38784

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Paul C. Rizzo Associates, Inc.
CONSULTANTS

Phase I Site Investigation Report

Volume II Appendices E Through G

Phase I Study Area Investigation

Pulverizing Services Site
Moorestown, New Jersey

PPG Industries, Inc.
Pittsburgh, Pennsylvania

Revision 1

300454

APPENDIX E

300455

APPENDIX E

LABORATORY DATA

300456

LABORATORY DATA
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TABLE E - 1

SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE	1/5/90	12/15/89	12/21/89		12/17/89	12/20/89	1/4/90
	LABORATORY	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS		LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	FIELD SAMPLE ID NO.	B-1	B2A	B-6		B-7	B-8	B-11
	SAMPLE DESCRIPTION	Soil Boring	Soil Boring	Soil Boring		Soil Boring	Soil Boring	Soil Boring
	LAB SAMPLE ID NO.	PPG B1/S3A	PPG B2A/S1	PPG B6/S3A	PPG B6/S3B	PPG B7/S3-A	PPG B8/S3A	PPG B11/S3A
	TIME	1015	850	1200	1200	1500	1430	1430
	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.	4-7'	5-6.5'	5-8'	5-8'	5-7'	5-7'	4-7'
	INORGANICS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	Aluminum	7,160	10,100	2,570	2,100	10,400	8,570	8,980
	Antimony	6u	6u	5u	19	6u	6u	7u
	Arsenic	6u	1u	11	14	6u	6u	17
	Barium	40	50	50	160	80	30	50
	Beryllium	0.6u	0.6u	0.5u	3	0.6u	0.7	1
	Cadmium	0.6u	0.6u	0.5u	2.8	0.6u	0.6u	0.7u
	Calcium	260	150	30	260	40	290	610
	Chromium	7	8	4	17	53	13	22
	Cobalt	6u	7	5u	31	6u	6u	7u
	Copper	4	8	2u	20	30	5	12
	Iron	10,600	6,000	3,670	4,610	13,800	10,700	17,600
	Lead	4	6.5	13.1	18	3.5	6.9	9.1
	Magnesium	350	520	70	190	330	650	840
	Manganese	184	156	6	37	14	30	65
	Mercury	0.04u	0.05u	0.04u	0.15	0.05u	0.05u	0.05u
	Nickel	4u	5	4u	31	5u	5u	11
	Potassium	240	320	130	0.6	200	570	1,420
	Selenium	0.6u	0.6u	0.5u	360	0.6u	0.6u	0.7u
	Silver	1u	1u	1u	3	1u	1u	1u
	Sodium	60u	60u	50u	230	60u	60u	80
	Thallium	1u	1u	1u	3	1u	1u	1u
	Vanadium	14	12	5	37	19	20	41
	Zinc	8	13	6	35	30	90	33
	Cyanide	0.1u	0.1u	0.1u	8.5	0.1u	0.1u	0.1u

Notes:

u Compound was not detected.

mg/kg Milligram per kilogram.

[#] Compound detected above detection limits.

30 0459

TABLE E - 1
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

CAS NUMBER					
	DATE.....	1/4/90	1/4/90	1/6/90	1/9/90
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-11	B-19	B-20	SED-1
	SAMPLE DESCRIPTION....	Soil Boring	Soil Boring	Soil Boring	Sediment
	LAB SAMPLE ID NO.....	PPG B11/S3B	PPG B19/S3A	PPG B-20/S3A	SED-1
	TIME.....	1430	0830	1305	1030
	MATRIX.....	SOIL	SOIL	SOIL	SEDIMENT
	DEPTH, FT.....	4-7'	4-7'	4-7'	
	INORGANICS	mg/kg	mg/kg	mg/kg	mg/kg
	Aluminum	7,140	3,220	10,800	5,870
	Antimony	7u	6u	5u	9u
	Arsenic	17	1u	5u	5
	Barium	40	20u	20u	40u
	Beryllium	0.8	0.6u	0.8	0.9u
	Cadmium	0.7u	0.6u	0.5u	4.3
	Calcium	550	310	20	310
	Chromium	20	8	17	8
	Cobalt	7u	6u	5u	9u
	Copper	11	3	25	54
	Iron	19,500	3,450	21,100	15,100
	Lead	9	2.4	4.5	22.9
	Magnesium	640	540	370	280
	Manganese	57	28	63	60
	Mercury	0.05u	0.05u	0.08	0.21
	Nickel	9	5u	6	7
	Potassium	1u	540	350	230
	Selenium	0.7u	0.6u	0.5u	4.3
	Silver	1u	1u	1u	2u
	Sodium	70u	60u	50u	90u
	Thallium	1u	1u	1u	2u
	Vanadium	39	9	26	9
	Zinc	28	9	14	304
	Cyanide	0.1u	0.1u	0.1u	0.2

Notes:

u Compound was not detected.

mg/kg Milligram per kilogram.

[#] Compound detected above detection limi

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TABLE E - 2

SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

CAS NUMBER							
	DATE	1/5/90	12/15/89	12/21/89		12/17/89	12/20/89
	LABORATORY	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS		LANCASTER LABS	LANCASTER LABS
	FIELD SAMPLE ID NO.	B-1	B2A	B-6		B-7	B-8
	SAMPLE DESCRIPTION	Soil Boring	Soil Boring	Soil Boring		Soil Boring	Soil Boring
	LAB SAMPLE ID NO.	PPG B1/S3A	PPG B2A/S1	PPG B6/S3A	PPG B6/S3B	PPG B7/S3-A	PPG B8/S3A
	TIME	1015	850	1200	1200	1500	1436
	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	DEPTH, FT	4-7'	5-6.5'	5-8'	5-8'	5-7'	5-7'
	TCL ORGANICS - VOLATILES	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
74-87-3	Chloromethane	11u	12u	12u	10u	12u	11u
74-83-9	Bromomethane	11u	12u	12u	10u	12u	11u
75-01-4	Vinyl Chloride	11u	12u	12u	10u	12u	11u
75-00-3	Chloroethane	11u	12u	12u	10u	12u	11u
75-09-2	Methylene Chloride	6u	6u	110	73	6u	9
67-64-1	Acetone	43	41	69	77	64	79
75-15-0	Carbon Disulfide	6u	6u	6u	5u	6u	6u
75-35-4	1,1-Dichloroethene	6u	6u	6u	64	6u	6u
75-34-3	1,1-Dichloroethane	6u	6u	6u	5u	6u	6u
	1,2-Dichloroethene (total)	6u	6u	6u	5u	6u	6u
67-66-3	Chloroform	6u	6u	6u	5u	6u	6u
107-06-2	1,2-Dichloroethane	6u	6u	6u	5u	6u	6u
78-93-3	2-Butanone	11u	12u	12u	10u	12u	11u
71-55-5	1,1,1-Trichloroethane	6u	6u	6u	5u	6u	6u
56-23-5	Carbon Tetrachloride	6u	6u	6u	5u	6u	6u
108-05-4	Vinyl Acetate	11u	12u	6u	10u	12u	11u
75-27-4	Bromodichloromethane	6u	6u	6u	5u	6u	6u
78-87-5	1,2-Dichloropropane	6u	6u	6u	5u	6u	6u
	cis-1,3-Dichloropropene	6u	6u	6u	5u	6u	6u
79-01-6	Trichloroethene	6u	6u	6u	55	6u	6u
124-48-1	Dibromochloromethane	6u	6u	6u	5u	6u	6u
79-00-5	1,1,2-Trichloroethane	6u	6u	6u	5u	6u	6u
71-43-2	Benzene	6u	6u	6u	54	6u	6u

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TABLE E - 2
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/5/90	12/15/89	12/21/89		12/17/89	12/20/89
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS		LANCASTER LABS	LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-1	B2A	B-6		B-7	B-8
	SAMPLE DESCRIPTION...	Soil Boring	Soil Boring	Soil Boring		Soil Boring	Soil Boring
	LAB SAMPLE ID NO.....	PPG B1/S3A	PPG B2A/S1	PPG B6/S3A	PPG B6/S3B	PPG B7/S3-A	PPG B8/S3A
	TIME.....	1015	850	1200	1200	1500	1436
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	4-7'	5-6.5'	5-8'	5-8'	5-7'	5-7'
	TCL ORGANICS - VOLATILES	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
	trans-1,3-Dichloropropene	6u	6u	6u	5u	6u	6u
75-25-2	Bromoform	6u	6u	6u	5u	6u	6u
108-10-1	4-Methyl-2-Pentanone	11u	12u	12u	10u	12u	11u
591-78-6	2-Hexanone	11u	12u	12u	10u	12u	11u
	Tetrachloroethene	6u	6u	6u	5u	6u	6u
79-34-5	1,1,2,2-Tetrachloroethane	6u	6u	6u	5u	6u	6u
108-88-3	Toluene	6u	6u	7	68	6u	6u
108-90-7	Chlorobenzene	6u	6u	6u	58	6u	6u
100-41-4	Ethylbenzene	6u	6u	6u	5	6u	6u
100-42-5	Styrene	6u	6u	6u	5u	6u	6u
	Total Xylenes	6u	6u	25	30	6u	6u

Notes:

u Compound was not detected.

ug/kg Microgram per kilogram.

[#] Compound detected above detection limits.

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SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/4/90		1/4/90	1/6/90	1/9/90
	LABORATORY.....	LANCASTER LABS		LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-11		B-19	B-20	SED-1
	SAMPLE DESCRIPTION...	Soil Boring		Soil Boring	Soil Boring	Sediment
	LAB SAMPLE ID NO.....	PPG B11/S3A	PPG B11/S3B	PPG B19/S3A	PPG B-20/S3A	SED-1
	TIME.....	1430	1430	0830	1305	1030
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SEDIMENT
CAS NUMBER	DEPTH, FT.....	4-7'	4-7'	4-7'	4-7'	
	TCL ORGANICS - VOLATILES	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
74-87-3	Chloromethane	14u	14u	12u	11u	18u
74-83-9	Bromomethane	14u	14u	12u	11u	18u
75-01-4	Vinyl Chloride	14u	14u	12u	11u	18u
75-00-3	Chloroethane	14u	14u	12u	11u	18u
75-09-2	Methylene Chloride	27	20	33	5u	9u
67-64-1	Acetone	45	68	95	46	93
75-15-0	Carbon Disulfide	7u	7u	6u	5u	9u
75-35-4	1,1-Dichloroethene	7u	7u	6u	5u	9u
75-34-3	1,1-Dichloroethane	7u	7u	6u	5u	9u
	1,2-Dichloroethene (total)	7u	7u	6u	5u	9u
67-66-3	Chloroform	7u	7u	6u	5u	9u
107-06-2	1,2-Dichloroethane	7u	7u	6u	5u	9u
78-93-3	2-Butanone	14u	14u	12u	11u	18u
71-55-5	1,1,1-Trichloroethane	7u	7u	6u	5u	9u
56-23-5	Carbon Tetrachloride	7u	7u	6u	5u	9u
108-05-4	Vinyl Acetate	14u	14u	12u	11u	18u
75-27-4	Bromodichloromethane	7u	7u	6u	5u	9u
78-87-5	1,2-Dichloropropane	7u	7u	6u	5u	9u
	cis-1,3-Dichloropropene	7u	7u	6u	5u	9u
79-01-6	Trichloroethene	7u	7u	6u	5u	9u
124-48-1	Dibromochloromethane	7u	7u	6u	5u	9u
79-00-5	1,1,2-Trichloroethane	7u	7u	6u	5u	9u
71-43-2	Benzene	7u	7u	6u	5u	10

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TABLE E - 2
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/4/90		1/4/90	1/6/90	1/9/90
	LABORATORY.....	LANCASTER LABS		LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-11		B-19	B-20	SED-1
	SAMPLE DESCRIPTION...	Soil Boring		Soil Boring	Soil Boring	Sediment
	LAB SAMPLE ID NO.....	PPG B11/S3A	PPG B11/S3B	PPG B19/S3A	PPG B-20/S3A	SED-1
	TIME.....	1430	1430	0830	1305	1030
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SEDIMENT
CAS NUMBER	DEPTH, FT.....	4-7'	4-7'	4-7'	4-7'	
	TCL ORGANICS - VOLATILES	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
	trans-1,3-Dichloropropene	7u	7u	6u	5u	9u
75-25-2	Bromoform	7u	7u	6u	5u	9u
108-10-1	4-Methyl-2-Pentanone	14u	14u	12u	11u	18u
591-78-6	2-Hexanone	14u	14u	12u	11u	18u
	Tetrachloroethene	7u	7u	6u	5u	10
79-34-5	1,1,2,2-Tetrachloroethane	7u	7u	6u	5u	9u
108-88-3	Toluene	7u	7u	6u	5u	9u
108-90-7	Chlorobenzene	7u	7u	6u	5u	32
100-41-4	Ethylbenzene	7u	7u	6u	5u	10
100-42-5	Styrene	7u	7u	6u	5u	9u
	Total Xylenes	7u	7u	6u	5u	98

Notes:

u Compound was not detected.

ug/kg Microgram per kilogram.

[#] Compound detected above detection lim

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SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

CAS NUMBER							
	DATE.....	1/5/90	12/15/89	12/21/89		12/17/89	12/20/89
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS		LANCASTER LABS	LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-1	B2A	B-6		B-7	B-8
	SAMPLE DESCRIPTION...	Soil Boring	Soil Boring	Soil Boring		Soil Boring	Soil Boring
	LAB SAMPLE ID NO.....	PPG B1/S3A	PPG B2A/S1	PPG B6/S3A	PPG B6/S3B	PPG B7/S3-A	PPG B8/S3A
	TIME.....	1015	850	1200	1200	1500	1436
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	DEPTH, FT.....	4-7'	5-6.5'	5-8'	5-8'	5-7'	5-7'
	ORGANICS -SEMI VOLATILES	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
108-95-2	Phenol	370u	390u	4,100u	4,900	400u	380u
111-44-4	bis(-2-Chloroethyl)Ether	370u	390u	4,100u	3,300u	400u	380u
95-57-8	2-Chlorophenol	370u	390u	4,100u	4,800	400u	380u
541-73-1	1,3-Dichlorobenzene	370u	390u	4,100u	3,300u	400u	380u
106-46-7	1,4-Dichlorobenzene	370u	390u	4,100u	3,300u	400u	380u
100-51-6	Benzyl Alcohol	370u	390u	4,100u	3,300u	400u	380u
95-50-1	1,2-Dichlorobenzene	370u	390u	4,100u	3,300u	400u	380u
95-48-7	2-Methylphenol	370u	390u	4,100u	3,300u	400u	380u
39638-32-9	bis(2-chloroisopropyl)Ether	370u	390u	4,100u	3,300u	400u	380u
106-44-5	4-Methylphenol	370u	390u	4,100u	3,300u	400u	380u
621-64-7	N-Nitroso-Di-n-Propylamine	370u	390u	4,100u	3,300u	400u	380u
67-72-1	Hexachloroethane	370u	390u	4,100u	3,300u	400u	380u
98-95-3	Nitrobenzene	370u	390u	4,100u	3,300u	400u	380u
78-59-1	Isophorone	370u	390u	4,100u	3,300u	400u	380u
88-75-5	2-Nitrophenol	370u	390u	4,100u	3,300u	400u	380u
105-67-9	2,4-Dimethylphenol	370u	390u	4,100u	3,300u	400u	380u
65-85-0	Benzoic Acid	1,900u	2,000u	21,000u	17,000u	2,100u	2,000u
111-91-1	bis(-2-Chloroethoxy)Methane	370u	390u	4,100u	3,300u	400u	380u
120-83-2	2,4-Dichlorophenol	370u	390u	4,100u	3,300u	400u	380u
120-82-1	1,2,4-Trichlorobenzene	370u	390u	4,100u	3,300u	400u	380u
91-20-3	Naphthalene	370u	390u	4,100u	3,300u	400u	380u
106-47-8	4-Chloroaniline	370u	390u	4,100u	3,300u	400u	380u
87-68-3	Hexachlorobutadiene	370u	390u	4,100u	3,300u	400u	380u
59-50-7	4-Chloro-3-Methylphenol	370u	390u	4,100u	4,500	400u	380u

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TABLE - 3
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/5/90	12/15/89	12/21/89		12/17/89	12/20/89
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS		LANCASTER LABS	LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-1	B2A	B-6		B-7	B-8
	SAMPLE DESCRIPTION...	Soil Boring	Soil Boring	Soil Boring		Soil Boring	Soil Boring
	LAB SAMPLE ID NO.....	PPG B1/S3A	PPG B2A/S1	PPG B6/S3A	PPG B6/S3B	PPG B7/S3-A	PPG B8/S3A
	TIME.....	1015	850	1200	1200	1500	1436
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	4-7'	5-6.5'	5-8'	5-8'	5-7'	5-7'
	ORGANICS -SEMI VOLATILES	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
91-57-6	2-Methylnapthalene	370u	390u	4,100u	3,300u	400u	380u
77-47-4	Hexachlorocyclopentadiene	370u	390u	4,100u	3,300u	400u	380u
88-06-2	2,4,6-Trichlorophenol	370u	2,000u	4,100u	3,300u	400u	380u
95-95-4	2,4,5-Trichlorophenol	1,900u	390u	21,000u	17,000u	2,100u	2,000u
91-58-7	2-Chloronapthalene	370u	390u	4,100u	3,300u	400u	380u
88-74-4	2-Nitroaniline	1,900u	2,000u	21,000u	17,000u	2,100u	2,000u
131-11-3	Dimethyl Phthalate	370u	390u	4,100u	3,300u	400u	380u
208-96-8	Acenaphthylene	370u	390u	4,100u	3,300u	400u	380u
99-09-2	3-Nitroaniline	1,900u	2,000u	21,000u	17,000u	2,100u	2,000u
83-32-9	Acenaphthene	370u	390u	4,100u	3,300u	400u	380u
51-28-5	2,4-Dinitophenol	1,900u	2,000u	21,000u	17,000u	2,100u	2,000u
100-02-7	4-Nitrophenol	1,900u	2,000u	21,000u	17,000u	2,100u	2,000u
132-64-9	Dibenzofuran	370u	390u	4,100u	3,300u	400u	380u
121-14-2	2,4-Dinitrotoluene	370u	390u	4,100u	3,300u	400u	380u
606-20-2	2,6-Dinitrotolune	370u	390u	4,100u	3,300u	400u	380u
84-66-2	Diethylphthalate	370u	390u	4,100u	3,300u	400u	380u
7005-72-3	4-Chlorophenyl-phenylether	370u	390u	4,100u	3,300u	400u	380u
86-73-7	Fluorene	370u	390u	4,100u	3,300u	400u	380u
100-01-6	4-Nitroaniline	1,900u	2,000u	21,000u	17,000u	2,100u	2,000u
534-52-1	4,6-Dinitro-2-Methylphenol	1,900u	2,000u	21,000u	17,000u	2,100u	2,000u
86-30-6	N-Nitrosodiphenylamine	370u	390u	4,100u	3,300u	400u	380u
101-55-3	4-Bromophenyl-phenyl ether	370u	390u	4,100u	3,300u	400u	380u
118-74-1	Hexachlorobenzene	370u	390u	4,100u	3,300u	400u	380u
87-86-5	Pentachlorophenol	1,900u	2,.000u	21,000u	17,000u	2,100u	2,000u

300466

SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/5/90	12/15/89	12/21/89		12/17/89	12/20/89
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS		LANCASTER LABS	LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-1	B2A	B-6		B-7	B-8
	SAMPLE DESCRIPTION...	Soil Boring	Soil Boring	Soil Boring		Soil Boring	Soil Boring
	LAB SAMPLE ID NO.....	PPG B1/S3A	PPG B2A/S1	PPG B6/S3A	PPG B6/S3B	PPG B7/S3-A	PPG B8/S3A
	TIME.....	1015	850	1200	1200	1500	1436
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	4-7'	5-6.5'	5-8'	5-8'	5-7'	5-7'
	ORGANICS -SEMI VOLATILES	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
85-01-8	Phenanthrene	370u	390u	4,100u	3,300u	400u	380u
120-12-7	Anthracene	370u	390u	4,100u	3,300u	400u	380u
84-74-2	Di-n-Butyl phthalate	370u	390u	4,100u	3,300u	400u	380u
206-44-0	Fluoranthene	370u	390u	4,100u	3,300u	400u	380u
129-00-0	Pyrene	370u	390u	4,100u	3,300u	400u	380u
85-68-7	Butylbenzylphthalate	370u	390u	4,100u	3,300u	400u	380u
91-94-1	3,3'-Dichlorobenzidine	750u	790u	8,200u	6,700u	820u	770u
56-55-3	Benzo(a)Anthracene	370u	390u	4,100u	3,300u	400u	380u
117-81-7	bis(2-Ethylhexyl)Phthalate	370u	390u	4,100u	3,300u	400u	380u
218-01-9	Chrysene	370u	390u	4,100u	3,300u	400u	380u
117-84-0	Di-n-Octyl Phthalate	370u	390u	4,100u	3,300u	400u	380u
205-99-2	Benzo(b)Fluoranthene	370u	390u	4,100u	3,300u	400u	380u
207-08-9	Benzo(k)Fluoranthene	370u	390u	4,100u	3,300u	400u	380u
50-32-8	Benzo(a)Pyrene	370u	390u	4,100u	3,300u	400u	380u
193-39-5	Indeno(1,2,3-cd)Pyrene	370u	390u	4,100u	3,300u	400u	380u
53-70-3	Dibenz(a,h)Anthracene	370u	390u	4,100u	3,300u	400u	380u
191-24-2	Benzo(ghi)Perylene	370u	390u	4,100u	3,300u	400u	380u

Notes:

u Compound was not detected.

ug/kg Microgram per kilogram.

[#] Compound detected above detection limits.

300467

TABLE E - 3
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/4/90		1/4/90	1/6/90	1/9/90
	LABORATORY.....	LANCASTER LABS		LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-11		B-19	B-20	SED-1
	SAMPLE DESCRIPTION...	Soil Boring		Soil Boring	Soil Boring	Sediment
	LAB SAMPLE ID NO.....	PPG B11/S3A	PPG B11/S3B	PPG B19/S3A	PPG B-20/S3A	SED-1
	TIME.....	1430	1430	0830	1305	1030
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SEDIMENT
CAS NUMBER	DEPTH, FT.....	4-7'	4-7'	4-7'	4-7'	
	ORGANICS -SEMI VOLATILES	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
108-95-2	Phenol	810	500	380u	380u	360u
111-44-4	bis(-2-Chloroethyl)Ether	450u	450u	380u	380u	360u
95-57-8	2-Chlorophenol	450u	450u	380u	380u	360u
541-73-1	1.3-Dichlorobenzene	450u	450u	380u	380u	360u
106-46-7	1,4-Dichlorobenzene	450u	450u	380u	380u	360u
100-51-6	Benzyl Alcohol	450u	450u	380u	380u	360u
95-50-1	1,2-Dichlorobenzene	450u	450u	380u	380u	360u
95-48-7	2-Methylphenol	450u	450u	380u	380u	360u
39638-32-9	bis(2-chloroisopropyl)Ether	450u	450u	380u	380u	360u
106-44-5	4-Methylphenol	450u	450u	380u	380u	360u
621-64-7	N-Nitroso-Di-n-Propylamine	450u	450u	380u	380u	360u
67-72-1	Hexachloroethane	450u	450u	380u	380u	360u
98-95-3	Nitrobenzene	450u	450u	380u	380u	360u
78-59-1	Isophorone	450u	450u	380u	380u	360u
88-75-5	2-Nitrophenol	450u	450u	380u	380u	360u
105-67-9	2,4-Dimethylphenol	450u	450u	380u	380u	360u
65-85-0	Benzoic Acid	2,300u	2,300u	2,000u	2,000u	1,900u
111-91-1	bis(-2-Chloroethoxy)Methane	450u	450u	380u	380u	360u
120-83-2	2,4-Dichlorophenol	450u	450u	380u	380u	360u
120-82-1	1,2,4-Trichlorobenzene	450u	450u	380u	380u	360u
91-20-3	Naphthalene	450u	450u	380u	380u	360u
106-47-8	4-Chloroaniline	450u	450u	380u	380u	360u
87-68-3	Hexachlorobutadiene	450u	450u	380u	380u	360u
59-50-7	4-Chloro-3-Methylphenol	450u	450u	380u	380u	360u

30U468

TABLE E - 3

SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/4/90		1/4/90	1/6/90	1/9/90
	LABORATORY.....	LANCASTER LABS		LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-11		B-19	B-20	SED-1
	SAMPLE DESCRIPTION...	Soil Boring		Soil Boring	Soil Boring	Sediment
	LAB SAMPLE ID NO.....	PPG B11/S3A	PPG B11/S3B	PPG B19/S3A	PPG B-20/S3A	SED-1
	TIME.....	1430	1430	0830	1305	1030
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SEDIMENT
CAS NUMBER	DEPTH, FT.....	4-7'	4-7'	4-7'	4-7'	
	ORGANICS -SEMI VOLATILES	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
91-57-6	2-Methylnapthalene	450u	450u	380u	380u	360u
77-47-4	Hexachlorocyclopentadiene	450u	450u	380u	380u	360u
88-06-2	2,4,6-Trichlorophenol	450u	450u	380u	380u	360u
95-95-4	2,4,5-Trichlorophenol	2,300u	2,300u	2,000u	2,000u	1,900u
91-58-7	2-Chloronapthalene	450u	450u	380u	380u	360u
88-74-4	2-Nitroaniline	2,300u	2,300u	2,000u	2,000u	1,900u
131-11-3	Dimethyl Phthalate	450u	450u	380u	380u	360u
208-96-8	Acenaphthylene	450u	450u	380u	380u	360u
99-09-2	3-Nitroaniline	2,300u	2,300u	2,000u	2,000u	1,900u
83-32-9	Acenaphthene	450u	450u	380u	380u	360u
51-28-5	2,4-Dinitophenol	2,300u	2,300u	2,000u	2,000u	1,900u
100-02-7	4-Nitrophenol	2,300u	2,300u	2,000u	2,000u	1,900u
132-64-9	Dibenzofuran	450u	450u	380u	380u	360u
121-14-2	2,4-Dinitrotoluene	450u	450u	380u	380u	360u
606-20-2	2,6-Dinitrotolune	450u	450u	380u	380u	360u
84-66-2	Diethylphthalate	450u	450u	380u	380u	360u
7005-72-3	4-Chlorophenyl-phenylether	450u	450u	380u	380u	360u
86-73-7	Fluorene	450u	450u	380u	380u	360u
100-01-6	4-Nitroaniline	2,300u	2,300u	2,000u	2,000u	1,900u
534-52-1	4,6-Dinitro-2-Methylphenol	2,300u	2,300u	2,000u	2,000u	1,900u
86-30-6	N-Nitrosodiphenylamine	450u	450u	380u	380u	360u
101-55-3	4-Bromophenyl-phenyl ether	450u	450u	380u	380u	360u
118-74-1	Hexachlorobenzene	450u	450u	380u	380u	360u
87-86-5	Pentachlorophenol	2,300u	2,300u	2,000u	2,000u	1,900u

300449

TABLE E - 3
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/4/90		1/4/90	1/6/90	1/9/90
	LABORATORY.....	LANCASTER LABS		LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-11		B-19	B-20	SED-1
	SAMPLE DESCRIPTION...	Soil Boring		Soil Boring	Soil Boring	Sediment
	LAB SAMPLE ID NO.....	PPG B11/S3A	PPG B11/S3B	PPG B19/S3A	PPG B-20/S3A	SED-1
	TIME.....	1430	1430	0830	1305	1030
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SEDIMENT
CAS NUMBER	DEPTH, FT.....	4-7'	4-7'	4-7'	4-7'	
	ORGANICS -SEMI VOLATILES	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
85-01-8	Phenanthrene	450u	450u	380u	380u	360u
120-12-7	Anthracene	450u	450u	380u	380u	360u
84-74-2	Di-n-Butyl phthalate	450u	450u	380u	380u	360u
206-44-0	Fluoranthene	450u	450u	380u	380u	360u
129-00-0	Pyrene	450u	450u	380u	380u	360u
85-68-7	Butylbenzylphthalate	450u	450u	380u	380u	360u
91-94-1	3,3'-Dichlorobenzidine	910u	910u	780u	780u	730u
56-55-3	Benzo(a)Anthracene	450u	450u	380u	380u	360u
117-81-7	bis(2-Ethylhexyl)Phthalate	450u	450u	380u	380u	360u
218-01-9	Chrysene	450u	450u	380u	380u	360u
117-84-0	Di-n-Octyl Phthalate	450u	450u	380u	380u	360u
205-99-2	Benzo(b)Fluoranthene	450u	450u	380u	380u	360u
207-08-9	Benzo(k)Fluoranthene	450u	450u	380u	380u	360u
50-32-8	Benzo(a)Pyrene	450u	450u	380u	380u	360u
193-39-5	Indeno(1,2,3-cd)Pyrene	450u	450u	380u	380u	360u
53-70-3	Dibenz(a,h)Anthracene	450u	450u	380u	380u	360u
191-24-2	Benzo(ghi)Perylene	450u	450u	380u	380u	360u

300470

Notes:

u Compound was not detected.

ug/kg Microgram per kilogram.

Compound detected above detection lim

SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/5/90			12/14/89		12/15/89
	LABORATORY.....	LANCASTER LABS			LANCASTER LABS		LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-1			B-2		B-3
	SAMPLE DESCRIPTION...	Soil Boring			Soil Boring		Soil Boring
	LAB SAMPLE ID NO.....	PPG B1/S3A	PPG B1/S6	PPG B-2/S-1	PPG B-2/S-5	PPG B2A/S1	PPG B-3/S1
	TIME.....	1015	1035	1230	1420	850	1050
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	4-7'	10-12'	0-2'	10-12'	5-6.5'	0-2'
	ORGANICS - Pesticides/Herbicides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	90u	9u	900u	40	12	900u
319-85-7	Beta-BHC	90u	9u	900u	10u	9u	900u
319-896-8	Delta-BHC	90u	9u	900u	10u	9u	900u
58-89-9	Gamma-BHC-Lindane	90u	9u	900u	20	9u	900u
76-44-8	Heptachlor	90u	9u	900u	10u	9u	900u
309-00-2	Aldrin	90u	9u	900u	10u	9u	900u
1024-67-3	Heptachlor Epoxide	90u	9u	900u	10u	9u	900u
959-98-8	Endosulfan I	90u	9u	900u	10u	9u	900u
60-57-1	Dieldrin	180u	18u	3,100	21	22	4,100
72-55-9	4,4'-DDE	180u	18	3,700	20u	19u	4,900
72-20-8	Endrin	180u	18u	1,800u	20u	19u	1,800u
33213-65-9	Endosulfan II	180u	18u	1,800u	20u	19u	1,800u
72-54-8	4,4'-DDD	280u	60u	5,500	20u	19u	7,700
1031-07-8	Endosulfan Sulfate	180u	18u	1,800u	20u	19u	1,800u
50-29-3	4,4'-DDT	9,750	148	185,000	56	45	257,000
53494-70-5	Endrin Ketone	180u	18u	1,800	20u	19u	1,800u
72-43-5	Methoxychlor	900u	90u	9,000u	100u	90u	9,000u
	Alpha Chlordane	900u	90u	9,000u	100u	90u	9,000u
	Gamma Chlordane	900u	90u	9,000u	100u	90u	9,000u
8001-35-2	Toxaphene	1,800u	180u	18,000u	200u	190u	100,000u
	Carbaryl	100u	100u	100u	100u	100u	200
	Malathion	60u	60u	60u	60u	60u	60u
	Pentachloronitrobenzene	370u	380u	370u	420u	390u	370u

300471

TABLE E - 4
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/5/90			12/14/89		12/15/89
	LABORATORY.....	LANCASTER LABS			LANCASTER LABS		LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-1			B-2		B-3
	SAMPLE DESCRIPTION...	Soil Boring			Soil Boring		Soil Boring
	LAB SAMPLE ID NO.....	PPG B1/S3A	PPG B1/S6	PPG B-2/S-1	PPG B-2/S-5	PPG B2A/S1	PPG B-3/S1
	TIME.....	1015	1035	1230	1420	850	1050
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	4-7'	10-12'	0-2'	10-12'	5-6.5'	0-2'
	ORGANICS - Pesticides/Herbicides/PCBs/S	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016	900u	90u	9 ,000u	100u	90u	9,000u
11104-28-2	Aroclor-1221	900u	90u	9 ,000u	100u	90u	9,000u
11141-16-5	Aroclor-1232	900u	90u	9 ,000u	100u	90u	9,000u
53469-21-9	Aroclor-1242	900u	90u	9 ,000u	100u	90u	9,000u
12672-29-6	Aroclor-1248	900u	90u	9 ,000u	100u	90u	9,000u
11097-69-1	Aroclor-1254	1,800u	180u	18,000u	200u	190u	18,000u
11096-82-5	Aroclor-1260	1,800u	180u	18,000u	200u	190u	18,000u

Notes:

u Compound was not detected.

ug/kg Microgram per kilogram.

[#] Compound detected above detection limits.

300472

SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	12/15/89			12/19/89		12/11/89
	LABORATORY.....	LANCASTER LABS			LANCASTER LABS		LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-3			B-4		B-5
	SAMPLE DESCRIPTION...	Soil Boring			Soil Boring		Soil Boring
	LAB SAMPLE ID NO.....	PPG B-3/S3	PPG B-3/S5	PPG B-4/S1	PPG B4/S3	PPG B-4/S5	PPG B5/S-4
	TIME.....	1105	1120	1615	1630	1145	1330
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	5-7'	10-12'	0-2'	5-7'	10-12'	7.5-9.5'
	ORGANICS - Pesticides/Herbicides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	9u	14	90u	10u	9u	21
319-85-7	Beta-BHC	9u	10u	90u	10u	9u	9u
319-896-8	Delta-BHC	9u	10u	90u	10u	9u	9u
58-89-9	Gamma-BHC-Lindane	9u	11	90u	10u	9u	9
76-44-8	Heptachlor	9u	10u	90u	10u	9u	9u
309-00-2	Aldrin	9u	10u	90u	10u	9u	22
1024-67-3	Heptachlor Epoxide	9u	10u	90u	10u	9u	9u
959-98-8	Endosulfan I	9u	10u	90u	10u	9u	9u
60-57-1	Dieldrin	18u	20u	180u	19u	19u	19
72-55-9	4,4'-DDE	18u	20u	630	19u	19u	19u
72-20-8	Endrin	18u	20u	180u	19u	19u	19u
33213-65-9	Endosulfan II	18u	20u	180u	19u	19u	19u
72-54-8	4,4'-DDD	18u	20u	330	19u	19u	74
1031-07-8	Endosulfan Sulfate	18u	20u	180u	19u	19u	19u
50-29-3	4,4'-DDT	31	157	11,300	31	19u	262
53494-70-5	Endrin Ketone	18u	20u	180u	100u	19u	19u
72-43-5	Methoxychlor	90u	100u	900u	100u	90u	90u
	Alpha Chlordane	90u	100u	900u	100u	90u	90u
	Gamma Chlordane	90u	100u	900u	190u	90u	90u
8001-35-2	Toxaphene	180u	200u	900u	100u	90u	190u
	Carbaryl	100u	100u	100u	100u	100u	100u
	Malathion	60u	60u	60u	60u	60u	60u
	Pentachloronitrobenzene	370u	410u	370u	390u	390u	380u

301473

TABLE E - 4
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	12/15/89			12/19/89		12/11/89
	LABORATORY.....	LANCASTER LABS			LANCASTER LABS		LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-3			B-4		B-5
	SAMPLE DESCRIPTION...	Soil Boring			Soil Boring		Soil Boring
	LAB SAMPLE ID NO.....	PPG B-3/S3	PPG B-3/S5	PPG B-4/S1	PPG B4/S3	PPG B-4/S5	PPG B5/S-4
	TIME.....	1105	1120	1615	1630	1145	1330
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	5-7'	10-12'	0-2'	5-7'	10-12'	7.5-9.5'
	ORGANICS - Pesticides/Herbicides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016	90u	100u	900u	100u	90u	90u
11104-28-2	Aroclor-1221	90u	100u	900u	100u	90u	600u
11141-16-5	Aroclor-1232	90u	100u	900u	100u	90u	90u
53469-21-9	Aroclor-1242	90u	100u	900u	100u	90u	90u
12672-29-6	Aroclor-1248	90u	100u	900u	100u	90u	90u
11097-69-1	Aroclor-1254	180u	200u	1,800u	190u	190u	190u
11096-82-5	Aroclor-1260	180u	200u	1,800u	190u	190u	190u

Notes:

u Compound was not detected.

ug/kg Microgram per kilogram.

[#] Compound detected above detection limits.

300474

SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	12/11/89		12/21/89		12/17/89	
	LABORATORY.....	LANCASTER LABS		LANCASTER LABS		LANCASTER LABS	
	FIELD SAMPLE ID NO.....	B-5		B-6		B-7	
	SAMPLE DESCRIPTION...	Soil Boring		Soil Boring		Soil Boring	
	LAB SAMPLE ID NO.....	PPG B5/S-5	PPG B6/S3A	PPG B6/S3B	PPG B6/S6A	PPG B7/S3-A	PPG B7/S5-A
	TIME.....	1400	1200	1200	1215	1500	1535
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	10-12'	5-8'	5-8'	10-12'	5-7'	10-12'
	ORGANICS - Pesticides/Herbicides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	9u	14,700	2,600	90u	103	15
319-85-7	Beta-BHC	9u	2,300	8000u	900u	100u	9u
319-896-8	Delta-BHC	9u	10,000u	8,000u	900u	100u	9u
58-89-9	Gamma-BHC-Lindane	9u	6,000	3,000	90u	100u	10
76-44-6	Heptachlor	9u	10,000u	800u	900u	100u	9u
309-00-2	Aldrin	9u	6,900	3,200	900u	100u	9u
1024-67-3	Heptachlor Epoxide	9u	1,000u	800u	90u	100u	9u
959-98-8	Endosulfan I	9u	10,000u	5,500u	130u	230	17
60-57-1	Dieldrin	19u	63,900	40,000	740	95	18u
72-55-9	4,4'-DDE	19u	6,000	2,600	190u	190u	18u
72-20-8	Endrin	19u	2,000u	1,600u	190u	19u	18u
33213-65-9	Endosulfan II	19u	2,000u	1,600u	190u	30u	18u
72-54-8	4,4'-DDD	19u	22,100	12,000	190u	36	18u
1031-07-8	Endosulfan Sulfate	19u	2,000u	1,600u	190u	19u	18u
50-29-3	4,4'-DDT	30	442,000	290,000	1,880	122	18u
53494-70-5	Endrin Ketone	19u	2,000u	1,600u	190u	50	18u
72-43-5	Methoxychlor	90u	10,000u	8,000u	900u	100u	90u
	Alpha Chlordane	90u	10,000u	8,000u	900u	1,000u	90u
	Gamma Chlordane	90u	10,000u	8,000u	900u	1,000u	90u
8001-35-2	Toxaphene	190u	20,000u	16,000u	1900u	190u	180u
	Carbaryl	100u	19,000	600	600	900	200
	Malathion	60u	60u	240	60u	70	60u
	Pentachloronitrobenzene	390u	4,100u	3,300u	390u	400u	380u

300475

TABLE E - 4
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	12/11/89		12/21/89		12/17/89	
	LABORATORY.....	LANCASTER LABS		LANCASTER LABS		LANCASTER LABS	
	FIELD SAMPLE ID NO.....	B-5		B-6		B-7	
	SAMPLE DESCRIPTION...	Soil Boring		Soil Boring		Soil Boring	
	LAB SAMPLE ID NO.....	PPG B5/S-5	PPG B6/S3A	PPG B6/S3B	PPG B6/S6A	PPG B7/S3-A	PPG B7/S5-A
	TIME.....	1400	1200	1200	1215	1500	1535
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	10-12'	5-8'	5-8'	10-12'	5-7'	10-12'
	ORGANICS - Pesticides/Herbicides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016	90u	200,000u	80000u	900u	1,000u	90u
11104-28-2	Aroclor-1221	90u	290,000u	53,000u	900u	2,000u	90u
11141-16-5	Aroclor-1232	90u	200,000u	80000u	900u	1,000u	90u
53469-21-9	Aroclor-1242	90u	200,000u	80000u	900u	1,000u	90u
12672-29-6	Aroclor-1248	90u	200,000u	80000u	900u	1,000u	90u
11097-69-1	Aroclor-1254	190u	20,000u	16,000u	1,900u	190u	180u
11096-82-5	Aroclor-1260	190u	20,000u	16,000u	1,900u	190u	180u

Notes:

u Compound was not detected.

ug/kg *Microgram per kilogram.*

[#] Compound detected above detection limits.

300476

SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	12/20/89		12/17/89		12/12/89	
	LABORATORY.....	LANCASTER LABS		LANCASTER LABS		LANCASTER LABS	
	FIELD SAMPLE ID NO.....	B-8		B-9		B-10	
	SAMPLE DESCRIPTION...	Soil Boring		Soil Boring		Soil Boring	
	LAB SAMPLE ID NO.....	PPG B8/S3A	PPG B8/S5	PPG B9/S3	PPG B9/S5	PPG B10/S-3	PPG B10/S5
	TIME.....	1436	1511	1115	1140	1000	1030
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	5-7'	10-12'	5-7'	10-12'	5-7'	10-12'
	ORGANICS - Pesticides/Herbicides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	100	310	27	10u	9u	10u
319-85-7	Beta-BHC	90u	20	10u	10u	9u	21
319-896-8	Delta-BHC	90u	70	18	10u	9u	10u
58-89-9	Gamma-BHC-Lindane	90u	140	17	10u	9u	10u
76-44-8	Heptachlor	90u	10u	10u	10u	9u	10u
309-00-2	Aldrin	90u	10u	10u	10u	9u	10u
1024-67-3	Heptachlor Epoxide	90u	10u	10u	10u	9u	10u
959-98-8	Endosulfan I	90u	10u	40u	10u	9u	10u
60-57-1	Dieldrin	390	41	20u	21u	19u	21u
72-55-9	4,4'-DDE	920	114	20u	21u	19u	21u
72-20-8	Endrin	180u	21u	20u	21u	19u	21u
33213-65-9	Endosulfan II	180u	21u	20u	21u	19u	21u
72-54-8	4,4'-DDD	990	47	20u	21u	19u	21u
1031-07-8	Endosulfan Sulfate	180u	21u	20u	21u	19u	21u
50-29-3	4,4'-DDT	11,300	798	87	52	19u	38
53494-70-5	Endrin Ketone	180u	21u	20u	21u	19u	21u
72-43-5	Methoxychlor	900u	100u	100u	100u	90u	100u
	Alpha Chlordane	900u	100u	100u	100u	90u	100u
	Gamma Chlordane	900u	100u	100u	100u	90u	100u
8001-35-2	Toxaphene	1,800u	210u	200u	210u	190u	210u
	Carbaryl	100u	5,900	2,200	100u	100	100u
	Malathion	60u	70u	60u	60u	60u	70u
	Pentachloronitrobenzene	380u	430u	410u	430u	390u	440u

300477

TABLE E - 4
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	12/20/89		12/17/89		12/12/89	
	LABORATORY.....	LANCASTER LABS		LANCASTER LABS		LANCASTER LABS	
	FIELD SAMPLE ID NO.....	B-8		B-9		B-10	
	SAMPLE DESCRIPTION...	Soil Boring		Soil Boring		Soil Boring	
	LAB SAMPLE ID NO.....	PPG B8/S3A	PPG B8/S5	PPG B9/S3	PPG B9/S5	PPG B10/S-3	PPG B10/S5
	TIME.....	1436	1511	1115	1140	1000	1030
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	5-7'	10-12'	5-7'	10-12'	5-7'	10-12'
	ORGANICS - Pesticides/Herbicides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016	900u	100u	100u	100u	90u	100u
11104-28-2	Aroclor-1221	13,000u	3,000u	100u	100u	90u	400u
11141-16-5	Aroclor-1232	900u	100u	100u	100u	90u	100u
53469-21-9	Aroclor-1242	900u	100u	100u	100u	90u	100u
12672-29-6	Aroclor-1248	900u	100u	100u	100u	90u	100u
11097-69-1	Aroclor-1254	1,800u	210u	200u	210u	190u	210u
11096-82-5	Aroclor-1260	1,800u	210u	200u	210u	190u	210u

Notes:

u Compound was not detected.

ug/kg Microgram per kilogram.

Compound detected above detection limits.

300478

SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

CAS NUMBER							
	DATE		1/4/90			12/19/89	
	LABORATORY		LANCASTER LABS			LANCASTER LABS	
	FIELD SAMPLE ID NO.		B-11			B-12	
	SAMPLE DESCRIPTION		Soil Boring			Soil Boring	
	LAB SAMPLE ID NO.	PPG B11/S3A	PPG B11/S3B	PPG B11/S6	PPG B12/S3	PPG B12/S5	PPG B12/S5
	TIME	1430	1430	1500	1400	1415	1415
	MATRIX	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	DEPTH, FT.	4-7'	4-7'	10-12'	5-7'	10-12'	10-12'
	ORGANICS - Pesticides/Herbicides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	20	20	10u	1,000u	1,000u	1,000u
319-85-7	Beta-BHC	10u	10u	10u	5,000u	1,000u	1,000u
319-896-8	Delta-BHC	10u	10u	10u	5,000u	1,000u	1,000u
58-89-9	Gamma-BHC-Lindane	10u	10u	10u	5,000u	1,000u	1,000u
76-44-8	Heptachlor	10u	10u	10u	5,000u	1,000u	1,000u
309-00-2	Aldrin	10u	10u	10u	5,000u	1,000u	1,000u
1024-67-3	Heptachlor Epoxide	10u	10u	10u	1,000u	100u	100u
959-98-8	Endosulfan I	10u	10u	10u	1,000u	100u	100u
60-57-1	Dieldrin	42	46	28	840	210u	210u
72-55-9	4,4'-DDE	22u	22u	20u	8,200	210u	210u
72-20-8	Endrin	22u	22u	20u	1,000u	210u	210u
33213-65-9	Endosulfan II	22u	22u	20u	200u	210u	210u
72-54-8	4,4'-DDD	22u	22u	20u	16,500	940	940
1031-07-8	Endosulfan Sulfate	22u	22u	20u	200u	210u	210u
50-29-3	4,4'-DDT	66	56	52	190,000	12,400	4,500
53494-70-5	Endrin Ketone	22u	22u	100u	200u	210u	200u
72-43-5	Methoxychlor	100u	100u	100u	1,000u	1,000u	1,000u
	Alpha Chlordane	100u	100u	100u	10,000u	1,000u	1,000u
	Gamma Chlordane	100u	100u	100u	10,000u	1,000u	1,000u
8001-35-2	Toxaphene	220u	220u	200u	20,000u	2,100	2,100u
	Carbaryl	300	300	100u	3,000	4,500	4,500
	Malathion	70u	70u	60u	60u	70u	70u
	Pentachloronitrobenzene	450u	450u	420u	4,200u	440u	440u

300479

TABLE E - 4
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....		1/4/90			12/19/89	
	LABORATORY.....		LANCASTER LABS			LANCASTER LABS	
	FIELD SAMPLE ID NO.....		B-11			B-12	
	SAMPLE DESCRIPTION...		Soil Boring			Soil Boring	
	LAB SAMPLE ID NO.....	PPG B11/S3A	PPG B11/S3B	PPG B11/S6	PPG B12/S3	PPG B12/S5	PPG B12/S5
	TIME.....	1430	1430	1500	1400	1415	1415
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	4-7'	4-7'	10-12'	5-7'	10-12'	10-12'
	ORGANICS - Pesticides/Herbicides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016	100u	100u	100u	50,000u	10,000u	10,000u
11104-28-2	Aroclor-1221	100u	100u	100u	50,000u	10,000u	10,000u
11141-16-5	Aroclor-1232	100u	100u	100u	50,000u	10,000u	10,000u
53469-21-9	Aroclor-1242	100u	100u	100u	50,000u	10,000u	10,000u
12672-29-6	Aroclor-1248	100u	100u	100u	50,000u	10,000u	10,000u
11097-69-1	Aroclor-1254	220u	220u	200u	2,000u	2,100u	2,100u
11096-82-5	Aroclor-1260	220u	220u	200u	2,000u	2,100u	2,100u

Notes:

u Compound was not detected.

ug/kg Microgram per kilogram.

[#] Compound detected above detection limits.

300460

TABLE E - 4
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	12/13/89		12/13/89		1/2/90	
	LABORATORY.....	LANCASTER LABS		LANCASTER LABS		LANCASTER LABS	
	FIELD SAMPLE ID NO.....	B-13		B-14		B-15	
	SAMPLE DESCRIPTION...	Soil Boring		Soil Boring		Soil Boring	
	LAB SAMPLE ID NO.....	PPG B13/S3	PPG B13/S5	PPG B14/S3	PPG B14/S5	PPG B15/S3	PPG B15/S5
	TIME.....	1215	1240	1520	1530	1250	1300
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	5-7'	10-12'	5-7'	10-12'	5-7'	10-12'
	ORGANICS - Pesticides/Herbicides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	15	130	34	10u	41	10u
319-85-7	Beta-BHC	9u	20	10u	10u	10u	10u
319-896-8	Delta-BHC	9u	40	60u	10u	14	10u
58-89-9	Gamma-BHC-Lindane	9u	30	20	10u	42	10u
76-44-8	Heptachlor	9u	10u	10u	10u	10u	10u
309-00-2	Aldrin	9u	10u	10u	10u	10u	10u
1024-67-3	Heptachlor Epoxide	9u	10u	10u	10u	10u	10u
959-98-8	Endosulfan I	9u	10u	35	10u	10u	10u
60-57-1	Dieldrin	19u	22u	20u	20u	10u	20u
72-55-9	4,4'-DDE	19u	22u	20u	20u	35	20u
72-20-8	Endrin	19u	22u	20u	20u	20u	20u
33213-65-9	Endosulfan II	19u	22u	20u	20u	20u	20u
72-54-8	4,4'-DDD	19u	22u	20u	20u	27	20u
1031-07-8	Endosulfan Sulfate	19u	22u	20u	20u	20u	20u
50-29-3	4,4'-DDT	166	34	34	49	922	20u
53494-70-5	Endrin Ketone	19u	22u	100u	20u	20u	20u
72-43-5	Methoxychlor	90u	100u	100u	100u	100u	100u
	Alpha Chlordane	90u	100u	100u	100u	100u	100u
	Gamma Chlordane	90u	100u	100u	100u	100u	100u
8001-35-2	Toxaphene	190u	220u	200u	200u	200u	200u
	Carbaryl	200	6,000	500	100u	1,100	100u
	Malathion	60u	70u	60u	60u	60u	60u
	Pentachloronitrobenzene	380u	450u	400u	410u	410u	400u

300481

TABLE E - 4
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	12/13/89		12/13/89		1/2/90	
	LABORATORY.....	LANCASTER LABS		LANCASTER LABS		LANCASTER LABS	
	FIELD SAMPLE ID NO.....	B-13		B-14		B-15	
	SAMPLE DESCRIPTION...	Soil Boring		Soil Boring		Soil Boring	
	LAB SAMPLE ID NO.....	PPG B13/S3	PPG B13/S5	PPG B14/S3	PPG B14/S5	PPG B15/S3	PPG B15/S5
	TIME.....	1215	1240	1520	1530	1250	1300
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	5-7'	10-12'	5-7'	10-12'	5-7'	10-12'
	ORGANICS - Pesticides/Herbicides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016	90u	100u	100u	100u	100u	100u
11104-28-2	Aroclor-1221	90u	100u	100u	100u	100u	100u
11141-16-5	Aroclor-1232	90u	100u	100u	100u	100u	100u
53469-21-9	Aroclor-1242	90u	100u	100u	100u	100u	100u
12672-29-6	Aroclor-1248	90u	100u	100u	100u	100u	100u
11097-69-1	Aroclor-1254	190u	220u	200u	200u	200u	200u
11096-82-5	Aroclor-1260	190u	220u	200u	200u	200u	200u

Notes:

u Compound was not detected.

ug/kg Microgram per kilogram.

[#] Compound detected above detection limits.

300482

TABLE E - 4
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

CAS NUMBER							
	DATE.....	1/5/90			1/3/90		
	LABORATORY.....	LANCASTER LABS			LANCASTER LABS		
	FIELD SAMPLE ID NO.....	B-16			B-17		
	SAMPLE DESCRIPTION...	Soil Boring			Soil Boring		
	LAB SAMPLE ID NO.....	PPG B16/S1	PPG B16/S3A	PPG B16/S3B	PPG B16/S5	PPG B17/S1	PPG B17/S3A
	TIME.....	1550	1605	1605	1615	1400	1420
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	DEPTH, FT.....	0-2'	5-7'	5-7'	10-12'	0-2'	5-7'
	ORGANICS - Pesticides/Herbicides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	9u	9u	9u	53	9u	100
319-85-7	Beta-BHC	11	9u	9u	10u	18	30
319-896-8	Delta-BHC	9u	9u	9u	21	9u	30
58-89-9	Gamma-BHC-Lindane	9u	9u	9u	32	9u	100
76-44-8	Heptachlor	9u	9u	9u	10u	9u	10u
309-00-2	Aldrin	9u	9u	9u	10u	9u	10u
1024-67-3	Heptachlor Epoxide	9u	9u	9u	10u	9u	10u
959-98-8	Endosulfan I	9u	9u	9u	10u	9u	10u
60-57-1	Dieldrin	40	19u	19u	20u	51	21u
72-55-9	4,4'-DDE	252	19u	19	20u	588	21u
72-20-8	Endrin	18u	19u	19u	20u	19u	21u
33213-65-9	Endosulfan II	18u	19u	19u	20u	19u	21u
72-54-8	4,4'-DDD	18u	19u	19u	20u	19u	21u
1031-07-8	Endosulfan Sulfate	18u	19u	19u	20u	19u	21u
50-29-3	4,4'-DDT	18u	175	43	20u	1,040	21u
53494-70-5	Endrin Ketone	18u	19u	19u	20u	19u	21u
72-43-5	Methoxychlor	90u	90u	90u	100u	90u	100u
	Alpha Chlordane	90u	90u	90u	100u	90u	100u
	Gamma Chlordane	90u	90u	90u	100u	90u	100u
8001-35-2	Toxaphene	180u	190u	190u	200u	190u	210u
	Carbaryl	100u	100u	100u	6,700	100u	300
	Malathion	60u	60u	60u	60u	60u	60u
	Pentachloronitrobenzene	380u	380u	390u	410u	390u	420u

300483

TABLE E - 4
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/5/90				1/3/90	
	LABORATORY.....	LANCASTER LABS				LANCASTER LABS	
	FIELD SAMPLE ID NO.....	B-16				B-17	
	SAMPLE DESCRIPTION...	Soil Boring				Soil Boring	
	LAB SAMPLE ID NO.....	PPG B16/S1	PPG B16/S3A	PPG B16/S3B	PPG B16/S5	PPG B17/S1	PPG B17/S3A
	TIME.....	1550	1605	1605	1615	1400	1420
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	0-2'	5-7'	5-7'	10-12'	0-2'	5-7'
	ORGANICS - Pesticides/Herbicides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016	90u	90u	90u	100u	90u	100u
11104-28-2	Aroclor-1221	180u	90u	90u	2,100u	90u	230u
11141-16-5	Aroclor-1232	90u	90u	90u	100u	90u	100u
53469-21-9	Aroclor-1242	90u	90u	90u	100u	90u	100u
12672-29-6	Aroclor-1248	90u	90u	90u	100u	90u	100u
11097-69-1	Aroclor-1254	180u	190u	190u	200u	190u	210u
11096-82-5	Aroclor-1260	180u	190u	190u	200u	190u	210u

Notes:

u Compound was not detected.

ug/kg Microgram per kilogram.

[#] Compound detected above detection limits.

300484

TABLE E - 4
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/3/90			1/2/90 & 1/3/90		1/4/90
	LABORATORY.....	LANCASTER LABS			LANCASTER LABS		LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-17			B-18		B-19
	SAMPLE DESCRIPTION...	Soil Boring			Soil Boring		Soil Boring
	LAB SAMPLE ID NO.....	PPG B17/S3B	PPG B17/S5	PPG B18/S1	PPG B18/S3	PPG B18/S5	PPG B19/S3A
	TIME.....	1420	1435	1600	1630	0900	0830
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	5-7'	10-12'	0-2'	5-7'	10-12'	4-7'
	ORGANICS - Pesticides/Herbicides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	90	10u	9u	20	10u	9u
319-85-7	Beta-BHC	30	10u	9u	10u	10u	9u
319-896-8	Delta-BHC	30	10u	9u	10	10u	9u
58-89-9	Gamma-BHC-Lindane	90	10u	9u	10	10u	9u
76-44-8	Heptachlor	10u	10u	9u	10u	10u	9u
309-00-2	Aldrin	10u	10u	9u	10u	10u	9u
1024-67-3	Heptachlor Epoxide	10u	10u	9u	10u	10u	9u
959-98-8	Endosulfan I	10u	10u	9u	10u	10u	9u
60-57-1	Dieldrin	20u	22u	19u	20u	22u	19u
72-55-9	4,4'-DDE	20u	22u	317	20u	22u	19u
72-20-8	Endrin	20u	22u	19u	20u	22u	19u
33213-65-9	Endosulfan II	20u	22u	19u	20u	22u	19u
72-54-8	4,4'-DDD	20u	22u	19u	20u	22u	19u
1031-07-8	Endosulfan Sulfate	20u	22u	19u	20u	22u	19u
50-29-3	4,4'-DDT	20u	22u	399	20u	22u	19u
53494-70-5	Endrin Ketone	20u	22u	19u	20u	22u	19u
72-43-5	Methoxychlor	100u	100u	90u	100u	100u	90u
	Alpha Chlordane	100u	100u	90u	100u	100u	90u
	Gamma Chlordane	100u	100u	90u	100u	100u	90u
8001-35-2	Toxaphene	200u	220u	190u	200u	220u	190u
	Carbaryl	300	100u	100u	100u	100u	100u
	Malathion	60u	70u	60u	60u	70u	60u
	Pentachloronitrobenzene	420u	460u	390u	420u	450u	380u

300485

TABLE E - 4
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/3/90			1/2/90 & 1/3/90		1/4/90
	LABORATORY.....	LANCASTER LABS			LANCASTER LABS		LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-17			B-18		B-19
	SAMPLE DESCRIPTION...	Soil Boring			Soil Boring		Soil Boring
	LAB SAMPLE ID NO.....	PPG B17/S3B	PPG B17/S5	PPG B18/S1	PPG B18/S3	PPG B18/S5	PPG B19/S3A
	TIME.....	1420	1435	1600	1630	0900	0830
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	5-7'	10-12'	0-2'	5-7'	10-12'	4-7'
	ORGANICS - Pesticides/Herbicides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016	100u	100u	90u	100u	100u	90u
11104-28-2	Aroclor-1221	200u	100u	90u	100u	100u	90u
11141-16-5	Aroclor-1232	100u	100u	90u	100u	100u	90u
53469-21-9	Aroclor-1242	100u	100u	90u	100u	100u	90u
12672-29-6	Aroclor-1248	100u	100u	90u	100u	100u	90u
11097-69-1	Aroclor-1254	200u	220u	190u	200u	220u	190u
11096-82-5	Aroclor-1260	200u	220u	190u	200u	220u	190u

Notes:

u Compound was not detected.

ug/kg Microgram per kilogram.

Compound detected above detection limits.

300486

TABLE E - 4
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/4/90	1/6/90		1/7/90	1/7/90	1/7/90
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS		LANCASTER LABS	LANCASTER LABS	LANCASTFR LABS
	FIELD SAMPLE ID NO.....	B-19	B-20		SS-1	SS-2	SS-3A
	SAMPLE DESCRIPTION...	Soil Boring	Soil Boring		Shallow	Shallow	Shallow
	LAB SAMPLE ID NO.....	PPG B-19/S6	PPG B-20/S3A	PPG B-20/S6	SS-1	SS-2	SS-3A
	TIME.....	0900	1305	1330	1220	1230	1235
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	10-12'	4-7'	10-12'	0.75-1.0'	0.75-1.0'	0.75-1.0'
	ORGANICS - Pesticides/Herbicides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	10u	12	100u	90u	1,400u	150,000u
319-85-7	Beta-BHC	10u	24	100u	180	1,400u	150,000u
319-896-8	Delta-BHC	10u	9u	100u	90u	1,400u	150,000u
58-89-9	Gamma-BHC-Lindane	10u	9u	100u	90u	1,400u	150,000u
76-44-8	Heptachlor	10u	9u	100u	90u	1,400u	150,000u
309-00-2	Aldrin	10u	9u	100u	90u	1,400u	150,000u
1024-67-3	Heptachlor Epoxide	10u	9u	100u	90u	1,400u	150,000u
959-98-8	Endosulfan I	10u	9u	100u	90u	1,400u	150,000u
60-57-1	Dieldrin	22u	17u	190u	190u	2,800u	300,000u
72-55-9	4,4'-DDE	22u	17u	190u	720	2,800u	300,000u
72-20-8	Endrin	22u	17u	190u	190u	2,800u	300,000u
33213-65-9	Endosulfan II	22u	17u	190u	190u	2,800u	300,000u
72-54-8	4,4'-DDD	22u	31	190u	190u	2,800u	300,000u
1031-07-8	Endosulfan Sulfate	22u	17u	190u	190u	2,800u	300,000u
50-29-3	4,4'-DDT	22u	196	2,920	2,710	23,400	14,000
53494-70-5	Endrin Ketone	22u	17u	190u	190u	2,800u	300,000u
72-43-5	Methoxychlor	100u	90u	1,000u	900u	14,000u	1,500,000u
	Alpha Chlordane	100u	90u	1,000u	900u	14,000u	1,500,000u
	Gamma Chlordane	100u	90u	1,000u	900u	14,000u	1,500,000u
8001-35-2	Toxaphene	220u	170u	1,900u	1,900u	28,000u	3,000,000u
	Carbaryl	100u	100u	100u	100u	100u	1,000u
	Malathion	70u	50u	60u	60u	60u	600u
	Pentachloronitrobenzene	450u	360u	400u	390u	390u	6,300u

300487

TABLE E - 4
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/4/90	1/6/90		1/7/90	1/7/90	1/7/90
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS		LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-19	B-20		SS-1	SS-2	SS-3A
	SAMPLE DESCRIPTION...	Soil Boring	Soil Boring		Shallow	Shallow	Shallow
	LAB SAMPLE ID NO.....	PPG B-19/S6	PPG B-20/S3A	PPG B-20/S6	SS-1	SS-2	SS-3A
	TIME.....	0900	1305	1330	1220	1230	1235
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	10-12'	4-7'	10-12'	0.75-1.0'	0.75-1.0'	0.75-1.0'
	ORGANICS - Pesticides/Herbicides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016	100u	90u	1,000u	900u	14,000u	1,500,000u
11104-28-2	Aroclor-1221	100u	90u	1,000u	900u	14,000u	1,500,000u
11141-16-5	Aroclor-1232	100u	90u	1,000u	900u	14,000u	1,500,000u
53469-21-9	Aroclor-1242	100u	90u	1,000u	900u	14,000u	1,500,000u
12672-29-6	Aroclor-1248	100u	90u	1,000u	900u	14,000u	1,500,000u
11097-69-1	Aroclor-1254	220u	170u	1,900u	1,900u	28,000u	3,000,000u
11096-82-5	Aroclor-1260	220u	170u	1,900u	1,900u	28,000u	3,000,000u

Notes:

u Compound was not detected.

ug/kg Microgram per kilogram.

[#] Compound detected above detection limits.

300458

TABLE E - 4
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

CAS NUMBER					
	DATE.....	1/7/90	1/7/90	1/7/90	1/9/90
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	FIELD SAMPLE ID NO.....	SS-3B	SS-4A	SS-4B	SED-1
	SAMPLE DESCRIPTION...	Shallow	Shallow	Shallow	Sediment
	LAB SAMPLE ID NO.....	SS-3B	SS-4A	SS-4B	SED-1
	TIME.....	1235	1237	1237	1030
	MATRIX.....	SOIL	SOIL	SOIL	SEDIMENT
	DEPTH, FT.....	0.75-1.0'	0.75-1.0'	0.75-1.0'	
	ORGANICS - Pesticides/Herbicides/PCBs/S	ug/kg	ug/kg	ug/kg	ug/kg
319-84-6	Alpha-BHC	160,000u	18,000u	18,000u	2,100u
319-85-7	Beta-BHC	160,000u	18,000u	18,000u	2,100u
319-896-8	Delta-BHC	160,000u	18,000u	18,000u	4,200u
58-89-9	Gamma-BHC-Lindane	160,000u	18,000u	18,000u	2,100u
76-44-8	Heptachlor	160,000u	18,000u	18,000u	2,100u
309-00-2	Aldrin	160,000u	18,000u	18,000u	4,200u
1024-67-3	Heptachlor Epoxide	160,000u	18,000u	18,000u	2,100u
959-98-8	Endosulfan I	160,000u	18,000u	18,000u	2,100u
60-57-1	Dieldrin	310,000u	36,000u	36,000u	4,200u
72-55-9	4,4'-DDE	310,000u	36,000u	226,000	4,200u
72-20-8	Endrin	310,000u	36,000u	36,000u	4,200u
33213-65-9	Endosulfan II	310,000u	36,000u	36,000u	4,200u
72-54-8	4,4'-DDD	1,940,000	36,000u	36,000u	21,100
1031-07-8	Endosulfan Sulfate	310,000u	36,000u	36,000u	4,200u
50-29-3	4,4'-DDT	27,200,000	1,240,000	1,300,000	4,200u
53494-70-5	Endrin Ketone	310,000u	36,000u	36,000u	4,200u
72-43-5	Methoxychlor	1,600,000u	180,000u	180,000u	21,000u
	Alpha Chlordane	1,600,000u	180,000u	180,000u	21,000u
	Gamma Chlordane	1,600,000u	180,000u	180,000u	21,100u
8001-35-2	Toxaphene	3,100,000u	360,000u	360,000u	42,000u
	Carbaryl	1,000u	1,000u	2,000u	2,000u
	Malathion	60u	70u	80u	150
	Pentachloronitrobenzene	6,500u	2,500u	2,600u	580u

300489

TABLE E - 4
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/7/90	1/7/90	1/7/90	1/9/90
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	FIELD SAMPLE ID NO.....	SS-3B	SS-4A	SS-4B	SED-1
	SAMPLE DESCRIPTION...	Shallow	Shallow	Shallow	Sediment
	LAB SAMPLE ID NO.....	SS-3B	SS-4A	SS-4B	SED-1
	TIME.....	1235	1237	1237	1030
	MATRIX.....	SOIL	SOIL	SOIL	SEDIMENT
CAS NUMBER	DEPTH, FT.....	0.75-1.0'	0.75-1.0'	0.75-1.0'	
	ORGANICS - Pesticides/Herbicides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg
12674-11-2	Aroclor-1016	1,600,000u	180,000u	180,000u	42,000u
11104-28-2	Aroclor-1221	1,600,000u	180,000u	180,000u	42,000u
11141-16-5	Aroclor-1232	1,600,000u	180,000u	180,000u	42,000u
53469-21-9	Aroclor-1242	1,600,000u	180,000u	180,000u	42,000u
12672-29-6	Aroclor-1248	1,600,000u	180,000u	180,000u	21,000u
11097-69-1	Aroclor-1254	3,100,000u	360,000u	360,000u	42,000u
11096-82-5	Aroclor-1260	3,100,000u	360,000u	360,000u	42,000u

Notes:

u Compound was not detected.

ug/kg Microgram per kilogram.

[#] Compound detected above detection limits.

300430

TABLE E - 5
WATER SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

DATE.....	1/9/90		1/9/90		1/9/90	
TIME.....	1315		1315		1630	
LABORATORY.....	LANCASTER LABS		LANCASTER LABS		LANCASTER LABS	
LAB SAMPLE ID NO.....	PPG GW-3A		PPG GW-3B		PPG GW-5	
FIELD SAMPLE ID NO.....	MW-1		MW-1D		MW-2	
FIELD SAMPLE LOCATION	Monitoring Well 1		Monitoring Well 1		Monitoring Well 2	
SAMPLE DESCRIPTION....	Groundwater		Groundwater		Groundwater	
MATRIX.....	Water		Water		Water	
			Duplicate Sample			
CAS NUMBER	TOTAL	DISSOLVED	TOTAL	DISSOLVED	TOTAL	DISSOLVED
INORGANICS	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Aluminum	0.9	0.3	1.2	0.1u	220	217
Antimony	0.05u	0.05u	0.05u	0.05u	0.05u	0.05u
Arsenic	0.01u	0.01u	0.01u	0.01u	0.05u	0.1u
Barium	0.1u	0.1u	0.01u	0.1u	0.1u	0.1u
Beryllium	0.005u	0.005u	0.005u	0.005u	0.021	0.020
Cadmium	0.005u	0.005u	0.005u	0.005u	0.009	0.010
Calcium	24.0	22.4	24.1	22.5	95.7	87.0
Chromium	0.01	0.01u	0.01u	0.01u	0.43	0.43
Cobalt	0.05	0.05u	0.05u	0.05u	0.06	0.06
Copper	0.02	0.02u	0.02u	0.02u	0.21	0.21
Iron	1.58	0.31	2.13	0.26	692	653
Lead	0.005	0.05u	0.005u	0.005u	0.082	0.097
Magnesium	8.49	7.63	8.32	7.62	20.8	19.8
Manganese	0.19	0.24	0.21	0.24	2.28	2.19
Mercury	0.0002u	0.0002u	0.00024	0.0002u	0.0002u	0.0002u
Nickel	0.04u	0.04u	0.04u	0.04u	0.24	0.37
Potassium	5.8	5.5	5.9	5.5	13.2	13.1
Selenium	0.005u	0.005u	0.005u	0.005u	0.03u	0.03u
Silver	0.01u	0.01u	0.01u	0.01u	0.01u	0.01u
Sodium	6.9	8.7	7.3	7.5	8.8	7.4
Thallium	0.01u	0.01u	0.01u	0.01u	0.01u	0.01u
Vanadium	0.05u	0.05u	0.05u	0.05u	0.47	0.45
Zinc	0.02u	0.02u	0.02u	0.02u	0.59	0.63
Cyanide, total	0.005u	---	0.005u	---	0.005u	---

Notes:

u Compound was not detected.

mg/L Milligram per liter

Compound detected above detection limits.

300491

TABLE E - 5
WATER SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

DATE.....		1/9/90		1/9/90		1/9/90
TIME.....		1630		1500		1830
LABORATORY.....		LANCASTER LABS		LANCASTER LABS		LANCASTER LABS
LAB SAMPLE ID NO.....		PPG GW-6		PPG GW-4		PPG GW-7
FIELD SAMPLE ID NO.....		MW-2D		MW-3		MW-4
FIELD SAMPLE LOCATION		Monitoring Well 2		Monitoring Well 3		Monitoring Well 4
SAMPLE DESCRIPTION....		Groundwater		Groundwater		Groundwater
MATRIX.....		Water		Water		Water
		Duplicate Sample				
CAS NUMBER		TOTAL	DISSOLVED	TOTAL	DISSOLVED	TOTAL	DISSOLVED
	INORGANICS	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
	Aluminum	223	217	2.1	0.7	23.9	21.5
	Antimony	0.05u	0.05u	0.05u	0.05u	0.05u	0.05u
	Arsenic	0.05u	0.05u	0.01u	0.01u	0.01u	0.01u
	Barium	0.1u	0.1u	0.1u	0.1u	0.1u	0.1u
	Beryllium	0.022	0.020	0.005u	0.005u	0.008	0.007
	Cadmium	0.010	0.011	0.005u	0.005u	0.005u	0.005u
	Calcium	93.2	86.0	22.6	22.7	414	407
	Chromium	0.43	0.44	0.01u	0.01u	0.01u	0.01u
	Cobalt	0.06	0.07	0.05u	0.05u	0.12	0.12
	Copper	0.21	0.21	0.02u	0.02u	0.02u	0.02u
	Iron	1380	665	2.67	0.13	192	177
	Lead	0.068	0.114	0.005u	0.005u	0.01	0.005u
	Magnesium	20.7	19.8	6.08	6.03	153	147
	Manganese	2.27	2.19	0.78	0.76	18.1	17.6
	Mercury	0.0002u	0.0002u	0.0002u	0.0002u	0.0002u	0.0002u
	Nickel	0.28	0.32	0.04u	0.04u	0.13	0.13
	Potassium	13.3	13.2	2.8	2.7	20.8	19.6
	Selenium	0.03u	0.03u	0.005u	0.005u	0.03u	0.005u
	Silver	0.01u	0.01u	0.01u	0.01u	0.01u	0.01u
	Sodium	8.2	7.2	7.8	7.3	25.7	24.5
	Thallium	0.01u	0.01u	0.01u	0.01u	0.01u	0.01u
	Vanadium	0.47	0.46	0.05u	0.05u	0.06	0.05u
	Zinc	0.60	0.62	0.07	0.05	0.29	0.3
	Cyanide, total	0.005u	---	0.005u	---	0.005u	---

Notes:

u Compound was not detected.

mg/L Milligram per liter

[#] Compound detected above detection limi

300492

TABLE E - 5
WATER SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

DATE.....	1/8/90	1/8/90
TIME.....	1620	1600
LABORATORY.....	LANCASTER LABS	LANCASTER LABS
LAB SAMPLE ID NO.....	PPG GW-2	PPG GW-1
FIELD SAMPLE ID NO.....	MW-5	MW-6
FIELD SAMPLE LOCATION	Monitoring Well 5	Monitoring Well 6
SAMPLE DESCRIPTION....	Groundwater	Groundwater
MATRIX.....	Water	Water

CAS NUMBER		TOTAL	DISSOLVED	TOTAL	DISSOLVED
	INORGANICS	mg/l	mg/l	mg/l	mg/l
	Aluminum	500	457	1.5	0.1
	Antimony	0.05u	0.05u	0.05u	0.05u
	Arsenic	0.1u	0.05u	0.01u	0.01u
	Barium	0.2	0.1u	0.1u	0.1u
	Beryllium	0.047	0.042	0.005u	0.005u
	Cadmium	0.032	0.032	0.005u	0.007
	Calcium	78.7	72.9	123	113
	Chromium	0.01	0.01u	0.01u	0.01u
	Cobalt	0.34	0.32	0.06	0.05
	Copper	0.04	0.03	0.02u	0.02u
	Iron	363	298	15.0	3.81
	Lead	0.016	0.007	0.005u	0.005u
	Magnesium	24.4	22.3	52.9	47.6
	Manganese	29.9	28.3	12.7	10.9
	Mercury	0.0002u	0.0002u	0.0002u	0.0002u
	Nickel	0.31	0.28	0.04	0.04u
	Potassium	12.9	10.7	5.4	4.2
	Selenium	0.03u	0.03u	0.005u	0.005u
	Silver	0.01u	0.01u	0.01u	0.01u
	Sodium	7.2	7.9	16.6	15.2
	Thallium	0.01u	0.01u	0.01u	0.01u
	Vanadium	0.18	0.05u	0.05u	0.05u
	Zinc	3.57	3.49	0.07	0.06
	Cyanide, total	0.005u	---	0.005u	---

Notes:

u Compound was not detected.

mg/L Milligram per liter

[#] Compound detected above detection limi

300493

TABLE E - 6
WATER SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/9/90	1/9/90	1/9/90	1/9/90
	TIME.....	1315	1315	1630	1630
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	LAB SAMPLE ID NO.....	PPG GW-3A	PPG GW-3B	PPG GW-5	PPG GW-6
	FIELD SAMPLE ID NO.....	MW-1	MW-1D	MW-2	MW-2D
	FIELD SAMPLE LOCATION	Monitoring Well 1	Monitoring Well 1	Monitoring Well 2	Monitoring Well 2
	SAMPLE DESCRIPTION....	Groundwater	Groundwater	Groundwater	Groundwater
	MATRIX.....	Water	Water	Water	Water
			Duplicate Sample		Duplicate Sample
CAS NUMBER	TCL ORGANICS - VOLATILES	ug/l	ug/l	ug/l	ug/l
74-87-3	Chloromethane	10u	10u	10u	10u
74-83-9	Bromomethane	10u	10u	10u	10u
75-01-4	Vinyl Chloride	10u	10u	10u	10u
75-00-3	Chloroethane	10u	10u	10u	10u
75-09-2	Methylene Chloride	5u	5u	5u	5u
67-64-1	Acetone	30	10u	10u	17
75-15-0	Carbon Disulfide	5u	5u	5u	5u
75-35-4	1,1-Dichloroethene	5u	5u	5u	5u
75-34-3	1,1-Dichloroethane	5u	5u	5u	5u
156-60-5	Trans-1,2-Dichloroethene	5u	5u	5u	5u
67-66-3	Chloroform	5u	5u	5u	5u
107-06-2	1,2-Dichloroethane	5u	5u	5u	5u
78-93-3	2-Butanone	10u	10u	10u	10u
71-55-5	1,1,1-Trichloroethane	5u	5u	5u	5u
56-23-5	Carbon Tetrachloride	5u	5u	5u	5u
108-05-4	Vinyl Acetate	10u	10u	10u	10u
75-27-4	Bromodichloromethane	5u	5u	5u	5u
78-87-5	1,2-Dichloropropane	5u	5u	5u	5u
10061-01-5	cis-1,3-Dichloropropene	5u	5u	5u	5u
79-01-6	Trichloroethene	5u	5u	5u	5u
124-48-1	Dibromochloromethane	5u	5u	5u	5u
79-00-5	1,1,2-Trichloroethane	5u	5u	5u	5u
71-43-2	Benzene	5u	5u	5u	5u
10061-02-6	trans-1,3-Dichloropropene	5u	5u	5u	5u

300434

TABLE E - 6
WATER SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/9/90	1/9/90	1/9/90	1/9/90
	TIME.....	1315	1315	1630	1630
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	LAB SAMPLE ID NO.....	PPG GW-3A	PPG GW-3B	PPG GW-5	PPG GW-6
	FIELD SAMPLE ID NO.....	MW-1	MW-1D	MW-2	MW-2D
	FIELD SAMPLE LOCATION	Monitoring Well 1	Monitoring Well 1	Monitoring Well 2	Monitoring Well 2
	SAMPLE DESCRIPTION....	Groundwater	Groundwater	Groundwater	Groundwater
	MATRIX.....	Water	Water	Water	Water
			Duplicate Sample		Duplicate Sample
CAS NUMBER	TCL ORGANICS - VOLATILES	ug/l	ug/l	ug/l	ug/l
75-25-2	Bromoform	5u	5u	5u	5u
108-10-1	4-Methyl-2-Pentanone	10u	10u	10u	10u
591-78-6	2-Hexanone	10u	10u	10u	10u
127-18-4	Tetrachloroethene	5u	5u	5u	5u
79-34-5	1,1,2,2-Tetrachloroethane	5u	5u	5u	5u
108-88-3	Toluene	5u	5u	5u	5u
108-90-7	Chlorobenzene	5u	5u	5u	5u
100-41-4	Ethylbenzene	5u	5u	5u	5u
100-42-5	Styrene	5u	5u	5u	5u
	Total Xylenes	5u	5u	25	23

Notes:

u Compound was not detected.

ug/L Microgram per liter.

Compound detected above detection limits.

300495

TABLE E - 6
WATER SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/9/90	1/9/90	1/8/90	1/8/90
	TIME.....	1500	1830	1620	1600
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	LAB SAMPLE ID NO.....	PPG GW-4	PPG GW-7	PPG GW-2	PPG GW-1
	FIELD SAMPLE ID NO.....	MW-3	MW-4	MW-5	MW-6
	FIELD SAMPLE LOCATION	Monitoring Well 3	Monitoring Well 4	Monitoring Well 5	Monitoring Well 6
	SAMPLE DESCRIPTION....	Groundwater	Groundwater	Groundwater	Groundwater
	MATRIX.....	Water	Water	Water	Water
CAS NUMBER	TCL ORGANICS - VOLATILES	ug/l	ug/l	ug/l	ug/l
74-87-3	Chloromethane	10u	10u	10u	10u
74-83-9	Bromomethane	10u	10u	10u	10u
75-01-4	Vinyl Chloride	10u	10u	10u	10u
75-00-3	Chloroethane	10u	10u	10u	10u
75-09-2	Methylene Chloride	5u	5u	5u	5u
67-64-1	Acetone	32	120	32	63
75-15-0	Carbon Disulfide	5u	5u	91	5u
75-35-4	1,1-Dichloroethene	5u	5u	5u	5u
75-34-3	1,1-Dichloroethane	5u	5u	5u	5u
156-60-5	Trans-1,2-Dichloroethene	5u	5u	5u	5u
67-66-3	Chloroform	5u	5u	5u	5u
107-06-2	1,2-Dichloroethane	5u	5u	5u	5u
78-93-3	2-Butanone	10u	10u	10u	10u
71-55-5	1,1,1-Trichloroethane	5u	5u	6	5u
56-23-5	Carbon Tetrachloride	5u	5u	5u	5u
108-05-4	Vinyl Acetate	10u	10u	10u	10u
75-27-4	Bromodichloromethane	5u	5u	5u	5u
78-87-5	1,2-Dichloropropane	5u	5u	5u	5u
10061-01-5	cis-1,3-Dichloropropene	5u	5u	5u	5u
79-01-6	Trichloroethene	5u	5u	5u	5u
124-48-1	Dibromochloromethane	5u	5u	5u	5u
79-00-5	1,1,2-Trichloroethane	5u	5u	30	5u
71-43-2	Benzene	5u	5u	10	5u
10061-02-6	trans-1,3-Dichloropropene	5u	5u	5u	5u

300456

TABLE E - 6
WATER SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

DATE.....	1/9/90	1/9/90	1/8/90	1/8/90
TIME.....	1500	1830	1620	1600
LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
LAB SAMPLE ID NO.....	PPG GW-4	PPG GW-7	PPG GW-2	PPG GW-1
FIELD SAMPLE ID NO.....	MW-3	MW-4	MW-5	MW-6
FIELD SAMPLE LOCATION	Monitoring Well 3	Monitoring Well 4	Monitoring Well 5	Monitoring Well 6
SAMPLE DESCRIPTION....	Groundwater	Groundwater	Groundwater	Groundwater
MATRIX.....	Water	Water	Water	Water

CAS NUMBER	TCL ORGANICS - VOLATILES	ug/l	ug/l	ug/l	ug/l
75-25-2	Bromoform	5u	5u	5u	5u
108-10-1	4-Methyl-2-Pentanone	10u	25	10u	38
591-78-6	2-Hexanone	10u	10u	10u	10u
127-18-4	Tetrachloroethene	5u	5u	7	13
79-34-5	1,1,2,2-Tetrachloroethane	5u	5u	5u	5u
108-88-3	Toluene	5u	5u	5u	5u
108-90-7	Chlorobenzene	5u	5u	16	5u
100-41-4	Ethylbenzene	5u	5u	34	5u
100-42-5	Styrene	5u	5u	5u	5u
	Total Xylenes	5u	5u	320	5u

Notes:

u Compound was not detected.

ug/L Microgram per liter.

[#] Compound detected above detection limi

3007597

TABLE E - 7
WATER SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

DATE.....	1/9/90	1/9/90	1/9/90	1/9/90
TIME.....	1315	1315	1630	1630
LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
LAB SAMPLE ID NO.....	PPG GW-3A	PPG GW-3B	PPG GW-5	PPG GW-6
FIELD SAMPLE ID NO.....	MW-1	MW-1D	MW-2	MW-2D
FIELD SAMPLE LOCATION	Monitoring Well 1	Monitoring Well 1	Monitoring Well 2	Monitoring Well 2
SAMPLE DESCRIPTION....	Groundwater	Groundwater	Groundwater	Groundwater
MATRIX.....	Water	Water	Water	Water
		Duplicate Sample		Duplicate Sample

CAS NUMBER	TCL ORGANICS -SEMI VOLATILES	ug/l	ug/l	ug/l	ug/l
108-95-2	Phenol	10u	10u	10u	20u
111-44-4	bis(-2-Chloroethyl)Ether	10u	10u	10u	20u
95-57-8	2-Chlorophenol	10u	10u	10u	20u
541-73-1	1,3-Dichlorobenzene	10u	10u	10u	20u
106-46-7	1,4-Dichlorobenzene	10u	10u	10u	20u
100-51-6	Benzyl Alcohol	10u	10u	10u	20u
95-50-1	1,2-Dichlorobenzene	10u	10u	10u	20u
95-48-7	2-Methylphenol	10u	10u	10u	20u
39638-32-9	bis(2-chloroisopropyl)ether	10u	10u	10u	20u
106-44-5	4-Methylphenol	10u	10u	10u	20u
621-64-7	N-Nitrosodi-n-propylamine	10u	10u	10u	20u
67-72-1	Hexachloroethane	10u	10u	10u	20u
98-95-3	Nitrobenzene	10u	10u	10u	20u
78-59-1	Isophorone	10u	10u	10u	20u
88-75-5	2-Nitrophenol	10u	10u	10u	20u
105-67-9	2,4-Dimethylphenol	10u	10u	10u	20u
65-85-0	Benzoic Acid	50u	50u	50u	100u
111-91-1	bis(-2-Chloroethoxy)Methane	10u	10u	10u	20u
120-83-2	2,4-Dichlorophenol	10u	10u	10u	20u
120-82-1	1,2,4-Trichlorobenzene	10u	10u	10u	20u
91-20-3	Naphthalene	10u	10u	122	154
106-47-8	4-Chloroaniline	10u	10u	10u	20u
87-68-3	Hexachlorobutadiene	10u	10u	10u	20u
59-50-7	4-Chloro-3-Methylphenol	10u	10u	10u	20u

30498

TABLE E - 7
WATER SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/9/90	1/9/90	1/9/90	1/9/90
	TIME.....	1315	1315	1630	1630
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	LAB SAMPLE ID NO.....	PPG GW-3A	PPG GW-3B	PPG GW-5	PPG GW-6
	FIELD SAMPLE ID NO.....	MW-1	MW-1D	MW-2	MW-2D
	FIELD SAMPLE LOCATION	Monitoring Well 1	Monitoring Well 1	Monitoring Well 2	Monitoring Well 2
	SAMPLE DESCRIPTION....	Groundwater	Groundwater	Groundwater	Groundwater
	MATRIX.....	Water	Water	Water	Water
			Duplicate Sample		Duplicate Sample
CAS NUMBER	TCL ORGANICS -SEMI VOLATILES	ug/l	ug/l	ug/l	ug/l
91-57-6	2-Methylnapthalene	10u	10u	290	20u
77-47-4	Hexachlorocyclopentadiene	10u	10u	10u	20u
88-06-2	2,4,6-Trichlorophenol	10u	10u	10u	20u
95-95-4	2,4,5-Trichlorophenol	50u	50u	50u	100u
91-58-7	2-Chloronapthalene	10u	10u	10u	20u
88-74-4	2-Nitroaniline	50u	50u	50u	100u
131-11-3	Dimethyl Phthalate	10u	10u	10u	20u
208-96-8	Acenaphthylene	10u	10u	10u	20u
99-09-2	3-Nitroaniline	50u	50u	50u	100u
83-32-9	Acenaphthene	10u	10u	10u	20u
51-28-5	2,4-Dinitophenol	50u	50u	50u	100u
100-02-7	4-Nitrophenol	50u	50u	50u	100u
132-64-9	Dibenzofuran	10u	10u	10u	20u
121-14-2	2,4-Dinitrotoluene	10u	10u	10u	20u
606-20-2	2,6-Dinitrotoluene	10u	10u	10u	20u
84-66-2	Diethyl phthalate	10u	10u	10u	20u
7005-72-3	4-Chlorophenyl phenyl ether	10u	10u	10u	20u
86-73-7	Fluorene	10u	10u	10u	20u
100-01-6	4-Nitroaniline	50u	50u	50u	100u
534-52-1	4,6-Dinitro-2-Methylphenol	50u	50u	50u	100u
86-30-6	N-Nitrosodiphenylamine	10u	10u	10u	20u
101-55-3	4-Bromophenyl phenyl ether	10u	10u	10u	20u
118-74-1	Hexachlorobenzene	10u	10u	10u	20u
87-86-5	Pentachlorophenol	50u	50u	50u	100u

300499

TABLE E - 7
WATER SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/9/90	1/9/90	1/9/90	1/9/90
	TIME.....	1315	1315	1630	1630
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	LAB SAMPLE ID NO.....	PPG GW-3A	PPG GW-3B	PPG GW-5	PPG GW-6
	FIELD SAMPLE ID NO.....	MW-1	MW-1D	MW-2	MW-2D
	FIELD SAMPLE LOCATION	Monitoring Well 1	Monitoring Well 1	Monitoring Well 2	Monitoring Well 2
	SAMPLE DESCRIPTION....	Groundwater	Groundwater	Groundwater	Groundwater
	MATRIX.....	Water	Water	Water	Water
			Duplicate Sample		Duplicate Sample
CAS NUMBER	TCL ORGANICS -SEMI VOLATILES	ug/l	ug/l	ug/l	ug/l
85-01-8	Phenanthrene	10u	10u	10u	20u
120-12-7	Anthracene	10u	10u	10u	20u
84-74-2	Di-n-Butyl phthalate	10u	10u	10u	20u
206-44-0	Fluoranthene	10u	10u	10u	20u
129-00-0	Pyrene	10u	10u	10u	20u
85-68-7	Butyl benzyl phthalate	10u	10u	10u	20u
91-94-1	3,3'-Dichlorobenzidine	20u	20u	20u	40u
56-55-3	Benzo(a)Anthracene	10u	10u	10u	20u
117-81-7	bis(2-Ethylhexyl)Phthalate	10u	10u	10u	20u
218-01-9	Chrysene	10u	10u	10u	20u
117-84-0	Di-n-Octyl Phthalate	10u	10u	10u	20u
205-99-2	Benzo(b)Fluoranthene	10u	10u	10u	20u
207-08-9	Benzo(k)Fluoranthene	10u	10u	10u	20u
50-32-8	Benzo(a)Pyrene	10u	10u	10u	20u
193-39-5	Indeno(1,2,3-cd)Pyrene	10u	10u	10u	20u
53-70-3	Dibenz(a,h)Anthracene	10u	10u	10u	20u
191-24-2	Benzo(g,h,i)Perylene	10u	10u	10u	20u

Notes:

u Compound was not detected.

ug/l Microgram per liter.

Compound detected above detection limits.

TABLE E - 7
WATER SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

DATE.....	1/9/90	1/9/90	1/8/90	1/8/90
TIME.....	1500	1830	1620	1600
LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
LAB SAMPLE ID NO.....	PPG GW-4	PPG GW-7	PPG GW-2	PPG GW-1
FIELD SAMPLE ID NO.....	MW-3	MW-4	MW-5	MW-6
FIELD SAMPLE LOCATION	Monitoring Well 3	Monitoring Well 4	Monitoring Well 5	Monitoring Well 6
SAMPLE DESCRIPTION....	Groundwater	Groundwater	Groundwater	Groundwater
MATRIX.....	Water	Water	Water	Water

CAS NUMBER	TCL ORGANICS -SEMI VOLATILES	ug/l	ug/l	ug/l	ug/l
108-95-2	Phenol	40u	10u	10u	10u
111-44-4	bis(-2-Chloroethyl)Ether	40u	10u	10u	10u
95-57-8	2-Chlorophenol	40u	10u	10u	10u
541-73-1	1,3-Dichlorobenzene	40u	10u	10u	10u
106-46-7	1,4-Dichlorobenzene	40u	10u	10u	10u
100-51-6	Benzyl Alcohol	40u	10u	10u	10u
95-50-1	1,2-Dichlorobenzene	40u	10u	10u	10u
95-48-7	2-Methylphenol	40u	10u	10u	10u
39638-32-9	bis(2-chloroisopropyl)ether	40u	10u	10u	10u
106-44-5	4-Methylphenol	40u	10u	10u	10u
621-64-7	N-Nitrosodi-n-propylamine	40u	10u	10u	10u
67-72-1	Hexachloroethane	40u	10u	10u	10u
98-95-3	Nitrobenzene	40u	10u	207	10u
78-59-1	Isophorone	40u	10u	10u	10u
88-75-5	2-Nitrophenol	40u	10u	10u	10u
105-67-9	2,4-Dimethylphenol	40u	10u	10u	10u
65-85-0	Benzoic Acid	200u	50u	50u	50u
111-91-1	bis(-2-Chloroethoxy)Methane	40u	10u	10u	10u
120-83-2	2,4-Dichlorophenol	40u	10u	10u	10u
120-82-1	1,2,4-Trichlorobenzene	40u	10u	35	10u
91-20-3	Naphthalene	40u	10u	10u	10u
106-47-8	4-Chloroaniline	40u	10u	10u	10u
87-68-3	Hexachlorobutadiene	40u	10u	10u	10u
59-50-7	4-Chloro-3-Methylphenol	40u	10u	10u	10u

301501

TABLE E - 7
WATER SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/9/90	1/9/90	1/8/90	1/8/90
	TIME.....	1500	1830	1620	1600
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	LAB SAMPLE ID NO.....	PPG GW-4	PPG GW-7	PPG GW-2	PPG GW-1
	FIELD SAMPLE ID NO.....	MW-3	MW-4	MW-5	MW-6
	FIELD SAMPLE LOCATION	Monitoring Well 3	Monitoring Well 4	Monitoring Well 5	Monitoring Well 6
	SAMPLE DESCRIPTION....	Groundwater	Groundwater	Groundwater	Groundwater
	MATRIX.....	Water	Water	Water	Water
CAS NUMBER	TCL ORGANICS -SEMI VOLATILES	ug/l	ug/l	ug/l	ug/l
91-57-6	2-Methylnapthalene	40u	10u	10u	10u
77-47-4	Hexachlorocyclopentadiene	40u	10u	10u	10u
88-06-2	2,4,6-Trichlorophenol	40u	10u	10u	10u
95-95-4	2,4,5-Trichlorophenol	200u	50u	50u	50u
91-58-7	2-Chloronapthalene	40u	10u	10u	10u
88-74-4	2-Nitroaniline	200u	50u	50u	50u
131-11-3	Dimethyl Phthalate	40u	10u	10u	10u
208-96-8	Acenaphthylene	40u	10u	10u	10u
99-09-2	3-Nitroaniline	200u	50u	50u	50u
83-32-9	Acenaphthene	40u	10u	10u	10u
51-28-5	2,4-Dinitophenol	200u	50u	50u	50u
100-02-7	4-Nitrophenol	200u	50u	50u	50u
132-64-9	Dibenzofuran	40u	10u	10u	10u
121-14-2	2,4-Dinitrotoluene	40u	10u	10u	10u
606-20-2	2,6-Dinitrotoluene	40u	10u	10u	10u
84-66-2	Diethyl phthalate	40u	10u	90	10u
7005-72-3	4-Chlorophenyl phenyl ether	40u	10u	10u	10u
86-73-7	Fluorene	40u	10u	10u	10u
100-01-6	4-Nitroaniline	200u	50u	50u	50u
534-52-1	4,6-Dinitro-2-Methylphenol	200u	50u	50u	50u
86-30-6	N-Nitrosodiphenylamine	40u	10u	10u	10u
101-55-3	4-Bromophenyl phenyl ether	40u	10u	10u	10u
118-74-1	Hexachlorobenzene	40u	10u	10u	10u
87-86-5	Pentachlorophenol	200u	50u	50u	50u

300502

TABLE E - 7
WATER SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/9/90	1/9/90	1/8/90	1/8/90
	TIME.....	1500	1830	1620	1600
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	LAB SAMPLE ID NO.....	PPG GW-4	PPG GW-7	PPG GW-2	PPG GW-1
	FIELD SAMPLE ID NO.....	MW-3	MW-4	MW-5	MW-6
	FIELD SAMPLE LOCATION	Monitoring Well 3	Monitoring Well 4	Monitoring Well 5	Monitoring Well 6
	SAMPLE DESCRIPTION....	Groundwater	Groundwater	Groundwater	Groundwater
	MATRIX.....	Water	Water	Water	Water
CAS NUMBER	TCL ORGANICS -SEMI VOLATILES	ug/l	ug/l	ug/l	ug/l
85-01-8	Phenanthrene	40u	10u	10u	10u
120-12-7	Anthracene	40u	10u	10u	10u
84-74-2	Di-n-Butyl phthalate	40u	10u	10u	10u
206-44-0	Fluoranthene	40u	10u	10u	10u
129-00-0	Pyrene	40u	10u	10u	10u
85-68-7	Butyl benzyl phthalate	40u	10u	10u	10u
91-94-1	3,3'-Dichlorobenzidine	80u	20u	20u	20u
56-55-3	Benzo(a)Anthracene	40u	10u	10u	10u
117-81-7	bis(2-Ethylhexyl)Phthalate	40u	10u	10u	10u
218-01-9	Chrysene	40u	10u	10u	10u
117-84-0	Di-n-Octyl Phthalate	40u	10u	10u	10u
205-99-2	Benzo(b)Fluoranthene	40u	10u	10u	10u
207-08-9	Benzo(k)Fluoranthene	40u	10u	10u	10u
50-32-8	Benzo(a)Pyrene	40u	10u	10u	10u
193-39-5	Indeno(1,2,3-cd)Pyrene	40u	10u	10u	10u
53-70-3	Dibenz(a,h)Anthracene	40u	10u	10u	10u
191-24-2	Benzo(g,h,i)Perylene	40u	10u	10u	10u

Notes:

u Compound was not detected.

ug/l Microgram per liter.

[#] Compound detected above detection li

300503

TABLE E - 8
WATER SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/9/90	1/9/90	1/9/90	1/9/90
	TIME.....	1315	1315	1630	1630
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	LAB SAMPLE ID NO.....	PPG GW-3A	PPG GW-3B	PPG GW-5	PPG GW-6
	FIELD SAMPLE ID NO.....	MW-1	MW-1D	MW-2	MW-2D
	FIELD SAMPLE LOCATION	Monitoring Well 1	Monitoring Well 1	Monitoring Well 2	Monitoring Well 2
	SAMPLE DESCRIPTION....	Groundwater	Groundwater	Groundwater	Groundwater
	MATRIX.....	Water	Water	Water	Water
			Duplicate Sample		Duplicate Sample
CAS NUMBER	ORGANICS - Pesticides/Herbicides/PCB	ug/l	ug/l	ug/l	ug/l
319-84-6	Alpha-BHC	0.05u	0.05u	4	4
319-85-7	Beta-BHC	0.05u	0.05u	5u	2u
319-896-8	Delta-BHC	0.05u	0.05u	2u	2u
58-89-9	Gamma-BHC-Lindane	0.05u	0.05u	3	4
76-44-8	Heptachlor	0.05u	0.05u	2u	2u
309-00-2	Aldrin	0.05u	0.05u	2u	2u
1024-67-3	Heptachlor Epoxide	0.05u	0.05u	2u	2u
959-98-8	Endosulfan I	0.05u	0.05u	2u	2u
60-57-1	Dieldrin	0.1u	0.1u	0.2u	0.2u
72-55-9	4,4'-DDE	0.1u	0.1u	0.2u	0.2u
72-20-8	Endrin	0.1u	0.1u	0.1u	0.1u
33213-65-9	Endosulfan II	0.1u	0.1u	0.1u	0.1u
72-54-8	4,4'-DDD	0.1u	0.1u	0.1u	0.1u
1031-07-8	Endosulfan Sulfate	0.1u	0.1u	0.1u	0.1u
50-29-3	4,4'-DDT	0.1u	0.1u	0.1	0.2u
53494-70-5	Methoxychlor	0.1u	0.1u	0.5u	0.5u
72-43-5	Endrin Ketone	0.1u	0.1u	0.1u	0.1u
	Alpha Chlordane	0.05u	0.05u	25u	25u
	Gamma Chlordane	0.05u	0.05u	25u	25u
8001-35-2	Toxaphene	1u	1u	2u	2u
	Carbaryl	4u	4u	152	174
	Malathion	0.05u	0.05u	22	23
	Pentachloronitrobenzene	10u	10u	10u	20u
12674-11-2	Aroclor-1016	0.5u	0.5u	25u	25u
11104-28-2	Aroclor-1221	0.5u	0.5u	25u	25u
11141-16-5	Aroclor-1232	0.5u	0.5u	25u	25u
53469-21-9	Aroclor-1242	0.5u	0.5u	25u	25u
12672-29-6	Aroclor-1248	0.5u	0.5u	25u	25u
11097-69-1	Aroclor-1254	1u	1u	1u	1u
11096-82-5	Aroclor-1260	1u	1u	1u	1u

Notes:

u Compound was not detected.

ug/l Microgram per liter.

[#] Compound detected above detection limits.

300504

TABLE E - 8
WATER SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/9/90	1/9/90	1/8/90	1/8/90
	TIME.....	1500	1830	1620	1600
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	LAB SAMPLE ID NO.....	PPG GW-4	PPG GW-7	PPG GW-2	PPG GW-1
	FIELD SAMPLE ID NO.....	MW-3	MW-4	MW-5	MW-6
	FIELD SAMPLE LOCATION	Monitoring Well 3	Monitoring Well 4	Monitoring Well 5	Monitoring Well 6
	SAMPLE DESCRIPTION....	Groundwater	Groundwater	Groundwater	Groundwater
	MATRIX.....	Water	Water	Water	Water
CAS NUMBER	ORGANICS - Pesticides/Herbicides/PCB	ug/l	ug/l	ug/l	ug/l
319-84-6	Alpha-BHC	5u	0.33	84	5
319-85-7	Beta-BHC	1.2	0.05u	9	2u
319-896-8	Delta-BHC	0.2	0.05u	16	0.57
58-89-9	Gamma-BHC-Lindane	1.4	0.11	50u	3
76-44-8	Heptachlor	0.1u	0.05u	5u	2u
309-00-2	Aldrin	0.1u	0.05u	5u	2u
1024-67-3	Heptachlor Epoxide	0.1u	0.05u	5u	0.05u
959-98-8	Endosulfan I	0.1u	0.05u	5u	2u
60-57-1	Dieldrin	0.5	0.1	10u	0.1u
72-55-9	4,4'-DDE	0.2u	0.1u	10u	0.1u
72-20-8	Endrin	0.2u	0.1u	10u	0.1u
33213-65-9	Endosulfan II	0.2u	0.1u	10u	0.1u
72-54-8	4,4'-DDD	0.2u	0.1u	10u	0.1u
1031-07-8	Endosulfan Sulfate	0.2u	0.1u	10u	0.1u
50-29-3	4,4'-DDT	1	0.1u	10u	0.1u
53494-70-5	Methoxychlor	1u	0.05u	50u	0.5u
72-43-5	Endrin Ketone	0.4	0.1u	10u	0.2
	Alpha Chlordane	1u	0.05u	50u	0.5u
	Gamma Chlordane	1u	0.05u	50u	0.5u
8001-35-2	Toxaphene	2u	1u	100u	1u
	Carbaryl	4u	4u	14,500	182
	Malathion	0.01u	0.05u	10u	1u
	Pentachloronitrobenzene	40u	10u	10u	10u
12674-11-2	Aroclor-1016	1u	0.5u	50u	25u
11104-28-2	Aroclor-1221	1u	5u	500u	25u
11141-16-5	Aroclor-1232	1u	0.5u	50u	25u
53469-21-9	Aroclor-1242	1u	0.5u	50u	25u
12672-29-6	Aroclor-1248	1u	0.5u	50u	25u
11097-69-1	Aroclor-1254	2u	1u	100u	50u
11096-82-5	Aroclor-1260	2u	1u	100u	50u

Notes:

u Compound was not detected.

ug/l Microgram per liter.

[#] Compound detected above detection li

300505

TABLE E - 9
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/5/90	12/14/89	12/21/89	12/17/89	12/20/89
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-1	B-2	B-6	B-7	B-8
	SAMPLE DESCRIPTION...	Soil Boring	Soil Boring	Soil Boring	Soil Boring	Soil Boring
	LAB SAMPLE ID NO.....	PPG B1/S3A	PPG B2A/S1	PPG B6/S3A	PPG B7/S3-A	PPG B8/S3A
	TIME.....	1015	850	1200	1500	1436
	MATRIX.....	SOIL	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	4-7'	5-6.5'	5-8'	5-7'	5-7'
	ORGANICS - TIC's	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
	Unknown	7,900	8,600	2,000	12,000	2,200
	Unknown			7,000		1,600
	Unknown					
	Unknown Carboxlic Acid/este	24,000				
	Unknown Aromatic			6,500		
	Unknown Aromatic			34,000		
	Unknown Ketone					
	Unknown Nitrogen Compound				2,200	
50293	p, p' - DDT	1,600				
	m, p' - DDD					3,100
72548	1, 1 - Dichloro - 2, 2 - bis (p-chlor)			5,300		
8017343	Technical Chlorophenothane			37,000		
	Miotane (USAN)			150,000		

Notes:

ug/kg Microgram per kilogram.

[#] Compound tenatively idenified.

300506

TABLE E - 9
SOIL SAMPLES, ANALYTICAL DATA SUMMARY
PHASE I INVESTIGATION
PULVERIZING SERVICES
MOORESTOWN, NEW JERSEY

	DATE.....	1/4/90	1/4/90	1/4/90	1/6/90
	LABORATORY.....	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS	LANCASTER LABS
	FIELD SAMPLE ID NO.....	B-11	B-11	B-19	B-20
	SAMPLE DESCRIPTION...	Soil Boring	Soil Boring	Soil Boring	Soil Boring
	LAB SAMPLE ID NO.....	PPG B11/S3A	PPG B11/S3B	PPG B19/S3A	PPG B-20/S3A
	TIME.....	1430	1430	0830	1305
	MATRIX.....	SOIL	SOIL	SOIL	SOIL
CAS NUMBER	DEPTH, FT.....	4-7'	4-7'	4-7'	4-7'
	ORGANICS - TIC's	ug/kg	ug/kg	ug/kg	ug/kg
	Unknown	4,400	11,000	8,100	7,600
	Unknown	1,500			
	Unknown	1,000			
	Unknown Carboxlic Acid/este	18,000	43,000	47,000	
	Unknown Aromatic				
	Unknown Aromatic				
	Unknown Ketone	1,400			
	Unknown Nitrogen Compound				
50293	p, p' - DDT				
	m, p' - DDD				
72548	1, 1 - Dichloro - 2, 2 - bis (p-chlor)				
8017343	Technical Chlorophenothane				
	Miotane (USAN)				

Notes:

ug/kg Microgram per kilogram.

[#] Compound tenatively idenified.

300507

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476747
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B1/S3A 4-7' Soil Sample
Collected on 01/05/90 at 1015 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
VOA GC/MS Library Search		attached		089001000P
TCL Volatiles (Soil)		attached		117827000P
TCL Semi-Volatiles (Soil)		attached		120127000P
TCL Semi-Volatiles (Soil) cont		attached		120227000P
TCL Pesticides		attached		122527000P
Moisture *AS RECEIVED*	11.1	% by wt.	0.1	135327000P
pH	6.50		0.01	144127000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150927000P
Dioxin	0.00000			900131000P
The analysis for dioxin was subcontracted to another laboratory. 2,3,7,8-TCDD was not detected in the sample. Please refer to the data package for the complete report.				
Malathion	< 60.	ug/kg	60.	900216500P
Pentachloronitrobenzene	< 370.	ug/kg	370.	900301000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476747
Date Reported 2/15/90
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PPG B1/S3A 4-7' Soil Sample
Collected on 01/05/90 at 1015 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 11.	ug/kg	11.	082700000P
Bromomethane	< 11.	ug/kg	11.	082800000P
Vinyl Chloride	< 11.	ug/kg	11.	082900000P
Chloroethane	< 11.	ug/kg	11.	083000000P
Methylene Chloride	< 6.	ug/kg	6.	083100000P
Acetone	43.	ug/kg	11.	091400000P
Carbon Disulfide	< 6.	ug/kg	6.	091500000P
1,1-Dichloroethene	< 6.	ug/kg	6.	118000000P
1,1-Dichloroethane	< 6.	ug/kg	6.	083300000P
1,2-Dichloroethene (total)	< 6.	ug/kg	6.	117900000P
Chloroform	< 6.	ug/kg	6.	083500000P
1,2-Dichloroethane	< 6.	ug/kg	6.	083600000P
2-Butanone	< 11.	ug/kg	11.	091600000P
1,1,1-Trichloroethane	< 6.	ug/kg	6.	083700000P
Carbon Tetrachloride	< 6.	ug/kg	6.	083800000P
Vinyl Acetate	< 11.	ug/kg	11.	091700000P
Bromodichloromethane	< 6.	ug/kg	6.	083900000P
1,2-Dichloropropane	< 6.	ug/kg	6.	084000000P
cis-1,3-Dichloropropene	< 6.	ug/kg	6.	084400000P
Trichloroethene	< 6.	ug/kg	6.	118100000P
Dibromochloromethane	< 6.	ug/kg	6.	084600000P
1,1,2-Trichloroethane	< 6.	ug/kg	6.	084500000P
Benzene	< 6.	ug/kg	6.	118200000P
trans-1,3-Dichloropropene	< 6.	ug/kg	6.	084100000P
Bromoform	< 6.	ug/kg	6.	084700000P
4-Methyl-2-Pentanone	< 11.	ug/kg	11.	091900000P
2-Hexanone	< 11.	ug/kg	11.	091800000P
Tetrachloroethene	< 6.	ug/kg	6.	084800000P
1,1,2,2-Tetrachloroethane	< 6.	ug/kg	6.	084900000P
Toluene	< 6.	ug/kg	6.	118300000P
Chlorobenzene	< 6.	ug/kg	6.	118400000P
Ethylbenzene	< 6.	ug/kg	6.	085200000P
Styrene	< 6.	ug/kg	6.	092000000P
Xylenes (total)	< 6.	ug/kg	6.	092100000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

300509

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476747
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B1/S3A 4-7' Soil Sample
Collected on 01/05/90 at 1015 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
phenol	< 370.	ug/kg	370.	118500000P
bis (2-chloroethyl) ether	< 370.	ug/kg	370.	066700000P
2-chlorophenol	< 370.	ug/kg	370.	118600000P
1,3-dichlorobenzene	< 370.	ug/kg	370.	067700000P
1,4-dichlorobenzene	< 370.	ug/kg	370.	118700000P
benzyl alcohol	< 370.	ug/kg	370.	092600000P
1,2-dichlorobenzene	< 370.	ug/kg	370.	067600000P
2-methylphenol	< 370.	ug/kg	370.	092700000P
bis (2-chloroisopropyl) ether	< 370.	ug/kg	370.	066800000P
4-methylphenol	< 370.	ug/kg	370.	092800000P
N-nitrosodi-n-propylamine	< 370.	ug/kg	370.	118800000P
hexachloroethane	< 370.	ug/kg	370.	069200000P
nitrobenzene	< 370.	ug/kg	370.	069600000P
isophorone	< 370.	ug/kg	370.	069400000P
2-nitrophenol	< 370.	ug/kg	370.	065100000P
2,4-dimethylphenol	< 370.	ug/kg	370.	064800000P
benzoic acid	< 1,900.	ug/kg	1,900.	092900000P
bis (2-chloroethoxy) methane	< 370.	ug/kg	370.	066600000P
2,4-dichlorophenol	< 370.	ug/kg	370.	064700000P
1,2,4-trichlorobenzene	< 370.	ug/kg	370.	118900000P
naphthalene	< 370.	ug/kg	370.	069500000P
4-chloroaniline	< 370.	ug/kg	370.	093000000P
hexachlorobutadiene	< 370.	ug/kg	370.	069000000P
4-chloro-3-methylphenol	< 370.	ug/kg	370.	119000000P
2-methylnaphthalene	< 370.	ug/kg	370.	093100000P
hexachlorocyclopentadiene	< 370.	ug/kg	370.	069100000P
2,4,6-trichlorophenol	< 370.	ug/kg	370.	065600000P
2,4,5-trichlorophenol	< 1,900.	ug/kg	1,900.	093200000P
2-chloronaphthalene	< 370.	ug/kg	370.	067200000P
2-nitroaniline	< 1,900.	ug/kg	1,900.	093300000P
dimethyl phthalate	< 370.	ug/kg	370.	068100000P
acenaphthylene	< 370.	ug/kg	370.	06580000CP

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300510

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476747
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B1/S3A 4-7' Soil Sample
Collected on 01/05/90 at 1015 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 1,900.	ug/kg	1,900.	093400000P
acenaphthene	< 370.	ug/kg	370.	119100000P
2,4-dinitrophenol	< 1,900.	ug/kg	1,900.	065000000P
4-nitrophenol	< 1,900.	ug/kg	1,900.	119200000P
dibenzofuran	< 370.	ug/kg	370.	093500000P
2,4-dinitrotoluene	< 370.	ug/kg	370.	119300000P
2,6-dinitrotoluene	< 370.	ug/kg	370.	068400000P
diethyl phthalate	< 370.	ug/kg	370.	068000000P
4-chlorophenyl phenyl ether	< 370.	ug/kg	370.	067300000P
fluorene	< 370.	ug/kg	370.	068800000P
4-nitroaniline	< 1,900.	ug/kg	1,900.	093600000P
2-methyl-4,6-dinitrophenol	< 1,900.	ug/kg	1,900.	064900000P
N-nitrosodiphenylamine	< 370.	ug/kg	370.	069900000P
4-bromophenyl phenyl ether	< 370.	ug/kg	370.	067000000P
hexachlorobenzene	< 370.	ug/kg	370.	068900000P
pentachlorophenol	< 1,900.	ug/kg	1,900.	119400000P
phenanthrene	< 370.	ug/kg	370.	070000000P
anthracene	< 370.	ug/kg	370.	065900000P
di-n-butyl phthalate	< 370.	ug/kg	370.	068200000P
fluoranthene	< 370.	ug/kg	370.	068700000P
pyrene	< 370.	ug/kg	370.	119500000P
butyl benzyl phthalate	< 370.	ug/kg	370.	067100000P
3,3'-dichlorobenzidine	< 750.	ug/kg	750.	067900000P
benzo (a) anthracene	< 370.	ug/kg	370.	066100000P
bis (2-ethylhexyl) phthalate	< 370.	ug/kg	370.	066900000P
chrysene	< 370.	ug/kg	370.	067400000P
di-n-octyl phthalate	< 370.	ug/kg	370.	068500000P
benzo (b) fluoranthene	< 370.	ug/kg	370.	066300000P
benzo (K) fluoranthene	< 370.	ug/kg	370.	066500000P
benzo (a) pyrene	< 370.	ug/kg	370.	066200000P
indeno (1,2,3-cd) pyrene	< 370.	ug/kg	370.	069300000P
dibenz (a,h) anthracene	< 370.	ug/kg	370.	067500000P
benzo (ghi) perylene	< 370.	ug/kg	370.	066400000P

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Member American Council of Independent Laboratories, Inc

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300511

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476747
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B1/S3A 4-7' Soil Sample
Collected on 01/05/90 at 1015 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 90.	ug/kg	90.	060900000P
Beta BHC	< 90.	ug/kg	90.	061000000P
Delta BHC	< 90.	ug/kg	90.	061200000P
Gamma BHC - Lindane	< 90.	ug/kg	90.	121800000P
Heptachlor	< 90.	ug/kg	90.	121900000P
Aldrin	< 90.	ug/kg	90.	122000000P
Heptachlor Epoxide	< 90.	ug/kg	90.	061500000P
Endosulfan I	< 90.	ug/kg	90.	062700000P
Dieldrin	< 180.	ug/kg	180.	122200000P
DDE	< 180.	ug/kg	180.	061600000P
Endrin	< 180.	ug/kg	180.	122300000P
Endosulfan II	< 180.	ug/kg	180.	062800000P
DDD	< 280.	ug/kg	280.	061700000P
Endosulfan Sulfate	< 180.	ug/kg	180.	062900000P
DDT	9,750.	ug/kg	180.	122100000P
Endrin Ketone	< 180.	ug/kg	180.	093800000P
Methoxychlor	< 900.	ug/kg	900.	062100000P
Alpha Chlordane	< 900.	ug/kg	900.	136100000P
Gamma Chlordane	< 900.	ug/kg	900.	136200000P
Toxaphene	< 1,800.	ug/kg	1,800.	094200000P
PCB-1016	< 900.	ug/kg	900.	063900000P
PCB-1221	< 900.	ug/kg	900.	064000000P
PCB-1232	< 900.	ug/kg	900.	064100000P
PCB-1242	< 900.	ug/kg	900.	064200000P
PCB-1248	< 900.	ug/kg	900.	064300000P
PCB-1254	< 1,800.	ug/kg	1,800.	064400000P
PCB-1260	< 1,800.	ug/kg	1,800.	064500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

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Chemical Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300512

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476747
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B1/S3A 4-7' Soil Sample
Collected on 01/05/90 at 1015 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Chemical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300513

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

B1S3A

Lab Name: LANCASTER LABS Contract:
Lab Code: LANCAS Case No.: 244147 SAS No.: SDG No.: PPG3
Matrix: (soil/water) SOIL Lab Sample ID: C1476747L
Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1476747L
Level: (low/med) LOW Date Received: 01/05/90
% Moisture: not dec. 11 Date Analyzed: 01/09/90
Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

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Member American Council of Independent Laboratories, Inc

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

300514

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B1S3A

Lab Name: LANCASTER LABS Contract: RIZZO
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) SOIL Lab Sample ID: 1476747
Sample wt/vol: 30 (g/mL) G Lab File ID: >F0005
Level: (low/med) LOW Date Received: 01/05/90
% Moisture: not dec. 11 dec. _____. Date Extracted: 01/08/90
Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/10/90
GPC Cleanup: (Y/N) N pH: 5.8 Dilution Factor: 1.000

Number TICs found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		Unknown	4.60	190.	J
2.		Unknown	5.69	300.	J
3.		Unknown	6.81	7900.	JBA
4.		Unknown	8.98	190.	JB
5.		Unknown	9.37	410.	JB
6.		Unknown ketone	9.62	190.	JB
7.	72548	1,1-Dichloro-2,2-bis(p-chlor	31.41	300	J
8.	50293	p,p'-DDT	31.55	1600	J
9.		Unknown carboxylic acid/este	32.39	24000.	JB
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					

FORM I SV-TIC 1/87 Rev.

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Questions? Contact Environmental Technical Services at (717) 656-2301

300515

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476748
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

Continuation of LLI #1476747 PPG B1/S3A 4-7'
Soil Sample
Collected on 01/05/90 at 1015 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Aluminum	7,160.	mg/kg	20.	014300100P
Antimony	< 6.	mg/kg	6.	014400100P
Barium	40.	mg/kg	20.	014600100P
Beryllium	< 0.6	mg/kg	0.6	014700100P
Cadmium	< 0.6	mg/kg	0.6	014900100P
Calcium	260.	mg/kg	10.	015000100P
Chromium	7.	mg/kg	1.	015100100P
Cobalt	< 6.	mg/kg	6.	015200100P
Copper	4.	mg/kg	2.	015300100P
Iron	10,600.	mg/kg	6.	015400100P
Magnesium	350.	mg/kg	10.	015700100P
Manganese	184.	mg/kg	1.	015800100P
Mercury	< 0.04	mg/kg	0.04	015900100P
Nickel	< 4.	mg/kg	4.	016100100P
Potassium	240.	mg/kg	60.	016200100P
Silver	< 1.	mg/kg	1.	016600100P
Sodium	< 60.	mg/kg	60.	016700100P
Vanadium	14.	mg/kg	6.	017100100P
Zinc	8.	mg/kg	2.	017200100P
Cyanide, Total	< 0.1	mg/kg	0.1	023700100P
Arsenic (furnace method)	< 6.	mg/kg	6.	114500100P
Lead (furnace method)	4.0	mg/kg	0.6	115500100P
Selenium (furnace method)	< 0.6	mg/kg	0.6	116400100P
Thallium (furnace method)	< 1.	mg/kg	1.	117300100P
Moisture *AS RECEIVED*	11.1	% by wt.	0.1	135300100P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300516

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476746
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B1/S6 10-12' Soil Sample
Collected on 01/05/90 at 1035 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	13.4	% by wt.	0.1	135330000P
pH	5.68		0.01	144130000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 380.	ug/kg	380.	900230000P

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Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300517

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476746
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B1/S6 10-12' Soil Sample
Collected on 01/05/90 at 1035 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 9.	ug/kg	9.	060900000P
Beta BHC	< 9.	ug/kg	9.	061000000P
Delta BHC	< 9.	ug/kg	9.	061200000P
Gamma BHC - Lindane	< 9.	ug/kg	9.	121800000P
Heptachlor	< 9.	ug/kg	9.	121900000P
Aldrin	< 9.	ug/kg	9.	122000000P
Heptachlor Epoxide	< 9.	ug/kg	9.	061500000P
Endosulfan I	< 9.	ug/kg	9.	062700000P
Dieldrin	< 18.	ug/kg	18.	122200000P
DDE	18.	ug/kg	18.	061600000P
Endrin	< 18.	ug/kg	18.	122300000P
Endosulfan II	< 18.	ug/kg	18.	062800000P
DDD	< 60.	ug/kg	60.	061700000P
Endosulfan Sulfate	< 18.	ug/kg	18.	062900000P
DDT	148.	ug/kg	18.	122100000P
Endrin Ketone	< 18.	ug/kg	18.	093800000P
Methoxychlor	< 90.	ug/kg	90.	062100000P
Alpha Chlordane	< 90.	ug/kg	90.	136100000P
Gamma Chlordane	< 90.	ug/kg	90.	136200000P
Toxaphene	< 180.	ug/kg	180.	094200000P
PCB-1016	< 90.	ug/kg	90.	063900000P
PCB-1221	< 90.	ug/kg	90.	064000000P
PCB-1232	< 90.	ug/kg	90.	064100000P
PCB-1242	< 90.	ug/kg	90.	064200000P
PCB-1248	< 90.	ug/kg	90.	064300000P
PCB-1254	< 180.	ug/kg	180.	064400000P
PCB-1260	< 180.	ug/kg	180.	064500000P

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Chemical, Biological & Environmental Fields of Testing

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Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories Inc.

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476746
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B1/S6 10-12' Soil Sample
Collected on 01/05/90 at 1035 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Group Leader, Pesticides/PCB's

300519

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471135
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-2/S-1 0-2' Soil Sample
Collected on 12/14/89 at 1230 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	10.9	% by wt.	0.1	135330000P
pH	4.53		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 370.	ug/kg	370.	900230000P

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Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300520

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471135
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-2/S-1 0-2' Soil Sample
Collected on 12/14/89 at 1230 by WS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 900.	ug/kg	900.	060900000P
Beta BHC	< 900.	ug/kg	900.	061000000P
Delta BHC	< 900.	ug/kg	900.	061200000P
Gamma BHC - Lindane	< 900.	ug/kg	900.	121800000P
Heptachlor	< 900.	ug/kg	900.	121900000P
Aldrin	< 900.	ug/kg	900.	122000000P
Heptachlor Epoxide	< 900.	ug/kg	900.	061500000P
Endosulfan I	< 900.	ug/kg	900.	062700000P
Dieldrin	3,100.	ug/kg	1,800.	122200000P
DDE	3,700.	ug/kg	1,800.	061600000P
Endrin	< 1,800.	ug/kg	1,800.	122300000P
Endosulfan II	< 1,800.	ug/kg	1,800.	062800000P
DDD	5,500.	ug/kg	1,800.	061700000P
Endosulfan Sulfate	< 1,800.	ug/kg	1,800.	062900000P
DDT	185,000.	ug/kg	1,800.	122100000P
Endrin Ketone	< 1,800.	ug/kg	1,800.	093800000P
Methoxychlor	< 9,000.	ug/kg	9,000.	062100000P
Alpha Chlordane	< 9,000.	ug/kg	9,000.	136100000P
Gamma Chlordane	< 9,000.	ug/kg	9,000.	136200000P
Toxaphene	< 18,000.	ug/kg	18,000.	094200000P
PCB-1016	< 9,000.	ug/kg	9,000.	063900000P
PCB-1221	< 9,000.	ug/kg	9,000.	064000000P
PCB-1232	< 9,000.	ug/kg	9,000.	064100000P
PCB-1242	< 9,000.	ug/kg	9,000.	064200000P
PCB-1248	< 9,000.	ug/kg	9,000.	064300000P
PCB-1254	< 18,000.	ug/kg	18,000.	064400000P
PCB-1260	< 18,000.	ug/kg	18,000.	064500000P

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Technical Services at (717) 656-2301

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Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300521

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471135
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-2/S-1 0-2' Soil Sample
Collected on 12/14/89 at 1230 by WS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300522

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471766
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG B2A/S1 5-6.5' Soil Sample
Collected on 12/15/89 at 0850 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
VOA GC/MS Library Search		attached		089004000P
TCL Volatiles (Soil)		attached		117826000P
TCL Semi-Volatiles (Soil)		attached		120126000P
TCL Semi-Volatiles (Soil) cont		attached		120226000P
TCL Pesticides		attached		122526000P
Moisture *AS RECEIVED*	15.2	% by wt.	0.1	135326000P
pH	5.39		0.01	144126000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150926000P
Dioxin	0.00000			900131000P

The analysis for dioxin was subcontracted to another laboratory.

2,3,7,8-TCDD was not detected in the sample. Please refer to the data package for the complete report.

Malathion	< 60.	ug/kg	60.	900216500P
Pentachloronitrobenzene	< 390.	ug/kg	390.	900301000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300523

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471766
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG B2A/S1 5-6.5' Soil Sample
Collected on 12/15/89 at 0850 by WS

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 12.	ug/kg	12.	082700000P
Bromomethane	< 12.	ug/kg	12.	082800000P
Vinyl Chloride	< 12.	ug/kg	12.	082900000P
Chloroethane	< 12.	ug/kg	12.	083000000P
Methylene Chloride	< 6.	ug/kg	6.	083100000P
Acetone	41.	ug/kg	12.	091400000P
Carbon Disulfide	< 6.	ug/kg	6.	091500000P
1,1-Dichloroethene	< 6.	ug/kg	6.	118000000P
1,1-Dichloroethane	< 6.	ug/kg	6.	083300000P
1,2-Dichloroethene (total)	< 6.	ug/kg	6.	117900000P
Chloroform	< 6.	ug/kg	6.	083500000P
1,2-Dichloroethane	< 6.	ug/kg	6.	083600000P
2-Butanone	< 12.	ug/kg	12.	091600000P
1,1,1-Trichloroethane	< 6.	ug/kg	6.	083700000P
Carbon Tetrachloride	< 6.	ug/kg	6.	083800000P
Vinyl Acetate	< 12.	ug/kg	12.	091700000P
Bromodichloromethane	< 6.	ug/kg	6.	083900000P
1,2-Dichloropropane	< 6.	ug/kg	6.	084000000P
cis-1,3-Dichloropropene	< 6.	ug/kg	6.	084400000P
Trichloroethene	< 6.	ug/kg	6.	118100000P
Dibromochloromethane	< 6.	ug/kg	6.	084600000P
1,1,2-Trichloroethane	< 6.	ug/kg	6.	084500000P
Benzene	< 6.	ug/kg	6.	118200000P
trans-1,3-Dichloropropene	< 6.	ug/kg	6.	084100000P
Bromoform	< 6.	ug/kg	6.	084700000P
4-Methyl-2-Pentanone	< 12.	ug/kg	12.	091900000P
2-Hexanone	< 12.	ug/kg	12.	091800000P
Tetrachloroethene	< 6.	ug/kg	6.	084800000P
1,1,2,2-Tetrachloroethane	< 6.	ug/kg	6.	084900000P
Toluene	< 6.	ug/kg	6.	118300000P
Chlorobenzene	< 6.	ug/kg	6.	118400000P
Ethylbenzene	< 6.	ug/kg	6.	085200000P
Styrene	< 6.	ug/kg	6.	092000000P
Xylenes (total)	< 6.	ug/kg	6.	092100000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard S. Rodgers, B.S.
Group Leader, GC/MS

300524

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471766
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG B2A/S1 5-6.5' Soil Sample
Collected on 12/15/89 at 0850 by WS

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
phenol	< 390.	ug/kg	390.	118500000P
bis (2-chloroethyl) ether	< 390.	ug/kg	390.	066700000P
2-chlorophenol	< 390.	ug/kg	390.	118600000P
1,3-dichlorobenzene	< 390.	ug/kg	390.	067700000P
1,4-dichlorobenzene	< 390.	ug/kg	390.	118700000P
benzyl alcohol	< 390.	ug/kg	390.	092600000P
1,2-dichlorobenzene	< 390.	ug/kg	390.	067600000P
2-methylphenol	< 390.	ug/kg	390.	092700000P
bis (2-chloroisopropyl) ether	< 390.	ug/kg	390.	066800000P
4-methylphenol	< 390.	ug/kg	390.	092800000P
N-nitrosodi-n-propylamine	< 390.	ug/kg	390.	118800000P
hexachloroethane	< 390.	ug/kg	390.	069200000P
nitrobenzene	< 390.	ug/kg	390.	069600000P
isophorone	< 390.	ug/kg	390.	069400000P
2-nitrophenol	< 390.	ug/kg	390.	065100000P
2,4-dimethylphenol	< 390.	ug/kg	390.	064800000P
benzoic acid	< 2,000.	ug/kg	2,000.	092900000P
bis (2-chloroethoxy) methane	< 390.	ug/kg	390.	066600000P
2,4-dichlorophenol	< 390.	ug/kg	390.	064700000P
1,2,4-trichlorobenzene	< 390.	ug/kg	390.	118900000P
naphthalene	< 390.	ug/kg	390.	069500000P
4-chloroaniline	< 390.	ug/kg	390.	093000000P
hexachlorobutadiene	< 390.	ug/kg	390.	069000000P
4-chloro-3-methylphenol	< 390.	ug/kg	390.	119000000P
2-methylnaphthalene	< 390.	ug/kg	390.	093100000P
hexachlorocyclopentadiene	< 390.	ug/kg	390.	069100000P
2,4,6-trichlorophenol	< 390.	ug/kg	390.	065600000P
2,4,5-trichlorophenol	< 2,000.	ug/kg	2,000.	093200000P
2-chloronaphthalene	< 390.	ug/kg	390.	067200000P
2-nitroaniline	< 2,000.	ug/kg	2,000.	093300000P
dimethyl phthalate	< 390.	ug/kg	390.	068100000P
acenaphthylene	< 390.	ug/kg	390.	065800000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300525

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471766
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG B2A/S1 5-6.5' Soil Sample
Collected on 12/15/89 at 0850 by WS

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 2,000.	ug/kg	2,000.	093400000P
acenaphthene	< 390.	ug/kg	390.	119100000P
2,4-dinitrophenol	< 2,000.	ug/kg	2,000.	065000000P
4-nitrophenol	< 2,000.	ug/kg	2,000.	119200000P
dibenzofuran	< 390.	ug/kg	390.	093500000P
2,4-dinitrotoluene	< 390.	ug/kg	390.	119300000P
2,6-dinitrotoluene	< 390.	ug/kg	390.	068400000P
diethyl phthalate	< 390.	ug/kg	390.	068000000P
4-chlorophenyl phenyl ether	< 390.	ug/kg	390.	067300000P
fluorene	< 390.	ug/kg	390.	068800000P
4-nitroaniline	< 2,000.	ug/kg	2,000.	093600000P
2-methyl-4,6-dinitrophenol	< 2,000.	ug/kg	2,000.	064900000P
N-nitrosodiphenylamine	< 390.	ug/kg	390.	069900000P
4-bromophenyl phenyl ether	< 390.	ug/kg	390.	067000000P
hexachlorobenzene	< 390.	ug/kg	390.	068900000P
pentachlorophenol	< 2,000.	ug/kg	2,000.	119400000P
phenanthrene	< 390.	ug/kg	390.	070000000P
anthracene	< 390.	ug/kg	390.	065900000P
di-n-butyl phthalate	< 390.	ug/kg	390.	068200000P
fluoranthene	< 390.	ug/kg	390.	068700000P
pyrene	< 390.	ug/kg	390.	119500000P
butyl benzyl phthalate	< 390.	ug/kg	390.	067100000P
3,3'-dichlorobenzidine	< 790.	ug/kg	790.	067900000P
benzo (a) anthracene	< 390.	ug/kg	390.	066100000P
bis (2-ethylhexyl) phthalate	< 390.	ug/kg	390.	066900000P
chrysene	< 390.	ug/kg	390.	067400000P
di-n-octyl phthalate	< 390.	ug/kg	390.	068500000P
benzo (b) fluoranthene	< 390.	ug/kg	390.	066300000P
benzo (K) fluoranthene	< 390.	ug/kg	390.	066500000P
benzo (a) pyrene	< 390.	ug/kg	390.	066200000P
indeno (1,2,3-cd) pyrene	< 390.	ug/kg	390.	069300000P
dibenz (a,h) anthracene	< 390.	ug/kg	390.	067500000P
benzo (ghi) perylene	< 390.	ug/kg	390.	066400000P

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Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300526

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471766
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG B2A/S1 5-6.5' Soil Sample
Collected on 12/15/89 at 0850 by WS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	12.	ug/kg	9.	060900000P
Beta BHC	< 9.	ug/kg	9.	061000000P
Delta BHC	< 9.	ug/kg	9.	061200000P
Gamma BHC - Lindane	< 9.	ug/kg	9.	121800000P
Heptachlor	< 9.	ug/kg	9.	121900000P
Aldrin	< 9.	ug/kg	9.	122000000P
Heptachlor Epoxide	< 9.	ug/kg	9.	061500000P
Endosulfan I	< 9.	ug/kg	9.	062700000P
Dieldrin	22.	ug/kg	19.	122200000P
DDE	< 19.	ug/kg	19.	061600000P
Endrin	< 19.	ug/kg	19.	122300000P
Endosulfan II	< 19.	ug/kg	19.	062800000P
DDD	< 19.	ug/kg	19.	061700000P
Endosulfan Sulfate	< 19.	ug/kg	19.	062900000P
DDT	45.	ug/kg	19.	122100000P
Endrin Ketone	< 19.	ug/kg	19.	093800000P
Methoxychlor	< 90.	ug/kg	90.	062100000P
Alpha Chlordane	< 90.	ug/kg	90.	136100000P
Gamma Chlordane	< 90.	ug/kg	90.	136200000P
Toxaphene	< 190.	ug/kg	190.	094200000P
PCB-1016	< 90.	ug/kg	90.	063900000P
PCB-1221	< 90.	ug/kg	90.	064000000P
PCB-1232	< 90.	ug/kg	90.	064100000P
PCB-1242	< 90.	ug/kg	90.	064200000P
PCB-1248	< 90.	ug/kg	90.	064300000P
PCB-1254	< 190.	ug/kg	190.	064400000P
PCB-1260	< 190.	ug/kg	190.	064500000P

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Questions? Contact Environmental
Technical Services at (717) 656-2301

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Of Symbols And Abbreviations And
Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300527

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471766
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG B2A/S1 5-6.5' Soil Sample
Collected on 12/15/89 at 0850 by WS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300528

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1R

EPA SAMPLE NO.

B2AS1

TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: LANCASTER LABS Contract:
Lab Code: LLI Case No.: 242630 SAS No.: SDG No.: PPG1
Matrix: (soil/water) SOIL Lab Sample ID: A1471766L
Sample wt/vol: 5.0 (g/mL) G Lab File ID: A1471766L
Level: (low/med) LOW Date Received: 12/18/89
% Moisture: not dec. 15 Date Analyzed: 12/20/89
Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 109-99-9	FURAN,TETRAHYDRO-	8.67	6.1	J

300529

FORM I VOA-TIC 1/87 Rev.

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Richard S. Rodgers, B.S.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

EPA SAMPLE NO.

B2AS1

Lab Name: LANCASTER LABS Contract: RIZZO
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) SOIL Lab Sample ID: 1471766
Sample wt/vol: 30.0(g/mL) G Lab File ID: >E1652
Level: (low/med) LOW Date Received: 12/18/89
% Moisture: not dec. 15. dec. _____. Date Extracted: 12/19/89
Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 12/27/89
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 1.000

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 625650	2-Pentene, 2,4-dimethyl-	6.93	350.	*JIB
2.	Unknown	8.07	8600.	JAB
3.	Unknown aromatic hydrocarbon	15.24	200.	J
4.	Unknown subs. 1,2-benzenedic	27.65	200.	J
5.	Unknown subs. hexanedioic ac	33.96	310.	JB
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

*I=or isomer of coumpond

FORM I SV-TIC 1/87 Rev.

300530

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471767
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

Continuation of LLI #1471766 PPG B2A/S1 5-6.5'
Soil Sample
Collected on 12/15/89 at 0850 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Aluminum	10,100.	mg/kg	20.	014301100P
Antimony	< 6.	mg/kg	6.	014401100P
Barium	50.	mg/kg	20.	014601100P
Beryllium	< 0.6	mg/kg	0.6	014701100P
Cadmium	< 0.6	mg/kg	0.6	014901100P
Calcium	150.	mg/kg	10.	015001100P
Chromium	8.	mg/kg	1.	015101100P
Cobalt	7.	mg/kg	6.	015201100P
Copper	8.	mg/kg	2.	015301100P
Iron	6,000.	mg/kg	6.	015401100P
Magnesium	520.	mg/kg	10.	015701100P
Manganese	156.	mg/kg	1.	015801100P
Mercury	< 0.05	mg/kg	0.05	015901100P
Nickel	5.	mg/kg	5.	016101100P
Potassium	320.	mg/kg	60.	016201100P
Silver	< 1.	mg/kg	1.	016601100P
Sodium	< 60.	mg/kg	60.	016701100P
Vanadium	12.	mg/kg	6.	017101100P
Zinc	13.	mg/kg	2.	017201100P
Cyanide, Total	< 0.1	mg/kg	0.1	023701100P
Arsenic (furnace method)	< 1.	mg/kg	1.	114501100P
Lead (furnace method)	6.5	mg/kg	0.6	115501100P
Selenium (furnace method)	< 0.6	mg/kg	0.6	116401100P
Thallium (furnace method)	< 1.	mg/kg	1.	117301100P
Moisture *AS RECEIVED*	15.2	% by wt.	0.1	135301100P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300531

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471137
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-2/S-5 10-12' Soil Sample
Collected on 12/14/89 at 1420 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	20.9	% by wt.	0.1	135330000P
pH	5.29		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 420.	ug/kg	420.	900230000P

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Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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300532

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471137
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-2/S-5 10-12' Soil Sample
Collected on 12/14/89 at 1420 by WS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	40.	ug/kg	10.	060900000P
Beta BHC	< 10.	ug/kg	10.	061000000P
Delta BHC	< 10.	ug/kg	10.	061200000P
Gamma BHC - Lindane	20.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	21.	ug/kg	20.	122200000P
DDE	< 20.	ug/kg	20.	061600000P
Endrin	< 20.	ug/kg	20.	122300000P
Endosulfan II	< 20.	ug/kg	20.	062800000P
DDD	< 20.	ug/kg	20.	061700000P
Endosulfan Sulfate	< 20.	ug/kg	20.	062900000P
DDT	56.	ug/kg	20.	122100000P
Endrin Ketone	< 20.	ug/kg	20.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 200.	ug/kg	200.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 100.	ug/kg	100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 200.	ug/kg	200.	064400000P
PCB-1260	< 200.	ug/kg	200.	064500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300533

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471137
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-2/S-5 10-12' Soil Sample
Collected on 12/14/89 at 1420 by WS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300534

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471141
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-3/S1 0-2' Soil Sample
Collected on 12/15/89 at 1050 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	11.7	% by wt.	0.1	135330000P
pH	7.28		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 370.	ug/kg	370.	900230000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories, Inc.

300535

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
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PPG B-3/S1 0-2' Soil Sample
Collected on 12/15/89 at 1050 by WS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 900.	ug/kg	900.	060900000P
Beta BHC	< 900.	ug/kg	900.	061000000P
Delta BHC	< 900.	ug/kg	900.	061200000P
Gamma BHC - Lindane	< 900.	ug/kg	900.	121800000P
Heptachlor	< 900.	ug/kg	900.	121900000P
Aldrin	< 900.	ug/kg	900.	122000000P
Heptachlor Epoxide	< 900.	ug/kg	900.	061500000P
Endosulfan I	< 900.	ug/kg	900.	062700000P
Dieldrin	4,100.	ug/kg	1,800.	122200000P
DDE	4,900.	ug/kg	1,800.	061600000P
Endrin	< 1,800.	ug/kg	1,800.	122300000P
Endosulfan II	< 1,800.	ug/kg	1,800.	062800000P
DDD	7,700.	ug/kg	1,800.	061700000P
Endosulfan Sulfate	< 1,800.	ug/kg	1,800.	062900000P
DDT	257,000.	ug/kg	1,800.	122100000P
Endrin Ketone	< 1,800.	ug/kg	1,800.	093800000P
Methoxychlor	< 9,000.	ug/kg	9,000.	062100000P
Alpha Chlordane	< 9,000.	ug/kg	9,000.	136100000P
Gamma Chlordane	< 9,000.	ug/kg	9,000.	136200000P
Toxaphene	< 100,000.	ug/kg	100,000.	094200000P
PCB-1016	< 9,000.	ug/kg	9,000.	063900000P
PCB-1221	< 9,000.	ug/kg	9,000.	064000000P
PCB-1232	< 9,000.	ug/kg	9,000.	064100000P
PCB-1242	< 9,000.	ug/kg	9,000.	064200000P
PCB-1248	< 9,000.	ug/kg	9,000.	064300000P
PCB-1254	< 18,000.	ug/kg	18,000.	064400000P
PCB-1260	< 18,000.	ug/kg	18,000.	064500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300536

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

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PPG B-3/S1 0-2' Soil Sample
Collected on 12/15/89 at 1050 by WS

P.O. 89-595
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N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	200.	ug/kg	100.	134500000P

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Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300537

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471142
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-3/S3 5-7' Soil Sample
Collected on 12/15/89 at 1105 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	11.1	% by wt.	0.1	135330000P
pH	5.71		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 370.	ug/kg	370.	900230000P

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Collected 12/13/89 by BS

PPG B-3/S3 5-7' Soil Sample
Collected on 12/15/89 at 1105 by WS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 9.	ug/kg	9.	060900000P
Beta BHC	< 9.	ug/kg	9.	061000000P
Delta BHC	< 9.	ug/kg	9.	061200000P
Gamma BHC - Lindane	< 9.	ug/kg	9.	121800000P
Heptachlor	< 9.	ug/kg	9.	121900000P
Aldrin	< 9.	ug/kg	9.	122000000P
Heptachlor Epoxide	< 9.	ug/kg	9.	061500000P
Endosulfan I	< 9.	ug/kg	9.	062700000P
Dieldrin	< 18.	ug/kg	18.	122200000P
DDE	< 18.	ug/kg	18.	061600000P
Endrin	< 18.	ug/kg	18.	122300000P
Endosulfan II	< 18.	ug/kg	18.	062800000P
DDD	< 18.	ug/kg	18.	061700000P
Endosulfan Sulfate	< 18.	ug/kg	18.	062900000P
DDT	31.	ug/kg	18.	122100000P
Endrin Ketone	< 18.	ug/kg	18.	093800000P
Methoxychlor	< 90.	ug/kg	90.	062100000P
Alpha Chlordane	< 90.	ug/kg	90.	136100000P
Gamma Chlordane	< 90.	ug/kg	90.	136200000P
Toxaphene	< 180.	ug/kg	180.	094200000P
PCB-1016	< 90.	ug/kg	90.	063900000P
PCB-1221	< 90.	ug/kg	90.	064000000P
PCB-1232	< 90.	ug/kg	90.	064100000P
PCB-1242	< 90.	ug/kg	90.	064200000P
PCB-1248	< 90.	ug/kg	90.	064300000P
PCB-1254	< 180.	ug/kg	180.	064400000P
PCB-1260	< 180.	ug/kg	180.	064500000P

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Group Leader, Pesticides/PCB's

300539

ANALYSIS REPORT

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LLI Sample No. SW 1471142
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Collected 12/13/89 by BS

PPG B-3/S3 5-7' Soil Sample
Collected on 12/15/89 at 1105 by WS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300540

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471143
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-3/S5 10-12' Soil Sample
Collected on 12/15/89 at 1120 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	19.9	% by wt.	0.1	135330000P
pH	5.09		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 410.	ug/kg	410.	900230000P

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Collected on 12/15/89 at 1120 by WS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	14.	ug/kg	10.	060900000P
Beta BHC	< 10.	ug/kg	10.	061000000P
Delta BHC	< 10.	ug/kg	10.	061200000P
Gamma BHC - Lindane	11.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	< 20.	ug/kg	20.	122200000P
DDE	< 20.	ug/kg	20.	061600000P
Endrin	< 20.	ug/kg	20.	122300000P
Endosulfan II	< 20.	ug/kg	20.	062800000P
DDD	< 20.	ug/kg	20.	061700000P
Endosulfan Sulfate	< 20.	ug/kg	20.	062900000P
DDT	157.	ug/kg	20.	122100000P
Endrin Ketone	< 20.	ug/kg	20.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 200.	ug/kg	200.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 100.	ug/kg	100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 200.	ug/kg	200.	064400000P
PCB-1260	< 200.	ug/kg	200.	064500000P

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Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300542

ANALYSIS REPORT

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2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

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PPG B-3/S5 10-12' Soil Sample
Collected on 12/15/89 at 1120 by WS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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300543

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473287
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B4/S1 0-2' Soil Sample
Collected on 12/19/89 at 1615 by WS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	11.7	% by wt.	0.1	135330000P
pH	5.62		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 370.	ug/kg	370.	900230000P

Internal standard peak areas were outside of QC limits for both the initial injection and the re-injection. The values reported here are from the initial injection of the sample.

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Group Leader, Pesticides/PCB's

300544

ANALYSIS REPORT

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2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
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LLI Sample No. SW 1473287
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B4/S1 0-2' Soil Sample
Collected o~ 12/19/89 at 1615 by WS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 90.	ug/kg	90.	060900000P
Beta BHC	< 90.	ug/kg	90.	061000000P
Delta BHC	< 90.	ug/kg	90.	061200000P
Gamma BHC - Lindane	< 90.	ug/kg	90.	121800000P
Heptachlor	< 90.	ug/kg	90.	121900000P
Aldrin	< 90.	ug/kg	90.	122000000P
Heptachlor Epoxide	< 90.	ug/kg	90.	061500000P
Endosulfan I	< 90.	ug/kg	90.	062700000P
Dieldrin	< 180.	ug/kg	180.	122200000P
DDE	630.	ug/kg	180.	061600000P
Endrin	< 180.	ug/kg	180.	122300000P
Endosulfan II	< 180.	ug/kg	180.	062800000P
DDD	330.	ug/kg	180.	061700000P
Endosulfan Sulfate	< 180.	ug/kg	180.	062900000P
DDT	11,300.	ug/kg	180.	122100000P
Endrin Ketone	< 180.	ug/kg	180.	093800000P
Methoxychlor	< 900.	ug/kg	900.	062100000P
Alpha Chlordane	< 900.	ug/kg	900.	136100000P
Gamma Chlordane	< 900.	ug/kg	900.	136200000P
Toxaphene	< 1,800.	ug/kg	1,800.	094200000P
PCB-1016	< 900.	ug/kg	900.	063900000P
PCB-1221	< 900.	ug/kg	900.	064000000P
PCB-1232	< 900.	ug/kg	900.	064100000P
PCB-1242	< 900.	ug/kg	900.	064200000P
PCB-1248	< 900.	ug/kg	900.	064300000P
PCB-1254	< 1,800.	ug/kg	1,800.	064400000P
PCB-1260	< 1,800.	ug/kg	1,800.	064500000P

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Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B4/S1 0-2' Soil Sample
Collected on 12/19/89 at 1615 by WS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Group Leader, Pesticides/PCB's

300546

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473290
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B4/S3 5-7' Soil Sample
Collected on 12/19/89 at 1630 by WS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	16.3	% by wt.	0.1	135330000P
pH	5.94		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 390.	ug/kg	390.	900230000P

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300547

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2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
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LLI Sample No. SW 1473290
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B4/S3 5-7' Soil Sample
Collected on 12/19/89 at 1630 by WS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 10.	ug/kg	10.	060900000P
Beta BHC	< 10.	ug/kg	10.	061000000P
Delta BHC	< 10.	ug/kg	10.	061200000P
Gamma BHC - Lindane	< 10.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	< 19.	ug/kg	19.	122200000P
DDE	< 19.	ug/kg	19.	061600000P
Endrin	< 19.	ug/kg	19.	122300000P
Endosulfan II	< 19.	ug/kg	19.	062800000P
DDD	< 19.	ug/kg	19.	061700000P
Endosulfan Sulfate	< 19.	ug/kg	19.	062900000P
DDT	31.	ug/kg	19.	122100000P
Endrin Ketone	< 19.	ug/kg	19.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 190.	ug/kg	190.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 100.	ug/kg	100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 190.	ug/kg	190.	064400000P
PCB-1260	< 190.	ug/kg	190.	064500000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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Chemical, Biological & Environmental Fields of Testing

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473290
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B4/S3 5-7' Soil Sample
Collected c.. 12/19/89 at 1630 by WS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
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Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473286
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B4/S5 10-12' Soil Sample
Collected on 12/19/89 at 1145 by WS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	15.4	% by wt.	0.1	135330000P
pH	5.79		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.
The pH of the method blank (background soil) performed with samples 1473286 - 1473300 was 5.89.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 390.	ug/kg	390.	900230000P

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Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories
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Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473286
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B4/S5 10-12' Soil Sample
Collected on 12/19/89 at 1145 by WS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 9.	ug/kg	9.	060900000P
Beta BHC	< 9.	ug/kg	9.	061000000P
Delta BHC	< 9.	ug/kg	9.	061200000P
Gamma BHC - Lindane	< 9.	ug/kg	9.	121800000P
Heptachlor	< 9.	ug/kg	9.	121900000P
Aldrin	< 9.	ug/kg	9.	122000000P
Heptachlor Epoxide	< 9.	ug/kg	9.	061500000P
Endosulfan I	< 9.	ug/kg	9.	062700000P
Dieldrin	< 19.	ug/kg	19.	122200000P
DDE	< 19.	ug/kg	19.	061600000P
Endrin	< 19.	ug/kg	19.	122300000P
Endosulfan II	< 19.	ug/kg	19.	062800000P
DDD	< 19.	ug/kg	19.	061700000P
Endosulfan Sulfate	< 19.	ug/kg	19.	062900000P
DDT	< 19.	ug/kg	19.	122100000P
Endrin Ketone	< 19.	ug/kg	19.	093800000P
Methoxychlor	< 90.	ug/kg	90.	062100000P
Alpha Chlordane	< 90.	ug/kg	90.	136100000P
Gamma Chlordane	< 90.	ug/kg	90.	136200000P
Toxaphene	< 190.	ug/kg	190.	094200000P
PCB-1016	< 90.	ug/kg	90.	063900000P
PCB-1221	< 90.	ug/kg	90.	064000000P
PCB-1232	< 90.	ug/kg	90.	064100000P
PCB-1242	< 90.	ug/kg	90.	064200000P
PCB-1248	< 90.	ug/kg	90.	064300000P
PCB-1254	< 190.	ug/kg	190.	064400000P
PCB-1260	< 190.	ug/kg	190.	064500000P

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473286
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B4/S5 10-12' Soil Sample
Collected on 12/19/89 at 1145 by WS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

Date Reported 1/15/90
Date Submitted 12/13/89
Discard Date 2/15/90
Collected by BS
P.O. 89-595
Rel.

PPG B5/S-4 7.5-9.5' Soil Sample
Collected on 12/11/89 at 1330 by BS

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	14.0	% by wt.	0.1	135330000P
pH	5.24		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.
The pH of the method blank (background soil) performed with samples 1470207 - 1470210 was 5.97.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 380.	ug/kg	380.	900230000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

Date Reported 1/15/90
Date Submitted 12/13/89
Discard Date 2/15/90
Collected by BS
P.O. 89-595
Rel.

PPG B5/S-4 7.5-9.5' Soil Sample
Collected on 12/11/89 at 1330 by BS

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

Date Reported 1/15/90
Date Submitted 12/13/89
Discard Date 2/15/90
Collected by BS
P.O. 89-595
Rel.

PPG B5/S-4 7.5-9.5' Soil Sample
Collected on 12/11/89 at 1330 by BS

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	21.	ug/kg	9.	060900000P
Beta BHC	< 9.	ug/kg	9.	061000000P
Delta BHC	< 9.	ug/kg	9.	061200000P
Gamma BHC - Lindane	9.	ug/kg	9.	121800000P
Heptachlor	< 9.	ug/kg	9.	121900000P
Aldrin	22.	ug/kg	9.	122000000P
Heptachlor Epoxide	< 9.	ug/kg	9.	061500000P
Endosulfan I	< 9.	ug/kg	9.	062700000P
Dieldrin	19.	ug/kg	19.	122200000P
DDE	< 19.	ug/kg	19.	061600000P
Endrin	< 19.	ug/kg	19.	122300000P
Endosulfan II	< 19.	ug/kg	19.	062800000P
DDD	74.	ug/kg	19.	061700000P
Endosulfan Sulfate	< 19.	ug/kg	19.	062900000P
DDT	262.	ug/kg	19.	122100000P
Endrin Ketone	< 19.	ug/kg	19.	093800000P
Methoxychlor	< 90.	ug/kg	90.	062100000P
Alpha Chlordane	< 90.	ug/kg	90.	136100000P
Gamma Chlordane	< 90.	ug/kg	90.	136200000P
Toxaphene	< 190.	ug/kg	190.	094200000P
PCB-1016	< 90.	ug/kg	90.	063900000P
PCB-1221	< 600.	ug/kg	600.	064000000P
PCB-1232	< 90.	ug/kg	90.	064100000P
PCB-1242	< 90.	ug/kg	90.	064200000P
PCB-1248	< 90.	ug/kg	90.	064300000P
PCB-1254	< 190.	ug/kg	190.	064400000P
PCB-1260	< 190.	ug/kg	190.	064500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

Date Reported 1/15/90
Date Submitted 12/13/89
Discard Date 2/15/90
Collected by BS
P.O. 89-595
Rel.

PPG B5/S-5 10-12' Soil Sample
Collected on 12/11/89 at 1400 by BS

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	14.3	% by wt.	0.1	135330000P
pH	4.72		0.01	144130000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.				
N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 390.	ug/kg	390.	900230000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

Date Reported 1/15/90
Date Submitted 12/13/89
Discard Date 2/15/90
Collected by BS
P.O. 89-595
Rel.

PPG B5/S-5 10-12' Soil Sample
Collected on 12/11/89 at 1400 by BS

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 9.	ug/kg	9.	060900000P
Beta BHC	< 9.	ug/kg	9.	061000000P
Delta BHC	< 9.	ug/kg	9.	061200000P
Gamma BHC - Lindane	< 9.	ug/kg	9.	121800000P
Heptachlor	< 9.	ug/kg	9.	121900000P
Aldrin	< 9.	ug/kg	9.	122000000P
Heptachlor Epoxide	< 9.	ug/kg	9.	061500000P
Endosulfan I	< 9.	ug/kg	9.	062700000P
Dieldrin	< 19.	ug/kg	19.	122200000P
DDE	< 19.	ug/kg	19.	061600000P
Endrin	< 19.	ug/kg	19.	122300000P
Endosulfan II	< 19.	ug/kg	19.	062800000P
DDD	< 19.	ug/kg	19.	061700000P
Endosulfan Sulfate	< 19.	ug/kg	19.	062900000P
DDT	30.	ug/kg	19.	122100000P
Endrin Ketone	< 19.	ug/kg	19.	093800000P
Methoxychlor	< 90.	ug/kg	90.	062100000P
Alpha Chlordane	< 90.	ug/kg	90.	136100000P
Gamma Chlordane	< 90.	ug/kg	90.	136200000P
Toxaphene	< 190.	ug/kg	190.	094200000P
PCB-1016	< 90.	ug/kg	90.	063900000P
PCB-1221	< 90.	ug/kg	90.	064000000P
PCB-1232	< 90.	ug/kg	90.	064100000P
PCB-1242	< 90.	ug/kg	90.	064200000P
PCB-1248	< 90.	ug/kg	90.	064300000P
PCB-1254	< 190.	ug/kg	190.	064400000P
PCB-1260	< 190.	ug/kg	190.	064500000P

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Lancaster Laboratories, Inc.
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Charles J. Neslund, B.S.
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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

Date Reported 1/15/90
Date Submitted 12/13/89
Discard Date 2/15/90
Collected by BS
P.O. 89-595
Rel.

PPG B5/S-5 10-12' Soil Sample
Collected on 12/11/89 at 1400 by BS

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473294
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3A 5-8' Unspiked Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
VOA GC/MS Library Search		attached		089004000P
TCL Volatiles (Soil)		attached		117804000P
TCL Semi-Volatiles (Soil)		attached		120104000P
TCL Semi-Volatiles (Soil) cont		attached		120204000P
TCL Pesticides		attached		122504000P
Moisture *AS RECEIVED*	18.6	% by wt.	0.1	135304000P
pH	2.33		0.01	144104000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150904000P
Dioxin	0.00000			900131000P

The analysis for dioxin was subcontracted to another laboratory.

2,3,7,8-TCDD was not detected in the sample. Please refer to the data package for the complete report.

Malathion	< 60.	ug/kg	60.	900216500P
Pentachloronitrobenzene	< 4,100.	ug/kg	4,100.	900301000P

The quantitation limits were increased due to the high concentration of non-target compounds.

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473294
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3A 5-8' Unspiked Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 12.	ug/kg	12.	082700000P
Bromomethane	< 12.	ug/kg	12.	082800000P
Vinyl Chloride	< 12.	ug/kg	12.	082900000P
Chloroethane	< 12.	ug/kg	12.	083000000P
Methylene Chloride	110.	ug/kg	6.	083100000P
Acetone	69.	ug/kg	12.	091400000P
Carbon Disulfide	< 6.	ug/kg	6.	091500000P
1,1-Dichloroethene	< 6.	ug/kg	6.	118000000P
1,1-Dichloroethane	< 6.	ug/kg	6.	083300000P
1,2-Dichloroethene (total)	< 6.	ug/kg	6.	117900000P
Chloroform	< 6.	ug/kg	6.	083500000P
1,2-Dichloroethane	< 6.	ug/kg	6.	083600000P
2-Butanone	< 12.	ug/kg	12.	091600000P
1,1,1-Trichloroethane	< 6.	ug/kg	6.	083700000P
Carbon Tetrachloride	< 6.	ug/kg	6.	083800000P
Vinyl Acetate	< 12.	ug/kg	12.	091700000P
Bromodichloromethane	< 6.	ug/kg	6.	083900000P
1,2-Dichloropropane	< 6.	ug/kg	6.	084000000P
cis-1,3-Dichloropropene	< 6.	ug/kg	6.	084400000P
Trichloroethene	< 6.	ug/kg	6.	118100000P
Dibromochloromethane	< 6.	ug/kg	6.	084600000P
1,1,2-Trichloroethane	< 6.	ug/kg	6.	084500000P
Benzene	< 6.	ug/kg	6.	118200000P
trans-1,3-Dichloropropene	< 6.	ug/kg	6.	084100000P
Bromoform	< 6.	ug/kg	6.	084700000P
4-Methyl-2-Pentanone	< 12.	ug/kg	12.	091900000P
2-Hexanone	< 12.	ug/kg	12.	091800000P
Tetrachloroethene	< 6.	ug/kg	6.	084800000P
1,1,2,2-Tetrachloroethane	< 6.	ug/kg	6.	084900000P
Toluene	7.	ug/kg	6.	118300000P
Chlorobenzene	< 6.	ug/kg	6.	118400000P
Ethylbenzene	< 6.	ug/kg	6.	085200000P
Styrene	< 6.	ug/kg	6.	092000000P
Xylenes (total)	25.	ug/kg	6.	092100000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473294
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3A 5-8' Unspiked Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
phenol	< 4,100.	ug/kg	4,100.	118500000P
bis (2-chloroethyl) ether	< 4,100.	ug/kg	4,100.	066700000P
2-chlorophenol	< 4,100.	ug/kg	4,100.	118600000P
1,3-dichlorobenzene	< 4,100.	ug/kg	4,100.	067700000P
1,4-dichlorobenzene	< 4,100.	ug/kg	4,100.	118700000P
benzyl alcohol	< 4,100.	ug/kg	4,100.	092600000P
1,2-dichlorobenzene	< 4,100.	ug/kg	4,100.	067600000P
2-methylphenol	< 4,100.	ug/kg	4,100.	092700000P
bis (2-chloroisopropyl) ether	< 4,100.	ug/kg	4,100.	066800000P
4-methylphenol	< 4,100.	ug/kg	4,100.	092800000P
N-nitrosodi-n-propylamine	< 4,100.	ug/kg	4,100.	118800000P
hexachloroethane	< 4,100.	ug/kg	4,100.	069200000P
nitrobenzene	< 4,100.	ug/kg	4,100.	069600000P
isophorone	< 4,100.	ug/kg	4,100.	069400000P
2-nitrophenol	< 4,100.	ug/kg	4,100.	065100000P
2,4-dimethylphenol	< 4,100.	ug/kg	4,100.	064800000P
benzoic acid	< 21,000.	ug/kg	21,000.	092900000P
bis (2-chloroethoxy) methane	< 4,100.	ug/kg	4,100.	066600000P
2,4-dichlorophenol	< 4,100.	ug/kg	4,100.	064700000P
1,2,4-trichlorobenzene	< 4,100.	ug/kg	4,100.	118900000P
naphthalene	< 4,100.	ug/kg	4,100.	069500000P
4-chloroaniline	< 4,100.	ug/kg	4,100.	093000000P
hexachlorobutadiene	< 4,100.	ug/kg	4,100.	069000000P
4-chloro-3-methylphenol	< 4,100.	ug/kg	4,100.	119000000P
2-methylnaphthalene	< 4,100.	ug/kg	4,100.	093100000P
hexachlorocyclopentadiene	< 4,100.	ug/kg	4,100.	069100000P
2,4,6-trichlorophenol	< 4,100.	ug/kg	4,100.	065600000P
2,4,5-trichlorophenol	< 21,000.	ug/kg	21,000.	093200000P
2-chloronaphthalene	< 4,100.	ug/kg	4,100.	067200000P
2-nitroaniline	< 21,000.	ug/kg	21,000.	093300000P
dimethyl phthalate	< 4,100.	ug/kg	4,100.	068100000P
acenaphthylene	< 4,100.	ug/kg	4,100.	065800000P

The quantitation limits were increased due to the high concentration of non-target compounds.

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473294
Date Reported 2/15/90
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PPG B6/S3A 5-8' Unspiked Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT DRY WT. BASIS	LIMIT OF QUANTITATION	LAB CODE
1 COPY TO Data Package Group			

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
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Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473294
Date Reported 2/15/90
Date Submitted 12/21/89
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PPG B6/S3A 5-8' Unspiked Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 21,000.	ug/kg	21,000.	093400000P
acenaphthene	< 4,100.	ug/kg	4,100.	119100000P
2,4-dinitrophenol	< 21,000.	ug/kg	21,000.	065000000P
4-nitrophenol	< 21,000.	ug/kg	21,000.	119200000P
dibenzofuran	< 4,100.	ug/kg	4,100.	093500000P
2,4-dinitrotoluene	< 4,100.	ug/kg	4,100.	119300000P
2,6-dinitrotoluene	< 4,100.	ug/kg	4,100.	068400000P
diethyl phthalate	< 4,100.	ug/kg	4,100.	068000000P
4-chlorophenyl phenyl ether	< 4,100.	ug/kg	4,100.	067300000P
fluorene	< 4,100.	ug/kg	4,100.	068800000P
4-nitroaniline	< 21,000.	ug/kg	21,000.	093600000P
2-methyl-4,6-dinitrophenol	< 21,000.	ug/kg	21,000.	064900000P
N-nitrosodiphenylamine	< 4,100.	ug/kg	4,100.	069900000P
4-bromophenyl phenyl ether	< 4,100.	ug/kg	4,100.	067000000P
hexachlorobenzene	< 4,100.	ug/kg	4,100.	068900000P
pentachlorophenol	< 21,000.	ug/kg	21,000.	119400000P
phenanthrene	< 4,100.	ug/kg	4,100.	070000000P
anthracene	< 4,100.	ug/kg	4,100.	065900000P
di-n-butyl phthalate	< 4,100.	ug/kg	4,100.	068200000P
fluoranthene	< 4,100.	ug/kg	4,100.	068700000P
pyrene	< 4,100.	ug/kg	4,100.	119500000P
butyl benzyl phthalate	< 4,100.	ug/kg	4,100.	067100000P
3,3'-dichlorobenzidine	< 8,200.	ug/kg	8,200.	067900000P
benzo (a) anthracene	< 4,100.	ug/kg	4,100.	066100000P
bis (2-ethylhexyl) phthalate	< 4,100.	ug/kg	4,100.	066900000P
chrysene	< 4,100.	ug/kg	4,100.	067400000P
di-n-octyl phthalate	< 4,100.	ug/kg	4,100.	068500000P
benzo (b) fluoranthene	< 4,100.	ug/kg	4,100.	066300000P
benzo (K) fluoranthene	< 4,100.	ug/kg	4,100.	066500000P
benzo (a) pyrene	< 4,100.	ug/kg	4,100.	066200000P
indeno (1,2,3-cd) pyrene	< 4,100.	ug/kg	4,100.	069300000P
dibenz (a,h) anthracene	< 4,100.	ug/kg	4,100.	067500000P
benzo (ghi) perylene	< 4,100.	ug/kg	4,100.	066400000P

The quantitation limits were increased due to the high concentration of non-target compounds.

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

American Association for Laboratory Accreditation
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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473294
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3A 5-8' Unspiked Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT DRY WT. BASIS	LIMIT OF QUANTITATION	LAB CODE

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300564

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473294
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
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PPG B6/S3A 5-8' Unspiked Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	14,700.	ug/kg	1,000.	060900000P
Beta BHC	2,300.	ug/kg	1,000.	061000000P
Delta BHC	< 10,000.	ug/kg	0,000.	061200000P
Gamma BHC - Lindane	6,000.	ug/kg	1,000.	121800000P
Heptachlor	< 10,000.	ug/kg	0,000.	121900000P
Aldrin	6,900.	ug/kg	1,000.	122000000P
Heptachlor Epoxide	< 1,000.	ug/kg	1,000.	061500000P
Endosulfan I	< 10,000.	ug/kg	10,000.	062700000P
Dieldrin	63,900.	ug/kg	2,000.	122200000P
DDE	6,000.	ug/kg	2,000.	061600000P
Endrin	< 2,000.	ug/kg	2,000.	122300000P
Endosulfan II	< 2,000.	ug/kg	2,000.	062800000P
DDD	22,100.	ug/kg	2,000.	061700000P
Endosulfan Sulfate	< 2,000.	ug/kg	2,000.	062900000P
DDT	442,000.	ug/kg	2,000.	122100000P
Endrin Ketone	< 2,000.	ug/kg	2,000.	093800000P
Methoxychlor	< 10,000.	ug/kg	0,000.	062100000P
Alpha Chlordane	< 10,000.	ug/kg	0,000.	136100000P
Gamma Chlordane	< 10,000.	ug/kg	0,000.	136200000P
Toxaphene	< 20,000.	ug/kg	20,000.	094200000P
PCB-1016	< 200,000.	ug/kg	200,000.	063900000P
PCB-1221	< 290,000.	ug/kg	290,000.	064000000P
PCB-1232	< 200,000.	ug/kg	200,000.	064100000P
PCB-1242	< 200,000.	ug/kg	200,000.	064200000P
PCB-1248	< 200,000.	ug/kg	200,000.	064300000P
PCB-1254	< 20,000.	ug/kg	20,000.	064400000P
PCB-1260	< 20,000.	ug/kg	20,000.	064500000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300565

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473294
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3A 5-8' Unspiked Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	19,000.	ug/kg	100.	134500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300566

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

B6S3A

Lab Name: LANCASTER LABS Contract:
Lab Code: LANCAS Case No.: 243084 SAS No.: SDG No.: PPG2
Matrix: (soil/water) SOIL Lab Sample ID: A1473294L
Sample wt/vol: 5.0 (g/mL) G Lab File ID: A1473294L
Level: (low/med) LOW Date Received: 12/21/89
% Moisture: not dec. 19 Date Analyzed: 12/27/89
Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 2

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 109-99-9	FURAN,TETRAHYDRO	8.67	12	J
2.	UNKNOWN	28.63	16	J

300567

FORM I VOA-TIC

1/87 Rev.

American Association for Laboratory Accreditation (Chemical, Biological & Environmental fields of testing)

Member: American Council of Independent Laboratories, Inc.

See Reverse Side For Explanation
Questions? Contact Our Environmental Technical Services at (717) 656-2301
Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B6S3A

Lab Name: LANCASTER LABS Contract: RIZZO

Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.

Matrix: (soil/water) SOIL Lab Sample ID: 1473294

Sample wt/vol: 30.0(g/mL) G Lab File ID: >B1803

Level: (low/med) LOW Date Received: 12/21/89

% Moisture: not dec. 19. dec. _____. Date Extracted: 12/27/89

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 12/29/89

GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 10.000

Number TICs found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		Unknown	22.37	2000.	J
2.		Unknown aromatic	27.99	6500.	J
3.		Unknown	31.27	7000.	J
4.		Unknown aromatic	31.96	34000.	J
5.		1,1-Dichloro-2,2-bis(p-chlor	32.70	5300.	*JI
6.	8017343	Technical chlorophenothane	32.86	37000.	J
7.		Mitotane (USAN)	33.67	150000.	JI
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					

*I = or isomer of compound.

FORM I SV-TIC 1/87 Rev.

300568

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories Inc

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Questions Concerning Environmental Technical Services at (717) 656-2301
Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473295
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

Continuatin of LLI #1473294 PPG B6/S3A 5-8'
Unspiked Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	2,570.	mg/kg	20.	014301300P
Antimony	< 5.	mg/kg	5.	014401300P
Barium	50.	mg/kg	20.	014601300P
Beryllium	< 0.5	mg/kg	0.5	014701300P
Cadmium	< 0.5	mg/kg	0.5	014901300P
Calcium	30.	mg/kg	10.	015001300P
Chromium	4.	mg/kg	1.	015101300P
Cobalt	< 5.	mg/kg	5.	015201300P
Copper	< 2.	mg/kg	2.	015301300P
Iron	3,670.	mg/kg	5.	015401300P
Magnesium	70.	mg/kg	10.	015701300P
Manganese	6.	mg/kg	1.	015801300P
Mercury	< 0.04	mg/kg	0.04	015903300P
Nickel	< 4.	mg/kg	4.	016101300P
Potassium	130.	mg/kg	50.	016201300P
Silver	< 1.	mg/kg	1.	016601300P
Sodium	< 50.	mg/kg	50.	016701300P
Vanadium	5.	mg/kg	5.	017101300P
Zinc	6.	mg/kg	2.	017201300P
Cyanide, Total	< 0.1	mg/kg	0.1	023705000P
Arsenic (furnace method)	11.	mg/kg	1.	114504000P
Lead (furnace method)	13.1	mg/kg	0.5	115504000P
Selenium (furnace method)	< 0.5	mg/kg	0.5	116404000P
Thallium (furnace method)	< 1.	mg/kg	1.	117304000P
Moisture	18.6	% by wt.	0.1	135301100P

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135 03915 70.00 055800

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300569

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473296
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3B 5-8' Matrix Spike Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
TCL Volatiles (Soil)	attached			117826000P
TCL Semi-Volatiles (Soil)	attached			120152500P
TCL Semi-Volatiles (Soil) cont	attached			120200000P
TCL Pesticides	attached			122524500P
N-Methyl Carbamates in Soil	attached			150915000P
Dioxin	See Below			900131000P

The analysis for dioxin was subcontracted to another laboratory.

Please refer to the data package for the complete report of this sample.

Malathion	240.	ug/kg	50.	900216500P
Pentachloronitrobenzene	< 3,300.	ug/kg	3,300.	900301000P

The quantitation limits were increased due to the high concentration of non-target compounds.

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

Questions? Contact Environmental Technical Services at (717) 656-2301
135 03915 225.00 189000

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
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LLI Sample No. SW 1473296
Date Reported 2/15/90
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PPG B6/S3B 5-8' Matrix Spike Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/kg	10.	082700000P
Bromomethane	< 10.	ug/kg	10.	082800000P
Vinyl Chloride	< 10.	ug/kg	10.	082900000P
Chloroethane	< 10.	ug/kg	10.	083000000P
Methylene Chloride	73.	ug/kg	5.	083100000P
Acetone	77.	ug/kg	10.	091400000P
Carbon Disulfide	< 5.	ug/kg	5.	091500000P
1,1-Dichloroethene	64.	ug/kg	5.	118000000P
1,1-Dichloroethane	< 5.	ug/kg	5.	083300000P
1,2-Dichloroethene (total)	< 5.	ug/kg	5.	117900000P
Chloroform	< 5.	ug/kg	5.	083500000P
1,2-Dichloroethane	< 5.	ug/kg	5.	083600000P
2-Butanone	< 10.	ug/kg	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/kg	5.	083700000P
Carbon Tetrachloride	< 5.	ug/kg	5.	083800000P
Vinyl Acetate	< 10.	ug/kg	10.	091700000P
Bromodichloromethane	< 5.	ug/kg	5.	083900000P
1,2-Dichloropropane	< 5.	ug/kg	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/kg	5.	084400000P
Trichloroethene	55.	ug/kg	5.	118100000P
Dibromochloromethane	< 5.	ug/kg	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/kg	5.	084500000P
Benzene	54.	ug/kg	5.	118200000P
trans-1,3-Dichloropropene	< 5.	ug/kg	5.	084100000P
Bromoform	< 5.	ug/kg	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/kg	10.	091900000P
2-Hexanone	< 10.	ug/kg	10.	091800000P
Tetrachloroethene	< 5.	ug/kg	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/kg	5.	084900000P
Toluene	68.	ug/kg	5.	118300000P
Chlorobenzene	58.	ug/kg	5.	118400000P
Ethylbenzene	5.	ug/kg	5.	085200000P
Styrene	< 5.	ug/kg	5.	092000000P
Xylenes (total)	30.	ug/kg	5.	092100000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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300571

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473296
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3B 5-8' Matrix Spike Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	4,900.	ug/kg	3,300.	118500000P
bis (2-chloroethyl) ether	< 3,300.	ug/kg	3,300.	066700000P
2-chlorophenol	4,800.	ug/kg	3,300.	118600000P
1,3-dichlorobenzene	< 3,300.	ug/kg	3,300.	067700000P
1,4-dichlorobenzene	< 3,300.	ug/kg	3,300.	118700000P
benzyl alcohol	< 3,300.	ug/kg	3,300.	092600000P
1,2-dichlorobenzene	< 3,300.	ug/kg	3,300.	067600000P
2-methylphenol	< 3,300.	ug/kg	3,300.	092700000P
bis (2-chloroisopropyl) ether	< 3,300.	ug/kg	3,300.	066800000P
4-methylphenol	< 3,300.	ug/kg	3,300.	092800000P
N-nitrosodi-n-propylamine	< 3,300.	ug/kg	3,300.	118800000P
hexachloroethane	< 3,300.	ug/kg	3,300.	069200000P
nitrobenzene	< 3,300.	ug/kg	3,300.	069600000P
isophorone	< 3,300.	ug/kg	3,300.	069400000P
2-nitrophenol	< 3,300.	ug/kg	3,300.	065100000P
2,4-dimethylphenol	< 3,300.	ug/kg	3,300.	064800000P
benzoic acid	< 17,000.	ug/kg	17,000.	092900000P
bis (2-chloroethoxy) methane	< 3,300.	ug/kg	3,300.	066600000P
2,4-dichlorophenol	< 3,300.	ug/kg	3,300.	064700000P
1,2,4-trichlorobenzene	< 3,300.	ug/kg	3,300.	118900000P
naphthalene	< 3,300.	ug/kg	3,300.	069500000P
4-chloroaniline	< 3,300.	ug/kg	3,300.	093000000P
hexachlorobutadiene	< 3,300.	ug/kg	3,300.	069000000P
4-chloro-3-methylphenol	4,500.	ug/kg	3,300.	119000000P
2-methylnaphthalene	< 3,300.	ug/kg	3,300.	093100000P
hexachlorocyclopentadiene	< 3,300.	ug/kg	3,300.	069100000P
2,4,6-trichlorophenol	< 3,300.	ug/kg	3,300.	065600000P
2,4,5-trichlorophenol	< 17,000.	ug/kg	17,000.	093200000P
2-chloronaphthalene	< 3,300.	ug/kg	3,300.	067200000P
2-nitroaniline	< 17,000.	ug/kg	17,000.	093300000P
dimethyl phthalate	< 3,300.	ug/kg	3,300.	068100000P
acenaphthylene	< 3,300.	ug/kg	3,300.	065800000P

The quantitation limits were increased due to the high concentration of non-target compounds.

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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300572

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473296
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3B 5-8' Matrix Spike Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT AS RECEIVED	LIMIT OF QUANTITATION	LAB CODE
1 COPY TO Data Package Group			

Questions? Contact Environmental Technical Services at (717) 656-2301

American Association for Laboratory Accreditation
Chemical Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300573

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473296
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3B 5-8' Matrix Spike Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 17,000.	ug/kg	17,000.	093400000P
acenaphthene	< 3,300.	ug/kg	3,300.	119100000P
2,4-dinitrophenol	< 17,000.	ug/kg	17,000.	065000000P
4-nitrophenol	< 17,000.	ug/kg	17,000.	119200000P
dibenzofuran	< 3,300.	ug/kg	3,300.	093500000P
2,4-dinitrotoluene	< 3,300.	ug/kg	3,300.	119300000P
2,6-dinitrotoluene	< 3,300.	ug/kg	3,300.	068400000P
diethyl phthalate	< 3,300.	ug/kg	3,300.	068000000P
4-chlorophenyl phenyl ether	< 3,300.	ug/kg	3,300.	067300000P
fluorene	< 3,300.	ug/kg	3,300.	068800000P
4-nitroaniline	< 17,000.	ug/kg	17,000.	093600000P
2-methyl-4,6-dinitrophenol	< 17,000.	ug/kg	17,000.	064900000P
N-nitrosodiphenylamine	< 3,300.	ug/kg	3,300.	069900000P
4-bromophenyl phenyl ether	< 3,300.	ug/kg	3,300.	067000000P
hexachlorobenzene	< 3,300.	ug/kg	3,300.	068900000P
pentachlorophenol	< 17,000.	ug/kg	17,000.	119400000P
phenanthrene	< 3,300.	ug/kg	3,300.	070000000P
anthracene	< 3,300.	ug/kg	3,300.	065900000P
di-n-butyl phthalate	< 3,300.	ug/kg	3,300.	068200000P
fluoranthene	< 3,300.	ug/kg	3,300.	068700000P
pyrene	< 3,300.	ug/kg	3,300.	119500000P
butyl benzyl phthalate	< 3,300.	ug/kg	3,300.	067100000P
3,3'-dichlorobenzidine	< 6,700.	ug/kg	6,700.	067900000P
benzo (a) anthracene	< 3,300.	ug/kg	3,300.	066100000P
bis (2-ethylhexyl) phthalate	< 3,300.	ug/kg	3,300.	066900000P
chrysene	< 3,300.	ug/kg	3,300.	067400000P
di-n-octyl phthalate	< 3,300.	ug/kg	3,300.	068500000P
benzo (b) fluoranthene	< 3,300.	ug/kg	3,300.	066300000P
benzo (K) fluoranthene	< 3,300.	ug/kg	3,300.	066500000P
benzo (a) pyrene	< 3,300.	ug/kg	3,300.	066200000P
indeno (1,2,3-cd) pyrene	< 3,300.	ug/kg	3,300.	069300000P
dibenz (a,h) anthracene	< 3,300.	ug/kg	3,300.	067500000P
benzo (ghi) perylene	< 3,300.	ug/kg	3,300.	066400000P

The quantitation limits were increased due to the high concentration of non-target compounds.

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

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300574

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473296
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3B 5-8' Matrix Spike Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT AS RECEIVED	LIMIT OF QUANTITATION	LAB CODE
1 COPY TO Paul C. Rizzo Associates	ATTN: Ken Bird		
1 COPY TO Data Package Group			

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300575

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473296
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3B 5-8' Matrix Spike Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	2,600.	ug/kg	800.	060900000P
Beta BHC	< 8,000.	ug/kg	8,000.	061000000P
Delta BHC	< 8,000.	ug/kg	8,000.	061200000P
Gamma BHC - Lindane	3,000.	ug/kg	800.	121800000P
Heptachlor	< 800.	ug/kg	800.	121900000P
Aldrin	3,200.	ug/kg	800.	122000000P
Heptachlor Epoxide	< 800.	ug/kg	800.	061500000P
Endosulfan I	< 5,500.	ug/kg	5,500.	062700000P
Dieldrin	40,000.	ug/kg	1,600.	122200000P
DDE	2,600.	ug/kg	1,600.	061600000P
Endrin	< 1,600.	ug/kg	1,600.	122300000P
Endosulfan II	< 1,600.	ug/kg	1,600.	062800000P
DDD	12,000.	ug/kg	1,600.	061700000P
Endosulfan Sulfate	< 1,600.	ug/kg	1,600.	062900000P
DDT	290,000.	ug/kg	1,600.	122100000P
Endrin Ketone	< 1,600.	ug/kg	1,600.	093800000P
Methoxychlor	< 8,000.	ug/kg	8,000.	062100000P
Alpha Chlordane	< 8,000.	ug/kg	8,000.	136100000P
Gamma Chlordane	< 8,000.	ug/kg	8,000.	136200000P
Toxaphene	< 16,000.	ug/kg	16,000.	094200000P
PCB-1016	< 80,000.	ug/kg	80,000.	063900000P
PCB-1221	< 53,000.	ug/kg	53,000.	064000000P
PCB-1232	< 80,000.	ug/kg	80,000.	064100000P
PCB-1242	< 80,000.	ug/kg	80,000.	064200000P
PCB-1248	< 80,000.	ug/kg	80,000.	064300000P
PCB-1254	< 16,000.	ug/kg	16,000.	064400000P
PCB-1260	< 16,000.	ug/kg	16,000.	064500000P

Due to the significant amount of lindane, aldrin, dieldrin, and DDT present in the background, the recovery of these compounds could not be determined. Endrin and heptachlor were diluted out.

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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300576

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473296
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3B 5-8' Matrix Spike Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	13,900.	ug/kg	100.	134500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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300577

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473297
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

Continuation of LLI #1473296 PPG B6/S3B 5-8'
Matrix Spike Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	2,100.	mg/kg	20.	014301300P
Antimony	19.	mg/kg	5.	014401300P
Barium	160.	mg/kg	20.	014601300P
Beryllium	3.0	mg/kg	0.5	014701300P
Cadmium	2.8	mg/kg	0.5	014901300P
Calcium	260.	mg/kg	10.	015001300P
Chromium	17.	mg/kg	1.	015101300P
Cobalt	31.	mg/kg	5.	015201300P
Copper	20.	mg/kg	2.	015301300P
Iron	4,610.	mg/kg	5.	015401300P
Magnesium	190.	mg/kg	10.	015701300P
Manganese	37.	mg/kg	1.	015801300P
Mercury	0.15	mg/kg	0.04	015903300P
Nickel	31.	mg/kg	4.	016101300P
Potassium	360.	mg/kg	50.	016201300P
Silver	3.	mg/kg	1.	016601300P
Sodium	230.	mg/kg	50.	016701300P
Vanadium	37.	mg/kg	5.	017101300P
Zinc	35.	mg/kg	2.	017201300P
Cyanide, Total	8.5	mg/kg	0.1	023705000P
Arsenic (furnace method)	14.	mg/kg	1.	114504000P
Lead (furnace method)	17.8	mg/kg	0.5	115504000P
Selenium (furnace method)	0.6	mg/kg	0.5	116404000P
Thallium (furnace method)	3.	mg/kg	1.	117304000P

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1 COPY TO Data Package Group

American Association for Laboratory Accreditation
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Member: American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301
135 03915 70.00 054700

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300578

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473298
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3B 5-8' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Volatiles (Soil)		attached		117801000P
TCL Semi-Volatiles (Soil)		attached		120101000P
TCL Semi-Volatiles (Soil) cont		attached		120201000P
TCL Pesticides		attached		122501000P
Moisture *AS RECEIVED*	19.0	% by wt.	0.1	135301000P
pH	2.28		0.01	144101000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150901000P
Dioxin	0.00000			900131000P

The analysis for dioxin was subcontracted to another laboratory.

Please refer to the data package for the complete report of this sample.

Malathion	280.	ug/kg	60.	900216500P
Pentachloronitrobenzene	< 4,100.	ug/kg	4,100.	900301000P

The quantitation limits were increased due to the high concentration of non-target compounds.

This sample functions as a matrix spike duplicate for organic compounds and as a duplicate for inorganic compounds. This means that for quality control purposes, inorganic compounds will be compared with the unspiked sample and organic compounds will be spiked with known concentrations of analyte for comparison with the matrix spike sample.

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1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300579

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473298
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3B 5-8' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 12.	ug/kg	12.	082700000P
Bromomethane	< 12.	ug/kg	12.	082800000P
Vinyl Chloride	< 12.	ug/kg	12.	082900000P
Chloroethane	< 12.	ug/kg	12.	083000000P
Methylene Chloride	110.	ug/kg	6.	083100000P
Acetone	86.	ug/kg	12.	091400000P
Carbon Disulfide	8.	ug/kg	6.	091500000P
1,1-Dichloroethene	80.	ug/kg	6.	118000000P
1,1-Dichloroethane	< 6.	ug/kg	6.	083300000P
1,2-Dichloroethene (total)	< 6.	ug/kg	6.	117900000P
Chloroform	< 6.	ug/kg	6.	083500000P
1,2-Dichloroethane	< 6.	ug/kg	6.	083600000P
2-Butanone	< 12.	ug/kg	12.	091600000P
1,1,1-Trichloroethane	< 6.	ug/kg	6.	083700000P
Carbon Tetrachloride	< 6.	ug/kg	6.	083800000P
Vinyl Acetate	< 12.	ug/kg	12.	091700000P
Bromodichloromethane	< 6.	ug/kg	6.	083900000P
1,2-Dichloropropane	< 6.	ug/kg	6.	084000000P
cis-1,3-Dichloropropene	< 6.	ug/kg	6.	084400000P
Trichloroethene	67.	ug/kg	6.	118100000P
Dibromochloromethane	< 6.	ug/kg	6.	084600000P
1,1,2-Trichloroethane	< 6.	ug/kg	6.	084500000P
Benzene	65.	ug/kg	6.	118200000P
trans-1,3-Dichloropropene	< 6.	ug/kg	6.	084100000P
Bromoform	< 6.	ug/kg	6.	084700000P
4-Methyl-2-Pentanone	< 12.	ug/kg	12.	091900000P
2-Hexanone	< 12.	ug/kg	12.	091800000P
Tetrachloroethene	< 6.	ug/kg	6.	084800000P
1,1,2,2-Tetrachloroethane	< 6.	ug/kg	6.	084900000P
Toluene	84.	ug/kg	6.	118300000P
Chlorobenzene	70.	ug/kg	6.	118400000P
Ethylbenzene	10.	ug/kg	6.	085200000P
Styrene	< 6.	ug/kg	6.	092000000P
Xylenes (total)	51.	ug/kg	6.	092100000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

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300580

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473298
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3B 5-8' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
phenol	5,900.	ug/kg	4,100.	118500000P
bis (2-chloroethyl) ether	< 4,100.	ug/kg	4,100.	066700000P
2-chlorophenol	6,000.	ug/kg	4,100.	118600000P
1,3-dichlorobenzene	< 4,100.	ug/kg	4,100.	067700000P
1,4-dichlorobenzene	< 4,100.	ug/kg	4,100.	118700000P
benzyl alcohol	< 4,100.	ug/kg	4,100.	092600000P
1,2-dichlorobenzene	< 4,100.	ug/kg	4,100.	067600000P
2-methylphenol	< 4,100.	ug/kg	4,100.	092700000P
bis (2-chloroisopropyl) ether	< 4,100.	ug/kg	4,100.	066800000P
4-methylphenol	< 4,100.	ug/kg	4,100.	092800000P
N-nitrosodi-n-propylamine	< 4,100.	ug/kg	4,100.	118800000P
hexachloroethane	< 4,100.	ug/kg	4,100.	069200000P
nitrobenzene	< 4,100.	ug/kg	4,100.	069600000P
isophorone	< 4,100.	ug/kg	4,100.	069400000P
2-nitrophenol	< 4,100.	ug/kg	4,100.	065100000P
2,4-dimethylphenol	< 4,100.	ug/kg	4,100.	064800000P
benzoic acid	< 21,000.	ug/kg	21,000.	092900000P
bis (2-chloroethoxy) methane	< 4,100.	ug/kg	4,100.	066600000P
2,4-dichlorophenol	< 4,100.	ug/kg	4,100.	064700000P
1,2,4-trichlorobenzene	< 4,100.	ug/kg	4,100.	118900000P
naphthalene	< 4,100.	ug/kg	4,100.	069500000P
4-chloroaniline	< 4,100.	ug/kg	4,100.	093000000P
hexachlorobutadiene	< 4,100.	ug/kg	4,100.	069000000P
4-chloro-3-methylphenol	5,200.	ug/kg	4,100.	119000000P
2-methylnaphthalene	< 4,100.	ug/kg	4,100.	093100000P
hexachlorocyclopentadiene	< 4,100.	ug/kg	4,100.	069100000P
2,4,6-trichlorophenol	< 4,100.	ug/kg	4,100.	065600000P
2,4,5-trichlorophenol	< 21,000.	ug/kg	21,000.	093200000P
2-chloronaphthalene	< 4,100.	ug/kg	4,100.	067200000P
2-nitroaniline	< 21,000.	ug/kg	21,000.	093300000P
dimethyl phthalate	< 4,100.	ug/kg	4,100.	068100000P
acenaphthylene	< 4,100.	ug/kg	4,100.	065800000P

The quantitation limits were increased due to the high concentration of non-target compounds.

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

American Association for Laboratory Accreditation
Chemical, Biological & Environmental fields of testing

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473298
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3B 5-8' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT DRY WT. BASIS	LIMIT OF QUANTITATION	LAB CODE

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
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Group Leader, GC/MS

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473298
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3B 5-8' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 21,000.	ug/kg	21,000.	093400000P
acenaphthene	< 4,100.	ug/kg	4,100.	119100000P
2,4-dinitrophenol	< 21,000.	ug/kg	21,000.	065000000P
4-nitrophenol	< 21,000.	ug/kg	21,000.	119200000P
dibenzofuran	< 4,100.	ug/kg	4,100.	093500000P
2,4-dinitrotoluene	< 4,100.	ug/kg	4,100.	119300000P
2,6-dinitrotoluene	< 4,100.	ug/kg	4,100.	068400000P
diethyl phthalate	< 4,100.	ug/kg	4,100.	068000000P
4-chlorophenyl phenyl ether	< 4,100.	ug/kg	4,100.	067300000P
fluorene	< 4,100.	ug/kg	4,100.	068800000P
4-nitroaniline	< 21,000.	ug/kg	21,000.	093600000P
2-methyl-4,6-dinitrophenol	< 21,000.	ug/kg	21,000.	064900000P
N-nitrosodiphenylamine	< 4,100.	ug/kg	4,100.	069900000P
4-bromophenyl phenyl ether	< 4,100.	ug/kg	4,100.	067000000P
hexachlorobenzene	< 4,100.	ug/kg	4,100.	068900000P
pentachlorophenol	< 21,000.	ug/kg	21,000.	119400000P
phenanthrene	< 4,100.	ug/kg	4,100.	070000000P
anthracene	< 4,100.	ug/kg	4,100.	065900000P
di-n-butyl phthalate	< 4,100.	ug/kg	4,100.	068200000P
fluoranthene	< 4,100.	ug/kg	4,100.	068700000P
pyrene	< 4,100.	ug/kg	4,100.	119500000P
butyl benzyl phthalate	< 4,100.	ug/kg	4,100.	067100000P
3,3'-dichlorobenzidine	< 8,300.	ug/kg	8,300.	067900000P
benzo (a) anthracene	< 4,100.	ug/kg	4,100.	066100000P
bis (2-ethylhexyl) phthalate	< 4,100.	ug/kg	4,100.	066900000P
chrysene	< 4,100.	ug/kg	4,100.	067400000P
di-n-octyl phthalate	< 4,100.	ug/kg	4,100.	068500000P
benzo (b) fluoranthene	< 4,100.	ug/kg	4,100.	066300000P
benzo (K) fluoranthene	< 4,100.	ug/kg	4,100.	066500000P
benzo (a) pyrene	< 4,100.	ug/kg	4,100.	066200000P
indeno (1,2,3-cd) pyrene	< 4,100.	ug/kg	4,100.	069300000P
dibenz (a,h) anthracene	< 4,100.	ug/kg	4,100.	067500000P
benzo (ghi) perylene	< 4,100.	ug/kg	4,100.	066400000P

The quantitation limits were increased due to the high concentration of non-target compounds.

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473298
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3B 5-8' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT DRY WT. BASIS	LIMIT OF QUANTITATION	LAB CODE

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Lancaster Laboratories, Inc.
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Group Leader, GC/MS

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473298
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3B 5-8' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	2,800.	ug/kg	1,000.	060900000P
Beta BHC	< 10,000.	ug/kg	0,000.	061000000P
Delta BHC	< 10,000.	ug/kg	0,000.	061200000P
Gamma BHC - Lindane	3,200.	ug/kg	1,000.	121800000P
Heptachlor	< 1,000.	ug/kg	1,000.	121900000P
Aldrin	27,200.	ug/kg	1,000.	122000000P
Heptachlor Epoxide	< 1,000.	ug/kg	1,000.	061500000P
Endosulfan I	< 6,800.	ug/kg	6,800.	062700000P
Dieldrin	40,700.	ug/kg	2,000.	122200000P
DDE	2,800.	ug/kg	2,000.	061600000P
Endrin	< 2,000.	ug/kg	2,000.	122300000P
Endosulfan II	< 2,000.	ug/kg	2,000.	062800000P
DDD	11,400.	ug/kg	2,000.	061700000P
Endosulfan Sulfate	< 2,000.	ug/kg	2,000.	062900000P
DDT	247,000.	ug/kg	2,000.	122100000P
Endrin Ketone	< 2,000.	ug/kg	2,000.	093800000P
Methoxychlor	< 10,000.	ug/kg	0,000.	062100000P
Alpha Chlordane	< 10,000.	ug/kg	0,000.	136100000P
Gamma Chlordane	< 10,000.	ug/kg	0,000.	136200000P
Toxaphene	< 20,000.	ug/kg	20,000.	094200000P
PCB-1016	< 100,000.	ug/kg	100,000.	063900000P
PCB-1221	< 140,000.	ug/kg	140,000.	064000000P
PCB-1232	< 100,000.	ug/kg	100,000.	064100000P
PCB-1242	< 100,000.	ug/kg	100,000.	064200000P
PCB-1248	< 100,000.	ug/kg	100,000.	064300000P
PCB-1254	< 20,000.	ug/kg	20,000.	064400000P
PCB-1260	< 20,000.	ug/kg	20,000.	064500000P

Due to the significant amount of lindane, aldrin, dieldrin, and DDT present in the background, the recovery of these compounds could not be determined. Endrin and heptachlor were diluted out.

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Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473298
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S3B 5-8' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	19,100.	ug/kg	100.	134500000P

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300586

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473299
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

Continuation of LLI #1473298 PPG B6/S3B 5-8'
Matrix Spike Dup. & Duplicate Soil Sample
Collected on 12/21/89 at 1200 by WS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT	BASIS	LIMIT OF QUANTITATION	LAB CODE
Aluminum	3,230.	mg/kg	20.	014301100P
Antimony	< 6.	mg/kg	6.	014401100P
Barium	50.	mg/kg	20.	014601100P
Beryllium	< 0.6	mg/kg	0.6	014701100P
Cadmium	< 0.6	mg/kg	0.6	014901100P
Calcium	30.	mg/kg	10.	015001100P
Chromium	5.	mg/kg	1.	015101100P
Cobalt	< 6.	mg/kg	6.	015201100P
Copper	< 2.	mg/kg	2.	015301100P
Iron	4,700.	mg/kg	6.	015401100P
Magnesium	80.	mg/kg	10.	015701100P
Manganese	6.	mg/kg	1.	015801100P
Mercury	< 0.05	mg/kg	0.05	015901100P
Nickel	< 5.	mg/kg	5.	016101100P
Potassium	170.	mg/kg	60.	016201100P
Silver	< 1.	mg/kg	1.	016601100P
Sodium	< 60.	mg/kg	60.	016701100P
Vanadium	7.	mg/kg	6.	017101100P
Zinc	9.	mg/kg	2.	017201100P
Cyanide, Total	< 0.1	mg/kg	0.1	023701100P
Arsenic (furnace method)	15.	mg/kg	1.	114501100P
Lead (furnace method)	16.7	mg/kg	0.6	115501100P
Selenium (furnace method)	< 0.6	mg/kg	0.6	116401100P
Thallium (furnace method)	< 1.	mg/kg	1.	117301100P
Moisture *AS RECEIVED*	19.0	% by wt.	0.1	135301100P

This sample functions as a matrix spike duplicate for organic compounds and as a duplicate for inorganic compounds. This means that for quality control purposes, inorganic compounds will be compared with the unspiked sample and organic compounds will be spiked with known concentrations of analyte for comparison with the matrix spike sample.

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300587

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473300
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S6A 10-12' Soil Sample
Collected on 12/21/89 at 1215 by WS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	14.9	% by wt.	0.1	135330000P
pH	4.23		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 390.	ug/kg	390.	900230000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300588

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2801

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473300
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S6A 10-12' Soil Sample
Collected on 12/21/89 at 1215 by WS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 90.	ug/kg	90.	060900000P
Beta BHC	< 900.	ug/kg	900.	061000000P
Delta BHC	< 900.	ug/kg	900.	061200000P
Gamma BHC - Lindane	< 90.	ug/kg	90.	121800000P
Heptachlor	< 900.	ug/kg	900.	121900000P
Aldrin	< 900.	ug/kg	900.	122000000P
Heptachlor Epoxide	< 90.	ug/kg	90.	061500000P
Endosulfan I	< 130.	ug/kg	130.	062700000P
Dieldrin	740.	ug/kg	190.	122200000P
DDE	< 190.	ug/kg	190.	061600000P
Endrin	< 190.	ug/kg	190.	122300000P
Endosulfan II	< 190.	ug/kg	190.	062800000P
DDD	< 190.	ug/kg	190.	061700000P
Endosulfan Sulfate	< 190.	ug/kg	190.	062900000P
DDT	1,880.	ug/kg	190.	122100000P
Endrin Ketone	< 190.	ug/kg	190.	093800000P
Methoxychlor	< 900.	ug/kg	900.	062100000P
Alpha Chlordane	< 900.	ug/kg	900.	136100000P
Gamma Chlordane	< 900.	ug/kg	900.	136200000P
Toxaphene	< 1,900.	ug/kg	1,900.	094200000P
PCB-1016	< 900.	ug/kg	900.	063900000P
PCB-1221	< 900.	ug/kg	900.	064000000P
PCB-1232	< 900.	ug/kg	900.	064100000P
PCB-1242	< 900.	ug/kg	900.	064200000P
PCB-1248	< 900.	ug/kg	900.	064300000P
PCB-1254	< 1,900.	ug/kg	1,900.	064400000P
PCB-1260	< 1,900.	ug/kg	1,900.	064500000P

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Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473300
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B6/S6A 10-12' Soil Sample
Collected on 12/21/89 at 1215 by WS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	600.	ug/kg	100.	134500000P

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471760
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

B7
PPG ~~B9~~/S3-A 5-7' Unspiked Soil Sample
Collected on 12/17/89 at 1500 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
VOA GC/MS Library Search		attached		089004000P
TCL Volatiles (Soil)		attached		117826000P
TCL Semi-Volatiles (Soil)		attached		120126000P
TCL Semi-Volatiles (Soil) cont		attached		120226000P
TCL Pesticides		attached		122526000P
Moisture *AS RECEIVED*	17.8	% by wt.	0.1	135326000P
pH	4.27		0.01	144126000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150926000P
Dioxin	0.00000			900131000P

The analysis for dioxin was subcontracted to another laboratory.

2,3,7,8-TCDD was not detected in the sample. Please refer to the data package for the complete report.

Malathion	70.	ug/kg	60.	900216500P
Pentachloronitrobenzene	< 400.	ug/kg	400.	900301000P

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

PPG ~~B9~~ B7/S3-A 5-7' Unspiked Soil Sample
Collected on 12/17/89 at 1500 by WS

LLI Sample No. SW 1471760
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 12.	ug/kg	12.	082700000P
Bromomethane	< 12.	ug/kg	12.	082800000P
Vinyl Chloride	< 12.	ug/kg	12.	082900000P
Chloroethane	< 12.	ug/kg	12.	083000000P
Methylene Chloride	< 6.	ug/kg	6.	083100000P
Acetone	64.	ug/kg	12.	091400000P
Carbon Disulfide	< 6.	ug/kg	6.	091500000P
1,1-Dichloroethene	< 6.	ug/kg	6.	118000000P
1,1-Dichloroethane	< 6.	ug/kg	6.	083300000P
1,2-Dichloroethene (total)	< 6.	ug/kg	6.	117900000P
Chloroform	< 6.	ug/kg	6.	083500000P
1,2-Dichloroethane	< 6.	ug/kg	6.	083600000P
2-Butanone	< 12.	ug/kg	12.	091600000P
1,1,1-Trichloroethane	< 6.	ug/kg	6.	083700000P
Carbon Tetrachloride	< 6.	ug/kg	6.	083800000P
Vinyl Acetate	< 12.	ug/kg	12.	091700000P
Bromodichloromethane	< 6.	ug/kg	6.	083900000P
1,2-Dichloropropane	< 6.	ug/kg	6.	084000000P
cis-1,3-Dichloropropene	< 6.	ug/kg	6.	084400000P
Trichloroethene	< 6.	ug/kg	6.	118100000P
Dibromochloromethane	< 6.	ug/kg	6.	084600000P
1,1,2-Trichloroethane	< 6.	ug/kg	6.	084500000P
Benzene	< 6.	ug/kg	6.	118200000P
trans-1,3-Dichloropropene	< 6.	ug/kg	6.	084100000P
Bromoform	< 6.	ug/kg	6.	084700000P
4-Methyl-2-Pentanone	< 12.	ug/kg	12.	091900000P
2-Hexanone	< 12.	ug/kg	12.	091800000P
Tetrachloroethene	< 6.	ug/kg	6.	084800000P
1,1,2,2-Tetrachloroethane	< 6.	ug/kg	6.	084900000P
Toluene	< 6.	ug/kg	6.	118300000P
Chlorobenzene	< 6.	ug/kg	6.	118400000P
Ethylbenzene	< 6.	ug/kg	6.	085200000P
Styrene	< 6.	ug/kg	6.	092000000P
Xylenes (total)	< 6.	ug/kg	6.	092100000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard S. Rodgers, B.S.
Group Leader, GC/MS

300592

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

PPG ~~B9~~ B7/S3-A 5-7' Unspiked Soil Sample
Collected on 12/17/89 at 1500 by WS

LLI Sample No. SW 1471760
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
phenol	< 400.	ug/kg	400.	118500000P
bis (2-chloroethyl) ether	< 400.	ug/kg	400.	066700000P
2-chlorophenol	< 400.	ug/kg	400.	118600000P
1,3-dichlorobenzene	< 400.	ug/kg	400.	067700000P
1,4-dichlorobenzene	< 400.	ug/kg	400.	118700000P
benzyl alcohol	< 400.	ug/kg	400.	092600000P
1,2-dichlorobenzene	< 400.	ug/kg	400.	067600000P
2-methylphenol	< 400.	ug/kg	400.	092700000P
bis (2-chloroisopropyl) ether	< 400.	ug/kg	400.	066800000P
4-methylphenol	< 400.	ug/kg	400.	092800000P
N-nitrosodi-n-propylamine	< 400.	ug/kg	400.	118800000P
hexachloroethane	< 400.	ug/kg	400.	069200000P
nitrobenzene	< 400.	ug/kg	400.	069600000P
isophorone	< 400.	ug/kg	400.	069400000P
2-nitrophenol	< 400.	ug/kg	400.	065100000P
2,4-dimethylphenol	< 400.	ug/kg	400.	064800000P
benzoic acid	< 2,100.	ug/kg	2,100.	092900000P
bis (2-chloroethoxy) methane	< 400.	ug/kg	400.	066600000P
2,4-dichlorophenol	< 400.	ug/kg	400.	064700000P
1,2,4-trichlorobenzene	< 400.	ug/kg	400.	118900000P
naphthalene	< 400.	ug/kg	400.	069500000P
4-chloroaniline	< 400.	ug/kg	400.	093000000P
hexachlorobutadiene	< 400.	ug/kg	400.	069000000P
4-chloro-3-methylphenol	< 400.	ug/kg	400.	119000000P
2-methylnaphthalene	< 400.	ug/kg	400.	093100000P
hexachlorocyclopentadiene	< 400.	ug/kg	400.	069100000P
2,4,6-trichlorophenol	< 400.	ug/kg	400.	065600000P
2,4,5-trichlorophenol	< 2,100.	ug/kg	2,100.	093200000P
2-chloronaphthalene	< 400.	ug/kg	400.	067200000P
2-nitroaniline	< 2,100.	ug/kg	2,100.	093300000P
dimethyl phthalate	< 400.	ug/kg	400.	068100000P
acenaphthylene	< 400.	ug/kg	400.	065800000P

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Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
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PPG ~~89~~ 87/S3-A 5-7' Unspiked Soil Sample
Collected on 12/17/89 at 1500 by WS

LLI Sample No. SW 1471760
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 2,100.	ug/kg	2,100.	093400000P
acenaphthene	< 400.	ug/kg	400.	119100000P
2,4-dinitrophenol	< 2,100.	ug/kg	2,100.	065000000P
4-nitrophenol	< 2,100.	ug/kg	2,100.	119200000P
dibenzofuran	< 400.	ug/kg	400.	093500000P
2,4-dinitrotoluene	< 400.	ug/kg	400.	119300000P
2,6-dinitrotoluene	< 400.	ug/kg	400.	068400000P
diethyl phthalate	< 400.	ug/kg	400.	068000000P
4-chlorophenyl phenyl ether	< 400.	ug/kg	400.	067300000P
fluorene	< 400.	ug/kg	400.	068800000P
4-nitroaniline	< 2,100.	ug/kg	2,100.	093600000P
2-methyl-4,6-dinitrophenol	< 2,100.	ug/kg	2,100.	064900000P
N-nitrosodiphenylamine	< 400.	ug/kg	400.	069900000P
4-bromophenyl phenyl ether	< 400.	ug/kg	400.	067000000P
hexachlorobenzene	< 400.	ug/kg	400.	068900000P
pentachlorophenol	< 2,100.	ug/kg	2,100.	119400000P
phenanthrene	< 400.	ug/kg	400.	070000000P
anthracene	< 400.	ug/kg	400.	065900000P
di-n-butyl phthalate	< 400.	ug/kg	400.	068200000P
fluoranthene	< 400.	ug/kg	400.	068700000P
pyrene	< 400.	ug/kg	400.	119500000P
butyl benzyl phthalate	< 400.	ug/kg	400.	067100000P
3,3'-dichlorobenzidine	< 820.	ug/kg	820.	067900000P
benzo (a) anthracene	< 400.	ug/kg	400.	066100000P
bis (2-ethylhexyl) phthalate	< 400.	ug/kg	400.	066900000P
chrysene	< 400.	ug/kg	400.	067400000P
di-n-octyl phthalate	< 400.	ug/kg	400.	068500000P
benzo (b) fluoranthene	< 400.	ug/kg	400.	066300000P
benzo (K) fluoranthene	< 400.	ug/kg	400.	066500000P
benzo (a) pyrene	< 400.	ug/kg	400.	066200000P
indeno (1,2,3-cd) pyrene	< 400.	ug/kg	400.	069300000P
dibenz (a,h) anthracene	< 400.	ug/kg	400.	067500000P
benzo (ghi) perylene	< 400.	ug/kg	400.	066400000P

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Group Leader, GC/MS

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

PPG ~~B9~~ 87/S3-A 5-7' Unspiked Soil Sample
Collected on 12/17/89 at 1500 by WS

LLI Sample No. SW 1471760
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	103.	ug/kg	10.	060900000P
Beta BHC	< 100.	ug/kg	100.	061000000P
Delta BHC	< 100.	ug/kg	100.	061200000P
Gamma BHC - Lindane	< 100.	ug/kg	100.	121800000P
Heptachlor	< 100.	ug/kg	100.	121900000P
Aldrin	< 100.	ug/kg	100.	122000000P
Heptachlor Epoxide	< 100.	ug/kg	100.	061500000P
Endosulfan I	230.	ug/kg	100.	062700000P
Dieldrin	95.	ug/kg	19.	122200000P
DDE	< 190.	ug/kg	190.	061600000P
Endrin	< 19.	ug/kg	19.	122300000P
Endosulfan II	< 30.	ug/kg	30.	062800000P
DDD	36.	ug/kg	19.	061700000P
Endosulfan Sulfate	< 19.	ug/kg	19.	062900000P
DDT	122.	ug/kg	19.	122100000P
Endrin Ketone	50.	ug/kg	19.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 1,000.	ug/kg	1,000.	136100000P
Gamma Chlordane	< 1,000.	ug/kg	1,000.	136200000P
Toxaphene	< 190.	ug/kg	190.	094200000P
PCB-1016	< 1,000.	ug/kg	1,000.	063900000P
PCB-1221	< 2,000.	ug/kg	2,000.	064000000P
PCB-1232	< 1,000.	ug/kg	1,000.	064100000P
PCB-1242	< 1,000.	ug/kg	1,000.	064200000P
PCB-1248	< 1,000.	ug/kg	1,000.	064300000P
PCB-1254	< 190.	ug/kg	190.	064400000P
PCB-1260	< 190.	ug/kg	190.	064500000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300595

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

PPG ~~B9~~ 87/S3-A 5-7' Unspiked Soil Sample
Collected on 12/17/89 at 1500 by WS

LLI Sample No. SW 1471760
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	900.	ug/kg	100.	134500000P

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300596

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2801

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

B7S3A

Lab Name: LANCASTER LABS Contract:
Lab Code: LLI Case No.: 242630 SAS No.: SDG No.: PPG1
Matrix: (soil/water) SOIL Lab Sample ID: A1471760LR
Sample wt/vol: 5.0 (g/mL) G Lab File ID: A1471760LR
Level: (low/med) LOW Date Received: 12/18/89
% Moisture: not dec. 18 Date Analyzed: 12/20/89
Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

300597

FORM I VOA-TIC 1/87 Rev.

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Lancaster Laboratories, Inc.
Reviewed and Approved by:
Richard S. Rodgers, B.S.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

EPA SAMPLE NO.

B7S3A

Lab Name: LANCASTER LABS Contract: RIZZO
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) SOIL Lab Sample ID: 1471760
Sample wt/vol: 30.0(g/mL) G Lab File ID: >E1601
Level: (low/med) LOW Date Received: 12/18/89
% Moisture: not dec. 18. dec. _____. Date Extracted: 12/19/89
Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 12/26/89
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 1.000

Number TICs found: 9

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		2-Pentene, 2,4-dimethyl-	7.10	410.	*JIB
2.		Unknown	8.27	12000.	JAB
3.		Unknown acid	9.05	200.	J
4.		Unknown ketone	10.90	320.	J
5.		3-Hepten-2-one	11.15	200.	JI
6.		Unknown nitrogen compound	21.59	2200.	J
7.		2-Naphthalenol	28.74	280.	JI
8.		Unknown	29.52	490.	J
9.		Unknown subs. hexanedioic ac	34.27	360.	JB
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					

*I=or isomer of compound

FORM I SV-TIC 1/87 Rev.

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

300598

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471761
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

Continuation of LLI #1471760 PPG ~~B9~~ B7/S3-A 5-7'
Unspiked Soil Sample
Collected on 12/17/89 at 1500 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT	BASIS	LIMIT OF QUANTITATION	LAB CODE
Aluminum	10,900.	mg/kg	20.	014301100P
Antimony	< 6.	mg/kg	6.	014401100P
Barium	70.	mg/kg	20.	014601100P
Beryllium	< 0.6	mg/kg	0.6	014701100P
Cadmium	< 0.6	mg/kg	0.6	014901100P
Calcium	40.	mg/kg	10.	015001100P
Chromium	47.	mg/kg	1.	015101100P
Cobalt	< 6.	mg/kg	6.	015201100P
Copper	23.	mg/kg	2.	015301100P
Iron	13,200.	mg/kg	6.	015401100P
Magnesium	350.	mg/kg	10.	015701100P
Manganese	14.	mg/kg	1.	015801100P
Mercury	< 0.05	mg/kg	0.05	015901100P
Nickel	6.	mg/kg	5.	016101100P
Potassium	240.	mg/kg	60.	016201100P
Silver	< 1.	mg/kg	1.	016601100P
Sodium	< 60.	mg/kg	60.	016701100P
Vanadium	18.	mg/kg	6.	017101100P
Zinc	28.	mg/kg	2.	017201100P
Cyanide, Total	< 0.1	mg/kg	0.1	023701100P
Arsenic (furnace method)	2.	mg/kg	1.	114501100P
Lead (furnace method)	4.8	mg/kg	0.6	115501100P
Selenium (furnace method)	< 0.6	mg/kg	0.6	116401100P
Thallium (furnace method)	< 1.	mg/kg	1.	117301100P
Moisture *AS RECEIVED*	17.8	% by wt.	0.1	135301100P

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300599

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471762
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG ~~B9~~ B7/S3-A 5-7' Matrix Spike Soil Sample
Collected on 12/17/89 at 1500 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
TCL Volatiles (Soil)		attached		117826000P
TCL Semi-Volatiles (Soil)		attached		120152500P
TCL Semi-Volatiles (Soil) cont		attached		120200000P
TCL Pesticides		attached		122524500P
N-Methyl Carbamates in Soil		attached		150915000P
Dioxin	See Below			900131000P

The analysis for dioxin was subcontracted to another laboratory.

Please refer to the data package for the complete report of this sample.

Malathion	280.	ug/kg	50.	900216500P
Pentachloronitrobenzene	3,180.	ug/kg	330.	900301000P

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194 03915 225.00 189000

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ANALYSIS REPORT

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Discard Date 3/ 8/90
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P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/kg	10.	082700000P
Bromomethane	< 10.	ug/kg	10.	082800000P
Vinyl Chloride	< 10.	ug/kg	10.	082900000P
Chloroethane	< 10.	ug/kg	10.	083000000P
Methylene Chloride	< 5.	ug/kg	5.	083100000P
Acetone	65.	ug/kg	10.	091400000P
Carbon Disulfide	< 5.	ug/kg	5.	091500000P
1,1-Dichloroethene	42.	ug/kg	5.	118000000P
1,1-Dichloroethane	< 5.	ug/kg	5.	083300000P
1,2-Dichloroethene (total)	< 5.	ug/kg	5.	117900000P
Chloroform	< 5.	ug/kg	5.	083500000P
1,2-Dichloroethane	< 5.	ug/kg	5.	083600000P
2-Butanone	< 10.	ug/kg	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/kg	5.	083700000P
Carbon Tetrachloride	< 5.	ug/kg	5.	083800000P
Vinyl Acetate	< 10.	ug/kg	10.	091700000P
Bromodichloromethane	< 5.	ug/kg	5.	083900000P
1,2-Dichloropropane	< 5.	ug/kg	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/kg	5.	084400000P
Trichloroethene	40.	ug/kg	5.	118100000P
Dibromochloromethane	< 5.	ug/kg	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/kg	5.	084500000P
Benzene	38.	ug/kg	5.	118200000P
trans-1,3-Dichloropropene	< 5.	ug/kg	5.	084100000P
Bromoform	< 5.	ug/kg	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/kg	10.	091900000P
2-Hexanone	< 10.	ug/kg	10.	091800000P
Tetrachloroethene	< 5.	ug/kg	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/kg	5.	084900000P
Toluene	43.	ug/kg	5.	118300000P
Chlorobenzene	44.	ug/kg	5.	118400000P
Ethylbenzene	< 5.	ug/kg	5.	085200000P
Styrene	< 5.	ug/kg	5.	092000000P
Xylenes (total)	< 5.	ug/kg	5.	092100000P

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Paul C. Rizzo Associates
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PPG ~~89~~ 87/S3-A 5-7' Matrix Spike Soil Sample
Collected on 12/17/89 at 1500 by WS

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	4,740.	ug/kg	330.	118500000P
bis (2-chloroethyl) ether	< 330.	ug/kg	330.	066700000P
2-chlorophenol	4,330.	ug/kg	330.	118600000P
1,3-dichlorobenzene	< 330.	ug/kg	330.	067700000P
1,4-dichlorobenzene	2,460.	ug/kg	330.	118700000P
benzyl alcohol	< 330.	ug/kg	330.	092600000P
1,2-dichlorobenzene	< 330.	ug/kg	330.	067600000P
2-methylphenol	< 330.	ug/kg	330.	092700000P
bis (2-chloroisopropyl) ether	< 330.	ug/kg	330.	066800000P
4-methylphenol	< 330.	ug/kg	330.	092800000P
N-nitrosodi-n-propylamine	2,170.	ug/kg	330.	118800000P
hexachloroethane	< 330.	ug/kg	330.	069200000P
nitrobenzene	< 330.	ug/kg	330.	069600000P
isophorone	< 330.	ug/kg	330.	069400000P
2-nitrophenol	< 330.	ug/kg	330.	065100000P
2,4-dimethylphenol	< 330.	ug/kg	330.	064800000P
benzoic acid	< 1,700.	ug/kg	1,700.	092900000P
bis (2-chloroethoxy) methane	< 330.	ug/kg	330.	066600000P
2,4-dichlorophenol	< 330.	ug/kg	330.	064700000P
1,2,4-trichlorobenzene	2,570.	ug/kg	330.	118900000P
naphthalene	< 330.	ug/kg	330.	069500000P
4-chloroaniline	< 330.	ug/kg	330.	093000000P
hexachlorobutadiene	< 330.	ug/kg	330.	069000000P
4-chloro-3-methylphenol	4,390.	ug/kg	330.	119000000P
2-methylnaphthalene	< 330.	ug/kg	330.	093100000P
hexachlorocyclopentadiene	< 330.	ug/kg	330.	069100000P
2,4,6-trichlorophenol	< 330.	ug/kg	330.	065600000P
2,4,5-trichlorophenol	< 1,700.	ug/kg	1,700.	093200000P
2-chloronaphthalene	< 330.	ug/kg	330.	067200000P
2-nitroaniline	< 1,700.	ug/kg	1,700.	093300000P
dimethyl phthalate	< 330.	ug/kg	330.	068100000P
acenaphthylene	< 330.	ug/kg	330.	065800000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300602

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471762
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG ~~B9~~ B7/S3-A 5-7' Matrix Spike Soil Sample
Collected on 12/17/89 at 1500 by WS

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 1,700.	ug/kg	1,700.	093400000P
acenaphthene	2,740.	ug/kg	330.	119100000P
2,4-dinitrophenol	< 1,700.	ug/kg	1,700.	065000000P
4-nitrophenol	3,300.	ug/kg	1,700.	119200000P
dibenzofuran	< 330.	ug/kg	330.	093500000P
2,4-dinitrotoluene	2,450.	ug/kg	330.	119300000P
2,6-dinitrotoluene	< 330.	ug/kg	330.	068400000P
diethyl phthalate	< 330.	ug/kg	330.	068000000P
4-chlorophenyl phenyl ether	< 330.	ug/kg	330.	067300000P
fluorene	< 330.	ug/kg	330.	068800000P
4-nitroaniline	< 1,700.	ug/kg	1,700.	093600000P
2-methyl-4,6-dinitrophenol	< 1,700.	ug/kg	1,700.	064900000P
N-nitrosodiphenylamine	< 330.	ug/kg	330.	069900000P
4-bromophenyl phenyl ether	< 330.	ug/kg	330.	067000000P
hexachlorobenzene	< 330.	ug/kg	330.	068900000P
pentachlorophenol	4,800.	ug/kg	1,700.	119400000P
phenanthrene	< 330.	ug/kg	330.	070000000P
anthracene	< 330.	ug/kg	330.	065900000P
di-n-butyl phthalate	< 330.	ug/kg	330.	068200000P
fluoranthene	< 330.	ug/kg	330.	068700000P
pyrene	3,060.	ug/kg	330.	119500000P
butyl benzyl phthalate	< 330.	ug/kg	330.	067100000P
3,3'-dichlorobenzidine	< 670.	ug/kg	670.	067900000P
benzo (a) anthracene	< 330.	ug/kg	330.	066100000P
bis (2-ethylhexyl) phthalate	< 330.	ug/kg	330.	066900000P
chrysene	< 330.	ug/kg	330.	067400000P
di-n-octyl phthalate	< 330.	ug/kg	330.	068500000P
benzo (b) fluoranthene	< 330.	ug/kg	330.	066300000P
benzo (K) fluoranthene	< 330.	ug/kg	330.	066500000P
benzo (a) pyrene	< 330.	ug/kg	330.	066200000P
indeno (1,2,3-cd) pyrene	< 330.	ug/kg	330.	069300000P
dibenz (a,h) anthracene	< 330.	ug/kg	330.	067500000P
benzo (ghi) perylene	< 330.	ug/kg	330.	066400000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300603

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471762
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG ~~B9~~ 87/S3-A 5-7' Matrix Spike Soil Sample
Collected on 12/17/89 at 1500 by WS

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	60.	ug/kg	8.	060900000P
Beta BHC	< 80.	ug/kg	80.	061000000P
Delta BHC	< 80.	ug/kg	80.	061200000P
Gamma BHC - Lindane	42.	ug/kg	8.	121800000P
Heptachlor	23.	ug/kg	8.	121900000P
Aldrin	55.	ug/kg	8.	122000000P
Heptachlor Epoxide	< 80.	ug/kg	80.	061500000P
Endosulfan I	104.	ug/kg	8.	062700000P
Dieldrin	244.	ug/kg	16.	122200000P
DDE	< 16.	ug/kg	16.	061600000P
Endrin	200.	ug/kg	16.	122300000P
Endosulfan II	< 25.	ug/kg	25.	062800000P
DDD	28.	ug/kg	16.	061700000P
Endosulfan Sulfate	< 16.	ug/kg	16.	062900000P
DDT	189.	ug/kg	16.	122100000P
Endrin Ketone	36.	ug/kg	16.	093800000P
Methoxychlor	< 80.	ug/kg	80.	062100000P
Alpha Chlordane	< 800.	ug/kg	800.	136100000P
Gamma Chlordane	< 800.	ug/kg	800.	136200000P
Toxaphene	< 160.	ug/kg	160.	094200000P
PCB-1016	< 800.	ug/kg	800.	063900000P
PCB-1221	< 2,000.	ug/kg	2,000.	064000000P
PCB-1232	< 800.	ug/kg	800.	064100000P
PCB-1242	< 800.	ug/kg	800.	064200000P
PCB-1248	< 800.	ug/kg	800.	064300000P
PCB-1254	< 160.	ug/kg	160.	064400000P
PCB-1260	< 160.	ug/kg	160.	064500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300604

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

PPG ~~B9~~ 87/S3-A 5-7' Matrix Spike Soil Sample
Collected on 12/17/89 at 1500 by WS

LLI Sample No. SW 1471762
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	2,400.	ug/kg	100.	134500000P

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300605

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471763
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

Continuation of LLI #1471762 PPG ~~B9~~ B7/S3-A 5-7'
Matrix Spike Soil Sample
Collected on 12/17/89 at 1500 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	7,760.	mg/kg	20.	014301300P
Antimony	20.	mg/kg	5.	014401300P
Barium	180.	mg/kg	20.	014601300P
Beryllium	3.3	mg/kg	0.5	014701300P
Cadmium	2.8	mg/kg	0.5	014901300P
Calcium	280.	mg/kg	10.	015001300P
Chromium	51.	mg/kg	1.	015101300P
Cobalt	32.	mg/kg	5.	015201300P
Copper	36.	mg/kg	2.	015301300P
Iron	10,800.	mg/kg	5.	015401300P
Magnesium	400.	mg/kg	10.	015701300P
Manganese	43.	mg/kg	1.	015801300P
Mercury	0.15	mg/kg	0.04	015903300P
Nickel	33.	mg/kg	4.	016101300P
Potassium	390.	mg/kg	50.	016201300P
Silver	3.	mg/kg	1.	016601300P
Sodium	250.	mg/kg	50.	016701300P
Vanadium	44.	mg/kg	5.	017101300P
Zinc	54.	mg/kg	2.	017201300P
Cyanide, Total	9.1	mg/kg	0.1	023705000P
Arsenic (furnace method)	4.	mg/kg	1.	114504000P
Lead (furnace method)	5.0	mg/kg	0.5	115504000P
Selenium (furnace method)	0.7	mg/kg	0.5	116404000P
Thallium (furnace method)	3.	mg/kg	1.	117304000P

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120 03915 70.00 054700

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300606

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471764
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG ~~B9~~ B7/S3-A 5-7' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 12/17/89 at 1500 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Volatiles (Soil)		attached		117801000P
TCL Semi-Volatiles (Soil)		attached		120101000P
TCL Semi-Volatiles (Soil) cont		attached		120201000P
TCL Pesticides		attached		122501000P
Moisture *AS RECEIVED*	17.6	% by wt.	0.1	135301000P
pH	4.26		0.01	144101000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150901000P
Dioxin	0.00000			900131000P

The analysis for dioxin was subcontracted to another laboratory.

Please refer to the data package for the complete report of this sample.

Malathion	330.	ug/kg	60.	900216500P
Pentachloronitrobenzene	4,540.	ug/kg	400.	900301000P

This sample functions as a matrix spike duplicate for organic compounds and as a duplicate for inorganic compounds. This means that for quality control purposes, inorganic compounds will be compared with the unspiked sample and organic compounds will be spiked with known concentrations of analyte for comparison with the matrix spike sample.

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300607

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471764
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG ~~B9~~ B7/S3-A 5-7' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 12/17/89 at 1500 by WS

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 12.	ug/kg	12.	082700000P
Bromomethane	< 12.	ug/kg	12.	082800000P
Vinyl Chloride	< 12.	ug/kg	12.	082900000P
Chloroethane	< 12.	ug/kg	12.	083000000P
Methylene Chloride	< 6.	ug/kg	6.	083100000P
Acetone	64.	ug/kg	12.	091400000P
Carbon Disulfide	< 6.	ug/kg	6.	091500000P
1,1-Dichloroethene	52.	ug/kg	6.	118000000P
1,1-Dichloroethane	< 6.	ug/kg	6.	083300000P
1,2-Dichloroethene (total)	< 6.	ug/kg	6.	117900000P
Chloroform	< 6.	ug/kg	6.	083500000P
1,2-Dichloroethane	< 6.	ug/kg	6.	083600000P
2-Butanone	< 12.	ug/kg	12.	091600000P
1,1,1-Trichloroethane	< 6.	ug/kg	6.	083700000P
Carbon Tetrachloride	< 6.	ug/kg	6.	083800000P
Vinyl Acetate	< 12.	ug/kg	12.	091700000P
Bromodichloromethane	< 6.	ug/kg	6.	083900000P
1,2-Dichloropropane	< 6.	ug/kg	6.	084000000P
cis-1,3-Dichloropropene	< 6.	ug/kg	6.	084400000P
Trichloroethene	51.	ug/kg	6.	118100000P
Dibromochloromethane	< 6.	ug/kg	6.	084600000P
1,1,2-Trichloroethane	< 6.	ug/kg	6.	084500000P
Benzene	47.	ug/kg	6.	118200000P
trans-1,3-Dichloropropene	< 6.	ug/kg	6.	084100000P
Bromoform	< 6.	ug/kg	6.	084700000P
4-Methyl-2-Pentanone	< 12.	ug/kg	12.	091900000P
2-Hexanone	< 12.	ug/kg	12.	091800000P
Tetrachloroethene	< 6.	ug/kg	6.	084800000P
1,1,2,2-Tetrachloroethane	< 6.	ug/kg	6.	084900000P
Toluene	53.	ug/kg	6.	118300000P
Chlorobenzene	56.	ug/kg	6.	118400000P
Ethylbenzene	< 6.	ug/kg	6.	085200000P
Styrene	< 6.	ug/kg	6.	092000000P
Xylenes (total)	< 6.	ug/kg	6.	092100000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard S. Rodgers, B.S.
Group Leader, GC/MS

300608

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471764
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG ~~B9~~ 87/S3-A 5-7' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 12/17/89 at 1500 by WS

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
phenol	6,900.	ug/kg	400.	118500000P
bis (2-chloroethyl) ether	< 400.	ug/kg	400.	066700000P
2-chlorophenol	6,330.	ug/kg	400.	118600000P
1,3-dichlorobenzene	< 400.	ug/kg	400.	067700000P
1,4-dichlorobenzene	3,380.	ug/kg	400.	118700000P
benzyl alcohol	< 400.	ug/kg	400.	092600000P
1,2-dichlorobenzene	< 400.	ug/kg	400.	067600000P
2-methylphenol	< 400.	ug/kg	400.	092700000P
bis (2-chloroisopropyl) ether	< 400.	ug/kg	400.	066800000P
4-methylphenol	< 400.	ug/kg	400.	092800000P
N-nitrosodi-n-propylamine	2,920.	ug/kg	400.	118800000P
hexachloroethane	< 400.	ug/kg	400.	069200000P
nitrobenzene	< 400.	ug/kg	400.	069600000P
isophorone	< 400.	ug/kg	400.	069400000P
2-nitrophenol	< 400.	ug/kg	400.	065100000P
2,4-dimethylphenol	< 400.	ug/kg	400.	064800000P
benzoic acid	< 2,100.	ug/kg	2,100.	092900000P
bis (2-chloroethoxy) methane	< 400.	ug/kg	400.	066600000P
2,4-dichlorophenol	< 400.	ug/kg	400.	064700000P
1,2,4-trichlorobenzene	3,590.	ug/kg	400.	118900000P
naphthalene	< 400.	ug/kg	400.	069500000P
4-chloroaniline	< 400.	ug/kg	400.	093000000P
hexachlorobutadiene	< 400.	ug/kg	400.	069000000P
4-chloro-3-methylphenol	7,120.	ug/kg	400.	119000000P
2-methylnaphthalene	< 400.	ug/kg	400.	093100000P
hexachlorocyclopentadiene	< 400.	ug/kg	400.	069100000P
2,4,6-trichlorophenol	< 400.	ug/kg	400.	065600000P
2,4,5-trichlorophenol	< 2,100.	ug/kg	2,100.	093200000P
2-chloronaphthalene	< 400.	ug/kg	400.	067200000P
2-nitroaniline	< 2,100.	ug/kg	2,100.	093300000P
dimethyl phthalate	< 400.	ug/kg	400.	068100000P
acenaphthylene	< 400.	ug/kg	400.	065800000P

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Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471764
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG ~~B9~~ BT/S3-A 5-7' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 12/17/89 at 1500 by WS

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 2,100.	ug/kg	2,100.	093400000P
acenaphthene	3,810.	ug/kg	400.	119100000P
2,4-dinitrophenol	< 2,100.	ug/kg	2,100.	065000000P
4-nitrophenol	5,100.	ug/kg	2,100.	119200000P
dibenzofuran	< 400.	ug/kg	400.	093500000P
2,4-dinitrotoluene	3,640.	ug/kg	400.	119300000P
2,6-dinitrotoluene	< 400.	ug/kg	400.	068400000P
diethyl phthalate	< 400.	ug/kg	400.	068000000P
4-chlorophenyl phenyl ether	< 400.	ug/kg	400.	067300000P
fluorene	< 400.	ug/kg	400.	068800000P
4-nitroaniline	< 2,100.	ug/kg	2,100.	093600000P
2-methyl-4,6-dinitrophenol	< 2,100.	ug/kg	2,100.	064900000P
N-nitrosodiphenylamine	< 400.	ug/kg	400.	069900000P
4-bromophenyl phenyl ether	< 400.	ug/kg	400.	067000000P
hexachlorobenzene	< 400.	ug/kg	400.	068900000P
pentachlorophenol	6,700.	ug/kg	2,100.	119400000P
phenanthrene	< 400.	ug/kg	400.	070000000P
anthracene	< 400.	ug/kg	400.	065900000P
di-n-butyl phthalate	< 400.	ug/kg	400.	068200000P
fluoranthene	< 400.	ug/kg	400.	068700000P
pyrene	4,430.	ug/kg	400.	119500000P
butyl benzyl phthalate	< 400.	ug/kg	400.	067100000P
3,3'-dichlorobenzidine	< 810.	ug/kg	810.	067900000P
benzo (a) anthracene	< 400.	ug/kg	400.	066100000P
bis (2-ethylhexyl) phthalate	< 400.	ug/kg	400.	066900000P
chrysene	< 400.	ug/kg	400.	067400000P
di-n-octyl phthalate	< 400.	ug/kg	400.	068500000P
benzo (b) fluoranthene	< 400.	ug/kg	400.	066300000P
benzo (K) fluoranthene	< 400.	ug/kg	400.	066500000P
benzo (a) pyrene	< 400.	ug/kg	400.	066200000P
indeno (1,2,3-cd) pyrene	< 400.	ug/kg	400.	069300000P
dibenz (a,h) anthracene	< 400.	ug/kg	400.	067500000P
benzo (ghi) perylene	< 400.	ug/kg	400.	066400000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental fields of testing

Member American Council of Independent Laboratories, Inc

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300610

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471764
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG ~~B9~~ 67/S3-A 5-7' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 12/17/89 at 1500 by WS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	68.	ug/kg	10.	060900000P
Beta BHC	27.	ug/kg	10.	061000000P
Delta BHC	< 100.	ug/kg	100.	061200000P
Gamma BHC - Lindane	80.	ug/kg	10.	121800000P
Heptachlor	59.	ug/kg	10.	121900000P
Aldrin	82.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 100.	ug/kg	100.	061500000P
Endosulfan I	153.	ug/kg	10.	062700000P
Dieldrin	453.	ug/kg	19.	122200000P
DDE	< 19.	ug/kg	19.	061600000P
Endrin	358.	ug/kg	19.	122300000P
Endosulfan II	< 42.	ug/kg	42.	062800000P
DDD	55.	ug/kg	19.	061700000P
Endosulfan Sulfate	< 19.	ug/kg	19.	062900000P
DDT	301.	ug/kg	19.	122100000P
Endrin Ketone	58.	ug/kg	19.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 1,000.	ug/kg	1,000.	136100000P
Gamma Chlordane	< 1,000.	ug/kg	1,000.	136200000P
Toxaphene	< 190.	ug/kg	190.	094200000P
PCB-1016	< 1,000.	ug/kg	1,000.	063900000P
PCB-1221	< 1,900.	ug/kg	1,900.	064000000P
PCB-1232	< 1,000.	ug/kg	1,000.	064100000P
PCB-1242	< 1,000.	ug/kg	1,000.	064200000P
PCB-1248	< 1,000.	ug/kg	1,000.	064300000P
PCB-1254	< 190.	ug/kg	190.	064400000P
PCB-1260	< 190.	ug/kg	190.	064500000P

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American Association for Laboratory Accreditation Chemical, Biological & Environmental fields of testing

Member: American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300611

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471764
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG ~~B9~~ B7/S3-A 5-7' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 12/17/89 at 1500 by WS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	3,000.	ug/kg	100.	134500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300612

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471765
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

Continuation of LLI #1471764 PPG ~~B9~~ B7/S3-A 5-7'
Matrix Spike Dup. & Duplicate Soil Sample
Collected on 12/17/89 at 1500 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT.	BASIS	LIMIT OF QUANTITATION	LAB CODE
Aluminum	10,400.	mg/kg	20.	014301100P
Antimony	< 6.	mg/kg	6.	014401100P
Barium	80.	mg/kg	20.	014601100P
Beryllium	< 0.6	mg/kg	0.6	014701100P
Cadmium	< 0.6	mg/kg	0.6	014901100P
Calcium	40.	mg/kg	10.	015001100P
Chromium	53.	mg/kg	1.	015101100P
Cobalt	< 6.	mg/kg	6.	015201100P
Copper	30.	mg/kg	2.	015301100P
Iron	13,800.	mg/kg	6.	015401100P
Magnesium	330.	mg/kg	10.	015701100P
Manganese	14.	mg/kg	1.	015801100P
Mercury	< 0.05	mg/kg	0.05	015901100P
Nickel	< 5.	mg/kg	5.	016101100P
Potassium	200.	mg/kg	60.	016201100P
Silver	< 1.	mg/kg	1.	016601100P
Sodium	< 60.	mg/kg	60.	016701100P
Vanadium	19.	mg/kg	6.	017101100P
Zinc	30.	mg/kg	2.	017201100P
Cyanide, Total	< 0.1	mg/kg	0.1	023701100P
Arsenic (furnace method)	< 6.	mg/kg	6.	114501100P
Lead (furnace method)	3.5	mg/kg	0.6	115501100P
Selenium (furnace method)	< 0.6	mg/kg	0.6	116401100P
Thallium (furnace method)	< 1.	mg/kg	1.	117301100P
Moisture *AS RECEIVED*	17.6	% by wt.	0.1	135301100P

This sample functions as a matrix spike duplicate for organic compounds and as a duplicate for inorganic compounds. This means that for quality control purposes, inorganic compounds will be compared with the unspiked sample and organic compounds will be spiked with known concentrations of analyte for comparison with the matrix spike sample.

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American Association for Laboratory Accreditation
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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300613

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471757
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG B7/S5-A 10-12' Soil Sample
Collected on 12/17/89 at 1535 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	12.6	% by wt.	0.1	135330000P
pH	4.88		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 380.	ug/kg	380.	900230000P

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Medical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300614

ANALYSIS REPORT

Lancaster Laboratories
3425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471757
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG B7/S5-A 10-12' Soil Sample
Collected on 12/17/89 at 1535 by WS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT.	BASIS	LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	15.	ug/kg	9.	060900000P
Beta BHC	< 9.	ug/kg	9.	061000000P
Delta BHC	< 9.	ug/kg	9.	061200000P
Gamma BHC - Lindane	10.	ug/kg	9.	121800000P
Heptachlor	< 9.	ug/kg	9.	121900000P
Aldrin	< 9.	ug/kg	9.	122000000P
Heptachlor Epoxide	< 9.	ug/kg	9.	061500000P
Endosulfan I	17.	ug/kg	9.	062700000P
Dieldrin	< 18.	ug/kg	18.	122200000P
DDE	< 18.	ug/kg	18.	061600000P
Endrin	< 18.	ug/kg	18.	122300000P
Endosulfan II	< 18.	ug/kg	18.	062800000P
DDD	< 18.	ug/kg	18.	061700000P
Endosulfan Sulfate	< 18.	ug/kg	18.	062900000P
DDT	< 18.	ug/kg	18.	122100000P
Endrin Ketone	< 18.	ug/kg	18.	093800000P
Methoxychlor	< 90.	ug/kg	90.	062100000P
Alpha Chlordane	< 90.	ug/kg	90.	136100000P
Gamma Chlordane	< 90.	ug/kg	90.	136200000P
Toxaphene	< 180.	ug/kg	180.	094200000P
PCB-1016	< 90.	ug/kg	90.	063900000P
PCB-1221	< 90.	ug/kg	90.	064000000P
PCB-1232	< 90.	ug/kg	90.	064100000P
PCB-1242	< 90.	ug/kg	90.	064200000P
PCB-1248	< 90.	ug/kg	90.	064300000P
PCB-1254	< 180.	ug/kg	180.	064400000P
PCB-1260	< 180.	ug/kg	180.	064500000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300615

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471757
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG B7/S5-A 10-12' Soil Sample
Collected on 12/17/89 at 1535 by WS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	200.	ug/kg	100.	134500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300616

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471756
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG B7/S5-C 10-12' Soil Sample
Collected on 12/17/89 at 1535 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	16.5	% by wt.	0.1	135330000P
pH	5.09		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.
The pH of the method blank (background soil) performed with samples 1471756 - 1471766 was 5.97.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 400.	ug/kg	400.	900230000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300617

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471756
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG B7/S5-C 10-12' Soil Sample
Collected on 12/17/89 at 1535 by WS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	17.	ug/kg	10.	060900000P
Beta BHC	< 10.	ug/kg	10.	061000000P
Delta BHC	< 10.	ug/kg	10.	061200000P
Gamma BHC - Lindane	11.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	20.	ug/kg	10.	062700000P
Dieldrin	< 19.	ug/kg	19.	122200000P
DDE	< 19.	ug/kg	19.	061600000P
Endrin	< 19.	ug/kg	19.	122300000P
Endosulfan II	< 19.	ug/kg	19.	062800000P
DDD	< 19.	ug/kg	19.	061700000P
Endosulfan Sulfate	< 19.	ug/kg	19.	062900000P
DDT	< 19.	ug/kg	19.	122100000P
Endrin Ketone	< 19.	ug/kg	19.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 190.	ug/kg	190.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 100.	ug/kg	100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 190.	ug/kg	190.	064400000P
PCB-1260	< 190.	ug/kg	190.	064500000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300618

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473291
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B8/S3A 5-7' Soil Sample
Collected on 12/20/89 at 1436 by WS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 2,000.	ug/kg	2,000.	093400000P
acenaphthene	< 380.	ug/kg	380.	119100000P
2,4-dinitrophenol	< 2,000.	ug/kg	2,000.	065000000P
4-nitrophenol	< 2,000.	ug/kg	2,000.	119200000P
dibenzofuran	< 380.	ug/kg	380.	093500000P
2,4-dinitrotoluene	< 380.	ug/kg	380.	119300000P
2,6-dinitrotoluene	< 380.	ug/kg	380.	068400000P
diethyl phthalate	< 380.	ug/kg	380.	068000000P
4-chlorophenyl phenyl ether	< 380.	ug/kg	380.	067300000P
fluorene	< 380.	ug/kg	380.	068800000P
4-nitroaniline	< 2,000.	ug/kg	2,000.	093600000P
2-methyl-4,6-dinitrophenol	< 2,000.	ug/kg	2,000.	064900000P
N-nitrosodiphenylamine	< 380.	ug/kg	380.	069900000P
4-bromophenyl phenyl ether	< 380.	ug/kg	380.	067000000P
hexachlorobenzene	< 380.	ug/kg	380.	068900000P
pentachlorophenol	< 2,000.	ug/kg	2,000.	119400000P
phenanthrene	< 380.	ug/kg	380.	070000000P
anthracene	< 380.	ug/kg	380.	065900000P
di-n-butyl phthalate	< 380.	ug/kg	380.	068200000P
fluoranthene	< 380.	ug/kg	380.	068700000P
pyrene	< 380.	ug/kg	380.	119500000P
butyl benzyl phthalate	< 380.	ug/kg	380.	067100000P
3,3'-dichlorobenzidine	< 770.	ug/kg	770.	067900000P
benzo (a) anthracene	< 380.	ug/kg	380.	066100000P
bis (2-ethylhexyl) phthalate	< 380.	ug/kg	380.	066900000P
chrysene	< 380.	ug/kg	380.	067400000P
di-n-octyl phthalate	< 380.	ug/kg	380.	068500000P
benzo (b) fluoranthene	< 380.	ug/kg	380.	066300000P
benzo (K) fluoranthene	< 380.	ug/kg	380.	066500000P
benzo (a) pyrene	< 380.	ug/kg	380.	066200000P
indeno (1,2,3-cd) pyrene	< 380.	ug/kg	380.	069300000P
dibenz (a,h) anthracene	< 380.	ug/kg	380.	067500000P
benzo (ghi) perylene	< 380.	ug/kg	380.	066400000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473291
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B8/S3A 5-7' Soil Sample
Collected on 12/20/89 at 1436 by WS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	100.	ug/kg	90.	060900000P
Beta BHC	< 90.	ug/kg	90.	061000000P
Delta BHC	< 90.	ug/kg	90.	061200000P
Gamma BHC - Lindane	< 90.	ug/kg	90.	121800000P
Heptachlor	< 90.	ug/kg	90.	121900000P
Aldrin	< 90.	ug/kg	90.	122000000P
Heptachlor Epoxide	< 90.	ug/kg	90.	061500000P
Endosulfan I	< 90.	ug/kg	90.	062700000P
Dieldrin	390.	ug/kg	180.	122200000P
DDE	920.	ug/kg	180.	061600000P
Endrin	< 180.	ug/kg	180.	122300000P
Endosulfan II	< 180.	ug/kg	180.	062800000P
DDD	990.	ug/kg	180.	061700000P
Endosulfan Sulfate	< 180.	ug/kg	180.	062900000P
DDT	11,300.	ug/kg	180.	122100000P
Endrin Ketone	< 180.	ug/kg	180.	093800000P
Methoxychlor	< 900.	ug/kg	900.	062100000P
Alpha Chlordane	< 900.	ug/kg	900.	136100000P
Gamma Chlordane	< 900.	ug/kg	900.	136200000P
Toxaphene	< 1,800.	ug/kg	1,800.	094200000P
PCB-1016	< 900.	ug/kg	900.	063900000P
PCB-1221	< 13,000.	ug/kg	13,000.	064000000P
PCB-1232	< 900.	ug/kg	900.	064100000P
PCB-1242	< 900.	ug/kg	900.	064200000P
PCB-1248	< 900.	ug/kg	900.	064300000P
PCB-1254	< 1,800.	ug/kg	1,800.	064400000P
PCB-1260	< 1,800.	ug/kg	1,800.	064500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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Member American Council of Independent Laboratories, Inc.

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300620

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473291
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B8/S3A 5-7' Soil Sample
Collected on 12/20/89 at 1436 by WS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300621

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

B8S3A

Lab Name: LANCASTER LABS Contract:
Lab Code: LANCAS Case No.: 243084 SAS No.: SDG No.: PPG2
Matrix: (soil/water) SOIL Lab Sample ID: A1473291LR
Sample wt/vol: 5.0 (g/mL) G Lab File ID: A1473291LR
Level: (low/med) LOW Date Received: 12/21/89
% Moisture: not dec. 13 Date Analyzed: 12/27/89
Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
Number TICs found: 1 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 109-99-9	FURAN TETRAHYDRO-	8.67	8.2	J

FORM I VOA-TIC 1/87 Rev.

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Our Environmental Technical Services at (717) 656-2301
Our Standard Terms And Conditions

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

300622

ANALYSIS REPORT
Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B8S3A

Lab Name: LANCASTER LABS Contract: _____.
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) SOIL Lab Sample ID: 1473291
Sample wt/vol: 30.0(g/mL) G Lab File ID: >E1956
Level: (low/med) LOW Date Received: 12/21/89
% Moisture: not dec. 13.0 dec. _____. Date Extracted: 12/27/89
Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/04/90
GPC Cleanup: (Y/N) N pH: 4.8 Dilution Factor: 1.000

Number TICs found: 8

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	7.53	2200.	JB
2.	Unknown	10.17	1600.	JB
3.	Unknown	10.39	380.	J
4.	Unknown aromatic	30.58	190.	J
5.	Unknown aromatic	32.42	150.	J
6.	Mitotane (USAN)	32.56	840.	*JI
7.	Unknown	33.28	840.	JB
8.	m,p'-DDD	33.37	3100.	JI
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

*I = or isomer of compound.

FORM I SV-TIC 1/87 Rev.

300623

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ratory Accreditation
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ndependent Laboratories, Inc

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Questions? Contact Environmental
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Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473292
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

Continuation of LLI #1473291 PPG B8/S3A 5-7' Soil Sample
Collected on 12/20/89 at 1436 by WS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT.	BASIS	LIMIT OF QUANTITATION	LAB CODE
Aluminum	8,570.	mg/kg	20.	014301100P
Antimony	< 6.	mg/kg	6.	014401100P
Barium	30.	mg/kg	20.	014601100P
Beryllium	0.7	mg/kg	0.6	014701100P
Cadmium	< 0.6	mg/kg	0.6	014901100P
Calcium	290.	mg/kg	10.	015001100P
Chromium	13.	mg/kg	1.	015101100P
Cobalt	< 6.	mg/kg	6.	015201100P
Copper	5.	mg/kg	2.	015301100P
Iron	10,700.	mg/kg	6.	015401100P
Magnesium	650.	mg/kg	10.	015701100P
Manganese	30.	mg/kg	1.	015801100P
Mercury	< 0.05	mg/kg	0.05	015901100P
Nickel	< 5.	mg/kg	5.	016101100P
Potassium	570.	mg/kg	60.	016201100P
Silver	< 1.	mg/kg	1.	016601100P
Sodium	< 60.	mg/kg	60.	016701100P
Vanadium	20.	mg/kg	6.	017101100P
Zinc	90.	mg/kg	2.	017201100P
Cyanide, Total	< 0.1	mg/kg	0.1	023701100P
Arsenic (furnace method)	< 6.	mg/kg	6.	114501100P
Lead (furnace method)	6.9	mg/kg	0.6	115501100P
Selenium (furnace method)	< 0.6	mg/kg	0.6	116401100P
Thallium (furnace method)	< 1.	mg/kg	1.	117301100P
Moisture *AS RECEIVED*	13.0	% by wt.	0.1	135301100P

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1 COPY TO Data Package Group

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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300624

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473293
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B8/S5 10-12' Soil Sample
Collected on 12/20/89 at 1511 by WS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	23.6	% by wt.	0.1	135330000P
pH	5.92		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 70.	ug/kg	70.	900116500P
Pentachloronitrobenzene	< 430.	ug/kg	430.	900230000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300625

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473293
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B8/S5 10-12' Soil Sample
Collected on 12/20/89 at 1511 by WS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	310.	ug/kg	10.	060900000P
Beta BHC	20.	ug/kg	10.	061000000P
Delta BHC	70.	ug/kg	10.	061200000P
Gamma BHC - Lindane	140.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	41.	ug/kg	21.	122200000P
DDE	114.	ug/kg	21.	061600000P
Endrin	< 21.	ug/kg	21.	122300000P
Endosulfan II	< 21.	ug/kg	21.	062800000P
DDD	47.	ug/kg	21.	061700000P
Endosulfan Sulfate	< 21.	ug/kg	21.	062900000P
DDT	798.	ug/kg	21.	122100000P
Endrin Ketone	< 21.	ug/kg	21.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 210.	ug/kg	210.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 3,000.	ug/kg	3,000.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 210.	ug/kg	210.	064400000P
PCB-1260	< 210.	ug/kg	210.	064500000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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Chemical, Biological & Environmental Tests of Testing

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471764
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG ~~B9~~ B7/S3-A 5-7' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 12/17/89 at 1500 by WS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	68.	ug/kg	10.	060900000P
Beta BHC	27.	ug/kg	10.	061000000P
Delta BHC	< 100.	ug/kg	100.	061200000P
Gamma BHC - Lindane	80.	ug/kg	10.	121800000P
Heptachlor	59.	ug/kg	10.	121900000P
Aldrin	82.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 100.	ug/kg	100.	061500000P
Endosulfan I	153.	ug/kg	10.	062700000P
Dieldrin	453.	ug/kg	19.	122200000P
DDE	< 19.	ug/kg	19.	061600000P
Endrin	358.	ug/kg	19.	122300000P
Endosulfan II	< 42.	ug/kg	42.	062800000P
DDD	55.	ug/kg	19.	061700000P
Endosulfan Sulfate	< 19.	ug/kg	19.	062900000P
DDT	301.	ug/kg	19.	122100000P
Endrin Ketone	58.	ug/kg	19.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 1,000.	ug/kg	1,000.	136100000P
Gamma Chlordane	< 1,000.	ug/kg	1,000.	136200000P
Toxaphene	< 190.	ug/kg	190.	094200000P
PCB-1016	< 1,000.	ug/kg	1,000.	063900000P
PCB-1221	< 1,900.	ug/kg	1,900.	064000000P
PCB-1232	< 1,000.	ug/kg	1,000.	064100000P
PCB-1242	< 1,000.	ug/kg	1,000.	064200000P
PCB-1248	< 1,000.	ug/kg	1,000.	064300000P
PCB-1254	< 190.	ug/kg	190.	064400000P
PCB-1260	< 190.	ug/kg	190.	064500000P

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American Association for Laboratory Accreditation Chemical, Biological & Environmental fields of testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300627

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471764
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

87
PPG ~~89~~/S3-A 5-7' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 12/17/89 at 1500 by WS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	3,000.	ug/kg	100.	134500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300628

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471765
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

Continuation of LLI #1471764 PPG ~~B9~~ 87/S3-A 5-7'
Matrix Spike Dup. & Duplicate Soil Sample
Collected on 12/17/89 at 1500 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Aluminum	10,400.	mg/kg	20.	014301100P
Antimony	< 6.	mg/kg	6.	014401100P
Barium	80.	mg/kg	20.	014601100P
Beryllium	< 0.6	mg/kg	0.6	014701100P
Cadmium	< 0.6	mg/kg	0.6	014901100P
Calcium	40.	mg/kg	10.	015001100P
Chromium	53.	mg/kg	1.	015101100P
Cobalt	< 6.	mg/kg	6.	015201100P
Copper	30.	mg/kg	2.	015301100P
Iron	13,800.	mg/kg	6.	015401100P
Magnesium	330.	mg/kg	10.	015701100P
Manganese	14.	mg/kg	1.	015801100P
Mercury	< 0.05	mg/kg	0.05	015901100P
Nickel	< 5.	mg/kg	5.	016101100P
Potassium	200.	mg/kg	60.	016201100P
Silver	< 1.	mg/kg	1.	016601100P
Sodium	< 60.	mg/kg	60.	016701100P
Vanadium	19.	mg/kg	6.	017101100P
Zinc	30.	mg/kg	2.	017201100P
Cyanide, Total	< 0.1	mg/kg	0.1	023701100P
Arsenic (furnace method)	< 6.	mg/kg	6.	114501100P
Lead (furnace method)	3.5	mg/kg	0.6	115501100P
Selenium (furnace method)	< 0.6	mg/kg	0.6	116401100P
Thallium (furnace method)	< 1.	mg/kg	1.	117301100P
Moisture *AS RECEIVED*	17.6	% by wt.	0.1	135301100P

This sample functions as a matrix spike duplicate for organic compounds and as a duplicate for inorganic compounds. This means that for quality control purposes, inorganic compounds will be compared with the unspiked sample and organic compounds will be spiked with known concentrations of analyte for comparison with the matrix spike sample.

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300629

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471757
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG B7/S5-A 10-12' Soil Sample
Collected on 12/17/89 at 1535 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	12.6	% by wt.	0.1	135330000P
pH	4.88		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 380.	ug/kg	380.	900230000P

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300630

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473293
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B8/S5 10-12' Soil Sample
Collected on 12/20/89 at 1511 by WS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	5,900.	ug/kg	100.	134500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300631

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471759
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG B9/~~SE~~ S3 5-7' Soil Sample
Collected on 12/17/89 at 1115 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	18.8	% by wt.	0.1	135330000P
pH	4.84		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 410.	ug/kg	410.	900230000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300632

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

PPG B9/~~SB~~ SB 5-7' Soil Sample
Collected on 12/17/89 at 1115 by WS

LLI Sample No. SW 1471759
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	27.	ug/kg	10.	060900000P
Beta BHC	< 10.	ug/kg	10.	061000000P
Delta BHC	18.	ug/kg	10.	061200000P
Gamma BHC - Lindane	17.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 40.	ug/kg	40.	062700000P
Dieldrin	< 20.	ug/kg	20.	122200000P
DDE	< 20.	ug/kg	20.	061600000P
Endrin	< 20.	ug/kg	20.	122300000P
Endosulfan II	< 20.	ug/kg	20.	062800000P
DDD	< 20.	ug/kg	20.	061700000P
Endosulfan Sulfate	< 20.	ug/kg	20.	062900000P
DDT	87.	ug/kg	20.	122100000P
Endrin Ketone	< 20.	ug/kg	20.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 200.	ug/kg	200.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 100.	ug/kg	100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 200.	ug/kg	200.	064400000P
PCB-1260	< 200.	ug/kg	200.	064500000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300633

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471759
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG B9/~~SB~~ 53 5-7' Soil Sample
Collected on 12/17/89 at 1115 by WS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	2,200.	ug/kg	100.	134500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300634

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471758
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG B9/S5 10-12' Soil Sample
Collected on 12/17/89 at 1140 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	22.7	% by wt.	0.1	135330000P
pH	7.80		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 430.	ug/kg	430.	900230000P

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300635

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471758
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG B9/S5 10-12' Soil Sample
Collected on 12/17/89 at 1140 by WS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 10.	ug/kg	10.	060900000P
Beta BHC	< 10.	ug/kg	10.	061000000P
Delta BHC	< 10.	ug/kg	10.	061200000P
Gamma BHC - Lindane	< 10.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	< 21.	ug/kg	21.	122200000P
DDE	< 21.	ug/kg	21.	061600000P
Endrin	< 21.	ug/kg	21.	122300000P
Endosulfan II	< 21.	ug/kg	21.	062800000P
DDD	< 21.	ug/kg	21.	061700000P
Endosulfan Sulfate	< 21.	ug/kg	21.	062900000P
DDT	52.	ug/kg	21.	122100000P
Endrin Ketone	< 21.	ug/kg	21.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 210.	ug/kg	210.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 100.	ug/kg	100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 210.	ug/kg	210.	064400000P
PCB-1260	< 210.	ug/kg	210.	064500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300636

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471758
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG B9/S5 10-12' Soil Sample
Collected on 12/17/89 at 1140 by WS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300637

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

Date Reported 1/15/90
Date Submitted 12/13/89
Discard Date 2/15/90
Collected by BS
P.O. 89-595
Rel.

PPG B10/S-3 5-7' Soil Sample
Collected on 12/12/89 at 1000 by BS

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	14.9	% by wt.	0.1	135330000P
pH	4.82		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 390.	ug/kg	390.	900230000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

306638

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

Date Reported 1/15/90
Date Submitted 12/13/89
Discard Date 2/15/90
Collected by BS
P.O. 89-595
Rel.

PPG B10/S-3 5-7' Soil Sample
Collected on 12/12/89 at 1000 by BS

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 9.	ug/kg	9.	060900000P
Beta BHC	< 9.	ug/kg	9.	061000000P
Delta BHC	< 9.	ug/kg	9.	061200000P
Gamma BHC - Lindane	< 9.	ug/kg	9.	121800000P
Heptachlor	< 9.	ug/kg	9.	121900000P
Aldrin	< 9.	ug/kg	9.	122000000P
Heptachlor Epoxide	< 9.	ug/kg	9.	061500000P
Endosulfan I	< 9.	ug/kg	9.	062700000P
Dieldrin	< 19.	ug/kg	19.	122200000P
DDE	< 19.	ug/kg	19.	061600000P
Endrin	< 19.	ug/kg	19.	122300000P
Endosulfan II	< 19.	ug/kg	19.	062800000P
DDD	< 19.	ug/kg	19.	061700000P
Endosulfan Sulfate	< 19.	ug/kg	19.	062900000P
DDT	< 19.	ug/kg	19.	122100000P
Endrin Ketone	< 19.	ug/kg	19.	093800000P
Methoxychlor	< 90.	ug/kg	90.	062100000P
Alpha Chlordane	< 90.	ug/kg	90.	136100000P
Gamma Chlordane	< 90.	ug/kg	90.	136200000P
Toxaphene	< 190.	ug/kg	190.	094200000P
PCB-1016	< 90.	ug/kg	90.	063900000P
PCB-1221	< 90.	ug/kg	90.	064000000P
PCB-1232	< 90.	ug/kg	90.	064100000P
PCB-1242	< 90.	ug/kg	90.	064200000P
PCB-1248	< 90.	ug/kg	90.	064300000P
PCB-1254	< 190.	ug/kg	190.	064400000P
PCB-1260	< 190.	ug/kg	190.	064500000P

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Chemical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300639

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

LLI Sample No. SW 1470209

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

Date Reported 1/15/90
Date Submitted 12/13/89
Discard Date 2/15/90
Collected by BS
P.O. 89-595
Rel.

PPG B10/S-3 5-7' Soil Sample
Collected on 12/12/89 at 1000 by BS

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	100.	ug/kg	100.	134500000P

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American Association for Laboratory Accreditation
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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300640

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

LLI Sample No. SW 147021O

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

Date Reported 1/15/90
Date Submitted 12/13/89
Discard Date 2/15/90
Collected by BS
P.O. 89-595
Rel.

PPG B10/S-5 10-12' Soil Sample
Collected on 12/12/89 at 1030 by BS

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	25.5	% by wt.	0.1	135330000P
pH	5.53		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 70.	ug/kg	70.	900116500P
Pentachloronitrobenzene	< 440.	ug/kg	440.	900230000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300641

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

LLI Sample No. SW 1470210

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

Date Reported 1/15/90
Date Submitted 12/13/89
Discard Date 2/15/90
Collected by BS
P.O. 89-595
Rel.

PPG B10/S-5 10-12' Soil Sample
Collected on 12/12/89 at 1030 by BS

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 10.	ug/kg	10.	060900000P
Beta BHC	< 21.	ug/kg	21.	061000000P
Delta BHC	< 10.	ug/kg	10.	061200000P
Gamma BHC - Lindane	< 10.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	< 21.	ug/kg	21.	122200000P
DDE	< 21.	ug/kg	21.	061600000P
Endrin	< 21.	ug/kg	21.	122300000P
Endosulfan II	< 21.	ug/kg	21.	062800000P
DDD	< 21.	ug/kg	21.	061700000P
Endosulfan Sulfate	< 21.	ug/kg	21.	062900000P
DDT	38.	ug/kg	21.	122100000P
Endrin Ketone	< 21.	ug/kg	21.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 210.	ug/kg	210.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 400.	ug/kg	400.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 210.	ug/kg	210.	064400000P
PCB-1260	< 210.	ug/kg	210.	064500000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories Inc

300642

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

[illegible]

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

Date Reported 1/15/90
Date Submitted 12/13/89
Discard Date 2/15/90
Collected by BS
P.O. 89-595
Rel.

PPG B10/S-5 10-12' Soil Sample
Collected on 12/12/89 at 1030 by BS

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Chemical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300643

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

ANALYSIS REPORT

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476738
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B11/S3A 4-7' Soil Sample
Collected on 01/04/90 at 1430 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
VOA GC/MS Library Search		attached		089001000P
TCL Volatiles (Soil)		attached		117827000P
TCL Semi-Volatiles (Soil)		attached		120127000P
TCL Semi-Volatiles (Soil) cont		attached		120227000P
TCL Pesticides		attached		122527000P
Moisture *AS RECEIVED*	26.3	% by wt.	0.1	135327000P
pH	5.31		0.01	144127000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.

N-Methyl Carbamates in Soil		attached		150927000P
Dioxin	0.00000			900131000P

The analysis for dioxin was subcontracted to another laboratory.

2,3,7,8-TCDD was not detected in the sample. Please refer to the data package for the complete report.

Malathion	< 70.	ug/kg	70.	900216500P
Pentachloronitrobenzene	< 450.	ug/kg	450.	900301000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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300644

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476738
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B11/S3A 4-7' Soil Sample
Collected on 01/04/90 at 1430 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 14.	ug/kg	14.	082700000P
Bromomethane	< 14.	ug/kg	14.	082800000P
Vinyl Chloride	< 14.	ug/kg	14.	082900000P
Chloroethane	< 14.	ug/kg	14.	083000000P
Methylene Chloride	27.	ug/kg	7.	083100000P
Acetone	45.	ug/kg	14.	091400000P
Carbon Disulfide	< 7.	ug/kg	7.	091500000P
1,1-Dichloroethene	< 7.	ug/kg	7.	118000000P
1,1-Dichloroethane	< 7.	ug/kg	7.	083300000P
1,2-Dichloroethene (total)	< 7.	ug/kg	7.	117900000P
Chloroform	< 7.	ug/kg	7.	083500000P
1,2-Dichloroethane	< 7.	ug/kg	7.	083600000P
2-Butanone	< 14.	ug/kg	14.	091600000P
1,1,1-Trichloroethane	< 7.	ug/kg	7.	083700000P
Carbon Tetrachloride	< 7.	ug/kg	7.	083800000P
Vinyl Acetate	< 14.	ug/kg	14.	091700000P
Bromodichloromethane	< 7.	ug/kg	7.	083900000P
1,2-Dichloropropane	< 7.	ug/kg	7.	084000000P
cis-1,3-Dichloropropene	< 7.	ug/kg	7.	084400000P
Trichloroethene	< 7.	ug/kg	7.	118100000P
Dibromochloromethane	< 7.	ug/kg	7.	084600000P
1,1,2-Trichloroethane	< 7.	ug/kg	7.	084500000P
Benzene	< 7.	ug/kg	7.	118200000P
trans-1,3-Dichloropropene	< 7.	ug/kg	7.	084100000P
Bromoform	< 7.	ug/kg	7.	084700000P
4-Methyl-2-Pentanone	< 14.	ug/kg	14.	091900000P
2-Hexanone	< 14.	ug/kg	14.	091800000P
Tetrachloroethene	< 7.	ug/kg	7.	084800000P
1,1,2,2-Tetrachloroethane	< 7.	ug/kg	7.	084900000P
Toluene	< 7.	ug/kg	7.	118300000P
Chlorobenzene	< 7.	ug/kg	7.	118400000P
Ethylbenzene	< 7.	ug/kg	7.	085200000P
Styrene	< 7.	ug/kg	7.	092000000P
Xylenes (total)	< 7.	ug/kg	7.	092100000P

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American Association for Laboratory Accreditation
Medical Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

300645

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476738
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B11/S3A 4-7' Soil Sample
Collected on 01/04/90 at 1430 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
phenol	810.	ug/kg	450.	118500000P
bis (2-chloroethyl) ether	< 450.	ug/kg	450.	066700000P
2-chlorophenol	< 450.	ug/kg	450.	118600000P
1,3-dichlorobenzene	< 450.	ug/kg	450.	067700000P
1,4-dichlorobenzene	< 450.	ug/kg	450.	118700000P
benzyl alcohol	< 450.	ug/kg	450.	092600000P
1,2-dichlorobenzene	< 450.	ug/kg	450.	067600000P
2-methylphenol	< 450.	ug/kg	450.	092700000P
bis (2-chloroisopropyl) ether	< 450.	ug/kg	450.	066800000P
4-methylphenol	< 450.	ug/kg	450.	092800000P
N-nitrosodi-n-propylamine	< 450.	ug/kg	450.	118800000P
hexachloroethane	< 450.	ug/kg	450.	069200000P
nitrobenzene	< 450.	ug/kg	450.	069600000P
isophorone	< 450.	ug/kg	450.	069400000P
2-nitrophenol	< 450.	ug/kg	450.	065100000P
2,4-dimethylphenol	< 450.	ug/kg	450.	064800000P
benzoic acid	< 2,300.	ug/kg	2,300.	092900000P
bis (2-chloroethoxy) methane	< 450.	ug/kg	450.	066600000P
2,4-dichlorophenol	< 450.	ug/kg	450.	064700000P
1,2,4-trichlorobenzene	< 450.	ug/kg	450.	118900000P
naphthalene	< 450.	ug/kg	450.	069500000P
4-chloroaniline	< 450.	ug/kg	450.	093000000P
hexachlorobutadiene	< 450.	ug/kg	450.	069000000P
4-chloro-3-methylphenol	< 450.	ug/kg	450.	119000000P
2-methylnaphthalene	< 450.	ug/kg	450.	093100000P
hexachlorocyclopentadiene	< 450.	ug/kg	450.	069100000P
2,4,6-trichlorophenol	< 450.	ug/kg	450.	065600000P
2,4,5-trichlorophenol	< 2,300.	ug/kg	2,300.	093200000P
2-chloronaphthalene	< 450.	ug/kg	450.	067200000P
2-nitroaniline	< 2,300.	ug/kg	2,300.	093300000P
dimethyl phthalate	< 450.	ug/kg	450.	068100000P
acenaphthylene	< 450.	ug/kg	450.	065800000P

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American Association for Laboratory Accreditation
Medical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300646

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476738
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B11/S3A 4-7' Soil Sample
Collected on 01/04/90 at 1430 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 2,300.	ug/kg	2,300.	093400000P
acenaphthene	< 450.	ug/kg	450.	119100000P
2,4-dinitrophenol	< 2,300.	ug/kg	2,300.	065000000P
4-nitrophenol	< 2,300.	ug/kg	2,300.	119200000P
dibenzofuran	< 450.	ug/kg	450.	093500000P
2,4-dinitrotoluene	< 450.	ug/kg	450.	119300000P
2,6-dinitrotoluene	< 450.	ug/kg	450.	068400000P
diethyl phthalate	< 450.	ug/kg	450.	068000000P
4-chlorophenyl phenyl ether	< 450.	ug/kg	450.	067300000P
fluorene	< 450.	ug/kg	450.	068800000P
4-nitroaniline	< 2,300.	ug/kg	2,300.	093600000P
2-methyl-4,6-dinitrophenol	< 2,300.	ug/kg	2,300.	064900000P
N-nitrosodiphenylamine	< 450.	ug/kg	450.	069900000P
4-bromophenyl phenyl ether	< 450.	ug/kg	450.	067000000P
hexachlorobenzene	< 450.	ug/kg	450.	068900000P
pentachlorophenol	< 2,300.	ug/kg	2,300.	119400000P
phenanthrene	< 450.	ug/kg	450.	070000000P
anthracene	< 450.	ug/kg	450.	065900000P
di-n-butyl phthalate	< 450.	ug/kg	450.	068200000P
fluoranthene	< 450.	ug/kg	450.	068700000P
pyrene	< 450.	ug/kg	450.	119500000P
butyl benzyl phthalate	< 450.	ug/kg	450.	067100000P
3,3'-dichlorobenzidine	< 910.	ug/kg	910.	067900000P
benzo (a) anthracene	< 450.	ug/kg	450.	066100000P
bis (2-ethylhexyl) phthalate	< 450.	ug/kg	450.	066900000P
chrysene	< 450.	ug/kg	450.	067400000P
di-n-octyl phthalate	< 450.	ug/kg	450.	068500000P
benzo (b) fluoranthene	< 450.	ug/kg	450.	066300000P
benzo (K) fluoranthene	< 450.	ug/kg	450.	066500000P
benzo (a) pyrene	< 450.	ug/kg	450.	066200000P
indeno (1,2,3-cd) pyrene	< 450.	ug/kg	450.	069300000P
dibenz (a,h) anthracene	< 450.	ug/kg	450.	067500000P
benzo (ghi) perylene	< 450.	ug/kg	450.	066400000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300647

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476738
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B11/S3A 4-7' Soil Sample
Collected on 01/04/90 at 1430 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	20.	ug/kg	10.	060900000P
Beta BHC	< 10.	ug/kg	10.	061000000P
Delta BHC	< 10.	ug/kg	10.	061200000P
Gamma BHC - Lindane	< 10.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	42.	ug/kg	22.	122200000P
DDE	< 22.	ug/kg	22.	061600000P
Endrin	< 22.	ug/kg	22.	122300000P
Endosulfan II	< 22.	ug/kg	22.	062800000P
DDD	< 22.	ug/kg	22.	061700000P
Endosulfan Sulfate	< 22.	ug/kg	22.	062900000P
DDT	66.	ug/kg	22.	122100000P
Endrin Ketone	< 22.	ug/kg	22.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 220.	ug/kg	220.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 100.	ug/kg	100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 220.	ug/kg	220.	064400000P
PCB-1260	< 220.	ug/kg	220.	064500000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300648

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476738
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B11/S3A 4-7' Soil Sample
Collected on 01/04/90 at 1430 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	300.	ug/kg	100.	134500000P

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Technical Biological & Environmental Fields of testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300649

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

B11SA

Lab Name: LANCASTER LABS Contract:

Lab Code: LANCAS Case No.: 244147 SAS No.: SDG No.: PPG3

Matrix: (soil/water) SOIL Lab Sample ID: C1476738L

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1476738L

Level: (low/med) LOW Date Received: 01/05/90

% Moisture: not dec. 26 Date Analyzed: 01/09/90

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

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1/87 Rev.

American Association for Laboratory Accreditation Chemical Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

Member American Council of Independent Laboratories, Inc.

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

300650

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B11SA

Lab Name: LANCASTER LABS Contract: RIZZO
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) SOIL Lab Sample ID: 1476738
Sample wt/vol: 30 (g/mL) G Lab File ID: >F0002
Level: (low/med) LOW Date Received: 01/05/90
% Moisture: not dec. 26 dec. _____. Date Extracted: 01/08/90
Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/10/90
GPC Cleanup: (Y/N) N pH: 3.9 Dilution Factor: 1.000

Number TICs found: 13

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	6.66	540.	J
2.	Unknown	6.89	4400.	JBA
3.	Unknown alkane	7.20	180.	JB
4.	Unknown	8.78	180.	J
5.	Unknown	9.07	680.	JB
6.	Unknown	9.23	230.	J
7.	Unknown	9.44	1500.	JB
8.	Unknown ketone	9.68	1400.	JB
9.	Unknown	10.47	1000.	JB
10.	Unknown	11.61	270.	J
11.	Unknown carboxylic acid	27.13	230.	J
12.	Unknown	28.36	860.	J
13.	Unknown carboxylic acid/este	32.39	18000.	JB
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

FORM I SV-TIC 1/87 Rev.

300651

American Association for Laboratory Accreditation
Technical Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories Inc.

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476739
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

Continuation of LLI #1476738 PPG B11/S3A 4-7'
Soil Sample
Collected on 01/04/90 at 1430 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Aluminum	8,980.	mg/kg	30.	014300100P
Antimony	< 7.	mg/kg	7.	014400100P
Barium	50.	mg/kg	30.	014600100P
Beryllium	1.0	mg/kg	0.7	014700100P
Cadmium	< 0.7	mg/kg	0.7	014900100P
Calcium	610.	mg/kg	10.	015000100P
Chromium	22.	mg/kg	1.	015100100P
Cobalt	< 7.	mg/kg	7.	015200100P
Copper	12.	mg/kg	3.	015300100P
Iron	17,600.	mg/kg	7.	015400100P
Magnesium	840.	mg/kg	10.	015700100P
Manganese	65.	mg/kg	1.	015800100P
Mercury	< 0.05	mg/kg	0.05	015900100P
Nickel	11.	mg/kg	5.	016100100P
Potassium	1,420.	mg/kg	70.	016200100P
Silver	< 1.	mg/kg	1.	016600100P
Sodium	80.	mg/kg	70.	016700100P
Vanadium	41.	mg/kg	7.	017100100P
Zinc	33.	mg/kg	3.	017200100P
Cyanide, Total	< 0.1	mg/kg	0.1	023700100P
Arsenic (furnace method)	17.	mg/kg	1.	114500100P
Lead (furnace method)	9.1	mg/kg	0.7	115500100P
Selenium (furnace method)	< 0.7	mg/kg	0.7	116400100P
Thallium (furnace method)	< 1.	mg/kg	1.	117300100P
Moisture *AS RECEIVED*	26.3	% by wt.	0.1	135300100P

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American Association for Laboratory Accreditation
Medical Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories, Inc.

300652

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477094
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B11/S3B 4-7' Soil Sample
Collected on 01/04/90 at 1430 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
VOA GC/MS Library Search		attached		089001000P
TCL Volatiles (Soil)		attached		117827000P
TCL Semi-Volatiles (Soil)		attached		120127000P
TCL Semi-Volatiles (Soil) cont		attached		120227000P
TCL Pesticides		attached		122527000P
Moisture *AS RECEIVED*	26.6	% by wt.	0.1	135327000P
pH	5.33		0.01	144127000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150927000P
Dioxin	0.00000			900131000P
The analysis for dioxin was subcontracted to another laboratory.				
2,3,7,8-TCDD was not detected in the sample. Please refer to the data package for the complete report.				
Malathion	< 70.	ug/kg	70.	900216500P
Pentachloronitrobenzene	< 450.	ug/kg	450.	900301000P

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American Association for Laboratory Accreditation
Biological & Environmental Tests of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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Member American Council of Independent Laboratories Inc

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477094
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B11/S3B 4-7' Soil Sample
Collected on 01/04/90 at 1430 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 14.	ug/kg	14.	082700000P
Bromomethane	< 14.	ug/kg	14.	082800000P
Vinyl Chloride	< 14.	ug/kg	14.	082900000P
Chloroethane	< 14.	ug/kg	14.	083000000P
Methylene Chloride	20.	ug/kg	7.	083100000P
Acetone	68.	ug/kg	14.	091400000P
Carbon Disulfide	< 7.	ug/kg	7.	091500000P
1,1-Dichloroethene	< 7.	ug/kg	7.	118000000P
1,1-Dichloroethane	< 7.	ug/kg	7.	083300000P
1,2-Dichloroethene (total)	< 7.	ug/kg	7.	117900000P
Chloroform	< 7.	ug/kg	7.	083500000P
1,2-Dichloroethane	< 7.	ug/kg	7.	083600000P
2-Butanone	< 14.	ug/kg	14.	091600000P
1,1,1-Trichloroethane	< 7.	ug/kg	7.	083700000P
Carbon Tetrachloride	< 7.	ug/kg	7.	083800000P
Vinyl Acetate	< 14.	ug/kg	14.	091700000P
Bromodichloromethane	< 7.	ug/kg	7.	083900000P
1,2-Dichloropropane	< 7.	ug/kg	7.	084000000P
cis-1,3-Dichloropropene	< 7.	ug/kg	7.	084400000P
Trichloroethene	< 7.	ug/kg	7.	118100000P
Dibromochloromethane	< 7.	ug/kg	7.	084600000P
1,1,2-Trichloroethane	< 7.	ug/kg	7.	084500000P
Benzene	< 7.	ug/kg	7.	118200000P
trans-1,3-Dichloropropene	< 7.	ug/kg	7.	084100000P
Bromoform	< 7.	ug/kg	7.	084700000P
4-Methyl-2-Pentanone	< 14.	ug/kg	14.	091900000P
2-Hexanone	< 14.	ug/kg	14.	091800000P
Tetrachloroethene	< 7.	ug/kg	7.	084800000P
1,1,2,2-Tetrachloroethane	< 7.	ug/kg	7.	084900000P
Toluene	< 7.	ug/kg	7.	118300000P
Chlorobenzene	< 7.	ug/kg	7.	118400000P
Ethylbenzene	< 7.	ug/kg	7.	085200000P
Styrene	< 7.	ug/kg	7.	092000000P
Xylenes (total)	< 7.	ug/kg	7.	092100000P

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American Association for Laboratory Accreditation
Building & Environmental Laboratory Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

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Member American Council of Independent Laboratories, Inc.

300654

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477094
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B11/S3B 4-7' Soil Sample
Collected on 01/04/90 at 1430 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
phenol	500.	ug/kg	450.	118500000P
bis (2-chloroethyl) ether	< 450.	ug/kg	450.	066700000P
2-chlorophenol	< 450.	ug/kg	450.	118600000P
1,3-dichlorobenzene	< 450.	ug/kg	450.	067700000P
1,4-dichlorobenzene	< 450.	ug/kg	450.	118700000P
benzyl alcohol	< 450.	ug/kg	450.	092600000P
1,2-dichlorobenzene	< 450.	ug/kg	450.	067600000P
2-methylphenol	< 450.	ug/kg	450.	092700000P
bis (2-chloroisopropyl) ether	< 450.	ug/kg	450.	066800000P
4-methylphenol	< 450.	ug/kg	450.	092800000P
N-nitrosodi-n-propylamine	< 450.	ug/kg	450.	118800000P
hexachloroethane	< 450.	ug/kg	450.	069200000P
nitrobenzene	< 450.	ug/kg	450.	069600000P
isophorone	< 450.	ug/kg	450.	069400000P
2-nitrophenol	< 450.	ug/kg	450.	065100000P
2,4-dimethylphenol	< 450.	ug/kg	450.	064800000P
benzoic acid	< 2,300.	ug/kg	2,300.	092900000P
bis (2-chloroethoxy) methane	< 450.	ug/kg	450.	066600000P
2,4-dichlorophenol	< 450.	ug/kg	450.	064700000P
1,2,4-trichlorobenzene	< 450.	ug/kg	450.	118900000P
naphthalene	< 450.	ug/kg	450.	069500000P
4-chloroaniline	< 450.	ug/kg	450.	093000000P
hexachlorobutadiene	< 450.	ug/kg	450.	069000000P
4-chloro-3-methylphenol	< 450.	ug/kg	450.	119000000P
2-methylnaphthalene	< 450.	ug/kg	450.	093100000P
hexachlorocyclopentadiene	< 450.	ug/kg	450.	069100000P
2,4,6-trichlorophenol	< 450.	ug/kg	450.	065600000P
2,4,5-trichlorophenol	< 2,300.	ug/kg	2,300.	093200000P
2-chloronaphthalene	< 450.	ug/kg	450.	067200000P
2-nitroaniline	< 2,300.	ug/kg	2,300.	093300000P
dimethyl phthalate	< 450.	ug/kg	450.	068100000P
acenaphthylene	< 450.	ug/kg	450.	065800000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

American Association for Laboratory Accreditation
Biological & Environmental Fields of Testing

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300655

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477094
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B11/S3B 4-7' Soil Sample
Collected on 01/04/90 at 1430 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 2,300.	ug/kg	2,300.	093400000P
acenaphthene	< 450.	ug/kg	450.	119100000P
2,4-dinitrophenol	< 2,300.	ug/kg	2,300.	065000000P
4-nitrophenol	< 2,300.	ug/kg	2,300.	119200000P
dibenzofuran	< 450.	ug/kg	450.	093500000P
2,4-dinitrotoluene	< 450.	ug/kg	450.	119300000P
2,6-dinitrotoluene	< 450.	ug/kg	450.	068400000P
diethyl phthalate	< 450.	ug/kg	450.	068000000P
4-chlorophenyl phenyl ether	< 450.	ug/kg	450.	067300000P
fluorene	< 450.	ug/kg	450.	068800000P
4-nitroaniline	< 2,300.	ug/kg	2,300.	093600000P
2-methyl-4,6-dinitrophenol	< 2,300.	ug/kg	2,300.	064900000P
N-nitrosodiphenylamine	< 450.	ug/kg	450.	069900000P
4-bromophenyl phenyl ether	< 450.	ug/kg	450.	067000000P
hexachlorobenzene	< 450.	ug/kg	450.	068900000P
pentachlorophenol	< 2,300.	ug/kg	2,300.	119400000P
phenanthrene	< 450.	ug/kg	450.	070000000P
anthracene	< 450.	ug/kg	450.	065900000P
di-n-butyl phthalate	< 450.	ug/kg	450.	068200000P
fluoranthene	< 450.	ug/kg	450.	068700000P
pyrene	< 450.	ug/kg	450.	119500000P
butyl benzyl phthalate	< 450.	ug/kg	450.	067100000P
3,3'-dichlorobenzidine	< 910.	ug/kg	910.	067900000P
benzo (a) anthracene	< 450.	ug/kg	450.	066100000P
bis (2-ethylhexyl) phthalate	< 450.	ug/kg	450.	066900000P
chrysene	< 450.	ug/kg	450.	067400000P
di-n-octyl phthalate	< 450.	ug/kg	450.	068500000P
benzo (b) fluoranthene	< 450.	ug/kg	450.	066300000P
benzo (K) fluoranthene	< 450.	ug/kg	450.	066500000P
benzo (a) pyrene	< 450.	ug/kg	450.	066200000P
indeno (1,2,3-cd) pyrene	< 450.	ug/kg	450.	069300000P
dibenz (a,h) anthracene	< 450.	ug/kg	450.	067500000P
benzo (ghi) perylene	< 450.	ug/kg	450.	066400000P

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1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Biological & Environmental Tests of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

Member American Council of Independent Laboratories Inc

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306656

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

LLI Sample No. SW [illegible]
Date Reported 3/15/90
Date Submitted 1/ 9/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

PPG B11/S3B 4-7' Soil Sample
Collected on 01/04/90 at 1430 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	20.	ug/kg	10.	060900000P
Beta BHC	< 10.	ug/kg	10.	061000000P
Delta BHC	< 10.	ug/kg	10.	061200000P
Gamma BHC - Lindane	< 10.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10	ug/kg	10.	061300000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	46.	ug/kg	22.	122200000P
DDE	< 22.	ug/kg	22.	061600000P
Endrin	< 22.	ug/kg	22.	122300000P
Endosulfan II	< 22.	ug/kg	22.	062800000P
DDD	< 22.	ug/kg	22.	061700000P
Endosulfan Sulfate	< 22.	ug/kg	22.	062900000P
DDT	56.	ug/kg	22.	122100000P
Endrin Ketone	< 22.	ug/kg	22.	093600000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 220.	ug/kg	220.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 100.	ug/kg	100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 220.	ug/kg	220.	064400000P
PCB-1260	< 220.	ug/kg	220.	064300000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

300657

American Association for Laboratory Accreditation
Chemical, Biological & Environmental fields of testing

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB

Member American Council of Independent Laboratories Inc

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477094
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B11/S3B 4-7' Soil Sample
Collected on 01/04/90 at 1430 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	300.	ug/kg	100.	134500000P

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American Association for Laboratory Accreditation (Analytical Biological & Environmental Fields of Testing)

Member American Council of Independent Laboratories Inc

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300658

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B11SB

Lab Name: LANCASTER LABS Contract:
Lab Code: LANCAS Case No.: 244272 SAS No.: SDG No.: PPG3
Matrix: (soil/water) SOIL Lab Sample ID: C1477094L
Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1477094L
Level: (low/med) LOW Date Received: 01/05/90
% Moisture: not dec. 27 Date Analyzed: 01/09/90
Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

300659

FORM I VOA-TIC

1/87 Rev.

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories Inc

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B11SB

Lab Name: LANCASTER LABS Contract: RIZZO
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) SOIL Lab Sample ID: 1477094
Sample wt/vol: 30 (g/mL) G Lab File ID: >F0006
Level: (low/med) LOW Date Received: 01/05/90
% Moisture: not dec. 27 dec. _____. Date Extracted: 01/08/90
Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/10/90
GPC Cleanup: (Y/N) N pH: 3.91 Dilution Factor: 1.000

Number TICs found: 9

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		Unknown	4.59	270.	J
2.		Unknown	5.68	410.	J
3.		Unknown	6.82	11000.	JBA
4.		Unknown	8.43	230.	J
5.		Unknown	9.37	450.	JB
6.		Unknown carboxylic acid	27.13	230.	J
7.	957517	Benzeneacetamide, N,N-dimeth	28.35	640.	J
8.		Unknown carboxylic acid/este	31.87	410.	J
9.		Unknown carboxylic acid/este	32.40	43000.	JB
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					

FORM I SV-TIC 1/87 Rev.

300660

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477095
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

Continuation of LLI #1477094 PPG B11/S3B 4-7'
Soil Sample
Collected on 01/04/90 at 1430 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Aluminum	7,140.	mg/kg	30.	014300100P
Antimony	< 7.	mg/kg	7.	014400100P
Barium	40.	mg/kg	30.	014600100P
Beryllium	0.8	mg/kg	0.7	014700100P
Cadmium	< 0.7	mg/kg	0.7	014900100P
Calcium	550.	mg/kg	10.	015000100P
Chromium	20.	mg/kg	1.	015100100P
Cobalt	< 7.	mg/kg	7.	015200100P
Copper	11.	mg/kg	3.	015300100P
Iron	19,500.	mg/kg	7.	015400100P
Magnesium	640.	mg/kg	10.	015700100P
Manganese	57.	mg/kg	1.	015800100P
Mercury	< 0.05	mg/kg	0.05	015900100P
Nickel	9.	mg/kg	5.	016100100P
Potassium	1,230.	mg/kg	70.	016200100P
Silver	< 1.	mg/kg	1.	016600100P
Sodium	< 70.	mg/kg	70.	016700100P
Vanadium	39.	mg/kg	7.	017100100P
Zinc	28.	mg/kg	3.	017200100P
Cyanide, Total	< 0.1	mg/kg	0.1	023700100P
Arsenic (furnace method)	17.	mg/kg	1.	114500100P
Lead (furnace method)	9.0	mg/kg	0.7	115500100P
Selenium (furnace method)	< 0.7	mg/kg	0.7	116400100P
Thallium (furnace method)	< 1.	mg/kg	1.	117300100P
Moisture *AS RECEIVED*	26.6	% by wt.	0.1	135300100P

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American Association for Laboratory Accreditation
Medical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300661

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476744
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B11/S6 10-12' Soil Sample
Collected on 01/04/90 at 1500 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	21.6	% by wt.	0.1	135330000P
pH	7.44		0.01	144130000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 420.	ug/kg	420.	900230000P

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American Association for Laboratory Accreditation
Technical Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories Inc

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300662

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476744
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B11/S6 10-12' Soil Sample
Collected on 01/04/90 at 1500 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 10.	ug/kg	10.	060900000P
Beta BHC	< 10.	ug/kg	10.	061000000P
Delta BHC	< 10.	ug/kg	10.	061200000P
Gamma BHC - Lindane	< 10.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	28.	ug/kg	20.	122200000P
DDE	< 20.	ug/kg	20.	061600000P
Endrin	< 20.	ug/kg	20.	122300000P
Endosulfan II	< 20.	ug/kg	20.	062800000P
DDD	< 20.	ug/kg	20.	061700000P
Endosulfan Sulfate	< 20.	ug/kg	20.	062900000P
DDT	52.	ug/kg	20.	122100000P
Endrin Ketone	< 20.	ug/kg	20.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 200.	ug/kg	200.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 100.	ug/kg	100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 200.	ug/kg	200.	064400000P
PCB-1260	< 200.	ug/kg	200.	064500000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300663

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476744
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B11/S6 10-12' Soil Sample
Collected on 01/04/90 at 1500 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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American Association for Laboratory Accreditation
Technical Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories Inc

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300664

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473289
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B12/S3 5-7' Soil Sample
Collected on 12/19/89 at 1400 by WS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	21.2	% by wt.	0.1	135330000P
pH	14.6		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 4,200.	ug/kg	4,200.	900230000P

The quantitation limits were increased due to the high concentration of non-target compounds.

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Questions? Contact Environmental Technical Services at (717) 656-2301

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300665

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473289
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B12/S3 5-7' Soil Sample
Collected on 12/19/89 at 1400 by WS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 1,000.	ug/kg	1,000.	060900000P
Beta BHC	< 5,000.	ug/kg	5,000.	061000000P
Delta BHC	< 5,000.	ug/kg	5,000.	061200000P
Gamma BHC - Lindane	< 5,000.	ug/kg	5,000.	121800000P
Heptachlor	< 5,000.	ug/kg	5,000.	121900000P
Aldrin	< 5,000.	ug/kg	5,000.	122000000P
Heptachlor Epoxide	< 1,000.	ug/kg	1,000.	061500000P
Endosulfan I	< 1,000.	ug/kg	1,000.	062700000P
Dieldrin	840.	ug/kg	200.	122200000P
DDE	8,200.	ug/kg	2,000.	061600000P
Endrin	< 1,000.	ug/kg	1,000.	122300000P
Endosulfan II	< 200.	ug/kg	200.	062800000P
DDD	16,500.	ug/kg	2,000.	061700000P
Endosulfan Sulfate	< 200.	ug/kg	200.	062900000P
DDT	190,000.	ug/kg	2,000.	122100000P
Endrin Ketone	< 200.	ug/kg	200.	093800000P
Methoxychlor	< 1,000.	ug/kg	1,000.	062100000P
Alpha Chlordane	< 10,000.	ug/kg	10,000.	136100000P
Gamma Chlordane	< 10,000.	ug/kg	10,000.	136200000P
Toxaphene	< 20,000.	ug/kg	20,000.	094200000P
PCB-1016	< 50,000.	ug/kg	50,000.	063900000P
PCB-1221	< 50,000.	ug/kg	50,000.	064000000P
PCB-1232	< 50,000.	ug/kg	50,000.	064100000P
PCB-1242	< 50,000.	ug/kg	50,000.	064200000P
PCB-1248	< 50,000.	ug/kg	50,000.	064300000P
PCB-1254	< 2,000.	ug/kg	2,000.	064400000P
PCB-1260	< 2,000.	ug/kg	2,000.	064500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300666

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473289
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B12/S3 5-7' Soil Sample
Collected on 12/19/89 at 1400 by WS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	3,000.	ug/kg	100.	134500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

300667

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473288
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B12/S5 10-12' Soil Sample
Collected on 12/19/89 at 1415 by WS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	24.7	% by wt.	0.1	135330000P
pH	6.16		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 70.	ug/kg	70.	900116500P
Pentachloronitrobenzene	< 440.	ug/kg	440.	900230000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300668

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473288
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B12/S5 10-12' Soil Sample
Collected on 12/19/89 at 1415 by WS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 1,000.	ug/kg	1,000.	060900000P
Beta BHC	< 1,000.	ug/kg	1,000.	061000000P
Delta BHC	< 1,000.	ug/kg	1,000.	061200000P
Gamma BHC - Lindane	< 1,000.	ug/kg	1,000.	121800000P
Heptachlor	< 1,000.	ug/kg	1,000.	121900000P
Aldrin	< 1,000.	ug/kg	1,000.	122000000P
Heptachlor Epoxide	< 100.	ug/kg	100.	061500000P
Endosulfan I	< 100.	ug/kg	100.	062700000P
Dieldrin	< 210.	ug/kg	210.	122200000P
DDE	< 210.	ug/kg	210.	061600000P
Endrin	< 210.	ug/kg	210.	122300000P
Endosulfan II	< 210.	ug/kg	210.	062800000P
DDD	940.	ug/kg	210.	061700000P
Endosulfan Sulfate	< 210.	ug/kg	210.	062900000P
DDT	12,400.	ug/kg	210.	122100000P
Endrin Ketone	< 210.	ug/kg	210.	093800000P
Methoxychlor	< 1,000.	ug/kg	1,000.	062100000P
Alpha Chlordane	< 1,000.	ug/kg	1,000.	136100000P
Gamma Chlordane	< 1,000.	ug/kg	1,000.	136200000P
Toxaphene	< 2,100.	ug/kg	2,100.	094200000P
PCB-1016	< 10,000.	ug/kg	10,000.	063900000P
PCB-1221	< 10,000.	ug/kg	10,000.	064000000P
PCB-1232	< 10,000.	ug/kg	10,000.	064100000P
PCB-1242	< 10,000.	ug/kg	10,000.	064200000P
PCB-1248	< 10,000.	ug/kg	10,000.	064300000P
PCB-1254	< 2,100.	ug/kg	2,100.	064400000P
PCB-1260	< 2,100.	ug/kg	2,100.	064500000P

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Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473288
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG B12/S5 10-12' Soil Sample
Collected on 12/19/89 at 1415 by WS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	4,500.	ug/kg	100.	134500000P

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Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471138
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-13/S-3 5-7' Soil Sample
Collected on 12/13/89 at 1215 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT.	BASIS	LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	14.1	% by wt.	0.1	135330000P
pH	5.51		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 380.	ug/kg	380.	900230000P

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Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471138
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-13/S-3 5-7' Soil Sample
Collected on 12/13/89 at 1215 by WS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	15.	ug/kg	9.	060900000P
Beta BHC	< 9.	ug/kg	9.	061000000P
Delta BHC	< 9.	ug/kg	9.	061200000P
Gamma BHC - Lindane	< 9.	ug/kg	9.	121800000P
Heptachlor	< 9.	ug/kg	9.	121900000P
Aldrin	< 9.	ug/kg	9.	122000000P
Heptachlor Epoxide	< 9.	ug/kg	9.	061500000P
Endosulfan I	< 9.	ug/kg	9.	062700000P
Dieldrin	< 19.	ug/kg	19.	122200000P
DDE	< 19.	ug/kg	19.	061600000P
Endrin	< 19.	ug/kg	19.	122300000P
Endosulfan II	< 19.	ug/kg	19.	062800000P
DDD	< 19.	ug/kg	19.	061700000P
Endosulfan Sulfate	< 19.	ug/kg	19.	062900000P
DDT	166.	ug/kg	19.	122100000P
Endrin Ketone	< 19.	ug/kg	19.	093800000P
Methoxychlor	< 90.	ug/kg	90.	062100000P
Alpha Chlordane	< 90.	ug/kg	90.	136100000P
Gamma Chlordane	< 90.	ug/kg	90.	136200000P
Toxaphene	< 190.	ug/kg	190.	094200000P
PCB-1016	< 90.	ug/kg	90.	063900000P
PCB-1221	< 90.	ug/kg	90.	064000000P
PCB-1232	< 90.	ug/kg	90.	064100000P
PCB-1242	< 90.	ug/kg	90.	064200000P
PCB-1248	< 90.	ug/kg	90.	064300000P
PCB-1254	< 190.	ug/kg	190.	064400000P
PCB-1260	< 190.	ug/kg	190.	064500000P

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Chemical Biological & Environmental Fields of Testing

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471138
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-13/S-3 5-7' Soil Sample
Collected on 12/13/89 at 1215 by WS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	200.	ug/kg	100.	134500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471139
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-13/S-5 10-12' Soil Sample
Collected on 12/13/89 at 1240 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	26.4	% by wt.	0.1	135330000P
pH	6.54		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 70.	ug/kg	70.	900116500P
Pentachloronitrobenzene	< 450.	ug/kg	450.	900230000P

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
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LLI Sample No. SW 1471139
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-13/S-5 10-12' Soil Sample
Collected on 12/13/89 at 1240 by WS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	130.	ug/kg	10.	060900000P
Beta BHC	20.	ug/kg	10.	061000000P
Delta BHC	40.	ug/kg	10.	061200000P
Gamma BHC - Lindane	30.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	< 22.	ug/kg	22.	122200000P
DDE	< 22.	ug/kg	22.	061600000P
Endrin	< 22.	ug/kg	22.	122300000P
Endosulfan II	< 22.	ug/kg	22.	062800000P
DDD	< 22.	ug/kg	22.	061700000P
Endosulfan Sulfate	< 22.	ug/kg	22.	062900000P
DDT	34.	ug/kg	22.	122100000P
Endrin Ketone	< 22.	ug/kg	22.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 220.	ug/kg	220.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 100.	ug/kg	100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 220.	ug/kg	220.	064400000P
PCB-1260	< 220.	ug/kg	220.	064500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471139
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-13/S-5 10-12' Soil Sample
Collected on 12/13/89 at 1240 by WS

P.O. 89-595
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N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	6,000.	ug/kg	100.	134500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
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Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471134
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-14/S-3 5-7' Soil Sample
Collected on 12/13/89 at 1520 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	18.0	% by wt.	0.1	135330000P
pH	4.86		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.
The pH of the method blank (background soil) performed with samples 1471134 - 1471143 was 5.97.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 400.	ug/kg	400.	900230000P

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471134
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-14/S-3 5-7' Soil Sample
Collected on 12/13/89 at 1520 by WS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	34.	ug/kg	10.	060900000P
Beta BHC	< 10.	ug/kg	10.	061000000P
Delta BHC	< 60.	ug/kg	60.	061200000P
Gamma BHC - Lindane	20.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	35.	ug/kg	10.	062700000P
Dieldrin	< 20.	ug/kg	20.	122200000P
DDE	< 20.	ug/kg	20.	061600000P
Endrin	< 20.	ug/kg	20.	122300000P
Endosulfan II	< 20.	ug/kg	20.	062800000P
DDD	< 20.	ug/kg	20.	061700000P
Endosulfan Sulfate	< 20.	ug/kg	20.	062900000P
DDT	34.	ug/kg	20.	122100000P
Endrin Ketone	< 20.	ug/kg	20.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 200.	ug/kg	200.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 100.	ug/kg	100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 200.	ug/kg	200.	064400000P
PCB-1260	< 200.	ug/kg	200.	064500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300678

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471134
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-14/S-3 5-7' Soil Sample
Collected on 12/13/89 at 1520 by WS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	500.	ug/kg	100.	134500000P

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Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300679

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471136
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-14/S-5 10-12' Soil Sample
Collected on 12/13/89 at 1530 by WS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	18.9	% by wt.	0.1	135330000P
pH	7.26		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour. The slurry was stirred during analysis.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 410.	ug/kg	410.	900230000P

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Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471136
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-14/S-5 10-12' Soil Sample
Collected on 12/13/89 at 1530 by WS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 10.	ug/kg	10.	060900000P
Beta BHC	< 10.	ug/kg	10.	061000000P
Delta BHC	< 10.	ug/kg	10.	061200000P
Gamma BHC - Lindane	< 10.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	< 20.	ug/kg	20.	122200000P
DDE	< 20.	ug/kg	20.	061600000P
Endrin	< 20.	ug/kg	20.	122300000P
Endosulfan II	< 20.	ug/kg	20.	062800000P
DDD	< 20.	ug/kg	20.	061700000P
Endosulfan Sulfate	< 20.	ug/kg	20.	062900000P
DDT	49.	ug/kg	20.	122100000P
Endrin Ketone	< 20.	ug/kg	20.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 200.	ug/kg	200.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 100.	ug/kg	100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 200.	ug/kg	200.	064400000P
PCB-1260	< 200.	ug/kg	200.	064500000P

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American Association for
Laboratory Accreditation
Biological & Environmental
Fields of testing

Member American Council of
Independent Laboratories Inc.

Questions? Contact Environmental
Technical Services at (717) 656-2301

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Of Symbols And Abbreviations And
Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300681

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471136
Date Reported 1/31/90
Date Submitted 12/15/89
Discard Date 3/ 3/90
Collected 12/13/89 by BS

PPG B-14/S-5 10-12' Soil Sample
Collected on 12/13/89 at 1530 by WS

P.O. 89-595
Rel.

	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
N-Methyl Carbamates in Soil				
Carbaryl	< 100.	ug/kg	100.	134500000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300682

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1475937
Date Reported 2/15/90
Date Submitted 1/ 3/90
Discard Date 3/18/90
Collected 1/ 2/90 by WS

PPG B15/S3 5-7' Soil Sample
Collected on 01/02/90 at 1250 by AHT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	19.6	% by wt.	0.1	135330000P
pH	6.32		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.
The pH of the method blank (background soil) performed with samples 1475937 - 1475941 was 6.95.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 410.	ug/kg	410.	900230000P

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American Association for Laboratory Accreditation
Analytical Chemistry & Environmental Services Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300683

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1475937
Date Reported 2/15/90
Date Submitted 1/ 3/90
Discard Date 3/18/90
Collected 1/ 2/90 by WS

PPG B15/S3 5-7' Soil Sample
Collected on 01/02/90 at 1250 by AHT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	41.	ug/kg	10.	060900000P
Beta BHC	< 10.	ug/kg	10.	061000000P
Delta BHC	14.	ug/kg	10.	061200000P
Gamma BHC - Lindane	42.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	< 20.	ug/kg	20.	122200000P
DDE	35.	ug/kg	20.	061600000P
Endrin	< 20.	ug/kg	20.	122300000P
Endosulfan II	< 20.	ug/kg	20.	062800000P
DDD	27.	ug/kg	20.	061700000P
Endosulfan Sulfate	< 20.	ug/kg	20.	062900000P
DDT	922.	ug/kg	20.	122100000P
Endrin Ketone	< 20.	ug/kg	20.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 200.	ug/kg	200.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 100.	ug/kg	100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 200.	ug/kg	200.	064400000P
PCB-1260	< 200.	ug/kg	200.	064500000P

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American Association for Laboratory Accreditation
Chemical Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300684

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1475937
Date Reported 2/15/90
Date Submitted 1/ 3/90
Discard Date 3/18/90
Collected 1/ 2/90 by WS

PPG B15/S3 5-7' Soil Sample
Collected on 01/02/90 at 1250 by AHT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	1,100.	ug/kg	100.	134500000P

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Pennsylvania Association for Laboratory Accreditation Medical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

306685

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1475938
Date Reported 2/15/90
Date Submitted 1/ 3/90
Discard Date 3/18/90
Collected 1/ 2/90 by WS

PPG B15/S5 10-12' Soil Sample
Collected on 01/02/90 at 1300 by AHT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	18.2	% by wt.	0.1	135330000P
pH	7.27		0.01	144130000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 400.	ug/kg	400.	900230000P

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American Association for Laboratory Accreditation in Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories Inc

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300686

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1475938
Date Reported 2/15/90
Date Submitted 1/ 3/90
Discard Date 3/18/90
Collected 1/ 2/90 by WS

PPG B15/S5 10-12' Soil Sample
Collected on 01/02/90 at 1300 by AHT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 10.	ug/kg	10.	060900000P
Beta BHC	< 10.	ug/kg	10.	061000000P
Delta BHC	< 10.	ug/kg	10.	061200000P
Gamma BHC - Lindane	< 10.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	< 20.	ug/kg	20.	122200000P
DDE	< 20.	ug/kg	20.	061600000P
Endrin	< 20.	ug/kg	20.	122300000P
Endosulfan II	< 20.	ug/kg	20.	062800000P
DDD	< 20.	ug/kg	20.	061700000P
Endosulfan Sulfate	< 20.	ug/kg	20.	062900000P
DDT	< 20.	ug/kg	20.	122100000P
Endrin Ketone	< 20.	ug/kg	20.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 200.	ug/kg	200.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 100.	ug/kg	100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 200.	ug/kg	200.	064400000P
PCB-1260	< 200.	ug/kg	200.	064500000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300687

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1475938
Date Reported 2/15/90
Date Submitted 1/ 3/90
Discard Date 3/18/90
Collected 1/ 2/90 by WS

PPG B15/S5 10-12' Soil Sample
Collected on 01/02/90 at 1300 by AHT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300688

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477186
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B16/S1 0-2' Soil Sample
Collected on 01/05/90 at 1550 by AT/BS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	12.7	% by wt.	0.1	135330000P
pH	6.58		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.
The pH of the method blank (background soil) performed with samples 1477186 - 1477198 was 6.87.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 380.	ug/kg	380.	900230000P

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Food, Biologics & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300689

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477186
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B16/S1 0-2' Soil Sample
Collected on 01/05/90 at 1550 by AT/BS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 9.	ug/kg	9.	060900000P
Beta BHC	11.	ug/kg	9.	061000000P
Delta BHC	< 9.	ug/kg	9.	061200000P
Gamma BHC - Lindane	< 9.	ug/kg	9.	121800000P
Heptachlor	< 9.	ug/kg	9.	121900000P
Aldrin	< 9.	ug/kg	9.	122000000P
Heptachlor Epoxide	< 9.	ug/kg	9.	061500000P
Endosulfan I	< 9.	ug/kg	9.	062700000P
Dieldrin	40.	ug/kg	18.	122200000P
DDE	252.	ug/kg	18.	061600000P
Endrin	< 18.	ug/kg	18.	122300000P
Endosulfan II	< 18.	ug/kg	18.	062800000P
DDD	< 18.	ug/kg	18.	061700000P
Endosulfan Sulfate	< 18.	ug/kg	18.	062900000P
DDT	< 18.	ug/kg	18.	122100000P
Endrin Ketone	< 18.	ug/kg	18.	093800000P
Methoxychlor	< 90.	ug/kg	90.	062100000P
Alpha Chlordane	< 90.	ug/kg	90.	136100000P
Gamma Chlordane	< 90.	ug/kg	90.	136200000P
Toxaphene	< 180.	ug/kg	180.	094200000P
PCB-1016	< 90.	ug/kg	90.	063900000P
PCB-1221	< 180.	ug/kg	180.	064000000P
PCB-1232	< 90.	ug/kg	90.	064100000P
PCB-1242	< 90.	ug/kg	90.	064200000P
PCB-1248	< 90.	ug/kg	90.	064300000P
PCB-1254	< 180.	ug/kg	180.	064400000P
PCB-1260	< 180.	ug/kg	180.	064500000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300690

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477186
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B16/S1 0-2' Soil Sample
Collected on 01/05/90 at 1550 by AT/BS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300691

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477187
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B16/S3A 5-7' Soil Sample
Collected on 01/05/90 at 1605 by AT/BS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	14.1	% by wt.	0.1	135330000P
pH	7.23		0.01	144130000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 380.	ug/kg	380.	900230000P

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Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300692

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477187
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B16/S3A 5-7' Soil Sample
Collected on 01/05/90 at 1605 by AT/BS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 9.	ug/kg	9.	060900000P
Beta BHC	< 9.	ug/kg	9.	061000000P
Delta BHC	< 9.	ug/kg	9.	061200000P
Gamma BHC - Lindane	< 9.	ug/kg	9.	121800000P
Heptachlor	< 9.	ug/kg	9.	121900000P
Aldrin	< 9.	ug/kg	9.	122000000P
Heptachlor Epoxide	< 9.	ug/kg	9.	061500000P
Endosulfan I	< 9.	ug/kg	9.	062700000P
Dieldrin	< 19.	ug/kg	19.	122200000P
DDE	< 19.	ug/kg	19.	061600000P
Endrin	< 19.	ug/kg	19.	122300000P
Endosulfan II	< 19.	ug/kg	19.	062800000P
DDD	< 19.	ug/kg	19.	061700000P
Endosulfan Sulfate	< 19.	ug/kg	19.	062900000P
DDT	175.	ug/kg	19.	122100000P
Endrin Ketone	< 19.	ug/kg	19.	093800000P
Methoxychlor	< 90.	ug/kg	90.	062100000P
Alpha Chlordane	< 90.	ug/kg	90.	136100000P
Gamma Chlordane	< 90.	ug/kg	90.	136200000P
Toxaphene	< 190.	ug/kg	190.	094200000P
PCB-1016	< 90.	ug/kg	90.	063900000P
PCB-1221	< 90.	ug/kg	90.	064000000P
PCB-1232	< 90.	ug/kg	90.	064100000P
PCB-1242	< 90.	ug/kg	90.	064200000P
PCB-1248	< 90.	ug/kg	90.	064300000P
PCB-1254	< 190.	ug/kg	190.	064400000P
PCB-1260	< 190.	ug/kg	190.	064500000P

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American Association for Laboratory Accreditation
American Biological & Environmental Needs of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300693

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477187
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B16/S3A 5-7' Soil Sample
Collected on 01/05/90 at 1605 by AT/BS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories, Inc.

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477188
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B16/S3B 5-7' Soil Sample
Collected on 01/05/90 at 1605 by AT/BS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	14.5	% by wt.	0.1	135330000P
pH	7.31		0.01	144130000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 390.	ug/kg	390.	900230000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300695

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477188
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B16/S3B 5-7' Soil Sample
Collected on 01/05/90 at 1605 by AT/BS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 9.	ug/kg	9.	060900000P
Beta BHC	< 9.	ug/kg	9.	061000000P
Delta BHC	< 9.	ug/kg	9.	061200000P
Gamma BHC - Lindane	< 9.	ug/kg	9.	121800000P
Heptachlor	< 9.	ug/kg	9.	121900000P
Aldrin	< 9.	ug/kg	9.	122000000P
Heptachlor Epoxide	< 9.	ug/kg	9.	061500000P
Endosulfan I	< 9.	ug/kg	9.	062700000P
Dieldrin	< 19.	ug/kg	19.	122200000P
DDE	19.	ug/kg	19.	061600000P
Endrin	< 19.	ug/kg	19.	122300000P
Endosulfan II	< 19.	ug/kg	19.	062800000P
DDD	< 19.	ug/kg	19.	061700000P
Endosulfan Sulfate	< 19.	ug/kg	19.	062900000P
DDT	43.	ug/kg	19.	122100000P
Endrin Ketone	< 19.	ug/kg	19.	093800000P
Methoxychlor	< 90.	ug/kg	90.	062100000P
Alpha Chlordane	< 90.	ug/kg	90.	136100000P
Gamma Chlordane	< 90.	ug/kg	90.	136200000P
Toxaphene	< 190.	ug/kg	190.	094200000P
PCB-1016	< 90.	ug/kg	90.	063900000P
PCB-1221	< 90.	ug/kg	90.	064000000P
PCB-1232	< 90.	ug/kg	90.	064100000P
PCB-1242	< 90.	ug/kg	90.	064200000P
PCB-1248	< 90.	ug/kg	90.	064300000P
PCB-1254	< 190.	ug/kg	190.	064400000P
PCB-1260	< 190.	ug/kg	190.	064500000P

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Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

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2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
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Monroeville PA 15146

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PPG B16/S3B 5-7' Soil Sample
Collected on 01/05/90 at 1605 by AT/BS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Group Leader, Pesticides/PCB's

306697

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477189
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B16/S5 10-12' Soil Sample
Collected on 01/05/90 at 1615 by AT/BS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	18.8	% by wt.	0.1	135330000P
pH	4.43		0.01	144130000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 410.	ug/kg	410.	900230000P

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Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

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PPG B16/S5 10-12' Soil Sample
Collected on 01/05/90 at 1615 by AT/BS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	53.	ug/kg	10.	060900000P
Beta BHC	< 10.	ug/kg	10.	061000000P
Delta BHC	21.	ug/kg	10.	061200000P
Gamma BHC - Lindane	32.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	< 20.	ug/kg	20.	122200000P
DDE	< 20.	ug/kg	20.	061600000P
Endrin	< 20.	ug/kg	20.	122300000P
Endosulfan II	< 20.	ug/kg	20.	062800000P
DDD	< 20.	ug/kg	20.	061700000P
Endosulfan Sulfate	< 20.	ug/kg	20.	062900000P
DDT	< 20.	ug/kg	20.	122100000P
Endrin Ketone	< 20.	ug/kg	20.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 200.	ug/kg	200.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 2,100.	ug/kg	2,100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 200.	ug/kg	200.	064400000P
PCB-1260	< 200.	ug/kg	200.	064500000P

Due to interfering peaks on the chromatogram, the value reported for Aroclor-1221 represents the lowest quantitation limit obtainable.

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300699

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477189
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B16/S5 10-12' Soil Sample
Collected on 01/05/90 at 1615 by AT/BS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	6,700.	ug/kg	100.	134500000P

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300700

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476731
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B17/S1 0-2' Soil Sample
Collected on 01/03/90 at 1400 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	15.7	% by wt.	0.1	135330000P
pH	6.69		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.
The pH of the method blank (background soil) performed with samples 1476731 - 1476747, 1477094, 1477096, 1477100 was 6.87.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 390.	ug/kg	390.	900230000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476731
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B17/S1 0-2' Soil Sample
Collected on 01/03/90 at 1400 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 9.	ug/kg	9.	060900000P
Beta BHC	18.	ug/kg	9.	061000000P
Delta BHC	< 9.	ug/kg	9.	061200000P
Gamma BHC - Lindane	< 9.	ug/kg	9.	121800000P
Heptachlor	< 9.	ug/kg	9.	121900000P
Aldrin	< 9.	ug/kg	9.	122000000P
Heptachlor Epoxide	< 9.	ug/kg	9.	061500000P
Endosulfan I	< 9.	ug/kg	9.	062700000P
Dieldrin	51.	ug/kg	19.	122200000P
DDE	588.	ug/kg	19.	061600000P
Endrin	< 19.	ug/kg	19.	122300000P
Endosulfan II	< 19.	ug/kg	19.	062800000P
DDD	< 19.	ug/kg	19.	061700000P
Endosulfan Sulfate	< 19.	ug/kg	19.	062900000P
DDT	1,040.	ug/kg	19.	122100000P
Endrin Ketone	< 19.	ug/kg	19.	093800000P
Methoxychlor	< 90.	ug/kg	90.	062100000P
Alpha Chlordane	< 90.	ug/kg	90.	136100000P
Gamma Chlordane	< 90.	ug/kg	90.	136200000P
Toxaphene	< 190.	ug/kg	190.	094200000P
PCB-1016	< 90.	ug/kg	90.	063900000P
PCB-1221	< 90.	ug/kg	90.	064000000P
PCB-1232	< 90.	ug/kg	90.	064100000P
PCB-1242	< 90.	ug/kg	90.	064200000P
PCB-1248	< 90.	ug/kg	90.	064300000P
PCB-1254	< 190.	ug/kg	190.	064400000P
PCB-1260	< 190.	ug/kg	190.	064500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300702

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476731
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B17/S1 0-2' Soil Sample
Collected on 01/03/90 at 1400 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Respectfully Submitted
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Reviewed and Approved by:

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Group Leader, Pesticides/PCB's

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300703

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476732
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B17/S3A 5-7' Soil Sample
Collected on 01/03/90 at 1420 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	22.3	% by wt.	0.1	135330000P
pH	4.85		0.01	144130000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 420.	ug/kg	420.	900230000P

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300704

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Paul C. Rizzo Associates
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Date Reported 2/15/90
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Collected 1/ 3/90 by WS

PPG B17/S3A 5-7' Soil Sample
Collected on 01/03/90 at 1420 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	100.	ug/kg	10.	060900000P
Beta BHC	30.	ug/kg	10.	061000000P
Delta BHC	30.	ug/kg	10.	061200000P
Gamma BHC - Lindane	100.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	< 21.	ug/kg	21.	122200000P
DDE	< 21.	ug/kg	21.	061600000P
Endrin	< 21.	ug/kg	21.	122300000P
Endosulfan II	< 21.	ug/kg	21.	062800000P
DDD	< 21.	ug/kg	21.	061700000P
Endosulfan Sulfate	< 21.	ug/kg	21.	062900000P
DDT	< 21.	ug/kg	21.	122100000P
Endrin Ketone	< 21.	ug/kg	21.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 210.	ug/kg	210.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 230.	ug/kg	230.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 210.	ug/kg	210.	064400000P
PCB-1260	< 210.	ug/kg	210.	064500000P

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300705

ANALYSIS REPORT

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2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476732
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B17/S3A 5-7' Soil Sample
Collected on 01/03/90 at 1420 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	300.	ug/kg	100.	134500000P

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300706

ANALYSIS REPORT

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2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476733
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B17/S3B 5-7' Soil Sample
Collected on 01/03/90 at 1420 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	21.1	% by wt.	0.1	135330000P
pH	4.81		0.01	144130000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 420.	ug/kg	420.	900230000P

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300707

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Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B17/S3B 5-7' Soil Sample
Collected on 01/03/90 at 1420 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	90.	ug/kg	10.	060900000P
Beta BHC	30.	ug/kg	10.	061000000P
Delta BHC	30.	ug/kg	10.	061200000P
Gamma BHC - Lindane	90.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	< 20.	ug/kg	20.	122200000P
DDE	< 20.	ug/kg	20.	061600000P
Endrin	< 20.	ug/kg	20.	122300000P
Endosulfan II	< 20.	ug/kg	20.	062800000P
DDD	< 20.	ug/kg	20.	061700000P
Endosulfan Sulfate	< 20.	ug/kg	20.	062900000P
DDT	< 20.	ug/kg	20.	122100000P
Endrin Ketone	< 20.	ug/kg	20.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 200.	ug/kg	200.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 200.	ug/kg	200.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 200.	ug/kg	200.	064400000P
PCB-1260	< 200.	ug/kg	200.	064500000P

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Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

30870S

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476733
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B17/S3B 5-7' Soil Sample
Collected on 01/03/90 at 1420 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	300.	ug/kg	100.	134500000P

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300709

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476734
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B17/S5 10-12' Soil Sample
Collected on 01/03/90 at 1435 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	28.0	% by wt.	0.1	135330000P
pH	6.98		0.01	144130000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 70.	ug/kg	70.	900116500P
Pentachloronitrobenzene	< 460.	ug/kg	460.	900230000P

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Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476734
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B17/S5 10-12' Soil Sample
Collected on 01/03/90 at 1435 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 10.	ug/kg	10.	060900000P
Beta BHC	< 10.	ug/kg	10.	061000000P
Delta BHC	< 10.	ug/kg	10.	061200000P
Gamma BHC - Lindane	< 10.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	< 22.	ug/kg	22.	122200000P
DDE	< 22.	ug/kg	22.	061600000P
Endrin	< 22.	ug/kg	22.	122300000P
Endosulfan II	< 22.	ug/kg	22.	062800000P
DDD	< 22.	ug/kg	22.	061700000P
Endosulfan Sulfate	< 22.	ug/kg	22.	062900000P
DDT	< 22.	ug/kg	22.	122100000P
Endrin Ketone	< 22.	ug/kg	22.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 220.	ug/kg	220.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 100.	ug/kg	100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 220.	ug/kg	220.	064400000P
PCB-1260	< 220.	ug/kg	220.	064500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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300711

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476734
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B17/S5 10-12' Soil Sample
Collected on 01/03/90 at 1435 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300712

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1475939
Date Reported 2/15/90
Date Submitted 1/ 3/90
Discard Date 3/18/90
Collected 1/ 2/90 by WS

PPG B18/S1 0-2' Soil Sample
Collected on 01/02/90 at 1600 by AHT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT.	BASIS	LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	14.8	% by wt.	0.1	135330000P
pH	6.60		0.01	144130000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 390.	ug/kg	390.	900230000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300713

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. [illegible]
Date Reported 2/15/90
Date Submitted 1/ 3/90
Discard Date 3/18/90
Collected 1/ 2/90 by WS

PPG B18/S1 0-2' Soil Sample
Collected on 01/02/90 at 1600 by AHT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 9.	ug/kg	9.	060900000F
Beta BHC	< 9.	ug/kg	9.	061000000F
Delta BHC	< 9.	ug/kg	9.	061200000F
Gamma BHC - Lindane	< 9.	ug/kg	9.	121600000F
Heptachlor	< 9.	ug/kg	9.	121900000F
Aldrin	< 9.	ug/kg	9.	122000000F
Heptachlor Epoxide	< 9	ug/kg	9.	061500000F
Endosulfan I	< 9.	ug/kg	9.	062700000F
Dieldrin	< 19.	ug/kg	19.	122200000F
DDE	317.	ug/kg	19.	061600000F
Endrin	< 19.	ug/kg	19.	122300000F
Endosulfan II	< 19.	ug/kg	19.	062800000F
DDD	< 19.	ug/kg	19.	061700000F
Endosulfan Sulfate	< 19.	ug/kg	19.	062900000F
DDT	399.	ug/kg	19.	122100000F
Endrin Ketone	< 19.	ug/kg	19.	073800000F
Methoxychlor	< 90.	ug/kg	90.	062100000F
Alpha Chlordane	< 90.	ug/kg	90.	136100000F
Gamma Chlordane	< 90.	ug/kg	90.	136200000F
Toxaphene	< 190.	ug/kg	190.	074200000F
PCB-1016	< 90.	ug/kg	90.	063900000F
PCB-1221	< 90.	ug/kg	90.	064000000F
PCB-1232	< 90.	ug/kg	90.	064100000F
PCB-1242	< 90.	ug/kg	90.	064200000F
PCB-1248	< 90.	ug/kg	90.	064300000F
PCB-1254	< 190.	ug/kg	190.	064400000F
PCB-1260	< 190.	ug/kg	190.	064500000F

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Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc
Reviewed and Approved by:

Charles J. Neslund, B.S
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories, Inc

300714

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1475939
Date Reported 2/15/90
Date Submitted 1/ 3/90
Discard Date 3/18/90
Collected 1/ 2/90 by WS

PPG B18/S1 0-2' Soil Sample
Collected on 01/02/90 at 1600 by AHT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300715

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1475940
Date Reported 2/15/90
Date Submitted 1/ 3/90
Discard Date 3/18/90
Collected 1/ 2/90 by WS

PPG B18/S3 5-7' Soil Sample
Collected on 01/02/90 at 1630 by AHT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	21.6	% by wt.	0.1	135330000P
pH	5.40		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 420.	ug/kg	420.	900230000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300716

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1475940
Date Reported 2/15/90
Date Submitted 1/ 3/90
Discard Date 3/18/90
Collected 1/ 2/90 by WS

PPG B18/S3 5-7' Soil Sample
Collected on 01/02/90 at 1630 by AHT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	20.	ug/kg	10.	060900000P
Beta BHC	< 10.	ug/kg	10.	061000000P
Delta BHC	10.	ug/kg	10.	061200000P
Gamma BHC - Lindane	10.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	< 20.	ug/kg	20.	122200000P
DDE	< 20.	ug/kg	20.	061600000P
Endrin	< 20.	ug/kg	20.	122300000P
Endosulfan II	< 20.	ug/kg	20.	062800000P
DDD	< 20.	ug/kg	20.	061700000P
Endosulfan Sulfate	< 20.	ug/kg	20.	062900000P
DDT	< 20.	ug/kg	20.	122100000P
Endrin Ketone	< 20.	ug/kg	20.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 200.	ug/kg	200.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 100.	ug/kg	100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 200.	ug/kg	200.	064400000P
PCB-1260	< 200.	ug/kg	200.	064500000P

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Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300717

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1475940
Date Reported 2/15/90
Date Submitted 1/ 3/90
Discard Date 3/18/90
Collected 1/ 2/90 by WS

PPG B18/S3 5-7' Soil Sample
Collected on 01/02/90 at 1630 by AHT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Medical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300718

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1475941
Date Reported 2/15/90
Date Submitted 1/ 3/90
Discard Date 3/18/90
Collected 1/ 2/90 by WS

PPG B18/S5 10-12' Soil Sample
Collected on 01/03/90 at 0900 by AHT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	26.2	% by wt.	0.1	135330000P
pH	6.58		0.01	144130000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 70.	ug/kg	70.	900116500P
Pentachloronitrobenzene	< 450.	ug/kg	450.	900230000P

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Chemical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300719

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1475941
Date Reported 2/15/90
Date Submitted 1/ 3/90
Discard Date 3/18/90
Collected 1/ 2/90 by WS

PPG B18/S5 10-12' Soil Sample
Collected on 01/03/90 at 0900 by AHT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 10.	ug/kg	10.	060900000P
Beta BHC	< 10.	ug/kg	10.	061000000P
Delta BHC	< 10.	ug/kg	10.	061200000P
Gamma BHC - Lindane	< 10.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	< 22.	ug/kg	22.	122200000P
DDE	< 22.	ug/kg	22.	061600000P
Endrin	< 22.	ug/kg	22.	122300000P
Endosulfan II	< 22.	ug/kg	22.	062800000P
DDD	< 22.	ug/kg	22.	061700000P
Endosulfan Sulfate	< 22.	ug/kg	22.	062900000P
DDT	< 22.	ug/kg	22.	122100000P
Endrin Ketone	< 22.	ug/kg	22.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 220.	ug/kg	220.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 100.	ug/kg	100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 220.	ug/kg	220.	064400000P
PCB-1260	< 220.	ug/kg	220.	064500000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories, Inc

300720

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1475941
Date Reported 2/15/90
Date Submitted 1/ 3/90
Discard Date 3/18/90
Collected 1/ 2/90 by WS

PPG B18/S5 10-12' Soil Sample
Collected on 01/03/90 at 0900 by AHT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300721

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477096
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B19/S3A 4-7' Unspiked Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
VOA GC/MS Library Search		attached		089001000P
TCL Volatiles (Soil)		attached		117827000P
TCL Semi-Volatiles (Soil)		attached		120127000P
TCL Semi-Volatiles (Soil) cont		attached		120227000P
TCL Pesticides		attached		122527000P
Moisture *AS RECEIVED*	14.1	% by wt.	0.1	135327000P
pH	6.28		0.01	144127000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150927000P
Dioxin	0.00000			900131000P
The analysis for dioxin was subcontracted to another laboratory.				
2,3,7,8-TCDD was not detected in the sample. Please refer to the data package for the complete report.				
Malathion	< 60.	ug/kg	60.	900216500P
Pentachloronitrobenzene	< 380.	ug/kg	380.	900301000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300722

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477096
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B19/S3A 4-7' Unspiked Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 12.	ug/kg	12.	082700000P
Bromomethane	< 12.	ug/kg	12.	082800000P
Vinyl Chloride	< 12.	ug/kg	12.	082900000P
Chloroethane	< 12.	ug/kg	12.	083000000P
Methylene Chloride	33.	ug/kg	6.	083100000P
Acetone	95.	ug/kg	12.	091400000P
Carbon Disulfide	< 6.	ug/kg	6.	091500000P
1,1-Dichloroethene	< 6.	ug/kg	6.	118000000P
1,1-Dichloroethane	< 6.	ug/kg	6.	083300000P
1,2-Dichloroethene (total)	< 6.	ug/kg	6.	117900000P
Chloroform	< 6.	ug/kg	6.	083500000P
1,2-Dichloroethane	< 6.	ug/kg	6.	083600000P
2-Butanone	< 12.	ug/kg	12.	091600000P
1,1,1-Trichloroethane	< 6.	ug/kg	6.	083700000P
Carbon Tetrachloride	< 6.	ug/kg	6.	083800000P
Vinyl Acetate	< 12.	ug/kg	12.	091700000P
Bromodichloromethane	< 6.	ug/kg	6.	083900000P
1,2-Dichloropropane	< 6.	ug/kg	6.	084000000P
cis-1,3-Dichloropropene	< 6.	ug/kg	6.	084400000P
Trichloroethene	< 6.	ug/kg	6.	118100000P
Dibromochloromethane	< 6.	ug/kg	6.	084600000P
1,1,2-Trichloroethane	< 6.	ug/kg	6.	084500000P
Benzene	< 6.	ug/kg	6.	118200000P
trans-1,3-Dichloropropene	< 6.	ug/kg	6.	084100000P
Bromoform	< 6.	ug/kg	6.	084700000P
4-Methyl-2-Pentanone	< 12.	ug/kg	12.	091900000P
2-Hexanone	< 12.	ug/kg	12.	091800000P
Tetrachloroethene	< 6.	ug/kg	6.	084800000P
1,1,2,2-Tetrachloroethane	< 6.	ug/kg	6.	084900000P
Toluene	< 6.	ug/kg	6.	118300000P
Chlorobenzene	< 6.	ug/kg	6.	118400000P
Ethylbenzene	< 6.	ug/kg	6.	085200000P
Styrene	< 6.	ug/kg	6.	092000000P
Xylenes (total)	< 6.	ug/kg	6.	092100000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

American Association for Laboratory Accreditation
Chemical, Biological & Environmental areas of testing

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Member American Council of Independent Laboratories Inc

300723

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477096
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B19/S3A 4-7' Unspiked Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
phenol	< 380.	ug/kg	380.	118500000P
bis (2-chloroethyl) ether	< 380.	ug/kg	380.	066700000P
2-chlorophenol	< 380.	ug/kg	380.	118600000P
1,3-dichlorobenzene	< 380.	ug/kg	380.	067700000P
1,4-dichlorobenzene	< 380.	ug/kg	380.	118700000P
benzyl alcohol	< 380.	ug/kg	380.	092600000P
1,2-dichlorobenzene	< 380.	ug/kg	380.	067600000P
2-methylphenol	< 380.	ug/kg	380.	092700000P
bis (2-chloroisopropyl) ether	< 380.	ug/kg	380.	066800000P
4-methylphenol	< 380.	ug/kg	380.	092800000P
N-nitrosodi-n-propylamine	< 380.	ug/kg	380.	118800000P
hexachloroethane	< 380.	ug/kg	380.	069200000P
nitrobenzene	< 380.	ug/kg	380.	069600000P
isophorone	< 380.	ug/kg	380.	069400000P
2-nitrophenol	< 380.	ug/kg	380.	065100000P
2,4-dimethylphenol	< 380.	ug/kg	380.	064800000P
benzoic acid	< 2,000.	ug/kg	2,000.	092900000P
bis (2-chloroethoxy) methane	< 380.	ug/kg	380.	066600000P
2,4-dichlorophenol	< 380.	ug/kg	380.	064700000P
1,2,4-trichlorobenzene	< 380.	ug/kg	380.	118900000P
naphthalene	< 380.	ug/kg	380.	069500000P
4-chloroaniline	< 380.	ug/kg	380.	093000000P
hexachlorobutadiene	< 380.	ug/kg	380.	069000000P
4-chloro-3-methylphenol	< 380.	ug/kg	380.	119000000P
2-methylnaphthalene	< 380.	ug/kg	380.	093100000P
hexachlorocyclopentadiene	< 380.	ug/kg	380.	069100000P
2,4,6-trichlorophenol	< 380.	ug/kg	380.	065600000P
2,4,5-trichlorophenol	< 2,000.	ug/kg	2,000.	093200000P
2-chloronaphthalene	< 380.	ug/kg	380.	067200000P
2-nitroaniline	< 2,000.	ug/kg	2,000.	093300000P
dimethyl phthalate	< 380.	ug/kg	380.	068100000P
acenaphthylene	< 380.	ug/kg	380.	065800000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300724

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477096
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B19/S3A 4-7' Unspiked Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 2,000.	ug/kg	2,000.	093400000P
acenaphthene	< 380.	ug/kg	380.	119100000P
2,4-dinitrophenol	< 2,000.	ug/kg	2,000.	065000000P
4-nitrophenol	< 2,000.	ug/kg	2,000.	119200000P
dibenzofuran	< 380.	ug/kg	380.	093500000P
2,4-dinitrotoluene	< 380.	ug/kg	380.	119300000P
2,6-dinitrotoluene	< 380.	ug/kg	380.	068400000P
diethyl phthalate	< 380.	ug/kg	380.	068000000P
4-chlorophenyl phenyl ether	< 380.	ug/kg	380.	067300000P
fluorene	< 380.	ug/kg	380.	068800000P
4-nitroaniline	< 2,000.	ug/kg	2,000.	093600000P
2-methyl-4,6-dinitrophenol	< 2,000.	ug/kg	2,000.	064900000P
N-nitrosodiphenylamine	< 380.	ug/kg	380.	069900000P
4-bromophenyl phenyl ether	< 380.	ug/kg	380.	067000000P
hexachlorobenzene	< 380.	ug/kg	380.	068900000P
pentachlorophenol	< 2,000.	ug/kg	2,000.	119400000P
phenanthrene	< 380.	ug/kg	380.	070000000P
anthracene	< 380.	ug/kg	380.	065900000P
di-n-butyl phthalate	< 380.	ug/kg	380.	068200000P
fluoranthene	< 380.	ug/kg	380.	068700000P
pyrene	< 380.	ug/kg	380.	119500000P
butyl benzyl phthalate	< 380.	ug/kg	380.	067100000P
3,3'-dichlorobenzidine	< 780.	ug/kg	780.	067900000P
benzo (a) anthracene	< 380.	ug/kg	380.	066100000P
bis (2-ethylhexyl) phthalate	< 380.	ug/kg	380.	066900000P
chrysene	< 380.	ug/kg	380.	067400000P
di-n-octyl phthalate	< 380.	ug/kg	380.	068500000P
benzo (b) fluoranthene	< 380.	ug/kg	380.	066300000P
benzo (K) fluoranthene	< 380.	ug/kg	380.	066500000P
benzo (a) pyrene	< 380.	ug/kg	380.	066200000P
indeno (1,2,3-cd) pyrene	< 380.	ug/kg	380.	069300000P
dibenz (a,h) anthracene	< 380.	ug/kg	380.	067500000P
benzo (ghi) perylene	< 380.	ug/kg	380.	066400000P

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American Association for Laboratory Accreditation Chemical, Biological & Environmental Testing

Member American Council of Independent Laboratories Inc

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300725

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477096
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B19/S3A 4-7' Unspiked Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 9.	ug/kg	9.	060900000P
Beta BHC	< 9.	ug/kg	9.	061000000P
Delta BHC	< 9.	ug/kg	9.	061200000P
Gamma BHC - Lindane	< 9.	ug/kg	9.	121800000P
Heptachlor	< 9.	ug/kg	9.	121900000P
Aldrin	< 9.	ug/kg	9.	122000000P
Heptachlor Epoxide	< 9.	ug/kg	9.	061500000P
Endosulfan I	< 9.	ug/kg	9.	062700000P
Dieldrin	< 19.	ug/kg	19.	122200000P
DDE	< 19.	ug/kg	19.	061600000P
Endrin	< 19.	ug/kg	19.	122300000P
Endosulfan II	< 19.	ug/kg	19.	062800000P
DDD	< 19.	ug/kg	19.	061700000P
Endosulfan Sulfate	< 19.	ug/kg	19.	062900000P
DDT	< 19.	ug/kg	19.	122100000P
Endrin Ketone	< 19.	ug/kg	19.	093800000P
Methoxychlor	< 90.	ug/kg	90.	062100000P
Alpha Chlordane	< 90.	ug/kg	90.	136100000P
Gamma Chlordane	< 90.	ug/kg	90.	136200000P
Toxaphene	< 190.	ug/kg	190.	094200000P
PCB-1016	< 90.	ug/kg	90.	063900000P
PCB-1221	< 90.	ug/kg	90.	064000000P
PCB-1232	< 90.	ug/kg	90.	064100000P
PCB-1242	< 90.	ug/kg	90.	064200000P
PCB-1248	< 90.	ug/kg	90.	064300000P
PCB-1254	< 190.	ug/kg	190.	064400000P
PCB-1260	< 190.	ug/kg	190.	064500000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300726

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477096
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B19/S3A 4-7' Unspiked Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories Inc

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300727

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B9S3A

Lab Name: LANCASTER LABS Contract:

Lab Code: LANCAS Case No.: 244147 SAS No.: SDG No.: PPG3

Matrix: (soil/water) SOIL Lab Sample ID: C1477096L

Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1477096L

Level: (low/med) LOW Date Received: 01/05/90

% Moisture: not dec. 14 Date Analyzed: 01/09/90

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

300728

FORM I VOA-TIC 1/87 Rev.

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B9S3A

Lab Name: LANCASTER LABS Contract: RIZZO

Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.

Matrix: (soil/water) SOIL Lab Sample ID: 1477096

Sample wt/vol: 30 (g/mL) G Lab File ID: >F9051

Level: (low/med) LOW Date Received: 01/05/90

% Moisture: not dec. 14 dec. _____. Date Extracted: 01/08/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/09/90

GPC Cleanup: (Y/N) N pH: 5.4 Dilution Factor: 1.000

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	4.82	190.	J
2.	Unknown	5.92	310.	J
3.	Unknown	7.06	8100.	JBA
4.	Unknown	9.61	620.	JB
5.	Unknown ketone	9.86	230.	JB
6.	Unknown	10.68	310.	JB
7.	Unknown aromatic	14.09	160.	J
8.	Unknown	28.65	190.	J
9.	Unknown carboxylic acid/este	32.17	270.	J
10.	Unknown carboxylic acid/este	32.71	47000.	JB
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

FORM I SV-TIC 1/87 Rev.

American Association for Laboratory Accreditation Technical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

Member American Council of Independent Laboratories, Inc.

300729

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477097
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

Continuation of LLI #1477096 PPG B19/S3A 4-7'
Unspiked Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Aluminum	3,220.	mg/kg	20.	014300100P
Antimony	< 6.	mg/kg	6.	014400100P
Barium	< 20.	mg/kg	20.	014600100P
Beryllium	< 0.6	mg/kg	0.6	014700100P
Cadmium	< 0.6	mg/kg	0.6	014900100P
Calcium	310.	mg/kg	10.	015000100P
Chromium	8.	mg/kg	1.	015100100P
Cobalt	< 6.	mg/kg	6.	015200100P
Copper	3.	mg/kg	2.	015300100P
Iron	3,450.	mg/kg	6.	015400100P
Magnesium	540.	mg/kg	10.	015700100P
Manganese	28.	mg/kg	1.	015800100P
Mercury	< 0.05	mg/kg	0.05	015900100P
Nickel	< 5.	mg/kg	5.	016100100P
Potassium	540.	mg/kg	60.	016200100P
Silver	< 1.	mg/kg	1.	016600100P
Sodium	< 60.	mg/kg	60.	016700100P
Vanadium	9.	mg/kg	6.	017100100P
Zinc	9.	mg/kg	2.	017200100P
Cyanide, Total	< 0.1	mg/kg	0.1	023700100P
Arsenic (furnace method)	< 1.	mg/kg	1.	114500100P
Lead (furnace method)	2.4	mg/kg	0.6	115500100P
Selenium (furnace method)	< 0.6	mg/kg	0.6	116400100P
Thallium (furnace method)	< 1.	mg/kg	1.	117300100P
Moisture *AS RECEIVED*	14.1	% by wt.	0.1	135300100P

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American Association for Laboratory Accreditation
Technical Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300730

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477098
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PG B19/S3A 4-7' Matrix Spike Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
TCL Volatiles (Soil)		attached		117827000P
TCL Semi-Volatiles (Soil)		attached		120154000P
TCL Semi-Volatiles (Soil) cont		attached		120200000P
TCL Pesticides		attached		122528000P
N-Methyl Carbamates in Soil		attached		150915000P
Dioxin	See Below			900131000P

The analysis for dioxin was subcontracted to another laboratory.

Please refer to the data package for the complete report of this sample.

Malathion	300.	ug/kg	50.	900216500P
Pentachloronitrobenzene	3,340.	ug/kg	330.	900301000P

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Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301
024 03915 240.00 196500

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

390731

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477098
Date Reported 2/15/90
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Collected 1/ 3/90 by WS

PG B19/S3A 4-7' Matrix Spike Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/kg	10.	082700000P
Bromomethane	< 10.	ug/kg	10.	082800000P
Vinyl Chloride	< 10.	ug/kg	10.	082900000P
Chloroethane	< 10.	ug/kg	10.	083000000P
Methylene Chloride	13.	ug/kg	5.	083100000P
Acetone	64.	ug/kg	10.	091400000P
Carbon Disulfide	< 5.	ug/kg	5.	091500000P
1,1-Dichloroethene	63.	ug/kg	5.	118000000P
1,1-Dichloroethane	< 5.	ug/kg	5.	083300000P
1,2-Dichloroethene (total)	< 5.	ug/kg	5.	117900000P
Chloroform	< 5.	ug/kg	5.	083500000P
1,2-Dichloroethane	< 5.	ug/kg	5.	083600000P
2-Butanone	< 10.	ug/kg	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/kg	5.	083700000P
Carbon Tetrachloride	< 5.	ug/kg	5.	083800000P
Vinyl Acetate	< 10.	ug/kg	10.	091700000P
Bromodichloromethane	< 5.	ug/kg	5.	083900000P
1,2-Dichloropropane	< 5.	ug/kg	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/kg	5.	084400000P
Trichloroethene	51.	ug/kg	5.	118100000P
Dibromochloromethane	< 5.	ug/kg	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/kg	5.	084500000P
Benzene	51.	ug/kg	5.	118200000P
trans-1,3-Dichloropropene	< 5.	ug/kg	5.	084100000P
Bromoform	< 5.	ug/kg	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/kg	10.	091900000P
2-Hexanone	< 10.	ug/kg	10.	091800000P
Tetrachloroethene	< 5.	ug/kg	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/kg	5.	084900000P
Toluene	57.	ug/kg	5.	118300000P
Chlorobenzene	54.	ug/kg	5.	118400000P
Ethylbenzene	< 5.	ug/kg	5.	085200000P
Styrene	< 5.	ug/kg	5.	092000000P
Xylenes (total)	< 5.	ug/kg	5.	092100000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477098
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PG B19/S3A 4-7' Matrix Spike Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	5,650.	ug/kg	330.	118500000P
bis (2-chloroethyl) ether	< 330.	ug/kg	330.	066700000P
2-chlorophenol	5,140.	ug/kg	330.	118600000P
1,3-dichlorobenzene	< 330.	ug/kg	330.	067700000P
1,4-dichlorobenzene	2,980.	ug/kg	330.	118700000P
benzyl alcohol	< 330.	ug/kg	330.	092600000P
1,2-dichlorobenzene	< 330.	ug/kg	330.	067600000P
2-methylphenol	< 330.	ug/kg	330.	092700000P
bis (2-chloroisopropyl) ether	< 330.	ug/kg	330.	066800000P
4-methylphenol	< 330.	ug/kg	330.	092800000P
N-nitrosodi-n-propylamine	2,550.	ug/kg	330.	118800000P
hexachloroethane	< 330.	ug/kg	330.	069200000P
nitrobenzene	< 330.	ug/kg	330.	069600000P
isophorone	< 330.	ug/kg	330.	069400000P
2-nitrophenol	< 330.	ug/kg	330.	065100000P
2,4-dimethylphenol	< 330.	ug/kg	330.	064800000P
benzoic acid	< 1,700.	ug/kg	1,700.	092900000P
bis (2-chloroethoxy) methane	< 330.	ug/kg	330.	066600000P
2,4-dichlorophenol	< 330.	ug/kg	330.	064700000P
1,2,4-trichlorobenzene	3,040.	ug/kg	330.	118900000P
naphthalene	< 330.	ug/kg	330.	069500000P
4-chloroaniline	< 330.	ug/kg	330.	093000000P
hexachlorobutadiene	< 330.	ug/kg	330.	069000000P
4-chloro-3-methylphenol	5,630.	ug/kg	330.	119000000P
2-methylnaphthalene	< 330.	ug/kg	330.	093100000P
hexachlorocyclopentadiene	< 330.	ug/kg	330.	069100000P
2,4,6-trichlorophenol	< 330.	ug/kg	330.	065600000P
2,4,5-trichlorophenol	< 1,700.	ug/kg	1,700.	093200000P
2-chloronaphthalene	< 330.	ug/kg	330.	067200000P
2-nitroaniline	< 1,700.	ug/kg	1,700.	093300000P
dimethyl phthalate	< 330.	ug/kg	330.	068100000P
acenaphthylene	< 330.	ug/kg	330.	065800000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300733

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477098
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PG B19/S3A 4-7' Matrix Spike Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 1,700.	ug/kg	1,700.	093400000P
acenaphthene	3,150.	ug/kg	330.	119100000P
2,4-dinitrophenol	< 1,700.	ug/kg	1,700.	065000000P
4-nitrophenol	7,040.	ug/kg	830.	119200000P
dibenzofuran	< 330.	ug/kg	330.	093500000P
2,4-dinitrotoluene	3,050.	ug/kg	330.	119300000P
2,6-dinitrotoluene	< 330.	ug/kg	330.	068400000P
diethyl phthalate	< 330.	ug/kg	330.	068000000P
4-chlorophenyl phenyl ether	< 330.	ug/kg	330.	067300000P
fluorene	< 330.	ug/kg	330.	068800000P
4-nitroaniline	< 1,700.	ug/kg	1,700.	093600000P
2-methyl-4,6-dinitrophenol	< 1,700.	ug/kg	1,700.	064900000P
N-nitrosodiphenylamine	< 330.	ug/kg	330.	069900000P
4-bromophenyl phenyl ether	< 330.	ug/kg	330.	067000000P
hexachlorobenzene	< 330.	ug/kg	330.	068900000P
pentachlorophenol	7,300.	ug/kg	830.	119400000P
phenanthrene	< 330.	ug/kg	330.	070000000P
anthracene	< 330.	ug/kg	330.	065900000P
di-n-butyl phthalate	< 330.	ug/kg	330.	068200000P
fluoranthene	< 330.	ug/kg	330.	068700000P
pyrene	3,240.	ug/kg	330.	119500000P
butyl benzyl phthalate	< 330.	ug/kg	330.	067100000P
3,3'-dichlorobenzidine	< 670.	ug/kg	670.	067900000P
benzo (a) anthracene	< 330.	ug/kg	330.	066100000P
bis (2-ethylhexyl) phthalate	< 330.	ug/kg	330.	066900000P
chrysene	< 330.	ug/kg	330.	067400000P
di-n-octyl phthalate	< 330.	ug/kg	330.	068500000P
benzo (b) fluoranthene	< 330.	ug/kg	330.	066300000P
benzo (K) fluoranthene	< 330.	ug/kg	330.	066500000P
benzo (a) pyrene	< 330.	ug/kg	330.	066200000P
indeno (1,2,3-cd) pyrene	< 330.	ug/kg	330.	069300000P
dibenz (a,h) anthracene	< 330.	ug/kg	330.	067500000P
benzo (ghi) perylene	< 330.	ug/kg	330.	066400000P

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Chemical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

304734

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477098
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PG B19/S3A 4-7' Matrix Spike Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 8.	ug/kg	8.	060900000P
Beta BHC	< 8.	ug/kg	8.	061000000P
Delta BHC	< 8.	ug/kg	8.	061200000P
Gamma BHC - Lindane	55.	ug/kg	8.	121800000P
Heptachlor	66.	ug/kg	8.	121900000P
Aldrin	65.	ug/kg	8.	122000000P
Heptachlor Epoxide	< 8.	ug/kg	8.	061500000P
Endosulfan I	< 8.	ug/kg	8.	062700000P
Dieldrin	160.	ug/kg	16.	122200000P
DDE	< 16.	ug/kg	16.	061600000P
Endrin	170.	ug/kg	16.	122300000P
Endosulfan II	< 16.	ug/kg	16.	062800000P
DDD	18.	ug/kg	16.	061700000P
Endosulfan Sulfate	< 16.	ug/kg	16.	062900000P
DDT	160.	ug/kg	16.	122100000P
Endrin Ketone	< 16.	ug/kg	16.	093800000P
Methoxychlor	< 80.	ug/kg	80.	062100000P
Alpha Chlordane	< 80.	ug/kg	80.	136100000P
Gamma Chlordane	< 80.	ug/kg	80.	136200000P
Toxaphene	< 160.	ug/kg	160.	094200000P
PCB-1016	< 80.	ug/kg	80.	063900000P
PCB-1221	< 80.	ug/kg	80.	064000000P
PCB-1232	< 80.	ug/kg	80.	064100000P
PCB-1242	< 80.	ug/kg	80.	064200000P
PCB-1248	< 80.	ug/kg	80.	064300000P
PCB-1254	< 160.	ug/kg	160.	064400000P
PCB-1260	< 160.	ug/kg	160.	064500000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

American Association for Laboratory Accreditation
Technical, Biological & Environmental Fields of Testing

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477098
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PG B19/S3A 4-7' Matrix Spike Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	1,500.	ug/kg	100.	134500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477099
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

Continuation of LLI #1477098 PG B19/S3A 4-7'
Matrix Spike Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	3,780.	mg/kg	20.	014301400P
Antimony	15.	mg/kg	5.	014401400P
Barium	140.	mg/kg	20.	014601400P
Beryllium	3.4	mg/kg	0.5	014701400P
Cadmium	3.1	mg/kg	0.5	014901400P
Calcium	520.	mg/kg	10.	015001400P
Chromium	22.	mg/kg	1.	015101400P
Cobalt	32.	mg/kg	5.	015201400P
Copper	18.	mg/kg	2.	015301400P
Iron	4,370.	mg/kg	5.	015401400P
Magnesium	730.	mg/kg	10.	015701400P
Manganese	56.	mg/kg	1.	015801400P
Mercury	0.16	mg/kg	0.04	015903500P
Nickel	34.	mg/kg	4.	016101400P
Potassium	1,080.	mg/kg	50.	016201400P
Silver	3.	mg/kg	1.	016601400P
Sodium	260.	mg/kg	50.	016701400P
Vanadium	41.	mg/kg	5.	017101400P
Zinc	36.	mg/kg	2.	017201400P
Cyanide, Total	9.4	mg/kg	0.1	023704000P
Arsenic (furnace method)	3.	mg/kg	1.	114504000P
Lead (furnace method)	3.1	mg/kg	0.5	115504000P
Selenium (furnace method)	0.5	mg/kg	0.5	116404000P
Thallium (furnace method)	3.	mg/kg	1.	117304000P

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Questions? Contact Environmental Technical Services at (717) 656-2301
024 03915 90.00 057700

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

American Association for Laboratory Accreditation
Biological & Environmental Fields of Testing

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477100
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PG B19/S3A 4-7' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Volatiles (Soil)		attached		117827000P
TCL Semi-Volatiles (Soil)		attached		120127000P
TCL Semi-Volatiles (Soil) cont		attached		120227000P
TCL Pesticides		attached		122527000P
Moisture *AS RECEIVED*	14.6	% by wt.	0.1	135327000P
pH	6.33		0.01	144127000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150927000P
Dioxin	0.00000			900131000P
The analysis for dioxin was subcontracted to another laboratory.				
Please refer to the data package for the complete report of this sample.				
Malathion	500.	ug/kg	60.	900216500P
Pentachloronitrobenzene	3,880.	ug/kg	390.	900301000P

This sample functions as a matrix spike duplicate for organic compounds and as a duplicate for inorganic compounds. This means that for quality control purposes, inorganic compounds will be compared with the unspiked sample and organic compounds will be spiked with known concentrations of analyte for comparison with the matrix spike sample.

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Revieved and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477100
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PG B19/S3A 4-7' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 12.	ug/kg	12.	082700000P
Bromomethane	< 12.	ug/kg	12.	082800000P
Vinyl Chloride	< 12.	ug/kg	12.	082900000P
Chloroethane	< 12.	ug/kg	12.	083000000P
Methylene Chloride	57.	ug/kg	6.	083100000P
Acetone	97.	ug/kg	12.	091400000P
Carbon Disulfide	< 6.	ug/kg	6.	091500000P
1,1-Dichloroethene	62.	ug/kg	6.	118000000P
1,1-Dichloroethane	< 6.	ug/kg	6.	083300000P
1,2-Dichloroethene (total)	< 6.	ug/kg	6.	117900000P
Chloroform	< 6.	ug/kg	6.	083500000P
1,2-Dichloroethane	< 6.	ug/kg	6.	083600000P
2-Butanone	< 12.	ug/kg	12.	091600000P
1,1,1-Trichloroethane	< 6.	ug/kg	6.	083700000P
Carbon Tetrachloride	< 6.	ug/kg	6.	083800000P
Vinyl Acetate	< 12.	ug/kg	12.	091700000P
Bromodichloromethane	< 6.	ug/kg	6.	083900000P
1,2-Dichloropropane	< 6.	ug/kg	6.	084000000P
cis-1,3-Dichloropropene	< 6.	ug/kg	6.	084400000P
Trichloroethene	62.	ug/kg	6.	118100000P
Dibromochloromethane	< 6.	ug/kg	6.	084600000P
1,1,2-Trichloroethane	< 6.	ug/kg	6.	084500000P
Benzene	61.	ug/kg	6.	118200000P
trans-1,3-Dichloropropene	< 6.	ug/kg	6.	084100000P
Bromoform	< 6.	ug/kg	6.	084700000P
4-Methyl-2-Pentanone	< 12.	ug/kg	12.	091900000P
2-Hexanone	< 12.	ug/kg	12.	091800000P
Tetrachloroethene	< 6.	ug/kg	6.	084800000P
1,1,2,2-Tetrachloroethane	< 6.	ug/kg	6.	084900000P
Toluene	67.	ug/kg	6.	118300000P
Chlorobenzene	66.	ug/kg	6.	118400000P
Ethylbenzene	< 6.	ug/kg	6.	085200000P
Styrene	< 6.	ug/kg	6.	092000000P
Xylenes (total)	< 6.	ug/kg	6.	092100000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Revieved and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

American Council of Independent Laboratories, Inc.

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477100
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PG B19/S3A 4-7' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
phenol	6,760.	ug/kg	390.	118500000P
bis (2-chloroethyl) ether	< 390.	ug/kg	390.	066700000P
2-chlorophenol	6,230.	ug/kg	390.	118600000P
1,3-dichlorobenzene	< 390.	ug/kg	390.	067700000P
1,4-dichlorobenzene	3,600.	ug/kg	390.	118700000P
benzyl alcohol	< 390.	ug/kg	390.	092600000P
1,2-dichlorobenzene	< 390.	ug/kg	390.	067600000P
2-methylphenol	< 390.	ug/kg	390.	092700000P
bis (2-chloroisopropyl) ether	< 390.	ug/kg	390.	066800000P
4-methylphenol	< 390.	ug/kg	390.	092800000P
N-nitrosodi-n-propylamine	3,080.	ug/kg	390.	118800000P
hexachloroethane	< 390.	ug/kg	390.	069200000P
nitrobenzene	< 390.	ug/kg	390.	069600000P
isophorone	< 390.	ug/kg	390.	069400000P
2-nitrophenol	< 390.	ug/kg	390.	065100000P
2,4-dimethylphenol	< 390.	ug/kg	390.	064800000P
benzoic acid	< 2,000.	ug/kg	2,000.	092900000P
bis (2-chloroethoxy) methane	< 390.	ug/kg	390.	066600000P
2,4-dichlorophenol	< 390.	ug/kg	390.	064700000P
1,2,4-trichlorobenzene	3,640.	ug/kg	390.	118900000P
naphthalene	< 390.	ug/kg	390.	069500000P
4-chloroaniline	< 390.	ug/kg	390.	093000000P
hexachlorobutadiene	< 390.	ug/kg	390.	069000000P
4-chloro-3-methylphenol	6,620.	ug/kg	390.	119000000P
2-methylnaphthalene	< 390.	ug/kg	390.	093100000P
hexachlorocyclopentadiene	< 390.	ug/kg	390.	069100000P
2,4,6-trichlorophenol	< 390.	ug/kg	390.	065600000P
2,4,5-trichlorophenol	< 2,000.	ug/kg	2,000.	093200000P
2-chloronaphthalene	< 390.	ug/kg	390.	067200000P
2-nitroaniline	< 2,000.	ug/kg	2,000.	093300000P
dimethyl phthalate	< 390.	ug/kg	390.	068100000P
acenaphthylene	< 390.	ug/kg	390.	065800000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

American Association for Laboratory Accreditation
Chemical & Environmental Tests & Testing

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477100
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PG B19/S3A 4-7' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 2,000.	ug/kg	2,000.	093400000P
acenaphthene	3,700.	ug/kg	390.	119100000P
2,4-dinitrophenol	< 2,000.	ug/kg	2,000.	065000000P
4-nitrophenol	8,900.	ug/kg	970.	119200000P
dibenzofuran	< 390.	ug/kg	390.	093500000P
2,4-dinitrotoluene	3,630.	ug/kg	390.	119300000P
2,6-dinitrotoluene	< 390.	ug/kg	390.	068400000P
diethyl phthalate	< 390.	ug/kg	390.	068000000P
4-chlorophenyl phenyl ether	< 390.	ug/kg	390.	067300000P
fluorene	< 390.	ug/kg	390.	068800000P
4-nitroaniline	< 2,000.	ug/kg	2,000.	093600000P
2-methyl-4,6-dinitrophenol	< 2,000.	ug/kg	2,000.	064900000P
N-nitrosodiphenylamine	< 390.	ug/kg	390.	069900000P
4-bromophenyl phenyl ether	< 390.	ug/kg	390.	067000000P
hexachlorobenzene	< 390.	ug/kg	390.	068900000P
pentachlorophenol	8,880.	ug/kg	970.	119400000P
phenanthrene	< 390.	ug/kg	390.	070000000P
anthracene	< 390.	ug/kg	390.	065900000P
di-n-butyl phthalate	< 390.	ug/kg	390.	068200000P
fluoranthene	< 390.	ug/kg	390.	068700000P
pyrene	3,690.	ug/kg	390.	119500000P
butyl benzyl phthalate	< 390.	ug/kg	390.	067100000P
3,3'-dichlorobenzidine	< 780.	ug/kg	780.	067900000P
benzo (a) anthracene	< 390.	ug/kg	390.	066100000P
bis (2-ethylhexyl) phthalate	< 390.	ug/kg	390.	066900000P
chrysene	< 390.	ug/kg	390.	067400000P
di-n-octyl phthalate	< 390.	ug/kg	390.	068500000P
benzo (b) fluoranthene	< 390.	ug/kg	390.	066300000P
benzo (K) fluoranthene	< 390.	ug/kg	390.	066500000P
benzo (a) pyrene	< 390.	ug/kg	390.	066200000P
indeno (1,2,3-cd) pyrene	< 390.	ug/kg	390.	069300000P
dibenz (a,h) anthracene	< 390.	ug/kg	390.	067500000P
benzo (ghi) perylene	< 390.	ug/kg	390.	066400000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

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PG B19/S3A 4-7' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

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TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 9.	ug/kg	9.	060900000P
Beta BHC	< 9.	ug/kg	9.	061000000P
Delta BHC	< 9.	ug/kg	9.	061200000P
Gamma BHC - Lindane	62.	ug/kg	9.	121800000P
Heptachlor	76.	ug/kg	9.	121900000P
Aldrin	75.	ug/kg	9.	122000000P
Heptachlor Epoxide	< 9.	ug/kg	9.	061500000P
Endosulfan I	< 9.	ug/kg	9.	062700000P
Dieldrin	187.	ug/kg	19.	122200000P
DDE	< 19.	ug/kg	19.	061600000P
Endrin	199.	ug/kg	19.	122300000P
Endosulfan II	< 19.	ug/kg	19.	062800000P
DDD	< 19.	ug/kg	19.	061700000P
Endosulfan Sulfate	< 19.	ug/kg	19.	062900000P
DDT	187.	ug/kg	19.	122100000P
Endrin Ketone	< 19.	ug/kg	19.	093800000P
Methoxychlor	< 90.	ug/kg	90.	062100000P
Alpha Chlordane	< 90.	ug/kg	90.	136100000P
Gamma Chlordane	< 90.	ug/kg	90.	136200000P
Toxaphene	< 190.	ug/kg	190.	094200000P
PCB-1016	< 90.	ug/kg	90.	063900000P
PCB-1221	< 90.	ug/kg	90.	064000000P
PCB-1232	< 90.	ug/kg	90.	064100000P
PCB-1242	< 90.	ug/kg	90.	064200000P
PCB-1248	< 90.	ug/kg	90.	064300000P
PCB-1254	< 190.	ug/kg	190.	064400000P
PCB-1260	< 190.	ug/kg	190.	064500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

American Association for Laboratory Accreditation
Federal Biological & Environmental Fields of Testing

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300742

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477100
Date Reported 2/15/90
Date Submitted 1/ 5/90
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PG B19/S3A 4-7' Matrix Spike Dup. & Duplicate
Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	1,900.	ug/kg	100.	134500000P

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Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300743

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477101
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

Continuation of LLI #1477100 PG B19/S3A 4-7'
Matrix Spike Dup. & Duplicate Soil Sample
Collected on 01/04/90 at 0830 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Aluminum	4,330.	mg/kg	20.	014300100P
Antimony	< 6.	mg/kg	6.	014400100P
Barium	< 20.	mg/kg	20.	014600100P
Beryllium	< 0.6	mg/kg	0.6	014700100P
Cadmium	< 0.6	mg/kg	0.6	014900100P
Calcium	340.	mg/kg	10.	015000100P
Chromium	11.	mg/kg	1.	015100100P
Cobalt	< 6.	mg/kg	6.	015200100P
Copper	3.	mg/kg	2.	015300100P
Iron	5,090.	mg/kg	6.	015400100P
Magnesium	730.	mg/kg	10.	015700100P
Manganese	30.	mg/kg	1.	015800100P
Mercury	< 0.05	mg/kg	0.05	015900100P
Nickel	< 5.	mg/kg	5.	016100100P
Potassium	970.	mg/kg	60.	016200100P
Silver	< 1.	mg/kg	1.	016600100P
Sodium	< 60.	mg/kg	60.	016700100P
Vanadium	12.	mg/kg	6.	017100100P
Zinc	9.	mg/kg	2.	017200100P
Cyanide, Total	< 0.1	mg/kg	0.1	023700100P
Arsenic (furnace method)	< 1.	mg/kg	1.	114500100P
Lead (furnace method)	2.6	mg/kg	0.6	115500100P
Selenium (furnace method)	< 0.6	mg/kg	0.6	116400100P
Thallium (furnace method)	< 1.	mg/kg	1.	117300100P
Moisture *AS RECEIVED*	14.6	% by wt.	0.1	135300100P

This sample functions as a matrix spike duplicate for organic compounds and as a duplicate for inorganic compounds. This means that for quality control purposes, inorganic compounds will be compared with the unspiked sample and organic compounds will be spiked with known concentrations of analyte for comparison with the matrix spike sample.

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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300744

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476737
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG B19/S6 10-12' Soil Sample
Collected on 01/04/90 at 0900 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	27.1	% by wt.	0.1	135330000P
pH	7.53		0.01	144130000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 70.	ug/kg	70.	900116500P
Pentachloronitrobenzene	< 450.	ug/kg	450.	900230000P

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Chemical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300745

ANALYSIS REPORT

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PPG B19/S6 10-12' Soil Sample
Collected on 01/04/90 at 0900 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 10.	ug/kg	10.	060900000P
Beta BHC	< 10.	ug/kg	10.	061000000P
Delta BHC	< 10.	ug/kg	10.	061200000P
Gamma BHC - Lindane	< 10.	ug/kg	10.	121800000P
Heptachlor	< 10.	ug/kg	10.	121900000P
Aldrin	< 10.	ug/kg	10.	122000000P
Heptachlor Epoxide	< 10.	ug/kg	10.	061500000P
Endosulfan I	< 10.	ug/kg	10.	062700000P
Dieldrin	< 22.	ug/kg	22.	122200000P
DDE	< 22.	ug/kg	22.	061600000P
Endrin	< 22.	ug/kg	22.	122300000P
Endosulfan II	< 22.	ug/kg	22.	062800000P
DDD	< 22.	ug/kg	22.	061700000P
Endosulfan Sulfate	< 22.	ug/kg	22.	062900000P
DDT	< 22.	ug/kg	22.	122100000P
Endrin Ketone	< 22.	ug/kg	22.	093800000P
Methoxychlor	< 100.	ug/kg	100.	062100000P
Alpha Chlordane	< 100.	ug/kg	100.	136100000P
Gamma Chlordane	< 100.	ug/kg	100.	136200000P
Toxaphene	< 220.	ug/kg	220.	094200000P
PCB-1016	< 100.	ug/kg	100.	063900000P
PCB-1221	< 100.	ug/kg	100.	064000000P
PCB-1232	< 100.	ug/kg	100.	064100000P
PCB-1242	< 100.	ug/kg	100.	064200000P
PCB-1248	< 100.	ug/kg	100.	064300000P
PCB-1254	< 220.	ug/kg	220.	064400000P
PCB-1260	< 220.	ug/kg	220.	064500000P

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300746

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N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Group Leader, Pesticides/PCB's

300747

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477193
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG SS-1 0.75-1' Soil Sample
Collected on 01/07/90 at 1220 by AT/BS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	15.0	% by wt.	0.1	135330000P
pH	5.87		0.01	144130000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 390.	ug/kg	390.	900230000P

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Group Leader, Pesticides/PCB's

300748

ANALYSIS REPORT

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Monroeville PA 15146

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PPG SS-1 0.75-1' Soil Sample
Collected on 01/07/90 at 1220 by AT/BS

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Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 90.	ug/kg	90.	060900000P
Beta BHC	180.	ug/kg	90.	061000000P
Delta BHC	< 90.	ug/kg	90.	061200000P
Gamma BHC - Lindane	< 90.	ug/kg	90.	121800000P
Heptachlor	< 90.	ug/kg	90.	121900000P
Aldrin	< 90.	ug/kg	90.	122000000P
Heptachlor Epoxide	< 90.	ug/kg	90.	061500000P
Endosulfan I	< 90.	ug/kg	90.	062700000P
Dieldrin	< 190.	ug/kg	190.	122200000P
DDE	720.	ug/kg	190.	061600000P
Endrin	< 190.	ug/kg	190.	122300000P
Endosulfan II	< 190.	ug/kg	190.	062800000P
DDD	< 190.	ug/kg	190.	061700000P
Endosulfan Sulfate	< 190.	ug/kg	190.	062900000P
DDT	2,710.	ug/kg	190.	122100000P
Endrin Ketone	< 190.	ug/kg	190.	093800000P
Methoxychlor	< 900.	ug/kg	900.	062100000P
Alpha Chlordane	< 900.	ug/kg	900.	136100000P
Gamma Chlordane	< 900.	ug/kg	900.	136200000P
Toxaphene	< 1,900.	ug/kg	1,900.	094200000P
PCB-1016	< 900.	ug/kg	900.	063900000P
PCB-1221	< 900.	ug/kg	900.	064000000P
PCB-1232	< 900.	ug/kg	900.	064100000P
PCB-1242	< 900.	ug/kg	900.	064200000P
PCB-1248	< 900.	ug/kg	900.	064300000P
PCB-1254	< 1,900.	ug/kg	1,900.	064400000P
PCB-1260	< 1,900.	ug/kg	1,900.	064500000P

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Group Leader, Pesticides/PCB's

300749

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
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LLI Sample No. SW 1477193
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Collected on 01/07/90 at 1220 by AT/BS

P.O. 89-595
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N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Group Leader, Pesticides/PCB's

300750

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

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300 Oxford Drive
Monroeville PA 15146

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Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG SS-2 0.75-1' Soil Sample
Collected on 01/07/90 at 1230 by AT/BS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	14.4	% by wt.	0.1	135330000P
pH	5.47		0.01	144130000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 390.	ug/kg	390.	900230000P

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Group Leader, Pesticides/PCB's

300751

ANALYSIS REPORT

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Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG SS-2 0.75-1' Soil Sample
Collected on 01/07/90 at 1230 by AT/BS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 1,400.	ug/kg	1,400.	060900000P
Beta BHC	< 1,400.	ug/kg	1,400.	061000000P
Delta BHC	< 1,400.	ug/kg	1,400.	061200000P
Gamma BHC - Lindane	< 1,400.	ug/kg	1,400.	121800000P
Heptachlor	< 1,400.	ug/kg	1,400.	121900000P
Aldrin	< 1,400.	ug/kg	1,400.	122000000P
Heptachlor Epoxide	< 1,400.	ug/kg	1,400.	061500000P
Endosulfan I	< 1,400.	ug/kg	1,400.	062700000P
Dieldrin	< 2,800.	ug/kg	2,800.	122200000P
DDE	< 2,800.	ug/kg	2,800.	061600000P
Endrin	< 2,800.	ug/kg	2,800.	122300000P
Endosulfan II	< 2,800.	ug/kg	2,800.	062800000P
DDD	< 2,800.	ug/kg	2,800.	061700000P
Endosulfan Sulfate	< 2,800.	ug/kg	2,800.	062900000P
DDT	23,400.	ug/kg	2,800.	122100000P
Endrin Ketone	< 2,800.	ug/kg	2,800.	093800000P
Methoxychlor	< 14,000.	ug/kg	14,000.	062100000P
Alpha Chlordane	< 14,000.	ug/kg	14,000.	136100000P
Gamma Chlordane	< 14,000.	ug/kg	14,000.	136200000P
Toxaphene	< 28,000.	ug/kg	28,000.	094200000P
PCB-1016	< 14,000.	ug/kg	14,000.	063900000P
PCB-1221	< 14,000.	ug/kg	14,000.	064000000P
PCB-1232	< 14,000.	ug/kg	14,000.	064100000P
PCB-1242	< 14,000.	ug/kg	14,000.	064200000P
PCB-1248	< 14,000.	ug/kg	14,000.	064300000P
PCB-1254	< 28,000.	ug/kg	28,000.	064400000P
PCB-1260	< 28,000.	ug/kg	28,000.	064500000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300752

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477194
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG SS-2 0.75-1' Soil Sample
Collected on 01/07/90 at 1230 by AT/BS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300753

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477195
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG SS-3A 0.75-1' Soil Sample
Collected on 01/07/90 at 1235 by AT/BS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	21.2	% by wt.	0.1	135330000P
pH	4.92		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 600.	ug/kg	600.	900116500P
Pentachloronitrobenzene	< 6,300.	ug/kg	6,300.	900230000P

Internal standard peak areas were outside of QC limits for both the initial injection and the re-injection. The values reported here are from the initial injection of the sample.
The quantitation limits were increased due to the high concentration of non-target compounds.

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Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300754

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477195
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG SS-3A 0.75-1' Soil Sample
Collected on 01/07/90 at 1235 by AT/BS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 150,000.	ug/kg	150,000.	060900000P
Beta BHC	< 150,000.	ug/kg	150,000.	061000000P
Delta BHC	< 150,000.	ug/kg	150,000.	061200000P
Gamma BHC - Lindane	< 150,000.	ug/kg	150,000.	121800000P
Heptachlor	< 150,000.	ug/kg	150,000.	121900000P
Aldrin	< 150,000.	ug/kg	150,000.	122000000P
Heptachlor Epoxide	< 150,000.	ug/kg	150,000.	061500000P
Endosulfan I	< 150,000.	ug/kg	150,000.	062700000P
Dieldrin	< 300,000.	ug/kg	300,000.	122200000P
DDE	< 300,000.	ug/kg	300,000.	061600000P
Endrin	< 300,000.	ug/kg	300,000.	122300000P
Endosulfan II	< 300,000.	ug/kg	300,000.	062800000P
DDD	< 300,000.	ug/kg	300,000.	061700000P
Endosulfan Sulfate	< 300,000.	ug/kg	300,000.	062900000P
DDT	14,000.	mg/kg	3,000.	122100000P
Endrin Ketone	< 300,000.	ug/kg	300,000.	093800000P
Methoxychlor	< 1,500,000.	ug/kg	1,500,000.	062100000P
Alpha Chlordane	< 1,500,000.	ug/kg	1,500,000.	136100000P
Gamma Chlordane	< 1,500,000.	ug/kg	1,500,000.	136200000P
Toxaphene	< 3,000,000.	ug/kg	3,000,000.	094200000P
PCB-1016	< 1,500,000.	ug/kg	1,500,000.	063900000P
PCB-1221	< 1,500,000.	ug/kg	1,500,000.	064000000P
PCB-1232	< 1,500,000.	ug/kg	1,500,000.	064100000P
PCB-1242	< 1,500,000.	ug/kg	1,500,000.	064200000P
PCB-1248	< 1,500,000.	ug/kg	1,500,000.	064300000P
PCB-1254	< 3,000,000.	ug/kg	3,000,000.	064400000P
PCB-1260	< 3,000,000.	ug/kg	3,000,000.	064500000P

The result for 4,4'-DDT is reported in mg/kg since the value in ug/kg is too large for the computer system to process.

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300755

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477195
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG SS-3A 0.75-1' Soil Sample
Collected on 01/07/90 at 1235 by AT/BS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 1,000.	ug/kg	1,000.	134500000P

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Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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Chemical, Biological & Environmental Fields of Testing

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477196
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG SS-3B 0.75-1' Soil Sample
Collected on 01/07/90 at 1235 by AT/BS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	22.8	% by wt.	0.1	135330000P
pH	5.01		0.01	144130000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 6,500.	ug/kg	6,500.	900230000P
The quantitation limits were increased due to the high concentration of non-target compounds.				

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Reviewed and Approved by:

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Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477196
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG SS-3B 0.75-1' Soil Sample
Collected on 01/07/90 at 1235 by AT/BS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 160,000.	ug/kg	160,000.	060900000P
Beta BHC	< 160,000.	ug/kg	160,000.	061000000P
Delta BHC	< 160,000.	ug/kg	160,000.	061200000P
Gamma BHC - Lindane	< 160,000.	ug/kg	160,000.	121800000P
Heptachlor	< 160,000.	ug/kg	160,000.	121900000P
Aldrin	< 160,000.	ug/kg	160,000.	122000000P
Heptachlor Epoxide	< 160,000.	ug/kg	160,000.	061500000P
Endosulfan I	< 160,000.	ug/kg	160,000.	062700000P
Dieldrin	< 310,000.	ug/kg	310,000.	122200000P
DDE	< 310,000.	ug/kg	310,000.	061600000P
Endrin	< 310,000.	ug/kg	310,000.	122300000P
Endosulfan II	< 310,000.	ug/kg	310,000.	062800000P
DDD	1,940.	mg/kg	310.	061700000P
Endosulfan Sulfate	< 310,000.	ug/kg	310,000.	062900000P
DDT	27,200.	mg/kg	3,100.	122100000P
Endrin Ketone	< 310,000.	ug/kg	310,000.	093800000P
Methoxychlor	< 1,600,000.	ug/kg	1,600,000.	062100000P
Alpha Chlordane	< 1,600,000.	ug/kg	1,600,000.	136100000P
Gamma Chlordane	< 1,600,000.	ug/kg	1,600,000.	136200000P
Toxaphene	< 3,100,000.	ug/kg	3,100,000.	094200000P
PCB-1016	< 1,600,000.	ug/kg	1,600,000.	063900000P
PCB-1221	< 1,600,000.	ug/kg	1,600,000.	064000000P
PCB-1232	< 1,600,000.	ug/kg	1,600,000.	064100000P
PCB-1242	< 1,600,000.	ug/kg	1,600,000.	064200000P
PCB-1248	< 1,600,000.	ug/kg	1,600,000.	064300000P
PCB-1254	< 3,100,000.	ug/kg	3,100,000.	064400000P
PCB-1260	< 3,100,000.	ug/kg	3,100,000.	064500000P

The results for 4,4'-DDD and 4,4'-DDT are reported in mg/kg since the values in ug/kg are too large for the computer system to process.

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

American Council of Independent Laboratories, Inc.

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300758

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477196
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG SS-3B 0.75-1' Soil Sample
Collected on 01/07/90 at 1235 by AT/BS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 1,000.	ug/kg	1,000.	134500000P

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Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300759

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477197
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG SS-4A 0.75-1' Soil Sample
Collected on 01/07/90 at 1237 by AT/BS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	32.4	% by wt.	0.1	135330000P
pH	9.81		0.01	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 70.	ug/kg	70.	900116500P
Pentachloronitrobenzene	< 2,500.	ug/kg	2,500.	900230000P

The quantitation limits were increased due to the high concentration of non-target compounds.

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Group Leader, Pesticides/PCB's

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Technical, Biological & Environmental Fields of Testing

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ANALYSIS REPORT

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2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
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Monroeville PA 15146

LLI Sample No. SW 1477197
Date Reported 2/15/90
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Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG SS-4A 0.75-1' Soil Sample
Collected on 01/07/90 at 1237 by AT/BS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 18,000.	ug/kg	18,000.	060900000P
Beta BHC	< 18,000.	ug/kg	18,000.	061000000P
Delta BHC	< 18,000.	ug/kg	18,000.	061200000P
Gamma BHC - Lindane	< 18,000.	ug/kg	18,000.	121800000P
Heptachlor	< 18,000.	ug/kg	18,000.	121900000P
Aldrin	< 18,000.	ug/kg	18,000.	122000000P
Heptachlor Epoxide	< 18,000.	ug/kg	18,000.	061500000P
Endosulfan I	< 18,000.	ug/kg	18,000.	062700000P
Dieldrin	< 36,000.	ug/kg	36,000.	122200000P
DDE	< 36,000.	ug/kg	36,000.	061600000P
Endrin	< 36,000.	ug/kg	36,000.	122300000P
Endosulfan II	< 36,000.	ug/kg	36,000.	062800000P
DDD	< 36,000.	ug/kg	36,000.	061700000P
Endosulfan Sulfate	< 36,000.	ug/kg	36,000.	062900000P
DDT	1,240,000.	ug/kg	36,000.	122100000P
Endrin Ketone	< 36,000.	ug/kg	36,000.	093800000P
Methoxychlor	< 180,000.	ug/kg	180,000.	062100000P
Alpha Chlordane	< 180,000.	ug/kg	180,000.	136100000P
Gamma Chlordane	< 180,000.	ug/kg	180,000.	136200000P
Toxaphene	< 360,000.	ug/kg	360,000.	094200000P
PCB-1016	< 180,000.	ug/kg	180,000.	063900000P
PCB-1221	< 180,000.	ug/kg	180,000.	064000000P
PCB-1232	< 180,000.	ug/kg	180,000.	064100000P
PCB-1242	< 180,000.	ug/kg	180,000.	064200000P
PCB-1248	< 180,000.	ug/kg	180,000.	064300000P
PCB-1254	< 360,000.	ug/kg	360,000.	064400000P
PCB-1260	< 360,000.	ug/kg	360,000.	064500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300761

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477197
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG SS-4A 0.75-1' Soil Sample
Collected on 01/07/90 at 1237 by AT/BS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 1,000.	ug/kg	1,000.	134500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300762

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477198
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG SS-4B 0.75-1' Soil Sample
Collected on 01/07/90 at 1237 by AT/BS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	33.6	% by wt.	0.1	135330000P
pH	10.1		0.02	144130000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.

N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 80.	ug/kg	80.	900116500P
Pentachloronitrobenzene	< 2,600.	ug/kg	2,600.	900230000P

Internal standard peak areas were outside of QC limits for both the initial injection and the re-injection. The values reported here are from the initial injection of the sample.
The quantitation limits were increased due to the high concentration of non-target compounds.

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300763

ANALYSIS REPORT

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2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477198
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG SS-4B 0.75-1' Soil Sample
Collected on 01/07/90 at 1237 by AT/BS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 18,000.	ug/kg	18,000.	060900000P
Beta BHC	< 18,000.	ug/kg	18,000.	061000000P
Delta BHC	< 18,000.	ug/kg	18,000.	061200000P
Gamma BHC - Lindane	< 18,000.	ug/kg	18,000.	121800000P
Heptachlor	< 18,000.	ug/kg	18,000.	121900000P
Aldrin	< 18,000.	ug/kg	18,000.	122000000P
Heptachlor Epoxide	< 18,000.	ug/kg	18,000.	061500000P
Endosulfan I	< 18,000.	ug/kg	18,000.	062700000P
Dieldrin	< 36,000.	ug/kg	36,000.	122200000P
DDE	226,000.	ug/kg	36,000.	061600000P
Endrin	< 36,000.	ug/kg	36,000.	122300000P
Endosulfan II	< 36,000.	ug/kg	36,000.	062800000P
DDD	< 36,000.	ug/kg	36,000.	061700000P
Endosulfan Sulfate	< 36,000.	ug/kg	36,000.	062900000P
DDT	1,300,000.	ug/kg	36,000.	122100000P
Endrin Ketone	< 36,000.	ug/kg	36,000.	093800000P
Methoxychlor	< 180,000.	ug/kg	180,000.	062100000P
Alpha Chlordane	< 180,000.	ug/kg	180,000.	136100000P
Gamma Chlordane	< 180,000.	ug/kg	180,000.	136200000P
Toxaphene	< 360,000.	ug/kg	360,000.	094200000P
PCB-1016	< 180,000.	ug/kg	180,000.	063900000P
PCB-1221	< 180,000.	ug/kg	180,000.	064000000P
PCB-1232	< 180,000.	ug/kg	180,000.	064100000P
PCB-1242	< 180,000.	ug/kg	180,000.	064200000P
PCB-1248	< 180,000.	ug/kg	180,000.	064300000P
PCB-1254	< 360,000.	ug/kg	360,000.	064400000P
PCB-1260	< 360,000.	ug/kg	360,000.	064500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300764

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477198
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG SS-4B 0.75-1' Soil Sample
Collected on 01/07/90 at 1237 by AT/BS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 2,000.	ug/kg	2,000.	134500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

American Association for Laboratory Accreditation
Environmental Biological & Environmental Tests of Testing

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300765

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477190
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B20/S3A 4-7' Soil Sample
Collected on 01/06/90 at 1305 by AT/BS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
VOA GC/MS Library Search		attached		089001000P
TCL Volatiles (Soil)		attached		117801000P
TCL Semi-Volatiles (Soil)		attached		120101000P
TCL Semi-Volatiles (Soil) cont		attached		120201000P
TCL Pesticides		attached		122501000P
Moisture *AS RECEIVED*	8.3	% by wt.	0.1	135301000P
pH	4.30		0.01	144101000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150901000P
Dioxin	0.00000			900131000P
The analysis for dioxin was subcontracted to another laboratory. 2,3,7,8-TCDD was not detected in the sample. Please refer to the data package for the complete report.				
Malathion	< 50.	ug/kg	50.	900216500P
Pentachloronitrobenzene	< 360.	ug/kg	360.	900301000P

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300766

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477190
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B20/S3A 4-7' Soil Sample
Collected on 01/06/90 at 1305 by AT/BS

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 11.	ug/kg	11.	082700000P
Bromomethane	< 11.	ug/kg	11.	082800000P
Vinyl Chloride	< 11.	ug/kg	11.	082900000P
Chloroethane	< 11.	ug/kg	11.	083000000P
Methylene Chloride	< 5.	ug/kg	5.	083100000P
Acetone	46.	ug/kg	11.	091400000P
Carbon Disulfide	< 5.	ug/kg	5.	091500000P
1,1-Dichloroethene	< 5.	ug/kg	5.	118000000P
1,1-Dichloroethane	< 5.	ug/kg	5.	083300000P
1,2-Dichloroethene (total)	< 5.	ug/kg	5.	117900000P
Chloroform	< 5.	ug/kg	5.	083500000P
1,2-Dichloroethane	< 5.	ug/kg	5.	083600000P
2-Butanone	< 11.	ug/kg	11.	091600000P
1,1,1-Trichloroethane	< 5.	ug/kg	5.	083700000P
Carbon Tetrachloride	< 5.	ug/kg	5.	083800000P
Vinyl Acetate	< 11.	ug/kg	11.	091700000P
Bromodichloromethane	< 5.	ug/kg	5.	083900000P
1,2-Dichloropropane	< 5.	ug/kg	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/kg	5.	084400000P
Trichloroethene	< 5.	ug/kg	5.	118100000P
Dibromochloromethane	< 5.	ug/kg	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/kg	5.	084500000P
Benzene	< 5.	ug/kg	5.	118200000P
trans-1,3-Dichloropropene	< 5.	ug/kg	5.	084100000P
Bromoform	< 5.	ug/kg	5.	084700000P
4-Methyl-2-Pentanone	< 11.	ug/kg	11.	091900000P
2-Hexanone	< 11.	ug/kg	11.	091800000P
Tetrachloroethene	< 5.	ug/kg	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/kg	5.	084900000P
Toluene	< 5.	ug/kg	5.	118300000P
Chlorobenzene	< 5.	ug/kg	5.	118400000P
Ethylbenzene	< 5.	ug/kg	5.	085200000P
Styrene	< 5.	ug/kg	5.	092000000P
Xylenes (total)	< 5.	ug/kg	5.	092100000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

300767

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477190
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B20/S3A 4-7' Soil Sample
Collected on 01/06/90 at 1305 by AT/BS

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
phenol	< 360.	ug/kg	360.	118500000P
bis (2-chloroethyl) ether	< 360.	ug/kg	360.	066700000P
2-chlorophenol	< 360.	ug/kg	360.	118600000P
1,3-dichlorobenzene	< 360.	ug/kg	360.	067700000P
1,4-dichlorobenzene	< 360.	ug/kg	360.	118700000P
benzyl alcohol	< 360.	ug/kg	360.	092600000P
1,2-dichlorobenzene	< 360.	ug/kg	360.	067600000P
2-methylphenol	< 360.	ug/kg	360.	092700000P
bis (2-chloroisopropyl) ether	< 360.	ug/kg	360.	066800000P
4-methylphenol	< 360.	ug/kg	360.	092800000P
N-nitrosodi-n-propylamine	< 360.	ug/kg	360.	118800000P
hexachloroethane	< 360.	ug/kg	360.	069200000P
nitrobenzene	< 360.	ug/kg	360.	069600000P
isophorone	< 360.	ug/kg	360.	069400000P
2-nitrophenol	< 360.	ug/kg	360.	065100000P
2,4-dimethylphenol	< 360.	ug/kg	360.	064800000P
benzoic acid	< 1,900.	ug/kg	1,900.	092900000P
bis (2-chloroethoxy) methane	< 360.	ug/kg	360.	066600000P
2,4-dichlorophenol	< 360.	ug/kg	360.	064700000P
1,2,4-trichlorobenzene	< 360.	ug/kg	360.	118900000P
naphthalene	< 360.	ug/kg	360.	069500000P
4-chloroaniline	< 360.	ug/kg	360.	093000000P
hexachlorobutadiene	< 360.	ug/kg	360.	069000000P
4-chloro-3-methylphenol	< 360.	ug/kg	360.	119000000P
2-methylnaphthalene	< 360.	ug/kg	360.	093100000P
hexachlorocyclopentadiene	< 360.	ug/kg	360.	069100000P
2,4,6-trichlorophenol	< 360.	ug/kg	360.	065600000P
2,4,5-trichlorophenol	< 1,900.	ug/kg	1,900.	093200000P
2-chloronaphthalene	< 360.	ug/kg	360.	067200000P
2-nitroaniline	< 1,900.	ug/kg	1,900.	093300000P
dimethyl phthalate	< 360.	ug/kg	360.	068100000P
acenaphthylene	< 360.	ug/kg	360.	065800000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300768

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477190
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B20/S3A 4-7' Soil Sample
Collected on 01/06/90 at 1305 by AT/BS

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 1,900.	ug/kg	1,900.	093400000P
acenaphthene	< 360.	ug/kg	360.	119100000P
2,4-dinitrophenol	< 1,900.	ug/kg	1,900.	065000000P
4-nitrophenol	< 1,900.	ug/kg	1,900.	119200000P
dibenzofuran	< 360.	ug/kg	360.	093500000P
2,4-dinitrotoluene	< 360.	ug/kg	360.	119300000P
2,6-dinitrotoluene	< 360.	ug/kg	360.	068400000P
diethyl phthalate	< 360.	ug/kg	360.	068000000P
4-chlorophenyl phenyl ether	< 360.	ug/kg	360.	067300000P
fluorene	< 360.	ug/kg	360.	068800000P
4-nitroaniline	< 1,900.	ug/kg	1,900.	093600000P
2-methyl-4,6-dinitrophenol	< 1,900.	ug/kg	1,900.	064900000P
N-nitrosodiphenylamine	< 360.	ug/kg	360.	069900000P
4-bromophenyl phenyl ether	< 360.	ug/kg	360.	067000000P
hexachlorobenzene	< 360.	ug/kg	360.	068900000P
pentachlorophenol	< 1,900.	ug/kg	1,900.	119400000P
phenanthrene	< 360.	ug/kg	360.	070000000P
anthracene	< 360.	ug/kg	360.	065900000P
di-n-butyl phthalate	< 360.	ug/kg	360.	068200000P
fluoranthene	< 360.	ug/kg	360.	068700000P
pyrene	< 360.	ug/kg	360.	119500000P
butyl benzyl phthalate	< 360.	ug/kg	360.	067100000P
3,3'-dichlorobenzidine	< 730.	ug/kg	730.	067900000P
benzo (a) anthracene	< 360.	ug/kg	360.	066100000P
bis (2-ethylhexyl) phthalate	< 360.	ug/kg	360.	066900000P
chrysene	< 360.	ug/kg	360.	067400000P
di-n-octyl phthalate	< 360.	ug/kg	360.	068500000P
benzo (b) fluoranthene	< 360.	ug/kg	360.	066300000P
benzo (K) fluoranthene	< 360.	ug/kg	360.	066500000P
benzo (a) pyrene	< 360.	ug/kg	360.	066200000P
indeno (1,2,3-cd) pyrene	< 360.	ug/kg	360.	069300000P
dibenz (a,h) anthracene	< 360.	ug/kg	360.	067500000P
benzo (ghi) perylene	< 360.	ug/kg	360.	066400000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300769

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477190
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B20/S3A 4-7' Soil Sample
Collected on 01/06/90 at 1305 by AT/BS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	12.	ug/kg	9.	060900000P
Beta BHC	24.	ug/kg	9.	061000000P
Delta BHC	< 9.	ug/kg	9.	061200000P
Gamma BHC - Lindane	< 9.	ug/kg	9.	121800000P
Heptachlor	< 9.	ug/kg	9.	121900000P
Aldrin	< 9.	ug/kg	9.	122000000P
Heptachlor Epoxide	< 9.	ug/kg	9.	061500000P
Endosulfan I	< 9.	ug/kg	9.	062700000P
Dieldrin	< 17.	ug/kg	17.	122200000P
DDE	< 17.	ug/kg	17.	061600000P
Endrin	< 17.	ug/kg	17.	122300000P
Endosulfan II	< 17.	ug/kg	17.	062800000P
DDD	31.	ug/kg	17.	061700000P
Endosulfan Sulfate	< 17.	ug/kg	17.	062900000P
DDT	196.	ug/kg	17.	122100000P
Endrin Ketone	< 17.	ug/kg	17.	093800000P
Methoxychlor	< 90.	ug/kg	90.	062100000P
Alpha Chlordane	< 90.	ug/kg	90.	136100000P
Gamma Chlordane	< 90.	ug/kg	90.	136200000P
Toxaphene	< 170.	ug/kg	170.	094200000P
PCB-1016	< 90.	ug/kg	90.	063900000P
PCB-1221	< 90.	ug/kg	90.	064000000P
PCB-1232	< 90.	ug/kg	90.	064100000P
PCB-1242	< 90.	ug/kg	90.	064200000P
PCB-1248	< 90.	ug/kg	90.	064300000P
PCB-1254	< 170.	ug/kg	170.	064400000P
PCB-1260	< 170.	ug/kg	170.	064500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories, Inc.

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477190
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B20/S3A 4-7' Soil Sample
Collected on 01/06/90 at 1305 by AT/BS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300771

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BOS3A

Lab Name: LANCASTER LABS Contract:
Lab Code: LANCAS Case No.: 244304 SAS No.: SDG No.: PPG4
Matrix: (soil/water) SOIL Lab Sample ID: C1477190L
Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1477190L
Level: (low/med) LOW Date Received: 01/08/90
% Moisture: not dec. 8 Date Analyzed: 01/09/90
Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

FORM I VOA-TIC 1/87 Rev.

American Association for Laboratory Accreditation Chemical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

300772

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BOS3A

Lab Name: LANCASTER LABS Contract: RIZZO
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) SOIL Lab Sample ID: 1477190
Sample wt/vol: 30 (g/mL) G Lab File ID: >F0258
Level: (low/med) LOW Date Received: 01/08/90
% Moisture: not dec. 8 dec. _____. Date Extracted: 01/12/90
Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/16/90
GPC Cleanup: (Y/N) N pH: 3.9 Dilution Factor: 1.000

Number TICs found: 8

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	4.19	180.	JB
2.	Unknown	5.26	290.	JB
3.	Unknown	6.39	7600.	JBA
4.	Unknown	8.92	440.	JB
5.	Unknown	9.17	180.	J
6.	Unknown	29.39	290.	J
7.	Unknown	31.65	180.	J
8.	Unknown carboxylic acid/este	31.80	730.	JB
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

FORM I SV-TIC 1/87 Rev.

300773

American Association for Laboratory Accreditation
Chemical Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories Inc

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477191
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

Continuation of LLI #1477190 PPG B20/S3A 4-7'
Soil Sample
Collected on 01/06/90 at 1305 by AT/BS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Aluminum	10,800.	mg/kg	20.	014300100P
Antimony	< 5.	mg/kg	5.	014400100P
Barium	< 20.	mg/kg	20.	014600100P
Beryllium	0.8	mg/kg	0.5	014700100P
Cadmium	< 0.5	mg/kg	0.5	014900100P
Calcium	20.	mg/kg	10.	015000100P
Chromium	17.	mg/kg	1.	015100100P
Cobalt	< 5.	mg/kg	5.	015200100P
Copper	25.	mg/kg	2.	015300100P
Iron	21,100.	mg/kg	5.	015400100P
Magnesium	370.	mg/kg	10.	015700100P
Manganese	63.	mg/kg	1.	015800100P
Mercury	0.08	mg/kg	0.04	015900100P
Nickel	6.	mg/kg	4.	016100100P
Potassium	350.	mg/kg	50.	016200100P
Silver	< 1.	mg/kg	1.	016600100P
Sodium	< 50.	mg/kg	50.	016700100P
Vanadium	26.	mg/kg	5.	017100100P
Zinc	14.	mg/kg	2.	017200100P
Cyanide, Total	< 0.1	mg/kg	0.1	023700100P
Arsenic (furnace method)	< 5.	mg/kg	5.	114500100P
Lead (furnace method)	4.5	mg/kg	0.5	115500100P
Selenium (furnace method)	< 0.5	mg/kg	0.5	116400100P
Thallium (furnace method)	< 1.	mg/kg	1.	117300100P
Moisture *AS RECEIVED*	8.3	% by wt.	0.1	135300100P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300774

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477192
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B20/S6 10-12' Soil Sample
Collected on 01/06/90 at 1330 by AT/BS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
TCL Pesticides		attached		122530000P
Moisture *AS RECEIVED*	17.8	% by wt.	0.1	135330000P
pH	4.89		0.01	144130000P
Note: The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.				
N-Methyl Carbamates in Soil		attached		150930000P
Malathion	< 60.	ug/kg	60.	900116500P
Pentachloronitrobenzene	< 400.	ug/kg	400.	900230000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300775

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477192
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B20/S6 10-12' Soil Sample
Collected on 01/06/90 at 1330 by AT/BS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 100.	ug/kg	100.	060900000P
Beta BHC	< 100.	ug/kg	100.	061000000P
Delta BHC	< 100.	ug/kg	100.	061200000P
Gamma BHC - Lindane	< 100.	ug/kg	100.	121800000P
Heptachlor	< 100.	ug/kg	100.	121900000P
Aldrin	< 100.	ug/kg	100.	122000000P
Heptachlor Epoxide	< 100.	ug/kg	100.	061500000P
Endosulfan I	< 100.	ug/kg	100.	062700000P
Dieldrin	< 190.	ug/kg	190.	122200000P
DDE	< 190.	ug/kg	190.	061600000P
Endrin	< 190.	ug/kg	190.	122300000P
Endosulfan II	< 190.	ug/kg	190.	062800000P
DDD	< 190.	ug/kg	190.	061700000P
Endosulfan Sulfate	< 190.	ug/kg	190.	062900000P
DDT	2,920.	ug/kg	190.	122100000P
Endrin Ketone	< 190.	ug/kg	190.	093800000P
Methoxychlor	< 1,000.	ug/kg	1,000.	062100000P
Alpha Chlordane	< 1,000.	ug/kg	1,000.	136100000P
Gamma Chlordane	< 1,000.	ug/kg	1,000.	136200000P
Toxaphene	< 1,900.	ug/kg	1,900.	094200000P
PCB-1016	< 1,000.	ug/kg	1,000.	063900000P
PCB-1221	< 1,000.	ug/kg	1,000.	064000000P
PCB-1232	< 1,000.	ug/kg	1,000.	064100000P
PCB-1242	< 1,000.	ug/kg	1,000.	064200000P
PCB-1248	< 1,000.	ug/kg	1,000.	064300000P
PCB-1254	< 1,900.	ug/kg	1,900.	064400000P
PCB-1260	< 1,900.	ug/kg	1,900.	064500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

390776

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1477192
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG B20/S6 10-12' Soil Sample
Collected on 01/06/90 at 1330 by AT/BS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300777

II. SEDIMENT SAMPLES

300778

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478390
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

SED-1 Stream Near B-19 Unspiked Soil Sample
Collected on 01/09/90 at 1030 by BS

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
VOA GC/MS Library Search		attached		089005500P
CLP forms for Extractables		see below		111205500P
TCL Volatiles (Soil)		attached		117805500P
TCL Semi-Volatiles (Soil)		attached		120105500P
TCL Semi-Volatiles (Soil) cont		attached		120205500P
TCL Pesticides		attached		122505500P
Moisture *AS RECEIVED*	43.1	% by wt.	0.1	135305500P
pH	10.8		0.02	144105500P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.
The pH of the method blank (background soil) performed with samples 1478390, 1478394 was 6.91.

N-Methyl Carbamates in Soil		attached		150905500P
Dioxin	0.00000			900131000P

The analysis for dioxin was subcontracted to another laboratory.

2,3,7,8-TCDD was not detected in the sample. Please refer to the data package for the complete report.

Malathion	150.	ug/kg	90.	900216500P
Pentachloronitrobenzene	< 580.	ug/kg	580.	900301000P

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478390
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

SED-1 Stream Near B-19 Unspiked Soil Sample
Collected on 01/09/90 at 1030 by BS

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 18.	ug/kg	18.	082700000P
Bromomethane	< 18.	ug/kg	18.	082800000P
Vinyl Chloride	< 18.	ug/kg	18.	082900000P
Chloroethane	< 18.	ug/kg	18.	083000000P
Methylene Chloride	< 9.	ug/kg	9.	083100000P
Acetone	93.	ug/kg	18.	091400000P
Carbon Disulfide	< 9.	ug/kg	9.	091500000P
1,1-Dichloroethene	< 9.	ug/kg	9.	118000000P
1,1-Dichloroethane	< 9.	ug/kg	9.	083300000P
1,2-Dichloroethene (total)	< 9.	ug/kg	9.	117900000P
Chloroform	< 9.	ug/kg	9.	083500000P
1,2-Dichloroethane	< 9.	ug/kg	9.	083600000P
2-Butanone	< 18.	ug/kg	18.	091600000P
1,1,1-Trichloroethane	< 9.	ug/kg	9.	083700000P
Carbon Tetrachloride	< 9.	ug/kg	9.	083800000P
Vinyl Acetate	< 18.	ug/kg	18.	091700000P
Bromodichloromethane	< 9.	ug/kg	9.	083900000P
1,2-Dichloropropane	< 9.	ug/kg	9.	084000000P
cis-1,3-Dichloropropene	< 9.	ug/kg	9.	084400000P
Trichloroethene	< 9.	ug/kg	9.	118100000P
Dibromochloromethane	< 9.	ug/kg	9.	084600000P
1,1,2-Trichloroethane	< 9.	ug/kg	9.	084500000P
Benzene	10.	ug/kg	9.	118200000P
trans-1,3-Dichloropropene	< 9.	ug/kg	9.	084100000P
Bromoform	< 9.	ug/kg	9.	084700000P
4-Methyl-2-Pentanone	< 18.	ug/kg	18.	091900000P
2-Hexanone	< 18.	ug/kg	18.	091800000P
Tetrachloroethene	10.	ug/kg	9.	084800000P
1,1,2,2-Tetrachloroethane	< 9.	ug/kg	9.	084900000P
Toluene	< 9.	ug/kg	9.	118300000P
Chlorobenzene	32.	ug/kg	9.	118400000P
Ethylbenzene	10.	ug/kg	9.	085200000P
Styrene	< 9.	ug/kg	9.	092000000P
Xylenes (total)	98.	ug/kg	9.	092100000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

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Member American Council of Independent Laboratories, Inc.

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478390
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

SED-1 Stream Near B-19 Unspiked Soil Sample
Collected on 01/09/90 at 1030 by BS

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
phenol	1,170.	ug/kg	580.	118500000P
bis (2-chloroethyl) ether	< 580.	ug/kg	580.	066700000P
2-chlorophenol	< 580.	ug/kg	580.	118600000P
1,3-dichlorobenzene	< 580.	ug/kg	580.	067700000P
1,4-dichlorobenzene	< 580.	ug/kg	580.	118700000P
benzyl alcohol	< 580.	ug/kg	580.	092600000P
1,2-dichlorobenzene	< 580.	ug/kg	580.	067600000P
2-methylphenol	< 580.	ug/kg	580.	092700000P
bis (2-chloroisopropyl) ether	< 580.	ug/kg	580.	066800000P
4-methylphenol	< 580.	ug/kg	580.	092800000P
N-nitrosodi-n-propylamine	< 580.	ug/kg	580.	118800000P
hexachloroethane	< 580.	ug/kg	580.	069200000P
nitrobenzene	< 580.	ug/kg	580.	069600000P
isophorone	< 580.	ug/kg	580.	069400000P
2-nitrophenol	< 580.	ug/kg	580.	065100000P
2,4-dimethylphenol	< 580.	ug/kg	580.	064800000P
benzoic acid	< 3,000.	ug/kg	3,000.	092900000P
bis (2-chloroethoxy) methane	< 580.	ug/kg	580.	066600000P
2,4-dichlorophenol	< 580.	ug/kg	580.	064700000P
1,2,4-trichlorobenzene	< 580.	ug/kg	580.	118900000P
naphthalene	< 580.	ug/kg	580.	069500000P
4-chloroaniline	< 580.	ug/kg	580.	093000000P
hexachlorobutadiene	< 580.	ug/kg	580.	069000000P
4-chloro-3-methylphenol	< 580.	ug/kg	580.	119000000P
2-methylnaphthalene	< 580.	ug/kg	580.	093100000P
hexachlorocyclopentadiene	< 580.	ug/kg	580.	069100000P
2,4,6-trichlorophenol	< 580.	ug/kg	580.	065600000P
2,4,5-trichlorophenol	< 3,000.	ug/kg	3,000.	093200000P
2-chloronaphthalene	< 580.	ug/kg	580.	067200000P
2-nitroaniline	< 3,000.	ug/kg	3,000.	093300000P
dimethyl phthalate	< 580.	ug/kg	580.	068100000P
acenaphthylene	< 580.	ug/kg	580.	065800000P

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Chemical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300781

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478390
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

SED-1 Stream Near B-19 Unspiked Soil Sample
Collected on 01/09/90 at 1030 by BS

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 3,000.	ug/kg	3,000.	093400000P
acenaphthene	< 580.	ug/kg	580.	119100000P
2,4-dinitrophenol	< 3,000.	ug/kg	3,000.	065000000P
4-nitrophenol	< 3,000.	ug/kg	3,000.	119200000P
dibenzofuran	< 580.	ug/kg	580.	093500000P
2,4-dinitrotoluene	< 580.	ug/kg	580.	119300000P
2,6-dinitrotoluene	< 580.	ug/kg	580.	068400000P
diethyl phthalate	< 580.	ug/kg	580.	068000000P
4-chlorophenyl phenyl ether	< 580.	ug/kg	580.	067300000P
fluorene	< 580.	ug/kg	580.	068800000P
4-nitroaniline	< 3,000.	ug/kg	3,000.	093600000P
2-methyl-4,6-dinitrophenol	< 3,000.	ug/kg	3,000.	064900000P
N-nitrosodiphenylamine	< 580.	ug/kg	580.	069900000P
4-bromophenyl phenyl ether	< 580.	ug/kg	580.	067000000P
hexachlorobenzene	< 580.	ug/kg	580.	068900000P
pentachlorophenol	< 3,000.	ug/kg	3,000.	119400000P
phenanthrene	< 580.	ug/kg	580.	070000000P
anthracene	< 580.	ug/kg	580.	065900000P
di-n-butyl phthalate	< 580.	ug/kg	580.	068200000P
fluoranthene	< 580.	ug/kg	580.	068700000P
pyrene	< 580.	ug/kg	580.	119500000P
butyl benzyl phthalate	< 580.	ug/kg	580.	067100000P
3,3'-dichlorobenzidine	< 1,200.	ug/kg	1,200.	067900000P
benzo (a) anthracene	< 580.	ug/kg	580.	066100000P
bis (2-ethylhexyl) phthalate	< 580.	ug/kg	580.	066900000P
chrysene	< 580.	ug/kg	580.	067400000P
di-n-octyl phthalate	< 580.	ug/kg	580.	068500000P
benzo (b) fluoranthene	< 580.	ug/kg	580.	066300000P
benzo (K) fluoranthene	< 580.	ug/kg	580.	066500000P
benzo (a) pyrene	< 580.	ug/kg	580.	066200000P
indeno (1,2,3-cd) pyrene	< 580.	ug/kg	580.	069300000P
dibenz (a,h) anthracene	< 580.	ug/kg	580.	067500000P
benzo (ghi) perylene	< 580.	ug/kg	580.	066400000P

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478390
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

SED-1 Stream Near B-19 Unspiked Soil Sample
Collected on 01/09/90 at 1030 by BS

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 2,100.	ug/kg	2,100.	060900000P
Beta BHC	< 2,100.	ug/kg	2,100.	061000000P
Delta BHC	< 4,200.	ug/kg	4,200.	061200000P
Gamma BHC - Lindane	< 2,100.	ug/kg	2,100.	121800000P
Heptachlor	< 2,100.	ug/kg	2,100.	121900000P
Aldrin	< 4,200.	ug/kg	4,200.	122000000P
Heptachlor Epoxide	< 2,100.	ug/kg	2,100.	061500000P
Endosulfan I	< 2,100.	ug/kg	2,100.	062700000P
Dieldrin	< 4,200.	ug/kg	4,200.	122200000P
DDE	< 4,200.	ug/kg	4,200.	061600000P
Endrin	< 4,200.	ug/kg	4,200.	122300000P
Endosulfan II	< 4,200.	ug/kg	4,200.	062800000P
DDD	21,100.	ug/kg	4,200.	061700000P
Endosulfan Sulfate	< 4,200.	ug/kg	4,200.	062900000P
DDT	< 4,200.	ug/kg	4,200.	122100000P
Endrin Ketone	< 4,200.	ug/kg	4,200.	093800000P
Methoxychlor	< 21,000.	ug/kg	21,000.	062100000P
Alpha Chlordane	< 21,000.	ug/kg	21,000.	136100000P
Gamma Chlordane	< 21,000.	ug/kg	21,000.	136200000P
Toxaphene	< 42,000.	ug/kg	42,000.	094200000P
PCB-1016	< 42,000.	ug/kg	42,000.	063900000P
PCB-1221	< 42,000.	ug/kg	42,000.	064000000P
PCB-1232	< 42,000.	ug/kg	42,000.	064100000P
PCB-1242	< 42,000.	ug/kg	42,000.	064200000P
PCB-1248	< 21,000.	ug/kg	21,000.	064300000P
PCB-1254	< 42,000.	ug/kg	42,000.	064400000P
PCB-1260	< 42,000.	ug/kg	42,000.	064500000P

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American Association for Laboratory Accreditation Chemical Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300783

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478390
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

SED-1 Stream Near B-19 Unspiked Soil Sample
Collected on 01/09/90 at 1030 by BS

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 2,000.	ug/kg	2,000.	134500000P

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300784

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

SED1X

Lab Name: LANCASTER LABS Contract:
Lab Code: LANCAS Case No.: 244304 SAS No.: SDG No.: PPG4
Matrix: (soil/water) SOIL Lab Sample ID: A1478390L
Sample wt/vol: 5.0 (g/mL) G Lab File ID: A1478390L
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. 43 Date Analyzed: 01/16/90
Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	C10.H16 ISOMER	22.54	49	J

00785

FORM I VOA-TIC 1/87 Rev.

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Tests & Testing

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Member American Council of Independent Laboratories, Inc.

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SED1X

Lab Name: LANCASTER LABS Contract: RIZZO
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) SOIL Lab Sample ID: 1478390
Sample wt/vol: 30 (g/mL) G Lab File ID: >F0251
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. 43 dec. _____. Date Extracted: 01/12/90
Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/15/90
GPC Cleanup: (Y/N) N pH: 6.1 Dilution Factor: 1.000

Number TICs found: 21

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		Unknown	5.25	350.	JB
2.		Unknown	6.37	7600.	JBA
3.		Unknown	8.94	1200.	JB
4.		Unknown	9.15	1300.	J
5.		Unknown	9.99	410.	JB
6.		Unknown	11.19	530.	J
7.		Unknown	11.33	880.	J
8.		Unknown	12.06	230.	J
9.		Unknown aliphatic hydrocarbo	23.03	350.	J
10.	58899	Lindane (gamma - BHC)	23.43	290.	J
11.	957517	Benzeneacetamide, N,N-dimeth	27.80	290.	J
12.		Unknown	28.65	230.	J
13.		Unknown	28.82	590.	J
14.	72548	1,1-Dichloro-2,2bis(p-chloro	30.02	4200.	J
15.	77941	Butyl citrate (VAN)	30.27	760.	J
16.	50293	4,4'-DDT	30.85	9400.	J
17.		Unknown aliphatic hydrocarbo	32.83	590.	J
18.		Unknown aliphatic hydrocarbo	34.81	1100.	J
19.		Unknown aliphatic hydrocarbo	36.97	11000.	J
20.		Unknown aliphatic hydrocarbo	39.93	12000.	J
21.		Unknown	41.19	1200.	J
22.					
23.					
24.					
25.					

FORM I SV-TIC 1/87 Rev.

300786

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories Inc

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Questions? Contact Our Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478391
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

Continuation of LLI #1478390

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT.	BASIS	LIMIT OF QUANTITATION	LAB CODE
Aluminum	5,870.	mg/kg	40.	014300100P
Antimony	< 9.	mg/kg	9.	014400100P
Barium	< 40.	mg/kg	40.	014600100P
Beryllium	< 0.9	mg/kg	0.9	014700100P
Cadmium	4.3	mg/kg	0.9	014900100P
Calcium	310.	mg/kg	20.	015000100P
Chromium	8.	mg/kg	2.	015100100P
Cobalt	< 9.	mg/kg	9.	015200100P
Copper	54.	mg/kg	4.	015300100P
Iron	15,100.	mg/kg	9.	015400100P
Magnesium	280.	mg/kg	20.	015700100P
Manganese	60.	mg/kg	2.	015800100P
Mercury	0.21	mg/kg	0.07	015900100P
Nickel	7.	mg/kg	7.	016100100P
Potassium	230.	mg/kg	90.	016200100P
Silver	< 2.	mg/kg	2.	016600100P
Sodium	< 90.	mg/kg	90.	016700100P
Vanadium	9.	mg/kg	9.	017100100P
Zinc	304.	mg/kg	4.	017200100P
Cyanide, Total	0.2	mg/kg	0.2	023700100P
Prep charge for solids (#22)		see below		039000100P
Arsenic (furnace method)	5.	mg/kg	2.	114500100P
Lead (furnace method)	22.9	mg/kg	0.9	115500100P
Selenium (furnace method)	4.3	mg/kg	0.9	116400100P
Thallium (furnace method)	< 2.	mg/kg	2.	117300100P
Moisture *AS RECEIVED*	43.1	% by wt.	0.1	135300100P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300787

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478392
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

SED-1 Stream Near B-19 Matrix Spike Soil Sample
Collected on 01/09/90 at 1030 by BS

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
TCL Volatiles (Soil)		attached		117827000P
TCL Semi-Volatiles (Soil)		attached		120154000P
TCL Semi-Volatiles (Soil) cont		attached		120200000P
TCL Pesticides		attached		122528000P
N-Methyl Carbamates in Soil		attached		150915000P
Dioxin	See Below			900131000P

The analysis for dioxin was subcontracted to another laboratory.

Please refer to the data package for the complete report of this sample.

Malathion	200.	ug/kg	50.	900216500P
Pentachloronitrobenzene	2,810.	ug/kg	330.	900301000P

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059 03915 240.00 196500

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

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P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/kg	10.	082700000P
Bromomethane	< 10.	ug/kg	10.	082800000P
Vinyl Chloride	< 10.	ug/kg	10.	082900000P
Chloroethane	< 10.	ug/kg	10.	083000000P
Methylene Chloride	< 5.	ug/kg	5.	083100000P
Acetone	66.	ug/kg	10.	091400000P
Carbon Disulfide	< 5.	ug/kg	5.	091500000P
1,1-Dichloroethene	65.	ug/kg	5.	118000000P
1,1-Dichloroethane	< 5.	ug/kg	5.	083300000P
1,2-Dichloroethene (total)	< 5.	ug/kg	5.	117900000P
Chloroform	< 5.	ug/kg	5.	083500000P
1,2-Dichloroethane	< 5.	ug/kg	5.	083600000P
2-Butanone	12.	ug/kg	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/kg	5.	083700000P
Carbon Tetrachloride	< 5.	ug/kg	5.	083800000P
Vinyl Acetate	< 10.	ug/kg	10.	091700000P
Bromodichloromethane	< 5.	ug/kg	5.	083900000P
1,2-Dichloropropane	< 5.	ug/kg	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/kg	5.	084400000P
Trichloroethene	54.	ug/kg	5.	118100000P
Dibromochloromethane	< 5.	ug/kg	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/kg	5.	084500000P
Benzene	59.	ug/kg	5.	118200000P
trans-1,3-Dichloropropene	< 5.	ug/kg	5.	084100000P
Bromoform	< 5.	ug/kg	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/kg	10.	091900000P
2-Hexanone	< 10.	ug/kg	10.	091800000P
Tetrachloroethene	7.	ug/kg	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/kg	5.	084900000P
Toluene	63.	ug/kg	5.	118300000P
Chlorobenzene	80.	ug/kg	5.	118400000P
Ethylbenzene	8.	ug/kg	5.	085200000P
Styrene	< 5.	ug/kg	5.	092000000P
Xylenes (total)	74.	ug/kg	5.	092100000P

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Chemical, Biological & Environmental Fields of Testing

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Member American Council of Independent Laboratories, Inc.

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

300789

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478392
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

SED-1 Stream Near B-19 Matrix Spike Soil Sample
Collected on 01/09/90 at 1030 by BS

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	5,200.	ug/kg	330.	118500000P
bis (2-chloroethyl) ether	< 330.	ug/kg	330.	066700000P
2-chlorophenol	4,530.	ug/kg	330.	118600000P
1,3-dichlorobenzene	< 330.	ug/kg	330.	067700000P
1,4-dichlorobenzene	2,370.	ug/kg	330.	118700000P
benzyl alcohol	< 330.	ug/kg	330.	092600000P
1,2-dichlorobenzene	< 330.	ug/kg	330.	067600000P
2-methylphenol	< 330.	ug/kg	330.	092700000P
bis (2-chloroisopropyl) ether	< 330.	ug/kg	330.	066800000P
4-methylphenol	< 330.	ug/kg	330.	092800000P
N-nitrosodi-n-propylamine	2,470.	ug/kg	330.	118800000P
hexachloroethane	< 330.	ug/kg	330.	069200000P
nitrobenzene	< 330.	ug/kg	330.	069600000P
isophorone	< 330.	ug/kg	330.	069400000P
2-nitrophenol	< 330.	ug/kg	330.	065100000P
2,4-dimethylphenol	< 330.	ug/kg	330.	064800000P
benzoic acid	< 1,700.	ug/kg	1,700.	092900000P
bis (2-chloroethoxy) methane	< 330.	ug/kg	330.	066600000P
2,4-dichlorophenol	< 330.	ug/kg	330.	064700000P
1,2,4-trichlorobenzene	2,670.	ug/kg	330.	118900000P
naphthalene	< 330.	ug/kg	330.	069500000P
4-chloroaniline	< 330.	ug/kg	330.	093000000P
hexachlorobutadiene	< 330.	ug/kg	330.	069000000P
4-chloro-3-methylphenol	4,960.	ug/kg	330.	119000000P
2-methylnaphthalene	< 330.	ug/kg	330.	093100000P
hexachlorocyclopentadiene	< 330.	ug/kg	330.	069100000P
2,4,6-trichlorophenol	< 330.	ug/kg	330.	065600000P
2,4,5-trichlorophenol	< 1,700.	ug/kg	1,700.	093200000P
2-chloronaphthalene	< 330.	ug/kg	330.	067200000P
2-nitroaniline	< 1,700.	ug/kg	1,700.	093300000P
dimethyl phthalate	< 330.	ug/kg	330.	068100000P
acenaphthylene	< 330.	ug/kg	330.	065800000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478392
Date Reported 2/20/90
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Collected 1/ 9/90 by BS

SED-1 Stream Near B-19 Matrix Spike Soil Sample
Collected on 01/09/90 at 1030 by BS

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 1,700.	ug/kg	1,700.	093400000P
acenaphthene	2,610.	ug/kg	330.	119100000P
2,4-dinitrophenol	< 1,700.	ug/kg	1,700.	065000000P
4-nitrophenol	5,200.	ug/kg	1,700.	119200000P
dibenzofuran	< 330.	ug/kg	330.	093500000P
2,4-dinitrotoluene	2,180.	ug/kg	330.	119300000P
2,6-dinitrotoluene	< 330.	ug/kg	330.	068400000P
diethyl phthalate	< 330.	ug/kg	330.	068000000P
4-chlorophenyl phenyl ether	< 330.	ug/kg	330.	067300000P
fluorene	< 330.	ug/kg	330.	068800000P
4-nitroaniline	< 1,700.	ug/kg	1,700.	093600000P
2-methyl-4,6-dinitrophenol	< 1,700.	ug/kg	1,700.	064900000P
N-nitrosodiphenylamine	< 330.	ug/kg	330.	069900000P
4-bromophenyl phenyl ether	< 330.	ug/kg	330.	067000000P
hexachlorobenzene	< 330.	ug/kg	330.	068900000P
pentachlorophenol	6,700.	ug/kg	1,700.	119400000P
phenanthrene	< 330.	ug/kg	330.	070000000P
anthracene	< 330.	ug/kg	330.	065900000P
di-n-butyl phthalate	< 330.	ug/kg	330.	068200000P
fluoranthene	< 330.	ug/kg	330.	068700000P
pyrene	2,890.	ug/kg	330.	119500000P
butyl benzyl phthalate	< 330.	ug/kg	330.	067100000P
3,3'-dichlorobenzidine	< 670.	ug/kg	670.	067900000P
benzo (a) anthracene	< 330.	ug/kg	330.	066100000P
bis (2-ethylhexyl) phthalate	< 330.	ug/kg	330.	066900000P
chrysene	< 330.	ug/kg	330.	067400000P
di-n-octyl phthalate	< 330.	ug/kg	330.	068500000P
benzo (b) fluoranthene	< 330.	ug/kg	330.	066300000P
benzo (K) fluoranthene	< 330.	ug/kg	330.	066500000P
benzo (a) pyrene	< 330.	ug/kg	330.	066200000P
indeno (1,2,3-cd) pyrene	< 330.	ug/kg	330.	069300000P
dibenz (a,h) anthracene	< 330.	ug/kg	330.	067500000P
benzo (ghi) perylene	< 330.	ug/kg	330.	066400000P

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Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
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SED-1 Stream Near B-19 Matrix Spike Soil Sample
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P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 1,200.	ug/kg	1,200.	060900000P
Beta BHC	< 1,200.	ug/kg	1,200.	061000000P
Delta BHC	< 1,200.	ug/kg	1,200.	061200000P
Gamma BHC - Lindane	< 1,200.	ug/kg	1,200.	121800000P
Heptachlor	< 1,200.	ug/kg	1,200.	121900000P
Aldrin	< 1,200.	ug/kg	1,200.	122000000P
Heptachlor Epoxide	< 1,200.	ug/kg	1,200.	061500000P
Endosulfan I	< 1,200.	ug/kg	1,200.	062700000P
Dieldrin	< 2,400.	ug/kg	2,400.	122200000P
DDE	3,100.	ug/kg	2,400.	061600000P
Endrin	< 2,400.	ug/kg	2,400.	122300000P
Endosulfan II	< 2,400.	ug/kg	2,400.	062800000P
DDD	22,000.	ug/kg	2,400.	061700000P
Endosulfan Sulfate	< 2,400.	ug/kg	2,400.	062900000P
DDT	670,000.	ug/kg	24,000.	122100000P
Endrin Ketone	< 2,400.	ug/kg	2,400.	093800000P
Methoxychlor	< 12,000.	ug/kg	12,000.	062100000P
Alpha Chlordane	< 12,000.	ug/kg	12,000.	136100000P
Gamma Chlordane	< 12,000.	ug/kg	12,000.	136200000P
Toxaphene	< 240,000.	ug/kg	240,000.	094200000P
PCB-1016	< 12,000.	ug/kg	12,000.	063900000P
PCB-1221	< 12,000.	ug/kg	12,000.	064000000P
PCB-1232	< 12,000.	ug/kg	12,000.	064100000P
PCB-1242	< 12,000.	ug/kg	12,000.	064200000P
PCB-1248	< 12,000.	ug/kg	12,000.	064300000P
PCB-1254	< 24,000.	ug/kg	24,000.	064400000P
PCB-1260	< 24,000.	ug/kg	24,000.	064500000P

The concentrations of the spiked compounds are below the CRQL since the sample was extracted as a medium level. The amount found of each compound is as follows:

Lindane	210.	ug/kg
Heptachlor	150.	ug/kg
Aldrin	78.	ug/kg
Dieldrin	1800.	ug/kg
Endrin	760.	ug/kg

Due to the significant amount of DDT in the background, the recovery could

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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American Council of Independent Laboratories, Inc.

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478392
Date Reported 2/20/90
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Discard Date 3/23/90
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SED-1 Stream Near B-19 Matrix Spike Soil Sample
Collected on 01/09/90 at 1030 by BS

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED	LIMIT OF QUANTITATION	LAB CODE
not be determined.			

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Group Leader, Pesticides/PCB's

300793

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
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P.O. 89-595
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N-Methyl Carbamates in Soil	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	2,300.	ug/kg	100.	134500000P

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ANALYSIS REPORT

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Collected 1/ 9/90 by BS

Continuation of LLI #1478392

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	3,590.	mg/kg	20.	014301400P
Antimony	17.	mg/kg	5.	014401400P
Barium	140.	mg/kg	20.	014601400P
Beryllium	3.5	mg/kg	0.5	014701400P
Cadmium	5.3	mg/kg	0.5	014901400P
Calcium	440.	mg/kg	10.	015001400P
Chromium	17.	mg/kg	1.	015101400P
Cobalt	36.	mg/kg	5.	015201400P
Copper	46.	mg/kg	2.	015301400P
Iron	8,340.	mg/kg	5.	015401400P
Magnesium	300.	mg/kg	10.	015701400P
Manganese	67.	mg/kg	1.	015801400P
Mercury	0.27	mg/kg	0.04	015903500P
Nickel	37.	mg/kg	4.	016101400P
Potassium	420.	mg/kg	50.	016201400P
Silver	3.	mg/kg	1.	016601400P
Sodium	270.	mg/kg	50.	016701400P
Vanadium	36.	mg/kg	5.	017101400P
Zinc	222.	mg/kg	2.	017201400P
Cyanide, Total	9.2	mg/kg	0.1	023704000P
Arsenic (furnace method)	5.	mg/kg	1.	114504000P
Lead (furnace method)	11.6	mg/kg	0.5	115504000P
Selenium (furnace method)	3.3	mg/kg	0.5	116404000P
Thallium (furnace method)	3.	mg/kg	1.	117304000P

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The American Association for Laboratory Accreditation
Biological & Environmental Testing

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059 03915 90.00 057700

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Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300795

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478394
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

SED-1 Stream Near B-19 Matrix Spike Duplicate Soil

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
CLP forms for Extractables		see below		111201000P
TCL Volatiles (Soil)		attached		117801000P
TCL Semi-Volatiles (Soil)		attached		120101000P
TCL Semi-Volatiles (Soil) cont		attached		120201000P
TCL Pesticides		attached		122501000P
Moisture *AS RECEIVED*	44.9	% by wt.	0.1	135301000P
pH	11.2		0.02	144101000P

Note:
The pH was performed on a 1:1 slurry (50 gms. of sample and 50 ml. of deionized water) after being tumbled for 1 hour.

N-Methyl Carbamates in Soil		attached		150901000P
Dioxin	0.00000			900131000P

The analysis for dioxin was subcontracted to another laboratory.

Please refer to the data package for the complete report of this sample.

Malathion	460.	ug/kg	90.	900216500P
Pentachloronitrobenzene	4,760.	ug/kg	600.	900301000P

This sample functions as a matrix spike duplicate for organic compounds and as a duplicate for inorganic compounds. This means that for quality control purposes, inorganic compounds will be compared with the unspiked sample and organic compounds will be spiked with known concentrations of analyte for comparison with the matrix spike sample.

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1 COPY TO Data Package Group

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Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300796

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478394
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

SED-1 Stream Near B-19 Matrix Spike Duplicate Soil

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 18.	ug/kg	18.	082700000P
Bromomethane	< 18.	ug/kg	18.	082800000P
Vinyl Chloride	< 18.	ug/kg	18.	082900000P
Chloroethane	< 18.	ug/kg	18.	083000000P
Methylene Chloride	< 9.	ug/kg	9.	083100000P
Acetone	87.	ug/kg	18.	091400000P
Carbon Disulfide	< 9.	ug/kg	9.	091500000P
1,1-Dichloroethene	120.	ug/kg	9.	118000000P
1,1-Dichloroethane	< 9.	ug/kg	9.	083300000P
1,2-Dichloroethene (total)	< 9.	ug/kg	9.	117900000P
Chloroform	< 9.	ug/kg	9.	083500000P
1,2-Dichloroethane	< 9.	ug/kg	9.	083600000P
2-Butanone	< 18.	ug/kg	18.	091600000P
1,1,1-Trichloroethane	< 9.	ug/kg	9.	083700000P
Carbon Tetrachloride	< 9.	ug/kg	9.	083800000P
Vinyl Acetate	< 18.	ug/kg	18.	091700000P
Bromodichloromethane	< 9.	ug/kg	9.	083900000P
1,2-Dichloropropane	< 9.	ug/kg	9.	084000000P
cis-1,3-Dichloropropene	< 9.	ug/kg	9.	084400000P
Trichloroethene	100.	ug/kg	9.	118100000P
Dibromochloromethane	< 9.	ug/kg	9.	084600000P
1,1,2-Trichloroethane	< 9.	ug/kg	9.	084500000P
Benzene	110.	ug/kg	9.	118200000P
trans-1,3-Dichloropropene	< 9.	ug/kg	9.	084100000P
Bromoform	< 9.	ug/kg	9.	084700000P
4-Methyl-2-Pentanone	< 18.	ug/kg	18.	091900000P
2-Hexanone	< 18.	ug/kg	18.	091800000P
Tetrachloroethene	12.	ug/kg	9.	084800000P
1,1,2,2-Tetrachloroethane	< 9.	ug/kg	9.	084900000P
Toluene	110.	ug/kg	9.	118300000P
Chlorobenzene	130.	ug/kg	9.	118400000P
Ethylbenzene	12.	ug/kg	9.	085200000P
Styrene	< 9.	ug/kg	9.	092000000P
Xylenes (total)	110.	ug/kg	9.	092100000P

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Member American Council of Independent Laboratories, Inc.

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

300797

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478394
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

SED-1 Stream Near B-19 Matrix Spike Duplicate Soil

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
phenol	9,460.	ug/kg	600.	118500000P
bis (2-chloroethyl) ether	< 600.	ug/kg	600.	066700000P
2-chlorophenol	7,820.	ug/kg	600.	118600000P
1,3-dichlorobenzene	< 600.	ug/kg	600.	067700000P
1,4-dichlorobenzene	4,290.	ug/kg	600.	118700000P
benzyl alcohol	< 600.	ug/kg	600.	092600000P
1,2-dichlorobenzene	< 600.	ug/kg	600.	067600000P
2-methylphenol	< 600.	ug/kg	600.	092700000P
bis (2-chloroisopropyl) ether	< 600.	ug/kg	600.	066800000P
4-methylphenol	< 600.	ug/kg	600.	092800000P
N-nitrosodi-n-propylamine	4,510.	ug/kg	600.	118800000P
hexachloroethane	< 600.	ug/kg	600.	069200000P
nitrobenzene	< 600.	ug/kg	600.	069600000P
isophorone	< 600.	ug/kg	600.	069400000P
2-nitrophenol	< 600.	ug/kg	600.	065100000P
2,4-dimethylphenol	< 600.	ug/kg	600.	064800000P
benzoic acid	< 3,100.	ug/kg	3,100.	092900000P
bis (2-chloroethoxy) methane	< 600.	ug/kg	600.	066600000P
2,4-dichlorophenol	< 600.	ug/kg	600.	064700000P
1,2,4-trichlorobenzene	4,220.	ug/kg	600.	118900000P
naphthalene	< 600.	ug/kg	600.	069500000P
4-chloroaniline	< 600.	ug/kg	600.	093000000P
hexachlorobutadiene	< 600.	ug/kg	600.	069000000P
4-chloro-3-methylphenol	8,310.	ug/kg	600.	119000000P
2-methylnaphthalene	< 600.	ug/kg	600.	093100000P
hexachlorocyclopentadiene	< 600.	ug/kg	600.	069100000P
2,4,6-trichlorophenol	< 600.	ug/kg	600.	065600000P
2,4,5-trichlorophenol	< 3,100.	ug/kg	3,100.	093200000P
2-chloronaphthalene	< 600.	ug/kg	600.	067200000P
2-nitroaniline	< 3,100.	ug/kg	3,100.	093300000P
dimethyl phthalate	< 600.	ug/kg	600.	068100000P
acenaphthylene	< 600.	ug/kg	600.	065800000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

Member American Council of Independent Laboratories, Inc.

300798

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478394
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

SED-1 Stream Near B-19 Matrix Spike Duplicate Soil

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 3,100.	ug/kg	3,100.	093400000P
acenaphthene	4,570.	ug/kg	600.	119100000P
2,4-dinitrophenol	< 3,100.	ug/kg	3,100.	065000000P
4-nitrophenol	8,700.	ug/kg	3,100.	119200000P
dibenzofuran	< 600.	ug/kg	600.	093500000P
2,4-dinitrotoluene	4,160.	ug/kg	600.	119300000P
2,6-dinitrotoluene	< 600.	ug/kg	600.	068400000P
diethyl phthalate	< 600.	ug/kg	600.	068000000P
4-chlorophenyl phenyl ether	< 600.	ug/kg	600.	067300000P
fluorene	< 600.	ug/kg	600.	068800000P
4-nitroaniline	< 3,100.	ug/kg	3,100.	093600000P
2-methyl-4,6-dinitrophenol	< 3,100.	ug/kg	3,100.	064900000P
N-nitrosodiphenylamine	< 600.	ug/kg	600.	069900000P
4-bromophenyl phenyl ether	< 600.	ug/kg	600.	067000000P
hexachlorobenzene	< 600.	ug/kg	600.	068900000P
pentachlorophenol	10,500.	ug/kg	3,100.	119400000P
phenanthrene	< 600.	ug/kg	600.	070000000P
anthracene	< 600.	ug/kg	600.	065900000P
di-n-butyl phthalate	< 600.	ug/kg	600.	068200000P
fluoranthene	< 600.	ug/kg	600.	068700000P
pyrene	5,170.	ug/kg	600.	119500000P
butyl benzyl phthalate	< 600.	ug/kg	600.	067100000P
3,3'-dichlorobenzidine	< 1,200.	ug/kg	1,200.	067900000P
benzo (a) anthracene	< 600.	ug/kg	600.	066100000P
bis (2-ethylhexyl) phthalate	< 600.	ug/kg	600.	066900000P
chrysene	< 600.	ug/kg	600.	067400000P
di-n-octyl phthalate	< 600.	ug/kg	600.	068500000P
benzo (b) fluoranthene	< 600.	ug/kg	600.	066300000P
benzo (K) fluoranthene	< 600.	ug/kg	600.	066500000P
benzo (a) pyrene	< 600.	ug/kg	600.	066200000P
indeno (1,2,3-cd) pyrene	< 600.	ug/kg	600.	069300000P
dibenz (a,h) anthracene	< 600.	ug/kg	600.	067500000P
benzo (ghi) perylene	< 600.	ug/kg	600.	066400000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300799

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478394
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

SED-1 Stream Near B-19 Matrix Spike Duplicate Soil

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 2,200.	ug/kg	2,200.	060900000P
Beta BHC	< 2,200.	ug/kg	2,200.	061000000P
Delta BHC	< 2,200.	ug/kg	2,200.	061200000P
Gamma BHC - Lindane	< 2,200.	ug/kg	2,200.	121800000P
Heptachlor	< 2,200.	ug/kg	2,200.	121900000P
Aldrin	< 2,200.	ug/kg	2,200.	122000000P
Heptachlor Epoxide	< 2,200.	ug/kg	2,200.	061500000P
Endosulfan I	< 2,200.	ug/kg	2,200.	062700000P
Dieldrin	< 4,400.	ug/kg	4,400.	122200000P
DDE	< 4,400.	ug/kg	4,400.	061600000P
Endrin	< 4,400.	ug/kg	4,400.	122300000P
Endosulfan II	< 4,400.	ug/kg	4,400.	062800000P
DDD	21,800.	ug/kg	4,400.	061700000P
Endosulfan Sulfate	< 4,400.	ug/kg	4,400.	062900000P
DDT	14,000.	ug/kg	4,400.	122100000P
Endrin Ketone	< 4,400.	ug/kg	4,400.	093800000P
Methoxychlor	< 22,000.	ug/kg	22,000.	062100000P
Alpha Chlordane	< 22,000.	ug/kg	22,000.	136100000P
Gamma Chlordane	< 22,000.	ug/kg	22,000.	136200000P
Toxaphene	< 44,000.	ug/kg	44,000.	094200000P
PCB-1016	< 22,000.	ug/kg	22,000.	063900000P
PCB-1221	< 22,000.	ug/kg	22,000.	064000000P
PCB-1232	< 22,000.	ug/kg	22,000.	064100000P
PCB-1242	< 22,000.	ug/kg	22,000.	064200000P
PCB-1248	< 22,000.	ug/kg	22,000.	064300000P
PCB-1254	< 44,000.	ug/kg	44,000.	064400000P
PCB-1260	< 44,000.	ug/kg	44,000.	064500000P

The concentrations of the spiked compounds are below the CRQL since the sample was extracted as a medium level. The amount found for each compound is as follows:

Lindane	250.	ug/kg
Heptachlor	190.	ug/kg
Aldrin	108.	ug/kg
Dieldrin	1300.	ug/kg
Endrin	430.	ug/kg

Due to the significant level of DDT in the background, the recovery could

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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Member American Council of Independent Laboratories, Inc.

300300

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478394
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

SED-1 Stream Near B-19 Matrix Spike Duplicate Soil

P.O. 89-595
Rel.

TCL Pesticides	RESULT DRY WT. BASIS	LIMIT OF QUANTITATION	LAB CODE
not be determined.			

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478394
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

SED-1 Stream Near B-19 Matrix Spike Duplicate Soil

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	4,400.	ug/kg	200.	134500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

306302

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478395
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

Continuation of LLI #1478394

P.O. 89-595
Rel.

ANALYSIS	RESULT DRY WT. BASIS		LIMIT OF QUANTITATION	LAB CODE
Aluminum	5,590.	mg/kg	40.	014300100P
Antimony	< 9.	mg/kg	9.	014400100P
Barium	< 40.	mg/kg	40.	014600100P
Beryllium	< 0.9	mg/kg	0.9	014700100P
Cadmium	4.6	mg/kg	0.9	014900100P
Calcium	330.	mg/kg	20.	015000100P
Chromium	8.	mg/kg	2.	015100100P
Cobalt	< 9.	mg/kg	9.	015200100P
Copper	53.	mg/kg	4.	015300100P
Iron	14,400.	mg/kg	9.	015400100P
Magnesium	260.	mg/kg	20.	015700100P
Manganese	64.	mg/kg	2.	015800100P
Mercury	0.15	mg/kg	0.07	015900100P
Nickel	7.	mg/kg	7.	016100100P
Potassium	210.	mg/kg	90.	016200100P
Silver	< 2.	mg/kg	2.	016600100P
Sodium	< 90.	mg/kg	90.	016700100P
Vanadium	< 9.	mg/kg	9.	017100100P
Zinc	332.	mg/kg	4.	017200100P
Cyanide, Total	0.2	mg/kg	0.2	023700100P
Arsenic (furnace method)	6.	mg/kg	2.	114500100P
Lead (furnace method)	22.3	mg/kg	0.9	115500100P
Selenium (furnace method)	5.0	mg/kg	0.9	116400100P
Thallium (furnace method)	< 2.	mg/kg	2.	117300100P
Moisture *AS RECEIVED*	44.9	% by wt.	0.1	135300100P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300803

III. GROUNDWATER SAMPLES

300804

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478182
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-1 MW-6 Water Sample
Collected on 01/08/90 at 1600 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Cyanide, Total	< 0.005	mg/l	0.005	023704000P
Aluminum	1.5	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	< 0.005	mg/l	0.005	024701400P
Cadmium	< 0.005	mg/l	0.005	024901400P
Calcium	123.	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	0.06	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	15.0	mg/l	0.05	025401400P
Magnesium	52.9	mg/l	0.05	025701400P
Manganese	12.7	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	0.04	mg/l	0.04	026101400P
Potassium	5.4	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	16.6	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	0.07	mg/l	0.02	027201400P
VOA GC/MS Library Search		attached		089005500P
Semivolatile Library Search		attached		089309500P
TCL Volatiles		attached		092227000P
TCL Semi-Volatiles		attached		092354000P
TCL Semi-Volatiles (cont)		attached		092400000P
TCL Pesticides		attached		093726000P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104503000P
Lead (furnace method)	< 0.005	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P
N-Methyl Carbamate Pesticides		attached		134011000P
Malathion	< 1.	ug/l	1.	900116500P
Pentachloronitrobenzene	< 10.	ug/l	10.	900201000P

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Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 500.00 244200

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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300305

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478182
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-1 MW-6 Water Sample
Collected on 01/08/90 at 1600 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	63.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	< 5.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	38.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	13.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	< 5.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	< 5.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene are not separated. Therefore, the result reported for trans-1,2-dichloroethene represents the combined total of both isomers.

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

300306

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478182
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-1 MW-6 Water Sample
Collected on 01/08/90 at 1600 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	< 10.	ug/l	10.	065500000P
bis (2-chloroethyl) ether	< 10.	ug/l	10.	066700000P
2-chlorophenol	< 10.	ug/l	10.	064600000P
1,3-dichlorobenzene	< 10.	ug/l	10.	067700000P
1,4-dichlorobenzene	< 10.	ug/l	10.	067800000P
benzyl alcohol	< 10.	ug/l	10.	092600000P
1,2-dichlorobenzene	< 10.	ug/l	10.	067600000P
2-methylphenol	< 10.	ug/l	10.	092700000P
bis (2-chloroisopropyl) ether	< 10.	ug/l	10.	066800000P
4-methylphenol	< 10.	ug/l	10.	092800000P
N-nitrosodi-n-propylamine	< 10.	ug/l	10.	069800000P
hexachloroethane	< 10.	ug/l	10.	069200000P
nitrobenzene	< 10.	ug/l	10.	069600000P
isophorone	< 10.	ug/l	10.	069400000P
2-nitrophenol	< 10.	ug/l	10.	065100000P
2,4-dimethylphenol	< 10.	ug/l	10.	064800000P
benzoic acid	< 50.	ug/l	50.	092900000P
bis (2-chloroethoxy) methane	< 10.	ug/l	10.	066600000P
2,4-dichlorophenol	< 10.	ug/l	10.	064700000P
1,2,4-trichlorobenzene	< 10.	ug/l	10.	070200000P
naphthalene	< 10.	ug/l	10.	069500000P
4-chloroaniline	< 10.	ug/l	10.	093000000P
hexachlorobutadiene	< 10.	ug/l	10.	069000000P
4-chloro-3-methylphenol	< 10.	ug/l	10.	065300000P
2-methylnaphthalene	< 10.	ug/l	10.	093100000P
hexachlorocyclopentadiene	< 10.	ug/l	10.	069100000P
2,4,6-trichlorophenol	< 10.	ug/l	10.	065600000P
2,4,5-trichlorophenol	< 50.	ug/l	50.	093200000P
2-chloronaphthalene	< 10.	ug/l	10.	067200000P
2-nitroaniline	< 50.	ug/l	50.	093300000P
dimethyl phthalate	< 10.	ug/l	10.	068100000P
acenaphthylene	< 10.	ug/l	10.	065800000P

Low surrogate recoveries were observed for this fraction. The extraction was repeated and low surrogate recoveries were again observed, indicating a significant matrix effect.

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Member American Council of Independent Laboratories Inc

300307

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478182
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-1 MW-6 Water Sample
Collected on 01/08/90 at 1600 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (cont)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 50.	ug/l	50.	093400000P
acenaphthene	< 10.	ug/l	10.	065700000P
2,4-dinitrophenol	< 50.	ug/l	50.	065000000P
4-nitrophenol	< 50.	ug/l	50.	065200000P
dibenzofuran	< 10.	ug/l	10.	093500000P
2,4-dinitrotoluene	< 10.	ug/l	10.	068300000P
2,6-dinitrotoluene	< 10.	ug/l	10.	068400000P
diethyl phthalate	< 10.	ug/l	10.	068000000P
4-chlorophenyl phenyl ether	< 10.	ug/l	10.	067300000P
fluorene	< 10.	ug/l	10.	068800000P
4-nitroaniline	< 50.	ug/l	50.	093600000P
2-methyl-4,6-dinitrophenol	< 50.	ug/l	50.	064900000P
N-nitrosodiphenylamine	< 10.	ug/l	10.	069900000P
4-bromophenyl phenyl ether	< 10.	ug/l	10.	067000000P
hexachlorobenzene	< 10.	ug/l	10.	068900000P
pentachlorophenol	< 50.	ug/l	50.	065400000P
phenanthrene	< 10.	ug/l	10.	070000000P
anthracene	< 10.	ug/l	10.	065900000P
di-n-butyl phthalate	< 10.	ug/l	10.	068200000P
fluoranthene	< 10.	ug/l	10.	068700000P
pyrene	< 10.	ug/l	10.	070100000P
butyl benzyl phthalate	< 10.	ug/l	10.	067100000P
3,3'-dichlorobenzidine	< 20.	ug/l	20.	067900000P
benzo (a) anthracene	< 10.	ug/l	10.	066100000P
bis (2-ethylhexyl) phthalate	< 10.	ug/l	10.	066900000P
chrysene	< 10.	ug/l	10.	067400000P
di-n-octyl phthalate	< 10.	ug/l	10.	068500000P
benzo (b) fluoranthene	< 10.	ug/l	10.	066300000P
benzo (K) fluoranthene	< 10.	ug/l	10.	066500000P
benzo (a) pyrene	< 10.	ug/l	10.	066200000P
indeno (1,2,3-cd) pyrene	< 10.	ug/l	10.	069300000P
dibenz (a,h) anthracene	< 10.	ug/l	10.	067500000P
benzo (ghi) perylene	< 10.	ug/l	10.	066400000P

Low surrogate recoveries were observed for this fraction. The extraction was repeated and low surrogate recoveries were again observed, indicating a significant matrix effect.

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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300308

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478182
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-1 MW-6 Water Sample
Collected on 01/08/90 at 1600 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	5.	ug/l	2.	060900000P
Beta BHC	< 2.	ug/l	2.	061000000P
Delta BHC	0.57	ug/l	0.05	061200000P
Gamma BHC - Lindane	3.	ug/l	2.	045300000P
Heptachlor	< 2.	ug/l	2.	045400000P
Aldrin	< 2.	ug/l	2.	045500000P
Heptachlor Epoxide	< 0.05	ug/l	0.05	061500000P
Endosulfan I	< 2.	ug/l	2.	062700000P
Dieldrin	< 0.1	ug/l	0.1	046900000P
DDE	< 0.1	ug/l	0.1	061600000P
Endrin	< 0.1	ug/l	0.1	047700000P
Endosulfan II	< 0.1	ug/l	0.1	062800000P
DDD	< 0.1	ug/l	0.1	061700000P
Endosulfan Sulfate	< 0.1	ug/l	0.1	062900000P
DDT	< 0.1	ug/l	0.1	047800000P
Endrin Ketone	0.2	ug/l	0.1	093800000P
Methoxychlor	< 0.5	ug/l	0.5	062100000P
Alpha Chlordane	< 0.5	ug/l	0.5	136100000P
Gamma Chlordane	< 0.5	ug/l	0.5	136200000P
Toxaphene	< 1.	ug/l	1.	094200000P
PCB-1016	< 25.	ug/l	25.	063900000P
PCB-1221	< 25.	ug/l	25.	064000000P
PCB-1232	< 25.	ug/l	25.	064100000P
PCB-1242	< 25.	ug/l	25.	064200000P
PCB-1248	< 25.	ug/l	25.	064300000P
PCB-1254	< 50.	ug/l	50.	064400000P
PCB-1260	< 50.	ug/l	50.	064500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300809

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478182
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-1 MW-6 Water Sample
Collected on 01/08/90 at 1600 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamate Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	182.	ug/l	4.	134500000P

The value generated using CA SOP 734 was 221. ug/l.

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300310

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW1M6

Lab Name: LANCASTER LABS Contract:

Lab Code: LANCAS Case No.: 244597 SAS No.: SDG No.: PPG5

Matrix: (soil/water) WATER Lab Sample ID: A1478182W

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A1478182W

Level: (low/med) LOW Date Received: 01/10/90

% Moisture: not dec. Date Analyzed: 01/11/90

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 2 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 64-17-5	ETHANOL	4.03	8.4	J
2. 67-63-0	2-PROPANOL	6.87	68	J

300611

FORM I VOA-TIC 1/87 Rev.

American Association for Laboratory Accreditation Chemical, Biological & Environmental Fields of Testing

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Questions? Contact Environmental Technical Services at (717) 656-2301

Member American Council of Independent Laboratories Inc.

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW1M6

Lab Name: LANCASTER LABS Contract: _____.
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) WATER Lab Sample ID: 1478182
Sample wt/vol: 1000.(g/mL) ML Lab File ID: >E2404
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. _____. dec. _____. Date Extracted: 01/11/90
Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 01/12/90
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 1.000

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown approx. C6 hydrocarb	8.58	10.	JB
2.	Unknown	10.04	28.	J
3. 130154	1,4-Naphthalenedione	18.96	16.	J
4.	Unknown	27.29	14.	J
5.	Unknown	28.15	580.	J
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

FORM I SV-TIC 1/87 Rev.

300812

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

See Reverse Side For Explanation Of Symbols And Abbreviations Used
Our Standard Terms And Conditions

Questions? Contact Environmental Technical Services at (717) 656-2301

Member American Council of Independent Laboratories, Inc.

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

03915

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478183
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-1 MW-6 (Dissolved) Water Sample
Collected on 01/08/90 at 1600 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	0.1	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	< 0.005	mg/l	0.005	024701400P
Cadmium	0.007	mg/l	0.005	024901400P
Calcium	113.	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	0.05	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	3.81	mg/l	0.05	025401400P
Magnesium	47.6	mg/l	0.05	025701400P
Manganese	10.9	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	< 0.04	mg/l	0.04	026101400P
Potassium	4.2	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	15.2	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	0.06	mg/l	0.02	027201400P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104503000P
Lead (furnace method)	< 0.005	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P

This sample was field filtered for dissolved metals.

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 90.00 048700

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300813

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478184
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-2 MW-5 Water Sample
Collected on 01/08/90 at 1620 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Cyanide, Total	< 0.005	mg/l	0.005	023704000P
Aluminum	500.	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	0.2	mg/l	0.1	024601400P
Beryllium	0.047	mg/l	0.005	024701400P
Cadmium	0.032	mg/l	0.005	024901400P
Calcium	78.7	mg/l	0.05	025001400P
Chromium	0.01	mg/l	0.01	025101400P
Cobalt	0.34	mg/l	0.05	025201400P
Copper	0.04	mg/l	0.02	025301400P
Iron	363.	mg/l	0.05	025401400P
Magnesium	24.4	mg/l	0.05	025701400P
Manganese	29.9	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	0.31	mg/l	0.04	026101400P
Potassium	12.9	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	7.2	mg/l	0.5	026701400P
Vanadium	0.18	mg/l	0.05	027101400P
Zinc	3.57	mg/l	0.02	027201400P
VOA GC/MS Library Search		attached		089005500P
Semivolatile Library Search		attached		089309500P
TCL Volatiles		attached		092227000P
TCL Semi-Volatiles		attached		092354000P
TCL Semi-Volatiles (cont)		attached		092400000P
TCL Pesticides		attached		093726000P
Arsenic (furnace method)	< 0.1	mg/l	0.1	104503000P
Lead (furnace method)	0.016	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.03	mg/l	0.03	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P
N-Methyl Carbamate Pesticides		attached		134011000P
Malathion	< 10.	ug/l	10.	900116500P
Pentachloronitrobenzene	< 10.	ug/l	10.	900201000P

Low surrogate recoveries were observed for this fraction. The extraction was repeated and low surrogate recoveries were again observed, indicating a significant matrix effect.

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories, Inc.

300814

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478184
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-2 MW-5 Water Sample
Collected on 01/08/90 at 1620 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	32.	ug/l	10.	091400000P
Carbon Disulfide	91.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	6.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	30.	ug/l	5.	084500000P
Benzene	10.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	7.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	16.	ug/l	5.	085100000P
Ethylbenzene	34.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	320.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene are not separated. Therefore, the result reported for trans-1,2-dichloroethene represents the combined total of both isomers.

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

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Member American Council of Independent Laboratories Inc

300815

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478184
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-2 MW-5 Water Sample
Collected on 01/08/90 at 1620 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	< 10.	ug/l	10.	065500000P
bis (2-chloroethyl) ether	< 10.	ug/l	10.	066700000P
2-chlorophenol	< 10.	ug/l	10.	064600000P
1,3-dichlorobenzene	< 10.	ug/l	10.	067700000P
1,4-dichlorobenzene	< 10.	ug/l	10.	067800000P
benzyl alcohol	< 10.	ug/l	10.	092600000P
1,2-dichlorobenzene	< 10.	ug/l	10.	067600000P
2-methylphenol	< 10.	ug/l	10.	092700000P
bis (2-chloroisopropyl) ether	< 10.	ug/l	10.	066800000P
4-methylphenol	< 10.	ug/l	10.	092800000P
N-nitrosodi-n-propylamine	< 10.	ug/l	10.	069800000P
hexachloroethane	< 10.	ug/l	10.	069200000P
nitrobenzene	207.	ug/l	10.	069600000P
isophorone	< 10.	ug/l	10.	069400000P
2-nitrophenol	< 10.	ug/l	10.	065100000P
2,4-dimethylphenol	< 10.	ug/l	10.	064800000P
benzoic acid	< 50.	ug/l	50.	092900000P
bis (2-chloroethoxy) methane	< 10.	ug/l	10.	066600000P
2,4-dichlorophenol	< 10.	ug/l	10.	064700000P
1,2,4-trichlorobenzene	35.	ug/l	10.	070200000P
naphthalene	< 10.	ug/l	10.	069500000P
4-chloroaniline	< 10.	ug/l	10.	093000000P
hexachlorobutadiene	< 10.	ug/l	10.	069000000P
4-chloro-3-methylphenol	< 10.	ug/l	10.	065300000P
2-methylnaphthalene	< 10.	ug/l	10.	093100000P
hexachlorocyclopentadiene	< 10.	ug/l	10.	069100000P
2,4,6-trichlorophenol	< 10.	ug/l	10.	065600000P
2,4,5-trichlorophenol	< 50.	ug/l	50.	093200000P
2-chloronaphthalene	< 10.	ug/l	10.	067200000P
2-nitroaniline	< 50.	ug/l	50.	093300000P
dimethyl phthalate	< 10.	ug/l	10.	068100000P
acenaphthylene	< 10.	ug/l	10.	065800000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
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American Association for Laboratory Accreditation
Medical, Biological & Environmental Laboratories Testing

Member American Council of Independent Laboratories Inc

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300816

ANALYSIS REPORT

Lancaster Laboratories, Inc.
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478184
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-2 MW-5 Water Sample
Collected on 01/08/90 at 1620 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (cont)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 50.	ug/l	50.	093400000P
acenaphthene	< 10.	ug/l	10.	065700000P
2,4-dinitrophenol	< 50.	ug/l	50.	065000000P
4-nitrophenol	< 50.	ug/l	50.	065200000P
dibenzofuran	< 10.	ug/l	10.	093500000P
2,4-dinitrotoluene	< 10.	ug/l	10.	068300000P
2,6-dinitrotoluene	< 10.	ug/l	10.	068400000P
diethyl phthalate	90.	ug/l	10.	068000000P
4-chlorophenyl phenyl ether	< 10.	ug/l	10.	067300000P
fluorene	< 10.	ug/l	10.	068800000P
4-nitroaniline	< 50.	ug/l	50.	093600000P
2-methyl-4,6-dinitrophenol	< 50.	ug/l	50.	064900000P
N-nitrosodiphenylamine	< 10.	ug/l	10.	069900000P
4-bromophenyl phenyl ether	< 10.	ug/l	10.	067000000P
hexachlorobenzene	< 10.	ug/l	10.	068900000P
pentachlorophenol	< 50.	ug/l	50.	065400000P
phenanthrene	< 10.	ug/l	10.	070000000P
anthracene	< 10.	ug/l	10.	065900000P
di-n-butyl phthalate	< 10.	ug/l	10.	068200000P
fluoranthene	< 10.	ug/l	10.	068700000P
pyrene	< 10.	ug/l	10.	070100000P
butyl benzyl phthalate	< 10.	ug/l	10.	067100000P
3,3'-dichlorobenzidine	< 20.	ug/l	20.	067900000P
benzo (a) anthracene	< 10.	ug/l	10.	066100000P
bis (2-ethylhexyl) phthalate	< 10.	ug/l	10.	066900000P
chrysene	< 10.	ug/l	10.	067400000P
di-n-octyl phthalate	< 10.	ug/l	10.	068500000P
benzo (b) fluoranthene	< 10.	ug/l	10.	066300000P
benzo (K) fluoranthene	< 10.	ug/l	10.	066500000P
benzo (a) pyrene	< 10.	ug/l	10.	066200000P
indeno (1,2,3-cd) pyrene	< 10.	ug/l	10.	069300000P
dibenz (a,h) anthracene	< 10.	ug/l	10.	067500000P
benzo (ghi) perylene	< 10.	ug/l	10.	066400000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300817

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478184
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-2 MW-5 Water Sample
Collected on 01/08/90 at 1620 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	84.	ug/l	5.	060900000P
Beta BHC	9.	ug/l	5.	061000000P
Delta BHC	16.	ug/l	5.	061200000P
Gamma BHC - Lindane	< 50.	ug/l	50.	045300000P
Heptachlor	< 5.	ug/l	5.	045400000P
Aldrin	< 5.	ug/l	5.	045500000P
Heptachlor Epoxide	< 5.	ug/l	5.	061500000P
Endosulfan I	< 5.	ug/l	5.	062700000P
Dieldrin	< 10.	ug/l	10.	046900000P
DDE	< 10.	ug/l	10.	061600000P
Endrin	< 10.	ug/l	10.	047700000P
Endosulfan II	< 10.	ug/l	10.	062800000P
DDD	< 10.	ug/l	10.	061700000P
Endosulfan Sulfate	< 10.	ug/l	10.	062900000P
DDT	< 10.	ug/l	10.	047800000P
Endrin Ketone	< 10.	ug/l	10.	093800000P
Methoxychlor	< 50.	ug/l	50.	062100000P
Alpha Chlordane	< 50.	ug/l	50.	136100000P
Gamma Chlordane	< 50.	ug/l	50.	136200000P
Toxaphene	< 100.	ug/l	100.	094200000P
PCB-1016	< 50.	ug/l	50.	063900000P
PCB-1221	< 500.	ug/l	500.	064000000P
PCB-1232	< 50.	ug/l	50.	064100000P
PCB-1242	< 50.	ug/l	50.	064200000P
PCB-1248	< 50.	ug/l	50.	064300000P
PCB-1254	< 100.	ug/l	100.	064400000P
PCB-1260	< 100.	ug/l	100.	064500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300818

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478184
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-2 MW-5 Water Sample
Collected on 01/08/90 at 1620 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamate Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	14,500.	ug/l	4.	134500000P

The value generated using CA SOP 734 was 2795. ug/l.

The value generated using CA SOP 734 was 2795. ug/l.

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Services of Testing

American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300819

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

GW2M5

Lab Name: LANCASTER LABS Contract:
Lab Code: LANCAS Case No.: 244597 SAS No.: SDG No.: PPG5
Matrix: (soil/water) WATER Lab Sample ID: A1478184W
Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A1478184W
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. Date Analyzed: 01/11/90
Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 3

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-18-3	METHANE,THIOBIS	5.93	12	J
2. 624-92-0	DISULFIDE,DIMETHYL	13.30	72	J
3. 98-82-8	BENZENE,(1-METHYLETHYL-)	24.67	270	J

300820

FORM I VOA-TIC

1/87 Rev.

American Association for Laboratory Accreditation
Technical Biological & Environmental Tests of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

Member American Council of Independent Laboratories, Inc.

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW2M5

Lab Name: LANCASTER LABS Contract: _____.
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) WATER Lab Sample ID: 1478184
Sample wt/vol: 1000.(g/mL) ML Lab File ID: >E2405
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. _____. dec. _____. Date Extracted: 01/11/90
Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 01/12/90
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 1.000

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	624920	Disulfide, dimethyl	4.16	52.	J
2.	1746776	Carbamic acid, 1-methylethyl	7.43	28.	J
3.		Benzene, (1-methylethyl)-	8.74	90.	JI
4.		Unknown	9.94	14.	J
5.		Benzenamine, 3-methyl-	12.19	38.	JI
6.		Benzaldehyde, 2-chloro-	13.24	12.	JI
7.		Phenol, 4-(1,1-dimethylethyl	16.62	34.	JI
8.	2953299	Phosphorodithioic acid, O,O,	14.34	10.	J
9.		Benzenamine, N-ethyl-N-methy	18.75	14.	JI
10.	130154	1,4-Naphthalenedione	18.97	38.	J
11.	122429	Carbamic acid, phenyl-, 1-me	19.66	660.	J
12.	6952596	Benzonitrile, 3-bromo-	19.84	8.	J
13.		Unknown approx. C6 hydrocarb	20.05	22.	J
14.		Unknown	21.52	80.	J
15.		Benzenemethanol, 4-chloro-.a	23.14	52.	JI
16.	13524044	Benzenemethanol, 2-chloro-.a	23.66	30.	J
17.		.alpha.-Lindane	23.73	20.	JI
18.	6108107	Cyclohexane, 1,2,3,4,5,6-hex	24.68	14.	J
19.		Unknown	28.11	190.	J
20.		Unknown	30.27	80.	J
21.					
22.					
23.					
24.					
25.					

*I= or isomer of compound.

FORM I SV-TIC 1/87 Rev.

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

Member American Council of Independent Laboratories, Inc.

300821

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478185
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-2 MW-5 (Dissolved) Water Sample
Collected on 01/08/90 at 1620 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	457.	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	0.042	mg/l	0.005	024701400P
Cadmium	0.032	mg/l	0.005	024901400P
Calcium	72.9	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	0.32	mg/l	0.05	025201400P
Copper	0.03	mg/l	0.02	025301400P
Iron	298.	mg/l	0.05	025401400P
Magnesium	22.3	mg/l	0.05	025701400P
Manganese	28.3	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	0.28	mg/l	0.04	026101400P
Potassium	10.7	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	7.9	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	3.49	mg/l	0.02	027201400P
Arsenic (furnace method)	< 0.05	mg/l	0.05	104503000P
Lead (furnace method)	0.007	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.03	mg/l	0.03	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P

This sample was field filtered for dissolved metals.

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1 COPY TO Data Package Group

300822

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 90.00 048700

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478187
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3A MW-1 Water Sample
Collected on 01/09/90 at 1315 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Cyanide, Total	< 0.005	mg/l	0.005	023704000P
Aluminum	0.9	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	< 0.005	mg/l	0.005	024701400P
Cadmium	< 0.005	mg/l	0.005	024901400P
Calcium	24.0	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	< 0.05	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	1.58	mg/l	0.05	025401400P
Magnesium	8.49	mg/l	0.05	025701400P
Manganese	0.19	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	< 0.04	mg/l	0.04	026101400P
Potassium	5.8	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	6.9	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	< 0.02	mg/l	0.02	027201400P
VOA GC/MS Library Search		attached		089005500P
Semivolatile Library Search		attached		089309500P
TCL Volatiles		attached		092227000P
TCL Semi-Volatiles		attached		092354000P
TCL Semi-Volatiles (cont)		attached		092400000P
TCL Pesticides		attached		093726000P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104503000P
Lead (furnace method)	< 0.005	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P
N-Methyl Carbamate Pesticides		attached		134011000P
Malathion	< 0.05	ug/l	0.05	900116500P
Pentachloronitrobenzene	< 10.	ug/l	10.	900201000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Sciences of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 250.00 219200

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300623

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478187
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3A MW-1 Water Sample
Collected on 01/09/90 at 1315 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	30.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	< 5.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	< 5.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	< 5.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene are not separated. Therefore, the result reported for trans-1,2-dichloroethene represents the combined total of both isomers.

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

306624

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478187
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3A MW-1 Water Sample
Collected on 01/09/90 at 1315 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	< 10.	ug/l	10.	065500000P
bis (2-chloroethyl) ether	< 10.	ug/l	10.	066700000P
2-chlorophenol	< 10.	ug/l	10.	064600000P
1,3-dichlorobenzene	< 10.	ug/l	10.	067700000P
1,4-dichlorobenzene	< 10.	ug/l	10.	067800000P
benzyl alcohol	< 10.	ug/l	10.	092600000P
1,2-dichlorobenzene	< 10.	ug/l	10.	067600000P
2-methylphenol	< 10.	ug/l	10.	092700000P
bis (2-chloroisopropyl) ether	< 10.	ug/l	10.	066800000P
4-methylphenol	< 10.	ug/l	10.	092800000P
N-nitrosodi-n-propylamine	< 10.	ug/l	10.	069800000P
hexachloroethane	< 10.	ug/l	10.	069200000P
nitrobenzene	< 10.	ug/l	10.	069600000P
isophorone	< 10.	ug/l	10.	069400000P
2-nitrophenol	< 10.	ug/l	10.	065100000P
2,4-dimethylphenol	< 10.	ug/l	10.	064800000P
benzoic acid	< 50.	ug/l	50.	092900000P
bis (2-chloroethoxy) methane	< 10.	ug/l	10.	066600000P
2,4-dichlorophenol	< 10.	ug/l	10.	064700000P
1,2,4-trichlorobenzene	< 10.	ug/l	10.	070200000P
naphthalene	< 10.	ug/l	10.	069500000P
4-chloroaniline	< 10.	ug/l	10.	093000000P
hexachlorobutadiene	< 10.	ug/l	10.	069000000P
4-chloro-3-methylphenol	< 10.	ug/l	10.	065300000P
2-methylnaphthalene	< 10.	ug/l	10.	093100000P
hexachlorocyclopentadiene	< 10.	ug/l	10.	069100000P
2,4,6-trichlorophenol	< 10.	ug/l	10.	065600000P
2,4,5-trichlorophenol	< 50.	ug/l	50.	093200000P
2-chloronaphthalene	< 10.	ug/l	10.	067200000P
2-nitroaniline	< 50.	ug/l	50.	093300000P
dimethyl phthalate	< 10.	ug/l	10.	068100000P
acenaphthylene	< 10.	ug/l	10.	065800000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

Member American Council of Independent Laboratories Inc

300825

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478187
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3A MW-1 Water Sample
Collected on 01/09/90 at 1315 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (cont)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 50.	ug/l	50.	093400000P
acenaphthene	< 10.	ug/l	10.	065700000P
2,4-dinitrophenol	< 50.	ug/l	50.	065000000P
4-nitrophenol	< 50.	ug/l	50.	065200000P
dibenzofuran	< 10.	ug/l	10.	093500000P
2,4-dinitrotoluene	< 10.	ug/l	10.	068300000P
2,6-dinitrotoluene	< 10.	ug/l	10.	068400000P
diethyl phthalate	< 10.	ug/l	10.	068000000P
4-chlorophenyl phenyl ether	< 10.	ug/l	10.	067300000P
fluorene	< 10.	ug/l	10.	068800000P
4-nitroaniline	< 50.	ug/l	50.	093600000P
2-methyl-4,6-dinitrophenol	< 50.	ug/l	50.	064900000P
N-nitrosodiphenylamine	< 10.	ug/l	10.	069900000P
4-bromophenyl phenyl ether	< 10.	ug/l	10.	067000000P
hexachlorobenzene	< 10.	ug/l	10.	068900000P
pentachlorophenol	< 50.	ug/l	50.	065400000P
phenanthrene	< 10.	ug/l	10.	070000000P
anthracene	< 10.	ug/l	10.	065900000P
di-n-butyl phthalate	< 10.	ug/l	10.	068200000P
fluoranthene	< 10.	ug/l	10.	068700000P
pyrene	< 10.	ug/l	10.	070100000P
butyl benzyl phthalate	< 10.	ug/l	10.	067100000P
3,3'-dichlorobenzidine	< 20.	ug/l	20.	067900000P
benzo (a) anthracene	< 10.	ug/l	10.	066100000P
bis (2-ethylhexyl) phthalate	< 10.	ug/l	10.	066900000P
chrysene	< 10.	ug/l	10.	067400000P
di-n-octyl phthalate	< 10.	ug/l	10.	068500000P
benzo (b) fluoranthene	< 10.	ug/l	10.	066300000P
benzo (K) fluoranthene	< 10.	ug/l	10.	066500000P
benzo (a) pyrene	< 10.	ug/l	10.	066200000P
indeno (1,2,3-cd) pyrene	< 10.	ug/l	10.	069300000P
dibenz (a,h) anthracene	< 10.	ug/l	10.	067500000P
benzo (ghi) perylene	< 10.	ug/l	10.	066400000P

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Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300826

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478187
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3A MW-1 Water Sample
Collected on 01/09/90 at 1315 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 0.05	ug/l	0.05	060900000P
Beta BHC	< 0.05	ug/l	0.05	061000000P
Delta BHC	< 0.05	ug/l	0.05	061200000P
Gamma BHC - Lindane	< 0.05	ug/l	0.05	045300000P
Heptachlor	< 0.05	ug/l	0.05	045400000P
Aldrin	< 0.05	ug/l	0.05	045500000P
Heptachlor Epoxide	< 0.05	ug/l	0.05	061500000P
Endosulfan I	< 0.05	ug/l	0.05	062700000P
Dieldrin	< 0.1	ug/l	0.1	046900000P
DDE	< 0.1	ug/l	0.1	061600000P
Endrin	< 0.1	ug/l	0.1	047700000P
Endosulfan II	< 0.1	ug/l	0.1	062800000P
DDD	< 0.1	ug/l	0.1	061700000P
Endosulfan Sulfate	< 0.1	ug/l	0.1	062900000P
DDT	< 0.1	ug/l	0.1	047800000P
Endrin Ketone	< 0.1	ug/l	0.1	093800000P
Methoxychlor	< 0.5	ug/l	0.5	062100000P
Alpha Chlordane	< 0.5	ug/l	0.5	136100000P
Gamma Chlordane	< 0.5	ug/l	0.5	136200000P
Toxaphene	< 1.	ug/l	1.	094200000P
PCB-1016	< 0.5	ug/l	0.5	063900000P
PCB-1221	< 0.5	ug/l	0.5	064000000P
PCB-1232	< 0.5	ug/l	0.5	064100000P
PCB-1242	< 0.5	ug/l	0.5	064200000P
PCB-1248	< 0.5	ug/l	0.5	064300000P
PCB-1254	< 1.	ug/l	1.	064400000P
PCB-1260	< 1.	ug/l	1.	064500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories, Inc.

300827

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478187
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3A MW-1 Water Sample
Collected on 01/09/90 at 1315 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamate Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 4.	ug/l	4.	134500000P

The value generated using CA SOP 734 was < 4. ug/l.

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300828

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
GW3AM

Lab Name: LANCASTER LABS Contract:
Lab Code: LANCAS Case No.: 244597 SAS No.: SDG No.: PPG5
Matrix: (soil/water) WATER Lab Sample ID: A1478187W
Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A1478187W
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. Date Analyzed: 01/11/90
Column (pack/cap) PACK Dilution Factor: 1.0
CONCENTRATION UNITS:
Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

300829

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American Association for Laboratory Accreditation
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Questions? Contact Environmental Technical Services at (717) 656-2301

Member American Council of Independent Laboratories, Inc.

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW3AM

Lab Name: LANCASTER LABS Contract: _____.
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) WATER Lab Sample ID: 1478187
Sample wt/vol: 1000.(g/mL) ML Lab File ID: >E2450
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. _____. dec. _____. Date Extracted: 01/11/90
Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 01/12/90
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 1.000

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown approx. C6 hydrocarb	8.54	10.	JB
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
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16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

FORM I SV-TIC 1/87 Rev.

300830

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Questions? Contact Environmental Technical Services at (717) 656-2301

Member American Council of Independent Laboratories Inc

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478188
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3A MW-1 (Dissolved) Water Sample
Collected on 01/09/90 at 1315 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	0.3	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	< 0.005	mg/l	0.005	024701400P
Cadmium	< 0.005	mg/l	0.005	024901400P
Calcium	22.4	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	< 0.05	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	0.31	mg/l	0.05	025401400P
Magnesium	7.63	mg/l	0.05	025701400P
Manganese	0.24	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	< 0.04	mg/l	0.04	026101400P
Potassium	5.5	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	8.7	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	< 0.02	mg/l	0.02	027201400P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104503000P
Lead (furnace method)	< 0.005	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P

This sample was field filtered for dissolved metals.

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 90.00 048700

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories, Inc.

300831

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478189
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D Unspiked Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Cyanide, Total	< 0.005	mg/l	0.005	023704000P
Aluminum	1.2	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	< 0.005	mg/l	0.005	024701400P
Cadmium	< 0.005	mg/l	0.005	024901400P
Calcium	24.1	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	< 0.05	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	2.13	mg/l	0.05	025401400P
Magnesium	8.32	mg/l	0.05	025701400P
Manganese	0.21	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	< 0.04	mg/l	0.04	026101400P
Potassium	5.9	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	7.3	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	< 0.02	mg/l	0.02	027201400P
VOA GC/MS Library Search		attached		089005500P
Semivolatile Library Search		attached		089309500P
TCL Volatiles		attached		092227000P
TCL Semi-Volatiles		attached		092354000P
TCL Semi-Volatiles (cont)		attached		092400000P
TCL Pesticides		attached		093726000P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104503000P
Lead (furnace method)	< 0.005	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P
N-Methyl Carbamate Pesticides		attached		134011000P
Malathion	< 0.05	ug/l	0.05	900116500P
Pentachloronitrobenzene	< 10.	ug/l	10.	900201000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 250.00 219200

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300832

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478189
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D Unspiked Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	< 10.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	< 5.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	< 5.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	< 5.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene are not separated. Therefore, the result reported for trans-1,2-dichloroethene represents the combined total of both isomers.

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amber American Council of
ependent Laboratories Inc

Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

300833

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478189
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D Unspiked Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	< 10.	ug/l	10.	065500000P
bis (2-chloroethyl) ether	< 10.	ug/l	10.	066700000P
2-chlorophenol	< 10.	ug/l	10.	064600000P
1,3-dichlorobenzene	< 10.	ug/l	10.	067700000P
1,4-dichlorobenzene	< 10.	ug/l	10.	067800000P
benzyl alcohol	< 10.	ug/l	10.	092600000P
1,2-dichlorobenzene	< 10.	ug/l	10.	067600000P
2-methylphenol	< 10.	ug/l	10.	092700000P
bis (2-chloroisopropyl) ether	< 10.	ug/l	10.	066800000P
4-methylphenol	< 10.	ug/l	10.	092800000P
N-nitrosodi-n-propylamine	< 10.	ug/l	10.	069800000P
hexachloroethane	< 10.	ug/l	10.	069200000P
nitrobenzene	< 10.	ug/l	10.	069600000P
isophorone	< 10.	ug/l	10.	069400000P
2-nitrophenol	< 10.	ug/l	10.	065100000P
2,4-dimethylphenol	< 10.	ug/l	10.	064800000P
benzoic acid	< 50.	ug/l	50.	092900000P
bis (2-chloroethoxy) methane	< 10.	ug/l	10.	066600000P
2,4-dichlorophenol	< 10.	ug/l	10.	064700000P
1,2,4-trichlorobenzene	< 10.	ug/l	10.	070200000P
naphthalene	< 10.	ug/l	10.	069500000P
4-chloroaniline	< 10.	ug/l	10.	093000000P
hexachlorobutadiene	< 10.	ug/l	10.	069000000P
4-chloro-3-methylphenol	< 10.	ug/l	10.	065300000P
2-methylnaphthalene	< 10.	ug/l	10.	093100000P
hexachlorocyclopentadiene	< 10.	ug/l	10.	069100000P
2,4,6-trichlorophenol	< 10.	ug/l	10.	065600000P
2,4,5-trichlorophenol	< 50.	ug/l	50.	093200000P
2-chloronaphthalene	< 10.	ug/l	10.	067200000P
2-nitroaniline	< 50.	ug/l	50.	093300000P
dimethyl phthalate	< 10.	ug/l	10.	068100000P
acenaphthylene	< 10.	ug/l	10.	065800000P

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Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300834

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478189
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D Unspiked Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (cont)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 50.	ug/l	50.	093400000P
acenaphthene	< 10.	ug/l	10.	065700000P
2,4-dinitrophenol	< 50.	ug/l	50.	065000000P
4-nitrophenol	< 50.	ug/l	50.	065200000P
dibenzofuran	< 10.	ug/l	10.	093500000P
2,4-dinitrotoluene	< 10.	ug/l	10.	068300000P
2,6-dinitrotoluene	< 10.	ug/l	10.	068400000P
diethyl phthalate	< 10.	ug/l	10.	068000000P
4-chlorophenyl phenyl ether	< 10.	ug/l	10.	067300000P
fluorene	< 10.	ug/l	10.	068800000P
4-nitroaniline	< 50.	ug/l	50.	093600000P
2-methyl-4,6-dinitrophenol	< 50.	ug/l	50.	064900000P
N-nitrosodiphenylamine	< 10.	ug/l	10.	069900000P
4-bromophenyl phenyl ether	< 10.	ug/l	10.	067000000P
hexachlorobenzene	< 10.	ug/l	10.	068900000P
pentachlorophenol	< 50.	ug/l	50.	065400000P
phenanthrene	< 10.	ug/l	10.	070000000P
anthracene	< 10.	ug/l	10.	065900000P
di-n-butyl phthalate	< 10.	ug/l	10.	068200000P
fluoranthene	< 10.	ug/l	10.	068700000P
pyrene	< 10.	ug/l	10.	070100000P
butyl benzyl phthalate	< 10.	ug/l	10.	067100000P
3,3'-dichlorobenzidine	< 20.	ug/l	20.	067900000P
benzo (a) anthracene	< 10.	ug/l	10.	066100000P
bis (2-ethylhexyl) phthalate	< 10.	ug/l	10.	066900000P
chrysene	< 10.	ug/l	10.	067400000P
di-n-octyl phthalate	< 10.	ug/l	10.	068500000P
benzo (b) fluoranthene	< 10.	ug/l	10.	066300000P
benzo (K) fluoranthene	< 10.	ug/l	10.	066500000P
benzo (a) pyrene	< 10.	ug/l	10.	066200000P
indeno (1,2,3-cd) pyrene	< 10.	ug/l	10.	069300000P
dibenz (a,h) anthracene	< 10.	ug/l	10.	067500000P
benzo (ghi) perylene	< 10.	ug/l	10.	066400000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300835

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478189
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D Unspiked Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 0.05	ug/l	0.05	060900000P
Beta BHC	< 0.05	ug/l	0.05	061000000P
Delta BHC	< 0.05	ug/l	0.05	061200000P
Gamma BHC - Lindane	< 0.05	ug/l	0.05	045300000P
Heptachlor	< 0.05	ug/l	0.05	045400000P
Aldrin	< 0.05	ug/l	0.05	045500000P
Heptachlor Epoxide	< 0.05	ug/l	0.05	061500000P
Endosulfan I	< 0.05	ug/l	0.05	062700000P
Dieldrin	< 0.1	ug/l	0.1	046900000P
DDE	< 0.1	ug/l	0.1	061600000P
Endrin	< 0.1	ug/l	0.1	047700000P
Endosulfan II	< 0.1	ug/l	0.1	062800000P
DDD	< 0.1	ug/l	0.1	061700000P
Endosulfan Sulfate	< 0.1	ug/l	0.1	062900000P
DDT	< 0.1	ug/l	0.1	047800000P
Endrin Ketone	< 0.1	ug/l	0.1	093800000P
Methoxychlor	< 0.5	ug/l	0.5	062100000P
Alpha Chlordane	< 0.5	ug/l	0.5	136100000P
Gamma Chlordane	< 0.5	ug/l	0.5	136200000P
Toxaphene	< 1.	ug/l	1.	094200000P
PCB-1016	< 0.5	ug/l	0.5	063900000P
PCB-1221	< 0.5	ug/l	0.5	064000000P
PCB-1232	< 0.5	ug/l	0.5	064100000P
PCB-1242	< 0.5	ug/l	0.5	064200000P
PCB-1248	< 0.5	ug/l	0.5	064300000P
PCB-1254	< 1.	ug/l	1.	064400000P
PCB-1260	< 1.	ug/l	1.	064500000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300836

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478189
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D Unspiked Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamate Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 4.	ug/l	4.	134500000P

The value generated using CA SOP 734 was < 4. ug/l.

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American Association for Laboratory Accreditation Chemical Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300837

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW3BU

Lab Name: LANCASTER LABS Contract:

Lab Code: LANCAS Case No.: 244597 SAS No.: SDG No.: PPG5

Matrix: (soil/water) WATER Lab Sample ID: A1478189W

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A1478189W

Level: (low/med) LOW Date Received: 01/10/90

% Moisture: not dec. Date Analyzed: 01/11/90

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

300838

FORM I VOA-TIC

1/87 Rev.

American Association for Laboratory Accreditation Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

Member American Council of Independent Laboratories, Inc.

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW3BUUS

Lab Name: LANCASTER LABS Contract: _____.
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) WATER Lab Sample ID: 1478189
Sample wt/vol: 1000.(g/mL) ML Lab File ID: >E2401
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. _____. dec. _____. Date Extracted: 01/11/90
Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 01/12/90
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 1.000

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown approx. C6 hydrocarb	8.59	10.	JB
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

FORM I SV-TIC 1/87 Rev.

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

300839

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

Member American Council of Independent Laboratories, Inc.

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478190
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D (Dissolved) Unspiked Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	< 0.1	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	< 0.005	mg/l	0.005	024701400P
Cadmium	< 0.005	mg/l	0.005	024901400P
Calcium	22.5	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	< 0.05	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	0.26	mg/l	0.05	025401400P
Magnesium	7.62	mg/l	0.05	025701400P
Manganese	0.24	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	< 0.04	mg/l	0.04	026101400P
Potassium	5.5	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	7.5	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	< 0.02	mg/l	0.02	027201400P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104503000P
Lead (furnace method)	< 0.005	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P

This sample was field filtered for dissolved metals.

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Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 90.00 048700

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300840

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478191
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D Matrix Spike Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Cyanide, Total	0.390	mg/l	0.005	023704000P
Aluminum	4.4	mg/l	0.1	024301400P
Antimony	0.24	mg/l	0.05	024401400P
Barium	1.0	mg/l	0.1	024601400P
Beryllium	0.025	mg/l	0.005	024701400P
Cadmium	0.023	mg/l	0.005	024901400P
Calcium	25.0	mg/l	0.05	025001400P
Chromium	0.10	mg/l	0.01	025101400P
Cobalt	0.24	mg/l	0.05	025201400P
Copper	0.13	mg/l	0.02	025301400P
Iron	3.48	mg/l	0.05	025401400P
Magnesium	9.04	mg/l	0.05	025701400P
Manganese	0.49	mg/l	0.01	025801400P
Mercury	0.0012	mg/l	0.0002	025902500P
Nickel	0.25	mg/l	0.04	026101400P
Potassium	7.9	mg/l	0.5	026201400P
Silver	0.02	mg/l	0.01	026601400P
Sodium	9.9	mg/l	0.5	026701400P
Vanadium	0.25	mg/l	0.05	027101400P
Zinc	0.27	mg/l	0.02	027201400P
TCL Volatiles		attached		092227000P
TCL Semi-Volatiles		attached		092354000P
TCL Semi-Volatiles (cont)		attached		092400000P
TCL Pesticides		attached		093726000P
Arsenic (furnace method)	0.04	mg/l	0.01	104503000P
Lead (furnace method)	0.025	mg/l	0.005	105503000P
Selenium (furnace method)	0.010	mg/l	0.005	106403000P
Thallium (furnace method)	0.06	mg/l	0.01	107303000P
N-Methyl Carbamate Pesticides		attached		134011000P
Malathion	3.6	ug/l	0.1	900116500P
Pentachloronitrobenzene	51.	ug/l	10.	900201000P

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1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 250.00 204200

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300841

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478191
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D Matrix Spike Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	17.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	45.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	44.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	41.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	47.	ug/l	5.	085000000P
Chlorobenzene	47.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	< 5.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene are not separated. Therefore, the result reported for trans-1,2-dichloroethene represents the combined total of both isomers.

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

Member American Council of Independent Laboratories, Inc.

300842

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478191
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D Matrix Spike Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	57.	ug/l	10.	065500000P
bis (2-chloroethyl) ether	< 10.	ug/l	10.	066700000P
2-chlorophenol	126.	ug/l	10.	064600000P
1,3-dichlorobenzene	< 10.	ug/l	10.	067700000P
1,4-dichlorobenzene	53.	ug/l	10.	067800000P
benzyl alcohol	< 10.	ug/l	10.	092600000P
1,2-dichlorobenzene	< 10.	ug/l	10.	067600000P
2-methylphenol	< 10.	ug/l	10.	092700000P
bis (2-chloroisopropyl) ether	< 10.	ug/l	10.	066800000P
4-methylphenol	< 10.	ug/l	10.	092800000P
N-nitrosodi-n-propylamine	41.	ug/l	10.	069800000P
hexachloroethane	< 10.	ug/l	10.	069200000P
nitrobenzene	< 10.	ug/l	10.	069600000P
isophorone	< 10.	ug/l	10.	069400000P
2-nitrophenol	< 10.	ug/l	10.	065100000P
2,4-dimethylphenol	< 10.	ug/l	10.	064800000P
benzoic acid	< 50.	ug/l	50.	092900000P
bis (2-chloroethoxy) methane	< 10.	ug/l	10.	066600000P
2,4-dichlorophenol	< 10.	ug/l	10.	064700000P
1,2,4-trichlorobenzene	57.	ug/l	10.	070200000P
naphthalene	< 10.	ug/l	10.	069500000P
4-chloroaniline	< 10.	ug/l	10.	093000000P
hexachlorobutadiene	< 10.	ug/l	10.	069000000P
4-chloro-3-methylphenol	124.	ug/l	10.	065300000P
2-methylnaphthalene	< 10.	ug/l	10.	093100000P
hexachlorocyclopentadiene	< 10.	ug/l	10.	069100000P
2,4,6-trichlorophenol	< 10.	ug/l	10.	065600000P
2,4,5-trichlorophenol	< 50.	ug/l	50.	093200000P
2-chloronaphthalene	< 10.	ug/l	10.	067200000P
2-nitroaniline	< 50.	ug/l	50.	093300000P
dimethyl phthalate	< 10.	ug/l	10.	068100000P
acenaphthylene	< 10.	ug/l	10.	065800000P

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Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300843

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478191
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D Matrix Spike Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (cont)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 50.	ug/l	50.	093400000P
acenaphthene	69.	ug/l	10.	065700000P
2,4-dinitrophenol	< 50.	ug/l	50.	065000000P
4-nitrophenol	< 50.	ug/l	50.	065200000P
dibenzofuran	< 10.	ug/l	10.	093500000P
2,4-dinitrotoluene	50.	ug/l	10.	068300000P
2,6-dinitrotoluene	< 10.	ug/l	10.	068400000P
diethyl phthalate	< 10.	ug/l	10.	068000000P
4-chlorophenyl phenyl ether	< 10.	ug/l	10.	067300000P
fluorene	< 10.	ug/l	10.	068800000P
4-nitroaniline	< 50.	ug/l	50.	093600000P
2-methyl-4,6-dinitrophenol	< 50.	ug/l	50.	064900000P
N-nitrosodiphenylamine	< 10.	ug/l	10.	069900000P
4-bromophenyl phenyl ether	< 10.	ug/l	10.	067000000P
hexachlorobenzene	< 10.	ug/l	10.	068900000P
pentachlorophenol	131.	ug/l	50.	065400000P
phenanthrene	< 10.	ug/l	10.	070000000P
anthracene	< 10.	ug/l	10.	065900000P
di-n-butyl phthalate	< 10.	ug/l	10.	068200000P
fluoranthene	< 10.	ug/l	10.	068700000P
pyrene	76.	ug/l	10.	070100000P
butyl benzyl phthalate	< 10.	ug/l	10.	067100000P
3,3'-dichlorobenzidine	< 20.	ug/l	20.	067900000P
benzo (a) anthracene	< 10.	ug/l	10.	066100000P
bis (2-ethylhexyl) phthalate	< 10.	ug/l	10.	066900000P
chrysene	< 10.	ug/l	10.	067400000P
di-n-octyl phthalate	< 10.	ug/l	10.	068500000P
benzo (b) fluoranthene	< 10.	ug/l	10.	066300000P
benzo (K) fluoranthene	< 10.	ug/l	10.	066500000P
benzo (a) pyrene	< 10.	ug/l	10.	066200000P
indeno (1,2,3-cd) pyrene	< 10.	ug/l	10.	069300000P
dibenz (a,h) anthracene	< 10.	ug/l	10.	067500000P
benzo (ghi) perylene	< 10.	ug/l	10.	066400000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300844

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478191
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D Matrix Spike Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 0.05	ug/l	0.05	060900000P
Beta BHC	< 0.05	ug/l	0.05	061000000P
Delta BHC	< 0.05	ug/l	0.05	061200000P
Gamma BHC - Lindane	0.25	ug/l	0.05	045300000P
Heptachlor	0.25	ug/l	0.05	045400000P
Aldrin	0.21	ug/l	0.05	045500000P
Heptachlor Epoxide	< 0.05	ug/l	0.05	061500000P
Endosulfan I	< 0.05	ug/l	0.05	062700000P
Dieldrin	0.8	ug/l	0.1	046900000P
DDE	< 0.1	ug/l	0.1	061600000P
Endrin	0.8	ug/l	0.1	047700000P
Endosulfan II	< 0.1	ug/l	0.1	062800000P
DDD	< 0.1	ug/l	0.1	061700000P
Endosulfan Sulfate	< 0.1	ug/l	0.1	062900000P
DDT	0.9	ug/l	0.1	047800000P
Endrin Ketone	< 0.1	ug/l	0.1	093800000P
Methoxychlor	< 0.5	ug/l	0.5	062100000P
Alpha Chlordane	< 0.5	ug/l	0.5	136100000P
Gamma Chlordane	< 0.5	ug/l	0.5	136200000P
Toxaphene	< 1.	ug/l	1.	094200000P
PCB-1016	< 0.5	ug/l	0.5	063900000P
PCB-1221	< 0.5	ug/l	0.5	064000000P
PCB-1232	< 0.5	ug/l	0.5	064100000P
PCB-1242	< 0.5	ug/l	0.5	064200000P
PCB-1248	< 0.5	ug/l	0.5	064300000P
PCB-1254	< 1.	ug/l	1.	064400000P
PCB-1260	< 1.	ug/l	1.	064500000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300845

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478191
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D Matrix Spike Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamate Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	6.	ug/l	4.	134500000P

The recovery data generated using EPA 531.1 was as follows:
6./9. = 67%
The recovery data generated using CA SOP 734 was as follows:
42./49. = 86%

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300846

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478192
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D Matrix Spike (Dissolved) Water
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	1.0	mg/l	0.1	024301400P
Antimony	0.24	mg/l	0.05	024401400P
Barium	1.0	mg/l	0.1	024601400P
Beryllium	0.024	mg/l	0.005	024701400P
Cadmium	0.022	mg/l	0.005	024901400P
Calcium	24.0	mg/l	0.05	025001400P
Chromium	0.10	mg/l	0.01	025101400P
Cobalt	0.24	mg/l	0.05	025201400P
Copper	0.12	mg/l	0.02	025301400P
Iron	0.74	mg/l	0.05	025401400P
Magnesium	8.46	mg/l	0.05	025701400P
Manganese	0.47	mg/l	0.01	025801400P
Mercury	0.0011	mg/l	0.0002	025902500P
Nickel	0.24	mg/l	0.04	026101400P
Potassium	7.4	mg/l	0.5	026201400P
Silver	0.03	mg/l	0.01	026601400P
Sodium	9.0	mg/l	0.5	026701400P
Vanadium	0.24	mg/l	0.05	027101400P
Zinc	0.26	mg/l	0.02	027201400P
Arsenic (furnace method)	0.03	mg/l	0.01	104503000P
Lead (furnace method)	0.016	mg/l	0.005	105503000P
Selenium (furnace method)	0.010	mg/l	0.005	106403000P
Thallium (furnace method)	0.06	mg/l	0.01	107303000P

This sample was field filtered for dissolved metals.

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112 03915 90.00 048700

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300847

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478193
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D Matrix Spike Dup. & Duplicate
Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Cyanide, Total	< 0.005	mg/l	0.005	023704000P
Aluminum	1.3	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	< 0.005	mg/l	0.005	024701400P
Cadmium	< 0.005	mg/l	0.005	024901400P
Calcium	22.6	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	< 0.05	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	2.01	mg/l	0.05	025401400P
Magnesium	8.08	mg/l	0.05	025701400P
Manganese	0.19	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	< 0.04	mg/l	0.04	026101400P
Potassium	5.7	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	7.1	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	0.03	mg/l	0.02	027201400P
TCL Volatiles		attached		092227000P
TCL Semi-Volatiles		attached		092354000P
TCL Semi-Volatiles (cont)		attached		092400000P
TCL Pesticides		attached		093726000P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104503000P
Lead (furnace method)	< 0.005	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P
N-Methyl Carbamate Pesticides		attached		134011000P
Malathion	4.0	ug/l	0.1	900116500P
Pentachloronitrobenzene	69.	ug/l	10.	900201000P

This sample functions as a matrix spike duplicate for organic compounds and as a duplicate for inorganic compounds. This means that for quality control purposes, inorganic compounds will be compared with the unspiked sample and organic compounds will be spiked with known concentrations of analyte for comparison with the matrix spike sample.

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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Chemical, Biological & Environmental Fields of Testing

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300848

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478193
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D Matrix Spike Dup. & Duplicate
Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	21.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	44.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	42.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	40.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	45.	ug/l	5.	085000000P
Chlorobenzene	45.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	< 5.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene are not separated. Therefore, the result reported for trans-1,2-dichloroethene represents the combined total of both isomers.

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

300849

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478193
Date Reported 2/21/90
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PPG GW-3B MW-1D Matrix Spike Dup. & Duplicate
Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	56.	ug/l	10.	065500000P
bis (2-chloroethyl) ether	< 10.	ug/l	10.	066700000P
2-chlorophenol	121.	ug/l	10.	064600000P
1,3-dichlorobenzene	< 10.	ug/l	10.	067700000P
1,4-dichlorobenzene	65.	ug/l	10.	067800000P
benzyl alcohol	< 10.	ug/l	10.	092600000P
1,2-dichlorobenzene	< 10.	ug/l	10.	067600000P
2-methylphenol	< 10.	ug/l	10.	092700000P
bis (2-chloroisopropyl) ether	< 10.	ug/l	10.	066800000P
4-methylphenol	< 10.	ug/l	10.	092800000P
N-nitrosodi-n-propylamine	49.	ug/l	10.	069800000P
hexachloroethane	< 10.	ug/l	10.	069200000P
nitrobenzene	< 10.	ug/l	10.	069600000P
isophorone	< 10.	ug/l	10.	069400000P
2-nitrophenol	< 10.	ug/l	10.	065100000P
2,4-dimethylphenol	< 10.	ug/l	10.	064800000P
benzoic acid	< 50.	ug/l	50.	092900000P
bis (2-chloroethoxy) methane	< 10.	ug/l	10.	066600000P
2,4-dichlorophenol	< 10.	ug/l	10.	064700000P
1,2,4-trichlorobenzene	72.	ug/l	10.	070200000P
naphthalene	< 10.	ug/l	10.	069500000P
4-chloroaniline	< 10.	ug/l	10.	093000000P
hexachlorobutadiene	< 10.	ug/l	10.	069000000P
4-chloro-3-methylphenol	125.	ug/l	10.	065300000P
2-methylnaphthalene	< 10.	ug/l	10.	093100000P
hexachlorocyclopentadiene	< 10.	ug/l	10.	069100000P
2,4,6-trichlorophenol	< 10.	ug/l	10.	065600000P
2,4,5-trichlorophenol	< 50.	ug/l	50.	093200000P
2-chloronaphthalene	< 10.	ug/l	10.	067200000P
2-nitroaniline	< 50.	ug/l	50.	093300000P
dimethyl phthalate	< 10.	ug/l	10.	068100000P
acenaphthylene	< 10.	ug/l	10.	065800000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300850

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478193
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
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PPG GW-3B MW-1D Matrix Spike Dup. & Duplicate
Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (cont)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 50.	ug/l	50.	093400000P
acenaphthene	84.	ug/l	10.	065700000P
2,4-dinitrophenol	< 50.	ug/l	50.	065000000P
4-nitrophenol	< 50.	ug/l	50.	065200000P
dibenzofuran	< 10.	ug/l	10.	093500000P
2,4-dinitrotoluene	66.	ug/l	10.	068300000P
2,6-dinitrotoluene	< 10.	ug/l	10.	068400000P
diethyl phthalate	< 10.	ug/l	10.	068000000P
4-chlorophenyl phenyl ether	< 10.	ug/l	10.	067300000P
fluorene	< 10.	ug/l	10.	068800000P
4-nitroaniline	< 50.	ug/l	50.	093600000P
2-methyl-4,6-dinitrophenol	< 50.	ug/l	50.	064900000P
N-nitrosodiphenylamine	< 10.	ug/l	10.	069900000P
4-bromophenyl phenyl ether	< 10.	ug/l	10.	067000000P
hexachlorobenzene	< 10.	ug/l	10.	068900000P
pentachlorophenol	138.	ug/l	50.	065400000P
phenanthrene	< 10.	ug/l	10.	070000000P
anthracene	< 10.	ug/l	10.	065900000P
di-n-butyl phthalate	< 10.	ug/l	10.	068200000P
fluoranthene	< 10.	ug/l	10.	068700000P
pyrene	87.	ug/l	10.	070100000P
butyl benzyl phthalate	< 10.	ug/l	10.	067100000P
3,3'-dichlorobenzidine	< 20.	ug/l	20.	067900000P
benzo (a) anthracene	< 10.	ug/l	10.	066100000P
bis (2-ethylhexyl) phthalate	< 10.	ug/l	10.	066900000P
chrysene	< 10.	ug/l	10.	067400000P
di-n-octyl phthalate	< 10.	ug/l	10.	068500000P
benzo (b) fluoranthene	< 10.	ug/l	10.	066300000P
benzo (K) fluoranthene	< 10.	ug/l	10.	066500000P
benzo (a) pyrene	< 10.	ug/l	10.	066200000P
indeno (1,2,3-cd) pyrene	< 10.	ug/l	10.	069300000P
dibenz (a,h) anthracene	< 10.	ug/l	10.	067500000P
benzo (ghi) perylene	< 10.	ug/l	10.	066400000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

Member American Council of Independent Laboratories Inc

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478193
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D Matrix Spike Dup. & Duplicate
Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 0.05	ug/l	0.05	060900000P
Beta BHC	< 0.05	ug/l	0.05	061000000P
Delta BHC	< 0.05	ug/l	0.05	061200000P
Gamma BHC - Lindane	0.27	ug/l	0.05	045300000P
Heptachlor	0.26	ug/l	0.05	045400000P
Aldrin	0.23	ug/l	0.05	045500000P
Heptachlor Epoxide	< 0.05	ug/l	0.05	061500000P
Endosulfan I	< 0.05	ug/l	0.05	062700000P
Dieldrin	0.8	ug/l	0.1	046900000P
DDE	< 0.1	ug/l	0.1	061600000P
Endrin	0.8	ug/l	0.1	047700000P
Endosulfan II	< 0.1	ug/l	0.1	062800000P
DDD	< 0.1	ug/l	0.1	061700000P
Endosulfan Sulfate	< 0.1	ug/l	0.1	062900000P
DDT	0.7	ug/l	0.1	047800000P
Endrin Ketone	< 0.1	ug/l	0.1	093800000P
Methoxychlor	< 0.5	ug/l	0.5	062100000P
Alpha Chlordane	< 0.5	ug/l	0.5	136100000P
Gamma Chlordane	< 0.5	ug/l	0.5	136200000P
Toxaphene	< 1.	ug/l	1.	094200000P
PCB-1016	< 0.5	ug/l	0.5	063900000P
PCB-1221	< 0.5	ug/l	0.5	064000000P
PCB-1232	< 0.5	ug/l	0.5	064100000P
PCB-1242	< 0.5	ug/l	0.5	064200000P
PCB-1248	< 0.5	ug/l	0.5	064300000P
PCB-1254	< 1.	ug/l	1.	064400000P
PCB-1260	< 1.	ug/l	1.	064500000P

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Chemical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478193
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D Matrix Spike Dup. & Duplicate
Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamate Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	6.	ug/l	4.	134500000P

The recovery data generated using EPA 531.1 was as follows:
6./9. = 67%
The recovery data generated using CA SOP 734 was as follows:
44./49. = 90%

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Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300853

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478194
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-3B MW-1D Matrix Spike Dup. & Duplicate
(Dissolved) Water Sample
Collected on 01/09/90 at 1320 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	< 0.1	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	< 0.005	mg/l	0.005	024701400P
Cadmium	< 0.005	mg/l	0.005	024901400P
Calcium	22.1	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	< 0.05	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	0.26	mg/l	0.05	025401400P
Magnesium	7.50	mg/l	0.05	025701400P
Manganese	0.24	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	< 0.04	mg/l	0.04	026101400P
Potassium	5.5	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	7.3	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	< 0.02	mg/l	0.02	027201400P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104503000P
Lead (furnace method)	< 0.005	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P

This sample functions as a matrix spike duplicate for organic compounds and as a duplicate for inorganic compounds. This means that for quality control purposes, inorganic compounds will be compared with the unspiked sample and organic compounds will be spiked with known concentrations of analyte for comparison with the matrix spike sample.
This sample was field filtered for dissolved metals.

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112 03915 90.00 048700

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300854

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478197
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-4 MW-3 Water Sample
Collected on 01/09/90 at 1500 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Cyanide, Total	< 0.005	mg/l	0.005	023704000P
Aluminum	2.1	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	< 0.005	mg/l	0.005	024701400P
Cadmium	< 0.005	mg/l	0.005	024901400P
Calcium	22.6	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	< 0.05	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	2.67	mg/l	0.05	025401400P
Magnesium	6.08	mg/l	0.05	025701400P
Manganese	0.78	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	< 0.04	mg/l	0.04	026101400P
Potassium	2.8	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	7.8	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	0.07	mg/l	0.02	027201400P
VOA GC/MS Library Search		attached		089005500P
Semivolatile Library Search		attached		089309500P
TCL Volatiles		attached		092227000P
TCL Semi-Volatiles		attached		092354000P
TCL Semi-Volatiles (cont)		attached		092400000P
TCL Pesticides		attached		093726000P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104503000P
Lead (furnace method)	< 0.005	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P
N-Methyl Carbamate Pesticides		attached		134011000P
Malathion	< 0.1	ug/l	0.1	900116500P
Pentachloronitrobenzene	< 40.	ug/l	40.	900201000P

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Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 250.00 219200

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Member American Council of Independent Laboratories Inc

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300855

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478197
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-4 MW-3 Water Sample
Collected on 01/09/90 at 1500 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	32.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	< 5.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	< 5.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	< 5.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene are not separated. Therefore, the result reported for trans-1,2-dichloroethene represents the combined total of both isomers.

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

300856

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478197
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-4 MW-3 Water Sample
Collected on 01/09/90 at 1500 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	< 40.	ug/l	40.	065500000P
bis (2-chloroethyl) ether	< 40.	ug/l	40.	066700000P
2-chlorophenol	< 40.	ug/l	40.	064600000P
1,3-dichlorobenzene	< 40.	ug/l	40.	067700000P
1,4-dichlorobenzene	< 40.	ug/l	40.	067800000P
benzyl alcohol	< 40.	ug/l	40.	092600000P
1,2-dichlorobenzene	< 40.	ug/l	40.	067600000P
2-methylphenol	< 40.	ug/l	40.	092700000P
bis (2-chloroisopropyl) ether	< 40.	ug/l	40.	066800000P
4-methylphenol	< 40.	ug/l	40.	092800000P
N-nitrosodi-n-propylamine	< 40.	ug/l	40.	069800000P
hexachloroethane	< 40.	ug/l	40.	069200000P
nitrobenzene	< 40.	ug/l	40.	069600000P
isophorone	< 40.	ug/l	40.	069400000P
2-nitrophenol	< 40.	ug/l	40.	065100000P
2,4-dimethylphenol	< 40.	ug/l	40.	064800000P
benzoic acid	< 200.	ug/l	200.	092900000P
bis (2-chloroethoxy) methane	< 40.	ug/l	40.	066600000P
2,4-dichlorophenol	< 40.	ug/l	40.	064700000P
1,2,4-trichlorobenzene	< 40.	ug/l	40.	070200000P
naphthalene	< 40.	ug/l	40.	069500000P
4-chloroaniline	< 40.	ug/l	40.	093000000P
hexachlorobutadiene	< 40.	ug/l	40.	069000000P
4-chloro-3-methylphenol	< 40.	ug/l	40.	065300000P
2-methylnaphthalene	< 40.	ug/l	40.	093100000P
hexachlorocyclopentadiene	< 40.	ug/l	40.	069100000P
2,4,6-trichlorophenol	< 40.	ug/l	40.	065600000P
2,4,5-trichlorophenol	< 200.	ug/l	200.	093200000P
2-chloronaphthalene	< 40.	ug/l	40.	067200000P
2-nitroaniline	< 200.	ug/l	200.	093300000P
dimethyl phthalate	< 40.	ug/l	40.	068100000P
acenaphthylene	< 40.	ug/l	40.	065800000P

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Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300857

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478197
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-4 MW-3 Water Sample
Collected on 01/09/90 at 1500 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (cont)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 200.	ug/l	200.	093400000P
acenaphthene	< 40.	ug/l	40.	065700000P
2,4-dinitrophenol	< 200.	ug/l	200.	065000000P
4-nitrophenol	< 200.	ug/l	200.	065200000P
dibenzofuran	< 40.	ug/l	40.	093500000P
2,4-dinitrotoluene	< 40.	ug/l	40.	068300000P
2,6-dinitrotoluene	< 40.	ug/l	40.	068400000P
diethyl phthalate	< 40.	ug/l	40.	068000000P
4-chlorophenyl phenyl ether	< 40.	ug/l	40.	067300000P
fluorene	< 40.	ug/l	40.	068800000P
4-nitroaniline	< 200.	ug/l	200.	093600000P
2-methyl-4,6-dinitrophenol	< 200.	ug/l	200.	064900000P
N-nitrosodiphenylamine	< 40.	ug/l	40.	069900000P
4-bromophenyl phenyl ether	< 40.	ug/l	40.	067000000P
hexachlorobenzene	< 40.	ug/l	40.	068900000P
pentachlorophenol	< 200.	ug/l	200.	065400000P
phenanthrene	< 40.	ug/l	40.	070000000P
anthracene	< 40.	ug/l	40.	065900000P
di-n-butyl phthalate	< 40.	ug/l	40.	068200000P
fluoranthene	< 40.	ug/l	40.	068700000P
pyrene	< 40.	ug/l	40.	070100000P
butyl benzyl phthalate	< 40.	ug/l	40.	067100000P
3,3'-dichlorobenzidine	< 80.	ug/l	80.	067900000P
benzo (a) anthracene	< 40.	ug/l	40.	066100000P
bis (2-ethylhexyl) phthalate	< 40.	ug/l	40.	066900000P
chrysene	< 40.	ug/l	40.	067400000P
di-n-octyl phthalate	< 40.	ug/l	40.	068500000P
benzo (b) fluoranthene	< 40.	ug/l	40.	066300000P
benzo (K) fluoranthene	< 40.	ug/l	40.	066500000P
benzo (a) pyrene	< 40.	ug/l	40.	066200000P
indeno (1,2,3-cd) pyrene	< 40.	ug/l	40.	069300000P
dibenz (a,h) anthracene	< 40.	ug/l	40.	067500000P
benzo (ghi) perylene	< 40.	ug/l	40.	066400000P

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Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300858

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478197
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-4 MW-3 Water Sample
Collected on 01/09/90 at 1500 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 5.	ug/l	5.	060900000P
Beta BHC	1.2	ug/l	0.1	061000000P
Delta BHC	0.2	ug/l	0.1	061200000P
Gamma BHC - Lindane	1.4	ug/l	0.1	045300000P
Heptachlor	< 0.1	ug/l	0.1	045400000P
Aldrin	< 0.1	ug/l	0.1	045500000P
Heptachlor Epoxide	< 0.1	ug/l	0.1	061500000P
Endosulfan I	< 0.1	ug/l	0.1	062700000P
Dieldrin	0.5	ug/l	0.2	046900000P
DDE	< 0.2	ug/l	0.2	061600000P
Endrin	< 0.2	ug/l	0.2	047700000P
Endosulfan II	< 0.2	ug/l	0.2	062800000P
DDD	< 0.2	ug/l	0.2	061700000P
Endosulfan Sulfate	< 0.2	ug/l	0.2	062900000P
DDT	1.0	ug/l	0.2	047800000P
Endrin Ketone	0.4	ug/l	0.2	093800000P
Methoxychlor	< 1.	ug/l	1.	062100000P
Alpha Chlordane	< 1.	ug/l	1.	136100000P
Gamma Chlordane	< 1.	ug/l	1.	136200000P
Toxaphene	< 2.	ug/l	2.	094200000P
PCB-1016	< 1.	ug/l	1.	063900000P
PCB-1221	< 1.	ug/l	1.	064000000P
PCB-1232	< 1.	ug/l	1.	064100000P
PCB-1242	< 1.	ug/l	1.	064200000P
PCB-1248	< 1.	ug/l	1.	064300000P
PCB-1254	< 2.	ug/l	2.	064400000P
PCB-1260	< 2.	ug/l	2.	064500000P

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Chemical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories Inc.

300859

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478197
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-4 MW-3 Water Sample
Collected on 01/09/90 at 1500 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamate Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 4.	ug/l	4.	134500000P

The value generated using CA SOP 734 was < 4. ug/l.

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Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300860

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478197
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-4 MW-3 Water Sample
Collected on 01/09/90 at 1500 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 5.	ug/l	5.	060900000P
Beta BHC	1.2	ug/l	0.1	061000000P
Delta BHC	0.2	ug/l	0.1	061200000P
Gamma BHC - Lindane	1.4	ug/l	0.1	045300000P
Heptachlor	< 0.1	ug/l	0.1	045400000P
Aldrin	< 0.1	ug/l	0.1	045500000P
Heptachlor Epoxide	< 0.1	ug/l	0.1	061500000P
Endosulfan I	< 0.1	ug/l	0.1	062700000P
Dieldrin	0.5	ug/l	0.2	046900000P
DDE	< 0.2	ug/l	0.2	061600000P
Endrin	< 0.2	ug/l	0.2	047700000P
Endosulfan II	< 0.2	ug/l	0.2	062800000P
DDD	< 0.2	ug/l	0.2	061700000P
Endosulfan Sulfate	< 0.2	ug/l	0.2	062900000P
DDT	1.0	ug/l	0.2	047800000P
Endrin Ketone	0.4	ug/l	0.2	093800000P
Methoxychlor	< 1.	ug/l	1.	062100000P
Alpha Chlordane	< 1.	ug/l	1.	136100000P
Gamma Chlordane	< 1.	ug/l	1.	136200000P
Toxaphene	< 2.	ug/l	2.	094200000P
PCB-1016	< 1.	ug/l	1.	063900000P
PCB-1221	< 1.	ug/l	1.	064000000P
PCB-1232	< 1.	ug/l	1.	064100000P
PCB-1242	< 1.	ug/l	1.	064200000P
PCB-1248	< 1.	ug/l	1.	064300000P
PCB-1254	< 2.	ug/l	2.	064400000P
PCB-1260	< 2.	ug/l	2.	064500000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories Inc.

300861

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW4M3

Lab Name: LANCASTER LABS Contract:

Lab Code: LANCAS Case No.: 244597 SAS No.: SDG No.: PPG5

Matrix: (soil/water) WATER Lab Sample ID: A1478197W

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A1478197W

Level: (low/med) LOW Date Received: 01/10/90

% Moisture: not dec. Date Analyzed: 01/11/90

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

300862

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American Association for Laboratory Accreditation Chemical, Biological & Environmental fields of testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW4M3

Lab Name: LANCASTER LABS Contract: RIZZO
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) WATER Lab Sample ID: 1478197
Sample wt/vol: 250.0(g/mL) ML Lab File ID: >E2501
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. _____. dec. _____. Date Extracted: 01/15/90
Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 01/15/90
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 1.000

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	8.44	48.	JB
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

FORM I SV-TIC 1/87 Rev.

300863

American Association for Laboratory Accreditation
Technical, Biological & Environmental Fields of Testing

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

Member American Council of Independent Laboratories, Inc.

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478198
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-4 MW-3 (Dissolved) Water Sample
Collected on 01/09/90 at 1500 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	0.7	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	< 0.005	mg/l	0.005	024701400P
Cadmium	< 0.005	mg/l	0.005	024901400P
Calcium	22.7	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	< 0.05	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	0.13	mg/l	0.05	025401400P
Magnesium	6.03	mg/l	0.05	025701400P
Manganese	0.76	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	< 0.04	mg/l	0.04	026101400P
Potassium	2.7	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	7.3	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	0.05	mg/l	0.02	027201400P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104503000P
Lead (furnace method)	< 0.005	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P

This sample was field filtered for dissolved metals.

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Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 90.00 048700

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478199
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-5 MW-2 Water Sample
Collected on 01/09/90 at 1630 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Cyanide, Total	< 0.005	mg/l	0.005	023704000P
Aluminum	220.	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	0.021	mg/l	0.005	024701400P
Cadmium	0.009	mg/l	0.005	024901400P
Calcium	95.7	mg/l	0.05	025001400P
Chromium	0.43	mg/l	0.01	025101400P
Cobalt	0.06	mg/l	0.05	025201400P
Copper	0.21	mg/l	0.02	025301400P
Iron	692.	mg/l	0.05	025401400P
Magnesium	20.8	mg/l	0.05	025701400P
Manganese	2.28	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	0.24	mg/l	0.04	026101400P
Potassium	13.2	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	8.8	mg/l	0.5	026701400P
Vanadium	0.47	mg/l	0.05	027101400P
Zinc	0.59	mg/l	0.02	027201400P
VOA GC/MS Library Search		attached		089005500P
Semivolatile Library Search		attached		089309500P
TCL Volatiles		attached		092227000P
TCL Semi-Volatiles		attached		092354000P
TCL Semi-Volatiles (cont)		attached		092400000P
TCL Pesticides		attached		093726000P
Arsenic (furnace method)	< 0.05	mg/l	0.05	104503000P
Lead (furnace method)	0.082	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.03	mg/l	0.03	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P
N-Methyl Carbamate Pesticides		attached		134011000P
Malathion	22.	ug/l	1.	900116500P
Pentachloronitrobenzene	< 10.	ug/l	10.	900201000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 250.00 219200

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories

300865

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478199
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-5 MW-2 Water Sample
Collected on 01/09/90 at 1630 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	< 10.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	< 5.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	< 5.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	25.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene are not separated. Therefore, the result reported for trans-1,2-dichloroethene represents the combined total of both isomers.

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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300866

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478199
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-5 MW-2 Water Sample
Collected on 01/09/90 at 1630 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	< 10.	ug/l	10.	065500000P
bis (2-chloroethyl) ether	< 10.	ug/l	10.	066700000P
2-chlorophenol	< 10.	ug/l	10.	064600000P
1,3-dichlorobenzene	< 10.	ug/l	10.	067700000P
1,4-dichlorobenzene	< 10.	ug/l	10.	067800000P
benzyl alcohol	< 10.	ug/l	10.	092600000P
1,2-dichlorobenzene	< 10.	ug/l	10.	067600000P
2-methylphenol	< 10.	ug/l	10.	092700000P
bis (2-chloroisopropyl) ether	< 10.	ug/l	10.	066800000P
4-methylphenol	< 10.	ug/l	10.	092800000P
N-nitrosodi-n-propylamine	< 10.	ug/l	10.	069800000P
hexachloroethane	< 10.	ug/l	10.	069200000P
nitrobenzene	< 10.	ug/l	10.	069600000P
isophorone	< 10.	ug/l	10.	069400000P
2-nitrophenol	< 10.	ug/l	10.	065100000P
2,4-dimethylphenol	< 10.	ug/l	10.	064800000P
benzoic acid	< 50.	ug/l	50.	092900000P
bis (2-chloroethoxy) methane	< 10.	ug/l	10.	066600000P
2,4-dichlorophenol	< 10.	ug/l	10.	064700000P
1,2,4-trichlorobenzene	< 10.	ug/l	10.	070200000P
naphthalene	122.	ug/l	10.	069500000P
4-chloroaniline	< 10.	ug/l	10.	093000000P
hexachlorobutadiene	< 10.	ug/l	10.	069000000P
4-chloro-3-methylphenol	< 10.	ug/l	10.	065300000P
2-methylnaphthalene	290.	ug/l	10.	093100000P
hexachlorocyclopentadiene	< 10.	ug/l	10.	069100000P
2,4,6-trichlorophenol	< 10.	ug/l	10.	065600000P
2,4,5-trichlorophenol	< 50.	ug/l	50.	093200000P
2-chloronaphthalene	< 10.	ug/l	10.	067200000P
2-nitroaniline	< 50.	ug/l	50.	093300000P
dimethyl phthalate	< 10.	ug/l	10.	068100000P
acenaphthylene	< 10.	ug/l	10.	065800000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300867

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478199
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-5 MW-2 Water Sample
Collected on 01/09/90 at 1630 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (cont)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 50.	ug/l	50.	093400000P
acenaphthene	< 10.	ug/l	10.	065700000P
2,4-dinitrophenol	< 50.	ug/l	50.	065000000P
4-nitrophenol	< 50.	ug/l	50.	065200000P
dibenzofuran	< 10.	ug/l	10.	093500000P
2,4-dinitrotoluene	< 10.	ug/l	10.	068300000P
2,6-dinitrotoluene	< 10.	ug/l	10.	068400000P
diethyl phthalate	< 10.	ug/l	10.	068000000P
4-chlorophenyl phenyl ether	< 10.	ug/l	10.	067300000P
fluorene	< 10.	ug/l	10.	068800000P
4-nitroaniline	< 50.	ug/l	50.	093600000P
2-methyl-4,6-dinitrophenol	< 50.	ug/l	50.	064900000P
N-nitrosodiphenylamine	< 10.	ug/l	10.	069900000P
4-bromophenyl phenyl ether	< 10.	ug/l	10.	067000000P
hexachlorobenzene	< 10.	ug/l	10.	068900000P
pentachlorophenol	< 50.	ug/l	50.	065400000P
phenanthrene	< 10.	ug/l	10.	070000000P
anthracene	< 10.	ug/l	10.	065900000P
di-n-butyl phthalate	< 10.	ug/l	10.	068200000P
fluoranthene	< 10.	ug/l	10.	068700000P
pyrene	< 10.	ug/l	10.	070100000P
butyl benzyl phthalate	< 10.	ug/l	10.	067100000P
3,3'-dichlorobenzidine	< 20.	ug/l	20.	067900000P
benzo (a) anthracene	< 10.	ug/l	10.	066100000P
bis (2-ethylhexyl) phthalate	< 10.	ug/l	10.	066900000P
chrysene	< 10.	ug/l	10.	067400000P
di-n-octyl phthalate	< 10.	ug/l	10.	068500000P
benzo (b) fluoranthene	< 10.	ug/l	10.	066300000P
benzo (K) fluoranthene	< 10.	ug/l	10.	066500000P
benzo (a) pyrene	< 10.	ug/l	10.	066200000P
indeno (1,2,3-cd) pyrene	< 10.	ug/l	10.	069300000P
dibenz (a,h) anthracene	< 10.	ug/l	10.	067500000P
benzo (ghi) perylene	< 10.	ug/l	10.	066400000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Upper American Council of Independent Laboratories Inc

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300868

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478199
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-5 MW-2 Water Sample
Collected on 01/09/90 at 1630 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	4.	ug/l	2.	060900000P
Beta BHC	< 5.	ug/l	5.	061000000P
Delta BHC	< 2.	ug/l	2.	061200000P
Gamma BHC - Lindane	3.	ug/l	2.	045300000P
Heptachlor	< 2.	ug/l	2.	045400000P
Aldrin	< 2.	ug/l	2.	045500000P
Heptachlor Epoxide	< 2.	ug/l	2.	061500000P
Endosulfan I	< 2.	ug/l	2.	062700000P
Dieldrin	< 0.2	ug/l	0.2	046900000P
DDE	< 0.2	ug/l	0.2	061600000P
Endrin	< 0.1	ug/l	0.1	047700000P
Endosulfan II	< 0.1	ug/l	0.1	062800000P
DDD	< 0.1	ug/l	0.1	061700000P
Endosulfan Sulfate	< 0.1	ug/l	0.1	062900000P
DDT	0.1	ug/l	0.1	047800000P
Endrin Ketone	< 0.1	ug/l	0.1	093800000P
Methoxychlor	< 0.5	ug/l	0.5	062100000P
Alpha Chlordane	< 25.	ug/l	25.	136100000P
Gamma Chlordane	< 25.	ug/l	25.	136200000P
Toxaphene	< 2.	ug/l	2.	094200000P
PCB-1016	< 25.	ug/l	25.	063900000P
PCB-1221	< 25.	ug/l	25.	064000000P
PCB-1232	< 25.	ug/l	25.	064100000P
PCB-1242	< 25.	ug/l	25.	064200000P
PCB-1248	< 25.	ug/l	25.	064300000P
PCB-1254	< 1.	ug/l	1.	064400000P
PCB-1260	< 1.	ug/l	1.	064500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300869

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478199
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-5 MW-2 Water Sample
Collected on 01/09/90 at 1630 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamate Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	152.	ug/l	4.	134500000P

The value generated using CA SOP 734 was 253. ug/l.

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Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories, Inc.

300870

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW5M2

Lab Name: LANCASTER LABS Contract:
Lab Code: LANCAS Case No.: 244597 SAS No.: SDG No.: PPG5
Matrix: (soil/water) WATER Lab Sample ID: A1478199W
Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A1478199W
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. Date Analyzed: 01/11/90
Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 103-65-1	BENZENE,PROPYL	29.14	20	J

300871

FORM I VOA-TIC 1/87 Rev.

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

Member American Council of Independent Laboratories Inc

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW5M2

Lab Name: LANCASTER LABS Contract: _____.
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) WATER Lab Sample ID: 1478199
Sample wt/vol: 1000.(g/mL) ML Lab File ID: >E2452
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. _____. dec. _____. Date Extracted: 01/11/90
Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 01/13/90
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 1.000

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Benzene, 1-ethyl-2-methyl-	9.61	42.	JI
2.	Benzene, 1,2,4-trimethyl-	9.77	28.	JI
3.	Benzene, 1,2,3-trimethyl-	10.39	90.	JI
4.	Benzene, 1-ethyl-4-methyl-	11.07	56.	JI
5.	Benzene, 1,2,3,4-tetramethyl	13.25	18.	JI
6.	1H-Indene, 2,3-dihydro-4-met	13.68	20.	JI
7.	1H-Indene, 2,3-dihydro-1-met	13.92	56.	JI
8.	Unknown	14.83	14.	J
19.	Unknown	15.65	18.	J
10.	1H-Indene, 2,3-dihydro-4,7-d	15.93	14.	JI
11.	Unknown	17.20	200.	J
12.	Naphthalene, 1-ethyl-	18.66	22.	JI
13.	Naphthalene, 1,7-dimethyl-	18.86	64.	JI
14. 130154	1,4-Naphthalenedione	18.92	16.	J
15.	Naphthalene, 1,8-dimethyl-	19.13	78.	JI
16.	Naphthalene, 2,3-dimethyl-	19.20	36.	JI
17.	Naphthalene, 1,4-dimethyl-	19.49	24.	JI
18.	Naphthalene, 2,6-dimethyl-	19.55	12.	JI
19.	Naphthalene, 1,2-dimethyl-	19.77	18.	JI
20.	Naphthalene, 1,4,5-trimethyl	21.27	12.	JI
21.				
22.				
23.				
24.				
25.				

*I=or isomer of compound

FORM I SV-TIC 1/87 Rev.

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Chemical Biological & Environmental Fields of testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

300872

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478200
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-5 MW-2 (Dissolved) Water Sample
Collected on 01/09/90 at 1630 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	217.	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	0.020	mg/l	0.005	024701400P
Cadmium	0.010	mg/l	0.005	024901400P
Calcium	87.0	mg/l	0.05	025001400P
Chromium	0.43	mg/l	0.01	025101400P
Cobalt	0.06	mg/l	0.05	025201400P
Copper	0.21	mg/l	0.02	025301400P
Iron	653.	mg/l	0.05	025401400P
Magnesium	19.8	mg/l	0.05	025701400P
Manganese	2.19	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	0.37	mg/l	0.04	026101400P
Potassium	13.1	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	7.4	mg/l	0.5	026701400P
Vanadium	0.45	mg/l	0.05	027101400P
Zinc	0.63	mg/l	0.02	027201400P
Arsenic (furnace method)	< 0.1	mg/l	0.1	104503000P
Lead (furnace method)	0.097	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.03	mg/l	0.03	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P

This sample was field filtered for dissolved metals.

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Chemical, Biological & Environmental Sciences of Testing

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112 03915 90.00 048700

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories, Inc.

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478201
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-6 MW-2D Water Sample
Collected on 01/09/90 at 1630 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Cyanide, Total	< 0.005	mg/l	0.005	023704000P
Aluminum	223.	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	0.022	mg/l	0.005	024701400P
Cadmium	0.010	mg/l	0.005	024901400P
Calcium	93.2	mg/l	0.05	025001400P
Chromium	0.43	mg/l	0.01	025101400P
Cobalt	0.06	mg/l	0.05	025201400P
Copper	0.21	mg/l	0.02	025301400P
Iron	1,380.	mg/l	0.05	025401400P
Magnesium	20.7	mg/l	0.05	025701400P
Manganese	2.27	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	0.28	mg/l	0.04	026101400P
Potassium	13.3	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	8.2	mg/l	0.5	026701400P
Vanadium	0.47	mg/l	0.05	027101400P
Zinc	0.60	mg/l	0.02	027201400P
VOA GC/MS Library Search		attached		089005500P
Semivolatile Library Search		attached		089309500P
TCL Volatiles		attached		092227000P
TCL Semi-Volatiles		attached		092354000P
TCL Semi-Volatiles (cont)		attached		092400000P
TCL Pesticides		attached		093726000P
Arsenic (furnace method)	0.05	mg/l	0.05	104503000P
Lead (furnace method)	0.068	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.03	mg/l	0.03	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P
N-Methyl Carbamate Pesticides		attached		134011000P
Malathion	23.	ug/l	1.	900116500P
Pentachloronitrobenzene	< 20.	ug/l	20.	900201000P

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112 03915 250.00 219200

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300874

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478201
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-6 MW-2D Water Sample
Collected on 01/09/90 at 1630 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	17.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	< 5.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	< 5.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	23.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene are not separated. Therefore, the result reported for trans-1,2-dichloroethene represents the combined total of both isomers.

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

300875

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478201
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-6 MW-2D Water Sample
Collected on 01/09/90 at 1630 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	< 20.	ug/l	20.	065500000P
bis (2-chloroethyl) ether	< 20.	ug/l	20.	066700000P
2-chlorophenol	< 20.	ug/l	20.	064600000P
1,3-dichlorobenzene	< 20.	ug/l	20.	067700000P
1,4-dichlorobenzene	< 20.	ug/l	20.	067800000P
benzyl alcohol	< 20.	ug/l	20.	092600000P
1,2-dichlorobenzene	< 20.	ug/l	20.	067600000P
2-methylphenol	< 20.	ug/l	20.	092700000P
bis (2-chloroisopropyl) ether	< 20.	ug/l	20.	066800000P
4-methylphenol	< 20.	ug/l	20.	092800000P
N-nitrosodi-n-propylamine	< 20.	ug/l	20.	069800000P
hexachloroethane	< 20.	ug/l	20.	069200000P
nitrobenzene	< 20.	ug/l	20.	069600000P
isophorone	< 20.	ug/l	20.	069400000P
2-nitrophenol	< 20.	ug/l	20.	065100000P
2,4-dimethylphenol	< 20.	ug/l	20.	064800000P
benzoic acid	< 100.	ug/l	100.	092900000P
bis (2-chloroethoxy) methane	< 20.	ug/l	20.	066600000P
2,4-dichlorophenol	< 20.	ug/l	20.	064700000P
1,2,4-trichlorobenzene	< 20.	ug/l	20.	070200000P
naphthalene	154.	ug/l	20.	069500000P
4-chloroaniline	< 20.	ug/l	20.	093000000P
hexachlorobutadiene	< 20.	ug/l	20.	069000000P
4-chloro-3-methylphenol	< 20.	ug/l	20.	065300000P
2-methylnaphthalene	< 20.	ug/l	20.	093100000P
hexachlorocyclopentadiene	< 20.	ug/l	20.	069100000P
2,4,6-trichlorophenol	< 20.	ug/l	20.	065600000P
2,4,5-trichlorophenol	< 100.	ug/l	100.	093200000P
2-chloronaphthalene	< 20.	ug/l	20.	067200000P
2-nitroaniline	< 100.	ug/l	100.	093300000P
dimethyl phthalate	< 20.	ug/l	20.	068100000P
acenaphthylene	< 20.	ug/l	20.	065800000P

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Chemical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300876

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478201
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-6 MW-2D Water Sample
Collected on 01/09/90 at 1630 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (cont)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 100.	ug/l	100.	093400000P
acenaphthene	< 20.	ug/l	20.	065700000P
2,4-dinitrophenol	< 100.	ug/l	100.	065000000P
4-nitrophenol	< 100.	ug/l	100.	065200000P
dibenzofuran	< 20.	ug/l	20.	093500000P
2,4-dinitrotoluene	< 20.	ug/l	20.	068300000P
2,6-dinitrotoluene	< 20.	ug/l	20.	068400000P
diethyl phthalate	< 20.	ug/l	20.	068000000P
4-chlorophenyl phenyl ether	< 20.	ug/l	20.	067300000P
fluorene	< 20.	ug/l	20.	068800000P
4-nitroaniline	< 100.	ug/l	100.	093600000P
2-methyl-4,6-dinitrophenol	< 100.	ug/l	100.	064900000P
N-nitrosodiphenylamine	< 20.	ug/l	20.	069900000P
4-bromophenyl phenyl ether	< 20.	ug/l	20.	067000000P
hexachlorobenzene	< 20.	ug/l	20.	068900000P
pentachlorophenol	< 100.	ug/l	100.	065400000P
phenanthrene	< 20.	ug/l	20.	070000000P
anthracene	< 20.	ug/l	20.	065900000P
di-n-butyl phthalate	< 20.	ug/l	20.	068200000P
fluoranthene	< 20.	ug/l	20.	068700000P
pyrene	< 20.	ug/l	20.	070100000P
butyl benzyl phthalate	< 20.	ug/l	20.	067100000P
3,3'-dichlorobenzidine	< 40.	ug/l	40.	067900000P
benzo (a) anthracene	< 20.	ug/l	20.	066100000P
bis (2-ethylhexyl) phthalate	< 20.	ug/l	20.	066900000P
chrysene	< 20.	ug/l	20.	067400000P
di-n-octyl phthalate	< 20.	ug/l	20.	068500000P
benzo (b) fluoranthene	< 20.	ug/l	20.	066300000P
benzo (K) fluoranthene	< 20.	ug/l	20.	066500000P
benzo (a) pyrene	< 20.	ug/l	20.	066200000P
indeno (1,2,3-cd) pyrene	< 20.	ug/l	20.	069300000P
dibenz (a,h) anthracene	< 20.	ug/l	20.	067500000P
benzo (ghi) perylene	< 20.	ug/l	20.	066400000P

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300877

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478201
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-6 MW-2D Water Sample
Collected on 01/09/90 at 1630 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	4.	ug/l	2.	060900000P
Beta BHC	< 2.	ug/l	2.	061000000P
Delta BHC	< 2.	ug/l	2.	061200000P
Gamma BHC - Lindane	4.	ug/l	2.	045300000P
Heptachlor	< 2.	ug/l	2.	045400000P
Aldrin	< 2.	ug/l	2.	045500000P
Heptachlor Epoxide	< 2.	ug/l	2.	061500000P
Endosulfan I	< 2.	ug/l	2.	062700000P
Dieldrin	< 0.2	ug/l	0.2	046900000P
DDE	< 0.2	ug/l	0.2	061600000P
Endrin	< 0.1	ug/l	0.1	047700000P
Endosulfan II	< 0.1	ug/l	0.1	062800000P
DDD	< 0.1	ug/l	0.1	061700000P
Endosulfan Sulfate	< 0.1	ug/l	0.1	062900000P
DDT	< 0.2	ug/l	0.2	047800000P
Endrin Ketone	< 0.1	ug/l	0.1	093800000P
Methoxychlor	< 0.5	ug/l	0.5	062100000P
Alpha Chlordane	< 25.	ug/l	25.	136100000P
Gamma Chlordane	< 25.	ug/l	25.	136200000P
Toxaphene	< 2.	ug/l	2.	094200000P
PCB-1016	< 25.	ug/l	25.	063900000P
PCB-1221	< 25.	ug/l	25.	064000000P
PCB-1232	< 25.	ug/l	25.	064100000P
PCB-1242	< 25.	ug/l	25.	064200000P
PCB-1248	< 25.	ug/l	25.	064300000P
PCB-1254	< 1.	ug/l	1.	064400000P
PCB-1260	< 1.	ug/l	1.	064500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

American Council of Independent Laboratories

300878

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478201
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-6 MW-2D Water Sample
Collected on 01/09/90 at 1630 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamate Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	174.	ug/l	4.	134500000P

The value generated using CA SOP 734 was 263. ug/l.

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Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW6MD

Lab Name: LANCASTER LABS Contract:

Lab Code: LANCAS Case No.: 244597 SAS No.: SDG No.: PPG5

Matrix: (soil/water) WATER Lab Sample ID: A1478201WR

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A1478201WR

Level: (low/med) LOW Date Received: 01/10/90

% Moisture: not dec. Date Analyzed: 01/12/90

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 1 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 103-65-1	PROPYL,BENZENE	29.07	18	J

300880

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Tests & Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

Member American Council of Independent Laboratories, Inc.

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW6MD

Lab Name: LANCASTER LABS Contract: RIZZO
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) WATER Lab Sample ID: 1478201
Sample wt/vol: 500.0(g/mL) ML Lab File ID: >E2504
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. _____. dec. _____. Date Extracted: 01/15/90
Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 01/16/90
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 1.000

Number TICs found: 16

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	8.44	28.	JB
2.	Benzene, 1-ethyl-2-methyl-	9.51	48.	*JI
3.	Benzene, 1,2,4-trimethyl-	9.67	36.	JI
4.	Benzene, 1,2,4-trimethyl-	10.28	110.	JI
5.	Benzene, (1-methylethyl)-	10.97	64.	JI
6.	Benzene, 1,2,3,4-tetramethyl	13.14	24.	JI
7.	1H-Indene, 2,3-dihydro-1-met	13.57	24.	JI
8.	1H-Indene, 2,3-dihydro-4-met	13.82	68.	JI
9.	1H-Indene, 2,3-dihydro-1,6-d	16.10	20.	JI
10.	1,4-Methanonaphthalene, 1,4-	17.08	260.	JI
11.	Naphthalene, 1-ethyl-	18.55	24.	JI
12.	Naphthalene, 1,7-dimethyl-	18.75	92.	JI
13.	Naphthalene, 1,8-dimethyl-	19.02	100.	JI
14.	Naphthalene, 1,7-dimethyl-	19.08	44.	JI
15.	Naphthalene, 1,4-dimethyl-	19.37	32.	JI
16.	Naphthalene, 1,2-dimethyl-	19.65	20.	JI
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

*I=or isomer of compound

FORM I SV-TIC 1/87 Rev.

300881

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Chemical, Biological, Environmental Tests of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478202
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-6 MW-2D (Dissolved) Water Sample
Collected on 01/09/90 at 1630 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	217.	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	0.020	mg/l	0.005	024701400P
Cadmium	0.011	mg/l	0.005	024901400P
Calcium	86.0	mg/l	0.05	025001400P
Chromium	0.44	mg/l	0.01	025101400P
Cobalt	0.07	mg/l	0.05	025201400P
Copper	0.21	mg/l	0.02	025301400P
Iron	665.	mg/l	0.05	025401400P
Magnesium	19.8	mg/l	0.05	025701400P
Manganese	2.19	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	0.32	mg/l	0.04	026101400P
Potassium	13.2	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	7.2	mg/l	0.5	026701400P
Vanadium	0.46	mg/l	0.05	027101400P
Zinc	0.62	mg/l	0.02	027201400P
Arsenic (furnace method)	< 0.05	mg/l	0.05	104503000P
Lead (furnace method)	0.114	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.03	mg/l	0.03	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P

This sample was field filtered for dissolved metals.

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Chemical, Biological & Environmental Fields of Testing

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112 03915 90.00 048700

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Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories, Inc.

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478203
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-7 MW-4 Water Sample
Collected on 01/09/90 at 1830 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Cyanide, Total	< 0.005	mg/l	0.005	023704000P
Aluminum	23.9	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	0.008	mg/l	0.005	024701400P
Cadmium	< 0.005	mg/l	0.005	024901400P
Calcium	414.	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	0.12	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	192.	mg/l	0.05	025401400P
Magnesium	153.	mg/l	0.05	025701400P
Manganese	18.1	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	0.13	mg/l	0.04	026101400P
Potassium	20.8	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	25.7	mg/l	0.5	026701400P
Vanadium	0.06	mg/l	0.05	027101400P
Zinc	0.29	mg/l	0.02	027201400P
VOA GC/MS Library Search		attached		089005500P
Semivolatile Library Search		attached		089309500P
TCL Volatiles		attached		092227000P
TCL Semi-Volatiles		attached		092354000P
TCL Semi-Volatiles (cont)		attached		092400000P
TCL Pesticides		attached		093726000P
Arsenic (furnace method)	0.01	mg/l	0.01	104503000P
Lead (furnace method)	0.010	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.03	mg/l	0.03	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P
N-Methyl Carbamate Pesticides		attached		134011000P
Malathion	< 0.05	ug/l	0.05	900116500P
Pentachloronitrobenzene	< 10.	ug/l	10.	900201000P

Low surrogate recoveries were observed for this fraction. The extraction was repeated and low surrogate recoveries were again observed, indicating a significant matrix effect.

300883

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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Chemical, Biological & Environmental Fields of Testing

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478203
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-7 MW-4 Water Sample
Collected on 01/09/90 at 1830 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	120.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	< 5.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	25.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	< 5.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	< 5.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene are not separated. Therefore, the result reported for trans-1,2-dichloroethene represents the combined total of both isomers.

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Chemical, Biological & Environmental Fields of Testing

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478203
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-7 MW-4 Water Sample
Collected on 01/09/90 at 1830 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	< 10.	ug/l	10.	065500000P
bis (2-chloroethyl) ether	< 10.	ug/l	10.	066700000P
2-chlorophenol	< 10.	ug/l	10.	064600000P
1,3-dichlorobenzene	< 10.	ug/l	10.	067700000P
1,4-dichlorobenzene	< 10.	ug/l	10.	067800000P
benzyl alcohol	< 10.	ug/l	10.	092600000P
1,2-dichlorobenzene	< 10.	ug/l	10.	067600000P
2-methylphenol	< 10.	ug/l	10.	092700000P
bis (2-chloroisopropyl) ether	< 10.	ug/l	10.	066800000P
4-methylphenol	< 10.	ug/l	10.	092800000P
N-nitrosodi-n-propylamine	< 10.	ug/l	10.	069800000P
hexachloroethane	< 10.	ug/l	10.	069200000P
nitrobenzene	< 10.	ug/l	10.	069600000P
isophorone	< 10.	ug/l	10.	069400000P
2-nitrophenol	< 10.	ug/l	10.	065100000P
2,4-dimethylphenol	< 10.	ug/l	10.	064800000P
benzoic acid	< 50.	ug/l	50.	092900000P
bis (2-chloroethoxy) methane	< 10.	ug/l	10.	066600000P
2,4-dichlorophenol	< 10.	ug/l	10.	064700000P
1,2,4-trichlorobenzene	< 10.	ug/l	10.	070200000P
naphthalene	< 10.	ug/l	10.	069500000P
4-chloroaniline	< 10.	ug/l	10.	093000000P
hexachlorobutadiene	< 10.	ug/l	10.	069000000P
4-chloro-3-methylphenol	< 10.	ug/l	10.	065300000P
2-methylnaphthalene	< 10.	ug/l	10.	093100000P
hexachlorocyclopentadiene	< 10.	ug/l	10.	069100000P
2,4,6-trichlorophenol	< 10.	ug/l	10.	065600000P
2,4,5-trichlorophenol	< 50.	ug/l	50.	093200000P
2-chloronaphthalene	< 10.	ug/l	10.	067200000P
2-nitroaniline	< 50.	ug/l	50.	093300000P
dimethyl phthalate	< 10.	ug/l	10.	068100000P
acenaphthylene	< 10.	ug/l	10.	065800000P

Low surrogate recoveries were observed for this fraction. The extraction was repeated and low surrogate recoveries were again observed, indicating a significant matrix effect.

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300885

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478203
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-7 MW-4 Water Sample
Collected on 01/09/90 at 1830 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (cont)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 50.	ug/l	50.	093400000P
acenaphthene	< 10.	ug/l	10.	065700000P
2,4-dinitrophenol	< 50.	ug/l	50.	065000000P
4-nitrophenol	< 50.	ug/l	50.	065200000P
dibenzofuran	< 10.	ug/l	10.	093500000P
2,4-dinitrotoluene	< 10.	ug/l	10.	068300000P
2,6-dinitrotoluene	< 10.	ug/l	10.	068400000P
diethyl phthalate	< 10.	ug/l	10.	068000000P
4-chlorophenyl phenyl ether	< 10.	ug/l	10.	067300000P
fluorene	< 10.	ug/l	10.	068800000P
4-nitroaniline	< 50.	ug/l	50.	093600000P
2-methyl-4,6-dinitrophenol	< 50.	ug/l	50.	064900000P
N-nitrosodiphenylamine	< 10.	ug/l	10.	069900000P
4-bromophenyl phenyl ether	< 10.	ug/l	10.	067000000P
hexachlorobenzene	< 10.	ug/l	10.	068900000P
pentachlorophenol	< 50.	ug/l	50.	065400000P
phenanthrene	< 10.	ug/l	10.	070000000P
anthracene	< 10.	ug/l	10.	065900000P
di-n-butyl phthalate	< 10.	ug/l	10.	068200000P
fluoranthene	< 10.	ug/l	10.	068700000P
pyrene	< 10.	ug/l	10.	070100000P
butyl benzyl phthalate	< 10.	ug/l	10.	067100000P
3,3'-dichlorobenzidine	< 20.	ug/l	20.	067900000P
benzo (a) anthracene	< 10.	ug/l	10.	066100000P
bis (2-ethylhexyl) phthalate	< 10.	ug/l	10.	066900000P
chrysene	< 10.	ug/l	10.	067400000P
di-n-octyl phthalate	< 10.	ug/l	10.	068500000P
benzo (b) fluoranthene	< 10.	ug/l	10.	066300000P
benzo (K) fluoranthene	< 10.	ug/l	10.	066500000P
benzo (a) pyrene	< 10.	ug/l	10.	066200000P
indeno (1,2,3-cd) pyrene	< 10.	ug/l	10.	069300000P
dibenz (a,h) anthracene	< 10.	ug/l	10.	067500000P
benzo (ghi) perylene	< 10.	ug/l	10.	066400000P

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Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300886

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478203
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-7 MW-4 Water Sample
Collected on 01/09/90 at 1830 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	0.33	ug/l	0.05	060900000P
Beta BHC	< 0.05	ug/l	0.05	061000000P
Delta BHC	< 0.05	ug/l	0.05	061200000P
Gamma BHC - Lindane	0.11	ug/l	0.05	045300000P
Heptachlor	< 0.05	ug/l	0.05	045400000P
Aldrin	< 0.05	ug/l	0.05	045500000P
Heptachlor Epoxide	< 0.05	ug/l	0.05	061500000P
Endosulfan I	< 0.05	ug/l	0.05	062700000P
Dieldrin	0.1	ug/l	0.1	046900000P
DDE	< 0.1	ug/l	0.1	061600000P
Endrin	< 0.1	ug/l	0.1	047700000P
Endosulfan II	< 0.1	ug/l	0.1	062800000P
DDD	< 0.1	ug/l	0.1	061700000P
Endosulfan Sulfate	< 0.1	ug/l	0.1	062900000P
DDT	< 0.1	ug/l	0.1	047800000P
Endrin Ketone	< 0.1	ug/l	0.1	093800000P
Methoxychlor	< 0.5	ug/l	0.5	062100000P
Alpha Chlordane	< 0.5	ug/l	0.5	136100000P
Gamma Chlordane	< 0.5	ug/l	0.5	136200000P
Toxaphene	< 1.	ug/l	1.	094200000P
PCB-1016	< 0.5	ug/l	0.5	063900000P
PCB-1221	< 5.	ug/l	5.	064000000P
PCB-1232	< 0.5	ug/l	0.5	064100000P
PCB-1242	< 0.5	ug/l	0.5	064200000P
PCB-1248	< 0.5	ug/l	0.5	064300000P
PCB-1254	< 1.	ug/l	1.	064400000P
PCB-1260	< 1.	ug/l	1.	064500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300887

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478203
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-7 MW-4 Water Sample
Collected on 01/09/90 at 1830 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamate Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 4.	ug/l	4.	134500000P

The value generated using CA SOP 734 was < 4. ug/l.

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300388

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

GW7M4

Lab Name: LANCASTER LABS Contract:
Lab Code: LANCAS Case No.: 244597 SAS No.: SDG No.: PPG5
Matrix: (soil/water) WATER Lab Sample ID: A1478203W
Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A1478203W
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. Date Analyzed: 01/12/90
Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 2

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 64-17-5	ETHANOL	4.13	5.2	J
2. 67-63-0	2-PROPANOL	6.97	42	J

300889

FORM I VOA-TIC

1/87 Rev.

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

National American Council of Independent Laboratories Inc

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Questions? Contact Our Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

GW7M4

Lab Name: LANCASTER LABS Contract: _____.
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) WATER Lab Sample ID: 1478203
Sample wt/vol: 1000.(g/mL) ML Lab File ID: >E2454
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. _____. dec. _____. Date Extracted: 01/11/90
Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 01/13/90
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 1.000

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	3.96	8.	J
2.	Unknown approx. C6 hydrocarb	8.55	10.	JB
3.	Unknown	9.91	20.	J
4.	Unknown	10.00	60.	J
5.				
6.				
7.				
8.				
9.				
10.				
11.				
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16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

FORM I SV-TIC 1/87 Rev.

300890

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478204
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG GW-7 MW-4 (Dissolved) Water Sample
Collected on 01/09/90 at 1830 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	21.5	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	0.007	mg/l	0.005	024701400P
Cadmium	< 0.005	mg/l	0.005	024901400P
Calcium	407.	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	0.12	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	177.	mg/l	0.05	025401400P
Magnesium	147.	mg/l	0.05	025701400P
Manganese	17.6	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	0.13	mg/l	0.04	026101400P
Potassium	19.6	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	24.5	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	0.30	mg/l	0.02	027201400P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104503000P
Lead (furnace method)	< 0.005	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P

This sample was field filtered for dissolved metals.

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Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 90.00 048700

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478195
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG Tank Water-Water Tank Sample
Collected on 01/09/90 at 1255 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Cyanide, Total	< 0.005	mg/l	0.005	023704000P
Aluminum	0.5	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	0.1	mg/l	0.1	024601400P
Beryllium	< 0.005	mg/l	0.005	024701400P
Cadmium	< 0.005	mg/l	0.005	024901400P
Calcium	23.8	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	< 0.05	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	0.43	mg/l	0.05	025401400P
Magnesium	2.40	mg/l	0.05	025701400P
Manganese	0.06	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	< 0.04	mg/l	0.04	026101400P
Potassium	2.0	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	5.7	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	0.09	mg/l	0.02	027201400P
VOA GC/MS Library Search		attached		089005500P
Semivolatile Library Search		attached		089309500P
TCL Volatiles		attached		092227000P
TCL Semi-Volatiles		attached		092354000P
TCL Semi-Volatiles (cont)		attached		092400000P
TCL Pesticides		attached		093726000P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104503000P
Lead (furnace method)	< 0.005	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P
N-Methyl Carbamate Pesticides		attached		134011000P
Malathion	< 0.05	ug/l	0.05	900116500P
Pentachloronitrobenzene	< 10.	ug/l	10.	900201000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 250.00 219200

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories Inc

300892

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478195
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG Tank Water-Water Tank Sample
Collected on 01/09/90 at 1255 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	18.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	< 5.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	< 5.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	< 5.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene are not separated. Therefore, the result reported for trans-1,2-dichloroethene represents the combined total of both isomers.

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Chemical, Biological & Environmental Fields of Testing

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Member American Council of Independent Laboratories Inc

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

300893

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478195
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG Tank Water-Water Tank Sample
Collected on 01/09/90 at 1255 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	< 10.	ug/l	10.	065500000P
bis (2-chloroethyl) ether	< 10.	ug/l	10.	066700000P
2-chlorophenol	< 10.	ug/l	10.	064600000P
1,3-dichlorobenzene	< 10.	ug/l	10.	067700000P
1,4-dichlorobenzene	< 10.	ug/l	10.	067800000P
benzyl alcohol	< 10.	ug/l	10.	092600000P
1,2-dichlorobenzene	< 10.	ug/l	10.	067600000P
2-methylphenol	< 10.	ug/l	10.	092700000P
bis (2-chloroisopropyl) ether	< 10.	ug/l	10.	066800000P
4-methylphenol	< 10.	ug/l	10.	092800000P
N-nitrosodi-n-propylamine	< 10.	ug/l	10.	069800000P
hexachloroethane	< 10.	ug/l	10.	069200000P
nitrobenzene	< 10.	ug/l	10.	069600000P
isophorone	< 10.	ug/l	10.	069400000P
2-nitrophenol	< 10.	ug/l	10.	065100000P
2,4-dimethylphenol	< 10.	ug/l	10.	064800000P
benzoic acid	< 50.	ug/l	50.	092900000P
bis (2-chloroethoxy) methane	< 10.	ug/l	10.	066600000P
2,4-dichlorophenol	< 10.	ug/l	10.	064700000P
1,2,4-trichlorobenzene	< 10.	ug/l	10.	070200000P
naphthalene	< 10.	ug/l	10.	069500000P
4-chloroaniline	< 10.	ug/l	10.	093000000P
hexachlorobutadiene	< 10.	ug/l	10.	069000000P
4-chloro-3-methylphenol	< 10.	ug/l	10.	065300000P
2-methylnaphthalene	< 10.	ug/l	10.	093100000P
hexachlorocyclopentadiene	< 10.	ug/l	10.	069100000P
2,4,6-trichlorophenol	< 10.	ug/l	10.	065600000P
2,4,5-trichlorophenol	< 50.	ug/l	50.	093200000P
2-chloronaphthalene	< 10.	ug/l	10.	067200000P
2-nitroaniline	< 50.	ug/l	50.	093300000P
dimethyl phthalate	< 10.	ug/l	10.	068100000P
acenaphthylene	< 10.	ug/l	10.	065800000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300894

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478195
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG Tank Water-Water Tank Sample
Collected on 01/09/90 at 1255 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (cont)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 50.	ug/l	50.	093400000P
acenaphthene	< 10.	ug/l	10.	065700000P
2,4-dinitrophenol	< 50.	ug/l	50.	065000000P
4-nitrophenol	< 50.	ug/l	50.	065200000P
dibenzofuran	< 10.	ug/l	10.	093500000P
2,4-dinitrotoluene	< 10.	ug/l	10.	068300000P
2,6-dinitrotoluene	< 10.	ug/l	10.	068400000P
diethyl phthalate	< 10.	ug/l	10.	068000000P
4-chlorophenyl phenyl ether	< 10.	ug/l	10.	067300000P
fluorene	< 10.	ug/l	10.	068800000P
4-nitroaniline	< 50.	ug/l	50.	093600000P
2-methyl-4,6-dinitrophenol	< 50.	ug/l	50.	064900000P
N-nitrosodiphenylamine	< 10.	ug/l	10.	069900000P
4-bromophenyl phenyl ether	< 10.	ug/l	10.	067000000P
hexachlorobenzene	< 10.	ug/l	10.	068900000P
pentachlorophenol	< 50.	ug/l	50.	065400000P
phenanthrene	< 10.	ug/l	10.	070000000P
anthracene	< 10.	ug/l	10.	065900000P
di-n-butyl phthalate	< 10.	ug/l	10.	068200000P
fluoranthene	< 10.	ug/l	10.	068700000P
pyrene	< 10.	ug/l	10.	070100000P
butyl benzyl phthalate	< 10.	ug/l	10.	067100000P
3,3'-dichlorobenzidine	< 20.	ug/l	20.	067900000P
benzo (a) anthracene	< 10.	ug/l	10.	066100000P
bis (2-ethylhexyl) phthalate	< 10.	ug/l	10.	066900000P
chrysene	< 10.	ug/l	10.	067400000P
di-n-octyl phthalate	< 10.	ug/l	10.	068500000P
benzo (b) fluoranthene	< 10.	ug/l	10.	066300000P
benzo (K) fluoranthene	< 10.	ug/l	10.	066500000P
benzo (a) pyrene	< 10.	ug/l	10.	066200000P
indeno (1,2,3-cd) pyrene	< 10.	ug/l	10.	069300000P
dibenz (a,h) anthracene	< 10.	ug/l	10.	067500000P
benzo (ghi) perylene	< 10.	ug/l	10.	066400000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300895

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478195
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG Tank Water-Water Tank Sample
Collected on 01/09/90 at 1255 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 0.05	ug/l	0.05	060900000P
Beta BHC	< 0.05	ug/l	0.05	061000000P
Delta BHC	< 0.05	ug/l	0.05	061200000P
Gamma BHC - Lindane	< 0.05	ug/l	0.05	045300000P
Heptachlor	< 0.05	ug/l	0.05	045400000P
Aldrin	< 0.05	ug/l	0.05	045500000P
Heptachlor Epoxide	< 0.05	ug/l	0.05	061500000P
Endosulfan I	< 0.05	ug/l	0.05	062700000P
Dieldrin	< 0.1	ug/l	0.1	046900000P
DDE	< 0.1	ug/l	0.1	061600000P
Endrin	< 0.1	ug/l	0.1	047700000P
Endosulfan II	< 0.1	ug/l	0.1	062800000P
DDD	< 0.1	ug/l	0.1	061700000P
Endosulfan Sulfate	< 0.1	ug/l	0.1	062900000P
DDT	< 0.1	ug/l	0.1	047800000P
Endrin Ketone	< 0.1	ug/l	0.1	093800000P
Methoxychlor	< 0.5	ug/l	0.5	062100000P
Alpha Chlordane	< 0.5	ug/l	0.5	136100000P
Gamma Chlordane	< 0.5	ug/l	0.5	136200000P
Toxaphene	< 1.	ug/l	1.	094200000P
PCB-1016	< 0.5	ug/l	0.5	063900000P
PCB-1221	< 0.5	ug/l	0.5	064000000P
PCB-1232	< 0.5	ug/l	0.5	064100000P
PCB-1242	< 0.5	ug/l	0.5	064200000P
PCB-1248	< 0.5	ug/l	0.5	064300000P
PCB-1254	< 1.	ug/l	1.	064400000P
PCB-1260	< 1.	ug/l	1.	064500000P

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300896

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478195
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG Tank Water-Water Tank Sample
Collected on 01/09/90 at 1255 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamate Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 4.	ug/l	4.	134500000P

The value generated using CA SOP 734 was < 4. ug/l.

1 COPY TO Paul C. Rizzo Associates , ATTN: Ken Bird
1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

American American Council of Independent Laboratories, Inc.

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300897

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TANKW

Lab Name: LANCASTER LABS Contract:

Lab Code: LANCAS Case No.: 244597 SAS No.: SDG No.: PPG5

Matrix: (soil/water) WATER Lab Sample ID: A1478195W

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A1478195W

Level: (low/med) LOW Date Received: 01/10/90

% Moisture: not dec. Date Analyzed: 01/11/90

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

300898

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American Association for Laboratory Accreditation Technical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TANKW

Lab Name: LANCASTER LABS Contract: _____.
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) WATER Lab Sample ID: 1478195
Sample wt/vol: 1000.(g/mL) ML Lab File ID: >E2451
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. _____. dec. _____. Date Extracted: 01/11/90
Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 01/13/90
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 1.000

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown approx. C6 hydrocarb	8.53	10.	JB
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

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Questions? Contact Environmental Technical Services at (717) 656-2301

300899

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478196
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG Tank Water-Water Tank (Dissolved) Sample
Collected on 01/09/90 at 1255 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	< 0.1	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	< 0.005	mg/l	0.005	024701400P
Cadmium	< 0.005	mg/l	0.005	024901400P
Calcium	21.5	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	< 0.05	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	< 0.05	mg/l	0.05	025401400P
Magnesium	1.88	mg/l	0.05	025701400P
Manganese	< 0.01	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	< 0.04	mg/l	0.04	026101400P
Potassium	2.0	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	5.0	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	< 0.02	mg/l	0.02	027201400P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104503000P
Lead (furnace method)	< 0.005	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P

This sample was field filtered for dissolved metals.

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 90.00 048700

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Upper American Council of Independent Laboratories, Inc.

300900

IV. TRIP BLANKS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

[redacted] Lancaster, PA 17601-6994 (717) 656-2301

SDG-1

[redacted]

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

Date Reported 1/11/90
Date Submitted 12/15/89
Discard Date 12/15/89
Collected by WS
P.O. 89-595
Rel.

PPG Trip Blank 002 Water Sample
Collected on 12/4/89

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	16.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	< 5.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	< 5.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	< 5.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene cannot be distinguished from one another. Therefore, the result reported for trans-1,2-dichloroethene represents the combined

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard S. Rodgers, B.S.
Group Leader, GC/MS

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Member American Council of Independent Laboratories Inc

300902

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
[redacted] Lancaster, PA 17601-6994 (717) 656-2301

[redacted]

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

Date Reported 1/11/90
Date Submitted 12/15/89
Discard Date 12/15/89
Collected by WS
P.O. 89-595
Rel.

PPG Trip Blank 002 Water Sample
Collected on 12/4/89

TCL Volatiles	RESULT AS RECEIVED	LIMIT OF QUANTITATION	LAB CODE
total of both isomers.			

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard S. Rodgers, B.S.
Group Leader, GC/MS

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Chemical, Biological & Environmental Fields of Testing

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300903

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

[illegible] PA 17601-5988 (717) [illegible]

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

1472297

Lab Name: LANCASTER LABS Contract:

Lab Code: LLI Case No.: 242783 SAS No.: SDG No.: PPG1

Matrix: (soil/water) WATER Lab Sample ID: A1472297W

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A1472297W

Level: (low/med) LOW Date Received: 12/15/89

% Moisture: not dec. Date Analyzed: 12/21/89

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

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Questions? Contact Environmental Technical Services at (717) 656-2301

[illegible]ember American Council of [illegible]pependent Laboratories Inc

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Richard S. Rodgers, B.S.
Group Leader, GC/MS

300904

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

[illegible] Lancaster, PA 17601-6894 (717) 656-2301

SDG-1

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

Date Reported 1/11/90
Date Submitted 12/15/89
Discard Date 12/15/89
Collected by WS
P.O. 89-595
Rel.

PPG Trip Blank 003 Water Sample
Collected on 12/4/89

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	15.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	< 5.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	< 5.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	< 5.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene cannot be distinguished from one another. Therefore, the result reported for trans-1,2-dichloroethene represents the combined

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard S. Rodgers, B.S.
Group Leader, GC/MS

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Chemical, Biological & Environmental Fields of Testing

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300905

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

[redacted]

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

Date Reported 1/11/90
Date Submitted 12/15/89
Discard Date 12/15/89
Collected by WS
P.O. 89-595
Rel.

PPG Trip Blank 003 Water Sample
Collected on 12/4/89

TCL Volatiles	RESULT AS RECEIVED	LIMIT OF QUANTITATION	LAB CODE
total of both isomers.			

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Revieved and Approved by:

Richard S. Rodgers, B.S.
Group Leader, GC/MS

American Association for Laboratory Accreditation Chemical, Biological & Environmental Fields of Testing

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300906

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

[illegible] Pine, Lancaster, PA 17601-5994 (717) 656-2301

1R

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

1472298

Lab Name: LANCASTER LABS Contract:

Lab Code: LLI Case No.: 242783 SAS No.: SDG No.: PPG1

Matrix: (soil/water) WATER Lab Sample ID: A1472298W

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A1472298W

Level: (low/med) LOW Date Received: 12/15/89

% Moisture: not dec. Date Analyzed: 12/21/89

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

300907

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Questions? Contact Our Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Richard S. Rodgers, B.S.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

SDG-2

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1473285
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG Trip Blank 004 Water Sample
Collected on 12/04/89 by WS/AT

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	34.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	< 5.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	< 5.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	< 5.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene cannot be distinguished from one another. Therefore, the result reported for trans-1,2-dichloroethene represents the combined

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

300908

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1473285
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG Trip Blank 004 Water Sample
Collected on 12/04/89 by WS/AT

P.O. 89-595
Rel.

	RESULT AS RECEIVED	LIMIT OF QUANTITATION	LAB CODE
TCL Volatiles			
total of both isomers.			

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Technical Biological & Environmental Fields of Testing

American Council of Independent Laboratories Inc

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

300909

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

1473285

Lab Name: LANCASTER LABS Contract:

Lab Code: LANCAS Case No.: 243084 SAS No.: SDG No.: PPG2

Matrix: (soil/water) WATER Lab Sample ID: C1473285W

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1473285W

Level: (low/med) LOW Date Received: 12/21/89

% Moisture: not dec. Date Analyzed: 12/27/89

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

300910

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American Association for Laboratory Accreditation Chemical, Biological & Environmental Fields of testing

Member American Council of Independent Laboratories, Inc.

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

SDG-3

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1476745
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG Trip Blank 006 Water Sample
Collected on 01/04/90 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	10.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	< 5.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	< 5.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	< 5.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene cannot be distinguished from one another. Therefore, the result reported for trans-1,2-dichloroethene represents the combined

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

300911

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1476745
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG Trip Blank 006 Water Sample
Collected on 01/04/90 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED	LIMIT OF QUANTITATION	LAB CODE
total of both isomers.			

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Technical Biological & Environmental Fields of Testing

American Council of Independent Laboratories Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

300912

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TB006

Lab Name: LANCASTER LABS Contract:

Lab Code: LANCAS Case No.: 244147 SAS No.: SDG No.: PPG3

Matrix: (soil/water) WATER Lab Sample ID: C1476745W

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C1476745W

Level: (low/med) LOW Date Received: 01/05/90

% Moisture: not dec. Date Analyzed: 01/08/90

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

300913

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1/87 Rev.

American Association for Laboratory Accreditation American Biological & Environmental Laboratories Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

SDG--

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1477199
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG Trip Blank 007 Water Sample
Collected on 12/04/89

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	37.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	< 5.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	< 5.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	< 5.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene cannot be distinguished from one another. Therefore, the result reported for trans-1,2-dichloroethene represents the combined

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

Member, American Council of Independent Laboratories, Inc.

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300914

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1477199
Date Reported 2/15/90
Date Submitted 1/ 8/90
Discard Date 3/18/90
Collected 1/ 5/90 by AT

PPG Trip Blank 007 Water Sample
Collected on 12/04/89

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED	LIMIT OF QUANTITATION	LAB CODE
total of both isomers.			

Acetone was detected in the method blank at a concentration of 15 ug/l. The blank value was not subtracted from the analytical result.

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

300915

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

1477199

Lab Name: LANCASTER LABS Contract:

Lab Code: LANCAS Case No.: 244304 SAS No.: SDG No.: PPG4

Matrix: (soil/water) WATER Lab Sample ID: A1477199W

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A1477199W

Level: (low/med) LOW Date Received: 01/08/90

% Moisture: not dec. Date Analyzed: 01/09/90

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

300916

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

SDG-

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478398
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

Trip Blank 008 Water Sample

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	67.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	< 5.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	< 5.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	< 5.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene cannot be distinguished from one another. Therefore, the result reported for trans-1,2-dichloroethene represents the combined

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

300917

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478398
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

Trip Blank 008 Water Sample

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED	LIMIT OF QUANTITATION	LAB CODE
total of both isomers.			

Acetone was detected in the method blank at a concentration of 12 ug/l. The blank value was not subtracted from the analytical result.

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories Inc

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

300918

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

1478398

Lab Name: LANCASTER LABS Contract:
Lab Code: LANCAS Case No.: 244304 SAS No.: SDG No.: PPG4
Matrix: (soil/water) WATER Lab Sample ID: A1478398W
Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A1478398W
Level: (low/med) LOW Date Received: 01/11/90
% Moisture: not dec. Date Analyzed: 01/12/90
Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 1

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 71-23-8	1-PROPANOL(ACN)	8.34	5.0	J

300919

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

SDG-5

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478186
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG Trip Blank 008 Water Sample
Collected on 01/05/90 & 01/08/90

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	< 0.1	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	< 0.005	mg/l	0.005	024701400P
Cadmium	< 0.005	mg/l	0.005	024901400P
Calcium	< 0.05	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	< 0.05	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	< 0.05	mg/l	0.05	025401400P
Magnesium	< 0.05	mg/l	0.05	025701400P
Manganese	< 0.01	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	< 0.04	mg/l	0.04	026101400P
Potassium	< 0.5	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	< 0.5	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	< 0.02	mg/l	0.02	027201400P
VOA GC/MS Library Search		attached		089005500P
TCL Volatiles		attached		092227000P
TCL Pesticides		attached		093726000P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104503000P
Lead (furnace method)	< 0.005	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P
N-Methyl Carbamate Pesticides		attached		134011000P
Malathion	< 0.1	ug/l	0.1	900116500P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

300920

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Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 190.00 144700

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478186
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG Trip Blank 008 Water Sample
Collected on 01/05/90 & 01/08/90

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	67.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	< 5.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	< 5.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	< 5.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene are not separated. Therefore, the result reported for trans-1,2-dichloroethene represents the combined total of both isomers.

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

300921

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478186
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG Trip Blank 008 Water Sample
Collected on 01/05/90 & 01/08/90

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 0.1	ug/l	0.1	060900000P
Beta BHC	< 0.1	ug/l	0.1	061000000P
Delta BHC	< 0.1	ug/l	0.1	061200000P
Gamma BHC - Lindane	< 0.1	ug/l	0.1	045300000P
Heptachlor	< 0.1	ug/l	0.1	045400000P
Aldrin	< 0.1	ug/l	0.1	045500000P
Heptachlor Epoxide	< 0.1	ug/l	0.1	061500000P
Endosulfan I	< 0.1	ug/l	0.1	062700000P
Dieldrin	< 0.2	ug/l	0.2	046900000P
DDE	< 0.2	ug/l	0.2	061600000P
Endrin	< 0.2	ug/l	0.2	047700000P
Endosulfan II	< 0.2	ug/l	0.2	062800000P
DDD	< 0.2	ug/l	0.2	061700000P
Endosulfan Sulfate	< 0.2	ug/l	0.2	062900000P
DDT	< 0.2	ug/l	0.2	047800000P
Endrin Ketone	< 0.2	ug/l	0.2	093800000P
Methoxychlor	< 1.	ug/l	1.	062100000P
Alpha Chlordane	< 1.	ug/l	1.	136100000P
Gamma Chlordane	< 1.	ug/l	1.	136200000P
Toxaphene	< 2.	ug/l	2.	094200000P
PCB-1016	< 1.	ug/l	1.	063900000P
PCB-1221	< 1.	ug/l	1.	064000000P
PCB-1232	< 1.	ug/l	1.	064100000P
PCB-1242	< 1.	ug/l	1.	064200000P
PCB-1248	< 1.	ug/l	1.	064300000P
PCB-1254	< 2.	ug/l	2.	064400000P
PCB-1260	< 2.	ug/l	2.	064500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

300922

American Association for Accreditation of Biological & Environmental Laboratory Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories Inc

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478186
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG Trip Blank 008 Water Sample
Collected on 01/05/90 & 01/08/90

P.O. 89-595
Rel.

N-Methyl Carbamate Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 4.	ug/l	4.	134500000P

The value generated using CA SOP 734 was < 4. ug/l.

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

300923

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TRIP BLANK

Lab Name: LANCASTER LABS Contract:
Lab Code: LANCAS Case No.: 244597 SAS No.: SDG No.: PPG5
Matrix: (soil/water) WATER Lab Sample ID: A1478186WR
Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A1478186WR
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. Date Analyzed: 01/11/90
Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

300924

FORM I VOA-TIC 1/87 Rev.

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Questions? Contact Environmental Technical Services at (717) 656-2301

Member American Council of Independent Laboratories Inc

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

V. EQUIPMENT BLANKS

300925

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478207
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG EB-1 Bailer Water Sample
Collected on 01/10/90 at 1300 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Cyanide, Total	< 0.005	mg/l	0.005	023704000P
Aluminum	< 0.1	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	< 0.005	mg/l	0.005	024701400P
Cadmium	< 0.005	mg/l	0.005	024901400P
Calcium	0.16	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	< 0.05	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	< 0.05	mg/l	0.05	025401400P
Magnesium	< 0.05	mg/l	0.05	025701400P
Manganese	< 0.01	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	< 0.04	mg/l	0.04	026101400P
Potassium	< 0.5	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	< 0.5	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	< 0.02	mg/l	0.02	027201400P
VOA GC/MS Library Search		attached		089005500P
Semivolatile Library Search		attached		089309500P
TCL Volatiles		attached		092227000P
TCL Semi-Volatiles		attached		092354000P
TCL Semi-Volatiles (cont)		attached		092400000P
TCL Pesticides		attached		093726000P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104503000P
Lead (furnace method)	< 0.005	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P
N-Methyl Carbamate Pesticides		attached		134011000P
Malathion	< 0.05	ug/l	0.05	900116500P
Pentachloronitrobenzene	< 10.	ug/l	10.	900201000P

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1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 250.00 219200

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Member American Council of Independent Laboratories, Inc.

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300926

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478207
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG EB-1 Bailer Water Sample
Collected on 01/10/90 at 1300 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	14.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	< 5.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	< 5.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	< 5.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene are not separated. Therefore, the result reported for trans-1,2-dichloroethene represents the combined total of both isomers.

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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300927

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478207
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG EB-1 Bailer Water Sample
Collected on 01/10/90 at 1300 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	< 10.	ug/l	10.	065500000P
bis (2-chloroethyl) ether	< 10.	ug/l	10.	066700000P
2-chlorophenol	< 10.	ug/l	10.	064600000P
1,3-dichlorobenzene	< 10.	ug/l	10.	067700000P
1,4-dichlorobenzene	< 10.	ug/l	10.	067800000P
benzyl alcohol	< 10.	ug/l	10.	092600000P
1,2-dichlorobenzene	< 10.	ug/l	10.	067600000P
2-methylphenol	< 10.	ug/l	10.	092700000P
bis (2-chloroisopropyl) ether	< 10.	ug/l	10.	066800000P
4-methylphenol	< 10.	ug/l	10.	092800000P
N-nitrosodi-n-propylamine	< 10.	ug/l	10.	069800000P
hexachloroethane	< 10.	ug/l	10.	069200000P
nitrobenzene	< 10.	ug/l	10.	069600000P
isophorone	< 10.	ug/l	10.	069400000P
2-nitrophenol	< 10.	ug/l	10.	065100000P
2,4-dimethylphenol	< 10.	ug/l	10.	064800000P
benzoic acid	< 50.	ug/l	50.	092900000P
bis (2-chloroethoxy) methane	< 10.	ug/l	10.	066600000P
2,4-dichlorophenol	< 10.	ug/l	10.	064700000P
1,2,4-trichlorobenzene	< 10.	ug/l	10.	070200000P
naphthalene	< 10.	ug/l	10.	069500000P
4-chloroaniline	< 10.	ug/l	10.	093000000P
hexachlorobutadiene	< 10.	ug/l	10.	069000000P
4-chloro-3-methylphenol	< 10.	ug/l	10.	065300000P
2-methylnaphthalene	< 10.	ug/l	10.	093100000P
hexachlorocyclopentadiene	< 10.	ug/l	10.	069100000P
2,4,6-trichlorophenol	< 10.	ug/l	10.	065600000P
2,4,5-trichlorophenol	< 50.	ug/l	50.	093200000P
2-chloronaphthalene	< 10.	ug/l	10.	067200000P
2-nitroaniline	< 50.	ug/l	50.	093300000P
dimethyl phthalate	< 10.	ug/l	10.	068100000P
acenaphthylene	< 10.	ug/l	10.	065800000P

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Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300928

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478207
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG EB-1 Bailer Water Sample
Collected on 01/10/90 at 1300 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (cont)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 50.	ug/l	50.	093400000P
acenaphthene	< 10.	ug/l	10.	065700000P
2,4-dinitrophenol	< 50.	ug/l	50.	065000000P
4-nitrophenol	< 50.	ug/l	50.	065200000P
dibenzofuran	< 10.	ug/l	10.	093500000P
2,4-dinitrotoluene	< 10.	ug/l	10.	068300000P
2,6-dinitrotoluene	< 10.	ug/l	10.	068400000P
diethyl phthalate	< 10.	ug/l	10.	068000000P
4-chlorophenyl phenyl ether	< 10.	ug/l	10.	067300000P
fluorene	< 10.	ug/l	10.	068800000P
4-nitroaniline	< 50.	ug/l	50.	093600000P
2-methyl-4,6-dinitrophenol	< 50.	ug/l	50.	064900000P
N-nitrosodiphenylamine	< 10.	ug/l	10.	069900000P
4-bromophenyl phenyl ether	< 10.	ug/l	10.	067000000P
hexachlorobenzene	< 10.	ug/l	10.	068900000P
pentachlorophenol	< 50.	ug/l	50.	065400000P
phenanthrene	< 10.	ug/l	10.	070000000P
anthracene	< 10.	ug/l	10.	065900000P
di-n-butyl phthalate	< 10.	ug/l	10.	068200000P
fluoranthene	< 10.	ug/l	10.	068700000P
pyrene	< 10.	ug/l	10.	070100000P
butyl benzyl phthalate	< 10.	ug/l	10.	067100000P
3,3'-dichlorobenzidine	< 20.	ug/l	20.	067900000P
benzo (a) anthracene	< 10.	ug/l	10.	066100000P
bis (2-ethylhexyl) phthalate	< 10.	ug/l	10.	066900000P
chrysene	< 10.	ug/l	10.	067400000P
di-n-octyl phthalate	< 10.	ug/l	10.	068500000P
benzo (b) fluoranthene	< 10.	ug/l	10.	066300000P
benzo (K) fluoranthene	< 10.	ug/l	10.	066500000P
benzo (a) pyrene	< 10.	ug/l	10.	066200000P
indeno (1,2,3-cd) pyrene	< 10.	ug/l	10.	069300000P
dibenz (a,h) anthracene	< 10.	ug/l	10.	067500000P
benzo (ghi) perylene	< 10.	ug/l	10.	066400000P

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Chemical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

300929

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478207
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG EB-1 Bailer Water Sample
Collected on 01/10/90 at 1300 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 0.05	ug/l	0.05	060900000P
Beta BHC	< 0.05	ug/l	0.05	061000000P
Delta BHC	< 0.05	ug/l	0.05	061200000P
Gamma BHC - Lindane	< 0.05	ug/l	0.05	045300000P
Heptachlor	< 0.05	ug/l	0.05	045400000P
Aldrin	< 0.05	ug/l	0.05	045500000P
Heptachlor Epoxide	< 0.05	ug/l	0.05	061500000P
Endosulfan I	< 0.05	ug/l	0.05	062700000P
Dieldrin	< 0.1	ug/l	0.1	046900000P
DDE	< 0.1	ug/l	0.1	061600000P
Endrin	< 0.1	ug/l	0.1	047700000P
Endosulfan II	< 0.1	ug/l	0.1	062800000P
DDD	< 0.1	ug/l	0.1	061700000P
Endosulfan Sulfate	< 0.1	ug/l	0.1	062900000P
DDT	< 0.1	ug/l	0.1	047800000P
Endrin Ketone	< 0.1	ug/l	0.1	093800000P
Methoxychlor	< 0.5	ug/l	0.5	062100000P
Alpha Chlordane	< 0.5	ug/l	0.5	136100000P
Gamma Chlordane	< 0.5	ug/l	0.5	136200000P
Toxaphene	< 1.	ug/l	1.	094200000P
PCB-1016	< 0.5	ug/l	0.5	063900000P
PCB-1221	< 0.5	ug/l	0.5	064000000P
PCB-1232	< 0.5	ug/l	0.5	064100000P
PCB-1242	< 0.5	ug/l	0.5	064200000P
PCB-1248	< 0.5	ug/l	0.5	064300000P
PCB-1254	< 1.	ug/l	1.	064400000P
PCB-1260	< 1.	ug/l	1.	064500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300930

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478207
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG EB-1 Bailer Water Sample
Collected on 01/10/90 at 1300 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamate Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 4.	ug/l	4.	134500000P

The value generated using CA SOP 734 was < 4. ug/l.

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300931

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Chemical Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
EB1BL

Lab Name: LANCASTER LABS Contract:
Lab Code: LANCAS Case No.: 244597 SAS No.: SDG No.: PPG5
Matrix: (soil/water) WATER Lab Sample ID: A1478207W
Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A1478207W
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. Date Analyzed: 01/12/90
Column (pack/cap) PACK Dilution Factor: 1.0
CONCENTRATION UNITS:
Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

300932

FORM I VOA-TIC 1/87 Rev.

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Revieved and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EB1BL

Lab Name: LANCASTER LABS Contract: _____.
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) WATER Lab Sample ID: 1478207
Sample wt/vol: 1000.(g/mL) ML Lab File ID: >E2456
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. _____. dec. _____. Date Extracted: 01/11/90
Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 01/13/90
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 1.000

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown approx. C6 hydrocarb	8.53	8.	JB
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

FORM I SV-TIC 1/87 Rev.

300933

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Tests or Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478208
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG EB-1 Bailer (Dissolved) Water Sample
Collected on 01/10/90 at 1300 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	< 0.1	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	< 0.005	mg/l	0.005	024701400P
Cadmium	< 0.005	mg/l	0.005	024901400P
Calcium	< 0.05	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	< 0.05	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	< 0.05	mg/l	0.05	025401400P
Magnesium	< 0.05	mg/l	0.05	025701400P
Manganese	< 0.01	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	< 0.04	mg/l	0.04	026101400P
Potassium	< 0.5	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	< 0.5	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	< 0.02	mg/l	0.02	027201400P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104503000P
Lead (furnace method)	< 0.005	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P

This sample was field filtered for dissolved metals.

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

300934

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 90.00 048700

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Upper American Council of Independent Laboratories Inc

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478205
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG EB-2 3" Split Spoon Water Sample
Collected on 01/10/90 at 0915 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Cyanide, Total	< 0.005	mg/l	0.005	023704000P
Aluminum	< 0.1	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	< 0.005	mg/l	0.005	024701400P
Cadmium	< 0.005	mg/l	0.005	024901400P
Calcium	0.29	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	< 0.05	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	0.07	mg/l	0.05	025401400P
Magnesium	< 0.05	mg/l	0.05	025701400P
Manganese	< 0.01	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	< 0.04	mg/l	0.04	026101400P
Potassium	< 0.5	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	< 0.5	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	< 0.02	mg/l	0.02	027201400P
VOA GC/MS Library Search		attached		089005500P
Semivolatile Library Search		attached		089309500P
TCL Volatiles		attached		092227000P
TCL Semi-Volatiles		attached		092354000P
TCL Semi-Volatiles (cont)		attached		092400000P
TCL Pesticides		attached		093726000P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104503000P
Lead (furnace method)	< 0.005	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P
N-Methyl Carbamate Pesticides		attached		134011000P
Malathion	< 0.05	ug/l	0.05	900116500P
Pentachloronitrobenzene	< 10.	ug/l	10.	900201000P

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1 COPY TO Data Package Group

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Areas of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 250.00 219200

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories Inc

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478205
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG EB-2 3" Split Spoon Water Sample
Collected on 01/10/90 at 0915 by BS/AT

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	20.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	< 5.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	< 5.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	< 5.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene are not separated. Therefore, the result reported for trans-1,2-dichloroethene represents the combined total of both isomers.

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Member American Council of Independent Laboratories Inc

300936

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478205
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG EB-2 3" Split Spoon Water Sample
Collected on 01/10/90 at 0915 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	< 10.	ug/l	10.	065500000P
bis (2-chloroethyl) ether	< 10.	ug/l	10.	066700000P
2-chlorophenol	< 10.	ug/l	10.	064600000P
1,3-dichlorobenzene	< 10.	ug/l	10.	067700000P
1,4-dichlorobenzene	< 10.	ug/l	10.	067800000P
benzyl alcohol	< 10.	ug/l	10.	092600000P
1,2-dichlorobenzene	< 10.	ug/l	10.	067600000P
2-methylphenol	< 10.	ug/l	10.	092700000P
bis (2-chloroisopropyl) ether	< 10.	ug/l	10.	066800000P
4-methylphenol	< 10.	ug/l	10.	092800000P
N-nitrosodi-n-propylamine	< 10.	ug/l	10.	069800000P
hexachloroethane	< 10.	ug/l	10.	069200000P
nitrobenzene	< 10.	ug/l	10.	069600000P
isophorone	< 10.	ug/l	10.	069400000P
2-nitrophenol	< 10.	ug/l	10.	065100000P
2,4-dimethylphenol	< 10.	ug/l	10.	064800000P
benzoic acid	< 50.	ug/l	50.	092900000P
bis (2-chloroethoxy) methane	< 10.	ug/l	10.	066600000P
2,4-dichlorophenol	< 10.	ug/l	10.	064700000P
1,2,4-trichlorobenzene	< 10.	ug/l	10.	070200000P
naphthalene	< 10.	ug/l	10.	069500000P
4-chloroaniline	< 10.	ug/l	10.	093000000P
hexachlorobutadiene	< 10.	ug/l	10.	069000000P
4-chloro-3-methylphenol	< 10.	ug/l	10.	065300000P
2-methylnaphthalene	< 10.	ug/l	10.	093100000P
hexachlorocyclopentadiene	< 10.	ug/l	10.	069100000P
2,4,6-trichlorophenol	< 10.	ug/l	10.	065600000P
2,4,5-trichlorophenol	< 50.	ug/l	50.	093200000P
2-chloronaphthalene	< 10.	ug/l	10.	067200000P
2-nitroaniline	< 50.	ug/l	50.	093300000P
dimethyl phthalate	< 10.	ug/l	10.	068100000P
acenaphthylene	< 10.	ug/l	10.	065800000P

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1 COPY TO Data Package Group

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Chemical, Biological & Environmental Fields of Testing

American Council of Independent Laboratories, Inc.

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478205
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG EB-2 3" Split Spoon Water Sample
Collected on 01/10/90 at 0915 by BS/AT

P.O. 89-595
Rel.

TCL Semi-Volatiles (cont)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 50.	ug/l	50.	093400000P
acenaphthene	< 10.	ug/l	10.	065700000P
2,4-dinitrophenol	< 50.	ug/l	50.	065000000P
4-nitrophenol	< 50.	ug/l	50.	065200000P
dibenzofuran	< 10.	ug/l	10.	093500000P
2,4-dinitrotoluene	< 10.	ug/l	10.	068300000P
2,6-dinitrotoluene	< 10.	ug/l	10.	068400000P
diethyl phthalate	< 10.	ug/l	10.	068000000P
4-chlorophenyl phenyl ether	< 10.	ug/l	10.	067300000P
fluorene	< 10.	ug/l	10.	068800000P
4-nitroaniline	< 50.	ug/l	50.	093600000P
2-methyl-4,6-dinitrophenol	< 50.	ug/l	50.	064900000P
N-nitrosodiphenylamine	< 10.	ug/l	10.	069900000P
4-bromophenyl phenyl ether	< 10.	ug/l	10.	067000000P
hexachlorobenzene	< 10.	ug/l	10.	068900000P
pentachlorophenol	< 50.	ug/l	50.	065400000P
phenanthrene	< 10.	ug/l	10.	070000000P
anthracene	< 10.	ug/l	10.	065900000P
di-n-butyl phthalate	< 10.	ug/l	10.	068200000P
fluoranthene	< 10.	ug/l	10.	068700000P
pyrene	< 10.	ug/l	10.	070100000P
butyl benzyl phthalate	< 10.	ug/l	10.	067100000P
3,3'-dichlorobenzidine	< 20.	ug/l	20.	067900000P
benzo (a) anthracene	< 10.	ug/l	10.	066100000P
bis (2-ethylhexyl) phthalate	< 10.	ug/l	10.	066900000P
chrysene	< 10.	ug/l	10.	067400000P
di-n-octyl phthalate	< 10.	ug/l	10.	068500000P
benzo (b) fluoranthene	< 10.	ug/l	10.	066300000P
benzo (K) fluoranthene	< 10.	ug/l	10.	066500000P
benzo (a) pyrene	< 10.	ug/l	10.	066200000P
indeno (1,2,3-cd) pyrene	< 10.	ug/l	10.	069300000P
dibenz (a,h) anthracene	< 10.	ug/l	10.	067500000P
benzo (ghi) perylene	< 10.	ug/l	10.	066400000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

Member American Council of Independent Laboratories Inc

300938

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478205
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG EB-2 3" Split Spoon Water Sample
Collected on 01/10/90 at 0915 by BS/AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 0.05	ug/l	0.05	060900000P
Beta BHC	< 0.05	ug/l	0.05	061000000P
Delta BHC	< 0.05	ug/l	0.05	061200000P
Gamma BHC - Lindane	< 0.05	ug/l	0.05	045300000P
Heptachlor	< 0.05	ug/l	0.05	045400000P
Aldrin	< 0.05	ug/l	0.05	045500000P
Heptachlor Epoxide	< 0.05	ug/l	0.05	061500000P
Endosulfan I	< 0.05	ug/l	0.05	062700000P
Dieldrin	< 0.1	ug/l	0.1	046900000P
DDE	< 0.1	ug/l	0.1	061600000P
Endrin	< 0.1	ug/l	0.1	047700000P
Endosulfan II	< 0.1	ug/l	0.1	062800000P
DDD	< 0.1	ug/l	0.1	061700000P
Endosulfan Sulfate	< 0.1	ug/l	0.1	062900000P
DDT	< 0.1	ug/l	0.1	047800000P
Endrin Ketone	< 0.1	ug/l	0.1	093800000P
Methoxychlor	< 0.5	ug/l	0.5	062100000P
Alpha Chlordane	< 0.5	ug/l	0.5	136100000P
Gamma Chlordane	< 0.5	ug/l	0.5	136200000P
Toxaphene	< 1.	ug/l	1.	094200000P
PCB-1016	< 0.5	ug/l	0.5	063900000P
PCB-1221	< 0.5	ug/l	0.5	064000000P
PCB-1232	< 0.5	ug/l	0.5	064100000P
PCB-1242	< 0.5	ug/l	0.5	064200000P
PCB-1248	< 0.5	ug/l	0.5	064300000P
PCB-1254	< 1.	ug/l	1.	064400000P
PCB-1260	< 1.	ug/l	1.	064500000P

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1 COPY TO Data Package Group

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478205
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG EB-2 3" Split Spoon Water Sample
Collected on 01/10/90 at 0915 by BS/AT

P.O. 89-595
Rel.

N-Methyl Carbamate Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 4.	ug/l	4.	134500000P

The value generated using CA SOP 734 was < 4. ug/l.

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EB2SS

Lab Name: LANCASTER LABS Contract:

Lab Code: LANCAS Case No.: 244597 SAS No.: SDG No.: PPG5

Matrix: (soil/water) WATER Lab Sample ID: A1478205WR

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A1478205WR

Level: (low/med) LOW Date Received: 01/10/90

% Moisture: not dec. Date Analyzed: 01/12/90

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

300941

FORM I VOA-TIC 1/87 Rev.

American Association for Laboratory Accreditation Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EB2SS

Lab Name: LANCASTER LABS Contract: _____.
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) WATER Lab Sample ID: 1478205
Sample wt/vol: 1000.(g/mL) ML Lab File ID: >E2455
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. _____. dec. _____. Date Extracted: 01/11/90
Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 01/13/90
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 1.000

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown approx. C6 hydrocarb	8.54	10.	JB
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

FORM I SV-TIC 1/87 Rev.

300942

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Questions? Contact Environmental Technical Services at (717) 656-2301

Member American Council of Independent Laboratories, Inc.

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478206
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG EB-2 3" Split Spoon (Dissolved) Water Sample
Collected on 01/10/90 at 0915 by BS/AT

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	< 0.1	mg/l	0.1	024301400P
Antimony	< 0.05	mg/l	0.05	024401400P
Barium	< 0.1	mg/l	0.1	024601400P
Beryllium	< 0.005	mg/l	0.005	024701400P
Cadmium	< 0.005	mg/l	0.005	024901400P
Calcium	0.27	mg/l	0.05	025001400P
Chromium	< 0.01	mg/l	0.01	025101400P
Cobalt	< 0.05	mg/l	0.05	025201400P
Copper	< 0.02	mg/l	0.02	025301400P
Iron	< 0.05	mg/l	0.05	025401400P
Magnesium	< 0.05	mg/l	0.05	025701400P
Manganese	< 0.01	mg/l	0.01	025801400P
Mercury	< 0.0002	mg/l	0.0002	025902500P
Nickel	< 0.04	mg/l	0.04	026101400P
Potassium	< 0.5	mg/l	0.5	026201400P
Silver	< 0.01	mg/l	0.01	026601400P
Sodium	< 0.5	mg/l	0.5	026701400P
Vanadium	< 0.05	mg/l	0.05	027101400P
Zinc	< 0.02	mg/l	0.02	027201400P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104503000P
Lead (furnace method)	< 0.005	mg/l	0.005	105503000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106403000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107303000P

This sample was field filtered for dissolved metals.

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1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301
112 03915 90.00 048700

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories, Inc.

300943

VI. METHOD BLANKS

300944

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

SDG-1

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471768
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG Method Blank Sample

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
VOA GC/MS Library Search		attached		089004000P
Semivolatile Library Search		attached		089307000P
TCL Volatiles (Soil)		attached		117826000P
TCL Semi-Volatiles (Soil)		attached		120152500P
TCL Semi-Volatiles (Soil) cont		attached		120200000P
TCL Pesticides		attached		122524500P
N-Methyl Carbamates in Soil		attached		150915000P
Malathion	< 50.	ug/kg	50.	900216500P
Pentachloronitrobenzene	< 330.	ug/kg	330.	900301000P
Dioxin	See Below			900431000P

The analysis for dioxin was subcontracted to another laboratory.

2,3,7,8-TCDD was not detected in this sample. Please refer to the data package for the complete report.

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Questions? Contact Environmental Technical Services at (717) 656-2301
120 03915 220.00 199500

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471768
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG Method Blank Sample

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/kg	10.	082700000P
Bromomethane	< 10.	ug/kg	10.	082800000P
Vinyl Chloride	< 10.	ug/kg	10.	082900000P
Chloroethane	< 10.	ug/kg	10.	083000000P
Methylene Chloride	< 5.	ug/kg	5.	083100000P
Acetone	< 10.	ug/kg	10.	091400000P
Carbon Disulfide	< 5.	ug/kg	5.	091500000P
1,1-Dichloroethene	< 5.	ug/kg	5.	118000000P
1,1-Dichloroethane	< 5.	ug/kg	5.	083300000P
1,2-Dichloroethene (total)	< 5.	ug/kg	5.	117900000P
Chloroform	< 5.	ug/kg	5.	083500000P
1,2-Dichloroethane	< 5.	ug/kg	5.	083600000P
2-Butanone	< 10.	ug/kg	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/kg	5.	083700000P
Carbon Tetrachloride	< 5.	ug/kg	5.	083800000P
Vinyl Acetate	< 10.	ug/kg	10.	091700000P
Bromodichloromethane	< 5.	ug/kg	5.	083900000P
1,2-Dichloropropane	< 5.	ug/kg	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/kg	5.	084400000P
Trichloroethene	< 5.	ug/kg	5.	118100000P
Dibromochloromethane	< 5.	ug/kg	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/kg	5.	084500000P
Benzene	< 5.	ug/kg	5.	118200000P
trans-1,3-Dichloropropene	< 5.	ug/kg	5.	084100000P
Bromoform	< 5.	ug/kg	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/kg	10.	091900000P
2-Hexanone	< 10.	ug/kg	10.	091800000P
Tetrachloroethene	< 5.	ug/kg	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/kg	5.	084900000P
Toluene	< 5.	ug/kg	5.	118300000P
Chlorobenzene	< 5.	ug/kg	5.	118400000P
Ethylbenzene	< 5.	ug/kg	5.	085200000P
Styrene	< 5.	ug/kg	5.	092000000P
Xylenes (total)	< 5.	ug/kg	5.	092100000P

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Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Richard S. Rodgers, B.S.
Group Leader, GC/MS

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471768
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG Method Blank Sample

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	< 330.	ug/kg	330.	118500000P
bis (2-chloroethyl) ether	< 330.	ug/kg	330.	066700000P
2-chlorophenol	< 330.	ug/kg	330.	118600000P
1,3-dichlorobenzene	< 330.	ug/kg	330.	067700000P
1,4-dichlorobenzene	< 330.	ug/kg	330.	118700000P
benzyl alcohol	< 330.	ug/kg	330.	092600000P
1,2-dichlorobenzene	< 330.	ug/kg	330.	067600000P
2-methylphenol	< 330.	ug/kg	330.	092700000P
bis (2-chloroisopropyl) ether	< 330.	ug/kg	330.	066800000P
4-methylphenol	< 330.	ug/kg	330.	092800000P
N-nitrosodi-n-propylamine	< 330.	ug/kg	330.	118800000P
hexachloroethane	< 330.	ug/kg	330.	069200000P
nitrobenzene	< 330.	ug/kg	330.	069600000P
isophorone	< 330.	ug/kg	330.	069400000P
2-nitrophenol	< 330.	ug/kg	330.	065100000P
2,4-dimethylphenol	< 330.	ug/kg	330.	064800000P
benzoic acid	< 1,700.	ug/kg	1,700.	092900000P
bis (2-chloroethoxy) methane	< 330.	ug/kg	330.	066600000P
2,4-dichlorophenol	< 330.	ug/kg	330.	064700000P
1,2,4-trichlorobenzene	< 330.	ug/kg	330.	118900000P
naphthalene	< 330.	ug/kg	330.	069500000P
4-chloroaniline	< 330.	ug/kg	330.	093000000P
hexachlorobutadiene	< 330.	ug/kg	330.	069000000P
4-chloro-3-methylphenol	< 330.	ug/kg	330.	119000000P
2-methylnaphthalene	< 330.	ug/kg	330.	093100000P
hexachlorocyclopentadiene	< 330.	ug/kg	330.	069100000P
2,4,6-trichlorophenol	< 330.	ug/kg	330.	065600000P
2,4,5-trichlorophenol	< 1,700.	ug/kg	1,700.	093200000P
2-chloronaphthalene	< 330.	ug/kg	330.	067200000P
2-nitroaniline	< 1,700.	ug/kg	1,700.	093300000P
dimethyl phthalate	< 330.	ug/kg	330.	068100000P
acenaphthylene	< 330.	ug/kg	330.	065800000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Tests & Testing

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471768
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG Method Blank Sample

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 1,700.	ug/kg	1,700.	093400000P
acenaphthene	< 330.	ug/kg	330.	119100000P
2,4-dinitrophenol	< 1,700.	ug/kg	1,700.	065000000P
4-nitrophenol	< 1,700.	ug/kg	1,700.	119200000P
dibenzofuran	< 330.	ug/kg	330.	093500000P
2,4-dinitrotoluene	< 330.	ug/kg	330.	119300000P
2,6-dinitrotoluene	< 330.	ug/kg	330.	068400000P
diethyl phthalate	< 330.	ug/kg	330.	068000000P
4-chlorophenyl phenyl ether	< 330.	ug/kg	330.	067300000P
fluorene	< 330.	ug/kg	330.	068800000P
4-nitroaniline	< 1,700.	ug/kg	1,700.	093600000P
2-methyl-4,6-dinitrophenol	< 1,700.	ug/kg	1,700.	064900000P
N-nitrosodiphenylamine	< 330.	ug/kg	330.	069900000P
4-bromophenyl phenyl ether	< 330.	ug/kg	330.	067000000P
hexachlorobenzene	< 330.	ug/kg	330.	068900000P
pentachlorophenol	< 1,700.	ug/kg	1,700.	119400000P
phenanthrene	< 330.	ug/kg	330.	070000000P
anthracene	< 330.	ug/kg	330.	065900000P
di-n-butyl phthalate	< 330.	ug/kg	330.	068200000P
fluoranthene	< 330.	ug/kg	330.	068700000P
pyrene	< 330.	ug/kg	330.	119500000P
butyl benzyl phthalate	< 330.	ug/kg	330.	067100000P
3,3'-dichlorobenzidine	< 670.	ug/kg	670.	067900000P
benzo (a) anthracene	< 330.	ug/kg	330.	066100000P
bis (2-ethylhexyl) phthalate	< 330.	ug/kg	330.	066900000P
chrysene	< 330.	ug/kg	330.	067400000P
di-n-octyl phthalate	< 330.	ug/kg	330.	068500000P
benzo (b) fluoranthene	< 330.	ug/kg	330.	066300000P
benzo (K) fluoranthene	< 330.	ug/kg	330.	066500000P
benzo (a) pyrene	< 330.	ug/kg	330.	066200000P
indeno (1,2,3-cd) pyrene	< 330.	ug/kg	330.	069300000P
dibenz (a,h) anthracene	< 330.	ug/kg	330.	067500000P
benzo (ghi) perylene	< 330.	ug/kg	330.	066400000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

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Chemical Biological & Environmental Fields of Testing

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471768
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG Method Blank Sample

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 8.	ug/kg	8.	060900000P
Beta BHC	< 8.	ug/kg	8.	061000000P
Delta BHC	< 8.	ug/kg	8.	061200000P
Gamma BHC - Lindane	< 8.	ug/kg	8.	121800000P
Heptachlor	< 8.	ug/kg	8.	121900000P
Aldrin	< 8.	ug/kg	8.	122000000P
Heptachlor Epoxide	< 8.	ug/kg	8.	061500000P
Endosulfan I	< 8.	ug/kg	8.	062700000P
Dieldrin	< 16.	ug/kg	16.	122200000P
DDE	< 16.	ug/kg	16.	061600000P
Endrin	< 16.	ug/kg	16.	122300000P
Endosulfan II	< 16.	ug/kg	16.	062800000P
DDD	< 16.	ug/kg	16.	061700000P
Endosulfan Sulfate	< 16.	ug/kg	16.	062900000P
DDT	< 16.	ug/kg	16.	122100000P
Endrin Ketone	< 16.	ug/kg	16.	093800000P
Methoxychlor	< 80.	ug/kg	80.	062100000P
Alpha Chlordane	< 80.	ug/kg	80.	136100000P
Gamma Chlordane	< 80.	ug/kg	80.	136200000P
Toxaphene	< 160.	ug/kg	160.	094200000P
PCB-1016	< 80.	ug/kg	80.	063900000P
PCB-1221	< 80.	ug/kg	80.	064000000P
PCB-1232	< 80.	ug/kg	80.	064100000P
PCB-1242	< 80.	ug/kg	80.	064200000P
PCB-1248	< 80.	ug/kg	80.	064300000P
PCB-1254	< 160.	ug/kg	160.	064400000P
PCB-1260	< 160.	ug/kg	160.	064500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471768
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

PPG Method Blank Sample

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

VBLK01

Lab Name: LANCASTER LABS Contract:
Lab Code: LLI Case No.: 242630 SAS No.: SDG No.: PPG1
Matrix: (soil/water) SOIL Lab Sample ID: A1471768L
Sample wt/vol: 5.0 (g/mL) G Lab File ID: A1471768L
Level: (low/med) LOW Date Received: 12/18/89
% Moisture: not dec. Date Analyzed: 12/20/89
Column (pack/cap) PACK Dilution Factor: 1.0
CONCENTRATION UNITS:
Number TICs found: 0 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

300951

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Richard S. Rodgers, B.S.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SBLKL1

Lab Name: LANCASTER LABS Contract: RIZZO
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) SOIL Lab Sample ID: 1471768
Sample wt/vol: 30.0(g/mL) G Lab File ID: >E1600
Level: (low/med) LOW Date Received: 12/18/89
% Moisture: not dec. _____. dec. _____. Date Extracted: 12/19/89
Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 12/26/89
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 1.000

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		2-Pentene, 2,4-dimethyl-	7.09	330.	*JI
2.		Unknown	8.25	9300.	JA
3.		Unknown	15.54	170.	J
4.		Unknown subs. hexanedioic ac	34.29	500.	J
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					

*I=or isomer of compound

FORM I SV-TIC 1/87 Rev.

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Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

Member American Council of Independent Laboratories, Inc.

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

EPA SAMPLE NO.

SBLKL1

Lab Name: LANCASTER LABS Contract: RIZZO
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) SOIL Lab Sample ID: 1471768
Sample wt/vol: 30.0(g/mL) G Lab File ID: >E1600
Level: (low/med) LOW Date Received: 12/18/89
% Moisture: not dec. _____. dec. _____. Date Extracted: 12/19/89
Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 12/26/89
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 1.000

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	2-Pentene, 2,4-dimethyl-	7.09	330.	*JI
2.	Unknown	8.25	9300.	JA
3.	Unknown	15.54	170.	J
4.	Unknown subs. hexanedioic ac	34.29	500.	J
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

*I=or isomer of compound

FORM I SV-TIC 1/87 Rev.

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Respectfully Submitted
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Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1471769
Date Reported 2/ 5/90
Date Submitted 12/18/89
Discard Date 3/ 8/90
Collected 12/15/89 by WS

Continuation of LLI #1471768 PPG Method Blank Sample

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	< 20.	mg/kg	20.	014301300P
Antimony	< 5.	mg/kg	5.	014401300P
Barium	< 20.	mg/kg	20.	014601300P
Beryllium	< 0.5	mg/kg	0.5	014701300P
Cadmium	< 0.5	mg/kg	0.5	014901300P
Calcium	< 10.	mg/kg	10.	015001300P
Chromium	< 1.	mg/kg	1.	015101300P
Cobalt	< 5.	mg/kg	5.	015201300P
Copper	< 2.	mg/kg	2.	015301300P
Iron	< 5.	mg/kg	5.	015401300P
Magnesium	< 10.	mg/kg	10.	015701300P
Manganese	< 1.	mg/kg	1.	015801300P
Mercury	< 0.04	mg/kg	0.04	015903300P
Nickel	< 4.	mg/kg	4.	016101300P
Potassium	< 50.	mg/kg	50.	016201300P
Silver	< 1.	mg/kg	1.	016601300P
Sodium	< 50.	mg/kg	50.	016701300P
Vanadium	< 5.	mg/kg	5.	017101300P
Zinc	< 2.	mg/kg	2.	017201300P
Cyanide, Total	< 0.1	mg/kg	0.1	023705000P
Arsenic (furnace method)	< 1.	mg/kg	1.	114504000P
Lead (furnace method)	< 0.5	mg/kg	0.5	115504000P
Selenium (furnace method)	< 0.5	mg/kg	0.5	116404000P
Thallium (furnace method)	< 1.	mg/kg	1.	117304000P

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Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301
120 03915 70.00 054700

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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American Association of Independent Laboratories Inc

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

SDG-

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473301
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG Method Blank Sample

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
VOA GC/MS Library Search	attached			089004000P
Semivolatile Library Search	attached			089307000P
TCL Volatiles (Soil)	attached			117826000P
TCL Semi-Volatiles (Soil)	attached			120152500P
TCL Semi-Volatiles (Soil) cont	attached			120200000P
TCL Pesticides	attached			122524500P
N-Methyl Carbamates in Soil	attached			150915000P
Dioxin	See Below			900131000P

The analysis for dioxin was subcontracted to another laboratory.

2,3,7,8-TCDD was not detected in this sample. Please refer to the data package for the complete report.

Malathion	< 50.	ug/kg	50.	900216500P
Pentachloronitrobenzene	< 330.	ug/kg	330.	900301000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

300955

Questions? Contact Environmental Technical Services at (717) 656-2301
135 03915 220.00 199500

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Chemical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473301
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG Method Blank Sample

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/kg	10.	082700000P
Bromomethane	< 10.	ug/kg	10.	082800000P
Vinyl Chloride	< 10.	ug/kg	10.	082900000P
Chloroethane	< 10.	ug/kg	10.	083000000P
Methylene Chloride	< 5.	ug/kg	5.	083100000P
Acetone	< 10.	ug/kg	10.	091400000P
Carbon Disulfide	< 5.	ug/kg	5.	091500000P
1,1-Dichloroethene	< 5.	ug/kg	5.	118000000P
1,1-Dichloroethane	< 5.	ug/kg	5.	083300000P
1,2-Dichloroethene (total)	< 5.	ug/kg	5.	117900000P
Chloroform	< 5.	ug/kg	5.	083500000P
1,2-Dichloroethane	< 5.	ug/kg	5.	083600000P
2-Butanone	< 10.	ug/kg	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/kg	5.	083700000P
Carbon Tetrachloride	< 5.	ug/kg	5.	083800000P
Vinyl Acetate	< 10.	ug/kg	10.	091700000P
Bromodichloromethane	< 5.	ug/kg	5.	083900000P
1,2-Dichloropropane	< 5.	ug/kg	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/kg	5.	084400000P
Trichloroethene	< 5.	ug/kg	5.	118100000P
Dibromochloromethane	< 5.	ug/kg	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/kg	5.	084500000P
Benzene	< 5.	ug/kg	5.	118200000P
trans-1,3-Dichloropropene	< 5.	ug/kg	5.	084100000P
Bromoform	< 5.	ug/kg	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/kg	10.	091900000P
2-Hexanone	< 10.	ug/kg	10.	091800000P
Tetrachloroethene	< 5.	ug/kg	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/kg	5.	084900000P
Toluene	< 5.	ug/kg	5.	118300000P
Chlorobenzene	< 5.	ug/kg	5.	118400000P
Ethylbenzene	< 5.	ug/kg	5.	085200000P
Styrene	< 5.	ug/kg	5.	092000000P
Xylenes (total)	< 5.	ug/kg	5.	092100000P

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1 COPY TO Data Package Group

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473301
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG Method Blank Sample

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	< 330.	ug/kg	330.	118500000P
bis (2-chloroethyl) ether	< 330.	ug/kg	330.	066700000P
2-chlorophenol	< 330.	ug/kg	330.	118600000P
1,3-dichlorobenzene	< 330.	ug/kg	330.	067700000P
1,4-dichlorobenzene	< 330.	ug/kg	330.	118700000P
benzyl alcohol	< 330.	ug/kg	330.	092600000P
1,2-dichlorobenzene	< 330.	ug/kg	330.	067600000P
2-methylphenol	< 330.	ug/kg	330.	092700000P
bis (2-chloroisopropyl) ether	< 330.	ug/kg	330.	066800000P
4-methylphenol	< 330.	ug/kg	330.	092800000P
N-nitrosodi-n-propylamine	< 330.	ug/kg	330.	118800000P
hexachloroethane	< 330.	ug/kg	330.	069200000P
nitrobenzene	< 330.	ug/kg	330.	069600000P
isophorone	< 330.	ug/kg	330.	069400000P
2-nitrophenol	< 330.	ug/kg	330.	065100000P
2,4-dimethylphenol	< 330.	ug/kg	330.	064800000P
benzoic acid	< 1,700.	ug/kg	1,700.	092900000P
bis (2-chloroethoxy) methane	< 330.	ug/kg	330.	066600000P
2,4-dichlorophenol	< 330.	ug/kg	330.	064700000P
1,2,4-trichlorobenzene	< 330.	ug/kg	330.	118900000P
naphthalene	< 330.	ug/kg	330.	069500000P
4-chloroaniline	< 330.	ug/kg	330.	093000000P
hexachlorobutadiene	< 330.	ug/kg	330.	069000000P
4-chloro-3-methylphenol	< 330.	ug/kg	330.	119000000P
2-methylnaphthalene	< 330.	ug/kg	330.	093100000P
hexachlorocyclopentadiene	< 330.	ug/kg	330.	069100000P
2,4,6-trichlorophenol	< 330.	ug/kg	330.	065600000P
2,4,5-trichlorophenol	< 1,700.	ug/kg	1,700.	093200000P
2-chloronaphthalene	< 330.	ug/kg	330.	067200000P
2-nitroaniline	< 1,700.	ug/kg	1,700.	093300000P
dimethyl phthalate	< 330.	ug/kg	330.	068100000P
acenaphthylene	< 330.	ug/kg	330.	065800000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

300957

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

Pennsylvania Association for Laboratory Accreditation
Medical, Biological & Environmental Fields of Testing

Member American Council of Independent Laboratories, Inc.

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473301
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG Method Blank Sample

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 1,700.	ug/kg	1,700.	093400000P
acenaphthene	< 330.	ug/kg	330.	119100000P
2,4-dinitrophenol	< 1,700.	ug/kg	1,700.	065000000P
4-nitrophenol	< 1,700.	ug/kg	1,700.	119200000P
dibenzofuran	< 330.	ug/kg	330.	093500000P
2,4-dinitrotoluene	< 330.	ug/kg	330.	119300000P
2,6-dinitrotoluene	< 330.	ug/kg	330.	068400000P
diethyl phthalate	< 330.	ug/kg	330.	068000000P
4-chlorophenyl phenyl ether	< 330.	ug/kg	330.	067300000P
fluorene	< 330.	ug/kg	330.	068800000P
4-nitroaniline	< 1,700.	ug/kg	1,700.	093600000P
2-methyl-4,6-dinitrophenol	< 1,700.	ug/kg	1,700.	064900000P
N-nitrosodiphenylamine	< 330.	ug/kg	330.	069900000P
4-bromophenyl phenyl ether	< 330.	ug/kg	330.	067000000P
hexachlorobenzene	< 330.	ug/kg	330.	068900000P
pentachlorophenol	< 1,700.	ug/kg	1,700.	119400000P
phenanthrene	< 330.	ug/kg	330.	070000000P
anthracene	< 330.	ug/kg	330.	065900000P
di-n-butyl phthalate	< 330.	ug/kg	330.	068200000P
fluoranthene	< 330.	ug/kg	330.	068700000P
pyrene	< 330.	ug/kg	330.	119500000P
butyl benzyl phthalate	< 330.	ug/kg	330.	067100000P
3,3'-dichlorobenzidine	< 670.	ug/kg	670.	067900000P
benzo (a) anthracene	< 330.	ug/kg	330.	066100000P
bis (2-ethylhexyl) phthalate	< 330.	ug/kg	330.	066900000P
chrysene	< 330.	ug/kg	330.	067400000P
di-n-octyl phthalate	< 330.	ug/kg	330.	068500000P
benzo (b) fluoranthene	< 330.	ug/kg	330.	066300000P
benzo (K) fluoranthene	< 330.	ug/kg	330.	066500000P
benzo (a) pyrene	< 330.	ug/kg	330.	066200000P
indeno (1,2,3-cd) pyrene	< 330.	ug/kg	330.	069300000P
dibenz (a,h) anthracene	< 330.	ug/kg	330.	067500000P
benzo (ghi) perylene	< 330.	ug/kg	330.	066400000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

The American Association for Laboratory Accreditation
Chemical Biological & Environmental Fields of Testing

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Member American Council of Independent Laboratories

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473301
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

PPG Method Blank Sample

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 8.	ug/kg	8.	060900000P
Beta BHC	< 8.	ug/kg	8.	061000000P
Delta BHC	< 8.	ug/kg	8.	061200000P
Gamma BHC - Lindane	< 8.	ug/kg	8.	121800000P
Heptachlor	< 8.	ug/kg	8.	121900000P
Aldrin	< 8.	ug/kg	8.	122000000P
Heptachlor Epoxide	< 8.	ug/kg	8.	061500000P
Endosulfan I	< 8.	ug/kg	8.	062700000P
Dieldrin	< 16.	ug/kg	16.	122200000P
DDE	< 16.	ug/kg	16.	061600000P
Endrin	< 16.	ug/kg	16.	122300000P
Endosulfan II	< 16.	ug/kg	16.	062800000P
DDD	< 16.	ug/kg	16.	061700000P
Endosulfan Sulfate	< 16.	ug/kg	16.	062900000P
DDT	< 16.	ug/kg	16.	122100000P
Endrin Ketone	< 16.	ug/kg	16.	093800000P
Methoxychlor	< 80.	ug/kg	80.	062100000P
Alpha Chlordane	< 80.	ug/kg	80.	136100000P
Gamma Chlordane	< 80.	ug/kg	80.	136200000P
Toxaphene	< 160.	ug/kg	160.	094200000P
PCB-1016	< 80.	ug/kg	80.	063900000P
PCB-1221	< 80.	ug/kg	80.	064000000P
PCB-1232	< 80.	ug/kg	80.	064100000P
PCB-1242	< 80.	ug/kg	80.	064200000P
PCB-1248	< 80.	ug/kg	80.	064300000P
PCB-1254	< 160.	ug/kg	160.	064400000P
PCB-1260	< 160.	ug/kg	160.	064500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

American Association for Laboratory Accreditation
Member American Council of Independent Laboratories, Inc.

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ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473301
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

P.O. 89-595
Rel.

PPG Method Blank Sample

N-Methyl Carbamates in Soil	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Revieved and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK01

Lab Name: LANCASTER LABS Contract:

Lab Code: LANCAS Case No.: 243084 SAS No.: SDG No.: PPG2

Matrix: (soil/water) SOIL Lab Sample ID: A1473301L

Sample wt/vol: 5.0 (g/mL) G Lab File ID: A1473301L

Level: (low/med) LOW Date Received: 12/21/89

% Moisture: not dec. Date Analyzed: 12/27/89

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

300961

FORM I VOA-TIC 1/87 Rev.

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Questions? Contact Environmental Technical Services at (717) 656-2301

Member American Council of Independent Laboratories Inc

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKL1

Lab Name: LANCASTER LABS Contract: _____.
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) SOIL Lab Sample ID: 1473301
Sample wt/vol: 30.0(g/mL) G Lab File ID: >E1802
Level: (low/med) LOW Date Received: 12/21/89
% Moisture: not dec. _____. dec. _____. Date Extracted: 12/27/89
Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 12/29/89
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 1.000

Number TICs found: 14

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	2-Pentene, 4,4-dimethyl-, (Z	6.60	170.	*JI
2.	Unknown	6.66	170.	J
3.	Unknown aliphatic hydrocarbo	7.64	200.	J
4.	Unknown	7.71	3000.	J
5.	Unknown	8.19	200.	J
6.	Unknown	8.38	230.	J
7.	Unknown	10.17	170.	J
8.	Unknown	10.35	800.	J
9.	Unknown	11.42	330.	J
10.	Unknown	12.80	170.	J
11.	Unknown	14.96	300.	J
12.	Unknown	23.27	170.	J
13.	Unknown	27.23	200.	J
14.	Unknown	33.54	400.	J
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

*I= or isomer of compound.

FORM I SV-TIC 1/87 Rev.

300962

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Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKL1

Lab Name: LANCASTER LABS Contract: _____.
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) SOIL Lab Sample ID: 1473301
Sample wt/vol: 30.0(g/mL) G Lab File ID: >E1802
Level: (low/med) LOW Date Received: 12/21/89
% Moisture: not dec. _____. dec. _____. Date Extracted: 12/27/89
Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 12/29/89
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 1.000

Number TICs found: 14

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	2-Pentene, 4,4-dimethyl-, (Z	6.60	170.	*JI
2.	Unknown	6.66	170.	J
3.	Unknown aliphatic hydrocarbo	7.64	200.	J
4.	Unknown	7.71	3000.	J
5.	Unknown	8.19	200.	J
6.	Unknown	8.38	230.	J
7.	Unknown	10.17	170.	J
8.	Unknown	10.35	800.	J
9.	Unknown	11.42	330.	J
10.	Unknown	12.80	170.	J
11.	Unknown	14.96	300.	J
12.	Unknown	23.27	170.	J
13.	Unknown	27.23	200.	J
14.	Unknown	33.54	400.	J
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

*I= or isomer of compound.

FORM I SV-TIC 1/87 Rev.

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301
Our Standard Terms And Conditions

300963

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473302
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

Continuation of LLI #1473301 PPG Method Blank Sample

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	< 20.	mg/kg	20.	014301300P
Antimony	< 5.	mg/kg	5.	014401300P
Barium	< 20.	mg/kg	20.	014601300P
Beryllium	< 0.5	mg/kg	0.5	014701300P
Cadmium	< 0.5	mg/kg	0.5	014901300P
Calcium	< 10.	mg/kg	10.	015001300P
Chromium	< 1.	mg/kg	1.	015101300P
Cobalt	< 5.	mg/kg	5.	015201300P
Copper	< 2.	mg/kg	2.	015301300P
Iron	< 5.	mg/kg	5.	015401300P
Magnesium	< 10.	mg/kg	10.	015701300P
Manganese	< 1.	mg/kg	1.	015801300P
Mercury	< 0.04	mg/kg	0.04	015903300P
Nickel	< 4.	mg/kg	4.	016101300P
Potassium	< 50.	mg/kg	50.	016201300P
Silver	< 1.	mg/kg	1.	016601300P
Sodium	< 50.	mg/kg	50.	016701300P
Vanadium	< 5.	mg/kg	5.	017101300P
Zinc	< 2.	mg/kg	2.	017201300P
Cyanide, Total	< 0.1	mg/kg	0.1	023705000P
Arsenic (furnace method)	< 1.	mg/kg	1.	114504000P
Lead (furnace method)	< 0.5	mg/kg	0.5	115504000P
Selenium (furnace method)	< 0.5	mg/kg	0.5	116404000P
Thallium (furnace method)	< 1.	mg/kg	1.	117304000P

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1 COPY TO Data Package Group

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Questions? Contact Environmental Technical Services at (717) 656-2301
135 03915 70.00 054700

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

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Member American Council of Independent Laboratories Inc

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1473302
Date Reported 2/15/90
Date Submitted 12/21/89
Discard Date 2/23/90
Collected 12/19/89 by WS

Continuation of LLI #1473301 PPG Method Blank Sample

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	< 20.	mg/kg	20.	014301300P
Antimony	< 5.	mg/kg	5.	014401300P
Barium	< 20.	mg/kg	20.	014601300P
Beryllium	< 0.5	mg/kg	0.5	014701300P
Cadmium	< 0.5	mg/kg	0.5	014901300P
Calcium	< 10.	mg/kg	10.	015001300P
Chromium	< 1.	mg/kg	1.	015101300P
Cobalt	< 5.	mg/kg	5.	015201300P
Copper	< 2.	mg/kg	2.	015301300P
Iron	< 5.	mg/kg	5.	015401300P
Magnesium	< 10.	mg/kg	10.	015701300P
Manganese	< 1.	mg/kg	1.	015801300P
Mercury	< 0.04	mg/kg	0.04	015903300P
Nickel	< 4.	mg/kg	4.	016101300P
Potassium	< 50.	mg/kg	50.	016201300P
Silver	< 1.	mg/kg	1.	016601300P
Sodium	< 50.	mg/kg	50.	016701300P
Vanadium	< 5.	mg/kg	5.	017101300P
Zinc	< 2.	mg/kg	2.	017201300P
Cyanide, Total	< 0.1	mg/kg	0.1	023705000P
Arsenic (furnace method)	< 1.	mg/kg	1.	114504000P
Lead (furnace method)	< 0.5	mg/kg	0.5	115504000P
Selenium (furnace method)	< 0.5	mg/kg	0.5	116404000P
Thallium (furnace method)	< 1.	mg/kg	1.	117304000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

300965

Questions? Contact Environmental Technical Services at (717) 656-2301
135 03915 70.00 054700

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

American Association for Laboratory Accreditation
Technical Electrical & Environmental Areas of Testing

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Member American Council of Independent Laboratories Inc

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

SDG -

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476749
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG Method Blank Sample

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
VOA GC/MS Library Search		attached		089000000P
Semivolatile Library Search		attached		089300000P
TCL Volatiles (Soil)		attached		117800000P
TCL Semi-Volatiles (Soil)		attached		120100000P
TCL Semi-Volatiles (Soil) cont		attached		120200000P
TCL Pesticides		attached		122500000P
N-Methyl Carbamates in Soil		attached		150900000P
Dioxin	See Below			900100000P

The analysis for dioxin was subcontracted to another laboratory.

2,3,7,8-TCDD was not detected in this sample. Please refer to the data package for the complete report.

Malathion	< 50.	ug/kg	50.	900200000P
Pentachloronitrobenzene	< 330.	ug/kg	330.	900300000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
1 COPY TO Data Package Group

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental fields of testing

Questions? Contact Environmental Technical Services at (717) 656-2301
135 03915 0.00 000000

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476749
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG Method Blank Sample

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/kg	10.	082700000P
Bromomethane	< 10.	ug/kg	10.	082800000P
Vinyl Chloride	< 10.	ug/kg	10.	082900000P
Chloroethane	< 10.	ug/kg	10.	083000000P
Methylene Chloride	< 5.	ug/kg	5.	083100000P
Acetone	< 10.	ug/kg	10.	091400000P
Carbon Disulfide	< 5.	ug/kg	5.	091500000P
1,1-Dichloroethene	< 5.	ug/kg	5.	118000000P
1,1-Dichloroethane	< 5.	ug/kg	5.	083300000P
1,2-Dichloroethene (total)	< 5.	ug/kg	5.	117900000P
Chloroform	< 5.	ug/kg	5.	083500000P
1,2-Dichloroethane	< 5.	ug/kg	5.	083600000P
2-Butanone	< 10.	ug/kg	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/kg	5.	083700000P
Carbon Tetrachloride	< 5.	ug/kg	5.	083800000P
Vinyl Acetate	< 10.	ug/kg	10.	091700000P
Bromodichloromethane	< 5.	ug/kg	5.	083900000P
1,2-Dichloropropane	< 5.	ug/kg	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/kg	5.	084400000P
Trichloroethene	< 5.	ug/kg	5.	118100000P
Dibromochloromethane	< 5.	ug/kg	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/kg	5.	084500000P
Benzene	< 5.	ug/kg	5.	118200000P
trans-1,3-Dichloropropene	< 5.	ug/kg	5.	084100000P
Bromoform	< 5.	ug/kg	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/kg	10.	091900000P
2-Hexanone	< 10.	ug/kg	10.	091800000P
Tetrachloroethene	< 5.	ug/kg	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/kg	5.	084900000P
Toluene	< 5.	ug/kg	5.	118300000P
Chlorobenzene	< 5.	ug/kg	5.	118400000P
Ethylbenzene	< 5.	ug/kg	5.	085200000P
Styrene	< 5.	ug/kg	5.	092000000P
Xylenes (total)	< 5.	ug/kg	5.	092100000P

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1 COPY TO Data Package Group

300967

The American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Member American Council of Independent Laboratories, Inc.

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476749
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG Method Blank Sample

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	< 330.	ug/kg	330.	118500000P
bis (2-chloroethyl) ether	< 330.	ug/kg	330.	066700000P
2-chlorophenol	< 330.	ug/kg	330.	118600000P
1,3-dichlorobenzene	< 330.	ug/kg	330.	067700000P
1,4-dichlorobenzene	< 330.	ug/kg	330.	118700000P
benzyl alcohol	< 330.	ug/kg	330.	092600000P
1,2-dichlorobenzene	< 330.	ug/kg	330.	067600000P
2-methylphenol	< 330.	ug/kg	330.	092700000P
bis (2-chloroisopropyl) ether	< 330.	ug/kg	330.	066800000P
4-methylphenol	< 330.	ug/kg	330.	092800000P
N-nitrosodi-n-propylamine	< 330.	ug/kg	330.	118800000P
hexachloroethane	< 330.	ug/kg	330.	069200000P
nitrobenzene	< 330.	ug/kg	330.	069600000P
isophorone	< 330.	ug/kg	330.	069400000P
2-nitrophenol	< 330.	ug/kg	330.	065100000P
2,4-dimethylphenol	< 330.	ug/kg	330.	064800000P
benzoic acid	< 1,700.	ug/kg	1,700.	092900000P
bis (2-chloroethoxy) methane	< 330.	ug/kg	330.	066600000P
2,4-dichlorophenol	< 330.	ug/kg	330.	064700000P
1,2,4-trichlorobenzene	< 330.	ug/kg	330.	118900000P
naphthalene	< 330.	ug/kg	330.	069500000P
4-chloroaniline	< 330.	ug/kg	330.	093000000P
hexachlorobutadiene	< 330.	ug/kg	330.	069000000P
4-chloro-3-methylphenol	< 330.	ug/kg	330.	119000000P
2-methylnaphthalene	< 330.	ug/kg	330.	093100000P
hexachlorocyclopentadiene	< 330.	ug/kg	330.	069100000P
2,4,6-trichlorophenol	< 330.	ug/kg	330.	065600000P
2,4,5-trichlorophenol	< 1,700.	ug/kg	1,700.	093200000P
2-chloronaphthalene	< 330.	ug/kg	330.	067200000P
2-nitroaniline	< 1,700.	ug/kg	1,700.	093300000P
dimethyl phthalate	< 330.	ug/kg	330.	068100000P
acenaphthylene	< 330.	ug/kg	330.	065800000P

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American Association for Laboratory Accreditation
Chemical Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Member American Council of Independent Laboratories

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476749
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG Method Blank Sample

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 1,700.	ug/kg	1,700.	093400000P
acenaphthene	< 330.	ug/kg	330.	119100000P
2,4-dinitrophenol	< 1,700.	ug/kg	1,700.	065000000P
4-nitrophenol	< 1,700.	ug/kg	1,700.	119200000P
dibenzofuran	< 330.	ug/kg	330.	093500000P
2,4-dinitrotoluene	< 330.	ug/kg	330.	119300000P
2,6-dinitrotoluene	< 330.	ug/kg	330.	068400000P
diethyl phthalate	< 330.	ug/kg	330.	068000000P
4-chlorophenyl phenyl ether	< 330.	ug/kg	330.	067300000P
fluorene	< 330.	ug/kg	330.	068800000P
4-nitroaniline	< 1,700.	ug/kg	1,700.	093600000P
2-methyl-4,6-dinitrophenol	< 1,700.	ug/kg	1,700.	064900000P
N-nitrosodiphenylamine	< 330.	ug/kg	330.	069900000P
4-bromophenyl phenyl ether	< 330.	ug/kg	330.	067000000P
hexachlorobenzene	< 330.	ug/kg	330.	068900000P
pentachlorophenol	< 1,700.	ug/kg	1,700.	119400000P
phenanthrene	< 330.	ug/kg	330.	070000000P
anthracene	< 330.	ug/kg	330.	065900000P
di-n-butyl phthalate	< 330.	ug/kg	330.	068200000P
fluoranthene	< 330.	ug/kg	330.	068700000P
pyrene	< 330.	ug/kg	330.	119500000P
butyl benzyl phthalate	< 330.	ug/kg	330.	067100000P
3,3'-dichlorobenzidine	< 670.	ug/kg	670.	067900000P
benzo (a) anthracene	< 330.	ug/kg	330.	066100000P
bis (2-ethylhexyl) phthalate	< 330.	ug/kg	330.	066900000P
chrysene	< 330.	ug/kg	330.	067400000P
di-n-octyl phthalate	< 330.	ug/kg	330.	068500000P
benzo (b) fluoranthene	< 330.	ug/kg	330.	066300000P
benzo (K) fluoranthene	< 330.	ug/kg	330.	066500000P
benzo (a) pyrene	< 330.	ug/kg	330.	066200000P
indeno (1,2,3-cd) pyrene	< 330.	ug/kg	330.	069300000P
dibenz (a,h) anthracene	< 330.	ug/kg	330.	067500000P
benzo (ghi) perylene	< 330.	ug/kg	330.	066400000P

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1 COPY TO Data Package Group

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Fields of Testing

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Upper American Council of Independent Laboratories, Inc.

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476749
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG Method Blank Sample

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 8.	ug/kg	8.	060900000P
Beta BHC	< 8.	ug/kg	8.	061000000P
Delta BHC	< 8.	ug/kg	8.	061200000P
Gamma BHC - Lindane	< 8.	ug/kg	8.	121800000P
Heptachlor	< 8.	ug/kg	8.	121900000P
Aldrin	< 8.	ug/kg	8.	122000000P
Heptachlor Epoxide	< 8.	ug/kg	8.	061500000P
Endosulfan I	< 8.	ug/kg	8.	062700000P
Dieldrin	< 16.	ug/kg	16.	122200000P
DDE	< 16.	ug/kg	16.	061600000P
Endrin	< 16.	ug/kg	16.	122300000P
Endosulfan II	< 16.	ug/kg	16.	062800000P
DDD	< 16.	ug/kg	16.	061700000P
Endosulfan Sulfate	< 16.	ug/kg	16.	062900000P
DDT	< 16.	ug/kg	16.	122100000P
Endrin Ketone	< 16.	ug/kg	16.	093800000P
Methoxychlor	< 80.	ug/kg	80.	062100000P
Alpha Chlordane	< 80.	ug/kg	80.	136100000P
Gamma Chlordane	< 80.	ug/kg	80.	136200000P
Toxaphene	< 160.	ug/kg	160.	094200000P
PCB-1016	< 80.	ug/kg	80.	063900000P
PCB-1221	< 80.	ug/kg	80.	064000000P
PCB-1232	< 80.	ug/kg	80.	064100000P
PCB-1242	< 80.	ug/kg	80.	064200000P
PCB-1248	< 80.	ug/kg	80.	064300000P
PCB-1254	< 160.	ug/kg	160.	064400000P
PCB-1260	< 160.	ug/kg	160.	064500000P

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American Association for Laboratory Accreditation
Chemical Biological & Environmental Fields of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Member American Council of Independent Laboratories Inc

300970

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476749
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

PPG Method Blank Sample

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
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Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK03

Lab Name: LANCASTER LABS Contract:
Lab Code: LANCAS Case No.: 244147 SAS No.: SDG No.: PPG3
Matrix: (soil/water) SOIL Lab Sample ID: C1476749L
Sample wt/vol: 5.0 (g/mL) G Lab File ID: C1476749L
Level: (low/med) LOW Date Received: 01/05/90
% Moisture: not dec. Date Analyzed: 01/09/90
Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

300972

FORM I VOA-TIC 1/87 Rev.

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKL1

Lab Name: LANCASTER LABS Contract: RIZZO
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) SOIL Lab Sample ID: 1476749
Sample wt/vol: 30 (g/mL) G Lab File ID: >F9050
Level: (low/med) LOW Date Received: 01/05/90
% Moisture: not dec. _____. dec. _____. Date Extracted: 01/08/90
Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/09/90
GPC Cleanup: (Y/N) N pH: 6.5 Dilution Factor: 1.000

Number TICs found: 8

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	7.00	2400.	JA
2.	Unknown alkane	7.46	200.	J
3.	Unknown alkane	7.64	170.	J
4.	Unknown	9.23	130.	J
5.	Unknown	9.61	570.	J
6.	Unknown ketone	9.86	300.	J
7.	Unknown	10.68	230.	J
8.	Unknown carboxylic acid/este	32.67	25000.	J
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

FORM I SV-TIC 1/87 Rev.

300973

American Association for Laboratory Accreditation
Chemical, Biological & Environmental fields of testing

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See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Questions: Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1476750
Date Reported 2/15/90
Date Submitted 1/ 5/90
Discard Date 3/18/90
Collected 1/ 3/90 by WS

Continuation of LLI #1476749 PPG Method Blank Sample

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	< 20.	mg/kg	20.	014300000P
Antimony	< 5.	mg/kg	5.	014400000P
Barium	< 20.	mg/kg	20.	014600000P
Beryllium	< 0.5	mg/kg	0.5	014700000P
Cadmium	< 0.5	mg/kg	0.5	014900000P
Calcium	10.	mg/kg	10.	015000000P
Chromium	< 1.	mg/kg	1.	015100000P
Cobalt	< 5.	mg/kg	5.	015200000P
Copper	< 2.	mg/kg	2.	015300000P
Iron	< 5.	mg/kg	5.	015400000P
Magnesium	< 10.	mg/kg	10.	015700000P
Manganese	< 1.	mg/kg	1.	015800000P
Mercury	< 0.04	mg/kg	0.04	015900000P
Nickel	< 4.	mg/kg	4.	016100000P
Potassium	< 50.	mg/kg	50.	016200000P
Silver	< 1.	mg/kg	1.	016600000P
Sodium	< 50.	mg/kg	50.	016700000P
Vanadium	< 5.	mg/kg	5.	017100000P
Zinc	< 2.	mg/kg	2.	017200000P
Cyanide, Total	< 0.1	mg/kg	0.1	023700000P
Arsenic (furnace method)	< 1.	mg/kg	1.	114500000P
Lead (furnace method)	< 0.5	mg/kg	0.5	115500000P
Selenium (furnace method)	< 0.5	mg/kg	0.5	116400000P
Thallium (furnace method)	< 1.	mg/kg	1.	117300000P

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American Association for Laboratory Accreditation
Chemical, Biological & Environmental Tests or Testing

Questions? Contact Environmental Technical Services at (717) 656-2301
135 03915 0.00 000000

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

Upper American Council of Independent Laboratories Inc

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

SDG

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478396
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

Method Blank

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
VOA GC/MS Library Search		attached		089000000P
Semivolatile Library Search		attached		089300000P
TCL Volatiles (Soil)		attached		117800000P
TCL Semi-Volatiles (Soil)		attached		120100000P
TCL Semi-Volatiles (Soil) cont		attached		120200000P
TCL Pesticides		attached		122500000P
N-Methyl Carbamates in Soil		attached		150900000P
Dioxin	See Below			900100000P

The analysis for dioxin was subcontracted to another laboratory.

2,3,7,8-TCDD was not detected in this sample. Please refer to the data package for the complete report.

Malathion	< 50.	ug/kg	50.	900200000P
Pentachloronitrobenzene	< 330.	ug/kg	330.	900300000P

1 COPY TO Paul C. Rizzo Associates ATTN: Ken Bird
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Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301
059 03915 0.00 000000

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478396
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

Method Blank

P.O. 89-595
Rel.

TCL Volatiles (Soil)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/kg	10.	082700000P
Bromomethane	< 10.	ug/kg	10.	082800000P
Vinyl Chloride	< 10.	ug/kg	10.	082900000P
Chloroethane	< 10.	ug/kg	10.	083000000P
Methylene Chloride	< 5.	ug/kg	5.	083100000P
Acetone	< 10.	ug/kg	10.	091400000P
Carbon Disulfide	< 5.	ug/kg	5.	091500000P
1,1-Dichloroethene	< 5.	ug/kg	5.	118000000P
1,1-Dichloroethane	< 5.	ug/kg	5.	083300000P
1,2-Dichloroethene (total)	< 5.	ug/kg	5.	117900000P
Chloroform	< 5.	ug/kg	5.	083500000P
1,2-Dichloroethane	< 5.	ug/kg	5.	083600000P
2-Butanone	< 10.	ug/kg	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/kg	5.	083700000P
Carbon Tetrachloride	< 5.	ug/kg	5.	083800000P
Vinyl Acetate	< 10.	ug/kg	10.	091700000P
Bromodichloromethane	< 5.	ug/kg	5.	083900000P
1,2-Dichloropropane	< 5.	ug/kg	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/kg	5.	084400000P
Trichloroethene	< 5.	ug/kg	5.	118100000P
Dibromochloromethane	< 5.	ug/kg	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/kg	5.	084500000P
Benzene	< 5.	ug/kg	5.	118200000P
trans-1,3-Dichloropropene	< 5.	ug/kg	5.	084100000P
Bromoform	< 5.	ug/kg	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/kg	10.	091900000P
2-Hexanone	< 10.	ug/kg	10.	091800000P
Tetrachloroethene	< 5.	ug/kg	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/kg	5.	084900000P
Toluene	< 5.	ug/kg	5.	118300000P
Chlorobenzene	< 5.	ug/kg	5.	118400000P
Ethylbenzene	< 5.	ug/kg	5.	085200000P
Styrene	< 5.	ug/kg	5.	092000000P
Xylenes (total)	< 5.	ug/kg	5.	092100000P

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1 COPY TO Data Package Group

American Association for Laboratory Accreditation
Chemical, Biological & Environmental Tests of Testing

Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478396
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

Method Blank

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	< 330.	ug/kg	330.	118500000P
bis (2-chloroethyl) ether	< 330.	ug/kg	330.	066700000P
2-chlorophenol	< 330.	ug/kg	330.	118600000P
1,3-dichlorobenzene	< 330.	ug/kg	330.	067700000P
1,4-dichlorobenzene	< 330.	ug/kg	330.	118700000P
benzyl alcohol	< 330.	ug/kg	330.	092600000P
1,2-dichlorobenzene	< 330.	ug/kg	330.	067600000P
2-methylphenol	< 330.	ug/kg	330.	092700000P
bis (2-chloroisopropyl) ether	< 330.	ug/kg	330.	066800000P
4-methylphenol	< 330.	ug/kg	330.	092800000P
N-nitrosodi-n-propylamine	< 330.	ug/kg	330.	118800000P
hexachloroethane	< 330.	ug/kg	330.	069200000P
nitrobenzene	< 330.	ug/kg	330.	069600000P
isophorone	< 330.	ug/kg	330.	069400000P
2-nitrophenol	< 330.	ug/kg	330.	065100000P
2,4-dimethylphenol	< 330.	ug/kg	330.	064800000P
benzoic acid	< 1,700.	ug/kg	1,700.	092900000P
bis (2-chloroethoxy) methane	< 330.	ug/kg	330.	066600000P
2,4-dichlorophenol	< 330.	ug/kg	330.	064700000P
1,2,4-trichlorobenzene	< 330.	ug/kg	330.	118900000P
naphthalene	< 330.	ug/kg	330.	069500000P
4-chloroaniline	< 330.	ug/kg	330.	093000000P
hexachlorobutadiene	< 330.	ug/kg	330.	069000000P
4-chloro-3-methylphenol	< 330.	ug/kg	330.	119000000P
2-methylnaphthalene	< 330.	ug/kg	330.	093100000P
hexachlorocyclopentadiene	< 330.	ug/kg	330.	069100000P
2,4,6-trichlorophenol	< 330.	ug/kg	330.	065600000P
2,4,5-trichlorophenol	< 1,700.	ug/kg	1,700.	093200000P
2-chloronaphthalene	< 330.	ug/kg	330.	067200000P
2-nitroaniline	< 1,700.	ug/kg	1,700.	093300000P
dimethyl phthalate	< 330.	ug/kg	330.	068100000P
acenaphthylene	< 330.	ug/kg	330.	065800000P

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Chemical, Biological & Environmental Fields of Testing

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See Reverse Side For Explanation Of Symbols And Abbreviations And Our Standard Terms And Conditions

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478396
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

Method Blank

P.O. 89-595
Rel.

TCL Semi-Volatiles (Soil) cont	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 1,700.	ug/kg	1,700.	093400000P
acenaphthene	< 330.	ug/kg	330.	119100000P
2,4-dinitrophenol	< 1,700.	ug/kg	1,700.	065000000P
4-nitrophenol	< 1,700.	ug/kg	1,700.	119200000P
dibenzofuran	< 330.	ug/kg	330.	093500000P
2,4-dinitrotoluene	< 330.	ug/kg	330.	119300000P
2,6-dinitrotoluene	< 330.	ug/kg	330.	068400000P
diethyl phthalate	< 330.	ug/kg	330.	068000000P
4-chlorophenyl phenyl ether	< 330.	ug/kg	330.	067300000P
fluorene	< 330.	ug/kg	330.	068800000P
4-nitroaniline	< 1,700.	ug/kg	1,700.	093600000P
2-methyl-4,6-dinitrophenol	< 1,700.	ug/kg	1,700.	064900000P
N-nitrosodiphenylamine	< 330.	ug/kg	330.	069900000P
4-bromophenyl phenyl ether	< 330.	ug/kg	330.	067000000P
hexachlorobenzene	< 330.	ug/kg	330.	068900000P
pentachlorophenol	< 1,700.	ug/kg	1,700.	119400000P
phenanthrene	< 330.	ug/kg	330.	070000000P
anthracene	< 330.	ug/kg	330.	065900000P
di-n-butyl phthalate	< 330.	ug/kg	330.	068200000P
fluoranthene	< 330.	ug/kg	330.	068700000P
pyrene	< 330.	ug/kg	330.	119500000P
butyl benzyl phthalate	< 330.	ug/kg	330.	067100000P
3,3'-dichlorobenzidine	< 670.	ug/kg	670.	067900000P
benzo (a) anthracene	< 330.	ug/kg	330.	066100000P
bis (2-ethylhexyl) phthalate	< 330.	ug/kg	330.	066900000P
chrysene	< 330.	ug/kg	330.	067400000P
di-n-octyl phthalate	< 330.	ug/kg	330.	068500000P
benzo (b) fluoranthene	< 330.	ug/kg	330.	066300000P
benzo (K) fluoranthene	< 330.	ug/kg	330.	066500000P
benzo (a) pyrene	< 330.	ug/kg	330.	066200000P
indeno (1,2,3-cd) pyrene	< 330.	ug/kg	330.	069300000P
dibenz (a,h) anthracene	< 330.	ug/kg	330.	067500000P
benzo (ghi) perylene	< 330.	ug/kg	330.	066400000P

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Chemical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478396
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

Method Blank

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 120.	ug/kg	120.	060900000P
Beta BHC	< 120.	ug/kg	120.	061000000P
Delta BHC	< 120.	ug/kg	120.	061200000P
Gamma BHC - Lindane	< 120.	ug/kg	120.	121800000P
Heptachlor	< 120.	ug/kg	120.	121900000P
Aldrin	< 120.	ug/kg	120.	122000000P
Heptachlor Epoxide	< 120.	ug/kg	120.	061500000P
Endosulfan I	< 120.	ug/kg	120.	062700000P
Dieldrin	< 240.	ug/kg	240.	122200000P
DDE	< 240.	ug/kg	240.	061600000P
Endrin	< 240.	ug/kg	240.	122300000P
Endosulfan II	< 240.	ug/kg	240.	062800000P
DDD	< 240.	ug/kg	240.	061700000P
Endosulfan Sulfate	< 240.	ug/kg	240.	062900000P
DDT	< 240.	ug/kg	240.	122100000P
Endrin Ketone	< 240.	ug/kg	240.	093800000P
Methoxychlor	< 1,200.	ug/kg	1,200.	062100000P
Alpha Chlordane	< 1,200.	ug/kg	1,200.	136100000P
Gamma Chlordane	< 1,200.	ug/kg	1,200.	136200000P
Toxaphene	< 2,400.	ug/kg	2,400.	094200000P
PCB-1016	< 1,200.	ug/kg	1,200.	063900000P
PCB-1221	< 1,200.	ug/kg	1,200.	064000000P
PCB-1232	< 1,200.	ug/kg	1,200.	064100000P
PCB-1242	< 1,200.	ug/kg	1,200.	064200000P
PCB-1248	< 1,200.	ug/kg	1,200.	064300000P
PCB-1254	< 2,400.	ug/kg	2,400.	064400000P
PCB-1260	< 2,400.	ug/kg	2,400.	064500000P

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Questions? Contact Environmental Technical Services at (717) 656-2301

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478396
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

Method Blank

P.O. 89-595
Rel.

N-Methyl Carbamates in Soil	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 100.	ug/kg	100.	134500000P

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Chemical, Biological & Environmental Fields of Testing

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Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

VBLK06

Lab Name: LANCASTER LABS Contract:
Lab Code: LANCAS Case No.: 244304 SAS No.: SDG No.: PPG4
Matrix: (soil/water) SOIL Lab Sample ID: A1478396
Sample wt/vol: 5.0 (g/mL) G Lab File ID: A1478396
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. Date Analyzed: 01/16/90
Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

300981

FORM I VOA-TIC 1/87 Rev.

American Association for Laboratory Accreditation Chemical, Biological & Environmental Fields of Testing

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SBLKL1

Lab Name: LANCASTER LABS Contract: RIZZO
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) SOIL Lab Sample ID: 1478396
Sample wt/vol: 30 (g/mL) G Lab File ID: >F0250
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. _____. dec. _____. Date Extracted: 01/12/90
Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 01/15/90
GPC Cleanup: (Y/N) N pH: 6.5 Dilution Factor: 1.000

Number TICs found: 11

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown alcohol	3.82	130.	J
2.	Unknown	4.19	170.	J
3.	Unknown	5.26	270.	J
4.	Unknown alkane	6.25	200.	J
5.	Unknown	6.39	6700.	JA
6.	Unknown alkane	6.78	130.	J
7.	Unknown alkane	6.98	170.	J
8.	Unknown	8.55	170.	J
9.	Unknown	8.93	630.	J
10.	Unknown	9.99	530.	J
11.	Unknown carboxylic acid/este	31.81	330.	J
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				
24.				
25.				

FORM I SV-TIC 1/87 Rev.

300982

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Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301

Member American Council of Independent Laboratories, Inc.

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. SW 1478397
Date Reported 2/20/90
Date Submitted 1/10/90
Discard Date 3/23/90
Collected 1/ 9/90 by BS

Continuation of LLI #1478396

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	< 20.	mg/kg	20.	014300000P
Antimony	< 5.	mg/kg	5.	014400000P
Barium	< 20.	mg/kg	20.	014600000P
Beryllium	< 0.5	mg/kg	0.5	014700000P
Cadmium	< 0.5	mg/kg	0.5	014900000P
Calcium	< 10.	mg/kg	10.	015000000P
Chromium	< 1.	mg/kg	1.	015100000P
Cobalt	< 5.	mg/kg	5.	015200000P
Copper	< 2.	mg/kg	2.	015300000P
Iron	< 5.	mg/kg	5.	015400000P
Magnesium	< 10.	mg/kg	10.	015700000P
Manganese	< 1.	mg/kg	1.	015800000P
Mercury	< 0.04	mg/kg	0.04	015900000P
Nickel	< 4.	mg/kg	4.	016100000P
Potassium	< 50.	mg/kg	50.	016200000P
Silver	< 1.	mg/kg	1.	016600000P
Sodium	< 50.	mg/kg	50.	016700000P
Vanadium	< 5.	mg/kg	5.	017100000P
Zinc	< 2.	mg/kg	2.	017200000P
Cyanide, Total	< 0.1	mg/kg	0.1	023700000P
Arsenic (furnace method)	< 1.	mg/kg	1.	114500000P
Lead (furnace method)	< 0.5	mg/kg	0.5	115500000P
Selenium (furnace method)	< 0.5	mg/kg	0.5	116400000P
Thallium (furnace method)	< 1.	mg/kg	1.	117300000P

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Chemical, Biological & Environmental Fields of Testing

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Questions? Contact Environmental Technical Services at (717) 656-2301
059 03915 0.00 000000

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

SDG-

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478209
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG Method Blank Water Sample

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Cyanide, Total	< 0.005	mg/l	0.005	023700000P
Aluminum	< 0.1	mg/l	0.1	024300000P
Antimony	< 0.05	mg/l	0.05	024400000P
Barium	< 0.1	mg/l	0.1	024600000P
Beryllium	< 0.005	mg/l	0.005	024700000P
Cadmium	< 0.005	mg/l	0.005	024900000P
Calcium	< 0.05	mg/l	0.05	025000000P
Chromium	< 0.01	mg/l	0.01	025100000P
Cobalt	< 0.05	mg/l	0.05	025200000P
Copper	< 0.02	mg/l	0.02	025300000P
Iron	< 0.05	mg/l	0.05	025400000P
Magnesium	< 0.05	mg/l	0.05	025700000P
Manganese	< 0.01	mg/l	0.01	025800000P
Mercury	< 0.0002	mg/l	0.0002	025900000P
Nickel	< 0.04	mg/l	0.04	026100000P
Potassium	< 0.5	mg/l	0.5	026200000P
Silver	< 0.01	mg/l	0.01	026600000P
Sodium	< 0.5	mg/l	0.5	026700000P
Vanadium	< 0.05	mg/l	0.05	027100000P
Zinc	< 0.02	mg/l	0.02	027200000P
VOA GC/MS Library Search		attached		089000000P
Semivolatile Library Search		attached		089300000P
TCL Volatiles		attached		092200000P
TCL Semi-Volatiles		attached		092300000P
TCL Semi-Volatiles (cont)		attached		092400000P
TCL Pesticides		attached		093700000P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104500000P
Lead (furnace method)	< 0.005	mg/l	0.005	105500000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106400000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107300000P
N-Methyl Carbamate Pesticides		attached		134000000P
Malathion	< 0.05	ug/l	0.05	900100000P
Pentachloronitrobenzene	< 10.	ug/l	10.	900200000P

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112 03915 0.00 000000

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478209
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG Method Blank Water Sample

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Chloromethane	< 10.	ug/l	10.	082700000P
Bromomethane	< 10.	ug/l	10.	082800000P
Vinyl Chloride	< 10.	ug/l	10.	082900000P
Chloroethane	< 10.	ug/l	10.	083000000P
Methylene Chloride	< 5.	ug/l	5.	083100000P
Acetone	< 10.	ug/l	10.	091400000P
Carbon Disulfide	< 5.	ug/l	5.	091500000P
1,1-Dichloroethene	< 5.	ug/l	5.	083200000P
1,1-Dichloroethane	< 5.	ug/l	5.	083300000P
trans-1,2-Dichloroethene	< 5.	ug/l	5.	083400000P
Chloroform	< 5.	ug/l	5.	083500000P
1,2-Dichloroethane	< 5.	ug/l	5.	083600000P
2-Butanone	< 10.	ug/l	10.	091600000P
1,1,1-Trichloroethane	< 5.	ug/l	5.	083700000P
Carbon Tetrachloride	< 5.	ug/l	5.	083800000P
Vinyl Acetate	< 10.	ug/l	10.	091700000P
Bromodichloromethane	< 5.	ug/l	5.	083900000P
1,2-Dichloropropane	< 5.	ug/l	5.	084000000P
cis-1,3-Dichloropropene	< 5.	ug/l	5.	084400000P
Trichloroethene	< 5.	ug/l	5.	084200000P
Dibromochloromethane	< 5.	ug/l	5.	084600000P
1,1,2-Trichloroethane	< 5.	ug/l	5.	084500000P
Benzene	< 5.	ug/l	5.	084300000P
trans-1,3-Dichloropropene	< 5.	ug/l	5.	084100000P
Bromoform	< 5.	ug/l	5.	084700000P
4-Methyl-2-Pentanone	< 10.	ug/l	10.	091900000P
2-Hexanone	< 10.	ug/l	10.	091800000P
Tetrachloroethene	< 5.	ug/l	5.	084800000P
1,1,2,2-Tetrachloroethane	< 5.	ug/l	5.	084900000P
Toluene	< 5.	ug/l	5.	085000000P
Chlorobenzene	< 5.	ug/l	5.	085100000P
Ethylbenzene	< 5.	ug/l	5.	085200000P
Styrene	< 5.	ug/l	5.	092000000P
Xylenes (total)	< 5.	ug/l	5.	092100000P

Under the conditions required for this analysis, the cis and trans isomers of 1,2-dichloroethene are not separated. Therefore, the result reported for trans-1,2-dichloroethene represents the combined total of both isomers.

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Questions? Contact Environmental Technical Services at (717) 656-2301

Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Nelson H. Risser B.A.
Manager, GC/MS

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American Council of Independent Laboratories, Inc.

300985

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478209
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG Method Blank Water Sample

P.O. 89-595
Rel.

TCL Volatiles	RESULT AS RECEIVED	LIMIT OF QUANTITATION	LAB CODE

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ANALYSIS REPORT

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Paul C. Rizzo Associates
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Monroeville PA 15146

LLI Sample No. WW 1478209
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG Method Blank Water Sample

P.O. 89-595
Rel.

TCL Semi-Volatiles	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
phenol	< 10.	ug/l	10.	065500000P
bis (2-chloroethyl) ether	< 10.	ug/l	10.	066700000P
2-chlorophenol	< 10.	ug/l	10.	064600000P
1,3-dichlorobenzene	< 10.	ug/l	10.	067700000P
1,4-dichlorobenzene	< 10.	ug/l	10.	067800000P
benzyl alcohol	< 10.	ug/l	10.	092600000P
1,2-dichlorobenzene	< 10.	ug/l	10.	067600000P
2-methylphenol	< 10.	ug/l	10.	092700000P
bis (2-chloroisopropyl) ether	< 10.	ug/l	10.	066800000P
4-methylphenol	< 10.	ug/l	10.	092800000P
N-nitrosodi-n-propylamine	< 10.	ug/l	10.	069800000P
hexachloroethane	< 10.	ug/l	10.	069200000P
nitrobenzene	< 10.	ug/l	10.	069600000P
isophorone	< 10.	ug/l	10.	069400000P
2-nitrophenol	< 10.	ug/l	10.	065100000P
2,4-dimethylphenol	< 10.	ug/l	10.	064800000P
benzoic acid	< 50.	ug/l	50.	092900000P
bis (2-chloroethoxy) methane	< 10.	ug/l	10.	066600000P
2,4-dichlorophenol	< 10.	ug/l	10.	064700000P
1,2,4-trichlorobenzene	< 10.	ug/l	10.	070200000P
naphthalene	< 10.	ug/l	10.	069500000P
4-chloroaniline	< 10.	ug/l	10.	093000000P
hexachlorobutadiene	< 10.	ug/l	10.	069000000P
4-chloro-3-methylphenol	< 10.	ug/l	10.	065300000P
2-methylnaphthalene	< 10.	ug/l	10.	093100000P
hexachlorocyclopentadiene	< 10.	ug/l	10.	069100000P
2,4,6-trichlorophenol	< 10.	ug/l	10.	065600000P
2,4,5-trichlorophenol	< 50.	ug/l	50.	093200000P
2-chloronaphthalene	< 10.	ug/l	10.	067200000P
2-nitroaniline	< 50.	ug/l	50.	093300000P
dimethyl phthalate	< 10.	ug/l	10.	068100000P
acenaphthylene	< 10.	ug/l	10.	065800000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478209
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG Method Blank Water Sample

P.O. 89-595
Rel.

TCL Semi-Volatiles (cont)	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
3-nitroaniline	< 50.	ug/l	50.	093400000P
acenaphthene	< 10.	ug/l	10.	065700000P
2,4-dinitrophenol	< 50.	ug/l	50.	065000000P
4-nitrophenol	< 50.	ug/l	50.	065200000P
dibenzofuran	< 10.	ug/l	10.	093500000P
2,4-dinitrotoluene	< 10.	ug/l	10.	068300000P
2,6-dinitrotoluene	< 10.	ug/l	10.	068400000P
diethyl phthalate	< 10.	ug/l	10.	068000000P
4-chlorophenyl phenyl ether	< 10.	ug/l	10.	067300000P
fluorene	< 10.	ug/l	10.	068800000P
4-nitroaniline	< 50.	ug/l	50.	093600000P
2-methyl-4,6-dinitrophenol	< 50.	ug/l	50.	064900000P
N-nitrosodiphenylamine	< 10.	ug/l	10.	069900000P
4-bromophenyl phenyl ether	< 10.	ug/l	10.	067000000P
hexachlorobenzene	< 10.	ug/l	10.	068900000P
pentachlorophenol	< 50.	ug/l	50.	065400000P
phenanthrene	< 10.	ug/l	10.	070000000P
anthracene	< 10.	ug/l	10.	065900000P
di-n-butyl phthalate	< 10.	ug/l	10.	068200000P
fluoranthene	< 10.	ug/l	10.	068700000P
pyrene	< 10.	ug/l	10.	070100000P
butyl benzyl phthalate	< 10.	ug/l	10.	067100000P
3,3'-dichlorobenzidine	< 20.	ug/l	20.	067900000P
benzo (a) anthracene	< 10.	ug/l	10.	066100000P
bis (2-ethylhexyl) phthalate	< 10.	ug/l	10.	066900000P
chrysene	< 10.	ug/l	10.	067400000P
di-n-octyl phthalate	< 10.	ug/l	10.	068500000P
benzo (b) fluoranthene	< 10.	ug/l	10.	066300000P
benzo (K) fluoranthene	< 10.	ug/l	10.	066500000P
benzo (a) pyrene	< 10.	ug/l	10.	066200000P
indeno (1,2,3-cd) pyrene	< 10.	ug/l	10.	069300000P
dibenz (a,h) anthracene	< 10.	ug/l	10.	067500000P
benzo (ghi) perylene	< 10.	ug/l	10.	066400000P

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Reviewed and Approved by:

Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

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ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

PPG Method Blank Water Sample

LLI Sample No. WW 1478209
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

P.O. 89-595
Rel.

TCL Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Alpha BHC	< 0.05	ug/l	0.05	060900000P
Beta BHC	< 0.05	ug/l	0.05	061000000P
Delta BHC	< 0.05	ug/l	0.05	061200000P
Gamma BHC - Lindane	< 0.05	ug/l	0.05	045300000P
Heptachlor	< 0.05	ug/l	0.05	045400000P
Aldrin	< 0.05	ug/l	0.05	045500000P
Heptachlor Epoxide	< 0.05	ug/l	0.05	061500000P
Endosulfan I	< 0.05	ug/l	0.05	062700000P
Dieldrin	< 0.1	ug/l	0.1	046900000P
DDE	< 0.1	ug/l	0.1	061600000P
Endrin	< 0.1	ug/l	0.1	047700000P
Endosulfan II	< 0.1	ug/l	0.1	062800000P
DDD	< 0.1	ug/l	0.1	061700000P
Endosulfan Sulfate	< 0.1	ug/l	0.1	062900000P
DDT	< 0.1	ug/l	0.1	047800000P
Endrin Ketone	< 0.1	ug/l	0.1	093800000P
Methoxychlor	< 0.5	ug/l	0.5	062100000P
Alpha Chlordane	< 0.5	ug/l	0.5	136100000P
Gamma Chlordane	< 0.5	ug/l	0.5	136200000P
Toxaphene	< 1.	ug/l	1.	094200000P
PCB-1016	< 0.5	ug/l	0.5	063900000P
PCB-1221	< 0.5	ug/l	0.5	064000000P
PCB-1232	< 0.5	ug/l	0.5	064100000P
PCB-1242	< 0.5	ug/l	0.5	064200000P
PCB-1248	< 0.5	ug/l	0.5	064300000P
PCB-1254	< 1.	ug/l	1.	064400000P
PCB-1260	< 1.	ug/l	1.	064500000P

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478209
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG Method Blank Water Sample

P.O. 89-595
Rel.

N-Methyl Carbamate Pesticides	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Carbaryl	< 4.	ug/l	4.	134500000P

The value generated using CA SOP 734 was < 4. ug/l.

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Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

VBLK02

Lab Name: LANCASTER LABS Contract:

Lab Code: LANCAS Case No.: 244597 SAS No.: SDG No.: PPG5

Matrix: (soil/water) WATER Lab Sample ID: A1478209W

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: A1478209W

Level: (low/med) LOW Date Received: 01/10/90

% Moisture: not dec. Date Analyzed: 01/11/90

Column (pack/cap) PACK Dilution Factor: 1.0

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

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FORM I VOA-TIC 1/87 Rev.

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:
Nelson H. Risser B.A.
Manager, GC/MS

ANALYSIS REPORT

Lancaster Laboratories
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

SBLKW1

Lab Name: LANCASTER LABS Contract: _____.
Lab Code: LANCAS Case No.: _____. SAS No.: _____. SDG No.: _____.
Matrix: (soil/water) WATER Lab Sample ID: 1478209
Sample wt/vol: 1000.(g/mL) ML Lab File ID: >E2400
Level: (low/med) LOW Date Received: 01/10/90
% Moisture: not dec. _____. dec. _____. Date Extracted: 01/11/90
Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 01/12/90
GPC Cleanup: (Y/N) N pH: _____. Dilution Factor: 1.000

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		Unknown approx. C6 hydrocarb	8.59	10.	J
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					

FORM I SV-TIC 1/87 Rev.

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Reviewed and Approved by:
Timothy S. Oostdyk, B.A.
Group Leader, GC/MS

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED
2425 New Holland Pike, Lancaster, PA 17601-5994 (717) 656-2301

Paul C. Rizzo Associates
300 Oxford Drive
Monroeville PA 15146

LLI Sample No. WW 1478210
Date Reported 2/21/90
Date Submitted 1/10/90
Discard Date 3/ 1/90
Collected 1/ 8/90 by AT

PPG Method Blank (Dissolved) Water Sample

P.O. 89-595
Rel.

ANALYSIS	RESULT AS RECEIVED		LIMIT OF QUANTITATION	LAB CODE
Aluminum	< 0.1	mg/l	0.1	024300000P
Antimony	< 0.05	mg/l	0.05	024400000P
Barium	< 0.1	mg/l	0.1	024600000P
Beryllium	< 0.005	mg/l	0.005	024700000P
Cadmium	< 0.005	mg/l	0.005	024900000P
Calcium	< 0.05	mg/l	0.05	025000000P
Chromium	< 0.01	mg/l	0.01	025100000P
Cobalt	< 0.05	mg/l	0.05	025200000P
Copper	< 0.02	mg/l	0.02	025300000P
Iron	< 0.05	mg/l	0.05	025400000P
Magnesium	< 0.05	mg/l	0.05	025700000P
Manganese	< 0.01	mg/l	0.01	025800000P
Mercury	< 0.0002	mg/l	0.0002	025900000P
Nickel	< 0.04	mg/l	0.04	026100000P
Potassium	< 0.5	mg/l	0.5	026200000P
Silver	< 0.01	mg/l	0.01	026600000P
Sodium	< 0.5	mg/l	0.5	026700000P
Vanadium	< 0.05	mg/l	0.05	027100000P
Zinc	< 0.02	mg/l	0.02	027200000P
Arsenic (furnace method)	< 0.01	mg/l	0.01	104500000P
Lead (furnace method)	< 0.005	mg/l	0.005	105500000P
Selenium (furnace method)	< 0.005	mg/l	0.005	106400000P
Thallium (furnace method)	< 0.01	mg/l	0.01	107300000P

This sample was field filtered for dissolved metals.

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112 03915 0.00 000000

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Respectfully Submitted
Lancaster Laboratories, Inc.
Reviewed and Approved by:

Charles J. Neslund, B.S.
Group Leader, Pesticides/PCB's

300994

APPENDIX F

APPENDIX F

DATA VALIDATION DOCUMENTATION

300995

SDG-1

SDG-1 contains data validation for the following samples:

LLI NUMBER	SAMPLE	MATRIX
1470207	B5/S4	Soil Boring
1470208	B5/S5	Soil Boring
1470209	B10/S3	Soil Boring
1470210	B10/S2	Soil Boring
1471134	B14/S3	Soil Boring
1471135	B2/S1	Soil Boring
1471136	B14/S5	Soil Boring
1471137	B2/S5	Soil Boring
1471138	B13/S3	Soil Boring
1471139	B13/S5	Soil Boring
1471141	B3/S1	Soil Boring
1471142	B3/S3	Soil Boring
1471143	B3/S5	Soil Boring
1471156	B7/S5C	Soil Boring
1471157	B7/S5A	Soil Boring
1471158	B9/S5	Soil Boring
1471159	B9/S3	Soil Boring
1471160 - 1471161	B7/S3A	Soil Boring
1471166 - 1471167	B2A/S1	Soil Boring

SDG-1

SOP NO. HW-6
Revision #6

CLP ORGANICS DATA REVIEW
AND PRELIMINARY REVIEW

CONCURRED BY: _____ Date: 4/6/89
Louis Bevilacqua
Monitoring Management Branch

APPROVED BY: _____ Date: 4/14/89
Gerard F. McKenna, Chief
Monitoring Management Branch

INTRODUCTION TO DATA VALIDATION

.0 Scope

1.1 This procedure is applicable to organic data obtained from contractor laboratories working for the Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in the Statement of Work (SOW).

.0 Responsibilities

Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1 Data Assessment - The reviewer must answer every question on the checklist. All response shall be in ink.

2.2 Data Assessment Narrative (Attachment 1) - Data reviewer is required to use these forms and must match the action in the narrative with the action taken on the Form I(s).

2.3 Rejection Summary Form (Attachment 2) - Fill in the total number of analytes measured by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in the boxes where analyses were not performed or criteria do not apply.

2.4 Organic Regional Data Assessment - Data reviewer is also required to fill out Organic Regional Data Assessment Form (Attachment 3).

2.5 Telephone Record Log - The data reviewer should enter the bare facts of inquiry before initiating any authorized telephone conversation with a CLP laboratory. After the case review has been completed, mail the white copy of the Telephone Record Log to the laboratory and the pink copy to SMO. File the yellow copy in the Telephone Record Log folder and attach a photocopy of the Telephone Record Log to the completed Data Assessment Narrative.

2.6 Forwarded Paperwork - Upon completion of the review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:

a. data package
b. completed assessment checklist
c. SMO Contract Compliance Screening (CCS)

Forward four (4) copies of the completed Data Assessment Narrative along with four (4) copies of the Organic Data Assessment Form: one each for the appropriate Regional DPO, the Sample Management Office (SMO), and to the last two addresses of the Data Reviewers Mailing List.

2.7 Filed Paperwork - Upon completion of the review, the following are to be filed within the Monitoring and Management Branch (MMB) files:

a. Telephone record Log (copy)
b. Record of Communication (original)
c. Rejection Summary Form

3.0 Rejection of Data - All values determined to be unacceptable on the Organic Analysis Data Sheet (Form I) must be flagged with an "R". As soon as review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

4.0 Acceptance Criteria - In order that the reviews be consistent among reviewers, this Standard Operating Procedure (SOP) should be used. Additional guidance can be found in the Functional Guidelines.

5.0 SMO Contract Compliance Screening (CCS) - This is intended to aid the reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from the laboratory in response to CCS must be used by the reviewer.

ACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: _____

LAB: Lancaster Laboratories Inc.

SITE: PPG

.0 Data Completeness and Deliverables	YES	NO	N/A
1.1 Have any missing deliverables been received and added to the data package.	[✓]	___	___
ACTION: Call lab for explanation / resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-compliance" section of reviewer narrative.			
1.2 Was SMO CCS checklist included with package?	[___]	___	✓

.0 Cover Letter/Case Narrative			
2.1 Is the Narrative or Cover Letter present?	[✓]	___	___
2.2 Are Case Number and/or SAS number contained in the Narrative or Cover Letter?	[___]	___	✓

.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any VOA analyses, Part B for any BNA analyses and Part C for Pesticide/PCBs.

Does this package contain:

VOA data?	✓	___
BNA data?	✓	___
Pesticide/PCB data?	✓	___

ACTION: Complete corresponding parts of checklist.

	YES	NO	N/A

PART A: VOA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [✓] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [✓] ___

ACTION: Use professional judgement to evaluate the effect on the quality of the data.

ACTION: If any sample analyzed as a soil contains more than 50% water, all data should be rejected.

ACTION: If both VOA vials for a sample have air bubbles, flag all positive results "J" and all non-detects "R".

2.0 Holding Times

2.1 Have any VOA holding times, determined from date of collection to date of analysis, been exceeded? ___ [✓] ___

If unpreserved, aqueous aromatic volatiles must be analyzed within 7 days of collection and non-aromatic volatiles must be analyzed within 14 days. If preserved with hydrochloric acid and stored at 4°C, then both aromatic and non-aromatic volatiles must be analyzed within 14 days. If uncertain about preservation, contact the sampler to determine whether the samples were preserved.

A ten-day* holding time for soil samples is recommended.

* From date of laboratory receipt to analysis.

Table of Holding Time Violations

Sample	Sample Matrix	Preserved ?	(See Traffic Report) Date Sampled	Date Lab Received	Date Analyzed

ACTION: If holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded.

	YES	NC	N/A
If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. The reviewer may determine that non-detect data are unusable ("R").			

3.0 Surrogate Recovery (Form II)

3.1 Are the VOA Surrogate Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[___]	___	✓
3.2 Are all the VOA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[___]	___	✓
ACTION: Call lab for explanation / resubmittals. If missing deliverables are unavailable, document effect on data under "Conclusions" section of reviewer narrative.			
3.3 Were outliers marked correctly with an asterisk? None of the recoveries were outliers. ACTION: Circle all outliers in red.	[___]	___	✓
3.4 Was one or more VOA surrogate recovery outside of contract specifications for any sample or method blank?	___	[✓]	___
If yes, were samples reanalyzed?	[___]	___	✓
Were method blanks reanalyzed?	[___]	___	✓

ACTION: If surrogate recoveries are > 10% but all do not meet SOW specifications:

1. Flag all positive results as estimated ("J").
2. Flag all non-detects as estimated detection limits ("UJ").

	YES	NO	N/A
If any surrogate has a recovery of <10% : 1. Flag all positive results as estimated ("J"). 2. Flag all non-detects as unusable ("R"). Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and re-analyses. Check the internal standard areas.			
3.5 Are there any transcription/calculation errors between raw data and Form II?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike Duplicate/Recovery Form (Form III) present?	[✓]	___	___
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	
d. Med Soil	[___]	___	✓
ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.			

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
0 out of 10	0 out of 10

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
0 out of 5	0 out of 5

ACTION: If MS and MSD both have less than 10% recovery for an analyte, negative results for that analyte should be rejected, and positive results should be flagged "J". The above applies only to the sample used for the MS/MSD analysis. Use professional judgement in applying this criterion to other samples in the package.

	YES	NO	N/A
5.0 Blanks (Form IV)			
5.1 Is the Method Blank Summary (Form IV) present?	[✓]	___	___
5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been analyzed for each set of samples or every 20 samples of similar matrix (low water, med water, low soil, medium soil), whichever is more frequent?	[✓]	___	___
5.3 Has a VOA instrument blank been analyzed at least once every twelve hours for each GC/MS system used?	[✓]	___	___
ACTION: If any method blank data are missing, call lab for explanation / resubmittal. If not available, reject all associated positive data ("R").			
5.4 Chromatography: review the blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.			
Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	[✓]	___	___
ACTION: Use professional judgement to determine the effect on the data.			
6.0 Contamination			
NOTE: "Water blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.			
6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for VOAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor.	___	[✓]	___
6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)? *See page 7A of SOG-1*	✓	[___]	___
ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)			
NOTE: Only field/rinse blanks taken the same day as the samples are used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped. Blanks may not be qualified because of contamination in another blank. Blanks may be qualified for surrogate, spectral, tuning or calibration QC problems.			

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By [illegible] Date 4-26-90 Subject [illegible] Sheet No. 7A of [illegible]
Chkd. By ____ Date ____ [illegible] Proj. No. [illegible]

Trip Blank LLI # 1475297 detected 16 ppb acetone (QL = 10 ppb)

Samples associated with this trip blank were not analyzed for VOAs.

Trip Blank LLI # 1475292 detected 15 ppb acetone (QL = 10 ppb)

Associated Samples: B2AS1 41 ppb acetone
B7S3A 65 ppb acetone

Trip blank (LLI # 1475292) detected 15 ppb acetone. The associated samples [B2AS1 (LLI # 1471166) and B7S3A (LLI # 1471160)] respectively detected acetone at a concentration of 41 and 65 ppb. Because the sample concentrations are greater than the quantitation limit but less than ten times the concentration of the blank, the concentration of acetone was determined to be less than the quantitation limit for samples B2AS1 and B7S3A.

YES NO N/A

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

	Sample conc > CRQL but < 10x blank	Sample conc < CRQL & is < 10x blank value	Sample conc > CRQL value & >10x blank value
Methylene chloride Acetone Toluene 2-butanone	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5 blank value
Other Contaminants	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? [___] ___ ✓

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Tuning and Mass Calibration (Form V)

7.1 Are the GC/MS Tuning and Mass Calibration Forms (Form V) present for Bromofluorobenzene (BFB)? [✓] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift? [✓] ___ ___

7.3 Has a tuning performance compound been analyzed for every twelve hours of sample analysis per instrument? [✓] ___ ___

ACTION: If any tuning data are missing, take action specified in 3.2 above.

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

	YES	NO	N/A
ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.			
7.4 Have the ion abundance criteria been met for each instrument used?	[✓]	___	___
ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).			
ACTION: If tuning calibration is in error, flag all associated sample data as unusable ("R"). However, if expanded ion criteria are met (See 1988 Functional Guidelines), the data reviewer may accept data with appropriate qualifiers.			
7.5 Are there any transcription / calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.)	___	[✓]	___
7.6 Have the appropriate number of significant figures (two) been reported? (Check at least two values, but if errors are found check more values.)	✓	[___]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make necessary corrections and note errors under "Conclusions".			
7.7 Are the spectra of the mass calibration compound acceptable?	[✓]	___	___
ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.			
8.0 Target Compound List (TCL) Analytes			
8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Matrix spikes and matrix spike duplicates	[✓]	___	___
c. Blanks	[✓]	___	___

	YES	NO	N/A
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Matrix spikes and matrix spike duplicates (Mass spectra not required)	[✓]	___	___
c. Blanks	[✓]	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			
8.3 Are the response factors shown in the Quant Report? In Quant Reports for initial calibration and continuing calibration	[✓]	___	___
8.4 Is chromatographic performance acceptable with respect to:			
Baseline stability	[✓]	___	___
Resolution	[✓]	___	___
Peak shape	[✓]	___	___
Full-scale graph (attenuation)	[✓]	___	___
Other:_____	[___]	___	___
ACTION: Use professional judgement to determine the acceptability of the data.			
8.5 Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[✓]	___	___
ACTION: If any mass spectra are missing, take action specified in 3.2 above. If Lab does not generate their own standard spectra, make note in "Contract Problems/Non-compliance".			
8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]	___	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
8.8 Do sample and standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected, flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (at the calculated detection limit).			

	YES	NO	N/A
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "J" qualifier?	[✓]	___	___
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Blanks	[✓]	___	___
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "J" qualifier if missing and "N" qualifier to all identified TIC compounds on Form I, Part B.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds (example: 1,2-dimethylbenzene is xylene--a VOA TCL--and should not be reported as a TIC)?	___	[✓]	___
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate.			
10.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription / calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found?	___	[✓]	___
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	✓	[___]	___

	YES	NO	N/A
ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant. Reports) present for initial and continuing calibration?	[✓]	___	___
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete for the volatile fraction?	[✓]	___	___
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Are response factors stable for volatiles over the concentration range of the calibration (RSD <30%)?	[✓]	___	___
ACTION: Circle all outliers in red.			
ACTION: When RSD >30%, non-detects may be qualified using professional judgement. Flag all positive results "J". When RSD >90%, flag all non-detects as unusable ("R"). (Region II policy.)			
12.3 Do any compounds have a RRF < 0.05?	___	[✓]	___
ACTION: Circle all outliers in red.			
ACTION: If any volatile compound has an average RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").			

	YES	NO	N/A
12.4 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least two values but if errors are found, check more.)	___	[✓]	___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

13.0 GC/MS Continuing Calibration (Form VII)

	YES	NO	N/A
13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the volatile fraction?	[✓]	___	___
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	[✓]	___	___

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

_____

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, call lab for explanation / resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").

	YES	NO	N/A
13.3 Do any continuing calibration standard compounds have a RRF < 0.05?	___	[✓]	___

ACTION: Circle all outliers in red.

ACTION: If any volatile compound has a RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").

	YES	NO	N/A
13.4 Do any compounds have a % difference between initial and continuing calibration RRF > 25%?	___	[✓]	___

ACTION: Circle all outliers in red and qualify associated sample data as outlined in the table below:

YES NO N/A

% DIFFERENCE

25-50	50-90	>90
'J' positive results, no action for non detects	'J' positive results, 'UJ' non detects	'J' positive results, "R" non detects

13.5 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

14.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits for each continuing calibration? [✓] ___ ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary.)

ACTION: If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results and non-detects (U values) quantitated with this internal standard. If extremely low area counts are reported, or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable ("R").

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [✓] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

	YES	NO	N/A
0 Field Duplicates			
15.1 Were any field duplicates submitted for VOA analysis?	[___]	✓	___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

	YES	NO	N/A

PART B: BNA ANALYSES

..0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [✓] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [✓] ___

ACTION: Use professional judgement to evaluate the effect on the quality of the data.

ACTION: If any sample analyzed as a soil contains more than 50% water, all data should be rejected.

.0 Holding Times

2.1 Have any BNA holding times, determined from date of collection to date of extraction, been exceeded? ___ [✓] ___

Samples for BNA analysis, ~~both~~ soils ~~and waters~~, must be extracted within seven days of the date of receipt, ~~collection~~. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations

Sample	Sample Matrix	Date Sampled	(See Traffic Report) Date Lab Received	Date Extracted	Date Analyzed
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___

ACTION: If holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded.

	YES	NO	N/A
If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. The reviewer may determine that non-detect data are unusable ("R").			
3.0 Surrogate Recovery (Form II)			
3.1 Are the BNA Surrogate Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water	[ ]		✓
b. Med Water	[ ]		✓
c. Low Soil	[✓]		
d. Med Soil	[ ]		✓
3.2 Are all the BNA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:			
a. Low Water	[ ]		✓
b. Med Water	[ ]		✓
c. Low Soil	[✓]		
d. Med Soil	[ ]		✓
ACTION: Call lab for explanation / resubmittals. If missing deliverables are unavailable, document effect on data under "Conclusions" section of reviewer narrative.			
3.3 Were outliers marked correctly with an asterisk? None of the recoveries were outliers.	[ ]		✓
ACTION: Circle all outliers in red.			
3.4 Were two or more base-neutral OR acid surrogate recoveries out of specification for any sample or method blank?		[✓]	
If yes, were samples reanalyzed?	[ ]		✓
Were method blanks reanalyzed?	[ ]		✓
ACTION: If all BNA surrogate recoveries are > 10% but two within the base-neutral or acid fraction do not meet SOW specifications, for the affected fraction only (i.e. base-neutral OR acid compounds): 1. Flag all positive results as estimated ("J"). 2. Flag all non-detects as estimated detection limits ("UJ").			

301015

	YES	NO	N/A
If any base-neutral or acid surrogate has a recovery of <10% : 1. Flag all positive results for that fraction (i.e. all acid or base-neutral compounds) "J". 2. Flag all non-detects for that fraction "R". Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and re-analyses. Check the internal standard areas.			
3.5 Are there any transcription/calculation errors between raw data and Form II?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			

4.0 Matrix Spikes (Form III)

4.1 Is the Matrix Spike Duplicate/Recovery Form (Form III) present?	[✓]	___	
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water	[___]	___	✓
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[___]	___	✓
ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.			

4.3 How many BNA spike recoveries are outside QC limits?

for 2,4-Dinitrotoluene
% recovery = 90
22 limits 28-22

Water	Soils
N/A out of 22	1 out of 22

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
N/A out of 11	0 out of 11

ACTION: If MS and MSD both have less than 10% recovery for an analyte, negative results for that analyte should be rejected, and positive results should be flagged "J". The above applies only to the sample used for MS/MSD analysis. Use professional judgement in

301016

	YES	NO	N/A
5.0 Blanks (Form IV)			
5.1 Is the Method Blank Summary (Form IV) present?	[✓]	___	___
5.2 Frequency of Analysis: for the analysis of BNA TCL compounds, has a reagent/method blank been analyzed for each set of samples or every 20 samples of similar matrix (low water, med water, low soil, medium soil), whichever is more frequent?	[✓]	___	___
5.3 Chromatography: review the blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.			
Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	[✓]	___	___
ACTION: Use professional judgement to determine the effect on the data.			
6.0 Contamination			
NOTE: "Water blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.			
6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for BNAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor. See page 19A of SOG-1	✓	[___]	
6.2 Do any field/rinse blanks have positive BNA results (TCL and/or TIC)?	___	[___]	✓
ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)			
NOTE: Only field/rinse blanks taken the same day as the samples are used to qualify data. Blanks may not be qualified because of contamination in another blank. Blanks may be qualified for surrogate, spectral, tuning or calibration QC problems.			

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By [illegible] Date 4-27-90 Subject _____ Sheet No. 19A of [illegible]
Chkd. By ____ Date _____ [illegible] Section 6.1 Proj. No. [illegible]

Method Blank	LLI # 1471762	TIC	330 ppb	2-Pentene or isomer
		"	9300 "	unknown
		"	170 "	unknown
		"	500 "	Hexanedioic Acid

Associated Samples:

B2AC1	TIC	350 ppb	2-Pentene or isomer
	"	8600 "	unknown
	"	310 "	Hexanedioic Acid
B73A	TIC	410 ppb	2-Pentene or isomer
	"	12000 "	unknown
	"	360 "	Hexanedioic Acid

301018

YES NO N/A

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

	Sample conc > CRQL but < 10x blank	Sample conc < CRQL & is < 10x blank value	Sample conc > CRQL value & >10x blank value
Common Phthalate Esters	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5 blank value
Other Contaminants	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? [___] ___ ✓

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Tuning and Mass Calibration (Form V)

7.1 Are the GC/MS Tuning and Mass Calibration Forms (Form V) present for Decafluorotriphenylphosphine (DFTPP)? [✓] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the DFTPP provided for each twelve hour shift? [✓] ___ ___

7.3 Has a tuning performance compound been analyzed for every twelve hours of sample analysis per instrument? [✓] ___ ___

ACTION: If any tuning data are missing, take action specified in 3.2 above.

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS tuning data are available.

	YES	NO	N/A

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundance criteria been met for each instrument used? [✓] __ __

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If tuning calibration is in error, flag all associated sample data as unusable ("R"). However, if expanded ion criteria are met (See 1988 Functional Guidelines), the data reviewer may accept data with appropriate qualifiers.

7.5 Are there any transcription / calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.) __ [✓] __

7.6 Have the appropriate number of significant figures (two) been reported? (Check at least two values, but if errors are found check more values.) ✓ [__] __

ACTION: If large errors exist, call lab for explanation / resubmittal, make necessary corrections and note errors under "Conclusions".

7.7 Are the spectra of the mass calibration compound acceptable? [✓] __ __

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes

301020

8.1 Are the Organic Analysis Data Sheets (Form I BNA) present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate [✓] __ __

b. Matrix spikes and matrix spike duplicates [✓] __

c. Blanks [✓]

	YES	NO	N/A
8.2 Are the BNA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Matrix spikes and matrix spike duplicates (Mass spectra not required)	[✓]	___	___
c. Blanks	[✓]	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			
8.3 Are the response factors shown in the Quant Report?	[✓]	___	___
8.4 Is chromatographic performance acceptable with respect to:			
Baseline stability	[✓]	___	___
Resolution	[✓]	___	___
Peak shape	[✓]	___	___
Full-scale graph (attenuation)	[✓]	___	___
Other:_____	[___]	___	___
ACTION: Use professional judgement to determine the acceptability of the data.			
8.5 Are the lab-generated standard mass spectra of the identified BNA compounds present for each sample?	[✓]	___	___
ACTION: If any mass spectra are missing, take action specified in 3.2 above. If Lab does not generate their own standard spectra, make note in "Contract Problems/Non-compliance".			
8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]	___	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
8.8 Do sample and standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected, flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (at the calculated detection limit).			

	YES	NO	N/A
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "J" qualifier?	[✓]	___	___
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Blanks	[✓]	___	___
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "J" qualifier if missing and "N" qualifier to all identified TIC compounds on Form I, Part B.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds (example: 1,2-dimethylbenzene is xylene--a VOA TCL--and should not be reported as a TIC)?	___	[✓]	___
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate.			
10.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription / calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found?	___	[✓]	___
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	✓	[___]	___

	YES	NO	N/A
ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant. Reports) present for initial and continuing calibration?	[✓]	___	___
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete for the BNA fraction?	[✓]	___	___
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Are response factors stable for BNAs over the concentration range of the calibration (RSD <30%)?	[✓]	___	___
ACTION: Circle all outliers in red.			
ACTION: When RSD >30%, non-detects may be qualified using professional judgement. Flag all positive results "J". When RSD >90%, flag all non-detects as unusable ("R"). (Region II policy.)			
12.3 Do any compounds have a RRF < 0.05?	___	[✓]	___
ACTION: Circle all outliers in red.			
ACTION: If any BNA compound has an average RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").			

	YES	NO	N/A
12.4 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least two values but if errors are found, check more.)	___	[✓]	___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

13.0 GC/MS Continuing Calibration (Form VII)

	YES	NO	N/A
13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the BNA fraction?	[✓]	___	___
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	[✓]	___	___

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

_____

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, call lab for explanation / resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").

	YES	NO	N/A
13.3 Do any continuing calibration standard compounds have a RRF < 0.05?	___	[✓]	___

ACTION: Circle all outliers in red.

ACTION: If any BNA compound has a RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").

	YES	NO	N/A
13.4 Do any compounds have a % difference between initial and continuing calibration RRF > 25%?	___	[✓]	___

ACTION: Circle all outliers in red and qualify associated sample data as outlined in the table below:

YES NO N/A

% DIFFERENCE

25-50	50-90	>90
'J' positive results, no action for non detects	'J' positive results, 'UJ' non detects	'J' positive results, "R" non detects

13.5 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

14.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits for each continuing calibration? [✓] ___ ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary.)

ACTION: If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results and non-detects (U values) quantitated with this internal standard. If extremely low area counts are reported, or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable ("R").

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [✓] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

	YES	NO	N/A
15.0 Field Duplicates			
15.1 Were any field duplicates submitted for BNA analysis?	[___]	✓	___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

	YES	NO	N/A
PART C: PESTICIDE/PCB ANALYSES			
1.0 Traffic Reports and Laboratory Narrative			
1.1 Are the Traffic Report Forms present for all samples?	[✓]	___	___
ACTION: If no, contact lab for replacement of missing or illegible copies.			
1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data?	___	[✓]	___
ACTION: Use professional judgement to evaluate the effect on the quality of the data.			
ACTION: If any sample analyzed as a soil contains more than 50% water, all data should be rejected.			
Note: Sample B9S3 was incorrectly named B9SE.			
2.0 Holding Times			
2.1 Have any PEST/PCB holding times, determined from date of collection to date of extraction, been exceeded?	___	[✓]	___
Samples for PEST/PCB analysis, ~~both~~ soils ~~and waters~~, must be extracted within* ~~seven days of the date of collection.~~ Extracts must be analyzed within 40 days of the date of extraction.			
*ten days of laboratory receipt.			
3.0 Surrogate Recovery (Form II)			
3.1 Are the PEST/PCB Surrogate Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water	[___]	___	✓
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[___]	___	✓
3.2 Are all the PEST/PCB samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:			
a. Low Water	[___]	___	✓
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[___]	___	✓

	YES	NO	N/A
ACTION: Call lab for explanation / resubmittals. If missing deliverables are unavailable, document effect on data under "Conclusions" section of reviewer narrative.			
3.3 Were outliers marked correctly with an asterisk? None of the recoveries were outliers. ACTION: Circle all outliers in red.	[ ]		✓
3.4 Was surrogate (DBC) recovery outside of the contract specification for any sample or blank?		[✓]	
ACTION: No qualification is done if surrogates are diluted beyond detection. If recovery is below contract limit (but above zero), flag all results for that sample "J". If recovery is zero, flag positive results "J" and non-detects "R". If recovery for the blank is zero, flag non-detects for all associated samples "R". If recovery is above contract limit, flag all positive results for that sample "J", unless in the reviewers professional judgement the high recovery is due to co-eluting interference (check the associated blank - if recovery is high there also, flag the sample data). The surrogate was diluted out of samples B2S1, B2S1-DL, and B3S1-DL.			
3.5 Are there any transcription/calculation errors between raw data and Form II?		[✓]	
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			

4.0 Matrix Spikes (Form III)

4.1 Is the Matrix Spike Duplicate/Recovery Form (Form III) present?	[✓]		
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water	[ ]		✓
b. Med Water	[ ]		✓
c. Low Soil	[✓]		
d. Med Soil	[ ]		✓
ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.			

4.3 How many PEST/PCB spike recoveries are outside QC limits?

Water	Soils
0/4 out of 12	3 out of 12

MS: Heptachlor 34% recovery

MSD: Dieldrin 176% recovery
Endrin 173% recovery

	YES	NO	N/A
4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?			

Water: N/A out of 6 Soils: 2 out of 6

ACTION: If MS and MSD both have less than zero recovery for an analyte, negative results for that analyte should be rejected, and positive results should be flagged "J". The above applies only to the sample used for MS/MSD analysis. Use professional judgement in applying this criterion to other samples.

5.0 Blanks (Form IV)

	YES	NO	N/A
5.1 Is the Method Blank Summary (Form IV) present?	[✓]	___	___
5.2 Frequency of Analysis: for the analysis of Pesticide TCL compounds, has a reagent/method blank been analyzed for each set of samples or every 20 samples of similar matrix (low water, med water, low soil, medium soil), whichever is more frequent?	[✓]	___	___
5.3 Chromatography: review the blank raw data - chromatograms, quant reports or data system printouts. Is the chromatographic performance (baseline stability) for each instrument acceptable for PEST/PCBs?	[✓]	___	___

ACTION: Use professional judgement to determine the effect on the data.

6.0 Contamination

NOTE: "Water blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

	YES	NO	N/A
6.1 Do any method/instrument/reagent blanks have positive results for PEST/PCBs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor.	___	[✓]	___
6.2 Do any field/rinse blanks have positive PEST/PCB results?	___	[___]	✓

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

YES NO N/A

NOTE: Only field/rinse blanks taken the same day as the samples are used to qualify data. Blanks may not be qualified because of contamination in another blank. Blanks may be qualified for surrogate, spectral, tuning or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL & > 5x blank value
Flag sample result with a "U"; cross out "B" flag	Reject sample result and report CRQL; cross out "B" flag	No qualification is needed

6.3 Are there field/rinse/equipment blanks associated with every sample? [___] ___ ✓

ACTION: For low level samples note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 Calibration and QC Performance

7.1 Are the following Gas Chromatograms and Data System Printouts for both Primary and Confirmation (confirmation standards not required if there are no positive results above CRQL) column present:

a. Evaluation Standard Mix A [✓] ___ ___

b. Evaluation Standard Mix B [✓] ___ ___

c. Evaluation Standard Mix C [✓] ___ ___

d. Individual Standard Mix A [✓] ___ ___

e. Individual Standard Mix B [✓] ___ ___

f. Multi-component Pesticides Toxaphene & Chlordane [✓] ___ ___

g. Aroclors 1016/1260 [✓] ___ ___

h. Aroclors 1221, 1232, 1242, 1248, and 1254 [✓] ___ ___

ACTION: If no, take action specified in 3.2 above

	YES	NO	N/A
7.2 Is Form VIII Pest-1 present and complete for each GC column (primary and confirmation) and each 72 hour sequence of analyses?	[✓]	___	___
ACTION: If no, take action specified in 3.2 above.			
7.3 Are there any transcription/calculation errors between raw data and Form VIII?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
7.4 Has the total breakdown on quantitation or confirmation column exceeded 20% for DDT?	___	[✓]	___
- for Endrin?	___	[✓]	___
or if Endrin aldehyde <u>and</u> 4,4'-DDD co-elute and there is a peak at their retention time, has the combined DDT and Endrin breakdown exceeded 20%?	___	[✓]	___

ACTION:

a. If DDT breakdown is greater than 20% on quantitation column beginning with the samples following the last <u>in control</u> standard:

1. Flag all positive DDT results "J".
2. If DDT was not detected but DDD and/or DDE are positive, flag the DDT non-detect "R".
3. Flag positive DDD and DDE results "JN".
4. If DDT breakdown is > 20% on confirmation column <u>and</u> DDT is identified on quantitation column but not on confirmation column, use professional judgement to determine whether DDT should be reported on Form I (if reported, flag result "N").

b. If Endrin breakdown is > 20% on quantitation column, beginning with the samples following the last <u>in control</u> standard:

1. Flag all positive Endrin results "J".
2. If Endrin was not detected, but Endrin Aldehyde and/or Endrin Ketone are positive, flag the Endrin non-detect "R".
3. Flag Endrin Ketone positive results "JN".
4. If Endrin breakdown is > 20% on confirmation column <u>and</u> Endrin is identified on quantitation column but not on confirmation column, use professional judgement to determine whether Endrin should be reported on Form I (if reported, flag result "N").

c. If the combined breakdown is used (it can only be used if the conditions in 7.4 above are met) and is > 20% on quantitation column beginning with the last <u>in control</u> standard, take the actions specified in 7.4 a and b above. If the combined breakdown is >20% on confirmation column <u>and</u> Endrin or DDT is identified on quantitation column but not on confirmation column, use professional judgement to determine whether Endrin or DDT should be reported on Form I (if reported, flag result "N").

	YES	NO	N/A
7.5 Is the linearity check RSD of all four calibration factors <10% for the quantitation column?	[✓]	___	___
ACTION: If no, flag positive hits for all pesticide and PCB analytes "J" for all associated samples. Do not flag toxaphene or DDT if they are quantified from a 3-point calibration curve.			
7.6 Is the % difference between the EVAL A and each analysis (quantitation and confirmation) DBC retention time within QC limits (2% for packed column, 0.3% for capillary [I.D. < 0.32 mm], 1% for megabore [0.32 < I.D. < 2 mm]) ?	[✓]	___	___
ACTION: DBC retention time cannot be evaluated if DBC is not detected. If it is present and has a retention time out of QC limits, then use professional judgement to determine the reliability of the analysis and flag results "R", if appropriate.			
7.7 Was the proper analytical sequence followed for each 72 hour period of analyses (page PEST D-36 in 8/87 SOW).	[✓]	___	___
ACTION: If no, use professional judgement to determine the severity of the effect on the data and accept or reject it accordingly. Generally, the effect is negligible unless the sequence was grossly altered or the calibration was also out of limits.			

0 Pesticide/PCB Standards Summary

	YES	NO	N/A
8.1 Is Form IX present and complete for each GC column and 72 hr sequence of analyses?	[✓]	___	___
ACTION: If no, take action specified in 3.2 above.			
8.2 Are there any transcription/calculation errors between raw data and Form IX?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
8.3 Is DDT retention time for packed columns > 12 min (except OV-1 and OV-101 columns)?	[✓]	___	___
ACTION: If no, check that there is adequate resolution between individual components. If not, flag results for compounds that interfere with each other (co-elute) "R".			
8.4 Do all standard retention times fall within the windows established for the first IND A and IND B analyses?	[✓]	___	___

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	YES	NO	N/A
ACTION: Beginning with the samples following the last in control standard, check to see if the chromatograms contain peaks within an expanded window surrounding the expected retention times. If no peaks are found and, DBC is visible non-detects are valid. If peaks are present and cannot be identified through "pattern recognition" or a consistent shift in standard retention times, flag all affected compound results "R".			
8.5 Are the continuing calibration standard calibration factors within 15% (for quantitation column) or 20% (for confirmation column) of the initial (at beginning of 72 hr sequence) calibration factors?	[✓]	___	___
ACTION: If no, flag all associated positive results "J". Use professional judgement to determine whether or not to flag non-detects.			
9.0 Pesticide/PCB Identification			
9.1 Is Form X complete for every sample in which a pesticide or PCB was detected?	[✓]	___	___
ACTION: If no, take action specified in 3.2 above.			
9.2 Are there any transcription errors between raw data and Form X?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
9.3 Are retention times of sample compounds within the calculated retention time windows for both quantitation and confirmation analyses?	[✓]	___	___
Was GC/MS confirmation provided when required (when compound concentration is > 10 ug/ml in final extract)?	[✓]	___	___
ACTION: Reject ("R") all positive results (meeting quantitation column criteria, but missing confirmation by a second column or GC/MS (if appropriate). Also, reject ("R") all positive results not meeting retention time window criteria unless associated standard compounds are similarly biased (i.e. base on RRT to DBC).			
9.4 Check chromatograms for false negatives, especially for the multiple peak components toxaphene and PCB's. Were there any false negatives?	___	[✓]	___
ACTION: If appropriate PCB standards were not analyzed, or if the lab performed no confirmation analysis, flag the appropriate data with an "R"			

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	YES	NO	N/A
.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription / calculation errors in Form I results? Check at least two positive values. Were any errors found?	___	[✓]	___

NOTE: Simple peak pesticide results can be checked for rough agreement between quantitative results obtained on the two GC columns. The reviewer should use professional judgement to decide whether a much larger concentration obtained on one column versus the other indicates the presence of an interfering compound. If an interfering compound is indicated, the lower of the two values should be reported and qualified as presumptively present at an estimated quantity ("JN"). This necessitates a determination of an estimated concentration on the confirmation column. The narrative should indicate that the presence of interferences has obscured the attempt at a second column confirmation.

10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture? See page 35A and 35B in SOG-1	✓	[___]	___

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.

.0 Chromatogram Quality			
11.1 Were baselines stable?	[✓]	___	___
11.2 Were any electropositive displacement (negative peaks) or unusual peaks seen?	___	[✓]	___
11.3 Were early eluting peaks (for early eluting analytes) resolved to baseline?	[✓]	___	___

ACTION: For 11.1 and 11.2, comment only. For 11.3, reject ("R") those analytes that are not sufficiently resolved

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By [illegible] Date [illegible] Subject _____ Sheet No. [illegible] of [illegible]
Chkd. By ____ Date _____ [illegible] Proj. No. [illegible]

The CRDL was increased for samples B2S1, B3S1, and B7S3A. Samples B2S1 and B3S1 required both a 100-fold and a [illegible]-fold dilution for the analysis. Sample B7S3A required a 10-fold dilution for the analysis of some compounds.

For sample B5S4, the CRDL was increased for the constituent PCB-1221. Due to an interferent present on the chromatogram, the quantitation limit was determined from a worst case calculation based on the height of the interferent.

For sample B10S5, the CRDL was increased for the constituents beta-BHC and PCB-1221. Due to an interferent present on the chromatogram, the quantitation limits were determined from a worst case calculation based on the height of the interferent.

For sample B14S3, the CRDL was increased for the constituent [illegible]. Due to an interferent present on the chromatogram, the quantitation limit was determined from a worst case calculation based on the height of the interferent.

For sample B14S5, the CRDL was increased for the constituent Endosulfan I. Due to an interferent present on the chromatogram, the quantitation limit was determined from a worst case calculation based on the height of the interferent.

For sample B3S1 the CRDL was increased for the constituent Toxaphene. Due to an interferent present on the chromatogram, the quantitation limit was determined from a worst case calculation based on the height of the interferent.

For sample B7S3A, the CRDL was increased for the constituent Endosulfan II. Due to an interferent present on the chromatogram, the quantitation limit was determined from a worst case calculation based on the height of the interferent.

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By [illegible] Date [illegible] Subject _____ Sheet No. [illegible] of [illegible]

Chkd. By ____ Date _____ [illegible] Proj. No. [illegible]

For [illegible] the [illegible] for the [illegible] [illegible] [illegible] [illegible]. Due to an interferent present in the [illegible] the quantitation limits were determined from a worst case calculation based on the height of the interferent.

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	YES	NO	N/A
12.0 Field Duplicates			
12.1 Were any field duplicates submitted for PEST/PCB analysis? See page 36A or 6203-1	[✓]	___	___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

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By [illegible] Date [illegible] Subject _____ Sheet No. [illegible] of [illegible]
Chkd. By ____ Date _____ [illegible] Proj. No. [illegible]

Field duplicates: B7S5A LLI # 1471157
B7S5C LLI # 1471155

RESULTS SKI WT. BASIS

Compound	B7S5A (ug/kg)	B7S5C (ug/kg)	RPD*
alpha-BHC	15	17	12.5
gamma-BHC	10	11	10
Endosulfan I	17	20	16
Carbaryl	200	200	0

RESULTS WET BASIS

Compound	B7S5A (ug/kg)	B7S5C (ug/kg)	RPD*
alpha-BHC	13	14	7
gamma-BHC	9	9	0
Endosulfan I	15	17	12.5
Carbaryl	200	200	0

$$* \text{ RPD} = \frac{|A - B|}{(A+B)/2} \times 100$$

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where. A ≡ concentration detected in sample A
B ≡ concentration detected in sample B

SOP NO. HW-5

CLP DIOXIN (2,3,7,8 TCDD) DATA REVIEW

REVISION 4

PREPARED BY: Stelios Gerazounis DATE: 7/10/89
Stelios Gerazounis
Monitoring Management Branch

CONCURRED BY: L Bevilacqua DATE: 7/10/89
Louis Bevilacqua
Monitoring Management Branch

APPROVED BY: Gerard F. McKenna DATE: 7/10/89
Gerard F. McKenna, Chief
Monitoring Management Branch

1.0 Introduction

1.1 This procedure is applicable to dioxin data from contractor laboratories working under the Hazardous Waste Site Contract Labortory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Solicitation, Offer and Award No. IFB WA-86K357.

2.0 Responsibilities

2.1 The reviewers will complete and/or file the following:

2.1.1 Data Review Log - Each reviewer will fill in the following information in the log book for each data package:

a. date of start of case review
b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples

2.1.2 Rejection Summary Form - Fill out as necessary using a ratio format. The numerator would indicate the number of dioxin data rejected; the denominator would indicate the number of dioxin fractions containing rejected compounds. File in the appropriate folder.

2.1.3 Telephone Log - All phone conversations must be initiated by the data review manager or the deputy project officer. If a phone call has been made, fill out stating the bare facts of the conversation. Give two copies to secretary, one to go to the laboratory and one to go to SMO. File the third copy in the appropriate folder.

2.1.5 Data Assessment Checklist - Attachment 1 of this SOP must be completed along with the Data Assessment Narrative.

2.1.6 Forwarded Paperwork - The following are to be forwarded to the Regional Sample Central Center (RSCC) upon completion of the review:

a. data package
b. completed data assessment checklist (original)
c. Contract Compliance Screening (CCS)
d. CLP Re-analysis Request/Approval Record (original and 2 copies)

Forward four (4) copies of the completed Data Assessment Narrative along with four (4) copies of the Organic Data Assessment Form: one each for the appropriate Regional DPO, the Sample Management Office (SMO), and the last two addressees of the Data Reviewers Mailing List.

2.1.7 Filed Paperwork - The following are to be filed within MMB files:

a. SMB Review (Copy)
b. Narrative part (Para. 7.0) of data assessment checklist (copy)
c. Telephone Record Log (yellow copy)
d. Rejection Summary Form (original)
e. CLP Re-analysis Request/Approval Record (copy)

3.0 Data Completeness

Incomplete data packages must be brought to the attention of the data review manager or the deputy project officer (DPO) whenever the lack of any information would cause the rejection of data.

4.0 Rejection of Data

All values determined to be unacceptable on the dioxin analysis data sheets should be lined over with a red pencil.

5.0 Acceptance Criteria

In order that reviews be consistent among reviewers, acceptance criteria as stated in Attachment 1 should be used.

6.0 Reviewer Corrections

All corrections to reviewed data made by reviewers must be indicated in red pencil.

7.0 Request for Reanalysis

Data reviewers must note all items of contract non-compliance within Data Assessment Narrative (see page 15 of this SOP). If holding times and sample storage times have not been exceeded, the Data Review Manager or DPO may request reanalysis, if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

NOTE TO THE REVIEWER: The attached SOP is for a "Total" Review of the 2,3,7,8-TCDD data. Its purpose is to facilitate the validation of the data reported by the contracting laboratory and also to assure that the data is being reviewed in a uniform manner.

Please read each item carefully and check YES if there is compliance and NO if there is no compliance.

The reviewer must red-line unacceptable data on Sample Data Sheets (red-lined does not imply the compound is not present).

Red-lined or rejected data means that the data is unusable and that the sample may need to be reanalyzed by the same laboratory. If the laboratory already has analyzed the sample twice a reanalysis must be done by another laboratory.

Please notify immediately the Deputy Project Officer (DPO) or the Data Review Manager concerning problems and inadequacies with regard to laboratory sample data.

1.0 Deliverables

1.1 All deliverables must be clearly labeled with the SMO case number and the associated sample/traffic number. Review the data package to assure that all items listed below are provided. Missing, illegible or incorrectly labeled items must be checked off. The contractor should immediately be contacted and requested to submit the missing or incorrect items.

1.2 Are the following forms present?	YES	NO
a. TCDD Data Report Form (Form B-1)	✓	
b. Initial Calibration Summary (Form B-2)	✓	
c. Continuing Calibration Summary (Form B-3)	✓	
d. A Chronological List of all Sample Analyses	✓	
GC/MS Displays		
a. SICP's for the Initial Triplicate Analysis of the Four Concentration Calibration Solution	✓	
b. SICP for Each Performance Check Solution	✓	
c. SICP for Each Shift Standard	✓	

	YES	NO
GC/MS Displays		
d. Plotted Concentration Calibration Curve	✓	
e. SICP's for Each Sample Ran	✓	

WERE THE FOLLOWING CRITERIA MET?

2.0 Instrument Performance

2.1 Performance Check Solution Requirements - The performance check solution must be analyzed at the beginning and at the end of each 12 hour shift. ✓

2.1.1 Chromatographic Resolution

- The valley between 2,3,7,8-TCDD and the peak of all other TCDD isomers must be $\leq$ 25%. ✓

- Recalculate the valley (%) between 2,3,7,8-TCDD and the peak of the least resolved adjacent isomer using the following equation:

$$\% \text{ Valley} = \frac{x}{y} \times 100$$

Where: y = peak height of 2,3,7,8-TCDD
x = measured height from valley of the least resolved adjacent isomer to the baseline.

2.1.2 Ion Critera

- The ratio of integrated ion current for m/z 320 to m/z 322 for 2,3,7,8-TCDD must be $\geq$.67 and $\leq$.90. ✓

- The ratio of the integrated ion current for m/z 332 to m/z 334 for $^{13}C_{12}$2,3,7,8-TCDD must be $\geq$.67 and $\leq$.90. ✓

ACTION: 1) If the 25% valley requirement is not met, red-line all data collected within the shift associated with the performance standard. No action is taken if any of the other requirements are not met; and 2) if the performance check solution was not analyzed in the required frequency, use professional judgment to determine the effect on the quality of the data.

	YES	NO

3.0 Calibration

3.1 Initial Calibration - Initially, 2,3,7,8-TCDD Standards of 0.2, 1.0, 5.0, and 20.0 ng/ul solutions will be injected in triplicate. Each solution also contains 1ng/ul $^{13}C_{12}$2,3,7,8-TCDD (internal standard) and 0.6ng/ul $^{13}C_{12}$1,2,3,4-TCDD (recovery standard). Solutions #1 and #2 contain 0.028 ng/ul of $^{37}Cl_4$2,3,7,8-TCDD. The concentration of these solutions may vary only slightly from time to time. The calibration standards must be analyzed using the same GC conditions that were used to analyze the performance check solution and must meet the following criteria.

- Scanning time must be $\leq$ 1.5 seconds. on ion profile ✓ ___
- The ratio of the integrated ion current for m/z 320 to 322 for 2,3,7,8-TCDD must be $\geq$.67 and ~~$\geq$.90~~ $\leq$0.90. ✓ ___
- The ratio of integrated ion current for m/z 332 to m/z 334 for $^{13}C_{12}$2,3,7,8-TCDD and $^{13}C_{12}$1,2,3,4-TCDD must be $\geq$0.67 and $\leq$0.90. ✓ ___
- The signal to noise ratio for ions 332 and 334 must be $\geq$ 10. This ratio is no longer a required deliverable. ___ ✓
- The signal to noise ratio for ions 259, 320, 322, and 328 must be $\geq$ 2.5. ✓ ___
- The ions 259, 320, and 322 must maximize simultaneously and within 3 seconds of ions 332, 334 of $^{13}C_{12}$-2,3,7,8-TCDD. ✓ ___

For each concentration level, recalculate the response factor for unlabeled 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD:

$$RRF_n = \frac{Ax \times Qis}{Ais \times Qx}$$

Where: Ax = the sum of integrated ion abundance of m/z 320 and m/z 322 for unlabeled 2,3,7,8-TCDD.

Ais = the sum of integrated abundance of m/z 332 and m/z 334 for $^{13}C_{12}$-2,3,7,8-TCDD

Qx = quantity of unlabeled 2,3,7,8-TCDD

Qis = quantity of $^{13}C_{12}$-2,3,7,8-TCDD

ReCalculate the response factor for $^{13}C_{12}$-2,3,7,8-TCDD relative to $^{13}C_{12}$-1,2,3,4,-TCDD:

$$RRF_i = \frac{Ais \times Qrs}{Ars \times Qis}$$

Where Ars = the sum of integrated abundance of M/Z 332 and M/Z 334 for $^{13}C_{12}$-1,2,3,4 - TCDD

Qrs = the quantity of $^{13}C_{12}$-1,2,3,4 - TCDD.

	YES	NO
- The variation of the RRF for unlabeled 2,3,7,8-TCDD at each concentration level must not exceed 10% RSD	✓	—
- The RSD of the 4 - mean RRFs for unlabeled 2,3,7,8-TCDD must not exceed 10% RSD.	✓	—
- The RSD of the 4 - mean RRFs for $^{13}C_{12}$2,3,7,8-TCDD must not exceed 10% RSD.	✓	—
- The mean of the 4 - mean RRFs for each compound established in the initial calibration must be used for concentration calculations.	—	—

ACTION: 1) If the required initial calibration data were not supplied, notify the laboratory. If they are unavailable, red-line (reject) all data; and 2) if any of the calibration curve standards fail to meet any of the above acceptance criteria red-line all data associated with the calibration curve.

3.2 Calibration Check Standard - At the beginning of every 12-hour shift, a calibration standard of a concentration of 1ppb must be analyzed using the same GC conditions that were used to analyze the performance check standard. Were the following operating MS conditions met?

- Scanning time must be ≤ 1.5 seconds. on ion profile	✓	—
- The ratio of the integrated ion current for m/z 320 to 322 for 2,3,7,8-TCDD must be ≥.67 and ≤.90.	✓	—
- The ratio of the integrated ion current for m/z 332 to 334 for $^{13}Cl_{12}$-2,3,7,8-TCDD must be ≥.67 and ≤.90.	✓	—
- The ions 259, 320, 322 for 2,3,7,8-TCDD must maximize simultaneously and within 3 seconds of $^{13}C_{12}$-2,3,7,8-TCDD.	✓	—

	YES	NO
- The signal to noise ratios for ions 259, 320, 322, and 328 must be $\geq$ 2.5.	✓	
- The signal to noise ratios for ions 332 and 334 must be $\geq$ 10. (This ratio is no longer reportable).		
Check calculations for the response factors for unlabeled 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD and for $^{13}C_{12}$-2,3,7,8-TCDD relative to $^{13}C_{12}$-1,2,3,4-TCDD.		
- Are there any errors?		✓
- The response factor of 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD must be within $\pm$ 10% of the mean value for the initial 4-point calibration curve.	✓	
- The response factor of $^{13}C_{12}$-2,3,7,8-TCDD relative to $^{13}C_{12}$-1,2,3,4-TCDD must be within $\pm$ 10% mean value of the initial 4 point calibration curve.	✓	

ACTION: 1) If the required number of analyses of calibration check solutions were not submitted notify the contracting laboratory. If they are unavailable, reject all data without an associated calibration check standard; and 2) if the calibration check standard fails to meet any of the acceptance criteria, reject all the data associated with this standard.

4.0 Sample Data

4.1 Qualitative Requirements

	YES	NO
4.1.1 The RT of 2,3,7,8-TCDD must be within 3 seconds of the RT of the $^{13}C_{12}$-2,3,7,8-TCDD.	Retention Time not reported.	
4.1.2 The integrated ion currents for m/z 259, 320 and 322 must maximize simultaneously.	✓	
4.1.3 The integrated ion currents for m/z 259, 320, 322, and 328 must be at least 2.5 times background noise and must not have saturated the detector.	✓	
4.1.4 The internal standard ions m/z 332, 334 must be at least 10 times of noise level.	✓	
4.1.5 The ratio of the integrated ion currents m/z 320 to m/z 322 and m/z 332 to m/z 334 must be $\geq$.67 and $\leq$.90.	✓	

	YES	NO
4.1.6 When 2,3,7,8-TCDD is not present, the ratio of internal standard ion m/z 332 to m/z 334 must still be $\geq$.67 and $\leq$.90.	✓	
4.1.7 If the 2,3,7,8-TCDD was not qualitatively identif. in the sample, the MPC (detection limits) must not exceed 1 ppb.	✓	

ACTION: 1) if the 2,3,7,8-TCDD qualitative criteria were not met, 2,3,7,8-TCDD was not qualitatively identified, red-line positive value; 2) if the detection limit exceeds 1 ppb, red-line ND (not detected) dioxin value; 3) if the signal to noise criteria for ions m/z 328, 332, 334 were not met, red-line positive or ND dioxin values; and 4) if the ratio of ion m/z 332 to m/z 334 is outside the acceptance criteria, red-line positive or ND dioxin data.

4.2 Quantitative Requirements

4.2.1 Recalculate the concentration of 2,3,4,7-TCDD which was found in the sample using the equation:

$$Cx = \frac{Ax \times Qis}{Ais \times RRF_n \times W}$$

Where: Cx = the concentration of 2,3,7,8-TCDD in micrograms/Kg

Ax = the sum of integrated ion abundance for M/Z 320 and M/Z 322 for unlabeled 2,3,7,8-TCDD

Ais = the sum of integrated ion abundances for M/Z 332 and M/Z 334 which are the characteristic ions for the internal stanard $^{13}C_{12}$-2,3,7,8-TCDD

Qis = quantity of the internal standard (in nanograms) added to the sample before extraction

RRF_n = calculated mean response factor for unlabeled 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD

W = weight (in grams) of wet soil or sediment sample

YES NO

4.2.2 Recalculate the concentration of the internal st uard $^{13}C_{12}$-2,3,7,8-TCDD using the formula:

$$Cis = \frac{Ais \times Qrs}{Ars \times RRF_i \times W}$$

Where: Cis = the concentration of the $^{13}C_{12}$-2,3,7,8-TCDD in ug/kg or ug/L

Ais = the sum of integrated ion abundance for M/Z 332 and 334 for $^{13}C_{12}$-2,3,7,8,-TCDD

Ars = sum of integrated ion abundances for M/Z 332 and 334 for $^{13}C_{12}$-1,2,3,4-TCDD

Qrs = quantity (in ng) of $^{13}C_{12}$-1,2,3,4-TCDD added to the sample before injection

RRF_i = calculated mean response factor for $^{13}C_{12}$-2,3,7,8 -TCDD relative to $^{13}C_{12}$-1,2,3,4-TCDD

W = weight (in grams) of wet soil or sediment sample or volume of water extracted (in mL)

4.2.3 The recovery of the internal standard must be within the 40 and 120 percent recovery window. #147,760 % R = 39
#147,760 % R = 36

ACTION: These are advisory limits. View outliers in conjunction with surrogate recoveries and other data such as internal standard peak areas and signal to noise ratios.

4.3 Recalculate Maximum Possible Concentration - When no unlabeled Dioxin is detected, the lab must calculate the estimated detection limits which is the concentrations required to produce a signal with an area or peak height 2.5 times the background signal area or peak height. To recalculate use the formula:

$$MPC = \frac{2.5 \times Ax2 \times Qis}{Ais2 \times RRF_n \times W}$$

Where: MPC = Estimated maximum possible concentration for unlabeled 2,3,7,8-TCDD in ug/kg or ug/L.

Ax2 = peak height or integrated ion abundance for M/Z 320 or 322

Ais2 = integrated ion abundance or peak height for M/Z 332 when M/Z 320 is used or M/Z 334 when M/Z 322 is used to determine Ax

Qis = same definition as in 4.2.1

RRF_n = calculated mean response factor for 2,3,7,8 -TCDD relative to $^{13}C_{12}$ - 2,3,7,8 - TCDD

W = same definition as above

	YES	NO
NOTE: The use of the area or peak height for M/Z 320 is preferred to M/Z 322 except when there is interference for M/Z 320 but not for M/Z 322		
ACTION: If variation in the calculations are found between the contractor's results and the regions recalculated results, the contractor must be informed and the discrepancy resolved. If the calculated amount of unlabeled Dioxin is outside the linear range obtained by the initial calculation (100 ppb for the 4 points) reject the data.		

4.4 Estimated Maximum Possible Concentration - For samples where interference is observed for both M/Z 320 and 322 or when an unacceptable ratio prevented identification of unlabeled 2,3,7,8-TCDD, use equation in Section 4.2.1 to estimate the maximum concentration that could be represented by detected signals.

5.0 Quality Control

5.1 Blanks - Rinsate Blank/Field Blank/Reagent Blank

	YES	NO
5.1.1 One rinsate blank must be analyzed for each batch of samples collected each day.	✓	
5.1.2 One field blank must be extracted and analyzed for each batch of 24 samples or less collected over a period of one or two days whichever comes first.		✓
5.1.3 One method blank must be extracted and analyzed for each batch of samples or each time a group of samples are extracted.	✓	
5.1.4 Acceptable field blanks and laboratory method blanks must not contain any signal at 320, 322, or 259 which is greater than 2% of the m/z 332 response within ±5 scans of the m/z 332 peak maximum. If the method blank that was extracted along with a batch of samples is contaminated, the associated positive samples must be rerun. (See Exhibit C, SOW).	✓	

YES NO

ACTION: 1) If the proper number of reagent blanks were not submitted, notify the contractor. If they are unavailable, reject all positive sample data; 2) if the field blank and/or rinsate blank are missing, notify the DPO and discuss the action to be taken; 3) if the contamination of Dioxin in the reagent blank or in the field blank is >.1 ppb all positive dioxin data must be rejected and the sample reanalyzed by the laboratory. 4) if the contamination of Dioxin in the blank is <.1 ppb no action is taken; and, 5) if the detection limit in the blank exceeds 1 ppb red-line positive data in all samples associated with the blank. 6) if the rinsate blank contains dioxins at > 0.5 ug/l notify the Deputy Project Officer and discuss the proper action to be taken.

5.1.5 Spiked Field Blank Requirements - Each batch of 24 samples or less collected over a period of one or two days, whichever comes first, must contain a sample of uncontaminated (known blank) soil/sediment and/or water for spiking. Ten grams must be fortified by the laboratory with unlabeled 2,3,7,8-TCDD at a concentration of 1 ug/kg for soil and 10 ng/l for water, 50 ng of $^{13}C_{12}$-2,3,7,8-TCDD and 1.4 ng of $^{37}Cl_4$-2,3,7,8-TCDD.

5.1.5.1 Is the percent recovery of 2,3,7,8-TCDD within the 60 to 140 percent range? ✓ ___

ACTION: If the recovery is outside the 60 to 140 percent range, reject all data and request reanalysis of the sample.

5.1.6 Duplicate Analysis Sample

5.1.6.1 For every batch of samples, is there a sample designated as duplicate? ___ ✓

5.1.6.2 Results of laboratory duplicates must agree within 50% relative difference. ___ ___

ACTION: No action is taken if relative difference is >50%. The contracting laboratory must be notified, however, and the problem discussed.

	YES	NO
5.1.7 Performance Evaluation (PE) Sample - A performance evaluation sample which is provided by the region must be analyzed with every batch of 24 samples or less collected over a period of one or two days whichever comes first.		
5.1.7.1 Do the analytical results fall within the 99% EMS-LV acceptance criteria?	___	___ N/A

The performance evaluation windows established by EPA can be obtained from diskettes supplied by UNLV-QAL. The Dioxin PE windows are updated quarterly and issued by UNLV-QAL quarterly.

ACTION: 1) The PE raw data must be reviewed as if it were an environmental sample; 2) if 2,3,7,8-TCDD was not qualitatively identified reject all data; 3) if the reported value for PE sample exceeds the upper acceptance limits, reject all positive Dioxin values in the entire associated batch of samples, but not the ND values; and 4) if the reported value exceeds the lower acceptance limits, all positive and negative (ND) values are rejected.

6.0 Holding Times (For water sample only).

6.1 Have any holding times have been exceeded for aqueous samples

a. 10 days to extraction from verified time of sample receipt	___	___ N/A
b. 40 days after extraction for analysis	___	___ N/A

Action: If these holding times are exceeded, red-line the value on the data sheet (including detection limits) indicating rejection.

Title: Attachment 1 - CLP Dioxin Data Assessment Checklist (GC/MS Analyses)

CASE#_____ LAB_____ Site_____

7.0 Conclusions: (NOTE: Reviewers must red-line unacceptable data on sample data sheets; red-line data does not imply the compound is not present)

7.1 Data Assessment Narrative_____

7.2 Contract Problems/Non-compliance _____

Reviewer's Signature: _____ Date:_____

Verified By: _____ Date:_____

SOG-1

SOP NO. HW-2

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 7/87
REV. 12/87

(SOP Revision IX)

PREPARED BY: _____ DATE: 10-25-84
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

CONCURRED BY: _____ DATE: 10/27/87
Louis Bevilacqua, Section Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: 10/27/84
Gerard F. McKenna, Chief
Monitoring Management Branch

301054

Title: Evaluation of Inorganic Data for the Contract Laboratory Program

Date: Oct. 1989
Number: HW-2
Revision: 9

1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 7/87.

2.0 Responsibilities - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a **total review**:

2.1.1 **Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1).**
The reviewer must answer every question on the checklist.

2.1.2 **Data Assessment - Data Assessment Narrative (Appendix A.2)**
The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 **Contract Non-Compliance - SMO Report (Appendix A.3)**
This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Review Manager or Deputy Project Officer (DPO). Forward 5 copies: one each for internal files, appropriate Regional DPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to end of Data Assessment Narrative (Sec. A.2.2).

2.1.4 **Data Summary Sheet - Summary of Inorganic Quality Control Data (Appendix A.5).**
Enter in ink on Data Summary Sheet required QC values from Forms I through IX. Circle all values that require data qualification "Action".

2.1.5 **CLP Data Assessment Summary Forms**

2.1.5.1 Appendix A.6
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.5.2 Appendix A.7
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.6 **Data Review Log:** It is recommended that each data reviewer should maintain a log of reviews completed to include:
a. date of start of case review
b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.7 **Telephone Record Log** - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.8 **Forwarded Paperwork**

2.1.8.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Data Summary Sheet (Appendix A.5) along with completed Data Assessment Narrative (Appendix A.2)
e. Record of Communication (copy)
f. CLP Reanalysis Request/Approval Record (original + 3 copies)
g. Appendix A.7 (original).

2.1.8.2 Forward 4 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.7) and Telephone Record Log , if any,: one each for appropriate Regional DPO, Sample Management Office (SMO), and last two addressees of Mailing List for Data Reviewers (Appendix A.4) (the Inorganic Data Assessment form does not go to the last two addressees).

2.1.9 **Filed Paperwork** - Upon completion of review, the following are to be filed within MMB files:

a. Four copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.7.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Data Assessment Summary Form (Appendix A.6).
e. CLP Reanalysis Request/Approval Record (copy)

3.0 **Data Completeness**
Indicate incomplete data package on the computer tracking sheet located in MMB office. Authorized contractor personnel may contact the laboratory after discovery of an incomplete data package. If a laboratory will not return phone calls or does not respond to requests, notify MMB coordinator of Region II for resolution.

4.0 **Rejection of Data** - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 **Acceptance Criteria** - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of July 1, 1988.

6.0 **SMO Contract Compliance Screening (CCS)** - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 **Request for Reanalysis** - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative.If holding times and sample storage times have not been exceeded, DPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 **Record of Communication** - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 **Rounding off numbers** - The data reviewer will follow the standard practice.

	YES	NO	N/A
A.1.1 **Contract Compliance Screening Report** (CCS) - Present? Case Narrative	[✓]		
ACTION: If no, contact RSCC.			
A.1.2 **Record of Communication (from RSCC)** - Present?	[ ]		✓
ACTION: If no, request from RSCC.			
A.1.3 **Trip Report** - Present? Chain-of-Custody	[✓]		
ACTION: If no, contact RSCC for trip report.			
A.1.4 **Sample Traffic Report** - Present or on file?	[✓]		
Legible?	[✓]		
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 **Cover Page** - Present?	[✓]		
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[✓]		
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on ~~Record of Communication~~? DATA PACKAGE	[✓]		
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[✓]		
(b) Form I's?	[✓]		
ACTION: If no for any of the above, contact RSCC for clarification.			

	YES	NO	N/A
A.1.6 **Form I (Final Data)** - Are all Form I's present and complete?	[✓]	___	___
ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[✓]	___	___
Are soil sample results for each parameter corrected for percent solids?	[✓]	___	___
Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[✓]	___	___
Are computation/transcription errors less than 10% of reported values?	[✓]	___	___
Are all "less than IDL" values properly coded with "U"?	[✓]	___	___
Was a brief physical description of samples given on Form I's?	[✓]	___	___
Were the result qualifiers used correctly with final data?	[✓]	___	___
ACTION: If no for any of the above, prepare Telephone Record Log, and contract laboratory for corrected data.			
Were any samples diluted beyond requirements of contract?	___	[✓]	___
If yes, were dilutions noted on Form I's?	[___]	___	✓
ACTION: If no, note under Contract-Problem/Non-Compliance of the"Data Assessment Narrative".			

	YES	NO	N/A
1.7 Holding Times - (aqueous samples)			
(Examine sample traffic reports and digestion/distillation logs.)			
Mercury (28 days). . . . . exceeded?	___	[___]	✓
Cyanide (14 days). . . . . exceeded?	___	[___]	✓
Other Metals (6 months). . . . . exceeded?	___	[___]	✓
Soil samples			
Metals (including Hg) and Cyanide (6 months)..exceeded?	___	[✓]	___

NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.

ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.

	YES	NO	N/A
A.1.8 Raw Data			
A.1.8.1 Digestion Log* for flame AA/ICP present?	[✓]	___	___
Digestion Log for furnace AA present?	[✓]	___	___
Digestion Log for mercury present?	[✓]	___	___
Digestion Log for cyanides present?	[✓]	___	___
Are pH values (pH<2 for all metals, pH>12 for cyanide) present in Digestion/Distillation Logs?	[___]	✓	___
*Weights, dilutions and volumes used to obtain values.			
Percent solids calculation present for soils/sediments? → % Solids listed on Form I	[___]	✓	___
Are preparation dates present on Digestion Log? Internal Chain of Custody	[✓]	___	___

			YES	NO	N/A
A.1.8.2	Measurement read out record present?	ICP	[✓]	___	___
		Flame AA	[___]	___	✓
		Furnace AA	[✓]	___	___
		Mercury	[✓]	___	___
		Cyanides	[✓]	___	___
A.1.8.3	Are all raw data to support all sample analyses and QC operations present?		[✓]	___	___
	Legible?		[✓]	___	___
	Properly Labeled?		[✓]	___	___

ACTION: If no for any of the above, write Telephone Record Log and contact laboratory. Flag metal data as estimated if pH of sample is greater than 2. Flag cyanide data as estimated if pH sample is less than 12.

A.1.9 **Data Validation and Verification**

A.1.9.1 Calibration

A.1.9.1.1	Is record of at least 2 point calibration present for ICP analysis?	[✓]	___	___
	Is record of 5 point calibration present for Hg analysis?	[✓]	___	___

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.9.1.2	Is record of 4 point calibration present for: Flame AA?	[___]	___	✓
	Furnace AA?	[✓]	___	___
	Cyanides?	[✓]	___	___

	YES	NO	N/A

NOTE: 1. If less than 4 standards are measured in absorbance mode, then the remaining standards in concentration mode must be run immediately after calibration and be within ±10% of true value.
2. For all AA (except Hg) and Cyanide analyses, one calibration standard is at CRDL level. If not, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".

ACTION: Flag associated data as estimated if standards are not within +10% of true values (except CRDL calibration standard). Do not flag the data as estimated in linear range indicated by good recovery of standard.

A.1.9.1.3 Is correlation *coefficient less than 0.995 for:

	YES	NO	N/A
Mercury Analysis?	___	[✓]	___
Cyanide Analysis?	___	[✓]	___
Atomic Absorption Analysis?	___	[✓]	___

ACTION: If yes, flag the associated data as estimated.

A.1.9.2 **Form II A (Initial and Continuing Calibration Verification)**-

	YES	NO	N/A
A.1.9.2.1 Present and complete for every metal and cyanide?	[✓]	___	___
Present and complete for AA and ICP when both are used for same analyte?	[___]	___	✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.9.2.2 Circle all values on data summary sheet that are outside contract windows. Are all calibration standards (initial and continuing) within control limits?

	YES	NO	N/A
Metals 90-110%	[✓]	___	___
Hg - 80-120%	[✓]	___	___

The reviewer will calculate correlation coefficient.

	YES	NO	N/A
Cyanides 85-115%	[✓]	___	___

ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard of 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ), if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%).

	YES	NO	N/A
Was continuing calibration performed every 10 samples or every 2 hours?	[✓]	___	___

ACTION: If no, flag the excess samples (eleventh and up) data as estimated (J).

A.1.9.3 **Form II B (CRDL Standards for AA and ICP)** -

	YES	NO	N/A
A.1.9.3.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[✓]	___	___
*Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[✓]	___	___
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[✓]	___	___

ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are:

AA Analysis - **True Value ± CRDL

ICP Analysis - **True Value ± 2CRDL

CN Analysis - **True Value ± 0.5 x True Value.

Find the results of mid-range standard in the raw data.
*True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL.

		YES	NO	N/A
.1.9.3.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and for every four hours of ICP run?	[✓]		
	ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
.1.9.3.3	Circle all values on summary sheet that are outside acceptance windows.			
	Are CRA and CRI standards within control limits: Metals 80 - 120%R?	[ ]	✓	
	Is mid-range standard within control limits: Cyanide 80 - 120%R?	[✓]		
	ACTION: Flag as estimated all the data within the affected ranges if the recovery of the standard is between 50-79%; flag only positive data if the recovery is between 121-150%; reject (red line) all data if the recovery is less than 50%; reject only positive data if the recovery is greater than 150%.			
.1.9.4	**Form III (Initial and Continuing Calibration Blanks)**			
.1.9.4.1	Present and complete?	[✓]		
	For both AA and ICP when both are used for same analyte?	[ ]		✓
	Was an initial calibration blank analyzed?	[✓]		
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (whichever is more frequent)?	[✓]		
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the contract-problems/ non-compliance section of the Data Assessment Narrative.			

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		YES	NO	N/A
A.1.9.4.2	Circle all calibration blank values on Data Summary Sheet that are above CRDL (or 2 x IDL when IDL > CRDL). Are all calibration blanks (when IDL<CRDL) less than or equal to Contract Required Detection Limits (CRDL)?	[✓]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[___]	___	✓

ACTION: If no for any of the above, flag as estimated (J) on Form I's all data <5xIDL between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank.

A.1.9.5 **FORM III (Preparation Blank)** -

(Note: The preparation blank for mercury is the same as the calibration blank.)

		YES	NO	N/A
A.1.9.5.1	Was one prep. blank analyzed for: each 20 samples?	[✓]	___	___
	each batch?	[✓]	___	___
	each matrix type?	[✓]	___	___
	both AA and ICP when both are used for same analyte?	[___]	___	✓

ACTION: If no for any of the above, flag as estimated (J) all associated positive data <10 x IDLs for which prep.blank was not analyzed.

NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).

		YES	NO	N/A
A.1.9.5.2	Is concentration of prep. blank greater than CRDL when IDL is less than or equal to CRDL?	___	[✓]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank value?	___	[___]	✓

		YES	NO	N/A
	ACTION: If yes, reject (red-line) all associated data that has a concentration less than ten times the prep. blank value, but greater than CRDL.			
A.1.9.5.3	Do concentrations of prep. blank fall below two times IDL when IDL is greater than CRDL?	[ ]		✓
	ACTION: If no, reject (red-line) all data that has a concentration less than 10 times the prep. blank value, but not flagged with a "U" (less than).			
A.1.9.5.4	Is concentration of prep. blank below the negative CRDL?		[✓]	
	ACTION: If yes, reject (red-line) all associated data that has a concentration less than 10xCRDL.			
.1.9.6	**Form IV (ICP Interference Check Sample)**			
A.1.9.6.1	Present and complete?	[✓]		
	(NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[✓]		
	ACTION: If no, flag as estimated (J) all samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.8.6.2	Circle all values on Data Summary Sheet that are more than + 20% of true or established mean value. Are all Interference Check Sample results inside of control limits (+ 20%)?	[✓]		
	If no, is concentration of Al, Ca, Fe, or Mg lower in sample than in ICS?	[ ]		✓
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			

		YES	NO	N/A
A.1.9.7	**Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distallation)**- (Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.9.7.1	Present and complete for: each 20 samples?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each conc. range (i.e. low, med., high)?	[✓]	___	___
	For both AA and ICP when both are used for same analyte?	[___]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) all positive data less than four times spiking level for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.9.7.2	Was field blank used for spiked sample?	___	[✓]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
	NOTE: Matrix spike analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
A.1.9.7.3	Circle all values on Data Summary Sheet that are outside control limits (75% to 125%). Are all recoveries within control limits?	[___]	✓	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	✓	___
	ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			

	YES	NO	N/A
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[✓]	___	___

ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".

A.1.9.7.4 Aqueous

Are any spike recoveries:

(a) less than 30%?	___	[___]	✓
(b) between 30-74%?	___	[___]	✓
(c) between 126-150%?	___	[___]	✓
(d) greater than 150%?	___	[___]	✓

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

NOTE: If pre-digestion spike result is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, disregard spike recovery on Form V. Flag the associated data as estimated(J).

A.1.9.7.5 Soil/Sediment

Are any spike recoveries:

(a) less than 10%?	___	[✓]	___
(b) between 10-74%?	✓	[___]	___
(c) between 126-200%?	___	[✓]	___
(d) greater than 200%?	___	[✓]	___

ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".

Flag antimony and lead as estimated.

		YES	NO	N/A
A.1.9.8	**Form VI (Lab Duplicates)**			
A.1.9.8.1	Present and complete for: each 20 samples?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each concentration range (i.e. low, med., high)?	[✓]	___	___
	both AA and ICP when both are used for same analyte?	[___]	___	✓
	ACTION: If no for any the above, flag as estimated (J) all data >CRDL* for which duplicate sample was not analyzed. Note: If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
A.1.9.8.2	Was field blank used for duplicate analysis?	___	[✓]	___
	ACTION: If yes, flag all data >CRDL* as estimated (J) for which field blank was used as duplicate. NOTE: Duplicate analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
A.1.9.8.3	Are all values within control limits (RPD 20% or difference < ±CRDL)?	[___]	✓	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[✓]	___	___
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative". NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL. 2. If lab duplicate result is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria.			

* Substitute IDL for CRDL when IDL > CRDL.

		YES	NO	N/A
A.1.9.8.4	Is any value for sample duplicate pair less than CRDL* and other value greater than or equal to 10 x *CRDL?	___	[✓]	___
	ACTION: If yes, flag the associated data as estimated (J).			
A.1.9.8.5	Aqueous Circle all values on Data Summary Sheet that are: RPD > 50%, or Difference > ± CRDL*			
	Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	✓
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	✓
	ACTION: If yes, flag the associated data as estimated.			
A.1.9.8.6	Soil/Sediment Circle all values on Data Summary Sheet that are: RPD > 100%, or Difference > 2 x CRDL*			
	Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%?	___	[✓]	___
	Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL?	___	[✓]	___
	ACTION: If yes, flag the associated data as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.

** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.9.9	**Field Duplicates**			
A.1.9.9.1	Were field duplicates analyzed?	[✓]	___	___

ACTION: If yes, prepare a Form VI for each field duplicate pair, report concentrations of soils in ug/l on wet weight basis and calculate RPDs.

NOTE: 1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

A.1.9.9.2	Is any value for sample duplicate pair less than *CRDL and other value greater than or equal to 10 x *CRDL?	___	[✓]	___

ACTION: If yes, flag the associated data as estimated.

A.1.9.9.3 Aqueous

Circle all values on Form VI for field duplicates that are:
RPD > 50%, or
Difference > ± CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	✓
Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	✓

ACTION: If yes, flag the associated data as estimated.

A.1.9.9.4 Soil/Sediment

Circle all values on Form VI for field duplicates that are:
RPD >100%, or

Difference > 2 x CRDL*

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A
Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%?	___	[✓]	___
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL): >2x *CRDL?	___	[✓]	___

ACTION: If yes, flag the associated data as estimated.

.9.10 Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)

	YES	NO	N/A
.9.10.1 Was one LCS prepared and analyzed for: every 20 water samples?	[___]	___	✓
every 20 solid samples?	[✓]	___	___
both AA and ICP when both are used for same analyte?	[___]	___	✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

.9.10.2 Aqueous LCS

Circle all LCS values outside control limits (80 - 120%- except aqueous Ag and Sb).

	YES	NO	N/A
Is any LCS recovery: less than 50%?	___	[___]	___
between 50% and 79%?	___	[___]	✓
between 121% and 150%?	___	[___]	✓
greater than 150%?	___	[___]	✓

ubstitute IDL for CRDL when IDL > CRDL.
se absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
	ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.			
A.1.9.10.3	Solid LCS			
	NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J). 2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.			
	Is LCS "Found" value higher than the control limits on Form VII?	___	[✓]	___
	ACTION: If yes, qualify all associated positive data as estimated.			
	Is LCS "Found" value lower than the Control limits on Form VII?	___	[✓]	___
	ACTION: If yes, qualify all associated data as estimated.			
A.1.9.11	Form IX (ICP Serial Dilution) -			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.9.11.1	Was Serial Dilution analysis performed for: each 20 samples?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each concentration range (i.e. low, med.)?	[✓]	___	___

		YES	NO	N/A
	ACTION: If no for any of the above, flag all positive data greater than or equal to 10xIDLs as estimated (J) for which Serial Dilution Analysis was not performed, and summarize the deficiency on the DPO report.			
9.11.2	Was field blank(s) used for Serial Dilution Analysis?	___	[✓]	___
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J).			
	NOTE: Serial dilution analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
9.11.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[✓]	___	___
	ACTION: If no, write in the contract-problem/non-compliance section of the "Data Assessment Narrative".			
9.11.4	Circle all values on Data Summary Sheet that are outside control limit for initial concentrations equal to or greater than 10 x IDLs only. Are any % difference values:			
	> 10%?	✓	[___]	___
	≥ 100%?	___	[✓]	___
	ACTION: Flag as estimated (J) all associated sample results equal to or greater than 10xIDLs for which percent difference is greater than 10% but less than 100%. Reject (red-line) all associated sample results equal to or greater than 10xIDLs for which PD is greater than or equal to 100%.			

Flag copper manganese and vanadium as estimated.

		YES	NO	N/A
A.1.9.12	**Furnace Atomic Absorbtion (AA) QC Analysis**			
A.1.9.12.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[✓]	___	___
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.9.12.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[✓]	___	___
	Was a dilution analyzed for sample with post digestion spike recovery less than 40%?	[✓]	___	___
	ACTION: If no for any of the above, flag all the associated data as estimated (J).			
...1.9.12.3	Is *post digestion spike recovery less than 10% or greater than 150% for any result?	___	[✓]	___
	ACTION: If yes, reject (red-line) the affected data if recovery is <10%; reject data not flagged with "U" if spike recovery is >150%.			
	NOTE: Reject the data only if the affected sample was not subsequently analyzed by Method of Standard Addition.			
A.1.9.13	**Form VIII (Method of Standard Addition Results)**			
A.1.9.13.1	Present?	[✓]	___	___
	If no, is any Form I result coded with "S" or a "+"?	___	[ ]	✓
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			

* Post digestion spike is not required on the pre-digestion spiked sample when predigestion spike recovery is within control limits of 75-125% or when SR>4xSA.

	YES	NO	N/A
9.13.2 Is coefficient of correlation for MSA less than 0.990 for any sample?	___	[✓]	___
ACTION: If yes, reject (red-line) affected data.			
9.13.3 Was *MSA required for any sample but not performed?	___	[✓]	___
Is coefficient of correlation for MSA less than 0.995?	___	[✓]	___
Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	___	[✓]	___
ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
9.13.4 Was proper quantitation procedure followed correctly as outlined in the SOW on page E-16 through E-17?	[___]	✓	___
ACTION: If no, note exception under contract problem/ non-compliance of data assessment narrative, or prepare a separate list.			

9.14 **Dissolved/Total or Inorganic/Total Analytes** -

9.14.1 Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[✓]	___
Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[✓]	___

NOTE:
1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration.
2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents.
3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.

*SA is not required on LCS and prep. blank.

	YES	NO	N/A
A.1.9.14.2 Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	✓
A.1.9.14.3 Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	✓

ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.

A.1.9.15 **Form I to IX**

	YES	NO	N/A
A.1.9.15.1 Are all the Form I through Form IX labeled with:			
Laboratory name?	[✓]	___	___
Case/SAS number?	[___]	___	✓
EPA sample No.?	[✓]	___	___
SDG No.?	[✓]	___	___
Contract No.?	[___]	___	✓
Correct units?	[✓]	___	___
Matrix?	[✓]	___	___

ACTION: If no for any of the above, note under contract problem/non-compliance section of the "Data Assessment Narrative".

	YES	NO	N/A
9.15.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
(NOTE: Check all forms against raw data.)			
(a) all analytes analyzed by ICP?	___	[✓]	___
(b) all analytes analyzed by GFAA?	___	[✓]	___
(c) all analytes analyzed by AA Flame?	___	[___]	✓
(d) Mercury?	___	[✓]	___
(e) Cyanide?	___	[✓]	___

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

9.16 **Form I (Field Blank)** -

Circle all field blank values on Data Summary Sheet that are greater than CRDL, 2 x IDL when IDL > CRDL or 5xIDL when 5xIDL < CRDL.

Do concentrations of field blank(s) fall below CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	✓
Do concentrations of field blank(s) fall below 5xIDL when 5xIDL < CRDL ?	[___]	___	✓
If no, was field blank value already rejected due to other QC criteria?	[___]	___	✓

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value.

	YES	NO	N/A
A.1.9.17 **Form XI, XII, XIII (Quarterly Verification of Instrumental Parameters).**			
A.1.9.17.1 Is quarterly verification report present for:			
Instrument Detection Limits?	[✓]	___	___
ICP Interelement Correction Factors?	[✓]	___	___
ICP Linear Ranges?	[✓]	___	___
ACTION: If no, contact DPO of the lab.			
A.1.9.17.2 Form XI (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)			
Are IDLs present for: all the analytes?	[✓]	___	___
all the instruments used?	[✓]	___	___
For both AA and ICP when both are used for same analyte?	[___]	___	✓
ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.			
Is IDL greater than CRDL for any analyte?	___	[✓]	___
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL?	[___]	___	✓
ACTION: If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			

	YES	NO	N/A
9.17.3 Form XII (Linear Ranges)			
Was any sample result higher than high linear range of ICP by more than 10%?	___	[✓]	___
Was any sample result higher than the highest calibration standard for non-ICP parameters?	___	[✓]	___
If yes for any of the above, was the sample diluted to obtain the result on Form I.	[___]	___	✓
ACTION: If no, flag the result reported on Form I as estimated(J).			
9.18 Percent Solids of Sediments			
Is soil content in sediment(s) less than 50%?	___	[___]	✓
ACTION: If yes, qualify as estimated all data not previously rejected or flagged due to other QC criteria.			

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

Date: Oct. 1989
Number: HW-2
Revision: 9

Case#	_____	Site	_____	Matrix:	Soil _____
SDG	_____	Lab	_____		Water_____
Contractor	_____	Reviewer	_____		Other_____

A.2.1 The case description and exceptions, if any, are noted below with reason(s) for rejection or qualification as estimated value(s) J.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

(continuation)

A.2.1 (continuation)

APPENDIX A 5 SUMMARY OF INORGANICS QUALITY CONTROL DATA

LABORATORY:_____ CASE NO._____ SOW NO._____ SAMPLE TYPE/SDG:_____

SITE/STUDY DESCRIPTION:_____ SAMPLE NOS:_____

FIELD DUP. #'S:_____ LAB DUP. #'S:_____ Field Blank _____ MATRIX SPIKE #:_____

SERIAL DILUTION SAMPLE NO._____ COMPLETION DATE:_____ REVIEWERS INITIALS:_____

	XI	I	IIA				IIB		III				IV		V	VI	VII	IX	
Parameter	Detection Limits UG/L CRDL	IDL	Field Blank	Calib. Ver. %R Init	Continued 1	2	3	CRDL Std Ver. % R Init	Fin	Calibration Blanks Init	Continued 1	2	3	PREP BLANK	ICP ICS % R Init	Fin	Matrix Spike	Lab Dup RPD/Diff	LCS % R	Ser Dil % D	Method
Al	200																				
Sb	60																				
As	10																				
Ba	200																				
Be	5																				
Cd	5																				
Ca	5000																				
Cr	10																				
Co	50																				
Cu	25																				
Fe	100																				
Pb	5																				
Mg	5000																				
Mn	15																				
Hg	0.2																				
Ni	40																				
K	5000																				
Se	5																				
Ag	10																				
Na	5000																				
Tl	10																				
V	50																				
Zn	20																				
CN	10																				

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: _____ Date: _____ Case #: _____

Site: _____ Lab Name: _____

Reviewer's Initials: _____ Number of Samples: _____

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejection
ICP														
Flame AA														
Furnace AA														
Mercury														
Total														
Other														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

ICP														
Flame AA														
Furnace AA														
Mercury														
Total														
Other														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

: Evaluation of Metals Data for the
Contract Laboratory Program
Appendix A.7: CLP Data Assessment Checklist
Inorganic Analysis

Date: Oct. 1989
Number: HW-2
Revision: 9

INORGANIC REGIONAL DATA ASSESSMENT Region____

NO._____ SITE_____

ATORY_____ NO. OF SAMPLES/ MATRIX_____

_____ REVIEWER (IF NOT ESD)_____

_____ REVIEWER'S NAME_____

ACTION_____ FYI_____ COMPLETION DATE_____

DATA ASSESSMENT SUMMARY

	ICP	AA	Hg	CYANIDE
HOLDING TIMES				
CALIBRATIONS				
BLANKS				
ICS				
LCS				
DUPLICATE ANALYSIS				
MATRIX SPIKE				
MSA				
SERIAL DILUTION				
SAMPLE VERIFICATION				
OTHER QC				
OVERALL ASSESSMENT				

) = Data has no problems/or qualified due to minor problems.
1 = Data qualified due to major problems.
; = Data unacceptable.
(= Problems, but do not affect data.

N ITEMS:_____

_____

_____

S OF CONCERN:_____

_____

_____

BLE PERFORMANCE:_____

_____

_____

SDG - 2

SDG-2 contains data validation for the following samples:

LLI NUMBER	SAMPLE	MATRIX
1473286	B4/S5	Soil Boring
1473287	B4/S1	Soil Boring
1473288	B12/S5	Soil Boring
1473289	B12/S3	Soil Boring
1473290	B4/S3	Soil Boring
1473291 - 1473292	B8/S3A	Soil Boring
1473293	B8/S5	Soil Boring
1473294 - 1473295	B6/S3A	Soil Boring
1473300	B6/56A	Soil Boring

SDG-2

SOP NO. HW-6
Revision #6

CLP ORGANICS DATA REVIEW AND PRELIMINARY REVIEW

CONCURRED BY: _____ Date: 4/6/89
Louis Bevilacqua
Monitoring Management Branch

APPROVED BY: _____ Date: 4/14/89
Gerard F. McKenna, Chief
Monitoring Management Branch

INTRODUCTION TO DATA VALIDATION

1.0 Scope

1.1 This procedure is applicable to organic data obtained from contractor laboratories working for the Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in the Statement of Work (SOW).

2.0 Responsibilities

Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1 Data Assessment - The reviewer must answer every question on the checklist. All response shall be in ink.

2.2 Data Assessment Narrative (Attachment 1) - Data reviewer is required to use these forms and must match the action in the narrative with the action taken on the Form I(s).

2.3 Rejection Summary Form (Attachment 2) - Fill in the total number of analytes measured by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in the boxes where analyses were not performed or criteria do not apply.

2.4 Organic Regional Data Assessment - Data reviewer is also required to fill out Organic Regional Data Assessment Form (Attachment 3).

2.5 Telephone Record Log - The data reviewer should enter the bare facts of inquiry before initiating any authorized telephone conversation with a CLP laboratory. After the case review has been completed, mail the white copy of the Telephone Record Log to the laboratory and the pink copy to SMO. File the yellow copy in the Telephone Record Log folder and attach a photocopy of the Telephone Record Log to the completed Data Assessment Narrative.

2.6 Forwarded Paperwork - Upon completion of the review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:

a. data package
b. completed assessment checklist
c. SMO Contract Compliance Screening (CCS)

Forward four (4) copies of the completed Data Assessment Narrative along with four (4) copies of the Organic Data Assessment Form: one each for the appropriate Regional DPO, the Sample Management Office (SMO), and to the last two addresses of the Data Reviewers Mailing List.

2.7 Filed Paperwork - Upon completion of the review, the following are to be filed within the Monitoring and Management Branch (MMB) files:

a. Telephone record Log (copy)
b. Record of Communication (original)
c. Rejection Summary Form

3.0 Rejection of Data - All values determined to be unacceptable on the Organic Analysis Data Sheet (Form I) must be flagged with an "R". As soon as review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

4.0 Acceptance Criteria - In order that the reviews be consistent among reviewers, this Standard Operating Procedure (SOP) should be used. Additional guidance can be found in the Functional Guidelines.

5.0 SMO Contract Compliance Screening (CCS) - This is intended to aid the reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from the laboratory in response to CCS must be used by the reviewer.

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: _____

LAB: Lancaster Laboratories, Inc.

SITE: NPG

1.0 Data Completeness and Deliverables	YES	NO	N/A
1.1 Have any missing deliverables been received and added to the data package.	[✓]	___	___
ACTION: Call lab for explanation / resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-compliance" section of reviewer narrative.			
1.2 Was SMO CCS checklist included with package?	[___]	___	✓
2.0 Cover Letter/Case Narrative			
2.1 Is the Narrative or Cover Letter present?	[✓]	___	___
2.2 Are Case Number and/or SAS number contained in the Narrative or Cover Letter?	[___]	___	✓

3.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any VOA analyses, Part B for any BNA analyses and Part C for Pesticide/PCBs.

Does this package contain:

VOA data?	✓	___
BNA data?	✓	___
Pesticide/PCB data?	✓	___

ACTION: Complete corresponding parts of checklist.

	YES	NO	N/A

PART A: VOA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [✓] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [✓] ___

ACTION: Use professional judgement to evaluate the effect on the quality of the data.

ACTION: If any sample analyzed as a soil contains more than 50% water, all data should be rejected.

ACTION: If both VOA vials for a sample have air bubbles, flag all positive results "J" and all non-detects "R".

2.0 Holding Times

2.1 Have any VOA holding times, determined from date of collection to date of analysis, been exceeded? ___ [✓] ___

If unpreserved, aqueous aromatic volatiles must be analyzed within 7 days of collection and non-aromatic volatiles must be analyzed within 14 days. If preserved with hydrochloric acid and stored at 4°C, then both aromatic and non-aromatic volatiles must be analyzed within 14 days. If uncertain about preservation, contact the sampler to determine whether the samples were preserved.

A ten-day* holding time for soil samples is recommended.
* From date of laboratory receipt to analysis.

Table of Holding Time Violations

Sample	Sample Matrix	Preserved ?	(See Traffic Report) Date Sampled	Date Lab Received	Date Analyzed

ACTION: If holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded.

	YES	NO	N/A
If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. The reviewer may determine that non-detect data are unusable ("R").			
3.0 Surrogate Recovery (Form II)			
3.1 Are the VOA Surrogate Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[___]	___	✓
3.2 Are all the VOA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[___]	___	✓
ACTION: Call lab for explanation / resubmittals. If missing deliverables are unavailable, document effect on data under "Conclusions" section of reviewer narrative.			
3.3 Were outliers marked correctly with an asterisk? *None of the recoveries were outliers.* ACTION: Circle all outliers in red.	[___]	___	✓
3.4 Was one or more VOA surrogate recovery outside of contract specifications for any sample or method blank?	___	[✓]	___
If yes, were samples reanalyzed?	[___]	___	✓
Were method blanks reanalyzed?	[___]	___	✓

ACTION: If surrogate recoveries are > 10% but all do not meet SOW specifications:

1. Flag all positive results as estimated ("J").
2. Flag all non-detects as estimated detection limits ("UJ").

	YES	NO	N/A
If any surrogate has a recovery of <10% : 1. Flag all positive results as estimated ("J"). 2. Flag all non-detects as unusable ("R"). Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and re-analyses. Check the internal standard areas.			
3.5 Are there any transcription/calculation errors between raw data and Form II?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike Duplicate/Recovery Form (Form III) present?	[✓]	___	___
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	
d. Med Soil	[___]	___	✓
ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.			

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
0 out of 10	0 out of 10

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
0 out of 5	0 out of 5

ACTION: If MS and MSD both have less than 10% recovery for an analyte, negative results for that analyte should be rejected, and positive results should be flagged "J". The above applies only to the sample used for the MS/MSD analysis. Use professional judgement in applying this criterion to other samples in the package.

	YES	NO	N/A
5.0 Blanks (Form IV)			
5.1 Is the Method Blank Summary (Form IV) present?	[✓]	___	___
5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been analyzed for each set of samples or every 20 samples of similar matrix (low water, med water, low soil, medium soil), whichever is more frequent?	[✓]	___	___
5.3 Has a VOA instrument blank been analyzed at least once every twelve hours for each GC/MS system used?	[✓]	___	___
ACTION: If any method blank data are missing, call lab for explanation / resubmittal. If not available, reject all associated positive data ("R").			
5.4 Chromatography: review the blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.			
Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	[✓]	___	___
ACTION: Use professional judgement to determine the effect on the data.			
6.0 Contamination			
NOTE: "Water blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.			
6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for VOAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor.	___	[✓]	___
6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)? See page 7A of SOG-2	✓	[___]	___
ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)			
NOTE: Only field/rinse blanks taken the same day as the samples are used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped. Blanks may not be qualified because of contamination in another blank. Blanks may be qualified for surrogate, spectral, tuning or calibration QC problems.			

Paul C. Rizzo Associates, Inc.
CONSULTANTS

By [illegible] Date 4-26-90 Subject _____ Sheet No. 7A of 36
Chkd. By ____ Date _____ SDG-2 ICA SECTION 6.2 Proj. No. 85-515

Trip Blank LLI # 1473285 detected: 34 ppb acetone (QL = 10 ppb

Associated Samples: B653A detected 69 ppb acetone
B853A detected 80 ppb acetone

Trip blank (LLI # 1473285) detected 34 ppb acetone. The associated samples [B653A (LLI # 1473294) and B853A (LLI # 1473291)] respectively detected acetone at a concentration of 69 and 80 ppb. Because these sample concentrations are greater than the quantitation limit but less than ten times the concentration of the blank, the concentration of acetone was determined to be less than the quantitation limit for samples B653A and B853A.

301096

YES NO N/A

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

	Sample conc > CRQL but < 10x blank	Sample conc < CRQL & is < 10x blank value	Sample conc > CRQL value & >10x blank value
Methylene chloride Acetone Toluene 2-butanone	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5 blank value
Other Contaminants	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] ___ ✓

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Tuning and Mass Calibration (Form V)

7.1 Are the GC/MS Tuning and Mass Calibration Forms (Form V) present for Bromofluorobenzene (BFB)? [✓] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift? [✓] ___ ___

7.3 Has a tuning performance compound been analyzed for every twelve hours of sample analysis per instrument? [✓] ___ ___

ACTION: If any tuning data are missing, take action specified in 3.2 above.

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

	YES	NO	N/A
7.4 Have the ion abundance criteria been met for each instrument used?	[✓]		

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If tuning calibration is in error, flag all associated sample data as unusable ("R"). However, if expanded ion criteria are met (See 1988 Functional Guidelines), the data reviewer may accept data with appropriate qualifiers.

	YES	NO	N/A
7.5 Are there any transcription / calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.)		[✓]	
7.6 Have the appropriate number of significant figures (two) been reported? (Check at least two values, but if errors are found check more values.)	✓	[ ]	

ACTION: If large errors exist, call lab for explanation / resubmittal, make necessary corrections and note errors under "Conclusions".

	YES	NO	N/A
7.7 Are the spectra of the mass calibration compound acceptable?	[✓]		

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes

8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:

	YES	NO	N/A
a. Samples and/or fractions as appropriate	[✓]		
b. Matrix spikes and matrix spike duplicates	[✓]		
c. Blanks	[✓]		

	YES	NO	N/A
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Matrix spikes and matrix spike duplicates (Mass spectra not required)	[✓]	___	___
c. Blanks	[✓]	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			
8.3 Are the response factors shown in the Quant Report? in Quant Reports for initial calibration and continuing calibration.	[✓]	___	___
8.4 Is chromatographic performance acceptable with respect to:			
Baseline stability	[✓]	___	___
Resolution	[✓]	___	___
Peak shape	[✓]	___	___
Full-scale graph (attenuation)	[✓]	___	___
Other:_____	[___]	___	___
ACTION: Use professional judgement to determine the acceptability of the data.			
8.5 Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[✓]	___	___
ACTION: If any mass spectra are missing, take action specified in 3.2 above. If Lab does not generate their own standard spectra, make note in "Contract Problems/Non-compliance".			
8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]	___	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
8.8 Do sample and standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected, flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (at the calculated detection limit).			

	YES	NO	N/A
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "J" qualifier?	[✓]	___	___
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Blanks	[✓]	___	___
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "J" qualifier if missing and "N" qualifier to all identified TIC compounds on Form I, Part B.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds (example: 1,2-dimethylbenzene is xylene--a VOA TCL--and should not be reported as a TIC)?	___	[✓]	___
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate.			
10.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription / calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found?	___	[✓]	___
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	✓	[___]	___

	YES	NO	N/A
ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant. Reports) present for initial and continuing calibration?	[✓]	___	___
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete for the volatile fraction?	[✓]	___	___
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Are response factors stable for volatiles over the concentration range of the calibration (RSD <30%)?	[✓]	___	___
ACTION: Circle all outliers in red.			
ACTION: When RSD >30%, non-detects may be qualified using professional judgement. Flag all positive results "J". When RSD >90%, flag all non-detects as unusable ("R"). (Region II policy.)			
12.3 Do any compounds have a RRF < 0.05?	___	[✓]	___
ACTION: Circle all outliers in red.			
ACTION: If any volatile compound has an average RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").			

	YES	NO	N/A
12.4 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least two values but if errors are found, check more.)	___	[✓]	___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

13.0 GC/MS Continuing Calibration (Form VII)

	YES	NO	N/A
13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the volatile fraction?	[✓]	___	___
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	[✓]	___	___

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

_____

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, call lab for explanation / resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").

	YES	NO	N/A
13.3 Do any continuing calibration standard compounds have a RRF < 0.05?	___	[✓]	___

ACTION: Circle all outliers in red.

ACTION: If any volatile compound has a RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").

	YES	NO	N/A
13.4 Do any compounds have a % difference between initial and continuing calibration RRF > 25%?	✓	[___]	___

ACTION: Circle all outliers in red and qualify associated sample data as outlined in the table below:

Chloromethane (SPCC) %Δ = 34.3
acetone %Δ = 44.1

301102

Samples 8853A and B653A analyzed chloromethane as being less than the quantitation limit, so no qualifying action was taken. Because of blank contamination, acetone was determined to be less than the quantitation

YES NO N/A

% DIFFERENCE

25-50	50-90	>90
'J' positive results, no action for non detects	'J' positive results, 'UJ' non detects	'J' positive results, "R" non detects

13.5 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

14.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits for each continuing calibration? [✓] ___ ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary.)

ACTION: If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results and non-detects (U values) quantitated with this internal standard. If extremely low area counts are reported, or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable ("R").

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [✓] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

	YES	NO	N/A
15.0 Field Duplicates			
15.1 Were any field duplicates submitted for VOA analysis?	[___]	✓	___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

Sample 6653H and sample 6653E were inferred to be field duplicates. 6653H was analyzed; however 6653E was analyzed as a MS and a MSD. Sample 6653E was not analyzed unspiked.

	YES	NO	N/A

PART B: BNA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

	YES	NO	N/A
1.1 Are the Traffic Report Forms present for all samples?	[✓]	___	___

ACTION: If no, contact lab for replacement of missing or illegible copies.

	YES	NO	N/A
1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data?	___	[✓]	___

ACTION: Use professional judgement to evaluate the effect on the quality of the data.

ACTION: If any sample analyzed as a soil contains more than 50% water, all data should be rejected.

2.0 Holding Times

	YES	NO	N/A
2.1 Have any BNA holding times, determined from date of collection to date of extraction, been exceeded?	___	[✓]	___

Samples for BNA analysis, ~~both~~ soils ~~and waters~~, must be extracted within seven days of the date of *receipt*. ~~collection~~. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations

Sample	Sample Matrix	Date Sampled	(See Traffic Report) Date Lab Received	Date Extracted	Date Analyzed
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___

ACTION: If holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded.

	YES	NO	N/A
If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. The reviewer may determine that non-detect data are unusable ("R").			
3.0 Surrogate Recovery (Form II)			
3.1 Are the BNA Surrogate Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water	[ ]		✓
b. Med Water	[ ]		✓
c. Low Soil	[✓]		
d. Med Soil	[ ]		✓
3.2 Are all the BNA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:			
a. Low Water	[ ]		✓
b. Med Water	[ ]		✓
c. Low Soil	[✓]		
d. Med Soil	[ ]		✓
ACTION: Call lab for explanation / resubmittals. If missing deliverables are unavailable, document effect on data under "Conclusions" section of reviewer narrative.			
3.3 Were outliers marked correctly with an asterisk? *None of the recoveries were out outliers.*	[ ]		✓
ACTION: Circle all outliers in red.			
3.4 Were two or more base-neutral OR acid surrogate recoveries out of specification for any sample or method blank? *However, several surrogates were diluted out.*		[✓]	
If yes, were samples reanalyzed?	[ ]		✓
Were method blanks reanalyzed?	[ ]		✓
ACTION: If all BNA surrogate recoveries are > 10% but two within the base-neutral or acid fraction do not meet SOW specifications, for the affected fraction only (i.e. base-neutral OR acid compounds): 1. Flag all positive results as estimated ("J"). 2. Flag all non-detects as estimated detection limits ("UJ").			

	YES	NO	N/A
If any base-neutral or acid surrogate has a recovery of <10% : 1. Flag all positive results for that fraction (i.e. all acid or base-neutral compounds) "J". 2. Flag all non-detects for that fraction "R". Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and re-analyses. Check the internal standard areas.			
3.5 Are there any transcription/calculation errors between raw data and Form II?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike Duplicate/Recovery Form (Form III) present?	[✓]	___	
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water	[___]	___	✓
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[___]	___	✓
ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.			

4.3 How many BNA spike recoveries are outside QC limits?

Water	Soils
N/A out of 22	2 out of 22

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
N/A out of 11	1 out of 11

Due to low recovery of pentachlorophenol in the MSD.

ACTION: If MS and MSD both have less than 10% recovery for an analyte, negative results for that analyte should be rejected, and positive results should be flagged "J". The above applies only to the sample used for MS/MSD analysis. Use professional judgement in

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	YES	NO	N/A
5.0 Blanks (Form IV)			
5.1 Is the Method Blank Summary (Form IV) present?	[✓]	___	___
5.2 Frequency of Analysis: for the analysis of BNA TCL compounds, has a reagent/method blank been analyzed for each set of samples or every 20 samples of similar matrix (low water, med water, low soil, medium soil), whichever is more frequent?	[✓]	___	___
5.3 Chromatography: review the blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.			
Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	[✓]	___	___

ACTION: Use professional judgement to determine the effect on the data.

6.0 Contamination

NOTE: "Water blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for BNAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor. See page 19A of SOG-2	✓	[___]	
6.2 Do any field/rinse blanks have positive BNA results (TCL and/or TIC)?	___	[___]	✓

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: Only field/rinse blanks taken the same day as the samples are used to qualify data. Blanks may not be qualified because of contamination in another blank. Blanks may be qualified for surrogate, spectral, tuning or calibration QC problems.

Paul C. Rizzo Associates, Inc.
CONSULTANTS

By [illegible] Date [illegible] Subject _____ Sheet No. 19A of 26
Chkd. By ____ Date _____ SDG-2 BNA SECTION 6.1 Proj. No. [illegible]-595

Method Blank LLI # 1473301	TIC	170	ppb	2-Pentene or isomer
	"	170	"	unknown
	"	200	"	unknown aliphatic hydrocarbon
	"	3000	"	unknown
	"	200	"	unknown
	"	230	"	unknown
	"	170	"	unknown
	"	500	"	unknown
	"	330	"	unknown
	"	170	"	unknown
	"	300	"	unknown
	"	170	"	unknown
	"	200	"	unknown
	"	400	"	unknown

Blank contaminates in Associated Samples: B6 S3A _____

B8S3A	TIC	2200	ppb	unknown
	"	1600	"	unknown
	"	840	"	unknown

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Pages 301110 through 301209 of this administrative record have been left blank for pagination purposes.

YES NO N/A

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

	Sample conc > CRQL but < 10x blank	Sample conc < CRQL & is < 10x blank value	Sample conc > CRQL value & >10x blank value
Common Phthalate Esters	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5 blank value
Other Contaminants	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] ___ ✓

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Tuning and Mass Calibration (Form V)

7.1 Are the GC/MS Tuning and Mass Calibration Forms (Form V) present for Decafluorotriphenylphosphine (DFTPP)? [✓] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the DFTPP provided for each twelve hour shift? [✓] ___ ___

7.3 Has a tuning performance compound been analyzed for every twelve hours of sample analysis per instrument? [✓] ___ ___

ACTION: If any tuning data are missing, take action specified in 3.2 above.

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS tuning data are available.

	YES	NO	N/A

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundance criteria been met for each instrument used? [✓] __ __

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If tuning calibration is in error, flag all associated sample data as unusable ("R"). However, if expanded ion criteria are met (See 1988 Functional Guidelines), the data reviewer may accept data with appropriate qualifiers.

7.5 Are there any transcription / calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.) __ [✓] __

7.6 Have the appropriate number of significant figures (two) been reported? (Check at least two values, but if errors are found check more values.) ✓ [__] __

ACTION: If large errors exist, call lab for explanation / resubmittal, make necessary corrections and note errors under "Conclusions".

7.7 Are the spectra of the mass calibration compound acceptable? [✓] __ __

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes

8.1 Are the Organic Analysis Data Sheets (Form I BNA) present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate [✓] __ __

b. Matrix spikes and matrix spike duplicates [✓] __

c. Blanks [✓]

	YES	NO	N/A
8.2 Are the BNA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Matrix spikes and matrix spike duplicates (Mass spectra not required)	[✓]	___	___
c. Blanks	[✓]	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			
8.3 Are the response factors shown in the Quant Report? In the Quant Report for initial calibration and continuing calibration.	[✓]	___	___
8.4 Is chromatographic performance acceptable with respect to:			
Baseline stability	[✓]	___	___
Resolution	[✓]	___	___
Peak shape	[✓]	___	___
Full-scale graph (attenuation)	[✓]	___	___
Other: _____	[___]	___	___
ACTION: Use professional judgement to determine the acceptability of the data.			
8.5 Are the lab-generated standard mass spectra of the identified BNA compounds present for each sample?	[✓]	___	___
ACTION: If any mass spectra are missing, take action specified in 3.2 above. If Lab does not generate their own standard spectra, make note in "Contract Problems/Non-compliance".			
8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]	___	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
8.8 Do sample and standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected, flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (at the calculated detection limit).			

	YES	NO	N/A
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "J" qualifier?	[✓]	___	___
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Blanks	[✓]	___	___
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "J" qualifier if missing and "N" qualifier to all identified TIC compounds on Form I, Part B.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds (example: 1,2-dimethylbenzene is xylene--a VOA TCL--and should not be reported as a TIC)?	___	[✓]	___
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate.			
10.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription / calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found?	___	[✓]	___
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	✓	[___]	___

	YES	NO	N/A
ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant. Reports) present for initial and continuing calibration?	[✓]		
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete for the BNA fraction?	[✓]		
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Are response factors stable for BNAs over the concentration range of the calibration (RSD <30%)?	[✓]		
ACTION: Circle all outliers in red.			
ACTION: When RSD >30%, non-detects may be qualified using professional judgement. Flag all positive results "J". When RSD >90%, flag all non-detects as unusable ("R"). (Region II policy.)			
12.3 Do any compounds have a RRF < 0.05?		[✓]	
ACTION: Circle all outliers in red.			
ACTION: If any BNA compound has an average RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").			

	YES	NO	N/A
12.4 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least two values but if errors are found, check more.)	___	[✓]	___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the BNA fraction?	[✓]	___	___
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	[✓]	___	___

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

_____

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, call lab for explanation / resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").

13.3 Do any continuing calibration standard compounds have a RRF < 0.05?	___	[✓]	___

ACTION: Circle all outliers in red.

ACTION: If any BNA compound has a RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").

13.4 Do any compounds have a % difference between initial and continuing calibration RRF > 25%?	___	[✓]	___

ACTION: Circle all outliers in red and qualify associated sample data as outlined in the table below:

YES NO N/A

% DIFFERENCE

25-50	50-90	>90
'J' positive results, no action for non detects	'J' positive results, 'UJ' non detects	'J' positive results, "R" non detects

13.5 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

14.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits for each continuing calibration? [✓] ___ ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary.)

ACTION: If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results and non-detects (U values) quantitated with this internal standard. If extremely low area counts are reported, or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable ("R").

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [✓] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

	YES	NO	N/A
15.0 Field Duplicates			
15.1 Were any field duplicates submitted for BNA analysis?	[___]	✓	___
ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.	Sample B653A and Sample B653B were intended to be field duplicates. B653A was analyzed. However B653B was analyzed. a MS and a MSD. Sample B653B was not analyzed unspiked.		
ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.			

	YES	NO	N/A

PART C: PESTICIDE/PCB ANALYSES

0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [✓] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [✓] ___

ACTION: Use professional judgement to evaluate the effect on the quality of the data.

ACTION: If any sample analyzed as a soil contains more than 50% water, all data should be rejected.

0 Holding Times

2.1 Have any PEST/PCB holding times, determined from date of collection to date of extraction, been exceeded? ___ [✓] ___

Note: Primary quantitation data and initial confirmation data was obtain for Sample B451 within the analytical hold time.

Samples for PEST/PCB analysis, ~~both~~ soils ~~and waters~~, must be extracted within* ~~seven days of the date of collection~~. Extracts must be analyzed within 40 days of the date of extraction.

* ten days of laboratory receipt.

0 Surrogate Recovery (Form II)

3.1 Are the PEST/PCB Surrogate Recovery Summaries (Form II) present for each of the following matrices:

a. Low Water	[___]	___	✓
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[___]	___	✓

3.2 Are all the PEST/PCB samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:

a. Low Water	[___]	___	✓
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[___]	___	✓

	YES	NO	N/A
ACTION: Call lab for explanation / resubmittals. If missing deliverables are unavailable, document effect on data under "Conclusions" section of reviewer narrative.			
3.3 Were outliers marked correctly with an asterisk?	[✓]	___	___
ACTION: Circle all outliers in red.			
3.4 Was surrogate (DBC) recovery outside of the contract specification for any sample or blank? sample 8253A %R = 156%	___	[✓]	___
ACTION: No qualification is done if surrogates are diluted beyond detection. If recovery is below contract limit (but above zero), flag all results for that sample "J". If recovery is zero, flag positive results "J" and non-detects "R". If recovery for the blank is zero, flag non-detects for all associated samples "R". If recovery is above contract limit, flag all positive results for that sample "J", unless in the reviewers professional judgement the high recovery is due to co-eluting interference (check the associated blank - if recovery is high there also, flag the sample data).			
3.5 Are there any transcription/calculation errors between raw data and Form II?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			

4.0 Matrix Spikes (Form III)

	YES	NO	N/A
4.1 Is the Matrix Spike Duplicate/Recovery Form (Form III) present?	[✓]	___	___
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water	[___]	___	✓
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[___]	___	✓
ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.			

4.3 How many PEST/PCB spike recoveries are outside QC limits?

Water	Soils
N/A out of 12	12 out of 12

Spike recoveries are not accurate due to interference from compounds present in the background and dilution factor

	YES	NO	N/A
4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?			

Water	Soils
N/A out of 6	0 out of 6

ACTION: If MS and MSD both have less than zero recovery for an analyte, negative results for that analyte should be rejected, and positive results should be flagged "J". The above applies only to the sample used for MS/MSD analysis. Use professional judgement in applying this criterion to other samples.

0 Blanks (Form IV)

	YES	NO	N/A
5.1 Is the Method Blank Summary (Form IV) present?	[✓]		
5.2 Frequency of Analysis: for the analysis of Pesticide TCL compounds, has a reagent/method blank been analyzed for each set of samples or every 20 samples of similar matrix (low water, med water, low soil, medium soil), whichever is more frequent?	[✓]		
5.3 Chromatography: review the blank raw data - chromatograms, quant reports or data system printouts.			
Is the chromatographic performance (baseline stability) for each instrument acceptable for PEST/PCBs?	[✓]		

ACTION: Use professional judgement to determine the effect on the data.

0 Contamination

NOTE: "Water blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

	YES	NO	N/A
6.1 Do any method/instrument/reagent blanks have positive results for PEST/PCBs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor.		[✓]	
6.2 Do any field/rinse blanks have positive PEST/PCB results?		[ ]	✓

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

YES NO N/A

NOTE: Only field/rinse blanks taken the same day as the samples are used to qualify data. Blanks may not be qualified because of contamination in another blank. Blanks may be qualified for surrogate, spectral, tuning or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL & > 5x blank value
Flag sample result with a "U"; cross out "B" flag	Reject sample result and report CRQL; cross out "B" flag	No qualification is needed

6.3 Are there field/rinse/equipment blanks associated with every sample? [___] ___ ✓

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 Calibration and QC Performance

7.1 Are the following Gas Chromatograms and Data System Printouts for both Primary and Confirmation (confirmation standards not required if there are no positive results above CRQL) column present:

a. Evaluation Standard Mix A [✓] ___ ___

b. Evaluation Standard Mix B [✓] ___ ___

c. Evaluation Standard Mix C [✓] ___ ___

d. Individual Standard Mix A [✓] ___ ___

e. Individual Standard Mix B [✓] ___ ___

f. Multi-component Pesticides Toxaphene & Chlordane [✓] ___ ___

g. Aroclors 1016/1260 [✓] ___ ___

h. Aroclors 1221, 1232, 1242, 1248, and 1254 [✓] ___ ___

ACTION: If no, take action specified in 3.2 above

	YES	NO	N/A
7.2 Is Form VIII Pest-1 present and complete for each GC column (primary and confirmation) and each 72 hour sequence of analyses?	[✓]	___	___
ACTION: If no, take action specified in 3.2 above.			
7.3 Are there any transcription/calculation errors between raw data and Form VIII?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
7.4 Has the total breakdown on quantitation or confirmation column exceeded 20% for DDT?	___	[✓]	___
- for Endrin?	___	[✓]	___
or if Endrin aldehyde and 4,4'-DDD co-elute and there is a peak at their retention time, has the combined DDT and Endrin breakdown exceeded 20%?	___	[✓]	___

ACTION:

a. If DDT breakdown is greater than 20% on quantitation column beginning with the samples following the last in control standard:

   1. Flag all positive DDT results "J".
   2. If DDT was not detected but DDD and/or DDE are positive, flag the DDT non-detect "R".
   3. Flag positive DDD and DDE results "JN".
   4. If DDT breakdown is > 20% on confirmation column and DDT is identified on quantitation column but not on confirmation column, use professional judgement to determine whether DDT should be reported on Form I (if reported, flag result "N").

b. If Endrin breakdown is > 20% on quantitation column, beginning with the samples following the last in control standard:

   1. Flag all positive Endrin results "J".
   2. If Endrin was not detected, but Endrin Aldehyde and/or Endrin Ketone are positive, flag the Endrin non-detect "R".
   3. Flag Endrin Ketone positive results "JN".
   4. If Endrin breakdown is > 20% on confirmation column and Endrin is identified on quantitation column but not on confirmation column, use professional judgement to determine whether Endrin should be reported on Form I (if reported, flag result "N").

c. If the combined breakdown is used (it can only be used if the conditions in 7.4 above are met) and is > 20% on quantitation column beginning with the last in control standard, take the actions specified in 7.4 a and b above. If the combined breakdown is >20% on confirmation column and Endrin or DDT is identified on quantitation column but not on confirmation column, use professional judgement to determine whether Endrin or DDT should be reported on Form I (if reported, flag result "N").

	YES	NO	N/A
7.5 Is the linearity check RSD of all four calibration factors <10% for the quantitation column?	[✓]		
ACTION: If no, flag positive hits for all pesticide and PCB analytes "J" for all associated samples. Do not flag toxaphene or DDT if they are quantified from a 3-point calibration curve.			
7.6 Is the % difference between the EVAL A and each analysis (quantitation and confirmation) DBC retention time within QC limits (2% for packed column, 0.3% for capillary [I.D. < 0.32 mm], 1% for megabore [0.32 < I.D. < 2 mm]) ?	[✓]		
ACTION: DBC retention time cannot be evaluated if DBC is not detected. If it is present and has a retention time out of QC limits, then use professional judgement to determine the reliability of the analysis and flag results "R", if appropriate.			
7.7 Was the proper analytical sequence followed for each 72 hour period of analyses (page PEST D-36 in 8/87 SOW).	[✓]		
ACTION: If no, use professional judgement to determine the severity of the effect on the data and accept or reject it accordingly. Generally, the effect is negligible unless the sequence was grossly altered or the calibration was also out of limits.			
8.0 Pesticide/PCB Standards Summary			
8.1 Is Form IX present and complete for each GC column and 72 hr sequence of analyses?	[✓]		
ACTION: If no, take action specified in 3.2 above.			
8.2 Are there any transcription/calculation errors between raw data and Form IX?		[✓]	
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
8.3 Is DDT retention time for packed columns > 12 min (except OV-1 and OV-101 columns)?	[✓]		
ACTION: If no, check that there is adequate resolution between individual components. If not, flag results for compounds that interfere with each other (co-elute) "R".			
8.4 Do all standard retention times fall within the windows established for the first IND A and IND B analyses?	[✓]		

	YES	NO	N/A
ACTION: Beginning with the samples following the last in control standard, check to see if the chromatograms contain peaks within an expanded window surrounding the expected retention times. If no peaks are found and, DBC is visible non-detects are valid. If peaks are present and cannot be identified through "pattern recognition" or a consistent shift in standard retention times, flag all affected compound results "R".			
8.5 Are the continuing calibration standard calibration factors within 15% (for quantitation column) or 20% (for confirmation column) of the initial (at beginning of 72 hr sequence) calibration factors?	[✓]	—	—
ACTION: If no, flag all associated positive results "J". Use professional judgement to determine whether or not to flag non-detects.			
9.0 Pesticide/PCB Identification			
9.1 Is Form X complete for every sample in which a pesticide or PCB was detected?	[✓]	—	—
ACTION: If no, take action specified in 3.2 above.			
9.2 Are there any transcription errors between raw data and Form X?	—	[✓]	—
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
9.3 Are retention times of sample compounds within the calculated retention time windows for both quantitation and confirmation analyses?	[✓]	—	—
Was GC/MS confirmation provided when required (when compound concentration is > 10 ug/ml in final extract)?	[✓]	—	—
ACTION: Reject ("R") all positive results (meeting quantitation column criteria, but missing confirmation by a second column or GC/MS (if appropriate). Also, reject ("R") all positive results not meeting retention time window criteria unless associated standard compounds are similarly biased (i.e. base on RRT to DBC).			
9.4 Check chromatograms for false negatives, especially for the multiple peak components toxaphene and PCB's. Were there any false negatives?	—	[✓]	—
ACTION: If appropriate PCB standards were not analyzed, or if the lab performed no confirmation analysis, flag the appropriate data with an "R".			

	YES	NO	N/A
10.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription / calculation errors in Form I results? Check at least two positive values. Were any errors found?	___	[✓]	___
NOTE: Simple peak pesticide results can be checked for rough agreement between quantitative results obtained on the two GC columns. The reviewer should use professional judgement to decide whether a much larger concentration obtained on one column versus the other indicates the presence of an interfering compound. If an interfering compound is indicated, the lower of the two values should be reported and qualified as presumptively present at an estimated quantity ("JN"). This necessitates a determination of an estimated concentration on the confirmation column. The narrative should indicate that the presence of interferences has obscured the attempt at a second column confirmation.			
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture? See page 35A of SOG-2	✓	[___]	___
ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.			
11.0 Chromatogram Quality			
11.1 Were baselines stable?	[✓]	___	___
11.2 Were any electropositive displacement (negative peaks) or unusual peaks seen?	___	[✓]	___
11.3 Were early eluting peaks (for early eluting analytes) resolved to baseline?	[✓]	___	___
ACTION: For 11.1 and 11.2, comment only. For 11.3, reject ("R") those analytes that are not sufficiently resolved.			

Paul C. Rizzo Associates, Inc.
CONSULTANTS

By [illegible] Date 5-2-90 Subject _____ Sheet No. 35A of 36
Chkd. By ____ Date _____ CLP-2 PEST/PCBs SECTION 10.2 Proj. No. 22-595

Sample B255 was diluted and reanalyzed. The CRDL of sample B255 was increased due to dilution factors.

Sample B255 was diluted and reanalyzed. The quantitation limits were determined from a replotted chromatogram which represents an increase in attenuation of five. Hence, the quantitation limits were raised by a factor of five.

For samples B253A and B255, the CRDL was increased for the constituent PCB-1221. Due to an interferent present on the chromatogram, the quantitation limit was determined for each sample from a worst case calculation based on the height of the interferent.

Sample B653A was diluted and reanalyzed. The CRDL of sample B653A was increased due to dilution factors. However, the actual quantitation limit for the constituent PCB-1221 was determined as a worst case based on the height of an intertering peak.

Sample B656A was diluted and reanalyzed. The CRDL of sample B656A was increased due to dilution factors.

	YES	NO	N/A
12.0 Field Duplicates			
12.1 Were any field duplicates submitted for PEST/PCB analysis?	[___]	✓	___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

Sample B653A and Sample B653B were intended to be field duplicates. B653A was analyzed; However, B653B was analyzed as a MS or a MSD. Sample B653B was not analyzed unspiked.

SDG-2

SOP NO. HW-5

CLP DIOXIN (2,3,7,8 TCDD) DATA REVIEW

REVISION 4

PREPARED BY: Stelios Gerazounis DATE: 7/10/89
Stelios Gerazounis
Monitoring Management Branch

CONCURRED BY: L Bevilacqua DATE: 7/10/89
Louis Bevilacqua
Monitoring Management Branch

APPROVED BY: Gerard F. McKenna DATE: 7/10/89
Gerard F. McKenna, Chief
Monitoring Management Branch

311228

1.0 Introduction

1.1 This procedure is applicable to dioxin data from contractor laboratories working under the Hazardous Waste Site Contract Labortory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Solicitation, Offer and Award No. IFB WA-86K357.

2.0 Responsibilities

2.1 The reviewers will complete and/or file the following:

2.1.1 Data Review Log - Each reviewer will fill in the following information in the log book for each data package:

a. date of start of case review
b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples

2.1.2 Rejection Summary Form - Fill out as necessary using a ratio format. The numerator would indicate the number of dioxin data rejected; the denominator would indicate the number of dioxin fractions containing rejected compounds. File in the appropriate folder.

2.1.3 Telephone Log - All phone conversations must be initiated by the data review manager or the deputy project officer. If a phone call has been made, fill out stating the bare facts of the conversation. Give two copies to secretary, one to go to the laboratory and one to go to SMO. File the third copy in the appropriate folder.

2.1.5 Data Assessment Checklist - Attachment 1 of this SOP must be completed along with the Data Assessment Narrative.

2.1.6 Forwarded Paperwork - The following are to be forwarded to the Regional Sample Central Center (RSCC) upon completion of the review:

a. data package
b. completed data assessment checklist (original)
c. Contract Compliance Screening (CCS)
d. CLP Re-analysis Request/Approval Record (original and 2 copies)

Forward four (4) copies of the completed Data Assessment Narrative along with four (4) copies of the Organic Data Assessment Form: one each for the appropriate Regional DPO, the Sample Management Office (SMO), and the last two addressees of the Data Reviewers Mailing List.

2.1.7 Filed Paperwork - The following are to be filed within MMB files:

a. SMB Review (Copy)
b. Narrative part (Para. 7.0) of data assessment checklist (copy)
c. Telephone Record Log (yellow copy)
d. Rejection Summary Form (original)
e. CLP Re-analysis Request/Approval Record (copy)

3.0 Data Completeness

Incomplete data packages must be brought to the attention of the data review manager or the deputy project officer (DPO) whenever the lack of any information would cause the rejection of data.

4.0 Rejection of Data

All values determined to be unacceptable on the dioxin analysis data sheets should be lined over with a red pencil.

5.0 Acceptance Criteria

In order that reviews be consistent among reviewers, acceptance criteria as stated in Attachment 1 should be used.

6.0 Reviewer Corrections

All corrections to reviewed data made by reviewers must be indicated in red pencil.

7.0 Request for Reanalysis

Data reviewers must note all items of contract non-compliance within Data Assessment Narrative (see page 15 of this SOP). If holding times and sample storage times have not been exceeded, the Data Review Manager or DPO may request reanalysis, if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

NOTE TO THE REVIEWER: The attached SOP is for a "Total" Review of the 2,3,7,8-TCDD data. Its purpose is to facilitate the validation of the data reported by the contracting laboratory and also to assure that the data is being reviewed in a uniform manner.

Please read each item carefully and check YES if there is compliance and NO if there is no compliance.

The reviewer must red-line unacceptable data on Sample Data Sheets (red-lined does not imply the compound is not present).

Red-lined or rejected data means that the data is unusable and that the sample may need to be reanalyzed by the same laboratory. If the laboratory already has analyzed the sample twice a reanalysis must be done by another laboratory.

Please notify immediately the Deputy Project Officer (DPO) or the Data Review Manager concerning problems and inadequacies with regard to laboratory sample data.

1.0 Deliverables

1.1 All deliverables must be clearly labeled with the SMO case number and the associated sample/traffic number. Review the data package to assure that all items listed below are provided. Missing, illegible or incorrectly labeled items must be checked off. The contractor should immediately be contacted and requested to submit the missing or incorrect items.

1.2 Are the following forms present?	YES	NO
a. TCDD Data Report Form (Form B-1)	✓	
b. Initial Calibration Summary (Form B-2)	✓	
c. Continuing Calibration Summary (Form B-3)	✓	
d. A Chronological List of all Sample Analyses	✓	
GC/MS Displays		
a. SICP's for the Initial Triplicate Analysis of the Four Concentration Calibration Solution	✓	
b. SICP for Each Performance Check Solution	✓	
c. SICP for Each Shift Standard	✓	

	YES	NO
GC/MS Displays		
d. Plotted Concentration Calibration Curve	✓	
e. SICP's for Each Sample Ran	✓	

WERE THE FOLLOWING CRITERIA MET?

2.0 Instrument Performance

2.1 Performance Check Solution Requirements - The performance check solution must be analyzed at the beginning and at the end of each 12 hour shift.	✓	
2.1.1 Chromatographic Resolution		
- The valley between 2,3,7,8-TCDD and the peak of all other TCDD isomers must be $\leq$ 25%.	✓	
- Recalculate the valley (%) between 2,3,7,8-TCDD and the peak of the least resolved adjacent isomer using the following equation: $\% \text{ Valley} = \frac{x}{y} \times 100$ Where: y = peak height of 2,3,7,8-TCDD; x = measured height from valley of the least resolved adjacent isomer to the baseline.		
2.1.2 Ion Critera		
- The ratio of integrated ion current for m/z 320 to m/z 322 for 2,3,7,8-TCDD must be $\geq$.67 and $\leq$.90.	✓	
- The ratio of the integrated ion current for m/z 332 to m/z 334 for $^{13}C_{12}$2,3,7,8-TCDD must be $\geq$.67 and $\leq$.90.	✓	

ACTION: 1) If the 25% valley requirement is not met, red-line all data collected within the shift associated with the performance standard. No action is taken if any of the other requirements are not met; and 2) if the performance check solution was not analyzed in the required frequency, use professional judgment to determine the effect on the quality of the data.

	YES	NO

3.0 Calibration

3.1 Initial Calibration - Initially, 2,3,7,8-TCDD Standards of 0.2, 1.0, 5.0, and 20.0 ng/ul solutions will be injected in triplicate. Each solution also contains 1ng/ul $^{13}C_{12}$2,3,7,8-TCDD (internal standard) and 0.6ng/ul $^{13}C_{12}$1,2,3,4-TCDD (recovery standard). Solutions #1 and #2 contain 0.028 ng/ul of $^{37}Cl_4$2,3,7,8-TCDD. The concentration of these solutions may vary only slightly from time to time. The calibration standards must be analyzed using the same GC conditions that were used to analyze the performance check solution and must meet the following criteria.

- Scanning time must be $\leq$ 1.5 seconds. on ion profile — ✓ ___
- The ratio of the integrated ion current for m/z 320 to 322 for 2,3,7,8-TCDD must be $\geq$.67 and ~~$\geq$.90~~ $\leq$ 0.90 — ✓ ___
- The ratio of integrated ion current for m/z 332 to m/z 334 for $^{13}C_{12}$2,3,7,8-TCDD and $^{13}C_{12}$1,2,3,4-TCDD must be $\geq$0.67 and $\leq$0.90. — ✓ ___
- The signal to noise ratio for ions 332 and 334 must be $\geq$ 10. This ratio is no longer a required deliverable. — ___ ___ N/A
- The signal to noise ratio for ions 259, 320, 322, and 328 must be $\geq$ 2.5. — ✓ ___
- The ions 259, 320, and 322 must maximize simultaneously and within 3 seconds of ions 332, 334 of $^{13}C_{12}$-2,3,7,8-TCDD. — ✓ ___

For each concentration level, recalculate the response factor for unlabeled 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD:

$$RRF_n = \frac{Ax \times Qis}{Ais \times Qx}$$

Where: Ax = the sum of integrated ion abundance of m/z 320 and m/z 322 for unlabeled 2,3,7,8-TCDD.

Ais = the sum of integrated abundance of m/z 332 and m/z 334 for $^{13}C_{12}$-2,3,7,8-TCDD

Qx = quantity of unlabeled 2,3,7,8-TCDD

Qis = quantity of $^{13}C_{12}$-2,3,7,8-TCDD

ReCalculate the response factor for $^{13}C_{12}$-2,3,7,8-TCDD relative to $^{13}C_{12}$-1,2,3,4,-TCDD:

$$RRF_i = \frac{Ais \times Qrs}{Ars \times Qis}$$

Where Ars = the sum of integrated abundance of M/Z 332 and M/Z 334 for $^{13}C_{12}$-1,2,3,4 - TCDD

Qrs = the quantity of $^{13}C_{12}$-1,2,3,4 - TCDD.

	YES	NO
- The variation of the RRF for unlabeled 2,3,7,8-TCDD at each concentration level must not exceed 10% RSD	✓	
- The RSD of the 4 - mean RRFs for unlabeled 2,3,7,8-TCDD must not exceed 10% RSD.	✓	
- The RSD of the 4 - mean RRFs for $^{13}C_{12}$2,3,7,8-TCDD must not exceed 10% RSD.	✓	
- The mean of the 4 - mean RRFs for each compound established in the initial calibration must be used for concentration calculations.	✓	

ACTION: 1) If the required initial calibration data were not supplied, notify the laboratory. If they are unavailable, red-line (reject) all data; and 2) if any of the calibration curve standards fail to meet any of the above acceptance criteria red-line all data associated with the calibration curve.

3.2 Calibration Check Standard - At the beginning of every 12-hour shift, a calibration standard of a concentration of 1ppb must be analyzed using the same GC conditions that were used to analyze the performance check standard. Were the following operating MS conditions met?

- Scanning time must be $\leq$ 1.5 seconds. on ion profile	✓	
- The ratio of the integrated ion current for m/z 320 to 322 for 2,3,7,8-TCDD must be $\geq$.67 and $\leq$.90.	✓	
- The ratio of the integrated ion current for m/z 332 to 334 for $^{13}Cl_{12}$-2,3,7,8-TCDD must be $\geq$.67 and $\leq$.90.	✓	
- The ions 259, 320, 322 for 2,3,7,8-TCDD must maximize simultaneously and within 3 seconds of $^{13}C_{12}$-2,3,7,8-TCDD.	✓	

	YES	NO
- The signal to noise ratios for ions 259, 320, 322, and 328 must be ≥ 2.5.	✓	
- The signal to noise ratios for ions 332 and 334 must be ≥ 10. (This ratio is no longer reportable).		N/A
Check calculations for the response factors for unlabeled 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD and for $^{13}C_{12}$-2,3,7,8-TCDD relative to $^{13}C_{12}$-1,2,3,4-TCDD.		
- Are there any errors?		✓
- The response factor of 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD must be within ± 10% of the mean value for the initial 4-point calibration curve.	✓	
- The response factor of $^{13}C_{12}$-2,3,7,8-TCDD relative to $^{13}C_{12}$-1,2,3,4-TCDD must be within ± 10% mean value of the initial 4 point calibration curve.	✓	

ACTION: 1) If the required number of analyses of calibration check solutions were not submitted notify the contracting laboratory. If they are unavailable, reject all data without an associated calibration check standard; and 2) if the calibration check standard fails to meet any of the acceptance criteria, reject all the data associated with this standard.

4.0 Sample Data

4.1 Qualitative Requirements

4.1.1 The RT of 2,3,7,8-TCDD must be within 3 seconds of the RT of the $^{13}C_{12}$-2,3,7,8-TCDD.	Retention Time not reported.	
4.1.2 The integrated ion currents for m/z 259, 320 and 322 must maximize simultaneously.	✓	
4.1.3 The integrated ion currents for m/z 259, 320, 322, and 328 must be at least 2.5 times background noise and must not have saturated the detector.	✓	
4.1.4 The internal standard ions m/z 332, 334 must be at least 10 times of noise level.	✓	
4.1.5 The ratio of the integrated ion currents m/z 320 to m/z 322 and m/z 332 to m/z 334 must be ≥.67 and ≤.90.	ok	

Sample #1473294 showed an interference in the 320/322 ions. Since the MPL was below 1 ppb, the results are reported. The same interference was seen in the matrix spike.

	YES	NO
4.1.6 When 2,3,7,8-TCDD is not present, the ratio of internal standard ion m/z 332 to m/z 334 must still be $\geq$.67 and $\leq$.90.	✓	
4.1.7 If the 2,3,7,8-TCDD was not qualitatively identified in the sample, the MPC (detection limits) must not exceed 1 ppb.	✓	

ACTION: 1) if the 2,3,7,8-TCDD qualitative criteria were not met, 2,3,7,8-TCDD was not qualitatively identified, red-line positive value; 2) if the detection limit exceeds 1 ppb, red-line ND (not detected) dioxin value; 3) if the signal to noise criteria for ions m/z 328, 332, 334 were not met, red-line positive or ND dioxin values; and 4) if the ratio of ion m/z 332 to m/z 334 is outside the acceptance criteria, red-line positive or ND dioxin data.

4.2 Quantitative Requirements

4.2.1 Recalculate the concentration of 2,3,4,7-TCDD which was found in the sample using the equation:

$$Cx = \frac{Ax \times Qis}{Ais \times RRF_n \times W}$$

Where: Cx = the concentration of 2,3,7,8-TCDD in micrograms/Kg

Ax = the sum of integrated ion abundance for M/Z 320 and M/Z 322 for unlabeled 2,3,7,8-TCDD

Ais = the sum of integrated ion abundances for M/Z 332 and M/Z 334 which are the characteristic ions for the internal stanard $^{13}C_{12}$-2,3,7,8-TCDD

Qis = quantity of the internal standard (in nanograms) added to the sample before extraction

RRF_n = calculated mean response factor for unlabeled 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD

W = weight (in grams) of wet soil or sediment sample

YES NO

4.2.2 Recalculate the concentration of the internal st ndard $^{13}C_{12}$-2,3,7,8-TCDD using the formula:

$$Cis = \frac{Ais \times Qrs}{Ars \times RRF_i \times W}$$

Where: Cis = the concentration of the $^{13}C_{12}$-2,3,7,8-TCDD in ug/kg or ug/L

Ais = the sum of integrated ion abundance for M/Z 332 and 334 for $^{13}C_{12}$-2,3,7,8,-TCDD

Ars = sum of integrated ion abundances for M/Z 332 and 334 for $^{13}C_{12}$-1,2,3,4-TCDD

Qrs = quantity (in ng) of $^{13}C_{12}$-1,2,3,4-TCDD added to the sample before injection

RRF_i = calculated mean response factor for $^{13}C_{12}$-2,3,7,8 -TCDD relative to $^{13}C_{12}$-1,2,3,4-TCDD

W = weight (in grams) of wet soil or sediment sample or volume of water extracted (in mL)

4.2.3 The recovery of the internal standard must be within the 40 and 120 percent recovery window. #1473291 %R = 38
#1473294 %R = 36

ACTION: These are advisory limits. View outliers in conjunction with surrogate recoveries and other data such as internal standard peak areas and signal to noise ratios.

4.3 Recalculate Maximum Possible Concentration - When no unlabeled Dioxin is detected, the lab must calculate the estimated detection limits which is the concentrations required to produce a signal with an area or peak height 2.5 times the background signal area or peak height. To recalculate use the formula:

$$MPC = \frac{2.5 \times Ax2 \times Qis}{Ais2 \times RRF_n \times W}$$

Where: MPC = Estimated maximum possible concentration for unlabeled 2,3,7,8-TCDD in ug/kg or ug/L.

Ax2 = peak height or integrated ion abundance for M/Z 320 or 322

Ais2 = integrated ion abundance or peak height for M/Z 332 when M/Z 320 is used or M/Z 334 when M/Z 322 is used to determine Ax

Qis = same definition as in 4.2.1

RRF_n = calculated mean response factor for 2,3,7,8 -TCDD relative to $^{13}C_{12}$ - 2,3,7,8 - TCDD

W = same definition as above

	YES	NO
NOTE: The use of the area or peak height for M/Z 320 is preferred to M/Z 322 except when there is interference for M/Z 320 but not for M/Z 322		
ACTION: If variation in the calculations are found between the contractor's results and the regions recalculated results, the contractor must be informed and the discrepancy resolved. If the calculated amount of unlabeled Dioxin is outside the linear range obtained by the initial calculation (100 ppb for the 4 points) reject the data.		

4.4 Estimated Maximum Possible Concentration - For samples where interference is observed for both M/Z 320 and 322 or when an unacceptable ratio prevented identification of unlabeled 2,3,7,8-TCDD, use equation in Section 4.2.1 to estimate the maximum concentration that could be represented by detected signals.

5.0 Quality Control

5,1 Blanks - Rinsate Blank/Field Blank/Reagent Blank

	YES	NO
5.1.1 One rinsate blank must be analyzed for each batch of samples collected each day.	✓	
5.1.2 One field blank must be extracted and analyzed for each batch of 24 samples or less collected over a period of one or two days whichever comes first.		✓
5.1.3 One method blank must be extracted and analyzed for each batch of samples or each time a group of samples are extracted.	✓	
5.1.4 Acceptable field blanks and laboratory method blanks must not contain any signal at 320, 322, or 259 which is greater than 2% of the m/z 332 response within ±5 scans of the m/z 332 peak maximum. If the method blank that was extracted along with a batch of samples is contaminated, the associated positive samples must be rerun. (See Exhibit C, SOW).	✓	

YES NO

ACTION: 1) If the proper number of reagent blanks were not submitted, notify the contractor. If they are unavailable, reject all positive sample data; 2) if the field blank and/or rinsate blank are missing, notify the DPO and discuss the action to be taken; 3) if the contamination of Dioxin in the reagent blank or in the field blank is >.1 ppb all positive dioxin data must be rejected and the sample reanalyzed by the laboratory. 4) if the contamination of Dioxin in the blank is <.1 ppb no action is taken; and, 5) if the detection limit in the blank exceeds 1 ppb red-line positive data in all samples associated with the blank. 6) if the rinsate blank contains dioxins at > 0.5 ug/l notify the Deputy Project Officer and discuss the proper action to be taken.

5.1.5 Spiked Field Blank Requirements - Each batch of 24 samples or less collected over a period of one or two days, whichever comes first, must contain a sample of uncontaminated (known blank) soil/sediment and/or water for spiking. Ten grams must be fortified by the laboratory with unlabeled 2,3,7,8-TCDD at a concentration of 1 ug/kg for soil and 10 ng/l for water, 50 ng of $^{13}C_{12}$-2,3,7,8-TCDD and 1.4 ng of $^{37}Cl_4$-2,3,7,8-TCDD.

For the analysis or the reanalysis of the MS and MSD, both the MS and MSD exhibited no interference in the 303/302 [illegible]

5.1.5.1 Is the percent recovery of 2,3,7,8-TCDD within the 60 to 140 percent range? ✓ ___

ACTION: If the recovery is outside the 60 to 140 percent range, reject all data and request reanalysis of the sample.

5.1.6 Duplicate Analysis Sample

5.1.6.1 For every batch of samples, is there a sample designated as duplicate? ___ ✓

5.1.6.2 Results of laboratory duplicates must agree within 50% relative difference. ___ ___

ACTION: No action is taken if relative difference is >50%. The contracting laboratory must be notified, however, and the problem discussed.

	YES	NO
5.1.7 Performance Evaluation (PE) Sample - A performance evaluation sample which is provided by the region must be analyzed with every batch of 24 samples or less collected over a period of one or two days whichever comes first.		
5.1.7.1 Do the analytical results fall within the 99% EMS-LV acceptance criteria?	___	___ N/A

The performance evaluation windows established by EPA can be obtained from diskettes supplied by UNLV-QAL. The Dioxin PE windows are updated quarterly and issued by UNLV-QAL quarterly.

ACTION: 1) The PE raw data must be reviewed as if it were an environmental sample; 2) if 2,3,7,8-TCDD was not qualitatively identified reject all data; 3) if the reported value for PE sample exceeds the upper acceptance limits, reject all positive Dioxin values in the entire associated batch of samples, but not the ND values; and 4) if the reported value exceeds the lower acceptance limits, all positive and negative (ND) values are rejected.

6.0 Holding Times (For water sample only).

	YES	NO
6.1 Have any holding times have been exceeded for aqueous samples		
a. 10 days to extraction from verified time of sample receipt	___	___ N/A
b. 40 days after extraction for analysis	___	___ N/A

Action: If these holding times are exceeded, red-line the value on the data sheet (including detection limits) indicating rejection.

301241

CASE#_____ LAB_____ Site_____

7.0 Conclusions: (NOTE: Reviewers must red-line unacceptable data on sample data sheets; red-line data does not imply the compound is not present)

7.1 Data Assessment Narrative_____

7.2 Contract Problems/Non-compliance _____

Reviewer's Signature: _____ Date:_____

Verified By: _____ Date:_____

SDG-2

SOP NO. HW-2

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 7/87
REV. 12/87

(SOP Revision IX)

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Title: Evaluation of Inorganic Data for the Contract Laboratory Program

Date: Oct. 1989
Number: HW-2
Revision: 9

1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 7/87.

2.0 Responsibilities - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a total review:

2.1.1 Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1). The reviewer must answer every question on the checklist.

2.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2) The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 Contract Non-Compliance - SMO Report (Appendix A.3) This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Review Manager or Deputy Project Officer (DPO). Forward 5 copies: one each for internal files, appropriate Regional DPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to end of Data Assessment Narrative (Sec. A.2.2).

2.1.4 Data Summary Sheet - Summary of Inorganic Quality Control Data (Appendix A.5). Enter in ink on Data Summary Sheet required QC values from Forms I through IX. Circle all values that require data qualification "Action".

2.1.5 CLP Data Assessment Summary Forms

2.1.5.1 Appendix A.6
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.5.2 Appendix A.7
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.6 **Data Review Log:** It is recommended that each data reviewer should maintain a log of reviews completed to include:
a. date of start of case review
b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.7 **Telephone Record Log** - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.8 **Forwarded Paperwork**

2.1.8.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Data Summary Sheet (Appendix A.5) along with completed Data Assessment Narrative (Appendix A.2)
e. Record of Communication (copy)
f. CLP Reanalysis Request/Approval Record (original + 3 copies)
g. Appendix A.7 (original).

2.1.8.2 Forward 4 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.7) and Telephone Record Log , if any,: one each for appropriate Regional DPO, Sample Management Office (SMO), and last two addressees of Mailing List for Data Reviewers (Appendix A.4) (the Inorganic Data Assessment form does not go to the last two addressees).

2.1.9 **Filed Paperwork** - Upon completion of review, the following are to be filed within MMB files:

a. Four copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.7.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Data Assessment Summary Form (Appendix A.6).
e. CLP Reanalysis Request/Approval Record (copy)

3.0 **Data Completeness**
Indicate incomplete data package on the computer tracking sheet located in MMB office. Authorized contractor personnel may contact the laboratory after discovery of an incomplete data package. If a laboratory will not return phone calls or does not respond to requests, notify MMB coordinator of Region II for resolution.

4.0 **Rejection of Data** - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 **Acceptance Criteria** - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of July 1, 1988.

6.0 **SMO Contract Compliance Screening (CCS)** - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 **Request for Reanalysis** - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative.If holding times and sample storage times have not been exceeded, DPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 **Record of Communication** - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 **Rounding off numbers** - The data reviewer will follow the standard practice.

	YES	NO	N/A
A.1.1 **Contract Compliance Screening Report** (CCS) - Present? Case Narrative	[✓]		
ACTION: If no, contact RSCC.			
A.1.2 **Record of Communication (from RSCC)** - Present?	[ ]		✓
ACTION: If no, request from RSCC.			
A.1.3 **Trip Report** - Present? Chain-of-Custody	[✓]		
ACTION: If no, contact RSCC for trip report.			
A.1.4 **Sample Traffic Report** - Present or on file?	[✓]		
Legible?	[✓]		
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 **Cover Page** - Present?	[✓]		
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[✓]		
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on ~~Record of Communication~~ DATA PACKAGE?	[✓]		
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[✓]		
(b) Form I's?	[✓]		
ACTION: If no for any of the above, contact RSCC for clarification.			

	YES	NO	N/A
A.1.6 **Form I (Final Data)** - Are all Form I's present and complete?	[✓]		
ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[✓]		
Are soil sample results for each parameter corrected for percent solids?	[✓]		
Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[✓]		
Are computation/transcription errors less than 10% of reported values?	[✓]		
Are all "less than IDL" values properly coded with "U"?	[✓]		
Was a brief physical description of samples given on Form I's?	[✓]		
Were the result qualifiers used correctly with final data?	[✓]		
ACTION: If no for any of the above, prepare Telephone Record Log, and contract laboratory for corrected data.			
Were any samples diluted beyond requirements of contract?		[✓]	
If yes, were dilutions noted on Form I's?	[ ]		✓
ACTION: If no, note under Contract-Problem/Non-Compliance of the "Data Assessment Narrative".			

	YES	NO	N/A
A.1.7 **Holding Times** - (aqueous samples)			
(Examine sample traffic reports and digestion/distillation logs.)			
Mercury (28 days). . . . . exceeded?	___	[___]	✓
Cyanide (14 days). . . . . exceeded?	___	[___]	✓
Other Metals (6 months). . . . . exceeded?	___	[___]	✓
Soil samples			
Metals (including Hg) and Cyanide (6 months)..exceeded?	___	[✓]	___

NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.

ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.

	YES	NO	N/A
A.1.8 **Raw Data**			
A.1.8.1 Digestion Log* for flame AA/ICP present?	[✓]	___	___
Digestion Log for furnace AA present?	[✓]	___	___
Digestion Log for mercury present?	[✓]	___	___
Digestion Log for cyanides present?	[✓]	___	___
Are pH values (pH<2 for all metals, pH>12 for cyanide) present in Digestion/Distillation Logs?	[___]	✓	___
*Weights, dilutions and volumes used to obtain values.			
Percent solids calculation present for soils/sediments? % Solids listed on Form I	[___]	✓	___
Are preparation dates present on Digestion Log? Internal Chain-of-Custody	[✓]	___	___

		YES	NO	N/A
A.1.8.2 Measurement read out record present?	ICP	[✓]		
	Flame AA	[ ]		✓
	Furnace AA	[✓]		
	Mercury	[✓]		
	Cyanides	[✓]		
A.1.8.3 Are all raw data to support all sample analyses and QC operations present?		[✓]		
Legible?		[✓]		
Properly Labeled?		[✓]		

ACTION: If no for any of the above, write Telephone Record Log and contact laboratory. Flag metal data as estimated if pH of sample is greater than 2. Flag cyanide data as estimated if pH sample is less than 12.

A.1.9 **Data Validation and Verification**

A.1.9.1 Calibration

A.1.9.1.1 Is record of at least 2 point calibration present for ICP analysis?		[✓]		
Is record of 5 point calibration present for Hg analysis?		[✓]		

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.9.1.2 Is record of 4 point calibration present for:	Flame AA?	[ ]		✓
	Furnace AA?	[✓]		
	Cyanides?	[✓]		

	YES	NO	N/A

NOTE: 1. If less than 4 standards are measured in absorbance mode, then the remaining standards in concentration mode must be run immediately after calibration and be within ±10% of true value.
2. For all AA (except Hg) and Cyanide analyses, one calibration standard is at CRDL level. If not, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".

ACTION: Flag associated data as estimated if standards are not within +10% of true values (except CRDL calibration standard). Do not flag the data as estimated in linear range indicated by good recovery of standard.

A.1.9.1.3 Is correlation *coefficient less than 0.995 for:

Mercury Analysis?	___	[✓]	___
Cyanide Analysis?	___	[✓]	___
Atomic Absorption Analysis?	___	[✓]	___

ACTION: If yes, flag the associated data as estimated.

A.1.9.2 Form II A (Initial and Continuing Calibration Verification)-

A.1.9.2.1 Present and complete for every metal and cyanide?	[✓]	___	___
Present and complete for AA and ICP when both are used for same analyte?	[___]	___	✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.9.2.2 Circle all values on data summary sheet that are outside contract windows. Are all calibration standards (initial and continuing) within control limits?

Metals 90-110%	[✓]	___	___
Hg - 80-120%	[✓]	___	___

* The reviewer will calculate correlation coefficient.

	YES	NO	N/A
Cyanides 85-115%	[✓]	___	___

ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard of 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ), if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%).

	YES	NO	N/A
Was continuing calibration performed every 10 samples or every 2 hours?	[✓]	___	___

ACTION: If no, flag the excess samples (eleventh and up) data as estimated (J).

A.1.9.3 **Form II B (CRDL Standards for AA and ICP)** -

	YES	NO	N/A
A.1.9.3.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[✓]	___	___
*Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[✓]	___	___
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[✓]	___	___

ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are:

AA Analysis - **True Value ± CRDL

ICP Analysis - **True Value ± 2CRDL

CN Analysis - **True Value ± 0.5 x True Value.

* Find the results of mid-range standard in the raw data.
**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL.

		YES	NO	N/A
A.1.9.3.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and for every four hours of ICP run?	[✓]	___	___
	ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
A.1.9.3.3	Circle all values on summary sheet that are outside acceptance windows.			
	Are CRA and CRI standards within control limits: Metals 80 - 120%R?	[___]	✓	___
	Is mid-range standard within control limits: Cyanide 80 - 120%R?	[✓]	___	___
	ACTION: Flag as estimated all the data within the affected ranges if the recovery of the standard is between 50-79%; flag only positive data if the recovery is between 121-150%; reject (red line) all data if the recovery is less than 50%; reject only positive data if the recovery is greater than 150%.			
	[illegible]			
A.1.9.4	**Form III (Initial and Continuing Calibration Blanks)**			
A.1.9.4.1	Present and complete?	[✓]	___	___
	For both AA and ICP when both are used for same analyte?	[___]	___	✓
	Was an initial calibration blank analyzed?	[✓]	___	___
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (whichever is more frequent)?	[✓]	___	___
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the contract-problems/ non-compliance section of the Data Assessment Narrative.			

		YES	NO	N/A
A.1.9.4.2	Circle all calibration blank values on Data Summary Sheet that are above CRDL (or 2 x IDL when IDL > CRDL). Are all calibration blanks (when IDL<CRDL) less than or equal to Contract Required Detection Limits (CRDL)?	[✓]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[___]	___	✓

ACTION: If no for any of the above, flag as estimated (J) on Form I's all data <5xIDL between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank.

A.1.9.5 FORM III (Preparation Blank) -

(Note: The preparation blank for mercury is the same as the calibration blank.)

		YES	NO	N/A
A.1.9.5.1	Was one prep. blank analyzed for: each 20 samples?	[✓]	___	___
	each batch?	[✓]	___	___
	each matrix type?	[✓]	___	___
	both AA and ICP when both are used for same analyte?	[___]	___	✓

ACTION: If no for any of the above, flag as estimated (J) all associated positive data <10 x IDLs for which prep.blank was not analyzed.

NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).

		YES	NO	N/A
A.1.9.5.2	Is concentration of prep. blank greater than CRDL when IDL is less than or equal to CRDL?	___	[✓]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank value?	___	[___]	✓

		YES	NO	N/A
	ACTION: If yes, reject (red-line) all associated data that has a concentration less than ten times the prep. blank value, but greater than CRDL.			
A.1.9.5.3	Do concentrations of prep. blank fall below two times IDL when IDL is greater than CRDL?	[ ]		✓
	ACTION: If no, reject (red-line) all data that has a concentration less than 10 times the prep. blank value, but not flagged with a "U" (less than).			
A.1.9.5.4	Is concentration of prep. blank below the negative CRDL?		[✓]	
	ACTION: If yes, reject (red-line) all associated data that has a concentration less than 10xCRDL.			
A.1.9.6	**Form IV (ICP Interference Check Sample)**			
A.1.9.6.1	Present and complete?	[✓]		
	(NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[✓]		
	ACTION: If no, flag as estimated (J) all samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.8.6.2	Circle all values on Data Summary Sheet that are more than + 20% of true or established mean value. Are all Interference Check Sample results inside of control limits (+ 20%)?	[✓]		
	If no, is concentration of Al, Ca, Fe, or Mg lower in sample than in ICS?	[ ]		✓
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			

		YES	NO	N/A
A.1.9.7	**Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distallation)**- (Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.9.7.1	Present and complete for: each 20 samples?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each conc. range (i.e. low, med., high)?	[✓]	___	___
	For both AA and ICP when both are used for same analyte?	[___]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) all positive data less than four times spiking level for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.9.7.2	Was field blank used for spiked sample?	___	[✓]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
	NOTE: Matrix spike analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
A.1.9.7.3	Circle all values on Data Summary Sheet that are outside control limits (75% to 125%). Are all recoveries within control limits?	[___]	✓	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	✓	___
	ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			

	YES	NO	N/A
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[✓]	___	___

ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".

A.1.9.7.4 Aqueous

Are any spike recoveries:

(a) less than 30%?	___	[___]	✓
(b) between 30-74%?	___	[___]	✓
(c) between 126-150%?	___	[___]	✓
(d) greater than 150%?	___	[___]	✓

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

NOTE: If pre-digestion spike result is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, disregard spike recovery on Form V. Flag the associated data as estimated(J).

A.1.9.7.5 Soil/Sediment

Are any spike recoveries:

(a) less than 10%?	___	[✓]	___
(b) between 10-74%?	✓	[___]	___
(c) between 126-200%?	___	[___]	✓
(d) greater than 200%?	___	[___]	✓

ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".
Flag antimony as estimated.

		YES	NO	N/A
A.1.9.8	**Form VI (Lab Duplicates)**			
A.1.9.8.1	Present and complete for: each 20 samples?	[✓]		
	each matrix type?	[✓]		
	each concentration range (i.e. low, med., high)?	[✓]		
	both AA and ICP when both are used for same analyte?	[ ]		✓
	ACTION: If no for any the above, flag as estimated (J) all data >CRDL* for which duplicate sample was not analyzed. Note: If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
A.1.9.8.2	Was field blank used for duplicate analysis?		[✓]	
	ACTION: If yes, flag all data >CRDL* as estimated (J) for which field blank was used as duplicate. NOTE: Duplicate analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
A.1.9.8.3	Are all values within control limits (RPD 20% or difference < ±CRDL)?	[ ]	✓	
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[✓]		
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative". NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL. 2. If lab duplicate result is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria.			

* Substitute IDL for CRDL when IDL > CRDL.

		YES	NO	N/A
A.1.9.8.4	Is any value for sample duplicate pair less than CRDL* and other value greater than or equal to 10 x *CRDL?	___	[✓]	___
	ACTION: If yes, flag the associated data as estimated (J).			
A.1.9.8.5	Aqueous Circle all values on Data Summary Sheet that are: RPD > 50%, or Difference > ± CRDL*			
	Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	✓
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	✓
	ACTION: If yes, flag the associated data as estimated.			
A.1.9.8.6	Soil/Sediment Circle all values on Data Summary Sheet that are: RPD > 100%, or Difference > 2 x CRDL*			
	Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%?	___	[✓]	___
	Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL?	___	[✓]	___
	ACTION: If yes, flag the associated data as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.

** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.9.9	**Field Duplicates**			
A.1.9.9.1	Were field duplicates analyzed?	[✓]	___	___

ACTION: If yes, prepare a Form VI for each field duplicate pair, report concentrations of soils in ug/l on wet weight basis and calculate RPDs.

NOTE: 1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

A.1.9.9.2	Is any value for sample duplicate pair less than *CRDL and other value greater than or equal to 10 x *CRDL?	___	[✓]	___

ACTION: If yes, flag the associated data as estimated.

A.1.9.9.3 Aqueous

Circle all values on Form VI for field duplicates that are:
RPD > 50%, or
Difference > ± CRDL*

	Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	✓
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	✓

ACTION: If yes, flag the associated data as estimated.

A.1.9.9.4 Soil/Sediment

Circle all values on Form VI for field duplicates that are:
RPD >100%, or

Difference > 2 x CRDL*

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A
Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%?	___	[✓]	___
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL): >2x *CRDL?	___	[✓]	___

ACTION: If yes, flag the associated data as estimated.

A.1.9.10 Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)

	YES	NO	N/A
A.1.9.10.1 Was one LCS prepared and analyzed for: every 20 water samples?	[___]	___	✓
every 20 solid samples?	[✓]	___	___
both AA and ICP when both are used for same analyte?	[___]	___	✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

A.1.9.10.2 Aqueous LCS

Circle all LCS values outside control limits (80 - 120%- except aqueous Ag and Sb).

	YES	NO	N/A
Is any LCS recovery: less than 50%?	___	[___]	✓
between 50% and 79%?	___	[___]	✓
between 121% and 150%?	___	[___]	✓
greater than 150%?	___	[___]	✓

* Substitute IDL for CRDL when IDL > CRDL.
**Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A
ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.			
A.1.9.10.3 Solid LCS			
NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J). 2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.			
Is LCS "Found" value higher than the control limits on Form VII?	___	[✓]	___
ACTION: If yes, qualify all associated positive data as estimated.			
Is LCS "Found" value lower than the Control limits on Form VII?	___	[✓]	___
ACTION: If yes, qualify all associated data as estimated.			
A.1.9.11 Form IX (ICP Serial Dilution) -			
NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.9.11.1 Was Serial Dilution analysis performed for: each 20 samples?	[✓]	___	___
each matrix type?	[✓]	___	___
each concentration range (i.e. low, med.)?	[✓]	___	___

		YES	NO	N/A
	ACTION: If no for any of the above, flag all positive data greater than or equal to 10xIDLs as estimated (J) for which Serial Dilution Analysis was not performed, and summarize the deficiency on the DPO report.			
A.1.9.11.2	Was field blank(s) used for Serial Dilution Analysis?	___	[✓]	___
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J).			
	NOTE: Serial dilution analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
A.1.9.11.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[___]	___	✓
	ACTION: If no, write in the contract-problem/non-compliance section of the "Data Assessment Narrative".			
A.1.9.11.4	Circle all values on Data Summary Sheet that are outside control limit for initial concentrations equal to or greater than 10 x IDLs only. Are any % difference values:			
	> 10%?	___	[✓]	___
	≥ 100%?	___	[✓]	___
	ACTION: Flag as estimated (J) all associated sample results equal to or greater than 10xIDLs for which percent difference is greater than 10% but less than 100%. Reject (red-line) all associated sample results equal to or greater than 10xIDLs for which PD is greater than or equal to 100%.			

		YES	NO	N/A
A.1.9.12	**Furnace Atomic Absorbtion (AA) QC Analysis**			
A.1.9.12.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[✓]	___	___
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.9.12.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[✓]	___	___
	Was a dilution analyzed for sample with post digestion spike recovery less than 40%?	[✓]	___	___
	ACTION: If no for any of the above, flag all the associated data as estimated (J).			
A.1.9.12.3	Is *post digestion spike recovery less than 10% or greater than 150% for any result?	___	[✓]	___
	ACTION: If yes, reject (red-line) the affected data if recovery is <10%; reject data not flagged with "U" if spike recovery is >150%.			
	NOTE: Reject the data only if the affected sample was not subsequently analyzed by Method of Standard Addition.			
A.1.9.13	**Form VIII (Method of Standard Addition Results)**			
A.1.9.13.1	Present?	[✓]	___	___
	If no, is any Form I result coded with "S" or a "+"?	___	[ ]	✓
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			

*. Post digestion spike is not required on the pre-digestion spiked sample when predigestion spike recovery is within control limits of 75-125% or when SR>4xSA.

	YES	NO	N/A
A.1.9.13.2 Is coefficient of correlation for MSA less than 0.990 for any sample?	___	[___]	✓
ACTION: If yes, reject (red-line) affected data.			
A.1.9.13.3 Was *MSA required for any sample but not performed?	___	[✓]	___
Is coefficient of correlation for MSA less than 0.995?	___	[___]	✓
Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	___	[___]	✓
ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.9.13.4 Was proper quantitation procedure followed correctly as outlined in the SOW on page E-16 through E-17?	[___]	___	✓
ACTION: If no, note exception under contract problem/ non-compliance of data assessment narrative, or prepare a separate list.			

A.1.9.14 **Dissolved/Total or Inorganic/Total Analytes** -

A.1.9.14.1 Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[✓]	___
Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[✓]	___

NOTE:
1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration.
2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents.
3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.

* MSA is not required on LCS and prep. blank.

	YES	NO	N/A
A.1.9.14.2 Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	✓
A.1.9.14.3 Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	✓

ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.

A.1.9.15 Form I to IX

A.1.9.15.1 Are all the Form I through Form IX labeled with: Laboratory name?	[✓]	___	___
Case/SAS number?	[___]	___	✓
EPA sample No.?	[✓]	___	___
SDG No.?	[✓]	___	___
Contract No.?	[___]	___	✓
Correct units?	[✓]	___	___
Matrix?	[✓]	___	___

ACTION: If no for any of the above, note under contract problem/non-compliance section of the "Data Assessment Narrative".

	YES	NO	N/A
A.1.9.15.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
(NOTE: Check all forms against raw data.)			
(a) all analytes analyzed by ICP?	___	[✓]	___
(b) all analytes analyzed by GFAA?	___	[✓]	___
(c) all analytes analyzed by AA Flame?	___	[___]	✓
(d) Mercury?	___	[✓]	___
(e) Cyanide?	___	[✓]	___

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

A.1.9.16 **Form I (Field Blank)** -

Circle all field blank values on Data Summary Sheet that are greater than CRDL, 2 x IDL when IDL > CRDL or 5xIDL when 5xIDL < CRDL.

Do concentrations of field blank(s) fall below CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	✓
Do concentrations of field blank(s) fall below 5xIDL when 5xIDL < CRDL ?	[___]	___	✓
If no, was field blank value already rejected due to other QC criteria?	[___]	___	✓

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value.

		YES	NO	N/A
A.1.9.17	**Form XI, XII, XIII (Quarterly Verification of Instrumental Parameters).**			
A.1.9.17.1	Is quarterly verification report present for:			
	Instrument Detection Limits?	[✓]	___	___
	ICP Interelement Correction Factors?	[✓]	___	___
	ICP Linear Ranges?	[✓]	___	___
	ACTION: If no, contact DPO of the lab.			
A.1.9.17.2	Form XI (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)			
	Are IDLs present for: all the analytes?	[✓]	___	___
	all the instruments used?	[✓]	___	___
	For both AA and ICP when both are used for same analyte?	[___]	___	✓
	ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.			
	Is IDL greater than CRDL for any analyte?	___	[✓]	___
	If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL?	[___]	___	✓
	ACTION: If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			

	YES	NO	N/A
A.1.9.17.3 Form XII (Linear Ranges)			
Was any sample result higher than high linear range of ICP by more than 10%?	___	[✓]	___
Was any sample result higher than the highest calibration standard for non-ICP parameters?	✓	[___]	___
If yes for any of the above, was the sample diluted to obtain the result on Form I.	[✓]	___	___
ACTION: If no, flag the result reported on Form I as estimated(J).			
A.1.9.18 **Percent Solids of Sediments**			
Is soil content in sediment(s) less than 50%?	___	[___]	✓
ACTION: If yes, qualify as estimated all data not previously rejected or flagged due to other QC criteria.			

Case# _____ Site _____ Matrix: Soil _____

SDG _____ Lab _____ Water _____

Contractor _____ Reviewer _____ Other _____

A.2.1 The case description and exceptions, if any, are noted below with reason(s) for rejection or qualification as estimated value(s) J.

_____

_____

_____

_____

_____

_____

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_____

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_____

_____

_____

A.2.1 (continuation)

A.2.1 (continuation)

itle: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.5: Summary of Inorganics Quality Control Data

Date: Oct. 1989
Number: HW-2
Revision: 9

APPENDIX A 5 SUMMARY OF INORGANICS QUALITY CONTROL DATA

LABORATORY:_____ CASE NO._____ SOW NO._____ SAMPLE TYPE/SDG:_____

SITE/STUDY DESCRIPTION:_____ SAMPLE NOS:_____

_____ Field Blank _____

FIELD DUP. #'S:_____ LAB DUP. #'S:_____ MATRIX SPIKE #:_____

SERIAL DILUTION SAMPLE NO._____ COMPLETION DATE:_____ REVIEWERS INITIALS:_____

	XI	I	IIA				IIB		III				IV		V	VI	VII	IX	
Parameter	Detection Limits UG/L CRDL	IDL	Field Blank	Calib. Ver. %R Init	Continued 1	2	3	CRDL Std Ver. % R Init	Fin	Calibration Blanks Init	Continued 1	2	3	PREP BLANK	ICP ICS % R Init	Fin	Matrix Spike	Lab Dup RPD/Diff	LCS % R	Ser Dil % D	Method
Al	200																				
Sb	60																				
As	10																				
Ba	200																				
Be	5																				
Cd	5																				
Ca	5000																				
Cr	10																				
Co	50																				
Cu	25																				
Fe	100																				
Pb	5																				
Mg	5000																				
Mn	15																				
Hg	0.2																				
Ni	40																				
K	5000																				
Se	5																				
Ag	10																				
Na	5000																				
Tl	10																				
V	50																				
Zn	20																				
CN	10																				

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: _____ Date: _____ Case #: _____

Site: _____ Lab Name: _____

Reviewer's Initials: _____ Number of Samples: _____

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejection
ICP														
Flame AA														
Furnace AA														
Mercury														
Total														
Other														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

ICP														
Flame AA														
Furnace AA														
Mercury														
Total														
Other														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

.itle: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.7: CLP Data Assessment Checklist
Inorganic Analysis

Date: Oct. 1989
Number: HW-2
Revision: 9

INORGANIC REGIONAL DATA ASSESSMENT

Region_____

CASE NO._____

SITE_____

LABORATORY_____

NO. OF SAMPLES/ MATRIX_____

SDG#_____

REVIEWER (IF NOT ESD)_____

SOW#_____

REVIEWER'S NAME_____

DPO: ACTION_____ FYI_____

COMPLETION DATE_____

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES				
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:_____

AREAS OF CONCERN:_____

NOTABLE PERFORMANCE:_____

SDG - 3

SDG-3 contains data validation for the following samples:

LLI NUMBER	SAMPLE	MATRIX
1475937	B15/S3	Soil Boring
1475938	B15/S5	Soil Boring
1475939	B18/S1	Soil Boring
1475940	B18/S3	Soil Boring
1475941	B18/S5	Soil Boring
1476731	B17/S1	Soil Boring
1476732	B17/S3A	Soil Boring
1476733	B17/S3B	Soil Boring
1476734	B17/S5	Soil Boring
1476737	B19/S6	Soil Boring
1476738 - 1476739	B11/S3A	Soil Boring
1476744	B11/S6	Soil Boring
1476746	B1/S6	Soil Boring
1476747 - 1476748	B1/S3A	Soil Boring
1477094 - 1477095	B11/SB3	Soil Boring
1477096 - 1477097	B19/S3A	Soil Boring

SDG-3

SOP NO. HW-6
Revision #6

CLP ORGANICS DATA REVIEW
AND PRELIMINARY REVIEW

CONCURRED BY: _____ Date: 4/6/89
Louis Bevilacqua
Monitoring Management Branch

APPROVED BY: _____ Date: 4/14/89
Gerard F. McKenna, Chief
Monitoring Management Branch

INTRODUCTION TO DATA VALIDATION

1.0 Scope

1.1 This procedure is applicable to organic data obtained from contractor laboratories working for the Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in the Statement of Work (SOW).

2.0 Responsibilities

Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1 Data Assessment - The reviewer must answer every question on the checklist. All response shall be in ink.

2.2 Data Assessment Narrative (Attachment 1) - Data reviewer is required to use these forms and must match the action in the narrative with the action taken on the Form I(s).

2.3 Rejection Summary Form (Attachment 2) - Fill in the total number of analytes measured by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in the boxes where analyses were not performed or criteria do not apply.

2.4 Organic Regional Data Assessment - Data reviewer is also required to fill out Organic Regional Data Assessment Form (Attachment 3).

2.5 Telephone Record Log - The data reviewer should enter the bare facts of inquiry before initiating any authorized telephone conversation with a CLP laboratory. After the case review has been completed, mail the white copy of the Telephone Record Log to the laboratory and the pink copy to SMO. File the yellow copy in the Telephone Record Log folder and attach a photocopy of the Telephone Record Log to the completed Data Assessment Narrative.

2.6 Forwarded Paperwork - Upon completion of the review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:

a. data package
b. completed assessment checklist
c. SMO Contract Compliance Screening (CCS)

Forward four (4) copies of the completed Data Assessment Narrative along with four (4) copies of the Organic Data Assessment Form: one each for the appropriate Regional DPO, the Sample Management Office (SMO), and to the last two addresses of the Data Reviewer Mailing List.

2.7 Filed Paperwork - Upon completion of the review, the following are to be filed within the Monitoring and Management Branch (MMB) files:

a. Telephone record Log (copy)
b. Record of Communication (original)
c. Rejection Summary Form

3.0 Rejection of Data - All values determined to be unacceptable on the Organic Analysis Data Sheet (Form I) must be flagged with an "R". As soon as review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

4.0 Acceptance Criteria - In order that the reviews be consistent among reviewers, this Standard Operating Procedure (SOP) should be used. Additional guidance can be found in the Functional Guidelines.

5.0 SMO Contract Compliance Screening (CCS) - This is intended to aid the reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from the laboratory in response to CCS must be used by the reviewer.

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: _____

LAB: Lancaster Laboratories, Inc.

SITE: PPG

1.0 Data Completeness and Deliverables	YES	NO	N/A
1.1 Have any missing deliverables been received and added to the data package.	[✓]	___	___
ACTION: Call lab for explanation / resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-compliance" section of reviewer narrative.			
1.2 Was SMO CCS checklist included with package?	[___]	___	✓
2.0 Cover Letter/Case Narrative			
2.1 Is the Narrative or Cover Letter present?	[✓]	___	___
2.2 Are Case Number and/or SAS number contained in the Narrative or Cover Letter?	[___]	___	✓

3.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any VOA analyses, Part B for any BNA analyses and Part C for Pesticide/PCBs.

Does this package contain:

VOA data?	✓	___
BNA data?	✓	___
Pesticide/PCB data?	✓	___

ACTION: Complete corresponding parts of checklist.

	YES	NO	N/A

PART A: VOA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [✓] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [✓] ___

ACTION: Use professional judgement to evaluate the effect on the quality of the data.

ACTION: If any sample analyzed as a soil contains more than 50% water, all data should be rejected.

ACTION: If both VOA vials for a sample have air bubbles, flag all positive results "J" and all non-detects "R".

note: Sample B1953A (LLI #1477096) was incorrectly labeled as B953A.

2.0 Holding Times

2.1 Have any VOA holding times, determined from date of collection to date of analysis, been exceeded? ___ [✓] ___

If unpreserved, aqueous aromatic volatiles must be analyzed within 7 days of collection and non-aromatic volatiles must be analyzed within 14 days. If preserved with hydrochloric acid and stored at 4°C, then both aromatic and non-aromatic volatiles must be analyzed within 14 days. If uncertain about preservation, contact the sampler to determine whether the samples were preserved.

A ten-day* holding time for soil samples is recommended.

* From date of laboratory receipt to analysis.

Table of Holding Time Violations

Sample	Sample Matrix	Preserved ?	(See Traffic Report) Date Sampled	Date Lab Received	Date Analyzed
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___

ACTION: If holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded.

	YES	NO	N/A
If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. The reviewer may determine that non-detect data are unusable ("R").			

3.0 Surrogate Recovery (Form II)

3.1 Are the VOA Surrogate Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water	[✓]		
b. Med Water	[ ]		✓
c. Low Soil	[✓]		
d. Med Soil	[ ]		✓
3.2 Are all the VOA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:			
a. Low Water	[✓]		
b. Med Water	[ ]		✓
c. Low Soil	[✓]		
d. Med Soil	[ ]		✓
ACTION: Call lab for explanation / resubmittals. If missing deliverables are unavailable, document effect on data under "Conclusions" section of reviewer narrative.			
3.3 Were outliers marked correctly with an asterisk? *None of the recoveries were outliers.*	[ ]		✓
ACTION: Circle all outliers in red.			
3.4 Was one or more VOA surrogate recovery outside of contract specifications for any sample or method blank?		[✓]	
If yes, were samples reanalyzed?	[ ]		✓
Were method blanks reanalyzed?	[ ]		✓

ACTION: If surrogate recoveries are > 10% but all do not meet SOW specifications:

1. Flag all positive results as estimated ("J").
2. Flag all non-detects as estimated detection limits ("UJ").

	YES	NO	N/A
If any surrogate has a recovery of <10% : 1. Flag all positive results as estimated ("J"). 2. Flag all non-detects as unusable ("R"). Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and re-analyses. Check the internal standard areas.			
3.5 Are there any transcription/calculation errors between raw data and Form II?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike Duplicate/Recovery Form (Form III) present?	[✓]	___	___
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	
d. Med Soil	[___]	___	✓
ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.			

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
0 out of 10	0 out of 10

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
0 out of 5	0 out of 5

ACTION: If MS and MSD both have less than 10% recovery for an analyte, negative results for that analyte should be rejected, and positive results should be flagged "J". The above applies only to the sample used for the MS/MSD analysis. Use professional judgement in applying this criterion to other samples in the package

	YES	NO	N/A
5.0 Blanks (Form IV)			
5.1 Is the Method Blank Summary (Form IV) present?	[✓]	___	___
5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been analyzed for each set of samples or every 20 samples of similar matrix (low water, med water, low soil, medium soil), whichever is more frequent?	[✓]	___	___
5.3 Has a VOA instrument blank been analyzed at least once every twelve hours for each GC/MS system used?	[✓]	___	___
ACTION: If any method blank data are missing, call lab for explanation / resubmittal. If not available, reject all associated positive data ("R").			
5.4 Chromatography: review the blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.			
Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	[✓]	___	___
ACTION: Use professional judgement to determine the effect on the data.			
6.0 Contamination			
NOTE: "Water blanks" and "distilled water blanks" are validated like any other sample and are <u>not</u> used to qualify data. Do not confuse them with the other QC blanks discussed below.			
6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for VOAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor.	___	[✓]	___
6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)? *see page 7A of SOG-3*	✓	[___]	___
ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)			
NOTE: Only field/rinse blanks taken the same day as the samples are used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped. Blanks may not be qualified because of contamination in another blank. Blanks may be qualified for surrogate, spectral, tuning or calibration QC problems.			

Paul C. Rizzo Associates, Inc.
CONSULTANTS

By [illegible] Date 4-26-90 Subject _____ Sheet No. ___ of ___
Chkd. By ___ Date ___ SDG-3 VOA SECTION 6.2 Proj. No. [illegible]

Trip Blank LLI # 1476745 detected 10 ppb acetone (QL [illegible] ppb)

Associated Samples: B11 S3A detected 45 ppb acetone
B11 S3B " 68 ppb "
B1 S3A " 42 ppb "
B19 S3A " 95 ppb "

Trip blank (LLI # 1476745) detected 10 ppb acetone. The associated samples [B11S3A (LLI # 1476732), B11S3B (LLI # 1477094), B1S3A (LLI # 1476747), and B19S3A (LLI # 1477096)] detected acetone in the range of 42-95 ppb. Because the sample concentrations are greater than the quantitation limit but less than ten times the concentration of the blank, the concentration of acetone was determined as being less than the quantitation limit for samples B11S3A, B11S3B, B1S3A, and B19S3A.

301285

YES NO N/A

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

	Sample conc > CRQL but < 10x blank	Sample conc < CRQL & is < 10x blank value	Sample conc > CRQL value & >10x blank value
Methylene chloride Acetone Toluene 2-butanone	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5 blank value
Other Contaminants	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] ___ ✓

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Tuning and Mass Calibration (Form V)

7.1 Are the GC/MS Tuning and Mass Calibration Forms (Form V) present for Bromofluorobenzene (BFB)? [✓] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift? [✓] ___ ___

7.3 Has a tuning performance compound been analyzed for every twelve hours of sample analysis per instrument? [✓] ___ ___

ACTION: If any tuning data are missing, take action specified in 3.2 above.

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

	YES	NO	N/A
ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.			
7.4 Have the ion abundance criteria been met for each instrument used?	[✓]	___	___
ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).			
ACTION: If tuning calibration is in error, flag all associated sample data as unusable ("R"). However, if expanded ion criteria are met (See 1988 Functional Guidelines), the data reviewer may accept data with appropriate qualifiers.			
7.5 Are there any transcription / calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.)	___	[✓]	___
7.6 Have the appropriate number of significant figures (two) been reported? (Check at least two values, but if errors are found check more values.)	✓	[___]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make necessary corrections and note errors under "Conclusions".			
7.7 Are the spectra of the mass calibration compound acceptable?	[✓]	___	___
ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.			
8.0 <u>Target Compound List (TCL) Analytes</u>			
8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Matrix spikes and matrix spike duplicates	[✓]	___	___
c. Blanks	[✓]	___	___

	YES	NO	N/A
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Matrix spikes and matrix spike duplicates (Mass spectra not required)	[✓]	___	___
c. Blanks	[✓]	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			
8.3 Are the response factors shown in the Quant Report? In Quant Report for initial calibration and continuing calibration.	[✓]	___	___
8.4 Is chromatographic performance acceptable with respect to:			
Baseline stability	[✓]	___	___
Resolution	[✓]	___	___
Peak shape	[✓]	___	___
Full-scale graph (attenuation)	[✓]	___	___
Other:_____	[___]	___	___
ACTION: Use professional judgement to determine the acceptability of the data.			
8.5 Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[✓]	___	___
ACTION: If any mass spectra are missing, take action specified in 3.2 above. If Lab does not generate their own standard spectra, make note in "Contract Problems/Non-compliance".			
8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]	___	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
8.8 Do sample and standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected, flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (at the calculated detection limit).			

	YES	NO	N/A
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "J" qualifier? *No TICs identified*	[✓]		
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate	[ ]		✓
b. Blanks	[ ]		✓
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "J" qualifier if missing and "N" qualifier to all identified TIC compounds on Form I, Part B.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds (example: 1,2-dimethylbenzene is xylene--a VOA TCL--and should not be reported as a TIC)?		[ ]	✓
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[ ]		✓
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[ ]		✓
ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate.			
10.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription / calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found?		[✓]	
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	✓	[ ]	

	YES	NO	N/A
ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant. Reports) present for initial and continuing calibration?	[✓]	___	___
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete for the volatile fraction?	[✓]	___	___
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Are response factors stable for volatiles over the concentration range of the calibration (RSD <30%)?	[✓]	___	___
ACTION: Circle all outliers in red.			
ACTION: When RSD >30%, non-detects may be qualified using professional judgement. Flag all positive results "J". When RSD >90%, flag all non-detects as unusable ("R"). (Region II policy.)			
12.3 Do any compounds have a RRF < 0.05?	___	[✓]	___
ACTION: Circle all outliers in red.			
ACTION: If any volatile compound has an average RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").			

	YES	NO	N/A
12.4 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least two values but if errors are found, check more.)	___	[✓]	___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

13.0 GC/MS Continuing Calibration (Form VII)

	YES	NO	N/A
13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the volatile fraction?	[✓]	___	___
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	[✓]	___	___

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

_____

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, call lab for explanation / resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").

	YES	NO	N/A
13.3 Do any continuing calibration standard compounds have a RRF < 0.05?	___	[✓]	___

ACTION: Circle all outliers in red.

ACTION: If any volatile compound has a RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").

	YES	NO	N/A
13.4 Do any compounds have a % difference between initial and continuing calibration RRF > 25%?	✓	[___]	___

ACTION: Circle all outliers in red and qualify associated sample data as outlined in the table below:

Styrene 0.28%

Styrene was analyzed as being less than the quantitation limit for samples B115A, B153A, B115B, and B1953A, so no qualifying action was taken.

YES NO N/A

% DIFFERENCE

25-50	50-90	>90
'J' positive results, no action for non detects	'J' positive results, 'UJ' non detects	'J' positive results, "R" non detects

13.5 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

14.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits for each continuing calibration? [✓] ___ ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary.)

ACTION: If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results and non-detects (U values) quantitated with this internal standard. If extremely low area counts are reported, or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable ("R").

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [✓] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

	YES	NO	N/A
15.0 Field Duplicates			
15.1 Were any field duplicates submitted for VOA analysis?	[✓]	___	___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference. See page 15a in SOA-3

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

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By ___ Date 4-27-90 Subject _____ Sheet No. 156 of 3..
Chkd. By ___ Date _____ SDG-3 IDA SECTION 15.0 Proj. No. EE-575

Field Duplicates B1153A LLI # 1476738
B1153B LLI # 1477094

RESULTS DRY WT. BASIS

Compound	B1153A (ug/kg)	B1153B (ug/kg)	RPD*
Methylene Chloride	27	20	30
Acetone	45	68	41

RESULTS WET BASIS

Compound	B1153A	B1153B	RPD*
Methylene Chloride	20	15	28
Acetone	33	50	41

$$*RPD = \frac{|A-B|}{(A+B)/2} \times 100$$

where, A ≡ concentration detected in sample A
B ≡ concentration detected in sample B

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	YES	NO	N/A

PART B: BNA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [✓] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [✓] ___

ACTION: Use professional judgement to evaluate the effect on the quality of the data.

ACTION: If any sample analyzed as a soil contains more than 50% water, all data should be rejected.

2.0 Holding Times

2.1 Have any BNA holding times, determined from date of collection to date of extraction, been exceeded? ___ [✓] ___

Samples for BNA analysis, ~~both~~ soils ~~and waters~~, must be extracted within seven days of the date of *receipt*. ~~collection~~. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations

Sample	Sample Matrix	Date Sampled	(See Traffic Report) Date Lab Received	Date Extracted	Date Analyzed
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___

ACTION: If holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded.

	YES	NO	N/A
If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. The reviewer may determine that non-detect data are unusable ("R").			
3.0 Surrogate Recovery (Form II)			
3.1 Are the BNA Surrogate Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water	[ ]		✓
b. Med Water	[ ]		✓
c. Low Soil	[✓]		
d. Med Soil	[ ]		✓
3.2 Are all the BNA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:			
a. Low Water	[ ]		✓
b. Med Water	[ ]		✓
c. Low Soil	[✓]		
d. Med Soil	[ ]		✓
ACTION: Call lab for explanation / resubmittals. If missing deliverables are unavailable, document effect on data under "Conclusions" section of reviewer narrative.			
3.3 Were outliers marked correctly with an asterisk? *None of the recoveries were outliers.* ACTION: Circle all outliers in red.	[ ]		✓
3.4 Were two or more base-neutral OR acid surrogate recoveries out of specification for any sample or method blank?		[✓]	
If yes, were samples reanalyzed?	[ ]		✓
Were method blanks reanalyzed?	[ ]		✓

ACTION: If all BNA surrogate recoveries are > 10% but two within the base-neutral or acid fraction do not meet SOW specifications, for the affected fraction only (i.e. base-neutral OR acid compounds):

1. Flag all positive results as estimated ("J").
2. Flag all non-detects as estimated detection limits ("UJ").

	YES	NO	N/A
If any base-neutral or acid surrogate has a recovery of <10% : 1. Flag all positive results for that fraction (i.e. all acid or base-neutral compounds) "J". 2. Flag all non-detects for that fraction "R".			
Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and re-analyses. Check the internal standard areas.			
3.5 Are there any transcription/calculation errors between raw data and Form II?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike Duplicate/Recovery Form (Form III) present?	[✓]	___	
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water	[___]	___	✓
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[___]	___	✓
ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.			

4.3 How many BNA spike recoveries are outside QC limits?

Water	Soils
N/A out of 22	— out of 22

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
N/A out of 11	0 out of 11

ACTION: If MS and MSD both have less than 10% recovery for an analyte, negative results for that analyte should be rejected, and positive results should be flagged "J". The above applies only to the sample used for MS/MSD analysis. Use professional judgement in

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	YES	NO	N/A
5.0 Blanks (Form IV)			
5.1 Is the Method Blank Summary (Form IV) present?	[✓]	___	___
5.2 Frequency of Analysis: for the analysis of BNA TCL compounds, has a reagent/method blank been analyzed for each set of samples or every 20 samples of similar matrix (low water, med water, low soil, medium soil), whichever is more frequent?	[✓]	___	___
5.3 Chromatography: review the blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.			
Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	[✓]	___	___
ACTION: Use professional judgement to determine the effect on the data.			
6.0 Contamination			
NOTE: "Water blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.			
6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for BNAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor. See page 19A of SOG-3	✓	[___]	___
6.2 Do any field/rinse blanks have positive BNA results (TCL and/or TIC)?	___	[___]	✓
ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)			
NOTE: Only field/rinse blanks taken the same day as the samples are used to qualify data. Blanks may not be qualified because of contamination in another blank. Blanks may be qualified for surrogate, spectral, tuning or calibration QC problems.			

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By [illegible] Date 4-30-90 Subject _____ Sheet No. 29A of 36
Chkd. By ____ Date _____ SDG-3 BNA SECTION 6.1 Proj. No. 22-[illegible]

Method Blank LLI #	1476749	TIC	2400	ppb	unknown
		"	200	"	unknown alkane
		"	170	"	unknown alkane
		"	130	"	unknown
		"	570	"	unknown
		"	300	"	unknown ketone
		"	230	"	unknown
		"	25000	"	unknown carboxylic acid, ester
Blank Contamination in Associated Samples:	B9 S3A	TIC	2100	ppb	unknown
		"	620	"	unknown
		"	230	"	unknown ketone
		"	310	"	unknown
		"	47000	"	unknown carboxylic acid or ester
	B11 SA	TIC	4400	ppb	unknown
		"	150	"	unknown alkane
		"	660	"	unknown
		"	500	"	unknown
		"	1400	"	unknown ketone
		"	1000	"	unknown
		"	180000	"	unknown carboxylic acid or ester
	B11 SB	TIC	11000	ppb	unknown
		"	450	"	unknown
		"	43000	"	unknown carboxylic acid or ester
	B13 3A	TIC	7900	ppb	unknown
		"	190	"	unknown
		"	410	"	unknown
		"	190	"	unknown ketone
		"	24000	"	unknown carboxylic acid or ester

301299

YES NO N/A

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

	Sample conc > CRQL but < 10x blank	Sample conc < CRQL & is < 10x blank value	Sample conc > CRQL value & >10x blank value
Common Phthalate Esters	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5 blank value
Other Contaminants	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? [___] ___ ✓

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Tuning and Mass Calibration (Form V)

7.1 Are the GC/MS Tuning and Mass Calibration Forms (Form V) present for Decafluorotriphenylphosphine (DFTPP)? [✓] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the DFTPP provided for each twelve hour shift? [✓] ___ ___

7.3 Has a tuning performance compound been analyzed for every twelve hours of sample analysis per instrument? [✓] ___ ___

ACTION: If any tuning data are missing, take action specified in 3.2 above.

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

	YES	NO	N/A
7.4 Have the ion abundance criteria been met for each instrument used?	[✓]	__	__
ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).			
ACTION: If tuning calibration is in error, flag all associated sample data as unusable ("R"). However, if expanded ion criteria are met (See 1988 Functional Guidelines), the data reviewer may accept data with appropriate qualifiers.			
7.5 Are there any transcription / calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.)	__	[✓]	__
7.6 Have the appropriate number of significant figures (two) been reported? (Check at least two values, but if errors are found check more values.)	✓	[__]	__
ACTION: If large errors exist, call lab for explanation / resubmittal, make necessary corrections and note errors under "Conclusions".			
7.7 Are the spectra of the mass calibration compound acceptable?	[✓]	__	__
ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.			

8.0 Target Compound List (TCL) Analytes

8.1 Are the Organic Analysis Data Sheets (Form I BNA) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate	[✓]	__	__
b. Matrix spikes and matrix spike duplicates	[✓]		__
c. Blanks	[✓]		

	YES	NO	N/A
8.2 Are the BNA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Matrix spikes and matrix spike duplicates (Mass spectra not required)	[✓]	___	___
c. Blanks	[✓]	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			
8.3 Are the response factors shown in the Quant Report? On the Quant Report for initial calibration and continuing calibration	[✓]	___	___
8.4 Is chromatographic performance acceptable with respect to:			
Baseline stability	[✓]	___	___
Resolution	[✓]	___	___
Peak shape	[✓]	___	___
Full-scale graph (attenuation)	[✓]	___	___
Other: _____	[___]	___	___
ACTION: Use professional judgement to determine the acceptability of the data.			
8.5 Are the lab-generated standard mass spectra of the identified BNA compounds present for each sample?	[✓]	___	___
ACTION: If any mass spectra are missing, take action specified in 3.2 above. If Lab does not generate their own standard spectra, make note in "Contract Problems/Non-compliance".			
8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]	___	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
8.8 Do sample and standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected, flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (at the calculated detection limit).			

	YES	NO	N/A
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "J" qualifier?	[✓]	___	___
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Blanks	[✓]	___	___
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "J" qualifier if missing and "N" qualifier to all identified TIC compounds on Form I, Part B.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds (example: 1,2-dimethylbenzene is xylene--a VOA TCL--and should not be reported as a TIC)?	___	[✓]	___
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate.			
10.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription / calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found?	___	[✓]	___
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	✓	[___]	___

	YES	NO	N/A
ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant. Reports) present for initial and continuing calibration?	[✓]	___	___
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete for the BNA fraction?	[✓]	___	___
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Are response factors stable for BNAs over the concentration range of the calibration (RSD <30%)?	[✓]	___	___
ACTION: Circle all outliers in red.			
ACTION: When RSD >30%, non-detects may be qualified using professional judgement. Flag all positive results "J". When RSD >90%, flag all non-detects as unusable ("R"). (Region II policy.)			
12.3 Do any compounds have a RRF < 0.05?	___	[✓]	___
ACTION: Circle all outliers in red.			
ACTION: If any BNA compound has an average RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").			

	YES	NO	N/A
12.4 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least two values but if errors are found, check more.)	___	[✓]	___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

13.0 GC/MS Continuing Calibration (Form VII)

	YES	NO	N/A
13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the BNA fraction?	[✓]	___	___
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	[✓]	___	___

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

_____

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, call lab for explanation / resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").

	YES	NO	N/A
13.3 Do any continuing calibration standard compounds have a RRF < 0.05?	___	[✓]	___

ACTION: Circle all outliers in red.

ACTION: If any BNA compound has a RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").

	YES	NO	N/A
13.4 Do any compounds have a % difference between initial and continuing calibration RRF > 25%?	✓	[___]	___

ACTION: Circle all outliers in red and qualify associated sample data as outlined in the table below:

Benzoic Acid %D = 29.1

2-4-Dinitrophenol (SPCC) %D = 41.9

YES NO N/A

% DIFFERENCE

25-50	50-90	>90
'J' positive results, no action for non detects	'J' positive results, 'UJ' non detects	'J' positive results, "R" non detects

13.5 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

14.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits for each continuing calibration? [✓] ___ ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary.)

ACTION: If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results and non-detects (U values) quantitated with this internal standard. If extremely low area counts are reported, or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable ("R").

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [✓] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

	YES	NO	N/A
15.0 Field Duplicates			
15.1 Were any field duplicates submitted for BNA analysis?	[✓]	___	___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference. See page [illegible]

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

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CONSULTANTS

By CV Date 4-20-90 Subject _____ Sheet No. 27B of 36
Chkd. By ____ Date _____ SDG-3 BNA SECTION 15.1 Proj. No. EE-595

Field Duplicates B1153A LLI # 1476738
B1153B LLI # 1477094

RESULTS DRY WT. BASIS

COMPOUND	B1153A (ug/kg)	B1153B (ug/kg)	RPD*
Phenol	810	500	47

RESULTS WET BASIS

Compound	B1153A (ug/kg)	B1153B (ug/kg)	RPD*
Phenol	600	370	47

$$* RPD = \frac{|A-B|}{(A+B)/2} \times 100$$

where, A ≡ concentration detected in sample A
B ≡ concentration detected in sample B

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	YES	NO	N/A
PART C: PESTICIDE/PCB ANALYSES			
1.0 Traffic Reports and Laboratory Narrative			
1.1 Are the Traffic Report Forms present for all samples?	[✓]	___	___
ACTION: If no, contact lab for replacement of missing or illegible copies.			
1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? Samples B1153E, B1953A MS, and B1953A MSD were contaminated during preparation by samples containing high levels of pesticide. Samples were re-extracted for analysis.		[✓]	___
ACTION: Use professional judgement to evaluate the effect on the quality of the data.			
ACTION: If any sample analyzed as a soil contains more than 50% water, all data should be rejected.			
2.0 Holding Times			
2.1 Have any PEST/PCB holding times, determined from date of collection to date of extraction, been exceeded?	___	[✓]	___
Samples for PEST/PCB analysis, ~~both~~ soils ~~and waters~~, must be extracted within ~~seven days of the date of collection~~. Extracts must be analyzed within 40 days of the date of extraction. * ten days of laboratory receipt.			
3.0 Surrogate Recovery (Form II)			
3.1 Are the PEST/PCB Surrogate Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water	[___]	___	✓
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[___]	___	✓
3.2 Are all the PEST/PCB samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:			
a. Low Water	[___]	___	✓
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[___]	___	✓

	YES	NO	N/A
ACTION: Call lab for explanation / resubmittals. If missing deliverables are unavailable, document effect on data under "Conclusions" section of reviewer narrative.			
3.3 Were outliers marked correctly with an asterisk? None of the recoveries were outliers.	[ ]		✓
ACTION: Circle all outliers in red.			
3.4 Was surrogate (DBC) recovery outside of the contract specification for any sample or blank?		[✓]	
ACTION: No qualification is done if surrogates are diluted beyond detection. If recovery is below contract limit (but above zero), flag all results for that sample "J". If recovery is zero, flag positive results "J" and non-detects "R". If recovery for the blank is zero, flag non-detects for all associated samples "R". If recovery is above contract limit, flag all positive results for that sample "J", unless in the reviewers professional judgement the high recovery is due to co-eluting interference (check the associated blank - if recovery is high there also, flag the sample data).			
3.5 Are there any transcription/calculation errors between raw data and Form II?		[✓]	
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			

4.0 Matrix Spikes (Form III)

	YES	NO	N/A
4.1 Is the Matrix Spike Duplicate/Recovery Form (Form III) present?	[✓]		
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water	[ ]		✓
b. Med Water	[ ]		✓
c. Low Soil	[✓]		
d. Med Soil	[ ]		✓
ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.			

4.3 How many PEST/PCB spike recoveries are outside QC limits?

Water	Soils
N/A out of 12	0 out of 12

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	YES	NO	N/A
4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?			

Water	Soils
N/A out of 6	0 out of 6

ACTION: If MS and MSD both have less than zero recovery for an analyte, negative results for that analyte should be rejected, and positive results should be flagged "J". The above applies only to the sample used for MS/MSD analysis. Use professional judgement in applying this criterion to other samples.

5.0 Blanks (Form IV)

	YES	NO	N/A
5.1 Is the Method Blank Summary (Form IV) present?	[✓]		
5.2 Frequency of Analysis: for the analysis of Pesticide TCL compounds, has a reagent/method blank been analyzed for each set of samples or every 20 samples of similar matrix (low water, med water, low soil, medium soil), whichever is more frequent?	[✓]		
5.3 Chromatography: review the blank raw data - chromatograms, quant reports or data system printouts.			
Is the chromatographic performance (baseline stability) for each instrument acceptable for PEST/PCBs?	[✓]		

ACTION: Use professional judgement to determine the effect on the data.

6.0 Contamination

NOTE: "Water blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

	YES	NO	N/A
6.1 Do any method/instrument/reagent blanks have positive results for PEST/PCBs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor.		[✓]	
6.2 Do any field/rinse blanks have positive PEST/PCB results?		[ ]	✓

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

YES NO N/A

NOTE: Only field/rinse blanks taken the same day as the samples are used to qualify data. Blanks may not be qualified because of contamination in another blank. Blanks may be qualified for surrogate, spectral, tuning or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL & > 5x blank value
Flag sample result with a "U"; cross out "B" flag	Reject sample result and report CRQL; cross out "B" flag	No qualification is needed

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] ___ ✓

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 Calibration and GC Performance

7.1 Are the following Gas Chromatograms and Data System Printouts for both Primary and Confirmation (confirmation standards not required if there are no positive results above CRQL) column present:

a. Evaluation Standard Mix A [✓] ___ ___

b. Evaluation Standard Mix B [✓] ___ ___

c. Evaluation Standard Mix C [✓] ___ ___

d. Individual Standard Mix A [✓] ___ ___

e. Individual Standard Mix B [✓] ___ ___

f. Multi-component Pesticides Toxaphene & Chlordane [✓] ___ ___

g. Aroclors 1016/1260 [✓] ___ ___

h. Aroclors 1221, 1232, 1242, 1248, and 1254 [✓] ___ ___

ACTION: If no, take action specified in 3.2 above

	YES	NO	N/A
7.2 Is Form VIII Pest-1 present and complete for each GC column (primary and confirmation) and each 72 hour sequence of analyses?	[✓]	___	___
ACTION: If no, take action specified in 3.2 above.			
7.3 Are there any transcription/calculation errors between raw data and Form VIII?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
7.4 Has the total breakdown on quantitation or confirmation column exceeded 20% for DDT?	___	[✓]	___
- for Endrin?	___	[✓]	___
or if Endrin aldehyde <u>and</u> 4,4'-DDD co-elute and there is a peak at their retention time, has the combined DDT and Endrin breakdown exceeded 20%?	___	[✓]	___

ACTION:

a. If DDT breakdown is greater than 20% on quantitation column beginning with the samples following the last <u>in control</u> standard:

   1. Flag all positive DDT results "J".
   2. If DDT was not detected but DDD and/or DDE are positive, flag the DDT non-detect "R".
   3. Flag positive DDD and DDE results "JN".
   4. If DDT breakdown is > 20% on confirmation column <u>and</u> DDT is identified on quantitation column but not on confirmation column, use professional judgement to determine whether DDT should be reported on Form I (if reported, flag result "N").

b. If Endrin breakdown is > 20% on quantitation column, beginning with the samples following the last <u>in control</u> standard:

   1. Flag all positive Endrin results "J".
   2. If Endrin was not detected, but Endrin Aldehyde and/or Endrin Ketone are positive, flag the Endrin non-detect "R".
   3. Flag Endrin Ketone positive results "JN".
   4. If Endrin breakdown is > 20% on confirmation column <u>and</u> Endrin is identified on quantitation column but not on confirmation column, use professional judgement to determine whether Endrin should be reported on Form I (if reported, flag result "N").

c. If the combined breakdown is used (it can only be used if the conditions in 7.4 above are met) and is > 20% on quantitation column beginning with the last <u>in control</u> standard, take the actions specified in 7.4 a and b above. If the combined breakdown is >20% on confirmation column <u>and</u> Endrin or DDT is identified on quantitation column but not on confirmation column, use professional judgement to determine whether Endrin or DDT should be reported on Form I (if reported, flag result "N").

	YES	NO	N/A
7.5 Is the linearity check RSD of all four calibration factors <10% for the quantitation column?	[✓]	___	___
ACTION: If no, flag positive hits for all pesticide and PCB analytes "J" for all associated samples. Do not flag toxaphene or DDT if they are quantified from a 3-point calibration curve.			
7.6 Is the % difference between the EVAL A and each analysis (quantitation and confirmation) DBC retention time within QC limits (2% for packed column, 0.3% for capillary [I.D. < 0.32 mm], 1% for megabore [0.32 < I.D. < 2 mm]) ?	[✓]	___	___
ACTION: DBC retention time cannot be evaluated if DBC is not detected. If it is present and has a retention time out of QC limits, then use professional judgement to determine the reliability of the analysis and flag results "R", if appropriate.			
7.7 Was the proper analytical sequence followed for each 72 hour period of analyses (page PEST D-36 in 8/87 SOW).	[✓]	___	___
ACTION: If no, use professional judgement to determine the severity of the effect on the data and accept or reject it accordingly. Generally, the effect is negligible unless the sequence was grossly altered or the calibration was also out of limits.			
8.0 Pesticide/PCB Standards Summary			
8.1 Is Form IX present and complete for each GC column and 72 hr sequence of analyses?	[✓]	___	___
ACTION: If no, take action specified in 3.2 above.			
8.2 Are there any transcription/calculation errors between raw data and Form IX?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
8.3 Is DDT retention time for packed columns > 12 min (except OV-1 and OV-101 columns)?	[✓]	___	___
ACTION: If no, check that there is adequate resolution between individual components. If not, flag results for compounds that interfere with each other (co-elute) "R".			
8.4 Do all standard retention times fall within the windows established for the first IND A and IND B analyses?	[✓]	___	___

	YES	NO	N/A
ACTION: Beginning with the samples following the last in control standard, check to see if the chromatograms contain peaks within an expanded window surrounding the expected retention times. If no peaks are found and, DBC is visible non-detects are valid. If peaks are present and cannot be identified through "pattern recognition" or a consistent shift in standard retention times, flag all affected compound results "R".			
8.5 Are the continuing calibration standard calibration factors within 15% (for quantitation column) or 20% (for confirmation column) of the initial (at beginning of 72 hr sequence) calibration factors?	[✓]	___	___
ACTION: If no, flag all associated positive results "J". Use professional judgement to determine whether or not to flag non-detects.			
9.0 Pesticide/PCB Identification			
9.1 Is Form X complete for every sample in which a pesticide or PCB was detected?	[✓]	___	___
ACTION: If no, take action specified in 3.2 above.			
9.2 Are there any transcription errors between raw data and Form X?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
9.3 Are retention times of sample compounds within the calculated retention time windows for both quantitation and confirmation analyses?	[✱]	___	___
Was GC/MS confirmation provided when required (when compound concentration is > 10 ug/ml in final extract)?	[✓]	___	___
ACTION: Reject ("R") all positive results (meeting quantitation column criteria, but missing confirmation by a second column or GC/MS (if appropriate). Also, reject ("R") all positive results not meeting retention time window criteria unless associated standard compounds are similarly biased (i.e. base on RRT to DBC).			
9.4 Check chromatograms for false negatives, especially for the multiple peak components toxaphene and PCB's. Were there any false negatives?	___	[✓]	___
ACTION: If appropriate PCB standards were not analyzed, or if the lab performed no confirmation analysis, flag the appropriate data with an "R".			

* The presence of 4,4'-DDT is reported although the retention time is not within the established window since the amount of 4,4'-DDT present yields a large peak causing the retention time to shift.

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	YES	NO	N/A
10.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription / calculation errors in Form I results? Check at least two positive values. Were any errors found?	___	[✓]	___
NOTE: Simple peak pesticide results can be checked for rough agreement between quantitative results obtained on the two GC columns. The reviewer should use professional judgement to decide whether a much larger concentration obtained on one column versus the other indicates the presence of an interfering compound. If an interfering compound is indicated, the lower of the two values should be reported and qualified as presumptively present at an estimated quantity ("JN"). This necessitates a determination of an estimated concentration on the confirmation column. The narrative should indicate that the presence of interferences has obscured the attempt at a second column confirmation.			
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture? See page 35A of SOG-3	✓	[___]	___
ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.			
11.0 Chromatogram Quality			
11.1 Were baselines stable?	[✓]	___	___
11.2 Were any electropositive displacement (negative peaks) or unusual peaks seen?	___	[✓]	___
11.3 Were early eluting peaks (for early eluting analytes) resolved to baseline?	[✓]	___	___
ACTION: For 11.1 and 11.2, comment only. For 11.3, reject ("R") those analytes that are not sufficiently resolved.			

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By [illegible] Date 5-2-92 Subject _____ Sheet No. [illegible] of [illegible]
Chkd. By ____ Date _____ [illegible] Proj. No. [illegible]

The SRDL was increased for sample B153A due to a 10-fold dilution required for analysis.

For samples B151, B156, and B153A, the SRDL was increased for the constituent 4,4'-DDD. Due to an interferent present on the chromatogram, the quantitation limit for each sample was determined from a worst case calculation based on the height of the interferent.

For sample B153A, the SRDL was increased for the constituent PCB-1221 due to an interferent present on the chromatogram; the quantitation limit was determined from a worst case calculation based on the height of the interferent.

For sample B153B, the quantitation limit for PCB-1221 was determined from a replotted chromatogram which represents an increase in attenuation of five. Hence, the quantitation limit was raised by a factor of five.

301317

	YES	NO	N/A
12.0 Field Duplicates			
12.1 Were any field duplicates submitted for PEST/PCB analysis?	[✓]	___	___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

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By [illegible] Date [illegible] Subject _____ Sheet No. [illegible] of [illegible]
Chkd. By ____ Date ____ [illegible] PEST/PCBs SECTION [illegible] Proj. No. [illegible]

Field Duplicates B1153A LLI # 1476738
B1153B LLI # 1477094

RESULTS DRY WT BASIS

COMPOUND	B1153A (ug/kg)	B1153B (ug/kg)	RPD*
Alpha-BHC	20	20	0
Dieldrin	42	46	9
DDT	66	56	16
Carbaryl	300	300	0
beta-BHC	—	40	—

RESULTS WET BASIS

COMPOUND	B1153A (ug/kg)	B1153B (ug/kg)	RPD*
Alpha-BHC	12	12	0
Dieldrin	31	34	9
DDT	49	41	18
Carbaryl	200	200	0
beta-BHC	—	31	—

$$* \; RPD = \frac{|A - B|}{(A + B)/2} \times 100$$

where, A ≡ concentration detected in sample A
B ≡ concentration detected in sample B

301319

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By ___ Date 4-27-90 Subject _____ Sheet No. 26B of 30
Chkd. By ___ Date ___ SDG-3 PEST/PCBs SECTION 12.0 Proj. No. 22-575

Field Duplicates B1753A LLZ # 1476732
B1753B LLZ # 1476733

RESULTS DRY WT BASIS

COMPOUND	B1753A (ug/kg)	B1753B (ug/kg)	RPD*
alpha-BHC	100	90	11
beta-BHC	30	30	0
delta-BHC	30	30	0
gamma-BHC	100	90	11
carbaryl	300	300	0

RESULTS WET BASIS

COMPOUND	B1753A (ug/kg)	B1753B (ug/kg)	RPD*
alpha-BHC	77	74	4
beta-BHC	20	20	0
delta-BHC	22	21	5
gamma-BHC	80	74	7
carbaryl	200	200	0

$$* RPD = \frac{|A-B|}{(A+B)/2} \times 100$$

where, A = concentration detected in Sample A
B = concentration detected in Sample B

301320

506-3

SOP NO. HW-5

CLP DIOXIN (2,3,7,8 TCDD) DATA REVIEW

REVISION 4

PREPARED BY: Stelios Gerazounis DATE: 7/10/89
Stelios Gerazounis
Monitoring Management Branch

CONCURRED BY: L Bevilacqua DATE: 7/10/89
Louis Bevilacqua
Monitoring Management Branch

APPROVED BY: Gerard F. McKenna DATE: 7/10/89
Gerard F. McKenna, Chief
Monitoring Management Branch

301321

1.0 Introduction

1.1 This procedure is applicable to dioxin data from contractor laboratories working under the Hazardous Waste Site Contract Labortory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Solicitation, Offer and Award No. IFB WA-86K357.

2.0 Responsibilities

2.1 The reviewers will complete and/or file the following:

2.1.1 Data Review Log - Each reviewer will fill in the following information in the log book for each data package:

a. date of start of case review
b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples

2.1.2 Rejection Summary Form - Fill out as necessary using a ratio format. The numerator would indicate the number of dioxin data rejected; the denominator would indicate the number of dioxin fractions containing rejected compounds. File in the appropriate folder.

2.1.3 Telephone Log - All phone conversations must be initiated by the data review manager or the deputy project officer. If a phone call has been made, fill out stating the bare facts of the conversation. Give two copies to secretary, one to go to the laboratory and one to go to SMO. File the third copy in the appropriate folder.

2.1.5 Data Assessment Checklist - Attachment 1 of this SOP must be completed along with the Data Assessment Narrative.

2.1.6 Forwarded Paperwork - The following are to be forwarded to the Regional Sample Central Center (RSCC) upon completion of the review:

a. data package
b. completed data assessment checklist (original)
c. Contract Compliance Screening (CCS)
d. CLP Re-analysis Request/Approval Record (original and 2 copies)

Forward four (4) copies of the completed Data Assessment Narrative along with four (4) copies of the Organic Data Assessment Form: one each for the appropriate Regional DPO, the Sample Management Office (SMO), and the last two addressees of the Data Reviewers Mailing List.

2.1.7 Filed Paperwork - The following are to be filed within MMB files:

a. SMB Review (Copy)
b. Narrative part (Para. 7.0) of data assessment checklist (copy)
c. Telephone Record Log (yellow copy)
d. Rejection Summary Form (original)
e. CLP Re-analysis Request/Approval Record (copy)

3.0 Data Completeness

Incomplete data packages must be brought to the attention of the data review manager or the deputy project officer (DPO) whenever the lack of any information would cause the rejection of data.

4.0 Rejection of Data

All values determined to be unacceptable on the dioxin analysis data sheets should be lined over with a red pencil.

5.0 Acceptance Criteria

In order that reviews be consistent among reviewers, acceptance criteria as stated in Attachment 1 should be used.

6.0 Reviewer Corrections

All corrections to reviewed data made by reviewers must be indicated in red pencil.

7.0 Request for Reanalysis

Data reviewers must note all items of contract non-compliance within Data Assessment Narrative (see page 15 of this SOP). If holding times and sample storage times have not been exceeded, the Data Review Manager or DPO may request reanalysis, if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

NOTE TO THE REVIEWER: The attached SOP is for a "Total" Review of the 2,3,7,8-TCDD data. Its purpose is to facilitate the validation of the data reported by the contracting laboratory and also to assure that the data is being reviewed in a uniform manner.

Please read each item carefully and check YES if there is compliance and NO if there is no compliance.

The reviewer must red-line unacceptable data on Sample Data Sheets (red-lined does not imply the compound is not present).

Red-lined or rejected data means that the data is unusable and that the sample may need to be reanalyzed by the same laboratory. If the laboratory already has analyzed the sample twice a reanalysis must be done by another laboratory.

Please notify immediately the Deputy Project Officer (DPO) or the Data Review Manager concerning problems and inadequacies with regard to laboratory sample data.

1.0 Deliverables

1.1 All deliverables must be clearly labeled with the SMO case number and the associated sample/traffic number. Review the data package to assure that all items listed below are provided. Missing, illegible or incorrectly labeled items must be checked off. The contractor should immediately be contacted and requested to submit the missing or incorrect items.

1.2 Are the following forms present?	YES	NO
a. TCDD Data Report Form (Form B-1)	✓	
b. Initial Calibration Summary (Form B-2)	✓	
c. Continuing Calibration Summary (Form B-3)	✓	
d. A Chronological List of all Sample Analyses	✓	
GC/MS Displays		
a. SICP's for the Initial Triplicate Analysis of the Four Concentration Calibration Solution	✓	
b. SICP for Each Performance Check Solution	✓	
c. SICP for Each Shift Standard	✓	

	YES	NO
GC/MS Displays		
d. Plotted Concentration Calibration Curve	✓	
e. SICP's for Each Sample Ran	✓	

WERE THE FOLLOWING CRITERIA MET?

2.0 Instrument Performance

2.1 Performance Check Solution Requirements - The performance check solution must be analyzed at the beginning and at the end of each 12 hour shift. ✓

2.1.1 Chromatographic Resolution

- The valley between 2,3,7,8-TCDD and the peak of all other TCDD isomers must be $\leq$ 25%. ✓

- Recalculate the valley (%) between 2,3,7,8-TCDD and the peak of the least resolved adjacent isomer using the following equation:

$$\% \text{ Valley} = \frac{x}{y} \times 100$$

Where: y = peak height of 2,3,7,8-TCDD
x = measured height from valley of the least resolved adjacent isomer to the baseline.

2.1.2 Ion Critera

- The ratio of integrated ion current for m/z 320 to m/z 322 for 2,3,7,8-TCDD must be $\geq$.67 and $\leq$.90. ✓

- The ratio of the integrated ion current for m/z 332 to m/z 334 for $^{13}C_{12}$2,3,7,8-TCDD must be $\geq$.67 and $\leq$.90. ✓

ACTION: 1) If the 25% valley requirement is not met, red-line all data collected within the shift associated with the performance standard. No action is taken if any of the other requirements are not met; and 2) if the performance check solution was not analyzed in the required frequency, use professional judgment to determine the effect on the quality of the data.

	YES	NO

3.0 Calibration

3.1 Initial Calibration - Initially, 2,3,7,8-TCDD Standards of 0.2, 1.0, 5.0, and 20.0 ng/ul solutions will be injected in triplicate. Each solution also contains 1ng/ul $^{13}C_{12}$2,3,7,8-TCDD (internal standard) and 0.6ng/ul $^{13}C_{12}$1,2,3,4-TCDD (recovery standard). Solutions #1 and #2 contain 0.028 ng/ul of $^{37}Cl_4$2,3,7,8-TCDD. The concentration of these solutions may vary only slightly from time to time. The calibration standards must be analyzed using the same GC conditions that were used to analyze the performance check solution and must meet the following criteria.

- Scanning time must be $\leq$ 1.5 seconds. on ion profile — ✓ ___
- The ratio of the integrated ion current for m/z 320 to 322 for 2,3,7,8-TCDD must be $\geq$.67 and ~~$\geq$.90~~. $\leq$ 0.90 — ✓ ___
- The ratio of integrated ion current for m/z 332 to m/z 334 for $^{13}C_{12}$2,3,7,8-TCDD and $^{13}C_{12}$1,2,3,4-TCDD must be $\geq$0.67 and $\leq$0.90. — ✓ ___
- The signal to noise ratio for ions 332 and 334 must be $\geq$ 10. This ratio is no longer a required deliverable. — ___ ___ n/a
- The signal to noise ratio for ions 259, 320, 322, and 328 must be $\geq$ 2.5. — ✓ ___
- The ions 259, 320, and 322 must maximize simultaneously and within 3 seconds of ions 332, 334 of $^{13}C_{12}$-2,3,7,8-TCDD. — ✓ ___

For each concentration level, recalculate the response factor for unlabeled 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD:

$$RRF_n = \frac{Ax \times Qis}{Ais \times Qx}$$

Where: Ax = the sum of integrated ion abundance of m/z 320 and m/z 322 for unlabeled 2,3,7,8-TCDD.

Ais = the sum of integrated abundance of m/z 332 and m/z 334 for $^{13}C_{12}$-2,3,7,8-TCDD

Qx = quantity of unlabeled 2,3,7,8-TCDD

Qis = quantity of $^{13}C_{12}$-2,3,7,8-TCDD

ReCalculate the response factor for $^{13}C_{12}$-2,3,7,8-TCDD relative to $^{13}C_{12}$-1,2,3,4,-TCDD:

$$RRF_i = \frac{Ais \times Qrs}{Ars \times Qis}$$

Where Ars = the sum of integrated abundance of M/Z 332 and M/Z 334 for $^{13}C_{12}$-1,2,3,4 - TCDD

Qrs = the quantity of $^{13}C_{12}$-1,2,3,4 - TCDD.

	YES	NO
- The variation of the RRF for unlabeled 2,3,7,8-TCDD at each concentration level must not exceed 10% RSD	✓	
- The RSD of the 4 - mean RRFs for unlabeled 2,3,7,8-TCDD must not exceed 10% RSD.	✓	
- The RSD of the 4 - mean RRFs for $^{13}C_{12}$2,3,7,8-TCDD must not exceed 10% RSD.	✓	
- The mean of the 4 - mean RRFs for each compound established in the initial calibration must be used for concentration calculations.	✓	

ACTION: 1) If the required initial calibration data were not supplied, notify the laboratory. If they are unavailable, red-line (reject) all data; and 2) if any of the calibration curve standards fail to meet any of the above acceptance criteria red-line all data associated with the calibration curve.

3.2 Calibration Check Standard - At the beginning of every 12-hour shift, a calibration standard of a concentration of 1ppb must be analyzed using the same GC conditions that were used to analyze the performance check standard. Were the following operating MS conditions met?

- Scanning time must be $\leq$ 1.5 seconds. on ion profile	✓	
- The ratio of the integrated ion current for m/z 320 to 322 for 2,3,7,8-TCDD must be $\geq$.67 and $\leq$.90.	✓	
- The ratio of the integrated ion current for m/z 332 to 334 for $^{13}Cl_{12}$-2,3,7,8-TCDD must be $\geq$.67 and $\leq$.90.	✓	
- The ions 259, 320, 322 for 2,3,7,8-TCDD must maximize simultaneously and within 3 seconds of $^{13}C_{12}$-2,3,7,8-TCDD.	✓	

	YES	NO
- The signal to noise ratios for ions 259, 320, 322, and 328 must be $\geq$ 2.5.	✓	
- The signal to noise ratios for ions 332 and 334 must be $\geq$ 10. (This ratio is no longer reportable).		N/A
Check calculations for the response factors for unlabeled 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD and for $^{13}C_{12}$-2,3,7,8-TCDD relative to $^{13}C_{12}$-1,2,3,4-TCDD.		
- Are there any errors?		✓
- The response factor of 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD must be within $\pm$ 10% of the mean value for the initial 4-point calibration curve.	✓	
- The response factor of $^{13}C_{12}$-2,3,7,8-TCDD relative to $^{13}C_{12}$-1,2,3,4-TCDD must be within $\pm$ 10% mean value of the initial 4 point calibration curve.	✓	

ACTION: 1) If the required number of analyses of calibration check solutions were not submitted notify the contracting laboratory. If they are unavailable, reject all data without an associated calibration check standard; and 2) if the calibration check standard fails to meet any of the acceptance criteria, reject all the data associated with this standard.

4.0 Sample Data

4.1 Qualitative Requirements

4.1.1 The RT of 2,3,7,8-TCDD must be within 3 seconds of the RT of the $^{13}C_{12}$-2,3,7,8-TCDD.	Retention Time not reported.	
4.1.2 The integrated ion currents for m/z 259, 320 and 322 must maximize simultaneously.	✓	
4.1.3 The integrated ion currents for m/z 259, 320, 322, and 328 must be at least 2.5 times background noise and must not have saturated the detector.	✓	
4.1.4 The internal standard ions m/z 332, 334 must be at least 10 times of noise level.	✓	
4.1.5 The ratio of the integrated ion currents m/z 320 to m/z 322 and m/z 332 to m/z 334 must be $\geq$.67 and $\leq$.90.	OK	

Sample #1476738 and sample #1476747 showed an interference in the 320/322 ions. Since the MPC was below 1 ppb, the results are reported.

	YES	NO
4.1.6 When 2,3,7,8-TCDD is not present, the ratio of internal standard ion m/z 332 to m/z 334 must still be $\geq$.67 and $\leq$.90.	✓	
4.1.7 If the 2,3,7,8-TCDD was not qualitatively identified in the sample, the MPC (detection limits) must not exceed 1 ppb.	✓	

ACTION: 1) if the 2,3,7,8-TCDD qualitative criteria were not met, 2,3,7,8-TCDD was not qualitatively identified, red-line positive value; 2) if the detection limit exceeds 1 ppb, red-line ND (not detected) dioxin value; 3) if the signal to noise criteria for ions m/z 328, 332, 334 were not met, red-line positive or ND dioxin values; and 4) if the ratio of ion m/z 332 to m/z 334 is outside the acceptance criteria, red-line positive or ND dioxin data.

4.2 Quantitative Requirements

4.2.1 Recalculate the concentration of 2,3,4,7-TCDD which was found in the sample using the equation:

$$Cx = \frac{Ax \times Qis}{Ais \times RRF_n \times W}$$

Where: Cx = the concentration of 2,3,7,8-TCDD in micrograms/Kg

Ax = the sum of integrated ion abundance for M/Z 320 and M/Z 322 for unlabeled 2,3,7,8-TCDD

Ais = the sum of integrated ion abundances for M/Z 332 and M/Z 334 which are the characteristic ions for the internal stanard $^{13}C_{12}$-2,3,7,8-TCDD

Qis = quantity of the internal standard (in nanograms) added to the sample before extraction

RRF_n = calculated mean response factor for unlabeled 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD

W = weight (in grams) of wet soil or sediment sample

YES NO

4.2.2 Recalculate the concentration of the internal st uard $^{13}C_{12}$-2,3,7,8-TCDD using the formula:

$$Cis = \frac{Ais \times Qrs}{Ars \times RRF_i \times W}$$

Where: Cis = the concentration of the $^{13}C_{12}$-2,3,7,8-TCDD in ug/kg or ug/L

Ais = the sum of integrated ion abundance for M/Z 332 and 334 for $^{13}C_{12}$-2,3,7,8,-TCDD

Ars = sum of integrated ion abundances for M/Z 332 and 334 for $^{13}C_{12}$-1,2,3,4-TCDD

Qrs = quantity (in ng) of $^{13}C_{12}$-1,2,3,4-TCDD added to the sample before injection

RRF_i = calculated mean response factor for $^{13}C_{12}$-2,3,7,8 -TCDD relative to $^{13}C_{12}$-1,2,3,4-TCDD

W = weight (in grams) of wet soil or sediment sample or volume of water extracted (in mL)

4.2.3 The recovery of the internal standard must be within the 40 and 120 percent recovery window. #1476738 %R=14 #1477096 %R=17 ck

ACTION: These are advisory limits. View outliers in conjunction with surrogate recoveries and other data such as internal standard peak areas and signal to noise ratios.

4.3 Recalculate Maximum Possible Concentration - When no unlabeled Dioxin is detected, the lab must calculate the estimated detection limits which is the concentrations required to produce a signal with an area or peak height 2.5 times the background signal area or peak height. To recalculate use the formula:

$$MPC = \frac{2.5 \times Ax2 \times Qis}{Ais2 \times RRF_n \times W}$$

Where: MPC = Estimated maximum possible concentration for unlabeled 2,3,7,8-TCDD in ug/kg or ug/L.

Ax2 = peak height or integrated ion abundance for M/Z 320 or 322

Ais2 = integrated ion abundance or peak height for M/Z 332 when M/Z 320 is used or M/Z 334 when M/Z 322 is used to determine Ax

Qis = same definition as in 4.2.1

RRF_n = calculated mean response factor for 2,3,7,8 -TCDD relative to $^{13}C_{12}$ - 2,3,7,8 - TCDD

W = same definition as above

	YES	NO
NOTE: The use of the area or peak height for M/Z 320 is preferred to M/Z 322 except when there is interference for M/Z 320 but not for M/Z 322		
ACTION: If variation in the calculations are found between the contractor's results and the regions recalculated results, the contractor must be informed and the discrepancy resolved. If the calculated amount of unlabeled Dioxin is outside the linear range obtained by the initial calculation (100 ppb for the 4 points) reject the data.		

4.4 Estimated Maximum Possible Concentration - For samples where interference is observed for both M/Z 320 and 322 or when an unacceptable ratio prevented identification of unlabeled 2,3,7,8-TCDD, use equation in Section 4.2.1 to estimate the maximum concentration that could be represented by detected signals.

5.0 Quality Control

5.1 Blanks - Rinsate Blank/Field Blank/Reagent Blank

	YES	NO
5.1.1 One rinsate blank must be analyzed for each batch of samples collected each day.	✓	
5.1.2 One field blank must be extracted and analyzed for each batch of 24 samples or less collected over a period of one or two days whichever comes first.		✓
5.1.3 One method blank must be extracted and analyzed for each batch of samples or each time a group of samples are extracted.	✓	
5.1.4 Acceptable field blanks and laboratory method blanks must not contain any signal at 320, 322, or 259 which is greater than 2% of the m/z 332 response within ±5 scans of the m/z 332 peak maximum. If the method blank that was extracted along with a batch of samples is contaminated, the associated positive samples must be rerun. (See Exhibit C, SOW).	✓	

YES NO

ACTION: 1) If the proper number of reagent blanks were not submitted, notify the contractor. If they are unavailable, reject all positive sample data; 2) if the field blank and/or rinsate blank are missing, notify the DPO and discuss the action to be taken; 3) if the contamination of Dioxin in the reagent blank or in the field blank is >.1 ppb all positive dioxin data must be rejected and the sample reanalyzed by the laboratory. 4) if the contamination of Dioxin in the blank is <.1 ppb no action is taken; and, 5) if the detection limit in the blank exceeds 1 ppb red-line positive data in all samples associated with the blank. 6) if the rinsate blank contains dioxins at > 0.5 ug/l notify the Deputy Project Officer and discuss the proper action to be taken.

5.1.5 Spiked Field Blank Requirements - Each batch of 24 samples or less collected over a period of one or two days, whichever comes first, must contain a sample of uncontaminated (known blank) soil/sediment and/or water for spiking. Ten grams must be fortified by the laboratory with unlabeled 2,3,7,8-TCDD at a concentration of 1 ug/kg for soil and 10 ng/l for water, 50 ng of $^{13}C_{12}$-2,3,7,8-TCDD and 1.4 ng of $^{37}Cl_4$-2,3,7,8-TCDD.

5.1.5.1 Is the percent recovery of 2,3,7,8-TCDD within the 60 to 140 percent range? ✓ ___

ACTION: If the recovery is outside the 60 to 140 percent range, reject all data and request reanalysis of the sample.

5.1.6 Duplicate Analysis Sample

5.1.6.1 For every batch of samples, is there a sample designated as duplicate? ___ ✓

5.1.6.2 Results of laboratory duplicates must agree within 50% relative difference. ___ ___ N/A

ACTION: No action is taken if relative difference is >50%. The contracting laboratory must be notified, however, and the problem discussed.

	YES	NO
5.1.7 Performance Evaluation (PE) Sample - A performance evaluation sample which is provided by the region must be analyzed with every batch of 24 samples or less collected over a period of one or two days whichever comes first.		
5.1.7.1 Do the analytical results fall within the 99% EMS-LV acceptance criteria?	___	___ N/

The performance evaluation windows established by EPA can be obtained from diskettes supplied by UNLV-QAL. The Dioxin PE windows are updated quarterly and issued by UNLV-QAL quarterly.

ACTION: 1) The PE raw data must be reviewed as if it were an environmental sample; 2) if 2,3,7,8-TCDD was not qualitatively identified reject all data; 3) if the reported value for PE sample exceeds the upper acceptance limits, reject all positive Dioxin values in the entire associated batch of samples, but not the ND values; and 4) if the reported value exceeds the lower acceptance limits, all positive and negative (ND) values are rejected.

6.0 Holding Times (For water sample only).

	YES	NO
6.1 Have any holding times have been exceeded for aqueous samples		
a. 10 days to extraction from verified time of sample receipt	___	___ N/A
b. 40 days after extraction for analysis	___	___ N/A

Action: If these holding times are exceeded, red-line the value on the data sheet (including detection limits) indicating rejection.

Title: Attachment 1 - CLP Dioxin Data Assessment Checklist (GC/MS Analyses)

CASE# _____ LAB _____ Site _____

7.0 Conclusions: (NOTE: Reviewers must red-line unacceptable data on sample data sheets; red-line data does not imply the compound is not present)

7.1 Data Assessment Narrative _____

7.2 Contract Problems/Non-compliance _____

Reviewer's Signature: _____ Date: _____

Verified By: _____ Date: _____

CDG-3

SOP NO. HW-2

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 7/87
REV. 12/87

(SOP Revision IX)

PREPARED BY: Hanif Sheikh DATE: 10-25-89
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

CONCURRED BY: Louis Bevilacqua DATE: 10/27/89
Louis Bevilacqua, Section Chief
Toxic and Hazardous Waste Section

APPROVED BY: Gerard F. McKenna DATE: 10/27/89
Gerard F. McKenna, Chief
Monitoring Management Branch

301336

itle: Evaluation of Inorganic Data for the Contract Laboratory Program

Date: Oct. 1989
Number: HW-2
Revision: 9

.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 7/87.

2.0 Responsibilities - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a total review:

2.1.1 Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1). The reviewer must answer every question on the checklist.

2.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2) The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 Contract Non-Compliance - SMO Report (Appendix A.3) This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Review Manager or Deputy Project Officer (DPO). Forward 5 copies: one each for internal files, appropriate Regional DPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to end of Data Assessment Narrative (Sec. A.2.2).

2.1.4 Data Summary Sheet - Summary of Inorganic Quality Control Data (Appendix A.5). Enter in ink on Data Summary Sheet required QC values from Forms I through IX. Circle all values that require data qualification "Action".

2.1.5 CLP Data Assessment Summary Forms

2.1.5.1 Appendix A.6
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.5.2 Appendix A.7
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.6 **Data Review Log**: It is recommended that each data reviewer should maintain a log of reviews completed to include:
a. date of start of case review
b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.7 **Telephone Record Log** - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

.1.8 **Forwarded Paperwork**

2.1.8.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Data Summary Sheet (Appendix A.5) along with completed Data Assessment Narrative (Appendix A.2)
e. Record of Communication (copy)
f. CLP Reanalysis Request/Approval Record (original + 3 copies)
g. Appendix A.7 (original).

2.1.8.2 Forward 4 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.7) and Telephone Record Log , if any,: one each for appropriate Regional DPO, Sample Management Office (SMO), and last two addressees of Mailing List for Data Reviewers (Appendix A.4) (the Inorganic Data Assessment form does not go to the last two addressees).

2.1.9 **Filed Paperwork** - Upon completion of review, the following are to be filed within MMB files:

a. Four copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.7.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Data Assessment Summary Form (Appendix A.6).
e. CLP Reanalysis Request/Approval Record (copy)

3.0 **Data Completeness**
Indicate incomplete data package on the computer tracking sheet located in MMB office. Authorized contractor personnel may contact the laboratory after discovery of an incomplete data package. If a laboratory will not return phone calls or does not respond to requests, notify MMB coordinator of Region II for resolution.

4.0 **Rejection of Data** - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 **Acceptance Criteria** - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of July 1, 1988.

6.0 **SMO Contract Compliance Screening (CCS)** - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 **Request for Reanalysis** - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative.If holding times and sample storage times have not been exceeded, DPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 **Record of Communication** - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 **Rounding off numbers** - The data reviewer will follow the standard practice.

	YES	NO	N/A
A.1.1 **Contract Compliance Screening Report** (CCS) - Present? Case Narrative	[✓]	___	___
ACTION: If no, contact RSCC.			
A.1.2 **Record of Communication (from RSCC)** - Present?	[ ]	___	✓
ACTION: If no, request from RSCC.			
A.1.3 **Trip Report** - Present? Chain-of-Custody	[✓]	___	___
ACTION: If no, contact RSCC for trip report.			
A.1.4 **Sample Traffic Report** - Present or on file?	[✓]	___	___
Legible?	[✓]	___	___
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 **Cover Page** - Present?	[✓]	___	___
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[✓]	___	___
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	[✓]	___	___
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[✓]	___	___
(b) Form I's?	[✓]	___	___
ACTION: If no for any of the above, contact RSCC for clarification.			

	YES	NO	N/A
1.6 **Form I (Final Data)** - Are all Form I's present and complete?	[✓]	___	___
ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[✓]	___	___
Are soil sample results for each parameter corrected for percent solids?	[✓]	___	___
Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[✓]	___	___
Are computation/transcription errors less than 10% of reported values?	[✓]	___	___
Are all "less than IDL" values properly coded with "U"?	[✓]	___	___
Was a brief physical description of samples given on Form I's?	[✓]	___	___
Were the result qualifiers used correctly with final data?	[✓]	___	___
ACTION: If no for any of the above, prepare Telephone Record Log, and contract laboratory for corrected data.			
Were any samples diluted beyond requirements of contract?	___	[✓]	___
If yes, were dilutions noted on Form I's?	[___]	___	✓
ACTION: If no, note under Contract-Problem/Non-Compliance of the"Data Assessment Narrative".			

	YES	NO	N/A
A.1.7 **Holding Times** - (aqueous samples)			
(Examine sample traffic reports and digestion/distillation logs.)			
Mercury (28 days). . . . . exceeded?	___	[___]	✓
Cyanide (14 days). . . . . exceeded?	___	[___]	✓
Other Metals (6 months). . . . . exceeded?	___	[___]	✓
Soil samples			
Metals (including Hg) and Cyanide (6 months)..exceeded?	___	[✓]	___

NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.

ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.

	YES	NO	N/A
A.1.8 **Raw Data**			
A.1.8.1 Digestion Log* for flame AA/ICP present?	[✓]	___	___
Digestion Log for furnace AA present?	[✓]	___	___
Digestion Log for mercury present?	[✓]	___	___
Digestion Log for cyanides present?	[✓]	___	___
Are pH values (pH<2 for all metals, pH>12 for cyanide) present in Digestion/Distillation Logs?	[___]	✓	___
*Weights, dilutions and volumes used to obtain values.			
Percent solids calculation present for soils/sediments? % Solids listed on Form I	[___]	✓	___
Are preparation dates present on Digestion Log? Internal Chain-of-Custody	[✓]	___	___

		YES	NO	N/A
.1.8.2 Measurement read out record present?	ICP	[✓]		
	Flame AA	[ ]		✓
	Furnace AA	[✓]		
	Mercury	[✓]		
	Cyanides	[✓]		
.1.8.3 Are all raw data to support all sample analyses and QC operations present?		[✓]		
Legible?		[✓]		
Properly Labeled?		[✓]		

ACTION: If no for any of the above, write Telephone Record Log and contact laboratory. Flag metal data as estimated if pH of sample is greater than 2. Flag cyanide data as estimated if pH sample is less than 12.

A.1.9 **Data Validation and Verification**

A.1.9.1 Calibration

A.1.9.1.1 Is record of at least 2 point calibration present for ICP analysis?		[✓]		
Is record of 5 point calibration present for Hg analysis?		[✓]		

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.9.1.2 Is record of 4 point calibration present for:	Flame AA?	[ ]		✓
	Furnace AA?	[✓]		
	Cyanides?	[✓]		

	YES	NO	N/A

NOTE: 1. If less than 4 standards are measured in absorbance mode, then the remaining standards in concentration mode must be run immediately after calibration and be within ±10% of true value.
2. For all AA (except Hg) and Cyanide analyses, one calibration standard is at CRDL level. If not, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".

ACTION: Flag associated data as estimated if standards are not within +10% of true values (except CRDL calibration standard). Do not flag the data as estimated in linear range indicated by good recovery of standard.

A.1.9.1.3 Is correlation *coefficient less than 0.995 for:

Mercury Analysis?	___	[✓]	___
Cyanide Analysis?	___	[✓]	___
Atomic Absorption Analysis?	___	[✓]	___

ACTION: If yes, flag the associated data as estimated.

A.1.9.2 Form II A (Initial and Continuing Calibration Verification)-

A.1.9.2.1 Present and complete for every metal and cyanide?	[✓]	___	___
Present and complete for AA and ICP when both are used for same analyte?	[___]	___	✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.9.2.2 Circle all values on data summary sheet that are outside contract windows. Are all calibration standards (initial and continuing) within control limits?

Metals 90-110%	[✓]	___	___
Hg - 80-120%	[✓]	___	___

e reviewer will calculate correlation coefficient.

	YES	NO	N/A
Cyanides 85-115%	[✓]	___	___

ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard of 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ), if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%).

Was continuing calibration performed every 10 samples or every 2 hours?	[✓]	___	___

ACTION: If no, flag the excess samples (eleventh and up) data as estimated (J).

9.3 **Form II B (CRDL Standards for AA and ICP)** -

9.3.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[✓]	___	___
*Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[✓]	___	___
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[✓]	___	___

ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are:

AA Analysis - **True Value ± CRDL

ICP Analysis - **True Value ± 2CRDL

CN Analysis - **True Value ± 0.5 x True Value.

ind the results of mid-range standard in the raw data.
rue value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL.

		YES	NO	N/A
A.1.9.3.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and for every four hours of ICP run?	[✓]	___	___
	ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
A.1.9.3.3	Circle all values on summary sheet that are outside acceptance windows.			
	Are CRA and CRI standards within control limits: Metals 80 - 120%R?	[___]	✓	___
	Is mid-range standard within control limits: Cyanide 80 - 120%R?	[✓]	___	___
	ACTION: Flag as estimated all the data within the affected ranges if the recovery of the standard is between 50-79%; flag only positive data if the recovery is between 121-150%; reject (red line) all data if the recovery is less than 50%; reject only positive data if the recovery is greater than 150%.			
A.1.9.4	**Form III (Initial and Continuing Calibration Blanks)**			
A.1.9.4.1	Present and complete?	[✓]	___	___
	For both AA and ICP when both are used for same analyte?	[___]	___	✓
	Was an initial calibration blank analyzed?	[✓]	___	___
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (whichever is more frequent)?	[✓]	___	___
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the contract-problems/ non-compliance section of the Data Assessment Narrative.			

	YES	NO	N/A
4.2 Circle all calibration blank values on Data Summary Sheet that are above CRDL (or 2 x IDL when IDL > CRDL). Are all calibration blanks (when IDL<CRDL) less than or equal to Contract Required Detection Limits (CRDL)?	[✓]		
Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[ ]		✓

ACTION: If no for any of the above, flag as estimated (J) on Form I's all data <5xIDL between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank.

.5 **FORM III (Preparation Blank)** -

(Note: The preparation blank for mercury is the same as the calibration blank.)

	YES	NO	N/A
.5.1 Was one prep. blank analyzed for: each 20 samples?	[✓]		
each batch?	[✓]		
each matrix type?	[✓]		
both AA and ICP when both are used for same analyte?	[ ]		✓

ACTION: If no for any of the above, flag as estimated (J) all associated positive data <10 x IDLs for which prep.blank was not analyzed.

NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).

	YES	NO	N/A
9.5.2 Is concentration of prep. blank greater than CRDL when IDL is less than or equal to CRDL?		[✓]	
If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank value?		[ ]	✓

		YES	NO	N/A
	ACTION: If yes, reject (red-line) all associated data that has a concentration less than ten times the prep. blank value, but greater than CRDL.			
A.1.9.5.3	Do concentrations of prep. blank fall below two times IDL when IDL is greater than CRDL?	[ ]		✓
	ACTION: If no, reject (red-line) all data that has a concentration less than 10 times the prep. blank value, but not flagged with a "U" (less than).			
A.1.9.5.4	Is concentration of prep. blank below the negative CRDL?		[✓]	
	ACTION: If yes, reject (red-line) all associated data that has a concentration less than 10xCRDL.			
9.6	**Form IV (ICP Interference Check Sample)**			
A.1.9.6.1	Present and complete?	[✓]		
	(NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[✓]		
	ACTION: If no, flag as estimated (J) all samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.8.6.2	Circle all values on Data Summary Sheet that are more than + 20% of true or established mean value. Are all Interference Check Sample results inside of control limits (+ 20%)?	[✓]		
	If no, is concentration of Al, Ca, Fe, or Mg lower in sample than in ICS?	[ ]		✓
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			

		YES	NO	N/A
9.7	**Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distallation)**- (Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
9.7.1	Present and complete for: each 20 samples?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each conc. range (i.e. low, med., high)?	[✓]	___	___
	For both AA and ICP when both are used for same analyte?	[___]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) all positive data less than four times spiking level for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
9.7.2	Was field blank used for spiked sample?	___	[✓]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
	NOTE: Matrix spike analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
9.7.3	Circle all values on Data Summary Sheet that are outside control limits (75% to 125%). Are all recoveries within control limits?	[___]	✓	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	✓	___
	ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			

	YES	NO	N/A
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[✓]	___	___

ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".

A.1.9.7.4 Aqueous

Are any spike recoveries:

(a) less than 30%?	___	[___]	✓
(b) between 30-74%?	___	[___]	✓
(c) between 126-150%?	___	[___]	✓
(d) greater than 150%?	___	[___]	✓

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

NOTE: If pre-digestion spike result is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, disregard spike recovery on Form V. Flag the associated data as estimated(J).

A.1.9.7.5 Soil/Sediment

Are any spike recoveries:

(a) less than 10%?	___	[✓]	___
(b) between 10-74%?	✓	[___]	___
(c) between 126-200%?	___	[✓]	___
(d) greater than 200%?	___	[✓]	___

ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".
Flag antimony arsenic, and selenium as estimated.

		YES	NO	N/A
9.8	**Form VI (Lab Duplicates)**			
9.8.1	Present and complete for: each 20 samples?	[✓]		
	each matrix type?	[✓]		
	each concentration range (i.e. low, med., high)?	[✓]		
	both AA and ICP when both are used for same analyte?	[ ]		✓
	ACTION: If no for any the above, flag as estimated (J) all data >CRDL* for which duplicate sample was not analyzed. Note: If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
9.8.2	Was field blank used for duplicate analysis?		[✓]	
	ACTION: If yes, flag all data >CRDL* as estimated (J) for which field blank was used as duplicate. NOTE: Duplicate analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
9.8.3	Are all values within control limits (RPD 20% or difference < ±CRDL)?	[ ]	✓	
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[✓]		
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative". NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL. 2. If lab duplicate result is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria.			

* Substitute IDL for CRDL when IDL > CRDL.

		YES	NO	N/A
A.1.9.8.4	Is any value for sample duplicate pair less than CRDL* and other value greater than or equal to 10 x *CRDL?	___	[✓]	___
	ACTION: If yes, flag the associated data as estimated (J).			
A.1.9.8.5	Aqueous Circle all values on Data Summary Sheet that are: RPD > 50%, or Difference > ± CRDL*			
	Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	✓
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	✓
	ACTION: If yes, flag the associated data as estimated.			
A.1.9.8.6	Soil/Sediment Circle all values on Data Summary Sheet that are: RPD > 100%, or Difference > 2 x CRDL*			
	Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%?	___	[✓]	___
	Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL?	___	[✓]	___
	ACTION: If yes, flag the associated data as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.

** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A
9.9 **Field Duplicates**			
9.9.1 Were field duplicates analyzed?	[✓]	___	___

ACTION: If yes, prepare a Form VI for each field duplicate pair, report concentrations of soils in ug/l on wet weight basis and calculate RPDs.

NOTE: 1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

9.9.2 Is any value for sample duplicate pair less than *CRDL and other value greater than or equal to 10 x *CRDL?	___	[✓]	___

ACTION: If yes, flag the associated data as estimated.

9.9.3 Aqueous

Circle all values on Form VI for field duplicates that are:
RPD > 50%, or
Difference > ± CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	✓
Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	✓

ACTION: If yes, flag the associated data as estimated.

9.9.4 Soil/Sediment

Circle all values on Form VI for field duplicates that are:
RPD >100%, or

Difference > 2 x CRDL*

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A
Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%?	___	[✓]	___
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL): >2x *CRDL?	___	[✓]	___

ACTION: If yes, flag the associated data as estimated.

A.1.9.10 Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)

A.1.9.10.1 Was one LCS prepared and analyzed for: every 20 water samples?	[___]	___	✓
every 20 solid samples?	[✓]	___	___
both AA and ICP when both are used for same analyte?	[___]	___	✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

A.1.9.10.2 Aqueous LCS

Circle all LCS values outside control limits (80 - 120%- except aqueous Ag and Sb).

Is any LCS recovery: less than 50%?	___	[___]	✓
between 50% and 79%?	___	[___]	✓
between 121% and 150%?	___	[___]	✓
greater than 150%?	___	[___]	✓

*bstitute IDL for CRDL when IDL > CRDL.
e absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

9.10.3 Solid LCS

NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).
2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.

	YES	NO	N/A
Is LCS "Found" value higher than the control limits on Form VII?	___	[✓]	___

ACTION: If yes, qualify all associated positive data as estimated.

	YES	NO	N/A
Is LCS "Found" value lower than the Control limits on Form VII?	___	[✓]	___

ACTION: If yes, qualify all associated data as estimated.

9.11 Form IX (ICP Serial Dilution) -

NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.

9.11.1 Was Serial Dilution analysis performed for:

	YES	NO	N/A
each 20 samples?	[✓]	___	___
each matrix type?	[✓]	___	___
each concentration range (i.e. low, med.)?	[✓]	___	___

		YES	NO	N/A
	ACTION: If no for any of the above, flag all positive data greater than or equal to 10xIDLs as estimated (J) for which Serial Dilution Analysis was not performed, and summarize the deficiency on the DPO report.			
A.1.9.11.2	Was field blank(s) used for Serial Dilution Analysis?	___	[✓]	___
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J).			
	NOTE: Serial dilution analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
A.1.9.11.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[✓]	___	___
	ACTION: If no, write in the contract-problem/non-compliance section of the "Data Assessment Narrative".			
A.1.9.11.4	Circle all values on Data Summary Sheet that are outside control limit for initial concentrations equal to or greater than 10 x IDLs only. Are any % difference values:			
	> 10%?	✓	[___]	___
	≥ 100%?	___	[✓]	___
	ACTION: Flag as estimated (J) all associated sample results equal to or greater than 10xIDLs for which percent difference is greater than 10% but less than 100%. Reject (red-line) all associated sample results equal to or greater than 10xIDLs for which PD is greater than or equal to 100%. Flag chromium data as estimated			

		YES	NO	N/A
9.12	**Furnace Atomic Absorbtion (AA) QC Analysis**			
9.12.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[✓]	___	___
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
9.12.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[✓]	___	___
	Was a dilution analyzed for sample with post digestion spike recovery less than 40%?	[✓]	___	___
	ACTION: If no for any of the above, flag all the associated data as estimated (J).			
9.12.3	Is *post digestion spike recovery less than 10% or greater than 150% for any result?	___	[✓]	___
	ACTION: If yes, reject (red-line) the affected data if recovery is <10%; reject data not flagged with "U" if spike recovery is >150%.			
	NOTE: Reject the data only if the affected sample was not subsequently analyzed by Method of Standard Addition.			
9.13	**Form VIII (Method of Standard Addition Results)**			
9.13.1	Present?	[✓]	___	___
	If no, is any Form I result coded with "S" or a "+"?	___	[___]	✓
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			

ɔst digestion spike is not required on the pre-digestion spiked sample when predigestion :e recovery is within control limits of 75-125% or when SR>4xSA.

	YES	NO	N/A
A.1.9.13.2 Is coefficient of correlation for MSA less than 0.990 for any sample?	___	[___]	✓
ACTION: If yes, reject (red-line) affected data.			
A.1.9.13.3 Was *MSA required for any sample but not performed?	___	[✓]	___
Is coefficient of correlation for MSA less than 0.995?	___	[___]	✓
Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	___	[___]	✓
ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1 9.13.4 Was proper quantitation procedure followed correctly as outlined in the SOW on page E-16 through E-17?	[___]	___	✓
ACTION: If no, note exception under contract problem/ non-compliance of data assessment narrative, or prepare a separate list.			

A.1.9.14 **Dissolved/Total or Inorganic/Total Analytes** -

A.1.9.14.1 Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[✓]	___
Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[✓]	___

NOTE:
1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration.
2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents.
3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.

* MSA is not required on LCS and prep. blank.

	YES	NO	N/A
9.14.2 Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	✓
9.14.3 Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	✓

ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.

9.15 Form I to IX

9.15.1 Are all the Form I through Form IX labeled with:

Laboratory name?	[✓]	___	___
Case/SAS number?	[___]	___	✓
EPA sample No.?	[✓]	___	___
SDG No.?	[✓]	___	___
Contract No.?	[___]	___	✓
Correct units?	[✓]	___	___
Matrix?	[✓]	___	___

ACTION: If no for any of the above, note under contract problem/non-compliance section of the "Data Assessment Narrative".

	YES	NO	N/A
A.1.9.15.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
(NOTE: Check all forms against raw data.)			
(a) all analytes analyzed by ICP?	___	[✓]	___
(b) all analytes analyzed by GFAA?	___	[✓]	___
(c) all analytes analyzed by AA Flame?	___	[___]	✓
(d) Mercury?	___	[✓]	___
(e) Cyanide?	___	[✓]	___

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

A.1.9.16 **Form I (Field Blank)** -

Circle all field blank values on Data Summary Sheet that are greater than CRDL, 2 x IDL when IDL > CRDL or 5xIDL when 5xIDL < CRDL.

Do concentrations of field blank(s) fall below CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	✓
Do concentrations of field blank(s) fall below 5xIDL when 5xIDL < CRDL ?	[___]	___	✓
If no, was field blank value already rejected due to other QC criteria?	[___]	___	✓

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value.

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	YES	NO	N/A
.17 **Form XI, XII, XIII (Quarterly Verification of Instrumental Parameters).**			
.17.1 Is quarterly verification report present for:			
Instrument Detection Limits?	[✓]	___	___
ICP Interelement Correction Factors?	[✓]	___	___
ICP Linear Ranges?	[✓]	___	___
ACTION: If no, contact DPO of the lab.			
.17.2 Form XI (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)			
Are IDLs present for: all the analytes?	[✓]	___	___
all the instruments used?	[✓]	___	___
For both AA and ICP when both are used for same analyte?	[___]	___	✓
ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.			
Is IDL greater than CRDL for any analyte?	___	[✓]	___
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL?	[___]	___	✓
ACTION: If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			

	YES	NO	N/A
A.1.9.17.3 Form XII (Linear Ranges)			
Was any sample result higher than high linear range of ICP by more than 10%?	___	[✓]	___
Was any sample result higher than the highest calibration standard for non-ICP parameters?	✓	[___]	___
If yes for any of the above, was the sample diluted to obtain the result on Form I.	[✓]	___	___
ACTION: If no, flag the result reported on Form I as estimated(J).			
A.1.9.18 **Percent Solids of Sediments**			
Is soil content in sediment(s) less than 50%?	___	[___]	✓
ACTION: If yes, qualify as estimated all data not previously rejected or flagged due to other QC criteria.			

: _____ Site _____ Matrix: Soil _____

_____ Lab _____ Water_____

actor _____ Reviewer _____ Other_____

. The case description and exceptions, if any, are noted below with reason(s) for rejection or qualification as estimated value(s) J.

_____

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A.2.1 (continuation)

1 (continuation)

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.5: Summary of Inorganics Quality Control Data

Date: Oct. 1989
Number: HW-2
Revision: 9

APPENDIX A 5 SUMMARY OF INORGANICS QUALITY CONTROL DATA

LABORATORY:_____ CASE NO._____ SOW NO._____ SAMPLE TYPE/SDG:_____

SITE/STUDY DESCRIPTION:_____ SAMPLE NOS:_____

_____

FIELD DUP. #'S:_____ LAB DUP. #'S:_____ Field Blank _____ MATRIX SPIKE #:_____

SERIAL DILUTION SAMPLE NO._____ COMPLETION DATE:_____ REVIEWERS INITIALS:_____

	XI	I	IIA				IIB		III				IV		V	VI	VII	IX	
Parameter	Detection Limits UG/L CRDL	Field Blank	Calib. Ver. %R Init	Continued 1	2	3	CRDL Std Ver. % R Init	Fin	Calibration Blanks Init	Continued 1	2	3	PREP BLANK	ICP ICS % R Init	Fin	Matrix Spike	Lab Dup RPD/Diff	LCS % R	Ser Dil % D	Method
Al	200																			
Sb	60																			
As	10																			
Ba	200																			
Be	5																			
Cd	5																			
Ca	5000																			
Cr	10																			
Co	50																			
Cu	25																			
Fe	100																			
Pb	5																			
Mg	5000																			
Mn	15																			
Hg	0.2																			
Ni	40																			
K	5000																			
Se	5																			
Ag	10																			
Na	5000																			
Tl	10																			
V	50																			
Zn	20																			
CN	10																			

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: _____ Date: _____ Case #: _____

Site: _____ Lab Name: _____

Reviewer's Initials: _____ Number of Samples: _____

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejection
ICP														
Flame AA														
Furnace AA														
Mercury														
Total														
Other														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

ICP														
Flame AA														
Furnace AA														
Mercury														
Total														
Other														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

..tle: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.7: CLP Data Assessment Checklist
Inorganic Analysis

Date: Oct. 1989
Number: HW-2
Revision: 9

INORGANIC REGIONAL DATA ASSESSMENT

Region_____

CASE NO._____

SITE_____

LABORATORY_____

NO. OF SAMPLES/ MATRIX_____

SDG#_____

REVIEWER (IF NOT ESD)_____

SOW#_____

REVIEWER'S NAME_____

DPO: ACTION_____ FYI_____

COMPLETION DATE_____

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES				
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:_____

AREAS OF CONCERN:_____

NOTABLE PERFORMANCE:_____

SDG - 4

SDG - 4 contains data validation for the following samples:

LLI NUMBER	SAMPLE	MATRIX
1477186	B16/S1	Soil Boring
1477187	B16/S3A	Soil Boring
1477188	B16/S3B	Soil Boring
1477189	B16/S5	Soil Boring
1477190 - 1477191	B20/S3A	Soil Boring
1477192	B20/S6	Soil Boring
1477193	SS-1	Soil Boring
1477194	SS-2	Soil Boring
1477195	SS-3A	Soil Boring
1477196	SS-3B	Soil Boring
1477197	SS-4A	Soil Boring
1477198	SS-4B	Soil Boring
1478390 - 1478391	SED-1	Sediment Sample

SDG-4

SOP NO. HW-6
Revision #6

CLP ORGANICS DATA REVIEW
AND PRELIMINARY REVIEW

CONCURRED BY: _____ Date: 4/6/89
Louis Bevilacqua
Monitoring Management Branch

APPROVED BY: _____ Date: 4/14/89
Gerard F. McKenna, Chief
Monitoring Management Branch

301370

INTRODUCTION TO DATA VALIDATION

1.0 Scope

1.1 This procedure is applicable to organic data obtained from contractor laboratories working for the Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in the Statement of Work (SOW).

2.0 Responsibilities

Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1 Data Assessment - The reviewer must answer every question on the checklist. All response shall be in ink.

2.2 Data Assessment Narrative (Attachment 1) - Data reviewer is required to use these forms and must match the action in the narrative with the action taken on the Form I(s).

2.3 Rejection Summary Form (Attachment 2) - Fill in the total number of analytes measured by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in the boxes where analyses were not performed or criteria do not apply.

2.4 Organic Regional Data Assessment - Data reviewer is also required to fill out Organic Regional Data Assessment Form (Attachment 3).

2.5 Telephone Record Log - The data reviewer should enter the bare facts of inquiry before initiating any authorized telephone conversation with a CLP laboratory. After the case review has been completed, mail the white copy of the Telephone Record Log to the laboratory and the pink copy to SMO. File the yellow copy in the Telephone Record Log folder and attach a photocopy of the Telephone Record Log to the completed Data Assessment Narrative.

2.6 Forwarded Paperwork - Upon completion of the review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:

a. data package
b. completed assessment checklist
c. SMO Contract Compliance Screening (CCS)

Forward four (4) copies of the completed Data Assessment Narrative along with four (4) copies of the Organic Data Assessment Form: one each for the appropriate Regional DPO, the Sample Management Office (SMO), and to the last two addresses of the Data Reviewers Mailing List.

2.7 Filed Paperwork - Upon completion of the review, the following are to be filed within the Monitoring and Management Branch (MMB) files:

a. Telephone record Log (copy)
b. Record of Communication (original)
c. Rejection Summary Form

3.0 Rejection of Data - All values determined to be unacceptable on the Organic Analysis Data Sheet (Form I) must be flagged with an "R". As soon as review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

4.0 Acceptance Criteria - In order that the reviews be consistent among reviewers, this Standard Operating Procedure (SOP) should be used. Additional guidance can be found in the Functional Guidelines.

5.0 SMO Contract Compliance Screening (CCS) - This is intended to aid the reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from the laboratory in response to CCS must be used by the reviewer.

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: _____

LAB: Lancaster Laboratories, Inc.

SITE: PPG-3

1.0 Data Completeness and Deliverables	YES	NO	N/A
1.1 Have any missing deliverables been received and added to the data package.	[✓]	___	___
ACTION: Call lab for explanation / resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-compliance" section of reviewer narrative.			
1.2 Was SMO CCS checklist included with package?	[___]	___	✓
2.0 Cover Letter/Case Narrative			
2.1 Is the Narrative or Cover Letter present?	[✓]	___	___
2.2 Are Case Number and/or SAS number contained in the Narrative or Cover Letter?	[___]	___	✓

3.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any VOA analyses, Part B for any BNA analyses and Part C for Pesticide/PCBs.

Does this package contain:

VOA data?	✓	___
BNA data?	✓	___
Pesticide/PCB data?	✓	___

ACTION: Complete corresponding parts of checklist.

	YES	NO	N/A

PART A: VOA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [✓] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [✓] ___

ACTION: Use professional judgement to evaluate the effect on the quality of the data.

ACTION: If any sample analyzed as a soil contains more than 50% water, all data should be rejected.

ACTION: If both VOA vials for a sample have air bubbles, flag all positive results "J" and all non-detects "R".

Note: Sample B2053A (LLI #1477190) was not labeled correctly.

2.0 Holding Times

2.1 Have any VOA holding times, determined from date of collection to date of analysis, been exceeded? ___ [✓] ___

If unpreserved, aqueous aromatic volatiles must be analyzed within 7 days of collection and non-aromatic volatiles must be analyzed within 14 days. If preserved with hydrochloric acid and stored at 4°C, then both aromatic and non-aromatic volatiles must be analyzed within 14 days. If uncertain about preservation, contact the sampler to determine whether the samples were preserved.

A ten-day* holding time for soil samples is recommended.

* from date of laboratory receipt to analysis.

Table of Holding Time Violations

Sample	Sample Matrix	Preserved ?	(See Traffic Report) Date Sampled	Date Lab Received	Date Analyzed

ACTION: If holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded.

	YES	NO	N/A
If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. The reviewer may determine that non-detect data are unusable ("R").			
3.0 Surrogate Recovery (Form II)			
3.1 Are the VOA Surrogate Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[___]	___	✓
3.2 Are all the VOA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[___]	___	✓
ACTION: Call lab for explanation / resubmittals. If missing deliverables are unavailable, document effect on data under "Conclusions" section of reviewer narrative.			
3.3 Were outliers marked correctly with an asterisk? None of the recoveries were outliers. ACTION: Circle all outliers in red.	[___]	___	✓
3.4 Was one or more VOA surrogate recovery outside of contract specifications for any sample or method blank?	___	[✓]	___
If yes, were samples reanalyzed?	[___]	___	✓
Were method blanks reanalyzed?	[___]	___	✓

ACTION: If surrogate recoveries are > 10% but all do not meet SOW specifications:

1. Flag all positive results as estimated ("J").
2. Flag all non-detects as estimated detection limits ("UJ").

	YES	NO	N/A
If any surrogate has a recovery of <10% : 1. Flag all positive results as estimated ("J"). 2. Flag all non-detects as unusable ("R"). Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and re-analyses. Check the internal standard areas.			
3.5 Are there any transcription/calculation errors between raw data and Form II?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike Duplicate/Recovery Form (Form III) present?	[✓]	___	___
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	
d. Med Soil	[___]	___	✓
ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.			

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
0 out of 10	0 out of 10

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
0 out of 5	0 out of 5

ACTION: If MS and MSD both have less than 10% recovery for an analyte, negative results for that analyte should be rejected, and positive results should be flagged "J". The above applies only to the sample used for the MS/MSD analysis. Use professional judgement in applying this criterion to other samples in the package.

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	YES	NO	N/A
5.0 Blanks (Form IV)			
5.1 Is the Method Blank Summary (Form IV) present?	[✓]	___	___
5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been analyzed for each set of samples or every 20 samples of similar matrix (low water, med water, low soil, medium soil), whichever is more frequent?	[✓]	___	___
5.3 Has a VOA instrument blank been analyzed at least once every twelve hours for each GC/MS system used?	[✓]	___	___
ACTION: If any method blank data are missing, call lab for explanation / resubmittal. If not available, reject all associated positive data ("R").			
5.4 Chromatography: review the blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.			
Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	[✓]	___	___
ACTION: Use professional judgement to determine the effect on the data.			
6.0 Contamination			
NOTE: "Water blanks" and "distilled water blanks" are validated like any other sample and are <u>not</u> used to qualify data. Do not confuse them with the other QC blanks discussed below.			
6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for VOAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor.	___	[✓]	___
6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)? see page 7A of SOG-4	✓	[___]	___
ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)			
NOTE: Only field/rinse blanks taken the same day as the samples are used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped. Blanks may not be qualified because of contamination in another blank. Blanks may be qualified for surrogate, spectral, tuning or calibration QC problems.			

Paul C. Rizzo Associates, Inc.
CONSULTANTS

By [illegible] Date 4-[illegible]-92 Subject _____ Sheet No. 7A of 36
Chkd. By ____ Date ____ CLG-4 VOA SECTION [illegible] Proj. No. [illegible]

Trip Blank LLI # 1477199 detected 37 ppb acetone (SQL = [illegible] ppb)

Associated Sample : B2053A detected 46 ppb acetone

Trip blank (LLI # 1477199) detected 37 ppb acetone. The associated sample B2053A (LLI # 1477190) detected 46 ppb acetone. Because the sample concentration is greater than the quantitation limit but less than ten times the concentration of the blank, the concentration of acetone was determined as being less than the quantitation limit for sample B2053A.

Trip Blank LLI # 1478398 detected 67 ppb acetone (SQL = 10 ppb)
TIC 5 " 1-propanol (ACN)

Associated Sample : SED-1 detected 92 ppb acetone

Trip blank (LLI # 1478398) detected 67 ppb acetone. The associated sample SED-1 (LLI # 1478390) detected 92 ppb acetone. Because the sample concentration is greater than the quantitation limit but less than ten times the concentration of the blank the concentration of acetone was determined as being less than the quantitation limit for sample SED-1.

YES NO N/A

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

	Sample conc > CRQL but < 10x blank	Sample conc < CRQL & is < 10x blank value	Sample conc > CRQL value & >10x blank value
Methylene chloride Acetone Toluene 2-butanone	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5 blank value
Other Contaminants	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? [___] ___ ✓

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Tuning and Mass Calibration (Form V)

7.1 Are the GC/MS Tuning and Mass Calibration Forms (Form V) present for Bromofluorobenzene (BFB)? [✓] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift? [✓] ___ ___

7.3 Has a tuning performance compound been analyzed for every twelve hours of sample analysis per instrument? [✓] ___ ___

ACTION: If any tuning data are missing, take action specified in 3.2 above.

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

	YES	NO	N/A
7.4 Have the ion abundance criteria been met for each instrument used?	[✓]	___	___

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If tuning calibration is in error, flag all associated sample data as unusable ("R"). However, if expanded ion criteria are met (See 1988 Functional Guidelines), the data reviewer may accept data with appropriate qualifiers.

	YES	NO	N/A
7.5 Are there any transcription / calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.)	___	[✓]	___
7.6 Have the appropriate number of significant figures (two) been reported? (Check at least two values, but if errors are found check more values.)	✓	[___]	___

ACTION: If large errors exist, call lab for explanation / resubmittal, make necessary corrections and note errors under "Conclusions".

	YES	NO	N/A
7.7 Are the spectra of the mass calibration compound acceptable?	[✓]	___	___

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes

8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:

	YES	NO	N/A
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Matrix spikes and matrix spike duplicates	[✓]	___	___
c. Blanks	[✓]	___	___

	YES	NO	N/A
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Matrix spikes and matrix spike duplicates (Mass spectra not required)	[✓]	___	___
c. Blanks	[✓]	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			
8.3 Are the response factors shown in the Quant Report? In Quant Report for initial calibration and continuing calibration.	[✓]	___	___
8.4 Is chromatographic performance acceptable with respect to:			
Baseline stability	[✓]	___	___
Resolution	[✓]	___	___
Peak shape	[✓]	___	___
Full-scale graph (attenuation)	[✓]	___	___
Other:_____	[___]	___	___
ACTION: Use professional judgement to determine the acceptability of the data.			
8.5 Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[✓]	___	___
ACTION: If any mass spectra are missing, take action specified in 3.2 above. If Lab does not generate their own standard spectra, make note in "Contract Problems/Non-compliance".			
8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]	___	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
8.8 Do sample and standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected, flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (at the calculated detection limit).			

	YES	NO	N/A
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "J" qualifier?	[✓]	___	___
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Blanks	[✓]	___	___
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "J" qualifier if missing and "N" qualifier to all identified TIC compounds on Form I, Part B.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds (example: 1,2-dimethylbenzene is xylene--a VOA TCL--and should not be reported as a TIC)?	___	[✓]	___
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate.			
10.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription / calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found?	___	[✓]	___
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	✓	[___]	___

	YES	NO	N/A
ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant. Reports) present for initial and continuing calibration?	[✓]	___	___
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete for the volatile fraction?	[✓]	___	___
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Are response factors stable for volatiles over the concentration range of the calibration (RSD <30%)?	[✓]	___	___
ACTION: Circle all outliers in red.			
ACTION: When RSD >30%, non-detects may be qualified using professional judgement. Flag all positive results "J". When RSD >90%, flag all non-detects as unusable ("R"). (Region II policy.)			
12.3 Do any compounds have a RRF < 0.05?	___	[✓]	___
ACTION: Circle all outliers in red.			
ACTION: If any volatile compound has an average RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").			

	YES	NO	N/A
12.4 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least two values but if errors are found, check more.)	___	[✓]	___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the volatile fraction?	[✓]	___	___
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	[✓]	___	___

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

_____

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, call lab for explanation / resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").

13.3 Do any continuing calibration standard compounds have a RRF < 0.05?	___	[✓]	___

ACTION: Circle all outliers in red.

ACTION: If any volatile compound has a RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").

13.4 Do any compounds have a % difference between initial and continuing calibration RRF > 25%?	✓	[___]	___

ACTION: Circle all outliers in red and qualify associated sample data as outlined in the table below:

Acetone %D = 34.0
2-Butanone %D = 29.7
Vinyl Acetate %D = 34.2
4-Methyl-2-Pentanone %D = 48.4
2-Hexanone %D = 49.9

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YES NO N/A

% DIFFERENCE

25-50	50-90	>90
'J' positive results, no action for non detects	'J' positive results, 'UJ' non detects	'J' positive results, "R" non detects

For samples B2053A and [illegible]: Vinyl Acetate, 2-Butanone, 4-Methyl-2-Pentanone and 2-Hexanone were analyzed as being less than the detection limit, so no qualifying action was taken. Because of blank contamination acetone was qualified as being less than the detection limit (see Section 6.2), so no action was taken.

13.5 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

14.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits for each continuing calibration? [✓] ___ ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary.)

ACTION: If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results and non-detects (U values) quantitated with this internal standard. If extremely low area counts are reported, or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable ("R").

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [✓] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

	YES	NO	N/A
15.0 Field Duplicates			
15.1 Were any field duplicates submitted for VOA analysis?	[___]	✓	___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

	YES	NO	N/A

PART B: BNA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [✓] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [✓] ___

ACTION: Use professional judgement to evaluate the effect on the quality of the data.

ACTION: If any sample analyzed as a soil contains more than 50% water, all data should be rejected.

2.0 Holding Times

2.1 Have any BNA holding times, determined from date of collection to date of extraction, been exceeded? ___ [✓] ___

Samples for BNA analysis, ~~both~~ soils ~~and waters~~, must be extracted within seven days of the date of *receipt*. ~~collection~~. Extracts must be analyzed within 40 days of the date of extraction.

Table of Holding Time Violations

Sample	Sample Matrix	Date Sampled	(See Traffic Report) Date Lab Received	Date Extracted	Date Analyzed

ACTION: If holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded.

	YES	NO	N/A
If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. The reviewer may determine that non-detect data are unusable ("R").			
3.0 Surrogate Recovery (Form II)			
3.1 Are the BNA Surrogate Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water	[ ]	___	✓
b. Med Water	[ ]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[ ]	___	✓
3.2 Are all the BNA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:			
a. Low Water	[ ]	___	✓
b. Med Water	[ ]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[ ]	___	✓
ACTION: Call lab for explanation / resubmittals. If missing deliverables are unavailable, document effect on data under "Conclusions" section of reviewer narrative.			
3.3 Were outliers marked correctly with an asterisk? None of the recoveries were outliers.	[ ]	___	✓
ACTION: Circle all outliers in red.			
3.4 Were two or more base-neutral OR acid surrogate recoveries out of specification for any sample or method blank?	___	[✓]	___
If yes, were samples reanalyzed?	[ ]	___	✓
Were method blanks reanalyzed?	[ ]	___	✓
ACTION: If all BNA surrogate recoveries are > 10% but two within the base-neutral or acid fraction do not meet SOW specifications, for the affected fraction only (i.e. base-neutral OR acid compounds): 1. Flag all positive results as estimated ("J"). 2. Flag all non-detects as estimated detection limits ("UJ").			

	YES	NO	N/A
If any base-neutral or acid surrogate has a recovery of <10% : 1. Flag all positive results for that fraction (i.e. all acid or base-neutral compounds) "J". 2. Flag all non-detects for that fraction "R".			
Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and re-analyses. Check the internal standard areas.			
3.5 Are there any transcription/calculation errors between raw data and Form II?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike Duplicate/Recovery Form (Form III) present?	[✓]	___	
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water	[___]	___	✓
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[___]	___	✓
ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.			

4.3 How many BNA spike recoveries are outside QC limits?

Water	Soils
N/A out of 22	0 out of 22

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
N/A out of 11	0 out of 11

ACTION: If MS and MSD both have less than 10% recovery for an analyte, negative results for that analyte should be rejected, and positive results should be flagged "J". The above applies only to the sample used for MS/MSD analysis. Use professional judgement in

	YES	NO	N/A
5.0 Blanks (Form IV)			
5.1 Is the Method Blank Summary (Form IV) present?	[✓]	___	___
5.2 Frequency of Analysis: for the analysis of BNA TCL compounds, has a reagent/method blank been analyzed for each set of samples or every 20 samples of similar matrix (low water, med water, low soil, medium soil), whichever is more frequent?	[✓]	___	___
5.3 Chromatography: review the blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.			
Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	[✓]	___	___
ACTION: Use professional judgement to determine the effect on the data.			
6.0 Contamination			
NOTE: "Water blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.			
6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for BNAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor. See page 194 of SOG-4	✓	[___]	___
6.2 Do any field/rinse blanks have positive BNA results (TCL and/or TIC)?	___	[___]	✓
ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)			
NOTE: Only field/rinse blanks taken the same day as the samples are used to qualify data. Blanks may not be qualified because of contamination in another blank. Blanks may be qualified for surrogate, spectral, tuning or calibration QC problems.			

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CONSULTANTS

By CV Date 4-30-90 Subject _____ Sheet No. 19A of 36

Chkd. By ____ Date _____ SDG-4 BNA SECTION 6.1 Proj. No. 88-595

Method Blank	LLI # 1472396	TIC	130	ppb	unknown alcohol
		"	170	"	unknown
		"	270	"	unknown
		"	200	"	unknown alkane
		"	6700	"	unknown
		"	130	"	unknown alkane
		"	170	"	unknown alkane
		"	170	"	unknown
		"	630	"	unknown
		"	530	"	unknown
		"	330	"	unknown carboxylic acid/ester

Blank Contamination in Associated Samples :

B20S3A	TIC	180	ppb	unknown
	"	392	"	unknown
	"	7600	"	unknown
	"	440	"	unknown
	"	730	"	unknown carboxylic acid/ester
SED-1	TIC	350	ppb	unknown
	"	7600	"	unknown
	"	200	"	unknown
	"	410	"	unknown

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YES NO N/A

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

	Sample conc > CRQL but < 10x blank	Sample conc < CRQL & is < 10x blank value	Sample conc > CRQL value & >10x blank value
Common Phthalate Esters	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5 blank value
Other Contaminants	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] ___ ✓

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Tuning and Mass Calibration (Form V)

7.1 Are the GC/MS Tuning and Mass Calibration Forms (Form V) present for Decafluorotriphenylphosphine (DFTPP)? [✓] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the DFTPP provided for each twelve hour shift? [✓] ___ ___

7.3 Has a tuning performance compound been analyzed for every twelve hours of sample analysis per instrument? [✓] ___ ___

ACTION: If any tuning data are missing, take action specified in 3.2 above.

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

	YES	NO	N/A
7.4 Have the ion abundance criteria been met for each instrument used?	[✓]		

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If tuning calibration is in error, flag all associated sample data as unusable ("R"). However, if expanded ion criteria are met (See 1988 Functional Guidelines), the data reviewer may accept data with appropriate qualifiers.

7.5 Are there any transcription / calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.)		[✓]	
7.6 Have the appropriate number of significant figures (two) been reported? (Check at least two values, but if errors are found check more values.)	✓	[ ]	

ACTION: If large errors exist, call lab for explanation / resubmittal, make necessary corrections and note errors under "Conclusions".

7.7 Are the spectra of the mass calibration compound acceptable?	[✓]		

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes

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8.1 Are the Organic Analysis Data Sheets (Form I BNA) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate	[✓]		
b. Matrix spikes and matrix spike duplicates	[✓]		
c. Blanks	[✓]		

	YES	NO	N/A
8.2 Are the BNA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Matrix spikes and matrix spike duplicates (Mass spectra not required)	[✓]	___	___
c. Blanks	[✓]	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			
8.3 Are the response factors shown in the Quant Report? On the Quant Report for initial calibration and continuing calibration.	[✓]	___	___
8.4 Is chromatographic performance acceptable with respect to:			
Baseline stability	[✓]	___	___
Resolution	[✓]	___	___
Peak shape	[✓]	___	___
Full-scale graph (attenuation)	[✓]	___	___
Other:_____	[___]	___	___
ACTION: Use professional judgement to determine the acceptability of the data.			
8.5 Are the lab-generated standard mass spectra of the identified BNA compounds present for each sample?	[✓]	___	___
ACTION: If any mass spectra are missing, take action specified in 3.2 above. If Lab does not generate their own standard spectra, make note in "Contract Problems/Non-compliance".			
8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]	___	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
8.8 Do sample and standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected, flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (at the calculated detection limit).			

	YES	NO	N/A
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "J" qualifier?	[✓]	___	___
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Blanks	[✓]	___	___
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "J" qualifier if missing and "N" qualifier to all identified TIC compounds on Form I, Part B.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds (example: 1,2-dimethylbenzene is xylene--a VOA TCL--and should not be reported as a TIC)?	___	[✓]	___
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate.			
10.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription / calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found?	___	[✓]	___
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	✓	[___]	___

	YES	NO	N/A

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.

11.0 Standards Data (GC/MS)

11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant. Reports) present for initial and continuing calibration? [✓] ___ ___

ACTION: If any calibration standard data are missing, take action specified in 3.2 above.

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI) present and complete for the BNA fraction? [✓] ___ ___

ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.

12.2 Are response factors stable for BNAs over the concentration range of the calibration (RSD <30%)? [___] ✓ ___
3-Nitroaniline RSD = 46.7%

ACTION: Circle all outliers in red.
No qualification; 3-Nitroaniline was less than the quantitation level in the associated samples.

ACTION: When RSD >30%, non-detects may be qualified using professional judgement. Flag all positive results "J". When RSD >90%, flag all non-detects as unusable ("R"). (Region II policy.)

12.3 Do any compounds have a RRF < 0.05? ___ [✓] ___

ACTION: Circle all outliers in red.

ACTION: If any BNA compound has an average RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").

	YES	NO	N/A
12.4 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least two values but if errors are found, check more.)	___	[✓]	___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the BNA fraction?	[✓]	___	___
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	[✓]	___	___

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

_____

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, call lab for explanation / resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").

13.3 Do any continuing calibration standard compounds have a RRF < 0.05?	___	[✓]	___

ACTION: Circle all outliers in red.

ACTION: If any BNA compound has a RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").

13.4 Do any compounds have a % difference between initial and continuing calibration RRF > 25%?	✓	[___]	___

ACTION: Circle all outliers in red and qualify associated sample data as outlined in the table below:

[illegible] Broaniline %D = 80.1

3,3'-Dichlorobenzidine %D = 40.9

YES NO N/A

3,3'-Dichlorobenzidine 4-Nitroaniline

% DIFFERENCE 25-50	50-90	>90
'J' positive results, no action for non detects	'J' positive results, 'UJ' non detects	'J' positive results, "R" non detects

Flag the results for 4-Nitroaniline as 'UJ' in the associated samples (B2D53A and SEC-1).

13.5 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

14.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits for each continuing calibration? [✓] ___ ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary.)

ACTION: If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results and non-detects (U values) quantitated with this internal standard. If extremely low area counts are reported, or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable ("R").

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [✓] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

	YES	NO	N/A
15.0 Field Duplicates			
15.1 Were any field duplicates submitted for BNA analysis?	[___]	✓	___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

	YES	NO	N/A

PART C: PESTICIDE/PCB ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [✓] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? The pH values for samples B16S5, B20S6, SS-2, SS-3A, SS-3ADL, SS-3BDL are outside of the range recommended in the CLP SOW. The pH was not adjusted. [✓] ___

ACTION: Use professional judgement to evaluate the effect on the quality of the data.

ACTION: If any sample analyzed as a soil contains more than 50% water, all data should be rejected.

2.0 Holding Times

2.1 Have any PEST/PCB holding times, determined from date of collection to date of extraction, been exceeded? ___ [✓] ___

Samples for PEST/PCB analysis, ~~both~~ soils ~~and waters~~, must be extracted within* ~~seven days of the date of collection~~. Extracts must be analyzed within 40 days of the date of extraction.

*ten days of laboratory receipt.

3.0 Surrogate Recovery (Form II)

3.1 Are the PEST/PCB Surrogate Recovery Summaries (Form II) present for each of the following matrices:

	YES	NO	N/A
a. Low Water	[___]	___	✓
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[✓]	___	___

3.2 Are all the PEST/PCB samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:

	YES	NO	N/A
a. Low Water	[___]	___	✓
b. Med Water	[___]	___	✓
c. Low Soil	[✓]	___	___
d. Med Soil	[✓]	___	___

	YES	NO	N/A
ACTION: Call lab for explanation / resubmittals. If missing deliverables are unavailable, document effect on data under "Conclusions" section of reviewer narrative.			
3.3 Were outliers marked correctly with an asterisk?	[✓]	___	___
ACTION: Circle all outliers in red.			
3.4 Was surrogate (DBC) recovery outside of the contract specification for any sample or blank? *Method Blank 2 (LLI # 478396A) % Recovery = 188*	✓	[___]	___
ACTION: No qualification is done if surrogates are diluted beyond detection. If recovery is below contract limit (but above zero), flag all results for that sample "J". If recovery is zero, flag positive results "J" and non-detects "R". If recovery for the blank is zero, flag non-detects for all associated samples "R". If recovery is above contract limit, flag all positive results for that sample "J", unless in the reviewers professional judgement the high recovery is due to co-eluting interference (check the associated blank - if recovery is high there also, flag the sample data). *All other surrogate standard recovery values are within the advisory quantitation limits.*			
3.5 Are there any transcription/calculation errors between raw data and Form II?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			

4.0 Matrix Spikes (Form III)

	YES	NO	N/A
4.1 Is the Matrix Spike Duplicate/Recovery Form (Form III) present?	[✓]	___	___
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water	[___]	___	✓
b. Med Water	[___]	___	✓
c. Low Soil	[___]	___	✓
d. Med Soil	[✓]	___	___
ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.			

MS:
Dieldrin %R = 178
Endrin %R = 162
4,4'-DDT %R = 1701

MSD:
4,4'-DDT %R = 1415

4.3 How many PEST/PCB spike recoveries are outside QC limits?

Water	Soils
N/A out of 12	*4* out of 12

	YES	NO	N/A
4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?			

Due to the non-homogeneous nature of the MS/MSD sample, the MS % recovery and the % RPD are outside the advisory quantitation limits for Endrin and Dieldrin. The % recovery for 4,4'-DDT is outside the advisory quantitation limit in both the MS and the MSD - to the high level of 4,4'-DDT in the background sample and to required dilutions.

Water	Soils
N/A out of 6	2 out of 6
Dieldrin % RPD = 22	Endrin % RPD = 60

ACTION: If MS and MSD both have less than zero recovery for an analyte, negative results for that analyte should be rejected, and positive results should be flagged "J". The above applies only to the sample used for MS/MSD analysis. Use professional judgement in applying this criterion to other samples.

5.0 Blanks (Form IV)

	YES	NO	N/A
5.1 Is the Method Blank Summary (Form IV) present?	[✓]		
5.2 Frequency of Analysis: for the analysis of Pesticide TCL compounds, has a reagent/method blank been analyzed for each set of samples or every 20 samples of similar matrix (low water, med water, low soil, medium soil), whichever is more frequent?	[✓]		
5.3 Chromatography: review the blank raw data - chromatograms, quant reports or data system printouts.			
Is the chromatographic performance (baseline stability) for each instrument acceptable for PEST/PCBs?	[✓]		

ACTION: Use professional judgement to determine the effect on the data.

6.0 Contamination

NOTE: "Water blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

	YES	NO	N/A
6.1 Do any method/instrument/reagent blanks have positive results for PEST/PCBs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor.		[✓]	
6.2 Do any field/rinse blanks have positive PEST/PCB results?		[ ]	✓

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

YES NO N/A

NOTE: Only field/rinse blanks taken the same day as the samples are used to qualify data. Blanks may not be qualified because of contamination in another blank. Blanks may be qualified for surrogate, spectral, tuning or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL & > 5x blank value
Flag sample result with a "U"; cross out "B" flag	Reject sample result and report CRQL; cross out "B" flag	No qualification is needed

6.3 Are there field/rinse/equipment blanks associated with every sample? [___] ___ ✓

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 Calibration and QC Performance

7.1 Are the following Gas Chromatograms and Data System Printouts for both Primary and Confirmation (confirmation standards not required if there are no positive results above CRQL) column present:

a. Evaluation Standard Mix A [✓] ___ ___

b. Evaluation Standard Mix B [✓] ___ ___

c. Evaluation Standard Mix C [✓] ___ ___

d. Individual Standard Mix A [✓] ___ ___

e. Individual Standard Mix B [✓] ___ ___

f. Multi-component Pesticides Toxaphene & Chlordane [✓] ___ ___

g. Aroclors 1016/1260 [✓] ___ ___

h. Aroclors 1221, 1232, 1242, 1248, and 1254 [✓] ___ ___

ACTION: If no, take action specified in 3.2 above

	YES	NO	N/A
7.2 Is Form VIII Pest-1 present and complete for each GC column (primary and confirmation) and each 72 hour sequence of analyses?	[✓]	___	___
ACTION: If no, take action specified in 3.2 above.			
7.3 Are there any transcription/calculation errors between raw data and Form VIII?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
7.4 Has the total breakdown on quantitation or confirmation column exceeded 20% for DDT?	___	[✓]	___
- for Endrin?	___	[✓]	___
or if Endrin aldehyde and 4,4'-DDD co-elute and there is a peak at their retention time, has the combined DDT and Endrin breakdown exceeded 20%?	___	[✓]	___

ACTION:

a. If DDT breakdown is greater than 20% on quantitation column beginning with the samples following the last in control standard:

1. Flag all positive DDT results "J".
2. If DDT was not detected but DDD and/or DDE are positive, flag the DDT non-detect "R".
3. Flag positive DDD and DDE results "JN".
4. If DDT breakdown is > 20% on confirmation column and DDT is identified on quantitation column but not on confirmation column, use professional judgement to determine whether DDT should be reported on Form I (if reported, flag result "N").

b. If Endrin breakdown is > 20% on quantitation column, beginning with the samples following the last in control standard:

1. Flag all positive Endrin results "J".
2. If Endrin was not detected, but Endrin Aldehyde and/or Endrin Ketone are positive, flag the Endrin non-detect "R".
3. Flag Endrin Ketone positive results "JN".
4. If Endrin breakdown is > 20% on confirmation column and Endrin is identified on quantitation column but not on confirmation column, use professional judgement to determine whether Endrin should be reported on Form I (if reported, flag result "N").

c. If the combined breakdown is used (it can only be used if the conditions in 7.4 above are met) and is > 20% on quantitation column beginning with the last in control standard, take the actions specified in 7.4 a and b above. If the combined breakdown is >20% on confirmation column and Endrin or DDT is identified on quantitation column but not on confirmation column, use professional judgement to determine whether Endrin or DDT should be reported on Form I (if reported, flag result "N").

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	YES	NO	N/A
7.5 Is the linearity check RSD of all four calibration factors <10% for the quantitation column?	[✓]	___	___
ACTION: If no, flag positive hits for all pesticide and PCB analytes "J" for all associated samples. Do not flag toxaphene or DDT if they are quantified from a 3-point calibration curve.			
7.6 Is the % difference between the EVAL A and each analysis (quantitation and confirmation) DBC retention time within QC limits (2% for packed column, 0.3% for capillary [I.D. < 0.32 mm], 1% for megabore [0.32 < I.D. < 2 mm]) ?	[✓]	___	___
ACTION: DBC retention time cannot be evaluated if DBC is not detected. If it is present and has a retention time out of QC limits, then use professional judgement to determine the reliability of the analysis and flag results "R", if appropriate.			
7.7 Was the proper analytical sequence followed for each 72 hour period of analyses (page PEST D-36 in 8/87 SOW).	[✓]	___	___
ACTION: If no, use professional judgement to determine the severity of the effect on the data and accept or reject it accordingly. Generally, the effect is negligible unless the sequence was grossly altered or the calibration was also out of limits.			

8.0 Pesticide/PCB Standards Summary

	YES	NO	N/A
8.1 Is Form IX present and complete for each GC column and 72 hr sequence of analyses?	[✓]	___	___
ACTION: If no, take action specified in 3.2 above.			
8.2 Are there any transcription/calculation errors between raw data and Form IX?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
8.3 Is DDT retention time for packed columns > 12 min (except OV-1 and OV-101 columns)?	[✓]	___	___
ACTION: If no, check that there is adequate resolution between individual components. If not, flag results for compounds that interfere with each other (co-elute) "R".			
8.4 Do all standard retention times fall within the windows established for the first IND A and IND B analyses?	[✓]	___	___

	YES	NO	N/A
ACTION: Beginning with the samples following the last in control standard, check to see if the chromatograms contain peaks within an expanded window surrounding the expected retention times. If no peaks are found and, DBC is visible non-detects are valid. If peaks are present and cannot be identified through "pattern recognition" or a consistent shift in standard retention times, flag all affected compound results "R".			
8.5 Are the continuing calibration standard calibration factors within 15% (for quantitation column) or 20% (for confirmation column) of the initial (at beginning of 72 hr sequence) calibration factors?	[✓]	___	___
ACTION: If no, flag all associated positive results "J". Use professional judgement to determine whether or not to flag non-detects.			
9.0 Pesticide/PCB Identification			
9.1 Is Form X complete for every sample in which a pesticide or PCB was detected?	[✓]	___	___
ACTION: If no, take action specified in 3.2 above.			
9.2 Are there any transcription errors between raw data and Form X?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
9.3 Are retention times of sample compounds within the calculated retention time windows for both quantitation and confirmation analyses? See page 34A of SOG-4	[✓]	___	___
Was GC/MS confirmation provided when required (when compound concentration is > 10 ug/ml in final extract)?	[✓]	___	___
ACTION: Reject ("R") all positive results (meeting quantitation column criteria, but missing confirmation by a second column or GC/MS (if appropriate). Also, reject ("R") all positive results not meeting retention time window criteria unless associated standard compounds are similarly biased (i.e. base on RRT to DBC).			
9.4 Check chromatograms for false negatives, especially for the multiple peak components toxaphene and PCB's. Were there any false negatives?	___	[✓]	___
ACTION: If appropriate PCB standards were not analyzed, or if the lab performed no confirmation analysis, flag the appropriate data with an "R".			

301406

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By _____ Date _____ Subject _____ Sheet No. 34A of 36
Chkd. By _____ Date _____ SDG-4 PEST/PCBs SECTION 9.3 Proj. No. EE-595

For sample SED-1L, the presence of 4,4'-DDT is reported (although the retention time is not within the established window on the 2401/2250 column, since the retention time of 4,4'-DDT is within the established windows on both the OV-101 and RTLS columns. The retention time of gamma-BHC is not within the established window on the 2401/2250 quantitation column; however, it is out by only 0.01 minutes so the presence of gamma-BHC is reported.

For sample SS-3BL, the presence of 4,4'-DDT is reported (although the retention time is not within the established window on the confirmation column) since the level of 4,4'-DDT present yields a large peak causing the retention time to shift.

	YES	NO	N/A
10.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription / calculation errors in Form I results? Check at least two positive values. Were any errors found?	___	[✓]	___
NOTE: Simple peak pesticide results can be checked for rough agreement between quantitative results obtained on the two GC columns. The reviewer should use professional judgement to decide whether a much larger concentration obtained on one column versus the other indicates the presence of an interfering compound. If an interfering compound is indicated, the lower of the two values should be reported and qualified as presumptively present at an estimated quantity ("JN"). This necessitates a determination of an estimated concentration on the confirmation column. The narrative should indicate that the presence of interferences has obscured the attempt at a second column confirmation.			
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture? See page 35A of SOG-4	✓	[___]	___
ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.			
11.0 Chromatogram Quality			
11.1 Were baselines stable?	[✓]	___	___
11.2 Were any electropositive displacement (negative peaks) or unusual peaks seen?	___	[✓]	___
11.3 Were early eluting peaks (for early eluting analytes) resolved to baseline?	[✓]	___	___
ACTION: For 11.1 and 11.2, comment only. For 11.3, reject ("R") those analytes that are not sufficiently resolved.			

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By ___ Date 5-3-90 Subject ___ Sheet No. 35A of 36
Chkd. By ___ Date ___ SDG-4 PEST/PCBs SECTION 10.2 Proj. No. 82-595

For sample B1651, the CRQL was increased for the constituent PCB-1221. Due to an interferent present on the chromatogram, the quantitation limit was determined from a worst case calculation based on the height of an interferent.

For sample B1655, the CRQL was increased for the constituents Endosulfan I and PCB-1221. Due to an interferent present on the chromatogram, the quantitation limit was determined from a worst case calculation based on the height of an interferent.

For sample SS-3A, the actual quantitation limit for 4,4'-DDD was determined as a worst case based on the height of an interfering peak.

For sample SEL-1, the actual quantitation limits of delta-BHC, Aldrin, PCB-1016, PCB-1221, PCB-1232, and PCB-1242 were determined from a replotted chromatogram representing a 2-fold increase in attenuation. Hence, the quantitation limit was raised by a factor of two.

	YES	NO	N/A
12.0 Field Duplicates			
12.1 Were any field duplicates submitted for PEST/PCB analysis? See page 36A of SOG-4	[✓]	___	___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

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By [illegible] Date [illegible] Subject _____ Sheet No. 36A of 36
Chkd. By ____ Date ____ SWG-4 PEST/PABS SECTION 12.1 Proj. No. 88-595

Field Duplicates SS-4A LLI # 1477197
SS-4B LLI # 1477198

RESULTS DRY WT. BASIS

COMPOUND	SS-4A (ug/kg)	SS-4B (ug/kg)	RPD*
DDT	1,240,000	1,300,000	5
DDE	—	256,000	—

RESULTS WET BASIS

COMPOUND	SS-4A (ug/kg)	SS-4B (ug/kg)	RPD*
DDT	540,000	860,000	—
DDE	—	150,000	—

* $RPD = \frac{|A-B|}{(A+B)/2} \times 100$

301411

where, A = concentration detected in sample A
B = concentration detected in sample B

SDG-4

SOP NO. HW-5

CLP DIOXIN (2,3,7,8 TCDD) DATA REVIEW

REVISION 4

PREPARED BY: Stelios Gerazounis DATE: 7/10/89
Stelios Gerazounis
Monitoring Management Branch

CONCURRED BY: L Bevilacqua DATE: 7/10/89
Louis Bevilacqua
Monitoring Management Branch

APPROVED BY: Gerard F. McKenna DATE: 7/10/89
Gerard F. McKenna, Chief
Monitoring Management Branch

1.0 Introduction

1.1 This procedure is applicable to dioxin data from contractor laboratories working under the Hazardous Waste Site Contract Labortory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Solicitation, Offer and Award No. IFB WA-86K357.

2.0 Responsibilities

2.1 The reviewers will complete and/or file the following:

2.1.1 Data Review Log - Each reviewer will fill in the following information in the log book for each data package:

a. date of start of case review
b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples

2.1.2 Rejection Summary Form - Fill out as necessary using a ratio format. The numerator would indicate the number of dioxin data rejected; the denominator would indicate the number of dioxin fractions containing rejected compounds. File in the appropriate folder.

2.1.3 Telephone Log - All phone conversations must be initiated by the data review manager or the deputy project officer. If a phone call has been made, fill out stating the bare facts of the conversation. Give two copies to secretary, one to go to the laboratory and one to go to SMO. File the third copy in the appropriate folder.

2.1.5 Data Assessment Checklist - Attachment 1 of this SOP must be completed along with the Data Assessment Narrative.

2.1.6 Forwarded Paperwork - The following are to be forwarded to the Regional Sample Central Center (RSCC) upon completion of the review:

a. data package
b. completed data assessment checklist (original)
c. Contract Compliance Screening (CCS)
d. CLP Re-analysis Request/Approval Record (original and 2 copies)

Forward four (4) copies of the completed Data Assessment Narrative along with four (4) copies of the Organic Data Assessment Form: one each for the appropriate Regional DPO, the Sample Management Office (SMO), and the last two addressees of the Data Reviewers Mailing List.

2.1.7 Filed Paperwork - The following are to be filed within MMB files:

a. SMB Review (Copy)
b. Narrative part (Para. 7.0) of data assessment checklist (copy)
c. Telephone Record Log (yellow copy)
d. Rejection Summary Form (original)
e. CLP Re-analysis Request/Approval Record (copy)

3.0 Data Completeness

Incomplete data packages must be brought to the attention of the data review manager or the deputy project officer (DPO) whenever the lack of any information would cause the rejection of data.

4.0 Rejection of Data

All values determined to be unacceptable on the dioxin analysis data sheets should be lined over with a red pencil.

5.0 Acceptance Criteria

In order that reviews be consistent among reviewers, acceptance criteria as stated in Attachment 1 should be used.

6.0 Reviewer Corrections

All corrections to reviewed data made by reviewers must be indicated in red pencil.

7.0 Request for Reanalysis

Data reviewers must note all items of contract non-compliance within Data Assessment Narrative (see page 15 of this SOP). If holding times and sample storage times have not been exceeded, the Data Review Manager or DPO may request reanalysis, if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

NOTE TO THE REVIEWER: The attached SOP is for a "Total" Review of the 2,3,7,8-TCDD data. Its purpose is to facilitate the validation of the data reported by the contracting laboratory and also to assure that the data is being reviewed in a uniform manner.

Please read each item carefully and check YES if there is compliance and NO if there is no compliance.

The reviewer must red-line unacceptable data on Sample Data Sheets (red-lined does not imply the compound is not present).

Red-lined or rejected data means that the data is unusable and that the sample may need to be reanalyzed by the same laboratory. If the laboratory already has analyzed the sample twice a reanalysis must be done by another laboratory.

Please notify immediately the Deputy Project Officer (DPO) or the Data Review Manager concerning problems and inadequacies with regard to laboratory sample data.

1.0 Deliverables

1.1 All deliverables must be clearly labeled with the SMO case number and the associated sample/traffic number. Review the data package to assure that all items listed below are provided. Missing, illegible or incorrectly labeled items must be checked off. The contractor should immediately be contacted and requested to submit the missing or incorrect items.

1.2 Are the following forms present?	YES	NO
a. TCDD Data Report Form (Form B-1)	✓	
b. Initial Calibration Summary (Form B-2)	✓	
c. Continuing Calibration Summary (Form B-3)	✓	
d. A Chronological List of all Sample Analyses	✓	
GC/MS Displays		
a. SICP's for the Initial Triplicate Analysis of the Four Concentration Calibration Solution	✓	
b. SICP for Each Performance Check Solution	✓	
c. SICP for Each Shift Standard	✓	

	YES	NO
GC/MS Displays		
d. Plotted Concentration Calibration Curve	✓	
e. SICP's for Each Sample Ran	✓	

WERE THE FOLLOWING CRITERIA MET?

2.0 Instrument Performance

2.1 Performance Check Solution Requirements - The performance check solution must be analyzed at the beginning and at the end of each 12 hour shift. ✓

2.1.1 Chromatographic Resolution

- The valley between 2,3,7,8-TCDD and the peak of all other TCDD isomers must be $\leq$ 25%. ✓

- Recalculate the valley (%) between 2,3,7,8-TCDD and the peak of the least resolved adjacent isomer using the following equation:

$$\% \text{ Valley} = \frac{x}{y} \times 100$$

Where: y = peak height of 2,3,7,8-TCDD
x = measured height from valley of the least resolved adjacent isomer to the baseline.

2.1.2 Ion Critera

- The ratio of integrated ion current for m/z 320 to m/z 322 for 2,3,7,8-TCDD must be $\geq$.67 and $\leq$.90. ✓

- The ratio of the integrated ion current for m/z 332 to m/z 334 for $^{13}C_{12}$2,3,7,8-TCDD must be $\geq$.67 and $\leq$.90. ✓

ACTION: 1) If the 25% valley requirement is not met, red-line all data collected within the shift associated with the performance standard. No action is taken if any of the other requirements are not met; and 2) if the performance check solution was not analyzed in the required frequency, use professional judgment to determine the effect on the quality of the data.

	YES	NO
3.0 Calibration		
3.1 Initial Calibration - Initially, 2,3,7,8-TCDD Standards of 0.2, 1.0, 5.0, and 20.0 ng/ul solutions will be injected in triplicate. Each solution also contains 1ng/ul $^{13}C_{12}$2,3,7,8-TCDD (internal standard) and 0.6ng/ul $^{13}C_{12}$1,2,3,4-TCDD (recovery standard). Solutions #1 and #2 contain 0.028 ng/ul of $^{37}Cl_4$2,3,7,8-TCDD. The concentration of these solutions may vary only slightly from time to time. The calibration standards must be analyzed using the same GC conditions that were used to analyze the performance check solution and must meet the following criteria.		
- Scanning time must be $\leq$ 1.5 seconds. on ion profile	✓	
- The ratio of the integrated ion current for m/z 320 to 322 for 2,3,7,8-TCDD must be $\geq$.67 and ~~$\geq$.90~~ $\leq$.90.	✓	
- The ratio of integrated ion current for m/z 332 to m/z 334 for $^{13}C_{12}$2,3,7,8-TCDD and $^{13}C_{12}$1,2,3,4-TCDD must be $\geq$0.67 and $\leq$0.90.	✓	
- The signal to noise ratio for ions 332 and 334 must be $\geq$ 10. This ratio is no longer a required deliverable.		N/A
- The signal to noise ratio for ions 259, 320, 322, and 328 must be $\geq$ 2.5.	✓	
- The ions 259, 320, and 322 must maximize simultaneously and within 3 seconds of ions 332, 334 of $^{13}C_{12}$-2,3,7,8-TCDD.	✓	

For each concentration level, recalculate the response factor for unlabeled 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD:

$$RRF_n = \frac{Ax \times Qis}{Ais \times Qx}$$

Where: Ax = the sum of integrated ion abundance of m/z 320 and m/z 322 for unlabeled 2,3,7,8-TCDD.

Ais = the sum of integrated abundance of m/z 332 and m/z 334 for $^{13}C_{12}$-2,3,7,8-TCDD

Qx = quantity of unlabeled 2,3,7,8-TCDD

Qis = quantity of $^{13}C_{12}$-2,3,7,8-TCDD

ReCalculate the response factor for $^{13}C_{12}$-2,3,7,8-TCDD relative to $^{13}C_{12}$-1,2,3,4,-TCDD:

$$RRF_i = \frac{Ais \times Qrs}{Ars \times Qis}$$

Where Ars = the sum of integrated abundance of M/Z 332 and M/Z 334 for $^{13}C_{12}$-1,2,3,4 - TCDD

Qrs = the quantity of $^{13}C_{12}$-1,2,3,4 - TCDD.

	YES	NO
- The variation of the RRF for unlabeled 2,3,7,8-TCDD at each concentration level must not exceed 10% RSD	✓	
- The RSD of the 4 - mean RRFs for unlabeled 2,3,7,8-TCDD must not exceed 10% RSD.	✓	
- The RSD of the 4 - mean RRFs for $^{13}C_{12}$2,3,7,8-TCDD must not exceed 10% RSD.	✓	
- The mean of the 4 - mean RRFs for each compound established in the initial calibration must be used for concentration calculations.	✓	

ACTION: 1) If the required initial calibration data were not supplied, notify the laboratory. If they are unavailable, red-line (reject) all data; and 2) if any of the calibration curve standards fail to meet any of the above acceptance criteria red-line all data associated with the calibration curve.

3.2 Calibration Check Standard - At the beginning of every 12-hour shift, a calibration standard of a concentration of 1ppb must be analyzed using the same GC conditions that were used to analyze the performance check standard. Were the following operating MS conditions met?

- Scanning time must be $\leq$ 1.5 seconds. on ion profile	✓	
- The ratio of the integrated ion current for m/z 320 to 322 for 2,3,7,8-TCDD must be $\geq$.67 and $\leq$.90.	✓	
- The ratio of the integrated ion current for m/z 332 to 334 for $^{13}Cl_{12}$-2,3,7,8-TCDD must be $\geq$.67 and $\leq$.90.	✓	
- The ions 259, 320, 322 for 2,3,7,8-TCDD must maximize simultaneously and within 3 seconds of $^{13}C_{12}$-2,3,7,8-TCDD.	✓	

	YES	NO
- The signal to noise ratios for ions 259, 320, 322, and 328 must be $\geq$ 2.5.	✓	
- The signal to noise ratios for ions 332 and 334 must be $\geq$ 10. (This ratio is no longer reportable).		N/A
Check calculations for the response factors for unlabeled 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD and for $^{13}C_{12}$-2,3,7,8-TCDD relative to $^{13}C_{12}$-1,2,3,4-TCDD.		
- Are there any errors?		✓
- The response factor of 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD must be within $\pm$ 10% of the mean value for the initial 4-point calibration curve.	✓	
- The response factor of $^{13}C_{12}$-2,3,7,8-TCDD relative to $^{13}C_{12}$-1,2,3,4-TCDD must be within $\pm$ 10% mean value of the initial 4 point calibration curve.	✓	

ACTION: 1) If the required number of analyses of calibration check solutions were not submitted notify the contracting laboratory. If they are unavailable, reject all data without an associated calibration check standard; and 2) if the calibration check standard fails to meet any of the acceptance criteria, reject all the data associated with this standard.

4.0 Sample Data

4.1 Qualitative Requirements

4.1.1 The RT of 2,3,7,8-TCDD must be within 3 seconds of the RT of the $^{13}C_{12}$-2,3,7,8-TCDD.	Retention Time not reported	
4.1.2 The integrated ion currents for m/z 259, 320 and 322 must maximize simultaneously.	✓	
4.1.3 The integrated ion currents for m/z 259, 320, 322, and 328 must be at least 2.5 times background noise and must not have saturated the detector.	✓	
4.1.4 The internal standard ions m/z 332, 334 must be at least 10 times of noise level.	✓	
4.1.5 The ratio of the integrated ion currents m/z 320 to m/z 322 and m/z 332 to m/z 334 must be $\geq$.67 and $\leq$.90.	✓	

	YES	NO
4.1.6 When 2,3,7,8-TCDD is not present, the ratio of internal standard ion m/z 332 to m/z 334 must still be $\geq$.67 and $\leq$.90.	✓	
4.1.7 If the 2,3,7,8-TCDD was not qualitatively identif. in the sample, the MPC (detection limits) must not exceed 1 ppb.	✓	

ACTION: 1) if the 2,3,7,8-TCDD qualitative criteria were not met, 2,3,7,8-TCDD was not qualitatively identified, red-line positive value; 2) if the detection limit exceeds 1 ppb, red-line ND (not detected) dioxin value; 3) if the signal to noise criteria for ions m/z 328, 332, 334 were not met, red-line positive or ND dioxin values; and 4) if the ratio of ion m/z 332 to m/z 334 is outside the acceptance criteria, red-line positive or ND dioxin data.

4.2 Quantitative Requirements

4.2.1 Recalculate the concentration of 2,3,4,7-TCDD which was found in the sample using the equation:

$$Cx = \frac{Ax \times Qis}{Ais \times RRF_n \times W}$$

Where: Cx = the concentration of 2,3,7,8-TCDD in micrograms/Kg

Ax = the sum of integrated ion abundance for M/Z 320 and M/Z 322 for unlabeled 2,3,7,8-TCDD

Ais = the sum of integrated ion abundances for M/Z 332 and M/Z 334 which are the characteristic ions for the internal stanard $^{13}C_{12}$-2,3,7,8-TCDD

Qis = quantity of the internal standard (in nanograms) added to the sample before extraction

RRF_n = calculated mean response factor for unlabeled 2,3,7,8-TCDD relative to $^{13}C_{12}$-2,3,7,8-TCDD

W = weight (in grams) of wet soil or sediment sample

YES NO

4.2.2 Recalculate the concentration of the internal st ıuard $^{13}C_{12}$-2,3,7,8-TCDD using the formula:

$$Cis = \frac{Ais \times Qrs}{Ars \times RRF_i \times W}$$

Where: Cis = the concentration of the $^{13}C_{12}$-2,3,7,8-TCDD in ug/kg or ug/L

Ais = the sum of integrated ion abundance for M/Z 332 and 334 for $^{13}C_{12}$-2,3,7,8,-TCDD

Ars = sum of integrated ion abundances for M/Z 332 and 334 for $^{13}C_{12}$-1,2,3,4-TCDD

Qrs = quantity (in ng) of $^{13}C_{12}$-1,2,3,4-TCDD added to the sample before injection

RRF_i = calculated mean response factor for $^{13}C_{12}$-2,3,7,8 -TCDD relative to $^{13}C_{12}$-1,2,3,4-TCDD

W = weight (in grams) of wet soil or sediment sample or volume of water extracted (in mL)

4.2.3 The recovery of the internal standard must be within the 40 and 120 percent recovery window. ✓ ___

ACTION: These are advisory limits. View outliers in conjunction with surrogate recoveries and other data such as internal standard peak areas and signal to noise ratios.

4.3 Recalculate Maximum Possible Concentration - When no unlabeled Dioxin is detected, the lab must calculate the estimated detection limits which is the concentrations required to produce a signal with an area or peak height 2.5 times the background signal area or peak height. To recalculate use the formula:

$$MPC = \frac{2.5 \times Ax2 \times Qis}{Ais2 \times RRF_n \times W}$$

Where: MPC = Estimated maximum possible concentration for unlabeled 2,3,7,8-TCDD in ug/kg or ug/L.

Ax2 = peak height or integrated ion abundance for M/Z 320 or 322

Ais2 = integrated ion abundance or peak height for M/Z 332 when M/Z 320 is used or M/Z 334 when M/Z 322 is used to determine Ax

Qis = same definition as in 4.2.1

RRF_n = calculated mean response factor for 2,3,7,8 -TCDD relative to $^{13}C_{12}$ - 2,3,7,8 - TCDD

W = same definition as above

	YES	NO

NOTE: The use of the area or peak height for M/Z 320 is preferred to M/Z 322 except when there is interference for M/Z 320 but not for M/Z 322

ACTION: If variation in the calculations are found between the contractor's results and the regions recalculated results, the contractor must be informed and the discrepancy resolved. If the calculated amount of unlabeled Dioxin is outside the linear range obtained by the initial calculation (100 ppb for the 4 points) reject the data.

4.4 Estimated Maximum Possible Concentration - For samples where interference is observed for both M/Z 320 and 322 or when an unacceptable ratio prevented identification of unlabeled 2,3,7,8-TCDD, use equation in Section 4.2.1 to estimate the maximum concentration that could be represented by detected signals.

5.0 Quality Control

5.1 Blanks - Rinsate Blank/Field Blank/Reagent Blank

	YES	NO
5.1.1 One rinsate blank must be analyzed for each batch of samples collected each day.	✓	
5.1.2 One field blank must be extracted and analyzed for each batch of 24 samples or less collected over a period of one or two days whichever comes first.		✓
5.1.3 One method blank must be extracted and analyzed for each batch of samples or each time a group of samples are extracted.	✓	
5.1.4 Acceptable field blanks and laboratory method blanks must not contain any signal at 320, 322, or 259 which is greater than 2% of the m/z 332 response within ±5 scans of the m/z 332 peak maximum. If the method blank that was extracted along with a batch of samples is contaminated, the associated positive samples must be rerun. (See Exhibit C, SOW).	✓	

	YES	NO
ACTION: 1) If the proper number of reagent blanks were not submitted, notify the contractor. If they are unavailable, reject all positive sample data; 2) if the field blank and/or rinsate blank are missing, notify the DPO and discuss the action to be taken; 3) if the contamination of Dioxin in the reagent blank or in the field blank is >.1 ppb all positive dioxin data must be rejected and the sample reanalyzed by the laboratory. 4) if the contamination of Dioxin in the blank is <.1 ppb no action is taken; and, 5) if the detection limit in the blank exceeds 1 ppb red-line positive data in all samples associated with the blank. 6) if the rinsate blank contains dioxins at > 0.5 ug/l notify the Deputy Project Officer and discuss the proper action to be taken.		
5.1.5 Spiked Field Blank Requirements - Each batch of 24 samples or less collected over a period of one or two days, whichever comes first, must contain a sample of uncontaminated (known blank) soil/sediment and/or water for spiking. Ten grams must be fortified by the laboratory with unlabeled 2,3,7,8-TCDD at a concentration of 1 ug/kg for soil and 10 ng/l for water, 50 ng of $^{13}C_{12}$-2,3,7,8-TCDD and 1.4 ng of $^{37}Cl_4$-2,3,7,8-TCDD.		
5.1.5.1 Is the percent recovery of 2,3,7,8-TCDD within the 60 to 140 percent range?	✓	—
ACTION: If the recovery is outside the 60 to 140 percent range, reject all data and request reanalysis of the sample.		
5.1.6 Duplicate Analysis Sample		
5.1.6.1 For every batch of samples, is there a sample designated as duplicate?	—	✓
5.1.6.2 Results of laboratory duplicates must agree within 50% relative difference.	—	— N/A
ACTION: No action is taken if relative difference is >50%. The contracting laboratory must be notified, however, and the problem discussed.		

	YES	NO
5.1.7 Performance Evaluation (PE) Sample - A performance evaluation sample which is provided by the region must be analyzed with every batch of 24 samples or less collected over a period of one or two days whichever comes first.		
5.1.7.1 Do the analytical results fall within the 99% EMS-LV acceptance criteria?	___	___ N/A

The performance evaluation windows established by EPA can be obtained from diskettes supplied by UNLV-QAL. The Dioxin PE windows are updated quarterly and issued by UNLV-QAL quarterly.

ACTION: 1) The PE raw data must be reviewed as if it were an environmental sample; 2) if 2,3,7,8-TCDD was not qualitatively identified reject all data; 3) if the reported value for PE sample exceeds the upper acceptance limits, reject all positive Dioxin values in the entire associated batch of samples, but not the ND values; and 4) if the reported value exceeds the lower acceptance limits, all positive and negative (ND) values are rejected.

6.0 Holding Times (For water sample only).

6.1 Have any holding times have been exceeded for aqueous samples		
a. 10 days to extraction from verified time of sample receipt	___	___ N/A
b. 40 days after extraction for analysis	___	___ N/A

Action: If these holding times are exceeded, red-line the value on the data sheet (including detection limits) indicating rejection.

Title: Attachment 1 - CLP Dioxin Data Assessment Checklist (GC/MS Analyses)

CASE# _____ LAB _____ Site _____

7.0 Conclusions: (NOTE: Reviewers must red-line unacceptable data on sample data sheets; red-line data does not imply the compound is not present)

7.1 Data Assessment Narrative _____

7.2 Contract Problems/Non-compliance _____

Reviewer's Signature: _____ Date: _____

Verified By: _____ Date: _____

SDG-4

SOP NO. HW-2

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 7/87
REV. 12/87

(SOP Revision IX)

PREPARED BY: Hanif Sheikh DATE: 10-25-84
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

CONCURRED BY: Louis Bevilacqua DATE: 10/27/87
Louis Bevilacqua, Section Chief
Toxic and Hazardous Waste Section

APPROVED BY: Gerard F. McKenna DATE: 10/27/84
Gerard F. McKenna, Chief
Monitoring Management Branch

Title: Evaluation of Inorganic Data for the Contract Laboratory Program

Date: Oct. 1989
Number: HW-2
Revision: 9

1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 7/87.

2.0 Responsibilities - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a total review:

2.1.1 Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1).
The reviewer must answer every question on the checklist.

2.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2)
The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 Contract Non-Compliance - SMO Report (Appendix A.3)
This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Review Manager or Deputy Project Officer (DPO). Forward 5 copies: one each for internal files, appropriate Regional DPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to end of Data Assessment Narrative (Sec. A.2.2).

2.1.4 Data Summary Sheet - Summary of Inorganic Quality Control Data (Appendix A.5).
Enter in ink on Data Summary Sheet required QC values from Forms I through IX. Circle all values that require data qualification "Action".

2.1.5 CLP Data Assessment Summary Forms

2.1.5.1 Appendix A.6
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.5.2 Appendix A.7
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.6 **Data Review Log:** It is recommended that each data reviewer should maintain a log of reviews completed to include:
a. date of start of case review
b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.7 **Telephone Record Log** - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.8 **Forwarded Paperwork**

2.1.8.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Data Summary Sheet (Appendix A.5) along with completed Data Assessment Narrative (Appendix A.2)
e. Record of Communication (copy)
f. CLP Reanalysis Request/Approval Record (original + 3 copies)
g. Appendix A.7 (original).

2.1.8.2 Forward 4 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.7) and Telephone Record Log , if any,: one each for appropriate Regional DPO, Sample Management Office (SMO), and last two addressees of Mailing List for Data Reviewers (Appendix A.4) (the Inorganic Data Assessment form does not go to the last two addressees).

2.1.9 **Filed Paperwork** - Upon completion of review, the following are to be filed within MMB files:

a. Four copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.7.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Data Assessment Summary Form (Appendix A.6).
e. CLP Reanalysis Request/Approval Record (copy)

3.0 **Data Completeness**
Indicate incomplete data package on the computer tracking sheet located in MMB office. Authorized contractor personnel may contact the laboratory after discovery of an incomplete data package. If a laboratory will not return phone calls or does not respond to requests, notify MMB coordinator of Region II for resolution.

4.0 **Rejection of Data** - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 **Acceptance Criteria** - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of July 1, 1988.

6.0 **SMO Contract Compliance Screening (CCS)** - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 **Request for Reanalysis** - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative.If holding times and sample storage times have not been exceeded, DPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 **Record of Communication** - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 **Rounding off numbers** - The data reviewer will follow the standard practice.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review - Inorganics)

Date: Oct. 1989
Number: HW-2
Revision: 9

	YES	NO	N/A
A.1.1 **Contract Compliance Screening Report** (CCS) - Present? Case Narrative	[✓]		
ACTION: If no, contact RSCC.			
A.1.2 **Record of Communication (from RSCC)** - Present?	[ ]		✓
ACTION: If no, request from RSCC.			
A.1.3 **Trip Report** - Present? Chain-of-Custody	[✓]		
ACTION: If no, contact RSCC for trip report.			
A.1.4 **Sample Traffic Report** - Present or on file?	[✓]		
Legible?	[✓]		
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 **Cover Page** - Present?	[✓]		
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[✓]		
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record ~~of Communication~~? DATA PACKAGE	[✓]		
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[✓]		
(b) Form I's?	[✓]		
ACTION: If no for any of the above, contact RSCC for clarification.			

	YES	NO	N/A
1.6 **Form I (Final Data)** - Are all Form I's present and complete?	[✓]	___	___
ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[✓]	___	___
Are soil sample results for each parameter corrected for percent solids?	[✓]	___	___
Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[✓]	___	___
Are computation/transcription errors less than 10% of reported values?	[✓]	___	___
Are all "less than IDL" values properly coded with "U"?	[✓]	___	___
Was a brief physical description of samples given on Form I's?	[✓]	___	___
Were the result qualifiers used correctly with final data?	[✓]	___	___
ACTION: If no for any of the above, prepare Telephone Record Log, and contract laboratory for corrected data.			
Were any samples diluted beyond requirements of contract?	___	[✓]	___
If yes, were dilutions noted on Form I's?	[ ]	___	✓
ACTION: If no, note under Contract-Problem/Non-Compliance of the"Data Assessment Narrative".			

	YES	NO	N/A
A.1.7 **Holding Times** - (aqueous samples)			
(Examine sample traffic reports and digestion/distillation logs.)			
Mercury (28 days). . . . . exceeded?	___	[___]	✓
Cyanide (14 days). . . . . exceeded?	___	[___]	✓
Other Metals (6 months). . . . . exceeded?	___	[___]	✓
Soil samples			
Metals (including Hg) and Cyanide (6 months)..exceeded?	___	[✓]	___

NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.

ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.

A.1.8 **Raw Data**			
A.1.8.1 Digestion Log* for flame AA/ICP present?	[✓]	___	___
Digestion Log for furnace AA present?	[✓]	___	___
Digestion Log for mercury present?	[✓]	___	___
Digestion Log for cyanides present?	[✓]	___	___
Are pH values (pH<2 for all metals, pH>12 for cyanide) present in Digestion/Distillation Logs?	[___]	✓	___
*Weights, dilutions and volumes used to obtain values.			
Percent solids calculation present for soils/sediments? % Solids listed on Form I	[___]	✓	___
Are preparation dates present on Digestion Log? Internal Chain-of-Custody	[✓]	___	___

		YES	NO	N/A
.1.8.2 Measurement read out record present?	ICP	[✓]	___	___
	Flame AA	[✓]	___	___
	Furnace AA	[✓]	___	___
	Mercury	[✓]	___	___
	Cyanides	[✓]	___	___
.1.8.3 Are all raw data to support all sample analyses and QC operations present?		[✓]	___	___
Legible?		[✓]	___	___
Properly Labeled?		[✓]	___	___

ACTION: If no for any of the above, write Telephone Record Log and contact laboratory. Flag metal data as estimated if pH of sample is greater than 2. Flag cyanide data as estimated if pH sample is less than 12.

A.1.9 **Data Validation and Verification**

A.1.9.1 Calibration

A.1.9.1.1 Is record of at least 2 point calibration present for ICP analysis?		[✓]	___	___
Is record of 5 point calibration present for Hg analysis?		[✓]	___	___

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.9.1.2 Is record of 4 point calibration present for:	Flame AA?	[✓]	___	___
	Furnace AA?	[✓]	___	___
	Cyanides?	[✓]	___	___

	YES	NO	N/A

NOTE: 1. If less than 4 standards are measured in absorbance mode, then the remaining standards in concentration mode must be run immediately after calibration and be within ±10% of true value.
2. For all AA (except Hg) and Cyanide analyses, one calibration standard is at CRDL level. If not, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".

ACTION: Flag associated data as estimated if standards are not within +10% of true values (except CRDL calibration standard). Do not flag the data as estimated in linear range indicated by good recovery of standard.

A.1.9.1.3 Is correlation *coefficient less than 0.995 for:

	YES	NO	N/A
Mercury Analysis?	___	[✓]	___
Cyanide Analysis?	___	[✓]	___
Atomic Absorption Analysis?	___	[✓]	___

ACTION: If yes, flag the associated data as estimated.

A.1.9.2 **Form II A (Initial and Continuing Calibration Verification)**-

	YES	NO	N/A
A.1.9.2.1 Present and complete for every metal and cyanide?	[✓]	___	___
Present and complete for AA and ICP when both are used for same analyte?	[___]	___	✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.9.2.2 Circle all values on data summary sheet that are outside contract windows. Are all calibration standards (initial and continuing) within control limits?

	YES	NO	N/A
Metals 90-110%	[✓]	___	___
Hg - 80-120%	[✓]	___	___

The reviewer will calculate correlation coefficient.

	YES	NO	N/A
Cyanides 85-115%	[✓]	___	___

ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard of 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ), if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%).

	YES	NO	N/A
Was continuing calibration performed every 10 samples or every 2 hours?	[✓]	___	___

ACTION: If no, flag the excess samples (eleventh and up) data as estimated (J).

A.1.9.3 **Form II B (CRDL Standards for AA and ICP)** -

	YES	NO	N/A
A.1.9.3.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[✓]	___	___
*Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[✓]	___	___
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[✓]	___	___

ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are:

AA Analysis - **True Value ± CRDL

ICP Analysis - **True Value ± 2CRDL

CN Analysis - **True Value ± 0.5 x True Value.

Find the results of mid-range standard in the raw data.
*True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL.

		YES	NO	N/A
A.1.9.3.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and for every four hours of ICP run?	[✓]	___	___
	ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
A.1.9.3.3	Circle all values on summary sheet that are outside acceptance windows.			
	Are CRA and CRI standards within control limits: Metals 80 - 120%R?	[___]	✓	___
	Is mid-range standard within control limits: Cyanide 80 - 120%R?	[✓]	___	___
	ACTION: Flag as estimated all the data within the affected ranges if the recovery of the standard is between 50-79%; flag only positive data if the recovery is between 121-150%; reject (red line) all data if the recovery is less than 50%; reject only positive data if the recovery is greater than 150%.			
	ICP Copper I %R = 63.1 F %R = 27.3			
A.1.9.4	**Form III (Initial and Continuing Calibration Blanks)**			
A.1.9.4.1	Present and complete?	[✓]	___	___
	For both AA and ICP when both are used for same analyte?	[___]	___	✓
	Was an initial calibration blank analyzed?	[✓]	___	___
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (whichever is more frequent)?	[✓]	___	___
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the contract-problems/ non-compliance section of the Data Assessment Narrative.			

		YES	NO	N/A
1.9.4.2	Circle all calibration blank values on Data Summary Sheet that are above CRDL (or 2 x IDL when IDL > CRDL). Are all calibration blanks (when IDL<CRDL) less than or equal to Contract Required Detection Limits (CRDL)?	[✓]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[___]	___	✓

ACTION: If no for any of the above, flag as estimated (J) on Form I's all data <5xIDL between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank.

.1.9.5 **FORM III (Preparation Blank)** -

(Note: The preparation blank for mercury is the same as the calibration blank.)

		YES	NO	N/A
.1.9.5.1	Was one prep. blank analyzed for: each 20 samples?	[✓]	___	___
	each batch?	[✓]	___	___
	each matrix type?	[✓]	___	___
	both AA and ICP when both are used for same analyte?	[___]	___	✓

ACTION: If no for any of the above, flag as estimated (J) all associated positive data <10 x IDLs for which prep.blank was not analyzed.

NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).

		YES	NO	N/A
.1.9.5.2	Is concentration of prep. blank greater than CRDL when IDL is less than or equal to CRDL?	___	[✓]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank value?	___	[___]	✓

		YES	NO	N/A
	ACTION: If yes, reject (red-line) all associated data that has a concentration less than ten times the prep. blank value, but greater than CRDL.			
A.1.9.5.3	Do concentrations of prep. blank fall below two times IDL when IDL is greater than CRDL?	[ ]		✓
	ACTION: If no, reject (red-line) all data that has a concentration less than 10 times the prep. blank value, but not flagged with a "U" (less than).			
A.1.9.5.4	Is concentration of prep. blank below the negative CRDL?		[✓]	
	ACTION: If yes, reject (red-line) all associated data that has a concentration less than 10xCRDL.			
A.1.9.6	**Form IV (ICP Interference Check Sample)**			
A.1.9.6.1	Present and complete?	[✓]		
	(NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[✓]		
	ACTION: If no, flag as estimated (J) all samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.8.6.2	Circle all values on Data Summary Sheet that are more than + 20% of true or established mean value. Are all Interference Check Sample results inside of control limits (+ 20%)?	[✓]		
	If no, is concentration of Al, Ca, Fe, or Mg lower in sample than in ICS?	[ ]		✓
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			

		YES	NO	N/A
.1.9.7	**Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distallation)-** (Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
..1.9.7.1	Present and complete for: each 20 samples?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each conc. range (i.e. low, med., high)?	[✓]	___	___
	For both AA and ICP when both are used for same analyte?	[___]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) all positive data less than four times spiking level for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
..1.9.7.2	Was field blank used for spiked sample?	___	[✓]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
	NOTE: Matrix spike analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
..1.9.7.3	Circle all values on Data Summary Sheet that are outside control limits (75% to 125%). Are all recoveries within control limits?	[___]	✓	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	✓	___
	ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			

	YES	NO	N/A
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[✓]	___	___

ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".

A.1.9.7.4 Aqueous

Are any spike recoveries:

(a) less than 30%?	___	[___]	✓
(b) between 30-74%?	___	[___]	✓
(c) between 126-150%?	___	[___]	✓
(d) greater than 150%?	___	[___]	✓

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

NOTE: If pre-digestion spike result is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, disregard spike recovery on Form V. Flag the associated data as estimated(J).

A.1.9.7.5 Soil/Sediment

Are any spike recoveries:

(a) less than 10%?	___	[✓]	___
(b) between 10-74%?	✓	[___]	___
(c) between 126-200%?	✓	[___]	___
(d) greater than 200%?	___	[✓]	___

ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".

Flag antimony as estimated (51.4%R)
Flag mercury as estimated (132.2%R)

		YES	NO	N/A
A.1.9.8	**Form VI (Lab Duplicates)**			
A.1.9.8.1	Present and complete for: each 20 samples?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each concentration range (i.e. low, med., high)?	[✓]	___	___
	both AA and ICP when both are used for same analyte?	[___]	___	✓
	ACTION: If no for any the above, flag as estimated (J) all data >CRDL* for which duplicate sample was not analyzed. Note: If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
1.9.8.2	Was field blank used for duplicate analysis?	___	[✓]	___
	ACTION: If yes, flag all data >CRDL* as estimated (J) for which field blank was used as duplicate. NOTE: Duplicate analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
A.1.9.8.3	Are all values within control limits (RPD 20% or difference < ±CRDL)?	[___]	✓	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[✓]	___	___
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative". NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL. 2. If lab duplicate result is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria.			

* Substitute IDL for CRDL when IDL > CRDL.

		YES	NO	N/A
A.1.9.8.4	Is any value for sample duplicate pair less than CRDL* and other value greater than or equal to 10 x *CRDL?	___	[✓]	___
	ACTION: If yes, flag the associated data as estimated (J).			
A.1.9.8.5	Aqueous Circle all values on Data Summary Sheet that are: RPD > 50%, or Difference > ± CRDL*			
	Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	✓
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	✓
	ACTION: If yes, flag the associated data as estimated.			
A.1.9.8.6	Soil/Sediment Circle all values on Data Summary Sheet that are: RPD > 100%, or Difference > 2 x CRDL*			
	Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%?	___	[✓]	___
	Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL?	___	[✓]	___
	ACTION: If yes, flag the associated data as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.

** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.9.9	**Field Duplicates**			
A.1.9.9.1	Were field duplicates analyzed?	[✓]	___	___

ACTION: If yes, prepare a Form VI for each field duplicate pair, report concentrations of soils in ug/l on wet weight basis and calculate RPDs.

NOTE:
1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

A.1.9.9.2	Is any value for sample duplicate pair less than *CRDL and other value greater than or equal to 10 x *CRDL?	___	[✓]	___

ACTION: If yes, flag the associated data as estimated.

1.9.9.3 Aqueous

Circle all values on Form VI for field duplicates that are:
RPD > 50%, or
Difference > ± CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	✓
Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	✓

ACTION: If yes, flag the associated data as estimated.

A.1.9.9.4 Soil/Sediment

Circle all values on Form VI for field duplicates that are:
RPD >100%, or

Difference > 2 x CRDL*

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A
Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%?	___	[✓]	___
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL): >2x *CRDL?	___	[✓]	___

ACTION: If yes, flag the associated data as estimated.

A.1.9.10 Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)

	YES	NO	N/A
A.1.9.10.1 Was one LCS prepared and analyzed for: every 20 water samples?	[___]	___	✓
every 20 solid samples?	[✓]	___	___
both AA and ICP when both are used for same analyte?	[___]	___	✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

A.1.9.10.2 Aqueous LCS

Circle all LCS values outside control limits (80 - 120%- except aqueous Ag and Sb).

	YES	NO	N/A
Is any LCS recovery: less than 50%?	___	[___]	✓
between 50% and 79%?	___	[___]	✓
between 121% and 150%?	___	[___]	✓
greater than 150%?	___	[___]	✓

Substitute IDL for CRDL when IDL > CRDL.
*Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

ı.1.9.10.3 Solid LCS

NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).
2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.

Is LCS "Found" value higher than the control limits on Form VII?	___	[✓]	___

ACTION: If yes, qualify all associated positive data as estimated.

Is LCS "Found" value lower than the Control limits on Form VII?	___	[✓]	___

ACTION: If yes, qualify all associated data as estimated.

ı.1.9.11 Form IX (ICP Serial Dilution) -

NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.

ı.1.9.11.1 Was Serial Dilution analysis performed for:

each 20 samples?	[✓]	___	___
each matrix type?	[✓]	___	___
each concentration range (i.e. low, med.)?	[✓]	___	___

		YES	NO	N/A
	ACTION: If no for any of the above, flag all positive data greater than or equal to 10xIDLs as estimated (J) for which Serial Dilution Analysis was not performed, and summarize the deficiency on the DPO report.			
A.1.9.11.2	Was field blank(s) used for Serial Dilution Analysis?	___	[✓]	___
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J).			
	NOTE: Serial dilution analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
A.1.9.11.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[✓]	___	___
	ACTION: If no, write in the contract-problem/non-compliance section of the "Data Assessment Narrative".			
A.1.9.11.4	Circle all values on Data Summary Sheet that are outside control limit for initial concentrations equal to or greater than 10 x IDLs only. Are any % difference values:			
	> 10%?	✓	[___]	___
	≥ 100%?	___	[✓]	___
	ACTION: Flag as estimated (J) all associated sample results equal to or greater than 10xIDLs for which percent difference is greater than 10% but less than 100%. Reject (red-line) all associated sample results equal to or greater than 10xIDLs for which PD is greater than or equal to 100%. Flag copper, zinc, and magnesium as estimated.			

		YES	NO	N/A
A.1.9.12	**Furnace Atomic Absorbtion (AA) QC Analysis**			
A.1.9.12.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[✓]	___	___
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.9.12.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[✓]	___	___
	Was a dilution analyzed for sample with post digestion spike recovery less than 40%?	[✓]	___	___
	ACTION: If no for any of the above, flag all the associated data as estimated (J).			
.1.9.12.3	Is *post digestion spike recovery less than 10% or greater than 150% for any result?	___	[✓]	___
	ACTION: If yes, reject (red-line) the affected data if recovery is <10%; reject data not flagged with "U" if spike recovery is >150%.			
	NOTE: Reject the data only if the affected sample was not subsequently analyzed by Method of Standard Addition.			
A.1.9.13	**Form VIII (Method of Standard Addition Results)**			
A.1.9.13.1	Present?	[✓]	___	___
	If no, is any Form I result coded with "S" or a "+"?	___	[___]	✓
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			

* Post digestion spike is not required on the pre-digestion spiked sample when predigestion spike recovery is within control limits of 75-125% or when SR>4xSA.

	YES	NO	N/A
A.1.9.13.2 Is coefficient of correlation for MSA less than 0.990 for any sample?	___	[___]	[✓]
ACTION: If yes, reject (red-line) affected data.			
A.1.9.13.3 Was *MSA required for any sample but not performed?	___	[✓]	___
Is coefficient of correlation for MSA less than 0.995?	___	[___]	[✓]
Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	___	[___]	[✓]
ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.9.13.4 Was proper quantitation procedure followed correctly as outlined in the SOW on page E-16 through E-17?	[___]	___	[✓]
ACTION: If no, note exception under contract problem/ non-compliance of data assessment narrative, or prepare a separate list.			

A.1.9.14 **Dissolved/Total or Inorganic/Total Analytes** -

A.1.9.14.1 Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[✓]	___
Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[✓]	___

NOTE:
1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration.
2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents.
3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.

* MSA is not required on LCS and prep. blank.

	YES	NO	N/A
A.1.9.14.2 Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	✓
A.1.9.14.3 Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	✓

ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.

A.1.9.15 Form I to IX

A.1.9.15.1 Are all the Form I through Form IX labeled with:

Laboratory name?	[✓]	___	___
Case/SAS number?	[___]	___	✓
EPA sample No.?	[✓]	___	___
SDG No.?	[✓]	___	___
Contract No.?	[___]	___	✓
Correct units?	[✓]	___	___
Matrix?	[✓]	___	___

ACTION: If no for any of the above, note under contract problem/non-compliance section of the "Data Assessment Narrative".

	YES	NO	N/A
A.1.9.15.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
(NOTE: Check all forms against raw data.)			
(a) all analytes analyzed by ICP?	___	[✓]	___
(b) all analytes analyzed by GFAA?	___	[✓]	___
(c) all analytes analyzed by AA Flame?	___	[✓]	___
(d) Mercury?	___	[✓]	___
(e) Cyanide?	___	[✓]	___

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

A.1.9.16 **Form I (Field Blank)** -

Circle all field blank values on Data Summary Sheet that are greater than CRDL, 2 x IDL when IDL > CRDL or 5xIDL when 5xIDL < CRDL.

Do concentrations of field blank(s) fall below CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	✓
Do concentrations of field blank(s) fall below 5xIDL when 5xIDL < CRDL ?	[___]	___	✓
If no, was field blank value already rejected due to other QC criteria?	[___]	___	✓

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value.

	YES	NO	N/A
A.1.9.17 **Form XI, XII, XIII (Quarterly Verification of Instrumental Parameters).**			
A.1.9.17.1 Is quarterly verification report present for:			
Instrument Detection Limits?	[✓]	___	___
ICP Interelement Correction Factors?	[✓]	___	___
ICP Linear Ranges?	[✓]	___	___
ACTION: If no, contact DPO of the lab.			
A.1.9.17.2 Form XI (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)			
Are IDLs present for: all the analytes?	[✓]	___	___
all the instruments used?	[✓]	___	___
For both AA and ICP when both are used for same analyte?	[___]	___	✓
ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.			
Is IDL greater than CRDL for any analyte?	___	[✓]	___
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL?	[___]	___	✓
ACTION: If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			

	YES	NO	N/A
A.1.9.17.3 Form XII (Linear Ranges)			
Was any sample result higher than high linear range of ICP by more than 10%?	___	[✓]	___
Was any sample result higher than the highest calibration standard for non-ICP parameters?	✓	[ ]	___
If yes for any of the above, was the sample diluted to obtain the result on Form I.	[✓]	___	___

ACTION: If no, flag the result reported on Form I as estimated(J).

	YES	NO	N/A
A.1.9.18 **Percent Solids of Sediments**			
Is soil content in sediment(s) less than 50%?	___	[✓]	___

ACTION: If yes, qualify as estimated all data not previously rejected or flagged due to other QC criteria.

ıse# _____ Site _____ Matrix: Soil _____

XG _____ Lab _____ Water_____

ɔntractor _____ Reviewer _____ Other_____

.2.1 The case description and exceptions, if any, are noted below with reason(s) for rejection or qualification as estimated value(s) J.

_____

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_____

A.2.1 (continuation)

A.2.1 (continuation)

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.5: Summary of Inorganics Quality Control Data

Date: Oct. 1989
Number: HW-2
Revision: 9

APPENDIX A 5 SUMMARY OF INORGANICS QUALITY CONTROL DATA

LABORATORY:_____ CASE NO._____ SOW NO._____ SAMPLE TYPE/SDG:_____

SITE/STUDY DESCRIPTION:_____ SAMPLE NOS:_____

_____

FIELD DUP. #'S:_____ LAB DUP. #'S:_____ Field Blank _____ MATRIX SPIKE #:_____

SERIAL DILUTION SAMPLE NO._____ COMPLETION DATE:_____ REVIEWERS INITIALS:_____

	XI	I	IIA				IIB		III				IV		V	VI	VII	IX	
Parameter	Detection Limits UG/L CRDL	IDL	Field Blank	Calib. Ver. %R Init	Continued 1	2	3	CRDL Std Ver. % R Init	Fin	Calibration Blanks Init	Continued 1	2	3	PREP BLANK	ICP ICS % R Init	Fin	Matrix Spike	Lab Dup RPD/Diff	LCS % R	Ser Dil % D	Method
Al	200																				
Sb	60																				
As	10																				
Ba	200																				
Be	5																				
Cd	5																				
Ca	5000																				
Cr	10																				
Co	50																				
Cu	25																				
Fe	100																				
Pb	5																				
Mg	5000																				
Mn	15																				
Hg	0.2																				
Ni	40																				
K	5000																				
Se	5																				
Ag	10																				
Na	5000																				
Tl	10																				
V	50																				
Zn	20																				
CN	10																				

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: _____ Date: _____ Case #: _____

Site: _____ Lab Name: _____

Reviewer's Initials: _____ Number of Samples: _____

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejection
ICP														
Flame AA														
Furnace AA														
Mercury														
Total														
Other														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

ICP														
Flame AA														
Furnace AA														
Mercury														
Total														
Other														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

INORGANIC REGIONAL DATA ASSESSMENT

Region____

CASE NO._____ SITE_____

LABORATORY_____ NO. OF SAMPLES/ MATRIX_____

SDG#_____ REVIEWER (IF NOT ESD)_____

SOW#_____ REVIEWER'S NAME_____

DPO: ACTION_____ FYI_____ COMPLETION DATE_____

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES				
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
	MATRIX SPIKE				
	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:_____

AREAS OF CONCERN:_____

NOTABLE PERFORMANCE:_____

SDG - 5

SDG-5 contains data validation for the following samples:

LLI NUMBER	SAMPLE	MATRIX
1478182	GW-1, MW-6	Aqueous Sample
1478183	GW-1, MW-6 (dissolved)	Aqueous Sample
1478184	GW-2, MW-5	Aqueous Sample
1478185	GW-2, MW-5 (dissolved)	Aqueous Sample
1478187	GW-3A, MW-1	Aqueous Sample
1478188	GW-3A, MW-1 (dissolved)	Aqueous Sample
1478189	GW-3B, MW-1	Aqueous Sample
1478190	GW-3B, MW-1 (dissolved)	Aqueous Sample
1478195	Water Tank	Aqueous Sample
1478196	Water Tank (dissolved)	Aqueous Sample
1478197	GW-4, MW-3	Aqueous Sample
1478198	GW-4, MW-3 (dissolved)	Aqueous Sample
1478199	GW-5, MW-2	Aqueous Sample
1478200	GW-5, MW-2 (dissolved)	Aqueous Sample
1478201	GW-6, MW-2	Aqueous Sample
1478202	GW-6, MW-2 (dissolved)	Aqueous Sample
1478203	GW-7, MW-4	Aqueous Sample
1478204	GW-7, MW-4 (dissolved)	Aqueous Sample
1478205	EB-2	Equipment Blank
1478206	EB-2 (dissolved)	Equipment Blank
1478207	EB-1	Equipment Blank
1478208	EB-1 (dissolved)	Equipment Blank

SDG-5

SOP NO. HW-6
Revision #6

CLP ORGANICS DATA REVIEW AND PRELIMINARY REVIEW

CONCURRED BY: _____ Date: 4/6/89
Louis Bevilacqua
Monitoring Management Branch

APPROVED BY: _____ Date: 4/14/89
Gerard F. McKenna, Chief
Monitoring Management Branch

301461

INTRODUCTION TO DATA VALIDATION

1.0 Scope

1.1 This procedure is applicable to organic data obtained from contractor laboratories working for the Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in the Statement of Work (SOW).

2.0 Responsibilities

Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1 Data Assessment - The reviewer must answer every question on the checklist. All response shall be in ink.

2.2 Data Assessment Narrative (Attachment 1) - Data reviewer is required to use these forms and must match the action in the narrative with the action taken on the Form I(s).

2.3 Rejection Summary Form (Attachment 2) - Fill in the total number of analytes measured by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in the boxes where analyses were not performed or criteria do not apply.

2.4 Organic Regional Data Assessment - Data reviewer is also required to fill out Organic Regional Data Assessment Form (Attachment 3).

2.5 Telephone Record Log - The data reviewer should enter the bare facts of inquiry before initiating any authorized telephone conversation with a CLP laboratory. After the case review has been completed, mail the white copy of the Telephone Record Log to the laboratory and the pink copy to SMO. File the yellow copy in the Telephone Record Log folder and attach a photocopy of the Telephone Record Log to the completed Data Assessment Narrative.

2.6 Forwarded Paperwork - Upon completion of the review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:

a. data package
b. completed assessment checklist
c. SMO Contract Compliance Screening (CCS)

Forward four (4) copies of the completed Data Assessment Narrative along with four (4) copies of the Organic Data Assessment Form: one each for the appropriate Regional DPO, the Sample Management Office (SMO), and to the last two addresses of the Data Reviewers Mailing List.

2.7 Filed Paperwork - Upon completion of the review, the following are to be filed within the Monitoring and Management Branch (MMB) files:

a. Telephone record Log (copy)
b. Record of Communication (original)
c. Rejection Summary Form

3.0 Rejection of Data - All values determined to be unacceptable on the Organic Analysis Data Sheet (Form I) must be flagged with an "R". As soon as review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

4.0 Acceptance Criteria - In order that the reviews be consistent among reviewers, this Standard Operating Procedure (SOP) should be used. Additional guidance can be found in the Functional Guidelines.

5.0 SMO Contract Compliance Screening (CCS) - This is intended to aid the reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from the laboratory in response to CCS must be used by the reviewer.

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: _____

LAB: Lancaster Laboratories, Inc.

SITE: PPG

1.0 Data Completeness and Deliverables	YES	NO	N/A
1.1 Have any missing deliverables been received and added to the data package.	[✓]	___	___
ACTION: Call lab for explanation / resubmittal of any missing deliverables. If lab cannot provide them, note the effect on review of the package under the "Contract Problems/Non-compliance" section of reviewer narrative.			
1.2 Was SMO CCS checklist included with package?	[___]	___	✓
2.0 Cover Letter/Case Narrative			
2.1 Is the Narrative or Cover Letter present?	[✓]	___	___
2.2 Are Case Number and/or SAS number contained in the Narrative or Cover Letter?	[___]	___	✓

3.0 Data Validation Checklist

The following checklist is divided into three parts. Part A is filled out if the data package contains any VOA analyses, Part B for any BNA analyses and Part C for Pesticide/PCBs.

Does this package contain:

VOA data?	✓	___
BNA data?	✓	___
Pesticide/PCB data?	✓	___

ACTION: Complete corresponding parts of checklist.

	YES	NO	N/A

PART A: VOA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [✓] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [✓] ___

ACTION: Use professional judgement to evaluate the effect on the quality of the data.

ACTION: If any sample analyzed as a soil contains more than 50% water, all data should be rejected.

ACTION: If both VOA vials for a sample have air bubbles, flag all positive results "J" and all non-detects "R".

2.0 Holding Times

2.1 Have any VOA holding times, determined from date of collection to date of analysis, been exceeded? ___ [✓] ___

If unpreserved, aqueous aromatic volatiles must be analyzed within 7 days of collection and non-aromatic volatiles must be analyzed within 14 days. If preserved with hydrochloric acid and stored at 4°C, then both aromatic and non-aromatic volatiles must be analyzed within 14 days. If uncertain about preservation, contact the sampler to determine whether the samples were preserved.

A ten-day* holding time for soil samples is recommended.
*from date of laboratory receipt to analysis.

Table of Holding Time Violations

Sample	Sample Matrix	Preserved ?	(See Traffic Report) Date Sampled	Date Lab Received	Date Analyzed

ACTION: If holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded.

	YES	NO	N/A
If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. The reviewer may determine that non-detect data are unusable ("R").			

3.0 Surrogate Recovery (Form II)

3.1 Are the VOA Surrogate Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Med Water	[___]	___	✓
c. Low Soil	[___]	___	✓
d. Med Soil	[___]	___	✓
3.2 Are all the VOA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Med Water	[___]	___	✓
c. Low Soil	[___]	___	✓
d. Med Soil	[___]	___	✓
ACTION: Call lab for explanation / resubmittals. If missing deliverables are unavailable, document effect on data under "Conclusions" section of reviewer narrative.			
3.3 Were outliers marked correctly with an asterisk? *None of the recoveries were outliers.* ACTION: Circle all outliers in red.	[___]	___	✓
3.4 Was one or more VOA surrogate recovery outside of contract specifications for any sample or method blank?	___	[✓]	___
If yes, were samples reanalyzed?	[___]	___	✓
Were method blanks reanalyzed?	[___]	___	✓

ACTION: If surrogate recoveries are > 10% but all do not meet SOW specifications:

1. Flag all positive results as estimated ("J").
2. Flag all non-detects as estimated detection limits ("UJ").

	YES	NO	N/A
If any surrogate has a recovery of <10% : 1. Flag all positive results as estimated ("J"). 2. Flag all non-detects as unusable ("R"). Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and re-analyses. Check the internal standard areas.			
3.5 Are there any transcription/calculation errors between raw data and Form II?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike Duplicate/Recovery Form (Form III) present?	[✓]	___	___
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Med Water	[___]	___	✓
c. Low Soil	[___]	___	✓
d. Med Soil	[___]	___	✓
ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.			

4.3 How many VOA spike recoveries are outside QC limits?

Water	Soils
0 out of 10	N/A out of 10

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
0 out of 5	N/A out of 5

ACTION: If MS and MSD both have less than 10% recovery for an analyte, negative results for that analyte should be rejected, and positive results should be flagged "J". The above applies only to the sample used for the MS/MSD analysis. Use professional judgement in applying this criterion to other samples in the package

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	YES	NO	N/A
5.0 Blanks (Form IV)			
5.1 Is the Method Blank Summary (Form IV) present?	[✓]	___	___
5.2 Frequency of Analysis: for the analysis of VOA TCL compounds, has a reagent/method blank been analyzed for each set of samples or every 20 samples of similar matrix (low water, med water, low soil, medium soil), whichever is more frequent?	[✓]	___	___
5.3 Has a VOA instrument blank been analyzed at least once every twelve hours for each GC/MS system used?	[✓]	___	___
ACTION: If any method blank data are missing, call lab for explanation / resubmittal. If not available, reject all associated positive data ("R").			
5.4 Chromatography: review the blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.			
Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	[✓]	___	___
ACTION: Use professional judgement to determine the effect on the data.			
6.0 Contamination			
NOTE: "Water blanks" and "distilled water blanks" are validated like any other sample and are <u>not</u> used to qualify data. Do not confuse them with the other QC blanks discussed below.			
6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for VOAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor.	___	[✓]	___
6.2 Do any field/trip/rinse blanks have positive VOA results (TCL and/or TIC)? see page 79 of SOG-5	✓	[___]	___
ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)			
NOTE: Only field/rinse blanks taken the same day as the samples are used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped. Blanks may not be qualified because of contamination in another blank. Blanks may be qualified for surrogate, spectral, tuning or calibration QC problems.			

Paul C. Rizzo Associates, Inc.
CONSULTANTS

By [illegible] Date 4-27-90 Subject _____ Sheet No. 7A of 3[illegible]
Chkd. By ____ Date _____ SDG-5 VOA Section 6.2 _____ Proj. No. 88-595

Trip blank LLI # 1478186 detected 67 ppb acetone (QL = 10 ppb)

Associated Samples:	GW-1	detected	63	ppb	acetone
	GW-2	"	32	"	"
	GW-3	"	30	"	"
	GW-4	"	32	"	"
	GW-5	"	10	"	"
	GW-6	"	16	"	"
	GW-7	"	120	"	"

Trip blank (LLI # 1478186) detected 67 ppb acetone. The associated samples [GW-1 (LLI # 1478182), GW-2 (LLI # 1478184), GW-3 (LLI # 1478187), GW-4 (LLI # 1478197), GW-5 (LLI # 1478199), GW-6 (LLI # 1478201) and GW-7 (LLI # 1478203)] detected acetone in the range 10-120 ppb. Because the sample concentration is greater than the quantitation but less than ten times the concentration of the blank, the concentration of acetone was considered to be less than the quantitation limit for samples GW-1, GW-2, GW-3, GW-4, GW-5, GW-6, and GW-7.

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YES NO N/A

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

	Sample conc > CRQL but < 10x blank	Sample conc < CRQL & is < 10x blank value	Sample conc > CRQL value & >10x blank value
Methylene chloride Acetone Toluene 2-butanone	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5 blank value
Other Contaminants	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? [✓] ___ ___

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Tuning and Mass Calibration (Form V)

7.1 Are the GC/MS Tuning and Mass Calibration Forms (Form V) present for Bromofluorobenzene (BFB)? [✓] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift? [✓] ___ ___

7.3 Has a tuning performance compound been analyzed for every twelve hours of sample analysis per instrument? [✓] ___ ___

ACTION: If any tuning data are missing, take action specified in 3.2 above.

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS tuning data are available.

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

	YES	NO	N/A
7.4 Have the ion abundance criteria been met for each instrument used?	[✓]	___	___
ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).			
ACTION: If tuning calibration is in error, flag all associated sample data as unusable ("R"). However, if expanded ion criteria are met (See 1988 Functional Guidelines), the data reviewer may accept data with appropriate qualifiers.			
7.5 Are there any transcription / calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.)	___	[✓]	___
7.6 Have the appropriate number of significant figures (two) been reported? (Check at least two values, but if errors are found check more values.)	✓	[___]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make necessary corrections and note errors under "Conclusions".			
7.7 Are the spectra of the mass calibration compound acceptable?	[✓]	___	___
ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.			

8.0 Target Compound List (TCL) Analytes

	YES	NO	N/A
8.1 Are the Organic Analysis Data Sheets (Form I VOA) present with required header information on each page, for each of the following:			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Matrix spikes and matrix spike duplicates	[✓]	___	___
c. Blanks	[✓]	___	___

	YES	NO	N/A
8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Matrix spikes and matrix spike duplicates (Mass spectra not required)	[✓]	___	___
c. Blanks	[✓]	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			
8.3 Are the response factors shown in the Quant Report? In the Quant Report for initial calibration and continuing calibration.	[✓]	___	___
8.4 Is chromatographic performance acceptable with respect to:			
Baseline stability	[✓]	___	___
Resolution	[✓]	___	___
Peak shape	[✓]	___	___
Full-scale graph (attenuation)	[✓]	___	___
Other:_____	[___]	___	___
ACTION: Use professional judgement to determine the acceptability of the data.			
8.5 Are the lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[✓]	___	___
ACTION: If any mass spectra are missing, take action specified in 3.2 above. If Lab does not generate their own standard spectra, make note in "Contract Problems/Non-compliance".			
8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]	___	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
8.8 Do sample and standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected, flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (at the calculated detection limit).			

	YES	NO	N/A
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "J" qualifier?	[✓]	___	___
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Blanks	[✓]	___	___
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "J" qualifier if missing and "N" qualifier to all identified TIC compounds on Form I, Part B.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds (example: 1,2-dimethylbenzene is xylene--a VOA TCL--and should not be reported as a TIC)?	___	[✓]	___
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate.			
10.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription / calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found?	___	[✓]	___
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	✓	[___]	___

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Note: The quantitation value for the merged xylene peaks exceeds the calibration range. However, the quantitation values for the unmerged xylene peaks fall within the calibration range.

	YES	NO	N/A
ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant. Reports) present for initial and continuing calibration?	[✓]	___	___
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete for the volatile fraction?	[✓]	___	___
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Are response factors stable for volatiles over the concentration range of the calibration (RSD <30%)?	[✓]	___	___
ACTION: Circle all outliers in red.			
ACTION: When RSD >30%, non-detects may be qualified using professional judgement. Flag all positive results "J". When RSD >90%, flag all non-detects as unusable ("R"). (Region II policy.)			
12.3 Do any compounds have a RRF < 0.05?	___	[✓]	___
ACTION: Circle all outliers in red.			
ACTION: If any volatile compound has an average RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").			

	YES	NO	N/A
12.4 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least two values but if errors are found, check more.)	___	[✓]	___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

13.0 GC/MS Continuing Calibration (Form VII)

	YES	NO	N/A
13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the volatile fraction?	[✓]	___	___
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	[✓]	___	___

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

_____

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, call lab for explanation / resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").

	YES	NO	N/A
13.3 Do any continuing calibration standard compounds have a RRF < 0.05?	___	[✓]	___

ACTION: Circle all outliers in red.

ACTION: If any volatile compound has a RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").

	YES	NO	N/A
13.4 Do any compounds have a % difference between initial and continuing calibration RRF > 25%?	___	[✓]	___

ACTION: Circle all outliers in red and qualify associated sample data as outlined in the table below:

YES NO N/A

% DIFFERENCE

25-50	50-90	>90
'J' positive results, no action for non detects	'J' positive results, 'UJ' non detects	'J' positive results, "R" non detects

13.5 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

14.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits for each continuing calibration? [✓] ___ ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary.)

ACTION: If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results and non-detects (U values) quantitated with this internal standard. If extremely low area counts are reported, or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable ("R").

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [✓] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

	YES	NO	N/A
15.0 Field Duplicates			
15.1 Were any field duplicates submitted for VOA analysis?	[✓]	___	___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference. See page 15A of SOG-E

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

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By AV Date 4-27-90 Subject _____ Sheet No. 15A of 3[illegible]
Chkd. By ____ Date _____ SDG-5 VOA SECTION 15.0 Proj. No. [illegible]

Field Duplicates: GW-3A MW-1 LLI # 1478187
GW-3B MW-1 Dup LLI # 1478189

COMPOUND	GW-3A (ug/L)	GW-3B (ug/L)	RPD *
Acetone	30	–	–

Lab Duplicates: GW-5 MW-2 LLI # 1478199
GW-6 MW-2 Dup LLI # 1478201

COMPOUND	GW-5 (ug/L)	GW-6 (ug/L)	RPD *
Xylene	25	23	8
Acetone	–	17	–

$$* \; RPD = \frac{|A-B|}{(A+B)/2} \times 100$$

where, A ≡ concentration detected in sample A
B ≡ concentration detected in sample B

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	YES	NO	N/A

PART B: BNA ANALYSES

1.0 Traffic Reports and Laboratory Narrative

1.1 Are the Traffic Report Forms present for all samples? [✓] ___ ___

ACTION: If no, contact lab for replacement of missing or illegible copies.

1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data? ___ [✓] ___

ACTION: Use professional judgement to evaluate the effect on the quality of the data.

ACTION: If any sample analyzed as a soil contains more than 50% water, all data should be rejected.

2.0 Holding Times

2.1 Have any BNA holding times, determined from date of collection to date of extraction, been exceeded? ___ [✓] ___

Samples for BNA analysis, ~~both soils and~~ waters, must be extracted within* ~~seven days of the date of collection~~. Extracts must be analyzed within 40 days of the date of extraction.
* five days of laboratory receipt.

Table of Holding Time Violations

Sample	Sample Matrix	Date Sampled	(See Traffic Report) Date Lab Received	Date Extracted	Date Analyzed
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___
___	___	___	___	___	___

ACTION: If holding times are exceeded, flag all positive results as estimated ("J") and sample quantitation limits as estimated ("UJ"), and document in the narrative that holding times were exceeded.

	YES	NO	N/A
If analyses were done more than 14 days beyond holding time, either on the first analysis or upon reanalysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. The reviewer may determine that non-detect data are unusable ("R").			
3.0 Surrogate Recovery (Form II)			
3.1 Are the BNA Surrogate Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Med Water	[___]	___	✓
c. Low Soil	[___]	___	✓
d. Med Soil	[___]	___	✓
3.2 Are all the BNA samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Med Water	[___]	___	✓
c. Low Soil	[___]	___	✓
d. Med Soil	[___]	___	✓
ACTION: Call lab for explanation / resubmittals. If missing deliverables are unavailable, document effect on data under "Conclusions" section of reviewer narrative.			
3.3 Were outliers marked correctly with an asterisk?	[✓]	___	___
ACTION: Circle all outliers in red.			
3.4 Were two or more base-neutral OR acid surrogate recoveries out of specification for any sample or method blank?	✓	[___]	___
If yes, were samples reanalyzed?	[✓]	___	___
Were method blanks reanalyzed?	[✓]	___	___
ACTION: If all BNA surrogate recoveries are > 10% but two within the ~~base-neutral or acid fraction~~ do not meet SOW specifications, for the affected fraction only (i.e. base-neutral OR acid compounds): 1. Flag all positive results as estimated ("J"). 2. Flag all non-detects as estimated detection limits ("UJ").			

The re-extraction and reanalysis of the affected samples confirmed a definite matrix effect

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	YES	NO	N/A
If any base-neutral or acid surrogate has a recovery of <10% : 1. Flag all positive results for that fraction (i.e. all acid or base-neutral compounds) "J". 2. Flag all non-detects for that fraction "R". Professional judgement should be used to qualify data that have method blank surrogate recoveries out of specification in both original and re-analyses. Check the internal standard areas.			
3.5 Are there any transcription/calculation errors between raw data and Form II?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike Duplicate/Recovery Form (Form III) present?	[✓]	___	
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Med Water	[___]	___	✓
c. Low Soil	[___]	___	✓
d. Med Soil	[___]	___	✓
ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.			

4.3 How many BNA spike recoveries are outside QC limits?

Water	Soils
0 out of 22	N/A out of 22

4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?

Water	Soils
0 out of 11	N/A out of 11

ACTION: If MS and MSD both have less than 10% recovery for an analyte, negative results for that analyte should be rejected, and positive results should be flagged "J". The above applies only to the sample used for MS/MSD analysis. Use professional judgement in

	YES	NO	N/A
5.0 Blanks (Form IV)			
5.1 Is the Method Blank Summary (Form IV) present?	[✓]	___	___
5.2 Frequency of Analysis: for the analysis of BNA TCL compounds, has a reagent/method blank been analyzed for each set of samples or every 20 samples of similar matrix (low water, med water, low soil, medium soil), whichever is more frequent?	[✓]	___	___
5.3 Chromatography: review the blank raw data - chromatograms (RICs), quant reports or data system printouts and spectra.			
Is the chromatographic performance (baseline stability) for each instrument acceptable for VOAs?	[✓]	___	___
ACTION: Use professional judgement to determine the effect on the data.			
6.0 Contamination			
NOTE: "Water blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.			
6.1 Do any method/instrument/reagent blanks have positive results (TCL and/or TIC) for BNAs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor. See page 19A SOG-5	✓	[___]	___
6.2 Do any field/rinse blanks have positive BNA results (TCL and/or TIC)?	___	[___]	✓
ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)			
NOTE: Only field/rinse blanks taken the same day as the samples are used to qualify data. Blanks may not be qualified because of contamination in another blank. Blanks may be qualified for surrogate, spectral, tuning or calibration QC problems.			

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By JV Date 4-30-90 Subject _____ Sheet No. ___ of ___
Chkd. By ___ Date _____ SDG-5 BNA SECTION 6.1 Proj. No. 88-595

Method Blank LLI # 1473209 TIC 10 ppb unknown - approx. C6 hydrocarbon

Blank Contamination found in Associates Samples:

EB 1 Blank	TIC	8 ppb	unknown - approx. C6 hydrocarbon
EB 2 Blank	TIC	10 ppb	unknown - approx. C6 hydrocarbon
GW-1 M-6 Re	—		
GW-2 M-5 Re	—		
GW-3A M-1	TIC	10 ppb	unknown - approx C6 hydrocarbon
GW-3B (unspiked) M-1D	TIC	10 ppb	unknown - approx C6 hydrocarbon
GW-4 M-3	—		
GW-5 M-2	—		
GW-6 M-2D	—		
GW-7 M-4 Re	—		
Water Tank	TIC	10 ppb	unknown - approx. C6 hydrocarbon

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YES NO N/A

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

	Sample conc > CRQL but < 10x blank	Sample conc < CRQL & is < 10x blank value	Sample conc > CRQL value & >10x blank value
Common Phthalate Esters	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

	Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL value & > 5 blank value
Other Contaminants	Flag sample result with a 'U'; cross out 'B' flag	Reject sample result and report CRQL; cross out 'B' flag	No qualification is needed

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.3 Are there field/rinse/equipment blanks associated with every sample? [✓] ___ ___

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Tuning and Mass Calibration (Form V)

7.1 Are the GC/MS Tuning and Mass Calibration Forms (Form V) present for Decafluorotriphenylphosphine (DFTPP)? [✓] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the DFTPP provided for each twelve hour shift? [✓] ___ ___

7.3 Has a tuning performance compound been analyzed for every twelve hours of sample analysis per instrument? [✓] ___ ___

ACTION: If any tuning data are missing, take action specified in 3.2 above.

ACTION: List date, time, instrument ID, and sample analyses for which no associated GC/MS tuning data are available.

	YES	NO	N/A

DATE	TIME	INSTRUMENT	SAMPLE NUMBERS

ACTION: If lab cannot provide missing data, reject ("R") all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundance criteria been met for each instrument used? [✓] __ __

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If tuning calibration is in error, flag all associated sample data as unusable ("R"). However, if expanded ion criteria are met (See 1988 Functional Guidelines), the data reviewer may accept data with appropriate qualifiers.

7.5 Are there any transcription / calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.) __ [✓] __

7.6 Have the appropriate number of significant figures (two) been reported? (Check at least two values, but if errors are found check more values.) ✓ [__] __

ACTION: If large errors exist, call lab for explanation / resubmittal, make necessary corrections and note errors under "Conclusions".

7.7 Are the spectra of the mass calibration compound acceptable? [✓] __ __

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes

8.1 Are the Organic Analysis Data Sheets (Form I BNA) present with required header information on each page, for each of the following:

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a. Samples and/or fractions as appropriate [✓] __ __

b. Matrix spikes and matrix spike duplicates [✓] __

c. Blanks [✓]

	YES	NO	N/A
8.2 Are the BNA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the data system printouts (Quant Reports) included in the sample package for each of the following?			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Matrix spikes and matrix spike duplicates (Mass spectra not required)	[✓]	___	___
c. Blanks	[✓]	___	___
ACTION: If any data are missing, take action specified in 3.2 above.			
8.3 Are the response factors shown in the Quant Report? On the Quant Report for initial calibration and continuing calibration	[✓]	___	___
8.4 Is chromatographic performance acceptable with respect to:			
Baseline stability	[✓]	___	___
Resolution	[✓]	___	___
Peak shape	[✓]	___	___
Full-scale graph (attenuation)	[✓]	___	___
Other: _____	[___]	___	___
ACTION: Use professional judgement to determine the acceptability of the data.			
8.5 Are the lab-generated standard mass spectra of the identified BNA compounds present for each sample?	[✓]	___	___
ACTION: If any mass spectra are missing, take action specified in 3.2 above. If Lab does not generate their own standard spectra, make note in "Contract Problems/Non-compliance".			
8.6 Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]	___	___
8.7 Are all ions present in the standard mass spectrum at a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
8.8 Do sample and standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected, flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (at the calculated detection limit).			

	YES	NO	N/A
9.0 Tentatively Identified Compounds (TIC)			
9.1 Are all Tentatively Identified Compound Forms (Form I, Part B) present; and do listed TICs include scan number or retention time, estimated concentration and "J" qualifier?	[✓]	___	___
9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate	[✓]	___	___
b. Blanks	[✓]	___	___
ACTION: If any TIC data are missing, take action specified in 3.2 above.			
ACTION: Add "J" qualifier if missing and "N" qualifier to all identified TIC compounds on Form I, Part B.			
9.3 Are any TCL compounds (from any fraction) listed as TIC compounds (example: 1,2-dimethylbenzene is xylene--a VOA TCL--and should not be reported as a TIC)?	___	[✓]	___
ACTION: Flag with "R" any TCL compound listed as a TIC.			
9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than 10% also present in the sample mass spectrum?	[✓]	___	___
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[✓]	___	___
ACTION: Use professional judgement to determine acceptability of TIC identifications. If it is determined that an incorrect identification was made, change identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate.			
10.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription / calculation errors in Form I results? Check at least two positive values. Verify that the correct internal standard, quantitation ion, and RRF were used to calculate Form I result. Were any errors found?	___	[✓]	___
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture?	✓	[___]	___

	YES	NO	N/A
ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.			
11.0 Standards Data (GC/MS)			
11.1 Are the Reconstructed Ion Chromatograms, and data system printouts (Quant. Reports) present for initial and continuing calibration?	[✓]	___	___
ACTION: If any calibration standard data are missing, take action specified in 3.2 above.			
12.0 GC/MS Initial Calibration (Form VI)			
12.1 Are the Initial Calibration Forms (Form VI) present and complete for the BNA fraction?	[✓]	___	___
ACTION: If any calibration standard forms are missing, take action specified in 3.2 above.			
12.2 Are response factors stable for BNAs over the concentration range of the calibration (RSD <30%)?	[✓]	___	___
ACTION: Circle all outliers in red.			
ACTION: When RSD >30%, non-detects may be qualified using professional judgement. Flag all positive results "J". When RSD >90%, flag all non-detects as unusable ("R"). (Region II policy.)			
12.3 Do any compounds have a RRF < 0.05?	___	[✓]	___
ACTION: Circle all outliers in red.			
ACTION: If any BNA compound has an average RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").			

	YES	NO	N/A
12.4 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or %RSD? (Check at least two values but if errors are found, check more.)	___	[✓]	___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

13.0 GC/MS Continuing Calibration (Form VII)

13.1 Are the Continuing Calibration Forms (Form VII) present and complete for the BNA fraction?	[✓]	___	___
13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument?	[✓]	___	___

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

_____

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, call lab for explanation / resubmittal. If continuing calibration data are not available, flag all associated sample data as unusable ("R").

13.3 Do any continuing calibration standard compounds have a RRF < 0.05?	___	[✓]	___

ACTION: Circle all outliers in red.

ACTION: If any BNA compound has a RRF < 0.05, flag positive results for that compound as estimated ("J"), and flag non-detects for that compound as unusable ("R").

13.4 Do any compounds have a % difference between initial and continuing calibration RRF > 25%? 4-Nitroaniline %Δ = 58%	✓	[___]	___

ACTION: Circle all outliers in red and qualify associated sample data as outlined in the table below:

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YES NO N/A

% DIFFERENCE

25-50	50-90	>90
'J' positive results, no action for non detects	'J' positive results, 'UJ' non detects	'J' positive results, "R" non detects

4-Nitroaniline was not detected in the associated samples.

13.5 Are there any transcription / calculation errors in the reporting of average response factors (RRF) or difference (%D) between initial and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".

14.0 Internal Standards (Form VIII)

14.1 Are the internal standard areas (Form VIII) of every sample and blank within the upper and lower limits for each continuing calibration? [✓] ___ ___

ACTION: List all the outliers below.

Sample #	Internal Std	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary.)

ACTION: If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results and non-detects (U values) quantitated with this internal standard. If extremely low area counts are reported, or if performance exhibits a major abrupt drop off, flag all associated non-detects as unusable ("R").

14.2 Are the retention times of the internal standards within 30 seconds of the associated calibration standard? [✓] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 30 seconds.

	YES	NO	N/A
15.0 Field Duplicates			
15.1 Were any field duplicates submitted for BNA analysis?	[✓]	___	___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference. See page 27A or 30G-5

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

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CONSULTANTS

By CL Date 5-1-90 Subject _____ Sheet No. 27A of 36
Chkd. By ____ Date _____ SDG-5 BNA SECTION 15.1 Proj. No. 88-595

Field Duplicates: GW-3A MW-1 LLI # 1478187
GW-3B MW-1 Dup LLI # 1478189

COMPOUND	GW-3A	GW-3B	RPD*
results (of all compounds) less than quantitation limit			—

Field Duplicates: GW-5 MW-2 LLI # 1478199
GW-6 MW-2 Dup LLI # 1478201

COMPOUND	GW-5 (ug/L)	GW-6 (ug/L)	RPD*
Naphthalene	122	154	23
2-Methylnaphthalene	290	—	—

$$* \; RPD = \frac{|A-B|}{(A+B)/2} \times 100$$

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where, A ≡ concentration detected in sample A
B ≡ concentration detected in sample B

	YES	NO	N/A
PART C: PESTICIDE/PCB ANALYSES			
1.0 Traffic Reports and Laboratory Narrative			
1.1 Are the Traffic Report Forms present for all samples?	[✓]	___	___
ACTION: If no, contact lab for replacement of missing or illegible copies.			
1.2 Do the Traffic Reports or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special notations affecting the quality of the data?	___	[✓]	___
ACTION: Use professional judgement to evaluate the effect on the quality of the data.			
ACTION: If any sample analyzed as a soil contains more than 50% water, all data should be rejected.			
2.0 Holding Times			
2.1 Have any PEST/PCB holding times, determined from date of collection to date of extraction, been exceeded?	✓	[___]	___
see page 28A of SOG-5			
Samples for PEST/PCB analysis, ~~both soils and~~ waters, must be extracted within seven days of the date of collection. Extracts must be analyzed within 40 days of the date of extraction.			
method 531.1 has a 28 day holding time when sample pH is adjusted to 3 and stored at -10°C.			
3.0 Surrogate Recovery (Form II)			
3.1 Are the PEST/PCB Surrogate Recovery Summaries (Form II) present for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Med Water	[___]	___	✓
c. Low Soil	[___]	___	✓
d. Med Soil	[___]	___	✓
3.2 Are all the PEST/PCB samples listed on the appropriate Surrogate Recovery Summaries for each of the following matrices:			
a. Low Water	[✓]	___	___
b. Med Water	[___]	___	✓
c. Low Soil	[___]	___	✓
d. Med Soil	[___]	___	✓

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CONSULTANTS

By ___ Date 5-4-90 Subject _____ Sheet No. 22A of ___
Chkd. By ___ Date ___ SDG-5 PEST/PCBs SECTION 2.0 Proj. No. EE-595

For SDG-5, the laboratory analyzed for N-methylcarbonate by using two different test methods for each sample. The samples were analyzed by Method 531.1 and SOP-734. The aqueous samples were analyzed within the established holding time for Method 531.1; however, the holding time was exceeded for SOP-734.

Due to the holding time situation, the results from SOP-734 should be used only as a reference. Method 531.1 results should be considered as representing the aqueous samples.

A comparison of data from each method is listed:

LAB NUMBER	SAMPLE	CA SOP 734 (ug/l)	EPA 531.1 (ug/l)	RPD*
1478182	GW-1 MW-6	221	182	19
1478184	GW-2 MW-5	2795	14500	135
1478187	GW-3A MW-1	<4	<4	–
1478189	GW-3B MW-1	<4	<4	–
1478195	WATER TANK	<4	<4	–
1478197	GW-4 MW-3	<4	<4	–
1478199	GW-5 MW-2	253	152	50
1478201	GW-6 MW-2	263	174	41
1478203	GW-7 MW-4	<4	<4	–
1478205	EQUIP BLANK 2	<4	<4	–
1478207	EQUIP BLANK 1	<4	<4	–

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$$* RPD = \frac{|D_1 - D_2|}{(D_1 + D_2)/2} \times 100$$

where, D_1 ≡ concentration detected with CA SOP 734
D_2 ≡ concentration detected with EPA 531.1

	YES	NO	N/A
ACTION: Call lab for explanation / resubmittals. If missing deliverables are unavailable, document effect on data under "Conclusions" section of reviewer narrative.			
3.3 Were outliers marked correctly with an asterisk? None of the recoveries were outliers. ACTION: Circle all outliers in red.	[ ]		✓
3.4 Was surrogate (DBC) recovery outside of the contract specification for any sample or blank?		[✓]	
ACTION: No qualification is done if surrogates are diluted beyond detection. If recovery is below contract limit (but above zero), flag all results for that sample "J". If recovery is zero, flag positive results "J" and non-detects "R". If recovery for the blank is zero, flag non-detects for all associated samples "R". If recovery is above contract limit, flag all positive results for that sample "J", unless in the reviewers professional judgement the high recovery is due to co-eluting interference (check the associated blank - if recovery is high there also, flag the sample data).			
3.5 Are there any transcription/calculation errors between raw data and Form II?		[✓]	
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
4.0 Matrix Spikes (Form III)			
4.1 Is the Matrix Spike Duplicate/Recovery Form (Form III) present?	[✓]		
4.2 Were matrix spikes analyzed at the required frequency for each of the following matrices:			
a. Low Water	[✓]		
b. Med Water	[ ]		✓
c. Low Soil	[ ]		✓
d. Med Soil	[ ]		✓
ACTION: If any matrix spike data are missing, take the action specified in 3.2 above.			

4.3 How many PEST/PCB spike recoveries are outside QC limits?

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Water	Soils
0 out of 12	N/A out of 12

	YES	NO	N/A
4.4 How many RPD's for matrix spike and matrix spike duplicate recoveries are outside QC limits?			

Water	Soils
0 out of 6	n/a out of 6

ACTION: If MS and MSD both have less than zero recovery for an analyte, negative results for that analyte should be rejected, and positive results should be flagged "J". The above applies only to the sample used for MS/MSD analysis. Use professional judgement in applying this criterion to other samples.

5.0 Blanks (Form IV)

	YES	NO	N/A
5.1 Is the Method Blank Summary (Form IV) present?	[✓]		
5.2 Frequency of Analysis: for the analysis of Pesticide TCL compounds, has a reagent/method blank been analyzed for each set of samples or every 20 samples of similar matrix (low water, med water, low soil, medium soil), whichever is more frequent?	[✓]		
5.3 Chromatography: review the blank raw data - chromatograms, quant reports or data system printouts.			
Is the chromatographic performance (baseline stability) for each instrument acceptable for PEST/PCBs?	[✓]		

ACTION: Use professional judgement to determine the effect on the data.

6.0 Contamination

NOTE: "Water blanks" and "distilled water blanks" are validated like any other sample and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

	YES	NO	N/A
6.1 Do any method/instrument/reagent blanks have positive results for PEST/PCBs? When applied as described below, the contaminant concentration in these blanks are multiplied by the sample Dilution Factor.		[✓]	
6.2 Do any field/rinse blanks have positive PEST/PCB results?		[ ]	✓

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

YES NO N/A

NOTE: Only field/rinse blanks taken the same day as the samples are used to qualify data. Blanks may not be qualified because of contamination in another blank. Blanks may be qualified for surrogate, spectral, tuning or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks.

Sample conc > CRQL but < 5x blank	Sample conc < CRQL & is < 5x blank value	Sample conc > CRQL & > 5x blank value
Flag sample result with a "U"; cross out "B" flag	Reject sample result and report CRQL; cross out "B" flag	No qualification is needed

6.3 Are there field/rinse/equipment blanks associated with every sample? [ ] ___ ✓

ACTION: For low level samples, note in data assessment that there is no associated field/rinse/equipment blank. Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 Calibration and QC Performance

7.1 Are the following Gas Chromatograms and Data System Printouts for both Primary and Confirmation (confirmation standards not required if there are no positive results above CRQL) column present:

a. Evaluation Standard Mix A [✓] ___ ___

b. Evaluation Standard Mix B [✓] ___ ___

c. Evaluation Standard Mix C [✓] ___ ___

d. Individual Standard Mix A [✓] ___ ___

e. Individual Standard Mix B [✓] ___ ___

f. Multi-component Pesticides Toxaphene & Chlordane [✓] ___ ___

g. Aroclors 1016/1260 [✓] ___ ___

h. Aroclors 1221, 1232, 1242, 1248, and 1254 [✓] ___ ___

ACTION: If no, take action specified in 3.2 above

	YES	NO	N/A
7.2 Is Form VIII Pest-1 present and complete for each GC column (primary and confirmation) and each 72 hour sequence of analyses?	[✓]	___	___
ACTION: If no, take action specified in 3.2 above.			
7.3 Are there any transcription/calculation errors between raw data and Form VIII?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
7.4 Has the total breakdown on quantitation or confirmation column exceeded 20% for DDT?	___	[✓]	___
- for Endrin?	___	[✓]	___
or if Endrin aldehyde <u>and</u> 4,4'-DDD co-elute and there is a peak at their retention time, has the combined DDT and Endrin breakdown exceeded 20%?	___	[✓]	___

ACTION:

a. If DDT breakdown is greater than 20% on quantitation column beginning with the samples following the last <u>in control</u> standard:

   1. Flag all positive DDT results "J".
   2. If DDT was not detected but DDD and/or DDE are positive, flag the DDT non-detect "R".
   3. Flag positive DDD and DDE results "JN".
   4. If DDT breakdown is > 20% on confirmation column <u>and</u> DDT is identified on quantitation column but not on confirmation column, use professional judgement to determine whether DDT should be reported on Form I (if reported, flag result "N").

b. If Endrin breakdown is > 20% on quantitation column, beginning with the samples following the last <u>in control</u> standard:

   1. Flag all positive Endrin results "J".
   2. If Endrin was not detected, but Endrin Aldehyde and/or Endrin Ketone are positive, flag the Endrin non-detect "R".
   3. Flag Endrin Ketone positive results "JN".
   4. If Endrin breakdown is > 20% on confirmation column <u>and</u> Endrin is identified on quantitation column but not on confirmation column, use professional judgement to determine whether Endrin should be reported on Form I (if reported, flag result "N").

c. If the combined breakdown is used (it can only be used if the conditions in 7.4 above are met) and is > 20% on quantitation column beginning with the last <u>in control</u> standard, take the actions specified in 7.4 a and b above. If the combined breakdown is >20% on confirmation column <u>and</u> Endrin or DDT is identified on quantitation column but not on confirmation column, use professional judgement to determine whether Endrin or DDT should be reported on Form I (if reported, flag result "N").

	YES	NO	N/A
7.5 Is the linearity check RSD of all four calibration factors <10% for the quantitation column?	[✓]	___	___
ACTION: If no, flag positive hits for all pesticide and PCB analytes "J" for all associated samples. Do not flag toxaphene or DDT if they are quantified from a 3-point calibration curve.			
7.6 Is the % difference between the EVAL A and each analysis (quantitation and confirmation) DBC retention time within QC limits (2% for packed column, 0.3% for capillary [I.D. < 0.32 mm], 1% for megabore [0.32 < I.D. < 2 mm]) ?	[✓]	___	___
ACTION: DBC retention time cannot be evaluated if DBC is not detected. If it is present and has a retention time out of QC limits, then use professional judgement to determine the reliability of the analysis and flag results "R", if appropriate.			
7.7 Was the proper analytical sequence followed for each 72 hour period of analyses (page PEST D-36 in 8/87 SOW).	[✓]	___	___
ACTION: If no, use professional judgement to determine the severity of the effect on the data and accept or reject it accordingly. Generally, the effect is negligible unless the sequence was grossly altered or the calibration was also out of limits.			

8.0 Pesticide/PCB Standards Summary

8.1 Is Form IX present and complete for each GC column and 72 hr sequence of analyses?	[✓]	___	___
ACTION: If no, take action specified in 3.2 above.			
8.2 Are there any transcription/calculation errors between raw data and Form IX?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
8.3 Is DDT retention time for packed columns > 12 min (except OV-1 and OV-101 columns)?	[✓]	___	___
ACTION: If no, check that there is adequate resolution between individual components. If not, flag results for compounds that interfere with each other (co-elute) "R".			
8.4 Do all standard retention times fall within the windows established for the first IND A and IND B analyses?	[✓]	___	___

	YES	NO	N/A
ACTION: Beginning with the samples following the last in control standard, check to see if the chromatograms contain peaks within an expanded window surrounding the expected retention times. If no peaks are found and, DBC is visible non-detects are valid. If peaks are present and cannot be identified through "pattern recognition" or a consistent shift in standard retention times, flag all affected compound results "R".			
8.5 Are the continuing calibration standard calibration factors within 15% (for quantitation column) or 20% (for confirmation column) of the initial (at beginning of 72 hr sequence) calibration factors?	[✓]	___	___
ACTION: If no, flag all associated positive results "J". Use professional judgement to determine whether or not to flag non-detects.			
9.0 Pesticide/PCB Identification			
9.1 Is Form X complete for every sample in which a pesticide or PCB was detected?	[✓]	___	___
ACTION: If no, take action specified in 3.2 above.			
9.2 Are there any transcription errors between raw data and Form X?	___	[✓]	___
ACTION: If large errors exist, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
9.3 Are retention times of sample compounds within the calculated retention time windows for both quantitation and confirmation analyses?	[✓]	___	___
Was GC/MS confirmation provided when required (when compound concentration is > 10 ug/ml in final extract)?	[✓]	___	___
ACTION: Reject ("R") all positive results (meeting quantitation column criteria, but missing confirmation by a second column or GC/MS (if appropriate). Also, reject ("R") all positive results not meeting retention time window criteria unless associated standard compounds are similarly biased (i.e. base on RRT to DBC).			
9.4 Check chromatograms for false negatives, especially for the multiple peak components toxaphene and PCB's. Were there any false negatives?	___	[✓]	___
ACTION: If appropriate PCB standards were not analyzed, or if the lab performed no confirmation analysis, flag the appropriate data with an "R".			

	YES	NO	N/A
10.0 Compound Quantitation and Reported Detection Limits			
10.1 Are there any transcription / calculation errors in Form I results? Check at least two positive values. Were any errors found?	___	[✓]	___
NOTE: Simple peak pesticide results can be checked for rough agreement between quantitative results obtained on the two GC columns. The reviewer should use professional judgement to decide whether a much larger concentration obtained on one column versus the other indicates the presence of an interfering compound. If an interfering compound is indicated, the lower of the two values should be reported and qualified as presumptively present at an estimated quantity ("JN"). This necessitates a determination of an estimated concentration on the confirmation column. The narrative should indicate that the presence of interferences has obscured the attempt at a second column confirmation.			
10.2 Are the CRQLs adjusted to reflect sample dilutions and, for soils, sample moisture? See page 35A of SOG-5	✓	[___]	___
ACTION: If errors are large, call lab for explanation / resubmittal, make any necessary corrections and note errors under "Conclusions".			
ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQL data from the diluted sample analysis). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" value on the original Form I and substituting it with data from the analysis of diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's that should not be used, including any in the summary package.			
11.0 Chromatogram Quality			
11.1 Were baselines stable?	[✓]	___	___
11.2 Were any electropositive displacement (negative peaks) or unusual peaks seen?	___	[✓]	___
11.3 Were early eluting peaks (for early eluting analytes) resolved to baseline?	[✓]	___	___
ACTION: For 11.1 and 11.2, comment only. For 11.3, reject ("R") those analytes that are not sufficiently resolved.			

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By [illegible] Date 5-4-90 Subject _____ Sheet No. 15A of 36

Chkd. By ____ Date _____ SDG-5 PEST/PCBs SECTION 10.2 Proj. No. 22-595

The SRDL was increased for samples GW1MW6, GW2MW5, GW4MW3, GW5MW2, and GW6MW2 due to dilution factors.

For samples GW5MW2 and GW6MW2, the actual quantitation limits of 4,4'-DDE, Dieldrin, and Toxaphene were determined from a replotted chromatogram representing a 2-fold increase in attenuation. Hence, the quantitation limit was raised by a factor of two.

For sample GW7MW4, the actual quantitation limit for PCB-1221 was determined as a worst case based on the height of an interfering peak.

301501

	YES	NO	N/A
12.0 Field Duplicates			
12.1 Were any field duplicates submitted for PEST/PCB analysis? See page 304 of Sig-5	[✓]	___	___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between field duplicate results must be addressed in the reviewer narrative. However, if large differences exist, identification of field duplicates should be confirmed by contacting the sampler.

Paul C. Rizzo Associates, Inc.
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By CV Date _____ Subject _____ Sheet No. 36A of 36
Chkd. By ____ Date _____ SWG-5 PESTICIDES SECTION Proj. No. 88-595

Field Duplicates: GW-3A MW-1 LLI # 1478187
GW-3B MW-1 Dup LLI # 1478189

Compound	GW-3A	GW-3B	RPD*
results (of all compounds) less than quantitation limit			—

Field Duplicates: GW-5 MW-2 LLI # 1478199
GW-5 MW-2 Dup LLI # 1478201

Compound	GW-5 (ug/L)	GW-6 (ug/L)	RPD*
alpha-BHC	4	4	0
gamma-BHC (Lindane)	3	4	29
DDT	0.1	—	—
Carbaryl (method 531.1)	152	174	13
Carbaryl (SOP 734)	253	263	4

$$* \; RPD = \frac{|A-B|}{(A+B)/2} \times 100$$

where, A ≡ concentration detected in sample A
B ≡ concentration detected in sample B

301503

SDG-5

SOP NO. HW-2

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 7/87
REV. 12/87

(SOP Revision IX)

PREPARED BY: Hanif Sheikh DATE: 10-25-84
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

CONCURRED BY: Louis Bevilacqua DATE: 10/27/87
Louis Bevilacqua, Section Chief
Toxic and Hazardous Waste Section

APPROVED BY: Gerard F. McKenna DATE: 10/27/84
Gerard F. McKenna, Chief
Monitoring Management Branch

301504

Title: Evaluation of Inorganic Data for the Contract Laboratory Program

Date: Oct. 1989
Number: HW-2
Revision: 9

1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 7/87.

2.0 Responsibilities - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a total review:

2.1.1 Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1).
The reviewer must answer every question on the checklist.

2.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2)
The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 Contract Non-Compliance - SMO Report (Appendix A.3)
This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Review Manager or Deputy Project Officer (DPO). Forward 5 copies: one each for internal files, appropriate Regional DPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to end of Data Assessment Narrative (Sec. A.2.2).

2.1.4 Data Summary Sheet - Summary of Inorganic Quality Control Data (Appendix A.5).
Enter in ink on Data Summary Sheet required QC values from Forms I through IX. Circle all values that require data qualification "Action".

2.1.5 CLP Data Assessment Summary Forms

2.1.5.1 Appendix A.6
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.5.2 Appendix A.7
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.6 **Data Review Log:** It is recommended that each data reviewer should maintain a log of reviews completed to include:
a. date of start of case review
b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.7 **Telephone Record Log** - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.8 **Forwarded Paperwork**

2.1.8.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Data Summary Sheet (Appendix A.5) along with completed Data Assessment Narrative (Appendix A.2)
e. Record of Communication (copy)
f. CLP Reanalysis Request/Approval Record (original + 3 copies)
g. Appendix A.7 (original).

2.1.8.2 Forward 4 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.7) and Telephone Record Log , if any,: one each for appropriate Regional DPO, Sample Management Office (SMO), and last two addressees of Mailing List for Data Reviewers (Appendix A.4) (the Inorganic Data Assessment form does not go to the last two addressees).

2.1.9 **Filed Paperwork** - Upon completion of review, the following are to be filed within MMB files:

a. Four copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.7.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Data Assessment Summary Form (Appendix A.6).
e. CLP Reanalysis Request/Approval Record (copy)

3.0 **Data Completeness**
Indicate incomplete data package on the computer tracking sheet located in MMB office. Authorized contractor personnel may contact the laboratory after discovery of an incomplete data package. If a laboratory will not return phone calls or does not respond to requests, notify MMB coordinator of Region II for resolution.

4.0 **Rejection of Data** - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 **Acceptance Criteria** - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of July 1, 1988.

6.0 **SMO Contract Compliance Screening (CCS)** - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 **Request for Reanalysis** - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative.If holding times and sample storage times have not been exceeded, DPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 **Record of Communication** - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 **Rounding off numbers** - The data reviewer will follow the standard practice.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review - Inorganics)

Date: Oct. 1989
Number: HW-2
Revision: 9

	YES	NO	N/A
A.1.1 **Contract Compliance Screening Report** (CCS) - Present? Case Narrative	[✓]		
ACTION: If no, contact RSCC.			
A.1.2 **Record of Communication (from RSCC)** - Present?	[ ]		✓
ACTION: If no, request from RSCC.			
A.1.3 **Trip Report** - Present? Chain-of-Custody	[✓]		
ACTION: If no, contact RSCC for trip report.			
A.1.4 **Sample Traffic Report** - Present or on file?	[✓]		
Legible?	[✓]		
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 **Cover Page** - Present?	[✓]		
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[✓]		
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on ~~Record of Communication~~? Data Package	[✓]		
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[✓]		
(b) Form I's?	[✓]		
ACTION: If no for any of the above, contact RSCC for clarification.			

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	YES	NO	N/A
A.1.6 **Form I (Final Data)** - Are all Form I's present and complete?	[✓]	___	___
ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[✓]	___	___
Are soil sample results for each parameter corrected for percent solids?	[___]	___	✓
Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[✓]	___	___
Are computation/transcription errors less than 10% of reported values?	[✓]	___	___
Are all "less than IDL" values properly coded with "U"?	[✓]	___	___
Was a brief physical description of samples given on Form I's?	[✓]	___	___
Were the result qualifiers used correctly with final data?	[✓]	___	___
ACTION: If no for any of the above, prepare Telephone Record Log, and contract laboratory for corrected data.			
Were any samples diluted beyond requirements of contract?	___	[✓]	___
If yes, were dilutions noted on Form I's?	[___]	___	✓
ACTION: If no, note under Contract-Problem/Non-Compliance of the"Data Assessment Narrative".			

	YES	NO	N/A
A.1.7 **Holding Times** - (aqueous samples)			
(Examine sample traffic reports and digestion/distillation logs.)			
Mercury (28 days). . . . . exceeded?	___	[✓]	___
Cyanide (14 days). . . . . exceeded?	___	[✓]	___
Other Metals (6 months). . . . . exceeded?	___	[✓]	___
Soil samples			
Metals (including Hg) and Cyanide (6 months)..exceeded?	___	[___]	✓

NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.

ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.

	YES	NO	N/A
A.1.8 **Raw Data**			
A.1.8.1 Digestion Log* for flame AA/ICP present?	[✓]	___	___
Digestion Log for furnace AA present?	[✓]	___	___
Digestion Log for mercury present?	[✓]	___	___
Digestion Log for cyanides present?	[✓]	___	___
Are pH values (pH<2 for all metals, pH>12 for cyanide) present in Digestion/Distillation Logs?	[___]	✓	___
*Weights, dilutions and volumes used to obtain values.			
Percent solids calculation present for soils/sediments?	[___]	___	✓
Are preparation dates present on Digestion Log?	[✓]	___	___

Internal Chain-of-Custody

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			YES	NO	N/A
A.1.8.2	Measurement read out record present?	ICP	[✓]	___	___
		Flame AA	[___]	___	✓
		Furnace AA	[✓]	___	___
		Mercury	[✓]	___	___
		Cyanides	[✓]	___	___
A.1.8.3	Are all raw data to support all sample analyses and QC operations present?		[✓]	___	___
	Legible?		[✓]	___	___
	Properly Labeled?		[✓]	___	___

ACTION: If no for any of the above, write Telephone Record Log and contact laboratory. Flag metal data as estimated if pH of sample is greater than 2. Flag cyanide data as estimated if pH sample is less than 12.

A.1.9 **Data Validation and Verification**

A.1.9.1 Calibration

A.1.9.1.1	Is record of at least 2 point calibration present for ICP analysis?	[✓]	___	___
	Is record of 5 point calibration present for Hg analysis?	[✓]	___	___

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.9.1.2	Is record of 4 point calibration present for: Flame AA?	[___]	___	✓
	Furnace AA?	[✓]	___	___
	Cyanides?	[✓]	___	___

	YES	NO	N/A

NOTE: 1. If less than 4 standards are measured in absorbance mode, then the remaining standards in concentration mode must be run immediately after calibration and be within ±10% of true value.
2. For all AA (except Hg) and Cyanide analyses, one calibration standard is at CRDL level. If not, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".

ACTION: Flag associated data as estimated if standards are not within +10% of true values (except CRDL calibration standard). Do not flag the data as estimated in linear range indicated by good recovery of standard.

A.1.9.1.3 Is correlation *coefficient less than 0.995 for:

Mercury Analysis?	___	[✓]	___
Cyanide Analysis?	___	[✓]	___
Atomic Absorption Analysis?	___	[✓]	___

ACTION: If yes, flag the associated data as estimated.

A.1.9.2 Form II A (Initial and Continuing Calibration Verification)-

A.1.9.2.1 Present and complete for every metal and cyanide?	[✓]	___	___
Present and complete for AA and ICP when both are used for same analyte?	[___]	___	✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.9.2.2 Circle all values on data summary sheet that are outside contract windows. Are all calibration standards (initial and continuing) within control limits?

Metals 90-110%	[✓]	___	___
Hg - 80-120%	[✓]	___	___

* The reviewer will calculate correlation coefficient.

	YES	NO	N/A
Cyanides 85-115%	[✓]	___	___

ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard of 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ), if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%).

	YES	NO	N/A
Was continuing calibration performed every 10 samples or every 2 hours?	[✓]	___	___

ACTION: If no, flag the excess samples (eleventh and up) data as estimated (J).

A.1.9.3 **Form II B (CRDL Standards for AA and ICP)** -

	YES	NO	N/A
A.1.9.3.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[✓]	___	___
*Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[✓]	___	___
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[✓]	___	___

ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are:

AA Analysis - **True Value ± CRDL

ICP Analysis - **True Value ± 2CRDL

CN Analysis - **True Value ± 0.5 x True Value.

* Find the results of mid-range standard in the raw data.
**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL.

		YES	NO	N/A
A.1.9.3.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and for every four hours of ICP run?	[✓]	___	___
	ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
A.1.9.3.3	Circle all values on summary sheet that are outside acceptance windows.			
	Are CRA and CRI standards within control limits: Metals 80 - 120%R?	[___]	✓	___
	Is mid-range standard within control limits: Cyanide 80 - 120%R?	[✓]	___	___
	ACTION: Flag as estimated all the data within the affected ranges if the recovery of the standard is between 50-79%; flag only positive data if the recovery is between 121-150%; reject (red line) all data if the recovery is less than 50%; reject only positive data if the recovery is greater than 150%.			
	ICP Chromium %R = 27.2 → 28.0			
	ICP Silver %R = 39.2 → 49.4			
A.1.9.4	**Form III (Initial and Continuing Calibration Blanks)**			
A.1.9.4.1	Present and complete?	[✓]	___	___
	For both AA and ICP when both are used for same analyte?	[___]	___	✓
	Was an initial calibration blank analyzed?	[✓]	___	___
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (whichever is more frequent)?	[✓]	___	___
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the contract-problems/non-compliance section of the Data Assessment Narrative.			

		YES	NO	N/A
A.1.9.4.2	Circle all calibration blank values on Data Summary Sheet that are above CRDL (or 2 x IDL when IDL > CRDL). Are all calibration blanks (when IDL<CRDL) less than or equal to Contract Required Detection Limits (CRDL)?	[✓]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[___]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) on Form I's all data <5xIDL between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank.			
A.1.9.5	**FORM III (Preparation Blank)** -			
	(Note: The preparation blank for mercury is the same as the calibration blank.)			
A.1.9.5.1	Was one prep. blank analyzed for: each 20 samples?	[✓]	___	___
	each batch?	[✓]	___	___
	each matrix type?	[✓]	___	___
	both AA and ICP when both are used for same analyte?	[___]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) all associated positive data <10 x IDLs for which prep.blank was not analyzed.			
	NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.9.5.2	Is concentration of prep. blank greater than CRDL when IDL is less than or equal to CRDL?	___	[✓]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank value?	___	[___]	✓

		YES	NO	N/A
	ACTION: If yes, reject (red-line) all associated data that has a concentration less than ten times the prep. blank value, but greater than CRDL.			
A.1.9.5.3	Do concentrations of prep. blank fall below two times IDL when IDL is greater than CRDL?	[ ]	___	✓
	ACTION: If no, reject (red-line) all data that has a concentration less than 10 times the prep. blank value, but not flagged with a "U" (less than).			
A.1.9.5.4	Is concentration of prep. blank below the negative CRDL?	___	[✓]	___
	ACTION: If yes, reject (red-line) all associated data that has a concentration less than 10xCRDL.			
A.1.9.6	**Form IV (ICP Interference Check Sample)**			
A.1.9.6.1	Present and complete?	[✓]	___	___
	(NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[✓]	___	___
	ACTION: If no, flag as estimated (J) all samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.8.6.2	Circle all values on Data Summary Sheet that are more than + 20% of true or established mean value. Are all Interference Check Sample results inside of control limits (+ 20%)?	[✓]	___	___
	If no, is concentration of Al, Ca, Fe, or Mg lower in sample than in ICS?	[ ]	___	✓
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			

		YES	NO	N/A
A.1.9.7	**Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distallation)-** (Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.9.7.1	Present and complete for: each 20 samples?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each conc. range (i.e. low, med., high)?	[✓]	___	___
	For both AA and ICP when both are used for same analyte?	[___]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) all positive data less than four times spiking level for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.9.7.2	Was field blank used for spiked sample?	___	[✓]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
	NOTE: Matrix spike analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
A.1.9.7.3	Circle all values on Data Summary Sheet that are outside control limits (75% to 125%). Are all recoveries within control limits? *All except Aluminum and Iron*	[___]	✓	___
	If no, is sample concentration greater than or equal to four times spike concentration? *Sample conc. ≥ 4x spike conc. for iron* *Sample conc. ≥ 4x spike conc. for aluminum*	[✓]	___	___
	ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			

	YES	NO	N/A
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA? aluminum	[✓]	___	___

ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".

A.1.9.7.4 Aqueous

Are any spike recoveries:

(a) less than 30%?	___	[✓]	___
(b) between 30-74%?	___	[✓]	___
(c) between 126-150%?	___	[✓]	___
(d) greater than 150%? aluminum post-digestive spike 86.3% R	✓	[___]	___

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

NOTE: If pre-digestion spike result is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, disregard spike recovery on Form V. Flag the associated data as estimated(J).

A.1.9.7.5 Soil/Sediment

Are any spike recoveries:

(a) less than 10%?	___	[___]	✓
(b) between 10-74%?	___	[___]	✓
(c) between 126-200%?	___	[___]	✓
(d) greater than 200%?	___	[___]	✓

ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".

		YES	NO	N/A
A.1.9.8	**Form VI (Lab Duplicates)**			
A.1.9.8.1	Present and complete for: each 20 samples?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each concentration range (i.e. low, med., high)?	[✓]	___	___
	both AA and ICP when both are used for same analyte?	[___]	___	✓
	ACTION: If no for any the above, flag as estimated (J) all data >CRDL* for which duplicate sample was not analyzed. Note: If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
A.1.9.8.2	Was field blank used for duplicate analysis?	___	[✓]	___
	ACTION: If yes, flag all data >CRDL* as estimated (J) for which field blank was used as duplicate. NOTE: Duplicate analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
A.1.9.8.3	Are all values within control limits (RPD 20% or difference < ±CRDL)?	[✓]	___	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[___]	___	✓
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative". NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL. 2. If lab duplicate result is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria.			

* Substitute IDL for CRDL when IDL > CRDL.

		YES	NO	N/A
A.1.9.8.4	Is any value for sample duplicate pair less than CRDL* and other value greater than or equal to 10 x *CRDL?	___	[✓]	___
	ACTION: If yes, flag the associated data as estimated (J).			
A.1.9.8.5	Aqueous Circle all values on Data Summary Sheet that are: RPD > 50%, or Difference > ± CRDL*			
	Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[✓]	___
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[✓]	___
	ACTION: If yes, flag the associated data as estimated.			
A.1.9.8.6	Soil/Sediment Circle all values on Data Summary Sheet that are: RPD > 100%, or Difference > 2 x CRDL*			
	Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%?	___	[___]	✓
	Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL?	___	[___]	✓
	ACTION: If yes, flag the associated data as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.

** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.9.9	**Field Duplicates**			
A.1.9.9.1	Were field duplicates analyzed?	[✓]	___	___

ACTION: If yes, prepare a Form VI for each field duplicate pair, report concentrations of soils in ug/l on wet weight basis and calculate RPDs.

NOTE:
1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

A.1.9.9.2	Is any value for sample duplicate pair less than *CRDL and other value greater than or equal to 10 x *CRDL?	___	[✓]	___

ACTION: If yes, flag the associated data as estimated.

A.1.9.9.3 Aqueous

Circle all values on Form VI for field duplicates that are:
RPD > 50%, or
Difference > ± CRDL*

	Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[✓]	___
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[✓]	___

ACTION: If yes, flag the associated data as estimated.

A.1.9.9.4 Soil/Sediment

Circle all values on Form VI for field duplicates that are:
RPD >100%, or

Difference > 2 x CRDL*

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A
Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%?	___	[___]	✓
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL): >2x *CRDL?	___	[___]	✓

ACTION: If yes, flag the associated data as estimated.

A.1.9.10 Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)

	YES	NO	N/A
A.1.9.10.1 Was one LCS prepared and analyzed for: every 20 water samples?	[✓]	___	___
every 20 solid samples?	[___]	___	✓
both AA and ICP when both are used for same analyte?	[___]	___	✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

A.1.9.10.2 Aqueous LCS

Circle all LCS values outside control limits (80 - 120%- except aqueous Ag and Sb).

	YES	NO	N/A
Is any LCS recovery: less than 50%?	___	[✓]	___
between 50% and 79%?	___	[✓]	___
between 121% and 150%?	___	[✓]	___
greater than 150%?	___	[✓]	___

* Substitute IDL for CRDL when IDL > CRDL.
**Use absolute values of sample and duplicate to calculate the difference.

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	YES	NO	N/A
ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.			

A.1.9.10.3 Solid LCS

NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).
2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.

	YES	NO	N/A
Is LCS "Found" value higher than the control limits on Form VII?	___	[___]	✓
ACTION: If yes, qualify all associated positive data as estimated.			
Is LCS "Found" value lower than the Control limits on Form VII?	___	[___]	✓
ACTION: If yes, qualify all associated data as estimated.			

A.1.9.11 Form IX (ICP Serial Dilution) -

NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.

A.1.9.11.1 Was Serial Dilution analysis performed for:

	YES	NO	N/A
each 20 samples?	[✓]	___	___
each matrix type?	[✓]	___	___
each concentration range (i.e. low, med.)?	[✓]	___	___

		YES	NO	N/A
	ACTION: If no for any of the above, flag all positive data greater than or equal to 10xIDLs as estimated (J) for which Serial Dilution Analysis was not performed, and summarize the deficiency on the DPO report.			
A.1.9.11.2	Was field blank(s) used for Serial Dilution Analysis?	___	[✓]	___
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J).			
	NOTE: Serial dilution analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
A.1.9.11.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[✓]	___	___
	ACTION: If no, write in the contract-problem/non-compliance section of the "Data Assessment Narrative".			
A.1.9.11.4	Circle all values on Data Summary Sheet that are outside control limit for initial concentrations equal to or greater than 10 x IDLs only. Are any % difference values:			
	> 10%?	✓	[___]	___
	≥ 100%?	___	[✓]	___
	ACTION: Flag as estimated (J) all associated sample results equal to or greater than 10xIDLs for which percent difference is greater than 10% but less than 100%. Reject (red-line) all associated sample results equal to or greater than 10xIDLs for which PD is greater than or equal to 100%. *Flag aluminum, barium, manganese, potassium, and sodium as estimated.*			

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		YES	NO	N/A
A.1.9.12	**Furnace Atomic Absorbtion (AA) QC Analysis**			
A.1.9.12.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[✓]	___	___
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.9.12.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[✓]	___	___
	Was a dilution analyzed for sample with post digestion spike recovery less than 40%?	[✓]	___	___
	ACTION: If no for any of the above, flag all the associated data as estimated (J).			
A.1.9.12.3	Is *post digestion spike recovery less than 10% or greater than 150% for any result?	___	[✓]	___
	ACTION: If yes, reject (red-line) the affected data if recovery is <10%; reject data not flagged with "U" if spike recovery is >150%.			
	NOTE: Reject the data only if the affected sample was not subsequently analyzed by Method of Standard Addition.			
A.1.9.13	**Form VIII (Method of Standard Addition Results)**			
A.1.9.13.1	Present?	[✓]	___	___
	If no, is any Form I result coded with "S" or a "+"?	___	[ ]	✓
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			

* Post digestion spike is not required on the pre-digestion spiked sample when predigestion spike recovery is within control limits of 75-125% or when SR>4xSA.

	YES	NO	N/A
A.1.9.13.2 Is coefficient of correlation for MSA less than 0.990 for any sample? sample was reanalyzed with coefficient of correlation = 0.9876	✓	[ ]	
ACTION: If yes, reject (red-line) affected data.			
A.1.9.13.3 Was *MSA required for any sample but not performed?		[✓]	
Is coefficient of correlation for MSA less than 0.995?		[✓]	
Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?		[✓]	
ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.9.13.4 Was proper quantitation procedure followed correctly as outlined in the SOW on page E-16 through E-17?	[✓]		
ACTION: If no, note exception under contract problem/ non-compliance of data assessment narrative, or prepare a separate list.			

A.1.9.14 **Dissolved/Total or Inorganic/Total Analytes** -

A.1.9.14.1 Were any analyses performed for dissolved as well as total analytes on the same sample(s). This group of samples were analyzed for total analytes. These same samples were analyzed for dissolved analytes in another group.	✓	[ ]	
Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?		[✓]	

NOTE:
1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration.
2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents.
3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.

See page 22A

* MSA is not required on LCS and prep. blank.

Paul C. Rizzo Associates, Inc.
CONSULTANTS

By _____ Date _____ Subject _____ Sheet No. 22A of 35
Chkd. By _____ Date _____ SDG-5 TOTAL INORGANICS Proj. No. 88-595

Field Duplicates: GW-3A MW-1
GW-3B MW-1 Dup

Compound	GW-3A (mg/l)	GW-3B (mg/l)	RPD*
Aluminum	0.9	1.2	29
Calcium	24.0	24.1	0.42
Iron	1.58	2.13	30
Magnesium	8.49	8.32	2.0
Manganese	0.19	0.21	10
Potassium	5.8	5.9	1.7
Sodium	6.9	7.3	5.6

$$* \quad RPD = \frac{|A-B|}{(A+B)/2} \times 100$$

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where, A ≡ concentration detected in sample A
B ≡ concentration detected in sample B

	YES	NO	N/A
A.1.9.14.2 Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?		[✓]	
A.1.9.14.3 Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?		[✓]	

ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.

A.1.9.15 Form I to IX

A.1.9.15.1 Are all the Form I through Form IX labeled with:

	YES	NO	N/A
Laboratory name?	[✓]		
Case/SAS number?	[ ]		✓
EPA sample No.?	[✓]		
SDG No.?	[✓]		
Contract No.?	[ ]		✓
Correct units?	[✓]		
Matrix?	[✓]		

ACTION: If no for any of the above, note under contract problem/non-compliance section of the "Data Assessment Narrative".

	YES	NO	N/A
A.1.9.15.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
(NOTE: Check all forms against raw data.)			
(a) all analytes analyzed by ICP?	___	[✓]	___
(b) all analytes analyzed by GFAA?	___	[✓]	___
(c) all analytes analyzed by AA Flame?	___	[___]	✓
(d) Mercury?	___	[✓]	___
(e) Cyanide?	___	[✓]	___

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

A.1.9.16 **Form I (Field Blank)** -

Circle all field blank values on Data Summary Sheet that are greater than CRDL, 2 x IDL when IDL > CRDL or 5xIDL when 5xIDL < CRDL.

Do concentrations of field blank(s) fall below CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	✓
Do concentrations of field blank(s) fall below 5xIDL when 5xIDL < CRDL ?	[___]	___	✓
If no, was field blank value already rejected due to other QC criteria?	[___]	___	✓

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value.

	YES	NO	N/A
A.1.9.17 **Form XI, XII, XIII (Quarterly Verification of Instrumental Parameters).**			
A.1.9.17.1 Is quarterly verification report present for:			
Instrument Detection Limits?	[✓]	___	___
ICP Interelement Correction Factors?	[✓]	___	___
ICP Linear Ranges?	[✓]	___	___
ACTION: If no, contact DPO of the lab.			
A.1.9.17.2 Form XI (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)			
Are IDLs present for: all the analytes?	[✓]	___	___
all the instruments used?	[✓]	___	___
For both AA and ICP when both are used for same analyte?	[___]	___	✓
ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.			
Is IDL greater than CRDL for any analyte?	___	[✓]	___
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL?	[___]	___	✓
ACTION: If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			

	YES	NO	N/A
A.1.9.17.3 Form XII (Linear Ranges)			
Was any sample result higher than high linear range of ICP by more than 10%?	___	[✓]	___
Was any sample result higher than the highest calibration standard for non-ICP parameters?	✓	[___]	___
If yes for any of the above, was the sample diluted to obtain the result on Form I.	[✓]	___	___
ACTION: If no, flag the result reported on Form I as estimated(J).			
A.1.9.18 **Percent Solids of Sediments**			
Is soil content in sediment(s) less than 50%?	___	[___]	✓
ACTION: If yes, qualify as estimated all data not previously rejected or flagged due to other QC criteria.			

Case# _____ Site _____ Matrix: Soil _____

SDG _____ Lab _____ Water _____

Contractor _____ Reviewer _____ Other _____

A.2.1 The case description and exceptions, if any, are noted below with reason(s) for rejection or qualification as estimated value(s) J.

_____

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A.2.1 (continuation)

A.2.1 (continuation)

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.5: Summary of Inorganics Quality Control Data

Date: Oct. 1989
Number: HW-2
Revision: 9

APPENDIX A 5 SUMMARY OF INORGANICS QUALITY CONTROL DATA

LABORATORY:_____ CASE NO._____ SOW NO._____ SAMPLE TYPE/SDG:_____

SITE/STUDY DESCRIPTION:_____ SAMPLE NOS:_____

_____ Field Blank _____

FIELD DUP. #'S:_____ LAB DUP. #'S:_____ MATRIX SPIKE #:_____

SERIAL DILUTION SAMPLE NO._____ COMPLETION DATE:_____ REVIEWERS INITIALS:_____

	XI	I	IIA				IIB		III				IV		V		VI	VII	IX	
Parameter	Detection Limits UG/L CRDL	IDL	Field Blank	Calib. Ver. %R Init	Continued 1	2	3	CRDL Std Ver. % R Init	Fin	Calibration Blanks Init	Continued 1	2	3	PREP BLANK	ICP ICS % R Init	Fin	Matrix Spik	Lab Dup RPD/Diff	LCS % R	Ser Dil % D	Meth
Al	200																				
Sb	60																				
As	10																				
Ba	200																				
Be	5																				
Cd	5																				
Ca	5000																				
Cr	10																				
Co	50																				
Cu	25																				
Fe	100																				
Pb	5																				
Mg	5000																				
Mn	15																				
Hg	0.2																				
Ni	40																				
K	5000																				
Se	5																				
Ag	10																				
Na	5000																				
Tl	10																				
V	50																				
Zn	20																				
CN	10																				

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: _____ Date: _____ Case #: _____

Site: _____ Lab Name: _____

Reviewer's Initials: _____ Number of Samples: _____

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejection
ICP														
Flame AA														
Furnace AA														
Mercury														
Total														
Other														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

ICP														
Flame AA														
Furnace AA														
Mercury														
Total														
Other														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

INORGANIC REGIONAL DATA ASSESSMENT

Region_____

CASE NO._____

SITE_____

LABORATORY_____

NO. OF SAMPLES/ MATRIX_____

SDG#_____

REVIEWER (IF NOT ESD)_____

SOW#_____

REVIEWER'S NAME_____

DPO: ACTION_____ FYI_____

COMPLETION DATE_____

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES				
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:_____

AREAS OF CONCERN:_____

NOTABLE PERFORMANCE:_____

SDG-5
(DISSOLVED)

SOP NO. HW-2

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 7/87
REV. 12/87

(SOP Revision IX)

PREPARED BY: _____ DATE: 10-25-84
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

CONCURRED BY: _____ DATE: 10/27/87
Louis Bevilacqua, Section Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: 10/27/84
Gerard F. McKenna, Chief
Monitoring Management Branch

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Title: Evaluation of Inorganic Data for the Contract Laboratory Program

Date: Oct. 1989
Number: HW-2
Revision: 9

1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 7/87.

2.0 Responsibilities - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a total review:

2.1.1 Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1). The reviewer must answer every question on the checklist.

2.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2) The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 Contract Non-Compliance - SMO Report (Appendix A.3) This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Review Manager or Deputy Project Officer (DPO). Forward 5 copies: one each for internal files, appropriate Regional DPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to end of Data Assessment Narrative (Sec. A.2.2).

2.1.4 Data Summary Sheet - Summary of Inorganic Quality Control Data (Appendix A.5). Enter in ink on Data Summary Sheet required QC values from Forms I through IX. Circle all values that require data qualification "Action".

2.1.5 CLP Data Assessment Summary Forms

2.1.5.1 Appendix A.6
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.5.2 Appendix A.7
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.6 **Data Review Log:** It is recommended that each data reviewer should maintain a log of reviews completed to include:
a. date of start of case review
b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.7 **Telephone Record Log** - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.8 **Forwarded Paperwork**

2.1.8.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Data Summary Sheet (Appendix A.5) along with completed Data Assessment Narrative (Appendix A.2)
e. Record of Communication (copy)
f. CLP Reanalysis Request/Approval Record (original + 3 copies)
g. Appendix A.7 (original).

2.1.8.2 Forward 4 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.7) and Telephone Record Log , if any,: one each for appropriate Regional DPO, Sample Management Office (SMO), and last two addressees of Mailing List for Data Reviewers (Appendix A.4) (the Inorganic Data Assessment form does not go to the last two addressees).

2.1.9 **Filed Paperwork** - Upon completion of review, the following are to be filed within MMB files:

a. Four copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.7.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Data Assessment Summary Form (Appendix A.6).
e. CLP Reanalysis Request/Approval Record (copy)

3.0 **Data Completeness**
Indicate incomplete data package on the computer tracking sheet located in MMB office. Authorized contractor personnel may contact the laboratory after discovery of an incomplete data package. If a laboratory will not return phone calls or does not respond to requests, notify MMB coordinator of Region II for resolution.

4.0 **Rejection of Data** - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 **Acceptance Criteria** - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of July 1, 1988.

6.0 **SMO Contract Compliance Screening (CCS)** - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 **Request for Reanalysis** - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative.If holding times and sample storage times have not been exceeded, DPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 **Record of Communication** - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 **Rounding off numbers** - The data reviewer will follow the standard practice.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review - Inorganics)

Date: Oct. 1989
Number: HW-2
Revision: 9

	YES	NO	N/A
A.1.1 **Contract Compliance Screening Report** (CCS) - Present? see Narrative	[✓]		
ACTION: If no, contact RSCC.			
A.1.2 **Record of Communication (from RSCC)** - Present?	[ ]		✓
ACTION: If no, request from RSCC.			
A.1.3 **Trip Report** - Present? Chain-of-Custody	[✓]		
ACTION: If no, contact RSCC for trip report.			
A.1.4 **Sample Traffic Report** - Present or on file?	[✓]		
Legible?	[✓]		
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 **Cover Page** - Present?	[✓]		
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[✓]		
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on ~~Record of Communication~~ Data Package?	[ ]		
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[✓]		
(b) Form I's?	[✓]		
ACTION: If no for any of the above, contact RSCC for clarification.			

	YES	NO	N/A
A.1.6 **Form I (Final Data)** - Are all Form I's present and complete?	[✓]	___	___
ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[✓]	___	___
Are soil sample results for each parameter corrected for percent solids?	[___]	___	✓
Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[✓]	___	___
Are computation/transcription errors less than 10% of reported values?	[✓]	___	___
Are all "less than IDL" values properly coded with "U"?	[✓]	___	___
Was a brief physical description of samples given on Form I's?	[✓]	___	___
Were the result qualifiers used correctly with final data?	[✓]	___	___
ACTION: If no for any of the above, prepare Telephone Record Log, and contract laboratory for corrected data.			
Were any samples diluted beyond requirements of contract?	___	[✓]	___
If yes, were dilutions noted on Form I's?	[___]	___	✓
ACTION: If no, note under Contract-Problem/Non-Compliance of the"Data Assessment Narrative".			

	YES	NO	N/A
A.1.7 **Holding Times** - (aqueous samples)			
(Examine sample traffic reports and digestion/distillation logs.)			
Mercury (28 days). . . . . exceeded?	___	[✓]	___
Cyanide (14 days). . . . . exceeded?	___	[___]	✓
Other Metals (6 months). . . . . exceeded?	___	[✓]	___
Soil samples			
Metals (including Hg) and Cyanide (6 months)..exceeded?	___	[___]	✓

NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.

ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.

A.1.8 **Raw Data**			
A.1.8.1 Digestion Log* for flame AA/ICP present?	[✓]	___	___
Digestion Log for furnace AA present?	[✓]	___	___
Digestion Log for mercury present?	[✓]	___	___
Digestion Log for cyanides present?	[___]	___	✓
Are pH values (pH<2 for all metals, pH>12 for cyanide) present in Digestion/Distillation Logs?	[___]	✓	___
*Weights, dilutions and volumes used to obtain values.			
Percent solids calculation present for soils/sediments?	[___]	___	✓
Are preparation dates present on Digestion Log?	[✓]	___	___

Internal Chain-of-Custody

		YES	NO	N/A
A.1.8.2 Measurement read out record present?	ICP	[✓]		
	Flame AA	[ ]		✓
	Furnace AA	[✓]		
	Mercury	[✓]		
	Cyanides	[ ]		✓
A.1.8.3 Are all raw data to support all sample analyses and QC operations present?		[✓]		
Legible?		[✓]		
Properly Labeled?		[✓]		

ACTION: If no for any of the above, write Telephone Record Log and contact laboratory. Flag metal data as estimated if pH of sample is greater than 2. Flag cyanide data as estimated if pH sample is less than 12.

A.1.9 **Data Validation and Verification**

A.1.9.1 Calibration

A.1.9.1.1	Is record of at least 2 point calibration present for ICP analysis?	[✓]		
	Is record of 5 point calibration present for Hg analysis?	[✓]		

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.9.1.2	Is record of 4 point calibration present for: Flame AA?	[ ]		✓
	Furnace AA?	[✓]		
	Cyanides?	[ ]		✓

	YES	NO	N/A

NOTE: 1. If less than 4 standards are measured in absorbance mode, then the remaining standards in concentration mode must be run immediately after calibration and be within ±10% of true value.
2. For all AA (except Hg) and Cyanide analyses, one calibration standard is at CRDL level. If not, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".

ACTION: Flag associated data as estimated if standards are not within +10% of true values (except CRDL calibration standard). Do not flag the data as estimated in linear range indicated by good recovery of standard.

A.1.9.1.3 Is correlation *coefficient less than 0.995 for:

	YES	NO	N/A
Mercury Analysis?	___	[✓]	___
Cyanide Analysis?	___	[___]	✓
Atomic Absorption Analysis?	___	[✓]	___

ACTION: If yes, flag the associated data as estimated.

A.1.9.2 **Form II A (Initial and Continuing Calibration Verification)**-

	YES	NO	N/A
A.1.9.2.1 Present and complete for every metal and cyanide? N/A	[✓]	___	___
Present and complete for AA and ICP when both are used for same analyte?	[___]	___	✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.9.2.2 Circle all values on data summary sheet that are outside contract windows. Are all calibration standards (initial and continuing) within control limits?

	YES	NO	N/A
Metals 90-110%	[✓]	___	___
Hg - 80-120%	[✓]	___	___

* The reviewer will calculate correlation coefficient.

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	YES	NO	N/A
Cyanides 85-115%	[ ]	___	✓

ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard of 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ), if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%).

	YES	NO	N/A
Was continuing calibration performed every 10 samples or every 2 hours?	[✓]	___	___

ACTION: If no, flag the excess samples (eleventh and up) data as estimated (J).

A.1.9.3 **Form II B (CRDL Standards for AA and ICP)** -

	YES	NO	N/A
A.1.9.3.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[✓]	___	___
*Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[ ]	___	✓
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[✓]	___	___

ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are:

AA Analysis - **True Value ± CRDL

ICP Analysis - **True Value ± 2CRDL

CN Analysis - **True Value ± 0.5 x True Value.

* Find the results of mid-range standard in the raw data.
**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL.

		YES	NO	N/A
A.1.9.3.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and for every four hours of ICP run?	[✓]	___	___
	ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
A.1.9.3.3	Circle all values on summary sheet that are outside acceptance windows.			
	Are CRA and CRI standards within control limits: Metals 80 - 120%R?	[___]	✓	___
	Is mid-range standard within control limits: Cyanide 80 - 120%R?	[✓]	___	___
	ACTION: Flag as estimated all the data within the affected ranges if the recovery of the standard is between 50-79%; flag only positive data if the recovery is between 121-150%; reject (red line) all data if the recovery is less than 50%; reject only positive data if the recovery is greater than 150%.			
	ICP - Flag silver as estimated. Reject zinc data for = 21.4 - 23.4			
	AA - Flag thallium as estimated.			
A.1.9.4	**Form III (Initial and Continuing Calibration Blanks)**			
A.1.9.4.1	Present and complete?	[✓]	___	___
	For both AA and ICP when both are used for same analyte?	[___]	___	✓
	Was an initial calibration blank analyzed?	[✓]	___	___
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (whichever is more frequent)?	[✓]	___	___
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the contract-problems/ non-compliance section of the Data Assessment Narrative.			

		YES	NO	N/A
A.1.9.4.2	Circle all calibration blank values on Data Summary Sheet that are above CRDL (or 2 x IDL when IDL > CRDL). Are all calibration blanks (when IDL<CRDL) less than or equal to Contract Required Detection Limits (CRDL)?	[✓]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[___]	___	✓

ACTION: If no for any of the above, flag as estimated (J) on Form I's all data <5xIDL between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank.

A.1.9.5 **FORM III (Preparation Blank)** -

(Note: The preparation blank for mercury is the same as the calibration blank.)

		YES	NO	N/A
A.1.9.5.1	Was one prep. blank analyzed for: each 20 samples?	[✓]	___	___
	each batch?	[✓]	___	___
	each matrix type?	[✓]	___	___
	both AA and ICP when both are used for same analyte?	[___]	___	✓

ACTION: If no for any of the above, flag as estimated (J) all associated positive data <10 x IDLs for which prep.blank was not analyzed.

NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).

		YES	NO	N/A
A.1.9.5.2	Is concentration of prep. blank greater than CRDL when IDL is less than or equal to CRDL?	___	[✓]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank value?	___	[___]	✓

		YES	NO	N/A
	ACTION: If yes, reject (red-line) all associated data that has a concentration less than ten times the prep. blank value, but greater than CRDL.			
A.1.9.5.3	Do concentrations of prep. blank fall below two times IDL when IDL is greater than CRDL?	[ ]		✓
	ACTION: If no, reject (red-line) all data that has a concentration less than 10 times the prep. blank value, but not flagged with a "U" (less than).			
A.1.9.5.4	Is concentration of prep. blank below the negative CRDL?		[✓]	
	ACTION: If yes, reject (red-line) all associated data that has a concentration less than 10xCRDL.			
A.1.9.6	**Form IV (ICP Interference Check Sample)**			
A.1.9.6.1	Present and complete?	[✓]		
	(NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[✓]		
	ACTION: If no, flag as estimated (J) all samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.8.6.2	Circle all values on Data Summary Sheet that are more than + 20% of true or established mean value. Are all Interference Check Sample results inside of control limits (+ 20%)?	[✓]		
	If no, is concentration of Al, Ca, Fe, or Mg lower in sample than in ICS?	[ ]		✓
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			

		YES	NO	N/A
A.1.9.7	**Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distallation)**- (Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.9.7.1	Present and complete for: each 20 samples?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each conc. range (i.e. low, med., high)?	[✓]	___	___
	For both AA and ICP when both are used for same analyte?	[___]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) all positive data less than four times spiking level for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.9.7.2	Was field blank used for spiked sample?	___	[✓]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
	NOTE: Matrix spike analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
A.1.9.7.3	Circle all values on Data Summary Sheet that are outside control limits (75% to 125%). Are all recoveries within control limits?	[✓]	___	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	___	✓
	ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			

	YES	NO	N/A
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[ ]		✓

ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".

A.1.9.7.4 Aqueous

Are any spike recoveries:

	YES	NO	N/A
(a) less than 30%?		[✓]	
(b) between 30-74%?		[✓]	
(c) between 126-150%?		[✓]	
(d) greater than 150%?		[✓]	

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

NOTE: If pre-digestion spike result is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, disregard spike recovery on Form V. Flag the associated data as estimated(J).

A.1.9.7.5 Soil/Sediment

Are any spike recoveries:

	YES	NO	N/A
(a) less than 10%?		[ ]	✓
(b) between 10-74%?		[ ]	✓
(c) between 126-200%?		[ ]	✓
(d) greater than 200%?		[ ]	✓

ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".

		YES	NO	N/A
A.1.9.8	**Form VI (Lab Duplicates)**			
A.1.9.8.1	Present and complete for: each 20 samples?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each concentration range (i.e. low, med., high)?	[✓]	___	___
	both AA and ICP when both are used for same analyte?	[___]	___	✓
	ACTION: If no for any the above, flag as estimated (J) all data >CRDL* for which duplicate sample was not analyzed. Note: If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
A.1.9.8.2	Was field blank used for duplicate analysis?	___	[✓]	___
	ACTION: If yes, flag all data >CRDL* as estimated (J) for which field blank was used as duplicate.			
	NOTE: Duplicate analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
A.1.9.8.3	Are all values within control limits (RPD 20% or difference < ±CRDL)?	[✓]	___	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[___]	___	✓
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			
	NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL. 2. If lab duplicate result is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria.			

* Substitute IDL for CRDL when IDL > CRDL.

		YES	NO	N/A
A.1.9.8.4	Is any value for sample duplicate pair less than CRDL* and other value greater than or equal to 10 x *CRDL?	___	[✓]	___
	ACTION: If yes, flag the associated data as estimated (J).			
A.1.9.8.5	Aqueous Circle all values on Data Summary Sheet that are: RPD > 50%, or Difference > ± CRDL*			
	Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[✓]	___
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[✓]	___
	ACTION: If yes, flag the associated data as estimated.			
A.1.9.8.6	Soil/Sediment Circle all values on Data Summary Sheet that are: RPD > 100%, or Difference > 2 x CRDL*			
	Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) : > 100%?	___	[___]	✓
	Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) : > 2x*CRDL?	___	[___]	✓
	ACTION: If yes, flag the associated data as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.

** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.9.9	**Field Duplicates**			
A.1.9.9.1	Were field duplicates analyzed?	[✓]	___	___

ACTION: If yes, prepare a Form VI for each field duplicate pair, report concentrations of soils in ug/l on wet weight basis and calculate RPDs.

NOTE:
1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

A.1.9.9.2	Is any value for sample duplicate pair less than *CRDL and other value greater than or equal to 10 x *CRDL?	___	[✓]	___

ACTION: If yes, flag the associated data as estimated.

A.1.9.9.3 Aqueous

Circle all values on Form VI for field duplicates that are:
RPD > 50%, or
Difference > ± CRDL*

	Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[✓]	___
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[✓]	___

ACTION: If yes, flag the associated data as estimated.

A.1.9.9.4 Soil/Sediment

Circle all values on Form VI for field duplicates that are:
RPD >100%, or

Difference > 2 x CRDL*

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A
Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%?	___	[___]	✓
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL): >2x *CRDL?	___	[___]	✓

ACTION: If yes, flag the associated data as estimated.

A.1.9.10 Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)

A.1.9.10.1 Was one LCS prepared and analyzed for:

	YES	NO	N/A
every 20 water samples?	[✓]	___	___
every 20 solid samples?	[___]	___	✓
both AA and ICP when both are used for same analyte?	[___]	___	✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

A.1.9.10.2 Aqueous LCS

Circle all LCS values outside control limits (80 - 120%- except aqueous Ag and Sb).

Is any LCS recovery:	YES	NO	N/A
less than 50%?	___	[✓]	___
between 50% and 79%?	___	[✓]	___
between 121% and 150%?	___	[✓]	___
greater than 150%?	___	[✓]	___

* Substitute IDL for CRDL when IDL > CRDL.
**Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
	ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.			
A.1.9.10.3	Solid LCS			
	NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J). 2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.			
	Is LCS "Found" value higher than the control limits on Form VII?	___	[___]	✓
	ACTION: If yes, qualify all associated positive data as estimated.			
	Is LCS "Found" value lower than the Control limits on Form VII?	___	[___]	✓
	ACTION: If yes, qualify all associated data as estimated.			
A.1.9.11	Form IX (ICP Serial Dilution) -			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.9.11.1	Was Serial Dilution analysis performed for: each 20 samples?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each concentration range (i.e. low, med.)?	[✓]	___	___

		YES	NO	N/A
	ACTION: If no for any of the above, flag all positive data greater than or equal to 10xIDLs as estimated (J) for which Serial Dilution Analysis was not performed, and summarize the deficiency on the DPO report.			
A.1.9.11.2	Was field blank(s) used for Serial Dilution Analysis?	___	[✓]	___
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J).			
	NOTE: Serial dilution analysis should be performed on a field blank when it is the only aqueous sample in SDG.			
A.1.9.11.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[✓]	___	___
	ACTION: If no, write in the contract-problem/non-compliance section of the "Data Assessment Narrative".			
A.1.9.11.4	Circle all values on Data Summary Sheet that are outside control limit for initial concentrations equal to or greater than 10 x IDLs only. Are any % difference values:			
	> 10%?	✓	[___]	___
	≥ 100%?	___	[✓]	___
	ACTION: Flag as estimated (J) all associated sample results equal to or greater than 10xIDLs for which percent difference is greater than 10% but less than 100%. Reject (red-line) all associated sample results equal to or greater than 10xIDLs for which PD is greater than or equal to 100%. *Flag potassium as estimated.*			

		YES	NO	N/A
A.1.9.12	**Furnace Atomic Absorbtion (AA) QC Analysis**			
A.1.9.12.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[✓]	___	___
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.9.12.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[✓]	___	___
	Was a dilution analyzed for sample with post digestion spike recovery less than 40%?	[✓]	___	___
	ACTION: If no for any of the above, flag all the associated data as estimated (J).			
A.1.9.12.3	Is *post digestion spike recovery less than 10% or greater than 150% for any result?	___	[✓]	___
	ACTION: If yes, reject (red-line) the affected data if recovery is <10%; reject data not flagged with "U" if spike recovery is >150%.			
	NOTE: Reject the data only if the affected sample was not subsequently analyzed by Method of Standard Addition.			
A.1.9.13	**Form VIII (Method of Standard Addition Results)**			
A.1.9.13.1	Present?	[✓]	___	___
	If no, is any Form I result coded with "S" or a "+"?	___	[ ]	✓
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			

* Post digestion spike is not required on the pre-digestion spiked sample when predigestion spike recovery is within control limits of 75-125% or when SR>4xSA.

		YES	NO	N/A
A.1.9.13.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	___	[✓]	___
	ACTION: If yes, reject (red-line) affected data.			
A.1.9.13.3	Was *MSA required for any sample but not performed?	___	[✓]	___
	Is coefficient of correlation for MSA less than 0.995?	___	[✓]	___
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	___	[✓]	___
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.9.13.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-16 through E-17?	[✓]	___	___
	ACTION: If no, note exception under contract problem/ non-compliance of data assessment narrative, or prepare a separate list.			
A.1.9.14	**Dissolved/Total or Inorganic/Total Analytes** -			
A.1.9.14.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s). This group of samples were analyzed for dissolved analytes. These same samples were analyzed for total analytes in another group. ✓		[___]	___
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[✓]	___

NOTE:
1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration.
2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents.
3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.

See page 33 A

* MSA is not required on LCS and prep. blank.

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By _____ Date _____ Subject _____ Sheet No. 22A of 35
Chkd. By _____ Date _____ SWG-5 DISSOLVED INORGANICS Proj. No. 22-535

Field Duplicates: GW-3A MW-1 (Dissolved)
GW-3B MW-1 Dup (Dissolved)

COMPOUND	GW-3A (mg/L)	GW-3B (mg/L)	RPD*
Aluminum	0.3	—	—
Calcium	22.4	22.5	0.45
Iron	0.31	0.26	18
Magnesium	7.63	7.62	0.1
Manganese	0.24	0.24	0
Potassium	5.5	5.5	0
Sodium	8.7	7.5	15

$$* RPD = \frac{|A-B|}{|A+B|/2} \times 100$$

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where, A = concentration detected in sample A
B = concentration detected in sample B

	YES	NO	N/A
A.1.9.14.2 Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[✓]	___
A.1.9.14.3 Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[✓]	___

ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.

A.1.9.15 Form I to IX

A.1.9.15.1 Are all the Form I through Form IX labeled with:

	YES	NO	N/A
Laboratory name?	[✓]	___	___
Case/SAS number?	[___]	___	✓
EPA sample No.?	[✓]	___	___
SDG No.?	[✓]	___	___
Contract No.?	[___]	___	✓
Correct units?	[✓]	___	___
Matrix?	[✓]	___	___

ACTION: If no for any of the above, note under contract problem/non-compliance section of the "Data Assessment Narrative".

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	YES	NO	N/A
A.1.9.15.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
(NOTE: Check all forms against raw data.)			
(a) all analytes analyzed by ICP?	___	[✓]	___
(b) all analytes analyzed by GFAA?	___	[✓]	___
(c) all analytes analyzed by AA Flame?	___	[___]	✓
(d) Mercury?	___	[✓]	___
(e) Cyanide?	___	[___]	✓

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

A.1.9.16 **Form I (Field Blank)** -

Circle all field blank values on Data Summary Sheet that are greater than CRDL, 2 x IDL when IDL > CRDL or 5xIDL when 5xIDL < CRDL.

Do concentrations of field blank(s) fall below CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	✓
Do concentrations of field blank(s) fall below 5xIDL when 5xIDL < CRDL ?	[___]	___	✓
If no, was field blank value already rejected due to other QC criteria?	[___]	___	✓

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value.

	YES	NO	N/A
A.1.9.17 **Form XI, XII, XIII (Quarterly Verification of Instrumental Parameters).**			
A.1.9.17.1 Is quarterly verification report present for:			
Instrument Detection Limits?	[✓]	___	___
ICP Interelement Correction Factors?	[✓]	___	___
ICP Linear Ranges?	[✓]	___	___
ACTION: If no, contact DPO of the lab.			
A.1.9.17.2 Form XI (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)			
Are IDLs present for: all the analytes?	[✓]	___	___
all the instruments used?	[✓]	___	___
For both AA and ICP when both are used for same analyte?	[___]	___	✓
ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.			
Is IDL greater than CRDL for any analyte?	___	[✓]	___
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL?	[___]	___	✓
ACTION: If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			

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	YES	NO	N/A
A.1.9.17.3 Form XII (Linear Ranges)			
Was any sample result higher than high linear range of ICP by more than 10%?	___	[✓]	___
Was any sample result higher than the highest calibration standard for non-ICP parameters?	✓	[___]	___
If yes for any of the above, was the sample diluted to obtain the result on Form I.	[✓]	___	___
ACTION: If no, flag the result reported on Form I as estimated(J).			
A.1.9.18 **Percent Solids of Sediments**			
Is soil content in sediment(s) less than 50%?	___	[___]	✓
ACTION: If yes, qualify as estimated all data not previously rejected or flagged due to other QC criteria.			

Case# _____ Site _____ Matrix: Soil _____

SDG _____ Lab _____ Water _____

Contractor _____ Reviewer _____ Other _____

A.2.1 The case description and exceptions, if any, are noted below with reason(s) for rejection or qualification as estimated value(s) J.

_____

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A.2.1 (continuation)

A.2.1 (continuation)

APPENDIX A 5 SUMMARY OF INORGANICS QUALITY CONTROL DATA

LABORATORY:_____ CASE NO._____ SOW NO._____ SAMPLE TYPE/SDG:_____

SITE/STUDY DESCRIPTION:_____ SAMPLE NOS:_____

_____

FIELD DUP. #'S:_____ LAB DUP. #'S:_____ Field Blank _____ MATRIX SPIKE #:_____

SERIAL DILUTION SAMPLE NO._____ COMPLETION DATE:_____ REVIEWERS INITIALS:_____

	XI	I	IIA				IIB		III				IV		V	VI	VII	IX	
Parameter	Detection Limits UG/L CRDL	Field Blank	Calib. Ver. %R Init	Continued 1	2	3	CRDL Std Ver. % R Init	Fin	Calibration Blanks Init	Continued 1	2	3	PREP BLANK	ICP ICS % R Init	Fin	Matrix Spike	Lab Dup RPD/Diff	LCS % R	Ser Dil % D	Method
Al	200																		
Sb	60																		
As	10																		
Ba	200																		
Be	5																		
Cd	5																		
Ca	5000																		
Cr	10																		
Co	50																		
Cu	25																		
Fe	100																		
Pb	5																		
Mg	5000																		
Mn	15																		
Hg	0.2																		
Ni	40																		
K	5000																		
Se	5																		
Ag	10																		
Na	5000																		
Tl	10																		
V	50																		
Zn	20																		
CN	10																		

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: _____ Date: _____ Case #: _____

Site: _____ Lab Name: _____

Reviewer's Initials: _____ Number of Samples: _____

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejection
ICP														
Flame AA														
Furnace AA														
Mercury														
Total														
Other														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

ICP														
Flame AA														
Furnace AA														
Mercury														
Total														
Other														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

INORGANIC REGIONAL DATA ASSESSMENT

Region_____

CASE NO._____ SITE_____

LABORATORY_____ NO. OF SAMPLES/ MATRIX_____

SDG#_____ REVIEWER (IF NOT ESD)_____

SOW#_____ REVIEWER'S NAME_____

DPO: ACTION_____ FYI_____ COMPLETION DATE_____

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES				
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:_____

AREAS OF CONCERN:_____

NOTABLE PERFORMANCE:_____

APPENDIX E

CHAIN-OF-CUSTODY RECORDS

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Paul C. Rizzo Associates, Inc.
CONSULTANTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 89-595

PROJECT NAME: PPG

SAMPLER(S) (SIGNATURE): Bill Smith

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE TYPE	SAMPLING LOCATION	VOLUME COLLECTED	NO. OF CONTAINERS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	COMMENTS
B5/S-4	12/11/89	1330	S	7.5-9.5'	1/2 jar	1	✓						
B5/S-5	12/11/89	1400	S	10-12'	1/2 jar	1	✓						
B10/S-3	12/12/89	1000	S	5-7'	1/2 jar	1	✓						
B10/S-5	12/12/89	1030	S	10-12'	1/2 jar	1	✓						
TRIP BLANK 001	12/4/89	—	W	—	40 ml	1		✓					lab supplied

RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
Bill Smith	12/13/89 0830	[illegible]	[illegible]	12/13/89 1435	[illegible]
RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
[illegible]	12/13/89 1615	[illegible]			
RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	REMARKS:		

Distribution--Original accompanies shipment, copy to project files.

SAMPLE TYPE: W-WATER, S-SOLID, A-AIR, O-OTHER

LABORATORY:

NOTE: ALL SAMPLES ARE TO BE INSPECTED FOR PHYSICAL INTEGRITY UPON RECEIPT BY THE ANALYTICAL LABORATORY.

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Acct 3415

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Paul C. Rizzo Associates, Inc.
CONSULTANTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 89-595

PROJECT NAME: PPG

SAMPLER(S) (SIGNATURE): Bill Smith

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE TYPE	SAMPLING LOCATION	VOLUME COLLECTED	NO. OF CONTAINERS	1000 ml glass	40 ml fuel	500 ml fuel	120 ml fuel			COMMENTS
B-14 / S-3	12/13/89	1520	S	[redacted] 5-7'	1/2 qt.	1	✓						WEEK 1 samples
B-2 / S-1	12/14/89	1230	S	0-2'	1/4 qt.	1	✓						Group B
B-14 / S-5	12/13/89	1530	S	10-12'	1000 ml	1	✓						analysis
B-2 / S-5	12/14/89	1420	S	10-12'	500 ml	1	✓						
B-13 / S-3	12/13/89	1215	S	5-7'	500 ml	1	✓						
B-13 / S-5	12/13/89	1240	S	10-12'	1000 ml	1	✓						
TRIP BLANK 002				TB 002	40 ml	1		✓					
B-2A / S1	12/15/89	0850	S	5-6.5'	1620 ml	5	2		1	2			Group A Analysis
B3 / S1	12/15/89	1050	S	0-2'	500 ml	1	✓						group B anal
B3 / S3	12.15.89	1105	S	5-7'	500 ml	1	✓						group B anal
B3 / S5	12.15.89	1120	S	10-12'	500 ml	1	✓						group B anal

RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
Bill Smith	12/15/89 2:50	Otis DeMarco	Otis DeMarco	12-15-89 15:15	Tim Mills
Tim Mills	12-15-89 17:00				

REMARKS:

NOTE: ALL SAMPLES ARE TO BE INSPECTED FOR PHYSICAL INTEGRITY UPON RECEIPT BY THE ANALYTICAL LABORATORY.

Distribution–Original accompanies shipment, copy to project files.

SAMPLE TYPE: W–WATER, S–SOLID, A–AIR, O–OTHER

LABORATORY: Phillip Estenstrada LLI

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301574

Paul C. Rizzo Associates, Inc.
CONSULTANTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 89-595

PROJECT NAME: PPG

SAMPLER(S) (SIGNATURE): Bill Smith

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE TYPE	SAMPLING LOCATION	VOLUME COLLECTED	NO. OF CONTAINERS	1000 ml glass	500 ml glass	120 ml glass	40 ml glass				COMMENTS: WEEK 1 Samples
B7/S5-C	12.17.89	1535	S	10-12'	500ml	1	1							LAB Duplicate, Group B anal
B7/S5-A	12.17.89	1535	S	10-12'	500ml	1	1							Group B anal.
B9/S5	12.17.89	1140	S	10-12'	500ml	1	1							Group B anal.
B9/S3	12.17.89	1115	S	5-7'	500ml	1	1							Group B anal.
B7/S3A	12.17.89	1500	S	5-7'	1720ml	5	2	1	2					Group A anal.
Trip Blank 003	12.4.89		W	Trip Blank	40ml	1				1				Trip Blank

RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
Bill Smith	12/18/89 1219	Andrew N. Chalhoun	[illegible]	12-18-89 1430	Tim Mott
Andrew N. Chalhoun	12/18/89 1330	[illegible]	Tim Mott	12-18-89 1630	Phillip Eberenshade
RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	REMARKS:		

Distribution—Original accompanies shipment, copy to project files.

SAMPLE TYPE: W—WATER, S—SOLID, A—AIR, O—OTHER

LABORATORY: Lancaster Labs Inc

NOTE: ALL SAMPLES ARE TO BE INSPECTED FOR PHYSICAL INTEGRITY UPON RECEIPT BY THE ANALYTICAL LABORATORY.

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PAGE 1 OF (

Paul C. Rizzo Associates, Inc.
CONSULTANTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 89-593

PROJECT NAME: PPG

SAMPLER(S) (SIGNATURE): [signature] / Andrew H. Thalheimer

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE TYPE	SAMPLING LOCATION	VOLUME COLLECTED	NO. OF CONTAINERS	40 ml	1000 ml	500 ml	120 ml			COMMENTS: Week 2 samples
TRIP BLANK 004	12/4/89	—	W		40 ml	1	1						TRIP BLANK
B4/S5	12.19.89	1645	S	10-12'	1000 ml	1		1					Group B anal
B4/S1	12.19.89	1615	S	0-2'	1000 ml	1		1					"
B12/S5	12.19.89	1415	S	10-12'	1000 ml	1		1					"
B12/S3	12.19.89	1400	S	5-7'	1000 ml	1		1					"
B4/S3	12.19.89	1630	S	5-7'	1000 ml	1		1					"
B8/S3A	12.20.89	1436	S	5-7'	2740 ml	5		2	1	2			GROUP A ANAL (split w/EPA)
B8/S5	12-20-89	1511	S	10-12'	1000 ml	1		1					GROUP B ANAL.
B6/S3A	12.21.89	1200	S	5-8'	2740 ml	5		2	1	2			Group A ANAL
B6/S3B	12.21.89	1200	S	5-8'	2740 ml	5		2	1	2			Group A anal - LAB Duplicate*
B6/S6A	12.21.89	1215	S	10-12'	1000 ml	1		1					Group B anal (split w/EPA)

RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
[signature]	12.21.89 2:00	[signature]	[signature]	12.21.89 14:50	[signature]
[signature]	12.21.89 12:50	[signature]			

REMARKS:

NOTE: ALL SAMPLES ARE TO BE INSPECTED FOR PHYSICAL INTEGRITY UPON RECEIPT BY THE ANALYTICAL LABORATORY.

Distribution—Original accompanies shipment, copy to project files.

SAMPLE TYPE: W-WATER, S-SOLID, A-AIR, O-OTHER

LABORATORY: Lancaster labs.

301576

F-129

Paul C. Rizzo Associates, Inc.
CONSULTANTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 89-595

PROJECT NAME: PPG

SAMPLER(S) (SIGNATURE): Bill Swick / Andrew N. Thalheimer

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE TYPE	SAMPLING LOCATION	VOLUME COLLECTED	NO. OF CONTAINERS	1000ml	40ml VOA						COMMENTS: Week 3 samples
B15/S3	1-2-90	1250	S	5-7'	1000ml	1	✓							Group B anal
B-15/S5	1-2-90	1300	S	10-12'	1000ml	1	✓							"
B-18/S1	1-2-90	1600	S	0-2'	1000ml	1	✓							"
B-18/S3	1-2-90	1630	S	5-7'	1000ml	1	✓							"
B-18/S5	1-3-90	0900	S	10-12'	1000ml	1	✓							"
TRIP BLANK 005	12-4-89	—	W	—	40ml	1		✓						TRIP BLANK

RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
Bill Swick	1-3-90 1205	Otis DiMarco	Otis DiMarco	1-3-90 12:20	Jim Mill
Jim Mill	1-3-90 17:30				

RELINQUISHED BY (SIGNATURE): DATE/TIME: RECEIVED BY (SIGNATURE):

REMARKS:

NOTE: ALL SAMPLES ARE TO BE INSPECTED FOR PHYSICAL INTEGRITY UPON RECEIPT BY THE ANALYTICAL LABORATORY.

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SAMPLE TYPE: W—WATER, S—SOLID, A—AIR, O—OTHER

LABORATORY:

F-129

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PAGE 1 OF 1

Paul C. Rizzo Associates, Inc.
CONSULTANTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 89-595

PROJECT NAME: PPG

SAMPLER(S) (SIGNATURE): Bill Smith / Andrew H. Thalheimer

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE TYPE	SAMPLING LOCATION	VOLUME COLLECTED	NO. OF CONTAINERS	1000 ml	120 ml	500 ml	40 ml			COMMENTS Week 3 samples
B17/S1	1.3.90	1400	S	0-2'	1000 ml	1	1						Group B anal.
B17/S3A	1.3.90	1420	S	5-7'	1000 ml	1	1						Group B anal.
B17/S3B	1.3.90	1420	S	5-7'	1000 ml	1	1						Group B anal. (LAB Duplicate)
B17/S5	1.3.90	1435	S	10-12'	1000 ml	1	1						Group B anal.
B19/S3A	1.4.90	0830	S	4-7'	2620 ml	5	2	2	1				Group A anal.
B19/S6	1.4.90	0900	S	10-12'	1000 ml	1	1						Group B anal.
B11/S3A	1.4.90	1430	S	4-7'	2620 ml	5	2	2	1				Group A anal.
B11/S3B	1.4.90	1430	S	4-7'	2620 ml	5	2	2	1				Group A anal.
B11/S6	1.4.90	1500	S	10-12'	1000 ml	1	1						Group B anal.
Trip Blank 006	12.4.89	—	W	LAB	40 ml	1				1			Trip Blank
B1/S6	1.5.90	1035	S	10-12'	1000 ml	1	1						Group B anal
B1/S3A	1.5.90	1015	S	4-7'	2620	5	2	2	1				Group A anal

RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
Bill Smith	1/5/90 1130	Otto DeMarco	Otto DeMarco	1/5/90 1500	Jim Mahl
Jim Mahl	1-5-90 1730	Phillip Esbenshade			

REMARKS:

LABORATORY:

NOTE: ALL SAMPLES ARE TO BE INSPECTED FOR PHYSICAL INTEGRITY UPON RECEIPT BY THE ANALYTICAL LABORATORY.

Distribution—Original accompanies shipment, copy to project files.

SAMPLE TYPE: W—WATER, S—SOLID, A—AIR, O—OTHER

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Paul C. Rizzo Associates, Inc.
CONSULTANTS

PROJECT NO.: 89-595

PROJECT NAME: PPG

SAMPLER(S) (SIGNATURE): Andrew H. Thalheimer / Bill Smith

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE TYPE	SAMPLING LOCATION	VOLUME COLLECTED	NO. OF CONTAINERS	1000 ml	500 ml	120 ml	40 ml			COMMENTS
B16/S1	1-5-90	1550	S	0-2'	1000 ml	1	1						Group B anal
B16/S3A	1-5-90	1605	S	5-7'	1000 ml	1	1						Group B anal.
B16/S3B	1-5-90	1605	S	5-7'	1000 ml	1	1						Group B anal
B16/S5	1-5-90	1615	S	10-12'	1000 ml	1	1						Group B anal.
B20/S3A	1-6-90	1305	S	4-7'	2740 ml	5	2	1	2				Group A anal
B20/S6	1-6-90	1330	S	10-12'	1000 ml	1	1						Group B anal
SS-1	1-7-90	1220	S	0.75'-1'	1000 ml	1	1						Group B anal.
SS-2	1-7-90	1230	S	0.75-1'	1000 ml	1	1						Group B anal.
SS-3A	1-7-90	1235	S	0.75-1'	1000 ml	1	1						Group B anal.
SS-3B	1-7-90	1235	S	0.75-1'	1000 ml	1	1						Group B anal.
SS-4A	1-7-90	1237	S	0.75-1'	1000 ml	1	1						Group B anal.
SS-4B	1-7-90	1237	S	0.75-1'	1000 ml	1	1						Group B anal (LAB Duplicate)
TRIP BLANK 007	12-4-89	-	W		40 ml	1				1			TRIP BLANK (lab supplied)

RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
Bill Smith	1/8/90 1105	E W Harding 11:05 1/8/90	E W Harding 14:56 1/8/90	1/9/90 1500	Philip Overwhole
RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	REMARKS:		

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SAMPLE TYPE: W—WATER, S—SOLID, A—AIR, O—OTHER

LABORATORY: LANCASTER LAB

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Paul C. Rizzo Associates, Inc.
CONSULTANTS

CHAIN OF CUSTODY RECORD

PROJECT NO.: 89-595

PROJECT NAME: PPG

SAMPLER(S) (SIGNATURE): Arthur H Chalhoun / Bill Quick

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE TYPE	SAMPLING LOCATION	VOLUME COLLECTED	NO. OF CONTAINERS	TAL Metals (FILTERED) 1000 ml/bt	TAL Metals (UNFILTERED) 1000 ml/bt	Cyanide 1000 ml/bt	TCL Pest, TCL Sem, Lib Sci 1000 ml/bt	Lactonate (SS vial) 250 ml/bt	VOA 40 ml/bt	COMMENTS week 4 samples
GW-1	1-8-90	1600	W	MW 6	7580 ml	11	1	1	1	4	2	2	Group C anal.
GW-2	1-8-90	1620	W	MW-5	7580 ml	11	1	1	1	4	2	2	Group C anal
TRIP BLANK 008	SEE COMMENTS	—	W	LAB SUPPLIED	2330 ml	5	1			1	1	2	lab supplied VOA collected on 1-5-90 Metals collected on 1-5-90 cyanide and TCL Pest, etc collected on 1-8-90
~~SED T~~ WCO	~~1-9-90~~	~~1030~~	~~S~~	WCO	~~3500~~	~~S~~ WCO							
GW-3A	1-9-90	1315	W	MW-1	7580 ml	11	1	1	1	4	2	2	Group C anal.
GW-3B	1-9-90	1320	W	MW-1D	22,740 ml	33	3	3	3	12	6	6	Group C anal (LAB Dup)
TANK Water	1-9-90	1255	W	water Tank	7580 ml	11	1	1	1	4	2	2	Group C anal
GW-4	1-9-90	1500	W	MW-3	7580 ml	11	1	1	1	4	2	2	Group C anal
GW-5	1-9-90	1630	W	MW-2	7580 ml	11	1	1	1	4	2	2	Group C anal
GW-6	1-9-90	1630	W	MW-2D	7580 ml	11	1	1	1	4	2	2	Group C anal
GW-7	1-9-90	1830	W	MW-4	7580 ml	11	1	1	1	4	2	2	Group C anal
EB-2	1-10-90	0915	W	3"ø SPLIT SPOON	7580 ml	11	1	1	1	4	2	2	Group C anal.
EB-1	1-10-90	1300	W	BAILER	7580	11	1	1	1	4	2	2	Group C anal

RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
Bill Quick	1-10-90 1:20	Otis D Moore	Otis D Moore	1-10-90 1413	Tim Mills
RELINQUISHED BY (SIGNATURE): Tim Mills	DATE/TIME: 1-10-90 1720	RECEIVED BY (SIGNATURE): Phillip Oberstock	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	REMARKS:		

Distribution—Original accompanies shipment, copy to project files.

SAMPLE TYPE: W—WATER, S—SOLID, A—AIR, O—OTHER

LABORATORY: LANCASTER

NOTE: ALL SAMPLES ARE TO BE INSPECTED FOR PHYSICAL INTEGRITY UPON RECEIPT BY THE ANALYTICAL LABORATORY.

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F-129

Paul C. Rizzo Associates, Inc.
CONSULTANTS

PROJECT NO.: 89-595

PROJECT NAME: PPG

SAMPLER(S) (SIGNATURE): Bill Smith

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE TYPE	SAMPLING LOCATION	VOLUME COLLECTED	NO. OF CONTAINERS	1000cc TCL PRS TCL SO	1000cc TAL MET	500cc TCL VOA	500cc DIOXIN			COMMENTS Week 4 Samples
SED-1	1.9.90	1030	S	STREAM NEAR B-19	3500cc	5	1	1	2	1			GROUP A ANAL.

RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE/TIME:	RECEIVED BY (SIGNATURE):
Bill Smith	1.10.90 1:20	Otis DiMarco	Otis DiMarco	1.10.90 14:30	Tim Miller
Tim Miller	1.10.90 17:20	P. Eberenstrade			

REMARKS:

NOTE: ALL SAMPLES ARE TO BE INSPECTED FOR PHYSICAL INTEGRITY UPON RECEIPT BY THE ANALYTICAL LABORATORY.

Distribution–Original accompanies shipment, copy to project files.

SAMPLE TYPE: W–WATER, S–SOLID, A–AIR, O–OTHER

LABORATORY: LANCASTER

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APPENDIX G

301582

APPENDIX G

INFORMATION ON SOIL SAMPLING AND FIELD SCREENING EQUIPMENT

301583

Probe-Drive Soil Sampling Kit*

Assembled Soil Sampler ready to be driven to depth ►

Geoprobe Systems probe-drive soil sampling kit (pictured at left), extracts a .960" diameter sample – 10 inches in length. The unique feature of this kit is that it remains completely sealed while being pushed to depth in the soil, preventing contamination from surface debris or soil layers while the desired sampling depth is being reached. Each sample is contained in a high strength, alloy steel sample tube which may be capped and sent to the lab for analysis or extruded in the field.

The operating depth of this soil sampling system is limited only by the soil type and the depth capability of the driving mechanism – whether mechanical or manual.

A typical probe-drive soil sampling kit consists of a drive head, a piston tip and rod, sample tubes, a piston stop, and extension rods. Operating instructions for this soil sampling kit are contained in this bulletin.

Typical Applications

Retrieval of Discrete Soil Samples at Depth Using Driven Probes

- Soil Sampling Beneath UST sites.
- Studies of chemical dissipation with soil depth.
- Pesticide studies.
- Hazardous waste site investigations.
- Property transaction surveys.
- Chemical carryover/residue studies

Using a hydraulically powered Geoprobe to drive probe-drive soil sampler ►

Patent Pending

Geoprobe Systems

607 Barney St. • Salina, Kansas 67401 • (913) 825-1842

301584

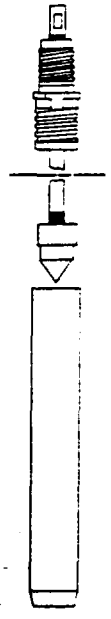
Operation

301585

Assembly

1. Insert piston tip and piston rod into the sample tube. **(Fig. 1)**
2. Insert trailing edge of piston rod into the drive head.
3. Screw drive head into the sample tube.
4. Screw reverse threaded piston stop into the top of the drive head.
   The piston stop is set when it exerts pressure against the piston rod. Make sure the whole assembly is tight.
5. Assembly is complete and probing is ready to begin. **(Fig. 2)**

Using a Slide Hammer to drive a Probe-Driven Sampler ►



(FIG. 1)
SOIL SAMPLER ASSEMBLY

(FIG. 2)
ASSEMBLED SOIL SAMPLER (CROSS SECTION)

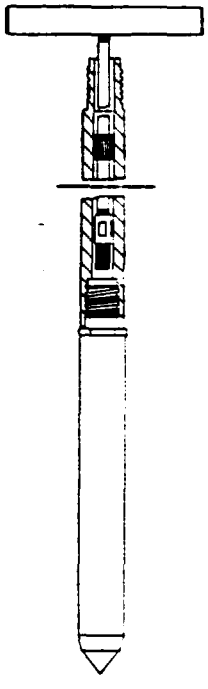
Insertion

1. Screw the leading Geoprobe rod onto the threaded drive head. **(Fig. 3)**
2. Drive the sample kit with attached probe rods to the top of the interval to be sampled.
   a) This can be accomplished manually or with a hydraulically powered Geoprobe unit.

   IMPORTANT: *Depending on soil conditions, it may be necessary to pre-probe the hole to the desired sampling depth using a Geoprobe retractable drive point before using the probe-drive soil sampling kit.*
3. Screw extension rods together using an extension rod coupler.
4. Insert extension rods into probe rods. **(Fig. 4)**

   HINT: *Extension rods are the same length as probe rods (3'), and can be screwed together one at a time into probe rod. Be careful to grasp inserted extension rod firmly while adding another to the string. Insert the same amount of extension rods as there are probe rods in the hole until extension rod handle can be attached to end of extension rod.*
   e.g. Probed hole is 9' deep. Insert 3 extension rods into I.D. of probe rod and attach handle.

(FIG. 3)
ASSEMBLED SOIL SAMPLER IS DRIVEN TO THE TOP OF INTERVAL TO BE SAMPLED



(FIG. 4)
EXTENSION RODS ARE USED TO REMOVE PISTON STOP

Operation

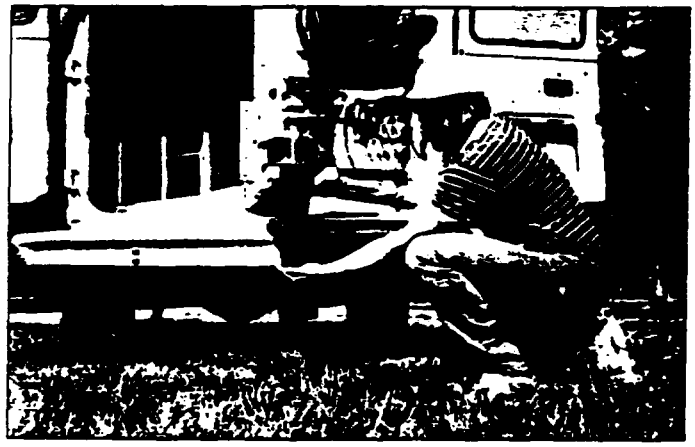
Activation

1. Rotate extension rod handle clockwise until the leading extension rod is screwed into piston stop.
2. Continue to rotate handle clockwise until extension rods and piston stop can be retracted from probe rods.
3. Retract extension rods with attached piston stop. This allows piston and piston tip to move freely as sample tube is driven to desired depth.
4. Mark the probe rods 10" above ground surface. (A marker or a piece of tape works well)
5. Advance probe rods with attached sample tube 10" (or to the mark on the rod).
6. Retract probe rods from hole.

▲ **Rotating extension rods clockwise to remove piston stop**

Machine Extrusion

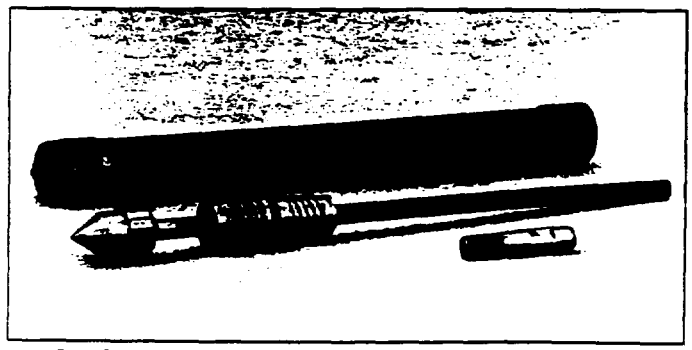
1. Disassemble sample kit.
2. Extrude soil sample from the sample tube using a piston extruder.
   a) An extruder is included with the sample kit.
   b) The sample extruder is placed on derrick foot. **(see photo at right)** ►
      1) The sample tube is inserted into the extruder.
      2) The hydraulically powered Geoprobe drives sample out of tube.
3. Sample is ready to be analyzed.



▲ **Using Geoprobe machine to extrude soil sample**

Specifications

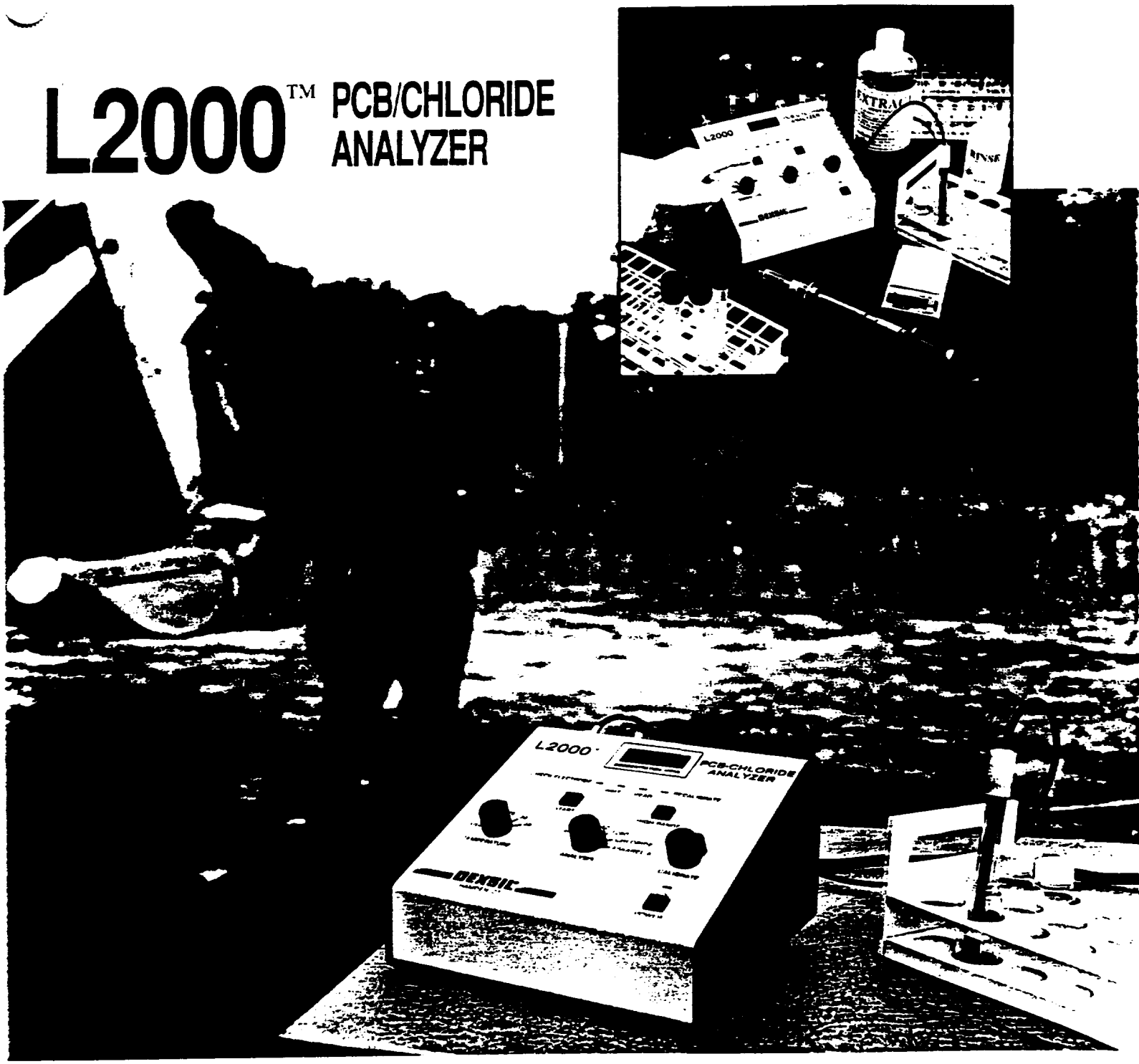
Drive Head Thread:	Geoprobe Standard
Sample Tube Length:	11.25 in.
Soil Sample Size:	approx. 8 in.l, 100 gr. wt.
Sample Tube Opening:	.85 in.
Sample Tube I.D.:	.960 in.
Sample Tube O.D.:	1.125 in.
Materials:	High strength alloy steel. extension rods are stainless steel.



▲ **Vinyl caps are provided with each sample tube. Instead of extruding samples in the field you can ship them to the laboratory for analysis.**

301586

L2000™ PCB/CHLORIDE ANALYZER



DEXSIL®

301587

The L2000 PCB/Chloride Analyzer

Dexsil's L2000 PCB/Chloride Analyzer is a field portable instrument that determines PCB concentration in oil and soil over a range of 5 to 2000 ppm. The L2000 tests for the total amount of chloride present in the sample. converts the amount of chloride sensed to an equivalent amount of PCB and provides an LCD readout in parts per million.

The instrument is easy to use and does not require a laboratory or an experienced technician to get accurate results. Being an on-site instrument, the L2000 eliminates the days or even weeks of waiting for the laboratory. Sample testing time is cut to 5 minutes for oil and 10 minutes for soil. The L2000 also eliminates the high cost of laboratory analysis. An average oil analysis costs $4.00 per sample and soil $8.00 per sample.

How The L2000 Works

The L2000 utilizes a chloride specific electrode to quantitatively measure the amount of PCB in a sample. A sodium reagent is reacted with the sample to convert the PCB to chloride. The instrument senses the amount of chloride in the sample and translates it to the equivalent amount of PCB.

Because different types of PCB contain different percentages of chlorine, the L2000 has an analysis range switch which allows the user to adjust for either Aroclor 1242, Aroclor 1260 or Askarel A (60% Aroclor 1260 and 40% trichlorobenzene). If the Aroclor of the sample being tested is unknown, the analysis range switch is set for 1242 for the most conservative reading.

How To Use The L2000

One L2000 can be used to test both oil and soil samples. For soil analysis. any PCB must first be extracted from the soil using the extraction solvent supplied with the instrument. After the PCB has been extracted from the soil. the procedure for oil and soil is the same. The sample is reacted with a sodium reagent to transform the PCB into chloride which the instrument then quantifies. The L2000 shows the result in parts per million PCB.

Several samples can be prepared concurrently to speed the sample testing time. In a single 8 hour day. one operator can run as many as 150 oil samples or 100 soil samples.

Typical Application Of The L2000 PCB/Chloride Analyzer

A site suspected of formerly holding PCB transformers is being considered for the location of a new office complex. Before the property is purchased, the prospective buyer wants the entire lot checked for PCB levels. By using the L2000 Analyzer, the entire site can be quickly screened for PCB, and, if necessary, cleaned up in a fraction of the time required by conventional methods.

1. The entire site is mapped out, and using a grid system, samples are taken from different areas that will give a representative view of the entire site. Each sample can be analyzed the same day with the L2000 to determine just how much PCB is in each sample. If the instrument shows that PCBs are present, several samples are then sent to a laboratory for GC analysis to confirm that the source of the organic chloride is indeed PCB and to identify what Aroclor or Aroclors may be present.

2. As clean-up of the site starts, additional samples are analyzed with the L2000 to determine just where the points of greatest contamination are located. In less than a day, all hot-spots are located and isolated.

3. As excavation takes place, additional samples are analyzed to determine the vertical and horizontal spread of the contamination. Since results on any sample can be obtained in less than ten minutes, only the soil that is truly contaminated is actually removed. Excavation continues until the L2000 shows that the soil now being removed from the site contains PCBs below the critical level. As soon as all test sites in the area register less than the critical level (eg, 10 ppm) with the L2000, digging can stop and several final samples are sent to a laboratory for GC analysis to confirm that any remaining soil contains less than the critical concentration of PCB.

During the entire process of detecting the presence of PCBs, isolating local hot-spots, and removing contaminated soil from the site, the L2000 saves both time and expense by providing quick, accurate results on a large number of samples. Waiting for analytical results is reduced to a minimum and excavating can proceed at a continuous pace because in less than ten minutes, the L2000 lets you know right where you stand. Just the waiting time that is saved can pay for the instrument in less than a week and the decreased analytical costs can help bring you in under budget.

Whether you test oil or soil samples, the L2000 PCB/Chloride Analyzer can help you work faster and more economically, and provide you with a competitive edge in PCB analysis that will increase your productivity and improve your bottom line.

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