	<330	330
CHRYSENE -----	<330	<330	2,300	<17,000	<330	330
DIBENZ(a,h)ANTHRACENE -----	<330	<330	<330	<17,000	<330	330
DIBENZOFURAN -----	<330	<330	<330	<17,000	<330	330
DI-N-BUTYLPHTHALATE -----	<330	<330	<330	<17,000	<330	330
1,2-DICHLOROBENZENE -----	<330	<330	<330	30,000	<330	330
1,3-DICHLOROBENZENE -----	<330	<330	<330	<17,000	<330	330
1,4-DICHLOROBENZENE -----	<330	<330	<330	26,000	<330	330
3,3-DICHLOROBENZIDINE -----	<660	<660	<660	<33,000	<660	660
DIETHYL PHTHALATE -----	<330	<330	<330	<17,000	<330	330
DIMETHYL PHTHALATE -----	<330	<330	<330	<17,000	<330	330
2,4-DINITROTOLUENE -----	<330	<330	<330	<17,000	<330	330
2,6-DINITROTOLUENE -----	<330	<330	<330	<17,000	<330	330
DI-N-OCTYL PHTHALATE -----	<330	<330	<330	<17,000	<330	330
FLUORANTHENE -----	<330	<330	4,800	<17,000	<330	330
FLUORENE -----	<330	<330	440	<17,000	<330	330
HEXACHLOROBENZENE -----	<330	<330	<330	<17,000	<330	330
HEXACHLOROBUTADIENE -----	<330	<330	<330	<17,000	<330	330
HEXACHLOROCYCLOPENTADIENE ---	<330	<330	<330	<17,000	<330	330
HEXACHLOROETHANE -----	<330	<330	<330	<17,000	<330	330
INDENO(1,2,3-cd)PYRENE -----	<330	<330	840	<17,000	<330	330

HUNTINGDON ANALYTICAL SERVICES ENVIRONMENTAL

PAGE 2 OF 2

METHOD 8270
SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	BLK FOUND SAND	LIME	BLACK	RESIN	METHOD BLANK	
HAS SAMPLE #931180	01	02	03	04	----	
BASE/NEUTRAL COMPOUNDS	RESULT ug/kg	RESULT ug/kg	RESULT ug/kg	RESULT ug/kg	RESULT ug/kg	MDL ug/kg
ISOPHORONE -----	<330	<330	<330	<17,000	<330	330
2-METHYL NAPHTHALENE -----	<330	<330	<330	<17,000	<330	330
NAPHTHALENE -----	<330	<330	<330	71,000	<330	330
2-NITROANILINE -----	<1,600	<1,600	<1,600	<80,000	<1,600	1,600
3-NITROANILINE -----	<1,600	<1,600	<1,600	<80,000	<1,600	1,600
4-NITROANILINE -----	<1,600	<1,600	<1,600	<80,000	<1,600	1,600
NITROBENZENE -----	<330	<330	<330	<17,000	<330	330
N-NITROSODIPHENYLAMINE -----	<330	<330	<330	<17,000	<330	330
N-NITROS-DI-N-PROPYLAMINE -----	<330	<330	<330	<17,000	<330	330
PHENANTHRENE -----	<330	<330	4,100	<17,000	<330	330
PYRENE -----	<330	<330	5,600	<17,000	<330	330
1,2,4-TRICHLOROBENZENE -----	<330	<330	<330	48,000	<330	330
CARBAZOLE -----	<330	<330	370	<17,000	<330	330
ACID COMPOUNDS	RESULT ug/Kg	RESULT ug/Kg	RESULT ug/Kg	RESULT ug/Kg	RESULT ug/Kg	MDL ug/Kg
BENZOIC ACID -----	<1,600	<1,600	<1,600	<80,000	<1,600	1,600
4-CHLORO-3-METHYLPHENOL -----	<330	<330	<330	<17,000	<330	330
2-CHLOROPHENOL -----	<330	<330	<330	<17,000	<330	330
2,4-DICHLOROPHENOL -----	<330	<330	<330	<17,000	<330	330
2,4-DIMETHYL PHENOL -----	<330	<330	<330	250,000	<330	330
2,4-DINITROPHENOL -----	<1,600	<1,600	<1,600	<80,000	<1,600	1,600
4,6-DINITRO-2-METHYLPHENOL -----	<1,600	<1,600	<1,600	<80,000	<1,600	1,600
2-METHYL PHENOL -----	<330	<330	<330	1,500,000	<330	330
4-METHYL PHENOL -----	<330	<330	<330	120,000	<330	330
2-NITROPHENOL -----	<330	<330	<330	<17,000	<330	330
4-NITROPHENOL -----	<1,600	<1,600	<1,600	<80,000	<1,600	1,600
PENTACHLOROPHENOL -----	<1,600	<1,600	<1,600	<80,000	<1,600	1,600
PHENOL -----	<330	<330	<330	5,800,000	<330	330
2,4,5-TRICHLOROPHENOL -----	<1,600	<1,600	<1,600	<80,000	<1,600	1,600
2,4,6-TRICHLOROPHENOL -----	<330	<330	<330	<17,000	<330	330
DATE EXTRACTED:	8-24-93	8-24-93	8-24-93	8-24-93	8-24-93	
DATE ANALYZED:	8-25-93	8-25-93	8-25-93	8-25-93	8-25-93	

WINTINGDON ANALYTICAL SERVICES - CHAIN-OF-CUSTODY RECORD AND ANALYTICAL REQUEST FORM

PAGE 1 OF 1

Client Name: Empire Soils Investigations, Inc.
S-5167 South Park Ave.
 Address: Hamburg, New York 14075

Client Contact Jeff Contino
 Phone (716) 649-8110

HAS Quote # _____
 P.O. # _____

Project No.: <u>BIA-92-273</u>		Project/Site Name: <u>Asteco - W.t. RQ.</u>		HAS Ref. No. <u>93-1180</u>		M A T R I X	No. of Cont.	Container Size & Type										Analyte Requested/Remarks					
Sample I.D.	Date	Time	Comp/Grab	Sample Location	HAS Seq. #			40ml VOA Vol	125ml VOA Vol	12-gallon VOA Vol	Amber Glass 150ml	Amber Glass 500ml	Poly 1000ml	Poly 1000ml	40ml VOA	125ml VOA	1/2 Gal. Amber	450ml Amber	1000ml poly	500ml poly			
Black Found. Sand	8/14/93	0842	C*	---	01	S	2		X		X												
Lime	"	0853	C*	---	02	S	2		X		X												
Black	"	0910	C*	---	03	S	2		X		X												
Resin	"	0929	C*	---	04	S	2		X		X												
GW-5	"	1052	G	well GW-5	05	W	1				X									(P.P. Metals)			
GW-2	"	1153	G	" " -2	06	W	5	XX			X	X	X	(P.P. Vol)		(P.P. Phenols)	(P.P. Metals)	(P.P. CNG)	(P.P. Vol)				
GW-2	"	1239	G	" " "	07	W	1				X					(P.P. Semi-Vol)							
GW-1	"	1303	G	" " -1	08	W	2	XX						(P.P. Vol)									
GW-2	"	1315	G	" " -2	09	W	1				X					(P.P. Pest/res)							
GW-1	"	1433	G	" " -1	10	W	1				X						(P.P. Semi-Vol)						
* Note: comp-site fully @ Lab																							

relinquished by: <u>Jeff Contino</u> date: <u>8/14/93</u> time: <u>1622</u> received by: <u>ESTC/Cooper</u>	relinquished by: <u>204 Cooper</u> date: <u>8/20/93</u> time: <u>11:35</u> received by: <u>Raven/Koerner</u>
relinquished by: <u>Raven Koerner</u> date: <u>8/23/93</u> time: <u>12:00</u> received by: <u>ESTC/Cooper</u>	relinquished by: <u>ESTC/Cooper</u> date: <u>8/23/93</u> time: <u>12:00</u> received by: <u>ESTC/Cooper</u>

DISCREPANCY/DEFICIENCY REPORT FORM

TO: Laboratory Manager

FROM: PAW PEARSON / SAMPLE CUSTODY

DATE: 8-20-93

RE: Sample I.D. No. 93-1180
Batch No. _____EXPLANATION: Sample rec'd for GW-2 PP Metals 1153,
Not on COC.

cc: Client report file

ENVIRONMENTAL ANALYTICAL REPORT

REPORT NUMBER: 93-1179

PREPARED FOR:

EMPIRE SOILS INVESTIGATIONS, INC.
S-5167 SOUTH PARK AVENUE
HAMBURG, NEW YORK 14075

RE: ASTECO - WITMER ROAD (BTA-92-273)

PREPARED BY:

HUNTINGDON ANALYTICAL SERVICES
DIVISION OF EMPIRE SOILS INVESTIGATIONS, INC.
P.O. BOX 250
MIDDLEPORT, NEW YORK 14105
TELEPHONE: 716/735-3400; FAX: 716/735-3653

SEPTEMBER 24, 1993

PAGE 1

Huntingdon
Analytical Laboratory

Analytical Services Division

HUNTINGDON ANALYTICAL SERVICES
ELAP #10833
ENVIRONMENTAL REPORT

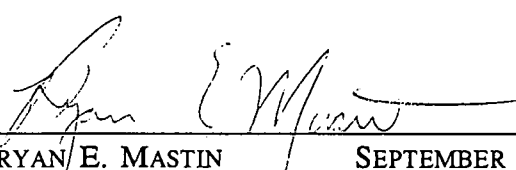
REPORT NUMBER: 93-1179

STATEMENT OF WORK PERFORMED

I HEREBY DECLARE THAT THE WORK WAS PERFORMED UNDER MY SUPERVISION ACCORDING TO THE PROCEDURES OUTLINED BY THE FOLLOWING REFERENCES AND THAT THIS REPORT PROVIDES A CORRECT AND FAITHFUL RECORD OF THE RESULTS OBTAINED.

- 40 CFR PART 136, "GUIDELINES ESTABLISHING TEST PROCEDURES FOR THE ANALYSIS OF POLLUTANTS UNDER THE CLEAN WATER ACT", OCTOBER 26, 1984 (FEDERAL REGISTER) U. S. ENVIRONMENTAL PROTECTION AGENCY.
- U.S. ENVIRONMENTAL PROTECTION AGENCY, "TEST METHODS OF EVALUATING SOLID WASTE - PHYSICAL/CHEMICAL METHODS", OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE, SW-846, 2ND EDITION AND 3RD EDITION.

THIS REPORT CONTAINS ANALYTICAL DATA BASED ON OUR EXAMINATION OF THE SAMPLE(S) PRESENTED TO US. THIS REPORT CONTAINS (EXCEPT WHERE EXPLICITLY STATED) A COMPLETE ACCOUNT OF THE ANALYSES REQUESTED TO BE PERFORMED ON THE SAMPLE(S). INFORMATION WHICH WAS NOT REQUESTED TO BE REPORTED IS NOT INCLUDED.


BRYAN E. MASTIN

SEPTEMBER 24, 1993

ENVIRONMENTAL LABORATORY DIRECTOR

REPORT CODE LEGEND:

<DL = LESS THAN DETECTION LIMIT
ND = NOT DETECTED
NA = NOT APPLICABLE
INP = INFORMATION NOT PROVIDED
MB = METHOD BLANK

Huntingdon
Analytical Laboratory

Analytical Services Division

HUNTINGDON ANALYTICAL SERVICES

Sample ID: GW-1

HAS Sample #93-1179-01

Date Sampled: 8/20/93

Date Prepared: 8/24/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/L)</u>	<u>RESULT ug/L</u>
ANTIMONY	6010	9/08/93	50.0	<50.0
ARSENIC	7060	9/02/93	10.0	<10.0
BERYLLIUM	6010	9/08/93	5.00	<5.00
CADMIUM	6010	9/08/93	5.00	<5.00
CHROMIUM	6010	9/08/93	10.0	<10.0
COPPER	6010	9/08/93	10.0	<10.0
LEAD	7421	8/27/93	5.00	8.9
MERCURY	7470	8/23/93	0.20	<0.20
NICKEL	6010	9/08/93	40.0	<40.0
SELENIUM	7740	9/02/93	5.00	<5.00
SILVER	6010	9/08/93	10.0	<10.0
THALLIUM	7841	9/07/93	10.0	<10.0
ZINC	6010	9/08/93	20.0	84.6

HUNTINGDON ANALYTICAL SERVICES

Sample ID: METHOD BLANK

HAS Sample #93-1179-MB

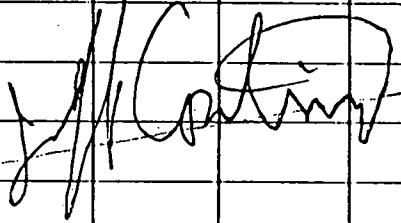
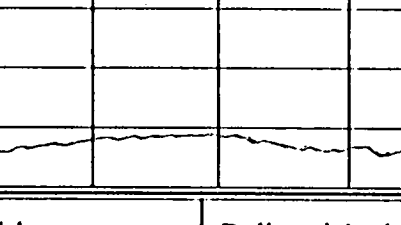
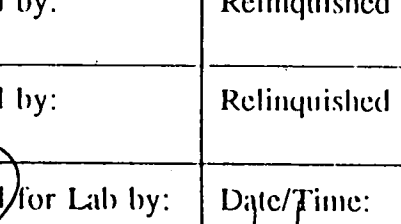
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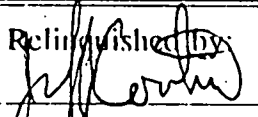
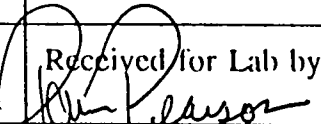
Date Prepared: 8/24/93

<u>ANALYTE</u>	<u>EPA METHOD</u>	<u>DATE ANALYZED</u>	<u>DET.LIMIT (ug/L)</u>	<u>RESULT ug/L</u>
ANTIMONY	6010	9/08/93	50.0	<50.0
ARSENIC	7060	9/02/93	10.0	<10.0
BERYLLIUM	6010	9/08/93	5.00	<5.00
CADMIUM	6010	9/08/93	5.00	<5.00
CHROMIUM	6010	9/08/93	10.0	<10.0
COPPER	6010	9/08/93	10.0	<10.0
LEAD	7421	8/27/93	5.00	<5.00
MERCURY	7470	8/23/93	0.20	<0.20
NICKEL	6010	9/08/93	40.0	<40.0
SELENIUM	7740	9/02/93	5.00	<5.00
SILVER	6010	9/08/93	10.0	<10.0
THALLIUM	7841	9/07/93	10.0	<10.0
ZINC	6010	9/08/93	20.0	<20.0

Page { of

Project No.: BMA-92-273 HAS Quote # _____
Project Site/Name: Astecowat Rd. P.O. # _____
Sampler's Signature: [Signature] HAS Ref. No.: 93-1179

Sample I.D.	Date	Time	Comp or Grab	Sample Location	HAS Seq. #	Matrix	No. of Cont.	Container Size & Type					Analysis Requested/Remarks
								50dm ³ poly					
GW-1	8/20/93	1020	G	well/GW-1	01	W	1	X					P.P. Metals
													
													
													

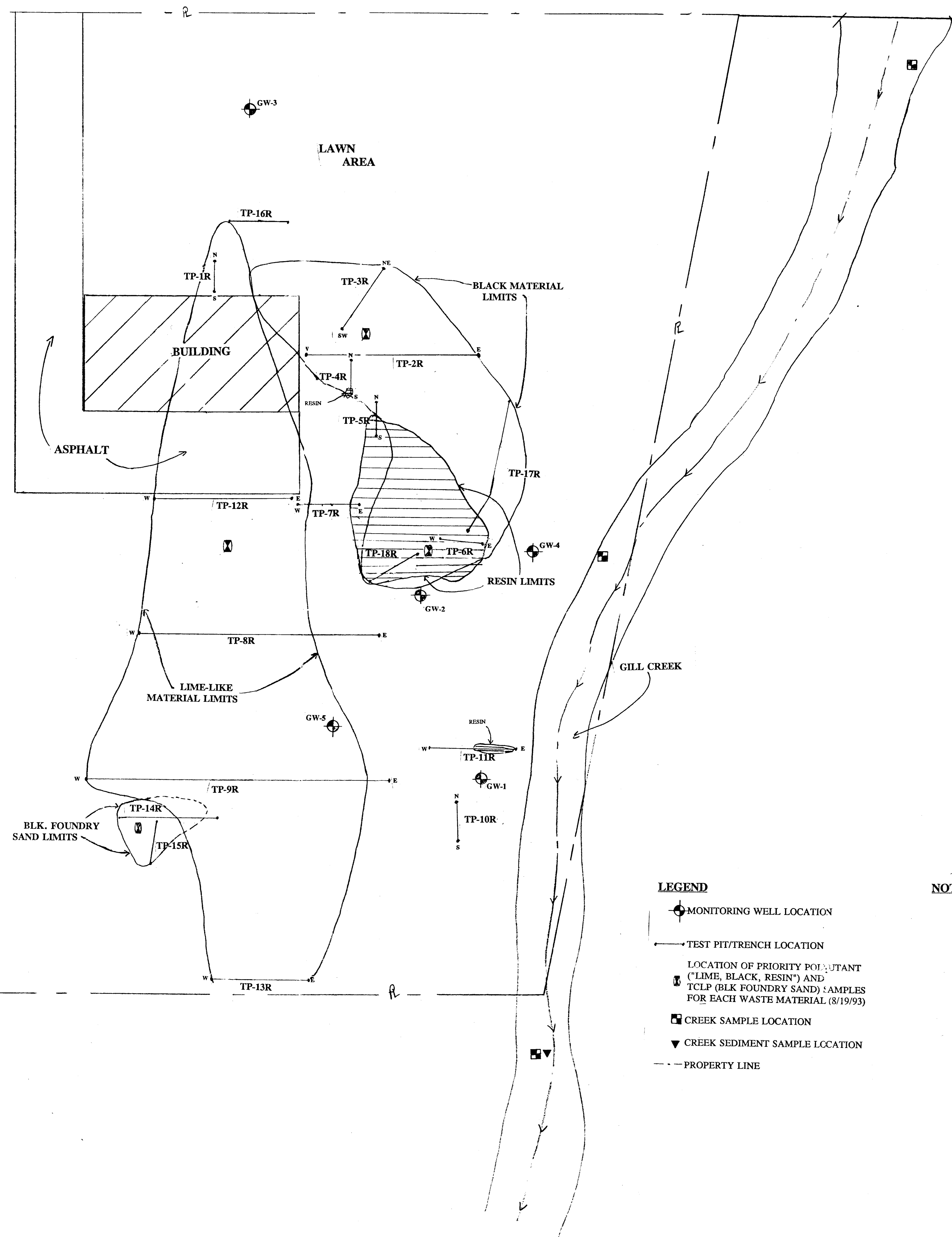
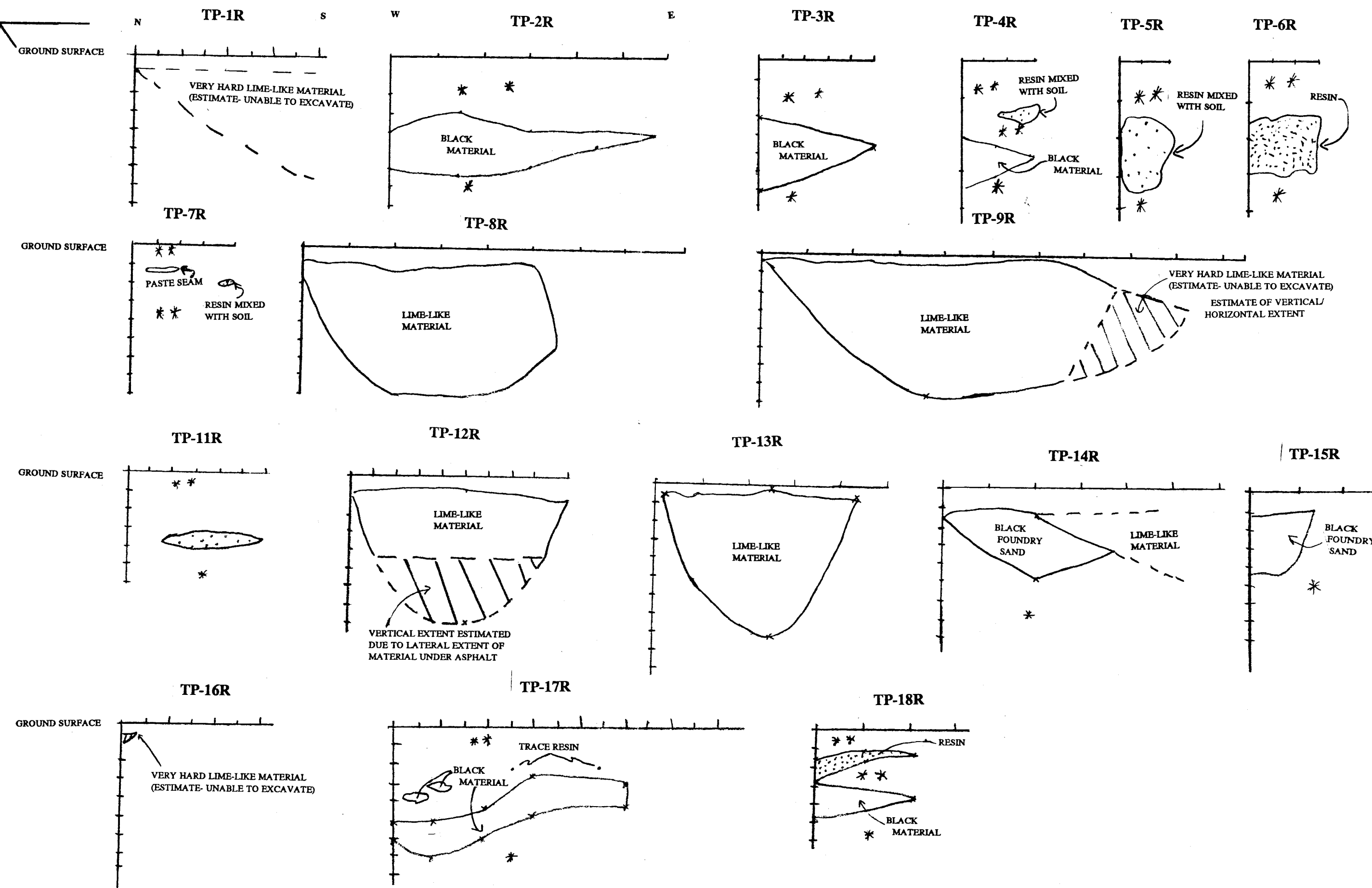
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	8/20/93 1335				
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Relinquished by:	Date/Time:	Received for Lab by:	Date/Time:	Remarks:	
			8/20/93 1335		

WITMER ROAD

** FILL- CLAYEY SILT, BOTTLES, BRICKS, ASPHALT, ETC.

* NATURAL SILTY-CLAY

CROSS SECTIONS



LEGEND

- MONITORING WELL LOCATION
- TEST PIT/TRENCH LOCATION
- LOCATION OF PRIORITY POLLUTANT ("LIME, BLACK, RESIN") AND TCLP (BLK FOUNDRY SAND) SAMPLES FOR EACH WASTE MATERIAL (8/19/93)
- CREEK SAMPLE LOCATION
- ▼ CREEK SEDIMENT SAMPLE LOCATION
- - - PROPERTY LINE

NOTES

1. THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY AND WAS ADAPTED FROM DRAWINGS INCLUDED IN THE REPORTS FOR THE TWO (2) PREVIOUS EMPIRE PROJECTS AT THIS SITE (BTA-89-A,B).
2. MONITORING WELL, TEST PIT/TRENCH, AND SAMPLING POINT LOCATIONS WERE LOCATED IN THE FIELD BY TAPED MEASUREMENTS FROM SITE FEATURES AND THE EXISTING DRAWINGS USING THE SCALE NOTED. THESE LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.
3. IN AREAS DENOTED AS HAVING WASTE OVERLAP, BLACK MATERIAL UNDERLIES RESIN.
4. APPROXIMATE WASTE QUANTITIES:
 - a) Lime-like Material = 2,750 cubic yards
 - b) Black Material = 700 cubic yards
 - c) Resin = 90 cubic yards
 - d) Blk Foundry Sand = 60 cubic yards

EMPIRE
 SOILS INVESTIGATIONS INC.

ASTECO- WITMER ROAD PROPERTY

SCALE: 1"=20'	BTA-92-273	DRAWN BY JC
DATE: 8/25/93	DBA	REVISED

TEST PIT EXCAVATION PLAN/CROSS SECTIONS

DRAWING NUMBER
1