SDMS Document
98680

Evidentiary Materials
(cont'd)

Troy Chemical Corp.

FACILITY REPORT (BRS DATA)

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search used- Facility       : TROY CHEMICAL*
             City           : NEWARK
             State          : NJ
             EPA ID         : ALL
             Year           : ALL
             Level of Detail: HIGH
Results:
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This search was taken from RTK NET's (the Right-To-Know Network)'s copy of EPA's BRS database. RTK NET is run by OMB Watch at 1742 Connecticut Ave. NW, Washington DC 20009 Phone: 202-234-8494
The search was done on 09/26/2002.
This copy of the database was last updated on 05/29/2002.

Note: "Federal" waste is waste with at least one Federal EPA waste code. Non-Federal waste is regulated by the state only. "RCRA" waste is Federal waste that is managed (treated, disposed, or recycled) in a RCRA-permitted TSD unit. The waste is classified according to assumptions made about where it ends up.

If you don't see the words *END OF REPORT* at the end of this search, then this Web search didn't complete -- back up and try it again.

Reporting Year: 1989

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Facility Name: TROY CHEMICAL CORP.   Reporting Year: 1989
Street       : 1 AVENUE L
City         : NEWARK                      State: NJ   Zip: 07105
County       : ESSEX   EPA ID: NJD002144517
Mailing Address: 1 AVENUE L
Mailing City   : NEWARK                      State: NJ   Zip: 07105
Year: 1989           Total Waste   Federal Wst.  RCRA Waste
Tons Generated  :        140.20        140.20        140.20
Tons Shipped    :        140.20        140.20        140.20
SIC Code(s):
Contact: EDWARD CAPASSO   Phone: 2015892500-240
Generator Status : Large Quantity Generator (LQG)
Storage Status   : No RCRA-permitted or interim status storage
RCRA TDR Status  : No on-site TDR; site has no plans to develop system
Exempt TDR Status: No on-site TDR; site has no plans to develop system
```

List of wastes generated by this facility:

```
Waste Desc.:
EPA Waste Code(s) for this generated waste-
  D001  Ignitable waste
Tons Generated: 0.69
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
CHEMICAL WASTE MANAGEMENT INC
EMELLE, AL
System type: M999
Tons sent: 0.69    EPA ID: ALD000622464


Waste Desc.:
EPA Waste Code(s) for this generated waste-
```

D002 Corrosive waste
Tons Generated: 0.23
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
CHEMICAL WASTE MANAGEMENT INC
EMELLE, AL
System type: M999
Tons sent: 0.23 EPA ID: ALD000622464

Waste Desc.:
EPA Waste Code(s) for this generated waste-
D009 Mercury
Tons Generated: 111.92
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
CHEMICAL WASTE MANAGEMENT INC
EMELLE, AL
System type: M999
Tons sent: 111.92 EPA ID: ALD000622464

Waste Desc.:
EPA Waste Code(s) for this generated waste-
D001 Ignitable waste
Tons Generated: 1.50
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ROLLINS ENVIRONMENTAL SERVIC
BRIDGEPORT, NJ
System type: M999
Tons sent: 1.50 EPA ID: NJD053288239

Waste Desc.:
EPA Waste Code(s) for this generated waste-
D001 Ignitable waste
Tons Generated: 8.60
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 8.60 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-
D002 Corrosive waste
Tons Generated: 0.13
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.13 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-

D003 Reactive waste
Tons Generated: 0.02
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.02 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-
D005 Barium
Tons Generated: 0.03
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.03 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-
D006 Cadmium
Tons Generated: 0.06
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.06 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-
D007 Chromium
Tons Generated: 0.01
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.01 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-
D008 Lead
Tons Generated: 0.07
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.07 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-

F005 Spent non-halogenated solvents (see 1991 Form)
Tons Generated: 0.02
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.02 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-
P014 Benzenethiol or Thiophenol
Tons Generated: 0.01
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.01 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-
P028 Benzene, (chloromethyl)- or Benzyl chloride
Tons Generated: 0.01
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.01 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-
P029 Copper cyanide Cu(CN)
Tons Generated: 0.01
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.01 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-
P030 Cyanides (soluble cyanide salts), not otherwise specified
Tons Generated: 0.03
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.03 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-

U019 Benzene (I,T)
Tons Generated: 0.50
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.50 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-
U039 p-Chloro-m-cresol or Phenol, 4--chloro-3-methyl-
Tons Generated: 0.01
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.01 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-
U048 o-Chlorophenol or Phenol, 2-chloro-
Tons Generated: 0.03
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.03 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-
U052 Cresol (Cresylic acid) or Phenol, methyl-
Tons Generated: 0.01
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.01 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-
U101 2,4-Dimethylphenol or Phenol, 2,4-dimethyl-
Tons Generated: 0.01
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.01 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-

U129 Lindane
Tons Generated: 0.01
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.01 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-
U144 Acetic acid, lead(2+) salt or Lead acetate
Tons Generated: 0.01
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.01 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-
U201 1,3-Benzenediol or Resorcinol
Tons Generated: 0.03
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.03 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-
U247 Methoxychlor
Tons Generated: 0.01
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.01 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-
U328 Benzenamine, 2-methyl or o-Toluidine
Tons Generated: 0.01
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADV ENVIRON TECH CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.01 EPA ID: NJD080631369

Waste Desc.:
EPA Waste Code(s) for this generated waste-

D001 Ignitable waste
Tons Generated: 3.53
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
CHEMICAL WASTE MGT OF NJ
NEWARK, NJ
System type: M999
Tons sent: 3.53 EPA ID: NJD089216790

Waste Desc.:
EPA Waste Code(s) for this generated waste-
D009 Mercury
Tons Generated: 3.96
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
CHEMICAL WASTE MGT OF NJ
NEWARK, NJ
System type: M999
Tons sent: 3.96 EPA ID: NJD089216790

Waste Desc.:
EPA Waste Code(s) for this generated waste-
P048 2,4-Dinitrophenol or Phenol, 2,4-dinitro-
Tons Generated: 0.09
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
CHEMICAL WASTE MGT OF NJ
NEWARK, NJ
System type: M999
Tons sent: 0.09 EPA ID: NJD089216790

Waste Desc.:
EPA Waste Code(s) for this generated waste-
D001 Ignitable waste
Tons Generated: 8.60
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADVANCED ENV TECHNOLOGY CORP
FLANDERS, NJ
System type: M999
Tons sent: 8.60 EPA ID: NJD980536593

Waste Desc.:
EPA Waste Code(s) for this generated waste-
D002 Corrosive waste
Tons Generated: 0.03
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADVANCED ENV TECHNOLOGY CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.03 EPA ID: NJD980536593

Waste Desc.:
EPA Waste Code(s) for this generated waste-

F003 Spent non-halogenated solvents (see 1991 Form)
Tons Generated: 0.02
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADVANCED ENV TECHNOLOGY CORP
FLANDERS, NJ
System type: M999
Tons sent: 0.02 EPA ID: NJD980536593

Reporting Year: 1993

Facility Name: TROY CHEMICAL CORP Reporting Year: 1993
Street : ONE AVE L
City : NEWARK State: NJ Zip: 071050000
County : ESSEX EPA ID: NJD002144517
Mailing Address: ONE AVE L
Mailing City : NEWARK State: NJ Zip: 071050000

Year: 1993	Total Waste	Federal Wst.	RCRA Waste
Tons Generated :	46.01	43.92	43.92
Tons Shipped :	46.01	43.93	43.92

SIC Code(s):
Contact: EDWARD J CAPASSO Phone: 2015892500-340
Generator Status : Large Quantity Generator (LQG)
Storage Status : No RCRA-permitted or interim status storage
RCRA TDR Status : No on-site TDR; site has no plans to develop system
Exempt TDR Status: No on-site TDR; site has no plans to develop system

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List of wastes generated by this facility:

Waste Desc.: PAINT WITH SOLVENTS IGNITABLE
EPA Waste Code(s) for this generated waste-
D001 Ignitable waste
F003 Spent non-halogenated solvents (see 1991 Form)
D035 Methyl ethyl ketone
Tons Generated: 0.64
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ASHLAND CHEMICAL CO
BINGHAMTON, NY
System type: M141
Tons sent: 0.44 EPA ID: NYD049253719

ADVANCED ENVIRONMENTAL TECHNOLOGY CORP.
FLANDERS, NJ
System type: M141
Tons sent: 0.20 EPA ID: NJD980536593

Waste Desc.: EFFLUENT SLUDGE FROM WASTEWATER TREATMENT
EPA Waste Code(s) for this generated waste-
D008 Lead
D009 Mercury
Tons Generated: 15.99
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ASHLAND CHEMICAL CO
BINGHAMTON, NY

System type: M141
Tons sent: 13.59 EPA ID: NYD049253719

ADVANCED ENVIRONMENTAL TECHNOLOGY CORP.
FLANDERS, NJ
System type: M141
Tons sent: 2.40 EPA ID: NJD980536593

Waste Desc.: DIESEL FUEL PLUS VERMICULITE
This is state-only waste (no Federal waste codes).
State waste code(s): X725
Tons Generated: 0.20
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADVANCED ENVIRONMENTAL TECHNOLOGY CORP.
FLANDERS, NJ
System type: M141
Tons sent: 0.20 EPA ID: NJD980536593

Waste Desc.: SURFACTANT WITH SOLVENT DISCARDED PRODUCT
EPA Waste Code(s) for this generated waste-
D001 Ignitable waste
Tons Generated: 3.96
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ASHLAND CHEMICAL CO
BINGHAMTON, NY
System type: M141
Tons sent: 3.96 EPA ID: NYD049253719

Waste Desc.: OIL AND SOLVENT MIX FROM PROCESS
EPA Waste Code(s) for this generated waste-
D001 Ignitable waste
Tons Generated: 23.20
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
NORLITE CORPORATION
COHOES, NY
System type: M061
Tons sent: 23.20 EPA ID: NYD080469935

Waste Desc.: LABORATORY DISCARDED CHEMICALS LAB PACKS
EPA Waste Code(s) for this generated waste-
P098 Potassium cyanide K(CN)
P092 Mercury, (acetato-0)phenyl- or Phenylmercury acetate
D009 Mercury
Tons Generated: 0.13
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADVANCED ENVIRONMENTAL TECHNOLOGY CORP.
FLANDERS, NJ
System type: M141
Tons sent: 0.01 EPA ID: NJD980536593

CLEAN HARBORS OF NATICK, INC.
NATICK, MA

System type: M141
Tons sent: 0.13 EPA ID: MAD980523203

Waste Desc.: LABORATORY DISCARDED CHEMICALS LAB PACKS
This is state-only waste (no Federal waste codes).
State waste code(s): LABP
Tons Generated: 0.23
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
CLEAN HARBORS OF NATICK, INC.
NATICK, MA
System type: M141
Tons sent: 0.23 EPA ID: MAD980523203

Waste Desc.: LABORATORY DISCARDED CHEMICALS LAB PACKS
This is state-only waste (no Federal waste codes).
State waste code(s): LABP
Tons Generated: 1.38
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADVANCED ENVIRONMENTAL TECHNOLOGY CORP.
FLANDERS, NJ
System type: M141
Tons sent: 0.20 EPA ID: NJD980536593

ASHLAND CHEMICAL CO
BINGHAMTON, NY
System type: M141
Tons sent: 1.18 EPA ID: NYD049253719

Waste Desc.: LABORATORY DISCARDED CHEMICALS LAB PACKS
This is state-only waste (no Federal waste codes).
State waste code(s): LABP
Tons Generated: 0.18
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADVANCED ENVIRONMENTAL TECHNOLOGY CORP.
FLANDERS, NJ
System type: M141
Tons sent: 0.16 EPA ID: NJD980536593

CLEAN HARBORS OF NATICK, INC.
NATICK, MA
System type: M141
Tons sent: 0.01 EPA ID: MAD980523203

Waste Desc.: LABORATORY CHEMICALS NON HAZARDOUS
This is state-only waste (no Federal waste codes).
State waste code(s): LABP
Tons Generated: 0.04
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADVANCED ENVIRONMENTAL TECHNOLOGY CORP.
FLANDERS, NJ
System type: M141
Tons sent: 0.04 EPA ID: NJD980536593

Waste Desc.: PLANT CLEANUP SCRAPS NON HAZARDOUS
This is state-only waste (no Federal waste codes).
State waste code(s): X850
Tons Generated: 0.06
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ADVANCED ENVIRONMENTAL TECHNOLOGY CORP.
FLANDERS, NJ
System type: M141
Tons sent: 0.06 EPA ID: NJD980536593

Reporting Year: 1997

Facility Name: TROY CHEMICAL CORP INC Reporting Year: 1997
Street : 1 AVE L
City : NEWARK State: NJ Zip: 071050000
County : ESSEX EPA ID: NJD002144517
Mailing Address: 1 AVE L
Mailing City : NEWARK State: NJ Zip: 071050000

Year: 1997	Total Waste	Federal Wst.	RCRA Waste
Tons Generated :	12.16	12.16	12.16
Tons Shipped :	12.16	12.16	0.00

SIC Code(s):
Contact: EDWARD J CAPASSO Phone: 9735892500-3340
Generator Status : Large Quantity Generator (LQG)
Storage Status : No RCRA-permitted or interim status storage
RCRA TDR Status : No on-site TDR; site has no plans to develop system
Exempt TDR Status:

List of wastes generated by this facility:

Waste Desc.: LABORATORY PACKSN LAB CLEAN-OUT
EPA Waste Code(s) for this generated waste-
D001 Ignitable waste
D002 Corrosive waste
D003 Reactive waste
U119 Ethyl methanesulfonate or Methanesulfonic acid, ethyl ester
D005 Barium
D006 Cadmium
D008 Lead
D004 Arsenic
U034 Acetaldehyde, trichloro- or Chloral
U112 Acetic acid ethyl ester (I) or Ethyl acetate (1)
U008 2-Propenoic acid (I) or Acrylic acid (I)
D009 Mercury
U003 Acetonitrile (I,T)
U196 Pyridine
D039 Tetrachloroethylene
U153 Methanethiol (I,T) or Thiomethanol (I,T)
U092 Dimethylamine (1) or Methanamine, N-methyl- (1)
F005 Spent non-halogenated solvents (see 1991 Form)
U162 Methyl methacrylate (I,T)
F006 Wastewater treatment sludges from electroplating, with exceptions
U103 Dimethyl sulfate or Sulfuric acid, dimethyl ester
F003 Spent non-halogenated solvents (see 1991 Form)

U044 Chloroform or Methane, trichloro-
U123 Formic acid (C,T)
U202 Saccharin, & salts
Tons Generated: 2.36
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ASHLAND CHEMICAL
BINGHAMTON, NY
System type: Transfer Facility Storage
Tons sent: 0.49 EPA ID: NYD049253719

MATHEW MARITECO REPAIRS INC
BROOKLYN, NY
System type: Transfer Facility Storage
Tons sent: 0.26 EPA ID: NYD980536593

CLEAN HARBORS SVCS INC
CHICAGO, IL
System type: Transfer Facility Storage
Tons sent: 0.96 EPA ID: ILD000608471

CLEAN HARBORS OF BALTIMORE INC
BALTIMORE, MD
System type: Transfer Facility Storage
Tons sent: 0.01 EPA ID: MDD980555189

POLLUTION CONTROL INDUSTRIES, INC
EAST CHICAGO, IN
System type: Transfer Facility Storage
Tons sent: 0.64 EPA ID: IND000646943

Waste Desc.: LABORATORY WASTE WITH SOLVENTS FROM R&D LAB.
EPA Waste Code(s) for this generated waste-
D001 Ignitable waste
F003 Spent non-halogenated solvents (see 1991 Form)
Tons Generated: 3.05
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ASHLAND CHEMICAL
BINGHAMTON, NY
System type: Transfer Facility Storage
Tons sent: 3.05 EPA ID: NYD049253719

Waste Desc.: SPENT ACTIVATED CARBON FROM PROCESS
EPA Waste Code(s) for this generated waste-
F003 Spent non-halogenated solvents (see 1991 Form)
F005 Spent non-halogenated solvents (see 1991 Form)
Tons Generated: 0.70
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ASHLAND CHEMICAL
BINGHAMTON, NY
System type: Transfer Facility Storage
Tons sent: 0.70 EPA ID: NYD049253719

Waste Desc.: SOLVENT BASED PAINT WASTE
EPA Waste Code(s) for this generated waste-

D001 Ignitable waste
D035 Methyl ethyl ketone
Tons Generated: 0.58
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ASHLAND CHEMICAL
BINGHAMTON, NY
System type: Transfer Facility Storage
Tons sent: 0.58 EPA ID: NYD049253719

Waste Desc.: FILTER PAPERS WITH SLUDGE WASTE
EPA Waste Code(s) for this generated waste-
D001 Ignitable waste
Tons Generated: 5.25
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ASHLAND CHEMICAL
BINGHAMTON, NY
System type: Transfer Facility Storage
Tons sent: 5.25 EPA ID: NYD049253719

Waste Desc.: WASTE ACROLEIN
EPA Waste Code(s) for this generated waste-
P003 2-Propenal or Acrolein
Tons Generated: 0.01
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
CLEAN HARBORS SVCS INC
CHICAGO, IL
System type: Transfer Facility Storage
Tons sent: 0.01 EPA ID: ILD000608471

Waste Desc.: CORROSIVE LIQUID PESTICIDE WASTE FROM PROCESS
EPA Waste Code(s) for this generated waste-
D001 Ignitable waste
Tons Generated: 0.20
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ASHLAND CHEMICAL
BINGHAMTON, NY
Tons sent: 0.20 EPA ID: NYD049253719

Waste Desc.: ORGANIC TOXIC LIQUID WASTE FROM LAB
EPA Waste Code(s) for this generated waste-
P023 Acetaldehyde, chloro- or Chloroacetaldehyde
Tons Generated: 0.01
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
POLLUTION CONTROL INDUSTRIES, INC
EAST CHICAGO, IN
System type: Transfer Facility Storage
Tons sent: 0.01 EPA ID: IND000646943

Reporting Year: 1999

Facility Name: TROY CHEMICAL CORP INC Reporting Year: 1999
Street : 1 AVENUE L
City : NEWARK State: NJ Zip: 07105
County : ESSEX EPA ID: NJD002144517
Mailing Address: 1 AVENUE L
Mailing City : NEWARK State: NJ Zip: 07105

Year: 1999	Total Waste	Federal Wst.
Tons Generated :	23.00	23.00
Tons Shipped :	23.00	23.00

SIC Code(s):
Contact: EDWARD CAPASSO Phone: 9735892500-3340
Generator Status : Large Quantity Generator (LQG)
Storage Status : No RCRA-permitted or interim status storage
RCRA TDR Status :
Exempt TDR Status: No on-site TDR; site has no plans to develop system

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List of wastes generated by this facility:

Waste Desc.: SOLVENT BASED PAINT WASTE
EPA Waste Code(s) for this generated waste-
D001 Ignitable waste
D035 Methyl ethyl ketone
Tons Generated: 16.25
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ASHLAND DISTRIBUTION CO
BINGHAMTON, NY
System type: Transfer Facility Storage
Tons sent: 16.25 EPA ID: NYD049253719

Waste Desc.: LABORATORY WASTE WITH SOLVENTS FROM LAB
EPA Waste Code(s) for this generated waste-
D001 Ignitable waste
F003 Spent non-halogenated solvents (see 1991 Form)
Tons Generated: 0.96
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ASHLAND DISTRIBUTION CO
BINGHAMTON, NY
System type: Transfer Facility Storage
Tons sent: 0.96 EPA ID: NYD049253719

Waste Desc.: SPENT ACTIVATED CARBON FROM PROCESS
EPA Waste Code(s) for this generated waste-
F003 Spent non-halogenated solvents (see 1991 Form)
F005 Spent non-halogenated solvents (see 1991 Form)
Tons Generated: 1.00
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
UNKNOWN/BAD EPA ID
System type: Transfer Facility Storage
Tons sent: 1.00 EPA ID: NJD049253719

Waste Desc.: SPENT STYRENE-OBSOLETE RAW MATERIAL
EPA Waste Code(s) for this generated waste-

D001 Ignitable waste
Tons Generated: 0.22
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ASHLAND DISTRIBUTION CO
BINGHAMTON, NY
System type: Transfer Facility Storage
Tons sent: 0.22 EPA ID: NYD049253719

Waste Desc.: FLAMMABLE FILTER MATERIAL WITH GLYCOL FROM PROCESS
EPA Waste Code(s) for this generated waste-
D001 Ignitable waste
Tons Generated: 1.76
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
CWM CHEMICAL SERVICES, L.L.C.
MODEL CITY, NY
System type: Transfer Facility Storage
Tons sent: 1.76 EPA ID: NYD049836679

Waste Desc.: WASTE CORROSIVE FILTERS FROM PROCESS
EPA Waste Code(s) for this generated waste-
D001 Ignitable waste
Tons Generated: 0.02
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ASHLAND DISTRIBUTION CO
BINGHAMTON, NY
System type: Transfer Facility Storage
Tons sent: 0.02 EPA ID: NYD049253719

Waste Desc.: FILTER PAPERS WITH SLUDGE WASTE
EPA Waste Code(s) for this generated waste-
D001 Ignitable waste
Tons Generated: 2.79
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
ASHLAND DISTRIBUTION CO
BINGHAMTON, NY
System type: Transfer Facility Storage
Tons sent: 2.79 EPA ID: NYD049253719

END OF REPORT

73

DEPARTMENT OF ENVIRONMENTAL PROTECTION OF THE STATE OF NEW JERSEY
WATER POLLUTION CONTROL PROGRAM
P.O. BOX 2809
TRENTON, NEW JERSEY 08625

Date July 15, 1977

APPLICATION FOR A PERMIT

To be within a watershed of this State in accordance with the provisions of N.J.S.A. 58:10A-17 to 21, inclusive.

000091

General

The name of company, corporation, partnership or individual desiring to locate is Troy Chemical Corporation

and (is) (~~will be~~) engaged in Chemical Manufacture
Nature of business or operation

The location (is) (~~will be~~) in Newark
Municipality

Essex, New Jersey.
County

A. The mailing address is No. 1 Avenue L, Newark, New Jersey 07105
B. The mailing address will be Same
C. Telephone Number 201-589-2500

D. Location of the principal office is One Avenue L, Newark, N.J. 07105
Street

The name and address of the officer or agent in charge thereof upon whom process may be served are Milton Nowak, 1 Avenue L, Newark, N. J. 07105

The names of the principal officers are: EliSinger, President
Milton Nowak, Vice President

Will the facility be adequately served by a public sewerage system? Yes

If answer to Question 7 is Yes, the following statement is to be completed by the appropriate municipal official:

Troy Chemical Corporation
(Name of Company, Corporation, Partnership, etc.)

will be required to be connected to the public sewerage system prior to beginning operation and all ☐ * sanitary and/or ☒ * industrial wastewater originating from said premises will be accepted for treatment at the sewage treatment facilities owned and operated by

Newark City Sewers

Signed: Joseph C. Greco
Municipal or Sewerage Authority Official

Title: Plumbing Inspector
City of Newark

Check appropriate box (boxes)

See reverse side

OTHER RAW MATERIAL - Continued

Iodine	5,000 pounds
Chlorine	2,000 pounds
Sodium Chloride	5,000 pounds
Litharge	10,000 pounds
Mercury Metal	500 flasks
Paraformaldehyde	5,000 pounds
Captan	5,000 pounds
Clay	3,000 pounds
Hydrogenated Castor Oil	10,000 pounds
Bentonite	10,000 pounds
Total	104,500 pounds

Chem-25
Sept. 75

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection 8/18 1977
Hour 4:50 A.M. _____ P.M. ✓

Sample No. 20245
Composite Period Grab Interval _____
Collected by C. Moeck & S. Skalfer

RECEIVED
SEP 23 1977
State of New Jersey Department of Environmental Protection Division Water Resources

Municipality Newark
Residual Chlorine: Immediate _____
Plant Troy Chemical Corp. Developed _____
Stream _____ Flow Rate _____
Location Ave L Temperature _____
Description and Remarks: Sample taken of discharge from fungicide plant

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

X	Color (units) 20	X	Chloride 45		Sulfate			Other Determinations	
X	Odor (cold) 4 C	X	Suspended Solids 7		Grease & Oil	X		Hg	39.0 PPB
	Turbidity (units)	X	Ash 3		Cyanide	X		Cd	13
X	pH 10.3	X	Total Solids 2412	X	Chromium Total 0.019	X		Ig	4.00
	Acidity to pH 4	X	Ash 1925	X	Chromium Hex. ND				
	Alkalinity to pH 4	X	Total PO_4 ND		Ortho - PO_4			DIVISION OF [illegible] ANALYSIS [illegible]	
	Nitrite N		MBAS		Copper				
	Nitrate N		Phenols	X	Lead 0.001				
	Ammonia N	X	COD Separate Dilute 154		Arsenic				
	Total Kjel. N		Iron	X	Zinc 0.135			REPORT SUBMITTED	

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

PART 1-CHEMISTRY COPY

H18

Chem-25
Sept. 73

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received _____
By Lab _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection 8/18 19 77
Hour 4:50 A.M. ____ P.M. ✓
Sample No. 20245
Composite Period Grab Interval _____
Collected by C. Marsh & S. Shultz
Residual Chlorine:
Immediate _____
Developed _____
Municipality Newark
Plant Chemical Corp.
Stream _____
Flow Rate _____
Location Pipe L
Temperature _____
Description and Remarks: Sample taken at discharge from bypass plant

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

X	Color (units)	X	Chloride		Sulfate		Other Determinations
X	Odor (cold)	X	Suspended Solids		Grease & Oil	X	Hg
	Turbidity (units)	X	Ash		Cyanide	X	Cd
X	pH	X	Total Solids	Y	Chromium Total 0.019	X	I
	Acidity to pH 4	X	Ash	Y	Chromium Hex.		
	Alkalinity to pH 4	X	Total PO_4		Ortho - PO_4		
	Nitrite N		MBAS		Copper		
	Nitrate N		Phenols	X	Lead		
	Ammonia N	Y	COD		Arsenic		
	Total Kjel. N		Iron	X	Zinc		

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

PART 3-STREAM POLLUTION COPY (FOR TRANSMISSION)

H1832

Chem-25
Sept. 75

JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection 8/18 1977
Hour 4:35 A.M. _____ P.M. _____

Sample No. 20243

RECEIVED
SEP 23 1977
State of New Jersey
Dept. of Environmental Protection
Division Water Resources

Composite Period Grab Interval _____
Collected by C. Meack & S. Shulfer
Residual Chlorine:
Immediate _____
Developed _____
Flow Rate _____
Temperature _____

Municipality Newark
Plant Troy Chemical Corp.
Stream Trib. of Newark Bay
Location Ave L
Description and Remarks: Sample taken of cooling water discharge from Mercury Distillant plant

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)	X	Chloride 11		Sulfate		Other Determinations	
	Odor (cold)	X	Suspended Solids 19		Grease & Oil	X	Hg	42.2 ppb
	Turbidity (units)	X	Ash 7		Cyanide			
X	pH 7.2	X	Total Solids 4[illegible]	X	Chromium Total 0.002			
	Acidity to pH 4	X	Ash 19[illegible]	X	Chromium Hex. ND			
	Alkalinity to pH 4	X	Total PO_4 ND		Ortho - PO_4		[illegible]	
	Nitrite N		MBAS	X	Copper 0.020		[illegible]	
	Nitrate N		Phenols	X	Lead 0.001			
	Ammonia N	X	COD Separate bottle 36		Arsenic			
	Total Kjel. N		Iron	X	Zinc 0.525		[illegible]	

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

PART 1-CHEMISTRY COPY

Chem-25
Sept. 75

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

RECEIVED
SEP 23 1977
State of New Jersey
Dept. Environmental Protection
Division Water Resources

Date of Collection 9-1 1977
Time 4:10 A.M. _____ P.M. ✓
Sample No. 20279
Composite Period Grab Interval _____
Collected by C. Marck & S. Shulfer
Residual Chlorine:
Municipality Newark
Immediate _____
Plant Troy Chemical Corporation
Developed _____
Stream Pierson's Creek
Flow Rate _____
Location Pier L
Temperature 24.5°C
Description and Remarks: Upstream sample; taken from road bridge on Troy Chemical's property. (Downstream side of bridge)

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

X	Color (units) ND	X	Chloride 910	X	Sulfate 920		Other Determinations
X	Odor (cold) I A	X	Suspended Solids 14		Grease & Oil	X	Hg 2.0 PPB
X	Turbidity (units) ND	X	Ash 4		Cyanide	X	~~Zr~~
X	pH 7.2	X	Total Solids 4422	X	Chromium Total Cr 0.75	X	~~Mn~~
	Acidity to pH 4	X	Ash 3262		Chromium Hex.	X	Ca 352
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		
	Nitrite N		MBAS		Copper		
	Nitrate N		Phenols	X	Lead ND		[illegible]
	Ammonia N	X	COD 63		Arsenic		
	Total Kjel. N		Iron	X	Zinc 0.131		[illegible]

REPORT SUBMITTED

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5	LAB ACCIDENT											

PART 1-CHEMISTRY COPY

H1832

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection 9-1 1977
Hour 4:10 A.M. ____ P.M. ✓
Sample No. 20279
Composite Period Grab Interval ____
Collected by C. Clark & S. Shaffer
Residual Chlorine:
Immediate ____
Municipality Newark
Plant Troy Chemical Corporation
Developed ____
Stream Peters Creek
Flow Rate ____
Location Rte 6
Temperature 24.5°C
Description and Remarks: Upstream sample taken from road bridge on Troy Chemical property (2 miles side of bridge)

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. ____ (Confirmed Test); Fecal Coliform MPN/100 ml. ____
Fecal Streptococci:MPN/100 ml. ____ Other ____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

X	Color (units) [illegible]	X	Chloride [illegible]	X	Sulfate [illegible]		Other Determinations		
X	Odor (cold) [illegible]	X	Suspended Solids [illegible]		Grease & Oil	X	Hg	[illegible]	
X	Turbidity (units) [illegible]	X	Ash 4		Cyanide	X	~~Zn~~		
X	pH 7.2	X	Total Solids [illegible]	X	Chromium Total 0.075	X	~~Mn~~		
	Acidity to pH 4	X	Ash [illegible]		Chromium Hex.	X	Ca	[illegible]	
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4				
	Nitrite N		MBAS		Copper				
	Nitrate N		Phenols	X	Lead [illegible]				
	Ammonia N	X	COD [illegible]		Arsenic				
	Total Kjel. N		Iron	X	Zinc [illegible]				

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

PART 3-STREAM POLLUTION COPY (FOR TRANSMISSION)

Chem-25
Sept. 75

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection 9-1 1977
3:45 A.M. ____ P.M. ✓

RECEIVED
SEP 23 1977
State of New Jersey
Dept. Environmental Protection
Division Water Resources

Sample No. 20277
Composite Period Grab Interval _____
Collected by C. Mauk & S. Shulfer
Residual Chlorine:
Immediate _____
Developed _____
Flow Rate _____

Municipality Newark
Plant Troy Chemical Corp.
Stream Pierson's Creek
Location Ave. L
Temperature 26.0°C
Description and Remarks: Overflow from wooden cooling water tank (tank #114)

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

X	Color (units) ND	X	Chloride 80	X	Sulfate 15		Other Determinations	
	Odor (cold)	X	Suspended Solids 11		Grease & Oil	X	Hg	4.6 ppb
	Turbidity (units)	X	Ash 3		Cyanide	X	Ca	12
X	pH 7.5	X	Total Solids 190	X	Chromium Total ND	X	~~Zr~~	
	Acidity to pH 4	X	Ash 33		Chromium Hex.		~~Mn~~	
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4			
	Nitrite N		MBAS		Copper			
	Nitrate N		Phenols	X	Lead 0.001		DIVISION OF LABORATORIES	
	Ammonia N	X	COD 4		Arsenic		ANALYSIS COMPLETED	
	Total Kjel. N	X	Iron [illegible]	X	Zinc 0.128		[illegible] 1977	

REPORT SUBMITTED

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.	Lab. D.O.			Seed Required:		Yes		No		
Sample Conc. % PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD5 Lab accident											

PART 1-CHEMISTRY COPY

H1832

Chem-25
Sept. 73

JERSEY STATE D[illegible]MENT OF HEAL
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection 9-1 19 77
Hour 3:45 A.M. _____ P.M. ✓

Sample No. 20277

Composite Period Grab Interval _____
Collected by C. [illegible] S. Shulter

Residual Chlorine:
Immediate _____
Developed _____

Municipality [illegible]
Plant Troy Chemical Corp.
Stream Pierson's Creek
Location Ave. L

Flow Rate _____
Temperature 26.0°C

Description and Remarks: Overflow from wooden cooling water tank (tank #114)

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

X	Color (units) 1 D	X	Chloride [illegible]	X	Sulfate 15		Other Determinations	
	Odor (cold)	X	Suspended Solids [illegible]		Grease & Oil	X	Hg	4.6 ppb
	Turbidity (units)	X	Ash 3		Cyanide	X	Ca	12
X	pH 7.5	X	Total Solids [illegible]	X	Chromium Total ND	X	~~Zn~~	
	Acidity to pH 4	X	Ash [illegible]		Chromium Hex.	X	~~Mn~~	
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4			
	Nitrite N		MBAS		Copper			
	Nitrate N		Phenols	X	Lead [illegible]			
	Ammonia N	X	COD 4		Arsenic			
	Total Kjel. N	X	Iron [illegible]	X	Zinc [illegible]			

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5	[illegible]											

PART 3-STREAM POLLUTION COPY (FOR TRANSMISSION)

H1832

Chem-25
Sept. 75

JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

RECEIVED
SEP 23 1977
State of New Jersey
Dept. Environmental Protection
Division Water Resources

Date of Collection 9-1 1977
Hour 4:35 A.M. _____ P.M. ✓
Composite Period Grab Interval _____
Collected by C. Maack & S. Shulfer
Residual Chlorine:
Immediate _____
Developed _____
Flow Rate _____
Temperature _____

Sample No. 20281
Municipality Newark
Plant Troy Chemical Corp.
Stream Pierson's Creek
Location Ave L
Description and Remarks: City sewer leaving Troy's property

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

X	Color (units) 400	X	Chloride 17400	X	Sulfate 21		Other Determinations		
X	Odor (cold) V C	X	Suspended Solids 252		Grease & Oil	X	Hg 1.0 PPB		
X	Turbidity (units) 80	X	Ash 124		Cyanide	X	~~Zr~~		
X	pH 11.6	X	Total Solids 71706	X	Chromium Total 0.095	X	Ca 128		
	Acidity to pH 4	X	Ash 63452	X	Chromium Hex. ND	X	~~Mn~~		
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4	X	Iodine ND		
	Nitrite N		MBAS		Copper				
	Nitrate N		Phenols	X	Lead 0.003				
	Ammonia N	X	COD 7400		Arsenic				
	Total Kjel. N		Iron	X	Zinc 0.447				

REPORT SUBMITTED

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD5	Lab accident											

PART 1-CHEMISTRY COPY

H1622

Chem-23
Sept. 75

JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received _____
By Labs
Lab No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection 9-1 19 77

Hour 4:35 A.M. _____ P.M. ✓

Sample No. 20281

Composite Period: [illegible] Interval _____

Collected by [illegible]

Residual Chlorine:
Immediate _____
Developed _____

Municipality Newark

Plant Troy Chemical Corp

Stream [illegible] Creek

Flow Rate _____

Location [illegible]

Temperature _____

Description and Remarks: City [illegible] Troy property

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS

BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____

Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

X	Color (units) 400	X	Chloride 1740	X	Sulfate 21		Other Determinations
X	Odor (cold) V C	X	Suspended Solids 252		Grease & Oil	X	Hg [illegible] PPB
X	Turbidity (units) 50	X	Ash 124		Cyanide	X	~~Cr~~
X	pH 11.6	X	Total Solids 71 7.6	X	Chromium Total 0.095	X	Ca 12[illegible]
	Acidity to pH 4	X	Ash 63452	X	Chromium Hex. ND		~~Mn~~
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4	X	Iodine ND
	Nitrite N		MBAS		Copper		
	Nitrate N		Phenols	X	Lead [illegible]		
	Ammonia N	X	COD 74[illegible]		Arsenic		
	Total Kjel. N		Iron	X	Zinc [illegible]		

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

PART 3-STREAM POLLUTION COPY (FOR TRANSMISSION)

H1032

Chem-28
Sept. 75

JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection 9-1 1977

RECEIVED
SEP 23 1977
State of New Jersey
Environmental Protection
Division Water Resources

Time 3:30 A.M. _____ P.M. ✓

Sample No. 20276

Composite Period Grab Interval _____

Collected by C. Maack & S. Shulfer

Residual Chlorine:
Immediate _____
Developed _____

Municipality Newark

Plant Troy Chemical Corp.

Stream Pierson's Creek

Flow Rate _____

Location Ave L

Temperature 23.5°C

Description and Remarks: Downstream sample; taken beside mercury reclaiming plant from stream running through Troy's property. Mercury plant was not discharging

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____

Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

X	Color (units) ND	X	Chloride 1250	X	Sulfate 820		Other Determinations
X	Odor (cold) II A	X	Suspended Solids 17		Grease & Oil	X	Hg 11.2 ppb
X	Turbidity (units) 5	X	Ash ?		Cyanide	~~X~~	~~Zr~~
X	pH 7.0	X	Total Solids 4610	X	Chromium Total 0.070	~~X~~	~~Mn~~
	Acidity to pH 4	X	Ash 2942	X	Chromium Hex. ND	X	Ca 456
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		
	Nitrite N		MBAS		Copper		
	Nitrate N		Phenols	X	Lead [illegible]		[illegible]
	Ammonia N	X	COD 47		Arsenic		
	Total Kjel. N		Iron	X	Zinc [illegible]		[illegible] 1977

REPORT SUBMITTED

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD5	Lab accident											

PART 1-CHEMISTRY COPY

H1832

Chem-98
Sept. 70

JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection 9-1 1977
Hour 3:20 A.M. _____ P.M. ✓
Composite Period Grab Interval _____
Collected by C. Mack & S. Walter
Residual Chlorine:
Immediate _____
Developed _____
Flow Rate _____
Temperature 23.5°C

Sample No. 20276

Municipality Newark
Plant Troy Chemical Corp
Stream Warren's Creek
Location Ave L

Description and Remarks: [illegible]

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

X	Color (units) [illegible]	X	Chloride [illegible]	X	Sulfate [illegible]		Other Determinations
X	Odor (cold) [illegible] A	X	Suspended Solids [illegible]		Grease & Oil	X	Hg 11.2 PPB
X	Turbidity (units) [illegible]	X	Ash		Cyanide	X	~~Zr~~
X	pH 7.0	X	Total Solids [illegible]	X	Chromium Total 0.070	X	~~Mn~~
	Acidity to pH 4	X	Ash [illegible]	X	Chromium Hex. ND	X	Ca [illegible]
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		
	Nitrite N		MBAS		Copper		
	Nitrate N		Phenols	X	Lead [illegible]		
	Ammonia N	X	COD [illegible]		Arsenic		
	Total Kjel. N		Iron	X	Zinc [illegible]		

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD5		[illegible]										

PART 3-STREAM POLLUTION COPY (FOR TRANSMISSION)

Chem-25
Sept. 75

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

RECEIVED
SEP 23 1977
State of New Jersey
Dept. Environmental Protection
Division Water Resources

Date of Collection 9-1 1977
Hour 4:20 A.M. _____ P.M. ✓
Composite Period Grab Interval _____
Collected by C. Mauck & S. Shulfer
Residual Chlorine:
Immediate _____
Developed _____
Flow Rate _____
Temperature 23.0°C

Sample No. 20280
Municipality Newark
Plant Troy Chemical Corp.
Stream Pierson's Creek
Location Ave L
Description and Remarks: City water sample; taken from bathroom sink in the mens lockeroom

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

X	Color (units)	ND	X	Chloride	9	X	Sulfate	14	Other Determinations
X	Odor (cold)	ND	X	Suspended Solids	15		Grease & Oil		X Hg 1.0 PPB
X	Turbidity (units)	ND	X	Ash	5		Cyanide		X Zr
X	pH	8.0	X	Total Solids	146	X	Chromium Total	0.009	X ~~Mn~~
	Acidity to pH 4		X	Ash	[illegible]		Chromium Hex.		X Ca 12
	Alkalinity to pH 4			Total PO_4			Ortho - PO_4		
	Nitrite N			MBAS			Copper		
	Nitrate N			Phenols		X	Lead	[illegible]	[illegible]
	Ammonia N		X	COD	[illegible]		Arsenic		
	Total Kjel. N		X	Iron	0.12	X	Zinc	[illegible]	[illegible]

REPORT SUBMITTED

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD5	Lab Accident											

PART 1-CHEMISTRY COPY

H1832

JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

TYPE OR PRINT
ALLPOINT PEN

Date of Collection 9-1 19 77
Hour 4:30 A.M. _____ P.M. ✓
Composite Period Grab Interval _____
Collected by C. Marck & S. Fuller
Residual Chlorine:
Immediate _____
Developed _____
Flow Rate _____
Temperature 22.0°C

No. 20280
pality Newark
Troy Chemical Corp.
Pierson's Creek
on Ave 6
tion and Remarks: City water sample, taken from bathroom sink in [illegible] lockerroom

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

C[illegible] MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
[illegible]treptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

Color (units) ND	X	Chloride 9	X	Sulfate 14		Other Determinations	
Odor (cold) ND	X	Suspended Solids 15		Grease & Oil	X	Hg	1.0 ppb
Turbidity (units) ND	X	Ash 5		Cyanide	X	~~Zr~~	
pH 8.0	X	Total Solids 146	X	Chromium Total 0.009	X	~~Mn~~	
Acidity to pH 4	X	Ash 4		Chromium Hex.	X	Ca	12
Alkalinity to pH 4		Total PO_4		Ortho - PO_4			
Nitrite N		MBAS		Copper			
Nitrate N		Phenols	X	Lead 0.04			
Ammonia N	X	COD [illegible]		Arsenic			
Total Kjel. N	X	Iron 0.12	X	Zinc 0.147			

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

D.O.		Lab. D.O.			Seed Required:			Yes		No		
le Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5	[illegible]	[illegible]										

PART 3-STREAM POLLUTION COPY (FOR TRANSMISSION)

H1837

JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

RECEIVED
SEP 23 1977
State of New Jersey
Dept. Environmental Protection
Division Water Resources

S OR PRINT
POINT PEN

Date of Collection 9-1 1977
Hour 4:00 A.M. _____ P.M. ✓
No. 20278
Composite Period Grab Interval _____
Collected by C. Maack & S. Shulfer
Residual Chlorine:
Immediate _____
Developed _____
Flow Rate _____
Temperature 37.0°C

ity Newark
Troy Chemical Corp.
Pierson's Creek
Ave. L

n and Remarks: Overflow from boiler room discharge

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
ptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

lor (units) ND	X	Chloride 12	X	Sulfate 12		Other Determinations	
lor (cold)	X	Suspended Solids 11		Grease & Oil	X	Hg	4.4 ppB
rbidity (units)	X	Ash 5		Cyanide	~~X~~	~~Mn~~	
H 7.2	X	Total Solids 112	X	Chromium Total 0.012	~~X~~	~~Zr~~	
idity to pH 4	X	Ash 22		Chromium Hex.	X	Ca	9
alinity to pH 4		Total PO_4		Ortho - PO_4			
trite N		MBAS		Copper			
trate N		Phenols	X	Lead ND		DIVISION ... ORIES ...	
Ammonia N	X	COD 4		Arsenic			
Total Kjel. N		Iron	X	Zinc 0.205		... 1977	

REPORT SUBMITTED

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

D.O.		Lab. D.O.			Seed Required:			Yes		No		
le Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
D5	LINDACCIDENT											

ET 1-CHEMISTRY COPY

H1634

JERSEY STATE DEPAR[illegible] OF HEA[illegible]
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PRINT
PEN

Date of Collection 9-1 1977
Hour 4:00 A.M. _____ P.M. ✓
Composite Period Grab Interval _____
Collected by C. Maack & S. Shulfer
Residual Chlorine:
Immediate _____
Developed _____
Flow Rate _____
Temperature 37.0°C

20278

Newark
Chemical Corp
Pierson's Creek
Ave L

Remarks: Overflow from [illegible] discharge

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Solutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

[illegible]00 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
[illegible]ci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

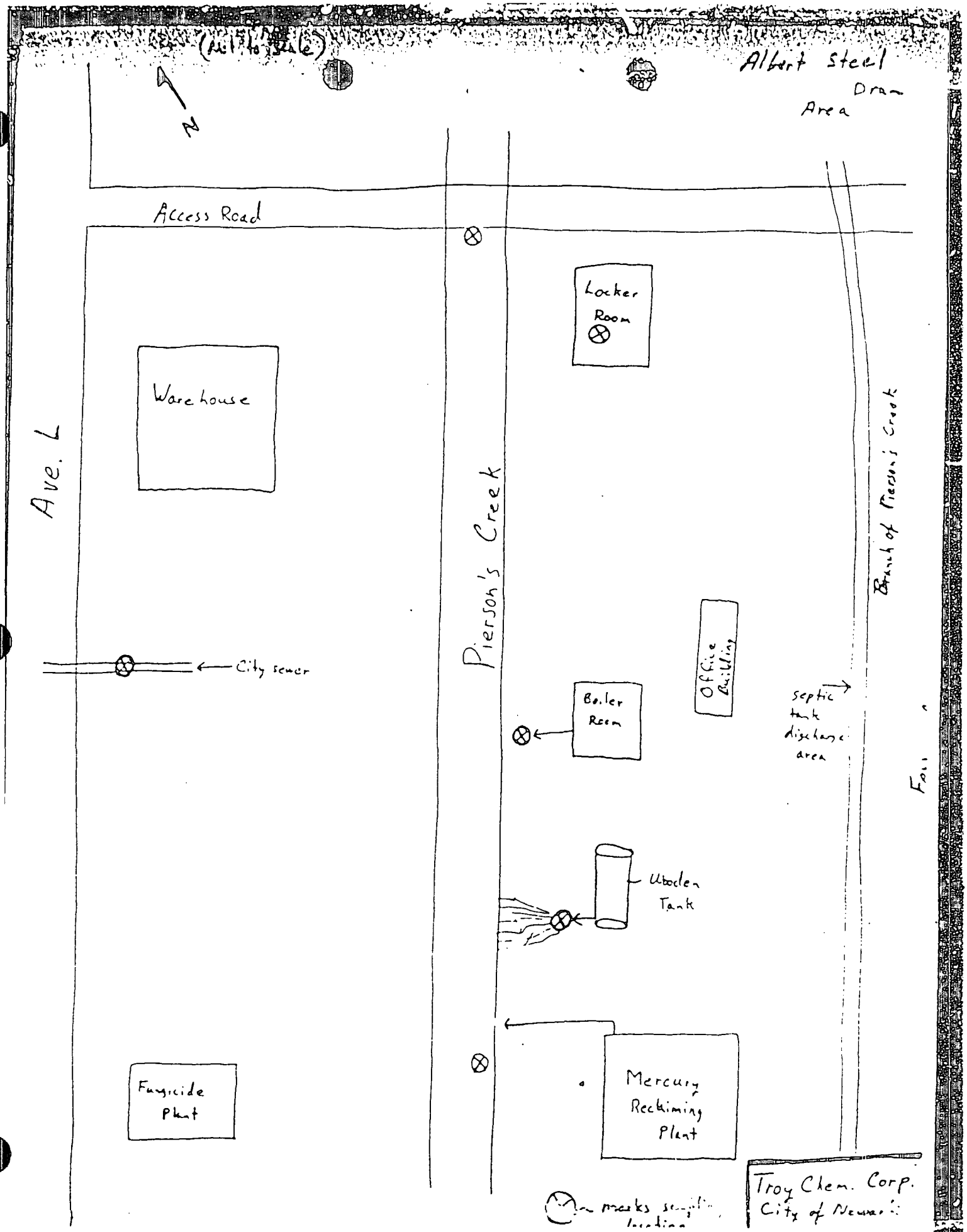
[illegible]nits) 1.0	X	Chloride 1[illegible]	X	Sulfate 12		Other Determinations	
[illegible]ld)	X	Suspended Solids 11		Grease & Oil	X	Hg 4.4 mD	
[illegible] (units)	X	Ash 5		Cyanide	X	~~Mn~~	
7.2	X	Total Solids 112	X	Chromium Total 2.2	X	~~Zn~~	
[illegible] to pH 4	X	Ash .2		Chromium Hex.	X	Ca 7	
[illegible] to pH 4		Total PO_4		Ortho - PO_4			
[illegible]		MBAS		Copper			
[illegible] N		Phenols	X	Lead			
[illegible]ia N	X	COD 4		Arsenic			
[illegible]jel. N		Iron	X	Zinc [illegible]			

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

	Lab. D.O.			Seed Required:			Yes		No		
% PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100

STREAM POLLUTION COPY (FOR TRANSMISSION)

H1032


(Not to Scale)
N
Albert Steel
Drum
Area
Access Road
Locker Room
Warehouse
Ave. L
Pierson's Creek
Branch of Pierson's Creek
City sewer
Office Building
Boiler Room
septic tank discharge area
Uboden Tank
Fungicide Plant
Mercury Reclaiming Plant
marks sampling location
Troy Chem. Corp.
City of Newark

DEPARTMENT OF ENVIRONMENTAL PROTECTION
POLLUTION CONTROL MONITORING, SURVEILLANCE AND ENFORCEMENT

File
Enforcement File

REPORT OF PHONE CALL / VISIT

In _____ Out ✓

File Troy Chemical

Date 8/30/77 Time 9:00 AM

Routing Maack CLM Post ENP Harrison

Person Contacted Gene Delahanty

Phone No. 2-5838

Affiliation Health Labs

Subject of Call / Visit confirmation of Hg results from samples.

Summary of Call / Visit

Mrs. Delahanty advised me that the lab ~~analyses~~ analyses for Hg were as follows:

20243 42.2 ppb

20245 39.0 ppb.

Action Recommended Follow up to obtain all outstanding analyses on Troy Chem 9-1-77

Signature

TEST	Jan. Feb.	Mar. Apr.	May June	July Aug.	Sept. Oct.	No De
PHENOLS	0.00	0.00	0.00	0.00	0.00	0.
PHOSPHATE, ORTHO ($PO_4^{-3}H_n^+$)	0.00	0.00	0.00	0.02	0.00	0.
SILICA (SiO_2)	0.44	0.61	0.41	2.0	2.0	2.
SILVER (Ag)	0.000	0.000	0.000	0.000	0.000	0.
SOLIDS, FIXED (ignited 600° C)	58.5	55.9	53.2	44.1	55.9	53.
SOLIDS, LOSS ON IGNITION	20.9	19.1	21.4	21.4	26.9	23.
SOLIDS, SUSPENDED (dried 105° C)	1.	1.	1.	1.5	2.	3.
SOLIDS, TOTAL (dried 179° C)	79.4	75.0	74.6	65.5	84.8	77.
SOLIDS, TOTAL DISSOLVED	78.4	74.0	73.6	64.	82.8	72.
SULFATE (SO_4^{-2})	12.	12.	10.	11.	9.	8.
TANNIN-AND-LIGNINS	0.0	0.0	0.0	0.0	0.0	0.
Chemical, Atomic Absorption Spectroscopy, results in ppm, (milligrams/liter), unless otherwise noted.						
ARSENIC (As)	-	-	0.00	0.00	0.00	0.
ALUMINUM (Al)	0.16	0.17	0.18	0.17	0.17	0.
CADMIUM (Cd)	0.001	0.0004	0.0000	0.0000	0.0000	0.
CALCIUM (Ca)	7.89	10.02	8.64	8.45	8.50	5.
CHROMIUM (Cr)	0.00	0.004	0.003	0.0004	0.00003	0.
COBALT (Co)	0.00	0.000	0.000	0.000	0.000	0.
COPPER (Cu)	0.005	0.026	0.040	0.092	0.02	0.
IRON (Fe)	0.36	0.258	0.12	0.45	0.24	0.
LEAD (Pb)	B 0.2	B0.020	0.00	0.00	0.00	0.
LITHIUM (Li)	0.00	0.000	0.000	0.000	0.000	0.
MAGNESIUM (Mg)	2.14	3.03	3.03	2.98	2.99	3.
MANGANESE (Mn)	0.030	0.032	0.035	0.269	0.056	0.
MERCURY (Hg)	B0.022	0.000	0.000	0.000	0.000	0.
NICKEL (Ni)	0.00	0.00	0.010	0.008	0.005	0.
POTASSIUM (K)	0.64	0.61	0.74	0.69	0.69	0.
SELENIUM (Se)	B0.10	0.00	0.00	0.00	0.00	0.
SODIUM (Na)	5.03	5.76	5.14	5.16	5.18	4.
TIN (Sn)	B0.025	B0.025	0.00	0.00	0.00	0.
ZINC (Zn)	0.008	0.019	0.00	0.00	0.00	0.

B before a value means "BELOW" and means that none of the element was found but if some were present it could not exceed the value that follows.

LAW OFFICES
SCHWARTZ, STEINBERG, TOBIA & STANZIALE
A PROFESSIONAL CORPORATION

DUCURBAN PLAZA
104 SOUTH HARRISON STREET
EAST ORANGE, NEW JERSEY 07018

(201) 678-0610
CABLE CASLAW

THEODORE A. SCHWARTZ
CHARLES A. STANZIALE, JR.
JOEL M. STEINBERG
RONALD L. TOBIA

RICHARD J. MURRAY
KENT A. F. WEISERT
JANET J. BURAK

WASHINGTON OFFICE

BROWN, STOREY, STANZIALE & GEORGE
1701 PENNSYLVANIA AVE., N.W.
SUITE 380
WASHINGTON, D.C. 20006
(202) 293-8328

977 OCT 13 PM 2 42

September 30, 1977

Samuel P. Moulthrop, Esq.
Office of Regulatory Affairs
Department of Environmental
Protection
Division of Water Resources
P.O. Box 2809
Trenton, New Jersey 08625

BBE000117

BBE000118

Re: Troy Chemical Corporation
Newark, New Jersey

Dear Mr. Moulthrop:

Pursuant to my letter of September 28, 1977, I have had an opportunity to meet with my client; and discuss in its entirety your letter of September 21, 1977 outlining certain activities to be performed by my client.

In order to properly respond, I will use the numbering that you have set forth in your letter and comment upon each item accordingly. I would again like to point out that it is the Company's position that its activities are not violative of any applicable environmental laws or regulations, and that the "understandings" that we have arrived at are being carried out in a cooperative and amicable manner.

1. This item has been thoroughly investigated by my client and the following facts are presented.

A. As stated to you at our meeting on August 30, 1977, the disposal field for the existing septic system had been repaired at a considerable expense to the Company.

B. The disposal field is not covered by a paved area any longer.

C. The branch of Pierson's Creek, which allegedly runs through my client's property, was blocked off sometime ago by Albert Steel Drum Company; and,

therefore, the creek no longer constitutes a stream.

D. In order to connect the existing septic system to the Newark sewerage collection system, the following work and extensive engineering is required.

(1) The construction of a 500 foot pipeline half of which is to go overland and the remaining portion underground.

(2) Extensive excavation is required for the construction of this pipeline in that existing concreted areas have to be torn up and reinstalled.

(3) Existing cross pipes and equipment have to be removed in order to construct the line.

(4) The location of the line has to be such that it does not interfere with future buildings and installations.

(5) Those portions of the pipe above ground would need a steam trace line to keep the same from freezing.

(6) A pump would have to be installed, which will take 8 to 10 weeks for delivery.

E. The approximate cost of connecting this septic system to the Newark sewerage collection system will be approximately $25,000.00, barring unforeseen events.

F. In light of the above, my client advises that the repair work performed to the septic system has improved its operation. Additionally, my client advises that it is in the process of making an application to the Department for permission to fill in this particular branch of Pierson's Creek, which runs between its property and the property of other corporations in the area. When the approval is received from the Department for filling in the area, it can certainly be filled in with material to permit

continued use of the septic system, thereby obviating the necessity of expending unreasonable sums of money for the connection to the Newark sewerage collection system. At the time of our meeting on August 30, 1977, my client did not know the extensive problem created with the connecting of this particular septic system. We certainly do not wish to be responsible for discharging any sewage into the branch of Pierson's Creek from the septic system. We do feel, however, that the situation has been corrected and that a more positive approach would be to fill in the branch of the creek, as outlined above. I also understand that the Department's last inspection confirmed the satisfactory operation of this septic tank. In the interim, however, my client did make an application to the City of Newark at least three weeks ago for a permit to connect the septic system to the Newark sewerage collection system. My client's plumber recently received the permit to do the work. However, as pointed out above, the extensive nature of both the construction and financial outlay was not fully apparent to my client when we discussed the connection of the septic system to the sewerage collection system. In light of the above, as an alternative to the extensive construction work and costs of connecting to the Newark collection system, I would appreciate your thoughts on the proposed filling in of the branch of Pierson's Creek as outlined above. We are not attempting to avoid any responsibilities in this regard, but we are merely attempting to arrive at a more practical and reasonable solution. The other property owners adjoining the branch of the Pierson's Creek have all indicated their agreement to filling in this area, which will have significant environmental benefits to all. Before taking another step in regard to this particular idea, I would appreciate having the opportunity to discuss the same with you and to determine which way to proceed. Again, I want to emphasize that all I am trying to do is achieve a more practical and reasonable solution to this one particular item.

2. This item was fully completed sometime ago.

3. As pointed out to you at our meeting of August 30, 1977 and I believe confirmed by the Departmental representatives, the only alleged discharges concerned cooling water and some steam condensate. There were no other discharges that we know of in that we pointed out to you that pipes in the area had been rearranged sometime ago. In regard to the issue of the cooling water, I do not believe that we have reached a firm conclusion that the same is an illegal or improper discharge. Certainly the steam condensate would not be considered a pollutant. We also feel that the cooling water is not contaminated as to prevent its discharge to the stream. Pursuant to your request, my client did consult with the Passaic Valley Sewerage Commissioners and they informed my client that they would prefer that the cooling water and steam condensate continue to be discharged into the Creek, rather than into their system. This is based on the fact that they do not feel clean water of this nature should be discharged into their facility since the same does not need any treatment. In the interim, however, my client did curtail the flow of cooling water from the cooling system so that there is very little of the same overflowing into the creek. We plan to continue to discuss this matter with the Passaic Valley Sewerage Commission, however, as I pointed out to you at our conference, I think that the discharge of cooling water of this nature should not be placed in the Passaic Valley system; but discharged into the Creek. In the interim, until this matter is resolved, the Company will continue to divert the cooling water to the sewerage system. I would appreciate knowing from the Department whether or not the cooling water can be directly discharged into the Creek since my client should not be paying excessive sewerage charges for the disposal of relatively clean water. Your prompt attention to this issue would be greatly appreciated.

Wrong wash sink discharge

4. All so-called leaking drums have been removed from the Company's site and have been disposed of in a proper manner. In addition, alleged contaminated soil has been removed from the ground and has been placed in containers, which will be disposed of by Duane Marine Inc. the contractors performing this work. I should point out to you that my client has been in direct communication with Ron Buchannan of the Bureau of Solid Waste regarding the disposal of the soil materials.

5. A. Raw Materials - stored in concrete areas.

B. Intermediates - stored in concrete areas.

C. Finished products - stored in warehouses or concrete areas.

It should be noted that berms have been installed around the property to protect the Creek from the receipt of any contaminated waters. Contaminated waters are discharged to

to the Company's effluent system. Storm waters that are contaminated with toxic and hazardous substances are directed through the Company's pretreatment unit. The Company feels that the berms that have been installed to protect the waters of Pierson's Creek are appropriate to prevent contamination of the Creek's waters.

6. Dikes for the oil storage area have always been in existence; and, in addition, the major part of the storage of raw materials has always been carried out in dike areas. The remaining raw material storage tanks which were felt to be of no problem have been diked anyway. The fungicide process tank is not a storage tank. As a process tank, we do not believe that a dike is required since the tank is filled only a few hours each day. The Company has constructed a berm around the concrete pad on which the tank rests so that so-called drippings will not contaminate nearby soil.

7. Plates and plugs on the floor drains of the Company's warehouse have been installed.

8. With regard to this item, I do believe that a misunderstanding has occurred in that I do recall from my notes at our August 30, 1977 conference that this septic system was satisfactory. As noted at our conference, this septic system services the old locker room, and its use will be minimal when the new locker room is constructed. It is expected that the new locker room will be constructed within the next two months and the use of the old locker room will be limited to probably no more than five people per shift. From a practical point of view the employees will probably be using the new locker room exclusively as opposed to the old locker room. In any event, my client pointed out to me that this septic system was proper and did not present any problem. I would, therefore, appreciate your clarifying this item.

I am sure you can note from the above that the Company has kept its commitments to the Department as reviewed at our August 30, 1977 conference. There are a couple of loose ends as noted above with respect to items 1, 3 and 8, which I would hope you could reexamine and advise of your position. I am particularly concerned about item 1, in that I do not wish to see the Company become involved in unreasonable and unnecessary expenditures. I think you would certainly agree with me on that point. The other remaining question regarding item 3, I do feel should be addressed soon; but as noted the Company has taken interim steps which I believe are satisfactory. I do feel that item 8 should certainly be eliminated.

In regard to your request for a clarification of the list of products and chemicals which the Company submitted as part of its permit to locate application, I am enclosing herein a complete itemization of raw materials and finished products. I trust after reviewing the information contained in this letter that you will find the Company has moved expeditiously to carry out its representations made to the Department. I look forward to hearing from you as to certain questions that I have raised above.

Again, many thanks for the kind courtesies and co-operation you have extended to me and my client in this matter. Should you have any questions in regard to the within response, please feel free to contact me at your earliest convenience.

Yours truly,

SCHWARTZ, STEINBERG, TOBIA & STANZIALE

BY: THEODORE A. SCHWARTZ

TAS:cpc
Enc.
cc: Mr. Milton Nowak
Mr. Alvin Zach
Mr. Seymour Lubetkin
Mr. Pat Griesi
Mr. William J. Librizzi

OTHER RAW MATERIALS - continued

Iodine	5,000 pounds
Chlorine	2,000 pounds
Sodium Chloride	5,000 pounds
Litharge	10,000 pounds
Mercury Metal	500 flasks
Paraformaldehyde	5,000 pounds
Captan	5,000 pounds
Clay	3,000 pounds
Hydrogenated Castor Oil	10,000 pounds
Bentonite	10,000 pounds
Manganese Oxide	10,000 pounds
Manganese Sulphate	5,000 pounds
Zinc Oxide	3,000 pounds
Boric Acid	5,000 pounds
Rhodamine B Dye	200 pounds

file #0085

DEC 14 1977

Meyer Scolnick, Director
Enforcement and Regional Counsel Division
U.S. Environmental Protection Agency
Region II
26 Federal Plaza
New York, New York 10007

Re: Troy Chemical Corporation
NJ 0031453-Newark, New Jersey

Dear Sir:

This letter serves to inform you that the State of New Jersey Department of Environmental Protection intends to certify, pursuant to Section 401 of the Federal Water Pollution Control Act Amendments of 1972 (the act), the discharges of Troy Chemical Corporation, Newark, Essex County, New Jersey which are the subject of Federal Application No. NJ 0031453. Certification for this application was requested by EPA Region II in a letter dated October 14, 1977. A copy of a tentative draft permit was also provided with the certification request.

It is understood that such notice of the NJDEP intent to certify will be in conjunction with the notice of the EPA Region II intent to issue an NPDES permit and that NJDEP will be provided copies of such conjunctive notice and properly advised by EPA of any procedures or actions resulting from such notice.

The above would appear to satisfy the requirements of Section 401 of the Federal Water Pollution Control Act Amendments of 1972 regarding public notice for certification.

This letter is also intended to serve as certification according to the provisions of Section 401 of the Act with respect to Sections 301, 302, 306 and 307. It is understood that the preliminary draft permit sent to this Department on October 14, 1977 includes the appropriate requirements of Sections 301, 302, 306, and 307.

If NJDEP is not advised of any intended action by EPA Region II or intended action by Troy Chemical Corporation resulting from this notice and receives no direct response deemed substantial for initiating further action, including a hearing, regarding certification, it will, after expiration of the dates provided in the notice, deem this letter a final 401 certification for the subject application.

It is intended that such final 401 certification, for the purpose of assuring compliance with New Jersey's water quality standards and other appropriate requirements of state law, will set forth, as provided by Section 401 (d) of the Act, the following effluent limitations and other limitations:

1. The permittee shall discharge so as not to violate the Surface Water Quality Standards for Port Newark Channel (Newark Bay), classified as TW-3 waters according to N.J.A.C. 7:9-4 et seq.

2. The permittee shall discharge so as not to violate the Interstate Sanitation Commission (I.S.C.) Water Quality Regulations promulgated pursuant to the authority conferred upon the I.S.C. by Tri-State Compact (N.J.S.A. 32:18-1 et. seq.).

   The I.S.C. Water Quality Regulations include, but are not limited to, the following provisions:

   (1) Total Suspended Solids content shall not exceed:

   (a) 30 mg/l on a 30 consecutive day average.
   (b) 45 mg/l on a 7 consecutive day average.
   (c) 50 mg/l on a 6 consecutive hour average.

Very truly yours,

Richard E. Bellis

Richard E. Bellis, Assistant Director
Pollution Control Monitoring, Surveillance
and Enforcement Element

183348-49:E66:H

cc: Bruce Pyle, Div. of Fish, Game & Shellfisheries
Mayor & Council of Newark
Dr. Alan Mytelka, ISC
Troy Chemical Corporation

Chem-25
Sept. 78

9

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection 12-8 1977
Hour 11:15 A.M. ✓ P.M. _____
Sample No. C19867
Composite Period Grab Interval _____
Collected by E. Wagner & C. Maack
Residual Chlorine:
Immediate _____
Developed _____
Municipality City of Newark
Plant Troy Chemical Corp.
Stream Pierson's Creek
Flow Rate _____
Location Ave L.
Temperature _____
Description and Remarks: Sample taken of cooling water being discharged from the Mercury Distillant plant

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

RECEIVED
JAN 6 1978
State of New Jersey
Dept. Environmental Protection
Division Water Resources

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

Color (units)		Chloride		Sulfate		~~Other Determinations~~	
Odor (cold)	X	Suspended Solids 6		Grease & Oil	X	Hg 27.0 PPB above limits	
Turbidity (units)		Ash		Cyanide			
pH	X	Total Solids 142		Chromium Total			
Acidity to pH 4		Ash		Chromium Hex.			
Alkalinity to pH 4		Total PO_4		Ortho - PO_4			
Nitrite N		MBAS		Copper			
Nitrate N		Phenols		Lead			
Ammonia N	X	COD 4	X	Arsenic ND			
Total Kjel. N		Iron	X	Zinc 0.350			

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O. 10.3			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5									<—		<2	

PART 1-CHEMISTRY COPY

4-832

Chem-25
Sept. 75

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection 12-8 1972
Hour 11:15 A.M. ✓ P.M. ____

Sample No. C19867

Composite Period Grab Interval ____

Collected by E Wisner & C Maack

Municipality City of Newark

Residual Chlorine:
Immediate ____

Plant Troy Chemical Corp.

Developed ____

Stream Peru Creek

Flow Rate ____

Location Ave L.

Temperature ____

Description and Remarks: Sample taken of cooling water being discharged from the Mercury Building

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10.1	10.2	10.3	10.4	10.5	10.6

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. ____ (Confirmed Test); Fecal Coliform MPN/100 ml. ____

Fecal Streptococci:MPN/100 ml. ____ Other ____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)	X	Suspended Solids 6		Grease & Oil	X	Hg 27.0 PPB
	Turbidity (units)		Ash		Cyanide		
	pH	X	Total Solids 142		Chromium Total		
	Acidity to pH 4		Ash		Chromium Hex.		
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		
	Nitrite N		MBAS		Copper		
	Nitrate N		Phenols		Lead		
	Ammonia N	X	COD 4	X	Arsenic ND		
	Total Kjel. N		Iron	X	Zinc 0.350		

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O. 10.3			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD5											2	

PART 3-STREAM POLLUTION COPY (FOR TRANSMISSION)

H-1832

Rev 7

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

TABULATION OF ANALYTICAL DATA FROM PUBLIC WATER SUPPLY

Supply Newark Water Dept. County Essex

Municipality City of Newark Date Collected 10-30-79

Collected by M Checco Memo # 969 Project # W-

BACTERIOLOGICAL ANALYSES: Coliform organisms determined by the membrane filter technique are reported in colonies per 100 ml. Chlorine residuals are reported in ppm.

Sample Number	Point of Collection	Coliform Organisms		Chlorine Residual	
		Fecal	Total	Free	Total
21434	Troy Chemical - 1 Ave L				
21435	Welsh Holme Chemical - 1 Ave L				
21436	Frema Chemical Co. - 1 Ave L				

PHYSICAL – CHEMICAL ANALYSES: Determinations are in ~~ppm~~ ppb except color, odor, turbidity, and pH. Figures in parentheses are from the N. J. Potable Water Standards and/or National Interim Primary Regulations.

Sample Number				Sample Number	21434	21435	21436
Color (10)				Arsenic (0.05)			
Odor (III)				Barium (1.0)			
Turbidity (5)				Cadmium (0.010)			
pH				Chromium^{+6} (0.05)			
Alkalinity to pH 4				Copper (1.0)			
Nitrate as NO_3 (45)				Cyanide (0.20)			
Chloride (250)				Lead (0.05)			
Total Dis. Solids (500)				Mercury (0.002)	<1.0	<1.0	<1.0
ABS/LAS (0.5)				Selenium (0.01)			
Total Hardness (150)				Silver (0.05)			
Total Iron (0.3)				Phenol (0.001)			
Manganese (0.05)				Endrin (0.0002)			
Sodium (50)				Lindane (0.004)			
Sulphate (250)				Methoxychlor (0.1)			
Fluoride (2.0)				Toxaphene (0.005)			
Zinc (5.0)				2.4-D (0.1)			
				Silvex (0.01)			

NOV 5 1979

Remarks

Form DWR-032

File Enforcement

DEPARTMENT OF ENVIRONMENTAL PROTECTION
POLLUTION CONTROL MONITORING, SURVEILLANCE AND ENFORCEMENT

REPORT OF PHONE CALL / VISIT

Troy Chemical

In _____ Out _____

File Newark

Date 10/24/79 Time 11:15

Routing C. Maack CLM
E. Post EDM

Person Contacted Sunny Saroya Phone No. _____

Affiliation Potable Water

Subject of Call / Visit Lab Analyses; Samples from Troy Chemical

Summary of Call / Visit Lab Analyses of sampled municipal water supplied to Troy Chemical Corp, Newark containing 48.0 ppb Mercury were shown to Mr. Saroya.

Mr. Saroya stated that he would call the ~~City of Newark~~ Local Heath Dept. and that resampling of both the industry and points of distribution would take place to confirm the lab results.

The said results were also brought to Ron William's attention.

Action Recommended Await Potable water's lab analyses.

Charles L. Johnson Jr.
Signature

N.J.D.E.P.
D.W.R.
DISCHARGE SURVEILLANCE REPORT

Permit #: NJ 0031453
Date: August 3, 1979

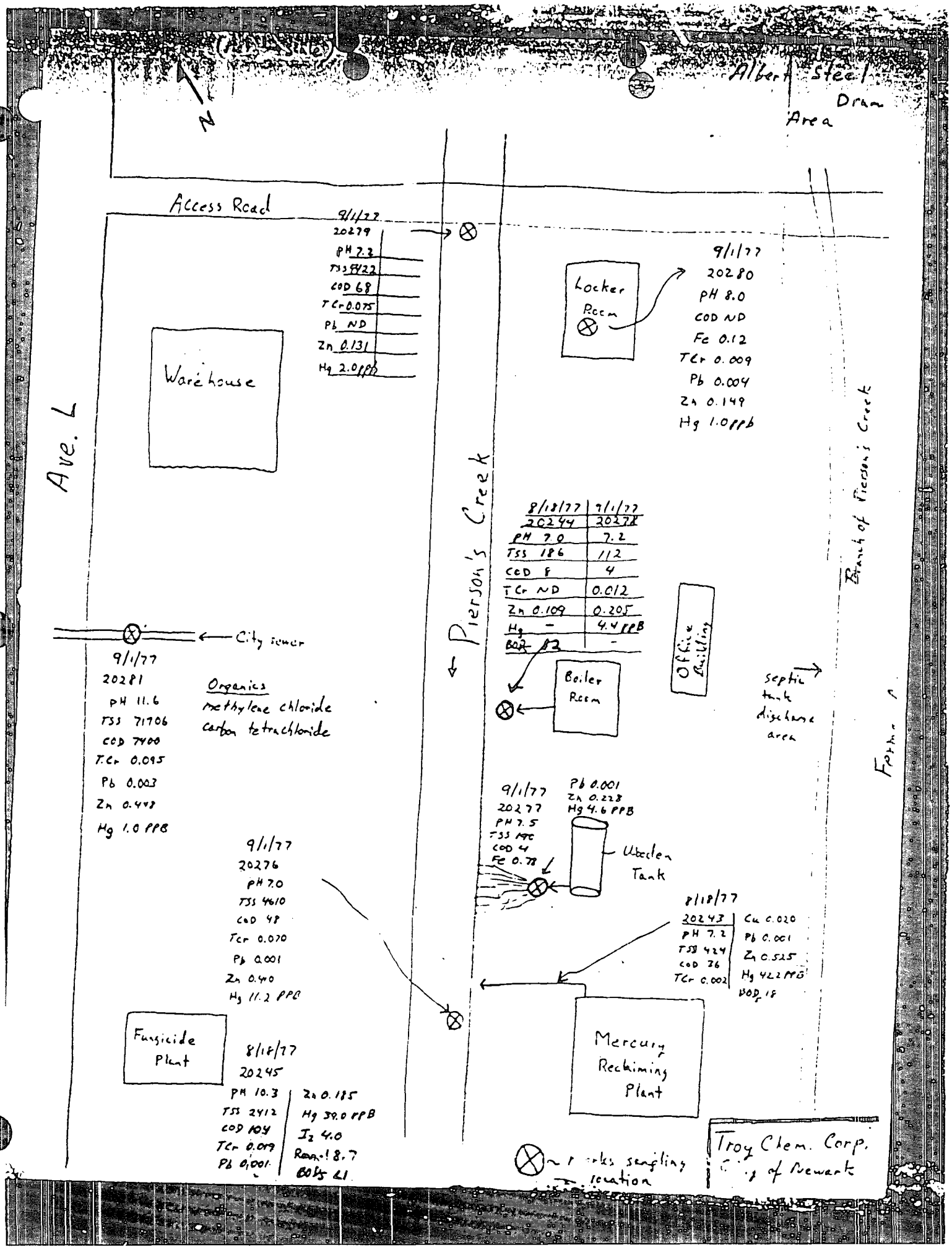
PLANT DIAGRAM AND FLOW SEQUENCE:

SEE PLANT DIAGRAM, FOLLOWING PAGE

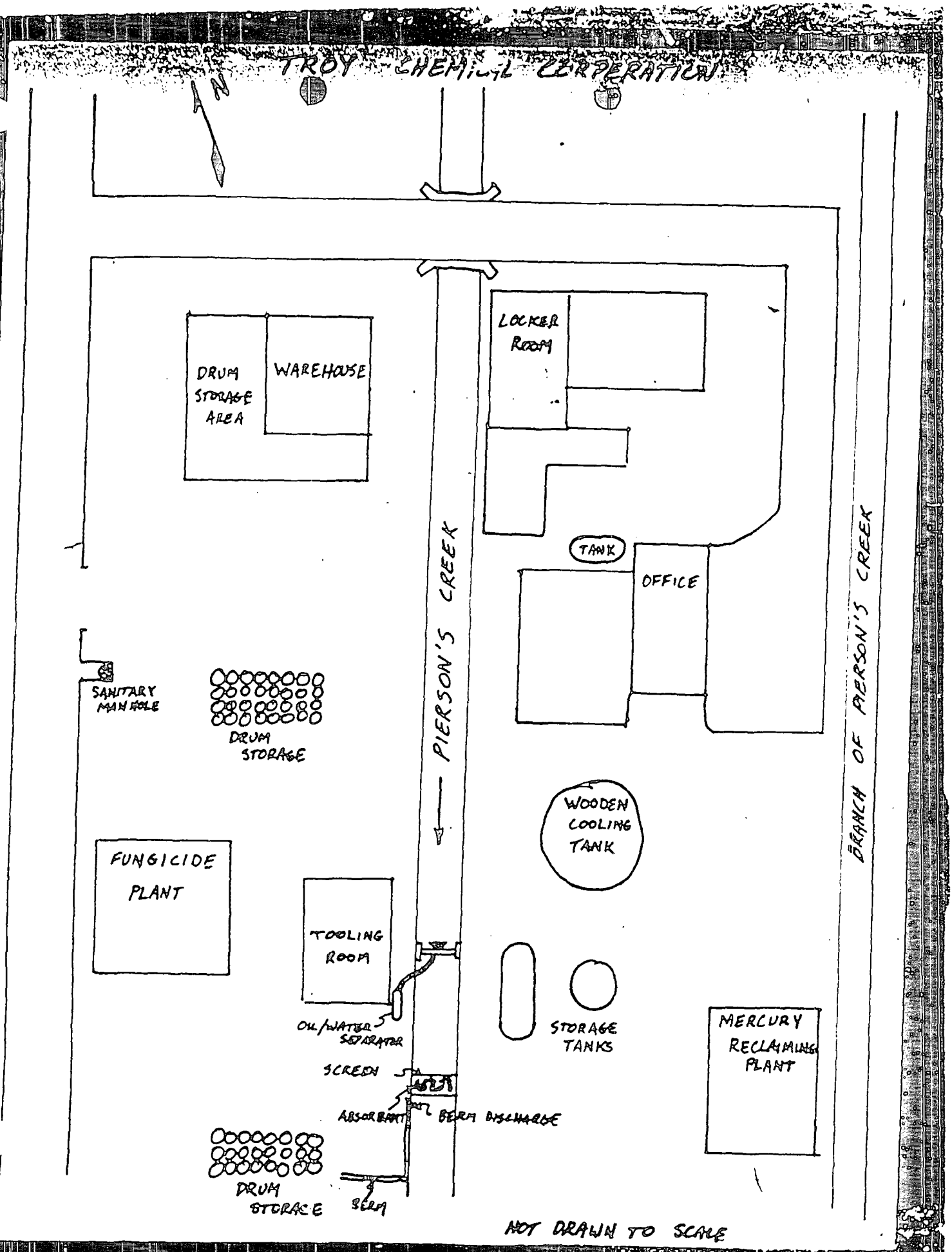
PLANT MANUFACTURES: MERCURY PRODUCTS
METALLIC SOAPS
SPECIALTY CHEMICALS FOR PAINT INDUSTRY
FUNGICIDES

SAMPLING PERIOD: _____ COMPOSITE INTERVAL: _____

DISCHG	PARA	SAMPLE TYPE	PERMIT LIMITS	SAMPLE RESULT	DISCHG	PARA	SAMPLE TYPE	PERMIT LIMITS	SAMPLE RESULT



Albert Steel Drum Area
N
Access Road
9/1/77
20279
pH 7.2
TSS 9422
COD 68
TCr 0.075
Pb ND
Zn 0.131
Hg 2.0 ppb
Locker Room
9/1/77
20280
pH 8.0
COD ND
Fe 0.12
TCr 0.009
Pb 0.004
Zn 0.149
Hg 1.0 ppb
Warehouse
Ave. L
Pierson's Creek
Branch of Pierson's Creek
8/18/77 | 9/1/77
20244 | 20278
pH 7.0 | 7.2
TSS 186 | 112
COD 8 | 4
TCr ND | 0.012
Zn 0.109 | 0.205
Hg – | 4.4 ppB
BOD 82 | –
Office Building
Boiler Room
septic tank discharge area
City sewer
9/1/77
20281
pH 11.6
TSS 71706
COD 7400
TCr 0.095
Pb 0.003
Zn 0.448
Hg 1.0 PPB
Organics
methylene chloride
carbon tetrachloride
9/1/77
20277
pH 7.5
TSS 190
COD 4
Fe 0.78
Pb 0.001
Zn 0.228
Hg 4.6 PPB
Wooden Tank
9/1/77
20276
pH 7.0
TSS 4610
COD 48
Tcr 0.070
Pb 0.001
Zn 0.40
Hg 11.2 PPB
8/18/77
20243
pH 7.2
TSS 424
COD 36
TCr 0.002
Cu 0.020
Pb 0.001
Zn 0.525
Hg 422 PPB
BOD 18
Fungicide Plant
8/18/77
20245
pH 10.3
TSS 2412
COD 104
TCr 0.019
Pb 0.001
Zn 0.185
Hg 39.0 PPB
I2 4.0
Room 8.7
BOD 21
Mercury Reclaiming Plant
~ marks sampling location
Troy Chem. Corp.
City of Newark


TROY CHEMICAL CORPORATION
N
DRUM STORAGE AREA
WAREHOUSE
LOCKER ROOM
TANK
OFFICE
PIERSON'S CREEK
BRANCH OF PIERSON'S CREEK
SANITARY MANHOLE
DRUM STORAGE
WOODEN COOLING TANK
FUNGICIDE PLANT
TOOLING ROOM
OIL/WATER SEPARATOR
SCREEN
ABSORBANT
BERM DISCHARGE
STORAGE TANKS
MERCURY RECLAIMING PLANT
DRUM STORAGE
BERM
NOT DRAWN TO SCALE

RECEIVED
OCT 24 9 09 AM '79
NJ DEPT ENV PROTECTION
DIV WATER RESOURCES
HS&E

Chem-29
Sept. 79

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received _____
By Labs
Lab. No. _____

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

FIELD INFORMATION

Date of Collection AUGUST 2 1979
Hour 12:10 A.M. _____ P.M. X
Composite Period GRAB Interval _____
Collected by C. JOHNSON + G. CUNNINGHAM
Residual Chlorine:
Immediate _____
Developed _____
Flow Rate _____
Temperature _____

Sample No. C35376

Municipality NEWARK
Plant TROY CHEMICAL CORPORATION
Stream PIERSON CREEK
Location 1 AVENUE L
Description and Remarks: DSN 001

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids	X	Grease & Oil 1.6	X	VOLATILE
	Turbidity (units)		Ash		Cyanide		ORGANICS ND<25 ppb
	pH		Total Solids		Chromium Total		
	Acidity to pH 4		Ash		Chromium Hex.	X	MERCURY 11.0 ppb
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		
	Nitrite N		MBAS		Copper		
	Nitrate N		Phenols		Lead		ND = NON-DETECTABLE: I. E. BELOW DETECTABLE LIMITS RE MEMO # 4
	Ammonia N	X	COD 19	X	Arsenic ND		
	Total Kjel. N		Iron		Zinc		OCT 22 1979

REPORT SUBMITTED
DIV. OF LABORATORIES & EPEL

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

PART 1 - CHEMISTRY COPY

H2065

RECEIVED
OCT 24 9 09 AM '79
NJ DEPT ENV PROTECTION
DIV WATER RESOURCES
MS&E

Chem-25
Sept. 75

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

FIELD INFORMATION

Date of Collection AUGUST 2 19 79
Hour 1:30 A.M. _____ P.M. X
Composite Period. GRAB Interval _____
Collected by G. CUNNINGHAM + C. JOHNSON
Residual Chlorine:
Immediate _____
Developed _____
Flow Rate _____
Temperature _____

Sample No. C35377

Municipality NEWARK
Plant TROY CHEMICAL CORPORATION
Stream PIERSON CREEK
Location 1 AVENUE L
Description and Remarks: DSN 006

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10.1	10.2	10.3	10.4	10.5	10.6

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	VOLATILE ORGANIC
	Turbidity (units)		Ash		Cyanide		SCAN ND <25 ppb
	pH		Total Solids		Chromium Total		
	Acidity to pH 4		Ash		Chromium Hex.		
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4	X	MERCURY
	Nitrite N		MBAS		Copper		51.0 ppb
	Nitrate N		Phenols		Lead		
	Ammonia N	X	COD 8		Arsenic		ND = NON-DETECTABLE; I. E. BELOW DETECTABLE LIMITS OF METHOD # 4
	Total Kjel. N		Iron		Zinc		

OCT 22 1979

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

REPORT SUBMITTED
BUR. OF LABORATORIES & EPH.

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

PART 1 - CHEMISTRY COPY

H2069

RECEIVED
OCT 24 9 09 AM '79
NJ DEPT ENV PROTECTION
DIV WATER RESOURCES
MS&E

NEW JERSEY STATE DEPARTMENT OF HEALTH
PROGRAM OR WASTEWATER ANALYSIS

Chem-25
Sept. 79

Time & Date Received _____
By Labs
Lab. No. _____

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

FIELD INFORMATION

Date of Collection AUGUST 2 1979
Hour 1:30 A.M. _____ P.M. X
Composite Period GRAB Interval _____
Collected by G. CUNNINGHAM + C. JOHNSON
Residual Chlorine:
Immediate _____
Developed _____
Flow Rate _____
Temperature _____

Sample No. C 35384
Municipality NEWARK
Plant TROY CHEMICAL CORPORATION
Stream PIERSON CREEK
Location 1 AVENUE L
Description and Remarks: DSN 005

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	MERCURY
	Turbidity (units)		Ash		Cyanide		45.0 ppb
	pH		Total Solids		Chromium Total		
	Acidity to pH 4		Ash		Chromium Hex.		
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		
	Nitrite N		MBAS		Copper		
	Nitrate N		Phenols		Lead		
	Ammonia N	X	COD 12		Arsenic		
	Total Kjel. N		Iron		Zinc		

NJ = NON-DETECTABLE; I. E. BELOW DETECTABLE LIMITS RE MEMO # 4
OCT 22 1979
REPORT SUBMITTED
DIV. OF LABORATORIES & EPIDL.

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

PART 1 - CHEMISTRY COPY

H2069

RECEIVED
OCT 24 9 09 AM '79
NJ DEPT ENV PROTECTION
DIV WATER RESOURCES
MS&E

Chem-29
Sept. 79

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection AUGUST 2 1979
Hour 3:15 A.M. _____ P.M. X
Sample No. C35385
Composite Period GRAB Interval _____
Collected by GREGORY CUNNINGHAM + C. JOHNSON
Residual Chlorine: Immediate _____
Developed _____
Municipality NEWARK
Plant TROY CHEMICAL CORPORATION
Stream PIERSON CREEK
Flow Rate _____
Location 1 AVENUE L
Temperature _____
Description and Remarks: UPSTREAM OF TROY CHEMICAL
5 FEET UPSTREAM OF BRIDGE

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci: MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids	X	Grease & Oil 172.3	X	VOLATILE ORGANIC SCAN / ppb
	Turbidity (units)		Ash		Cyanide		
	pH		Total Solids	X	Chromium Total 0.156		
	Acidity to pH 4		Ash		Chromium Hex.	X	MERCURY 43.0 ppb
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		Benzene 175
	Nitrite N		MBAS		Copper		tetra choro ethylene 360
	Nitrate N		Phenols		Lead		1,2 dichloro ethane 600
	Ammonia N		COD	X	Arsenic 0.016		toluene 962
	Total Kjel. N		Iron		Zinc		m,p xylene 100
							O-xylene 32

NO SIGN DETECTABLE; I. E. BELOW DETECTABLE LIMITS RE MEMO # 4

OCT 22 1979

REPORT SUBMITTED
DIV. OF LABORATORIES & EPID.

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

PART 1 CHEMISTRY COPY

H2069

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Chem-25
Sept. 75

Nov 9 3 07 PM '79

NJ DEPT ENV PROTECTION
DIV WATER RESOURCES
MS&E

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Test & Data Received By Labs _____

Lab. No. _____

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

FIELD INFORMATION

Date of Collection AUGUST 2 1979

Hour 3:45 A.M. ____ P.M. X

Sample No. C 35386

Composite Period GRAB Interval _____

Collected by GREGORY CUNNINGHAM + C. JOHNSON

Residual Chlorine:
Immediate _____
Developed _____

Municipality NEWARK

Plant TROY CHEMICAL CORPORATION

Stream PIERSON CREEK

Flow Rate _____

Location 1 AVENUE L

Temperature _____

Description and Remarks: DOWNSTREAM OF TROY CHEMICAL IMMEDIATELY OUT SIDE FENCE LINE

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____

Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids	X	Grease & Oil ND	X	VOLATILE ORGANIC SCAN ppb
	Turbidity (units)		Ash		Cyanide		
	pH		Total Solids	X	Chromium Total 0.087		Benzene 185
	Acidity to pH 4		Ash		Chromium Hex.		tetrachloro ethylene 95
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4	X	PESTICIDE 1.6 ppb
	Nitrite N		MBAS		Copper		[illegible]
	Nitrate N	X	Phenols 0.102		Lead		
	Ammonia N		COD	X	Arsenic 0.034	X	MERCURY 460 ppb
	Total Kjel. N		Iron		Zinc		

ND = NON DETECTABLE: I. E. BELOW DETECTABLE LIMITS RE MEMO # 4

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes				
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

NOV 5 1979
REPORT SUBMITTED
DIV. OF LABORATORIES & EPHD

PART 1 - CHEMISTRY COPY

H2069

RECEIVED
Nov 27 9 25 AM '79
NJ DEPT ENV PROTECTION
DIV WATER RESOURCES
HS&E

Chem-29
Sept. 79

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received _____
By Labs
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection AUGUST 2 1979
Hour 3:25 A.M. _____ P.M. _____

Sample No. C353887

Composite Period GRAB Interval _____
Collected by G. CUNNINGHAM + C JOHNSON
Residual Chlorine:
Immediate _____
Developed _____

Municipality NEWARK
Plant TROY CHEMICAL CORPORATION
Stream PIERSON CREEK
Location 1 AVENUE L

Flow Rate _____
Temperature _____

Description and Remarks: UPSTREAM OF TROY CHEMICAL (SEDIMENT SAMPLE) 10 FEET UPSTREAM OF BRIDGE

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____

Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	VOLATILE ORGANIC
	Turbidity (units)		Ash		Cyanide		SCAN <500 ppb
	pH		Total Solids	X	Chromium Total 15.43		
	Acidity to pH 4		Ash		Chromium Hex.		
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4	X	MERCURY 4.8 PPM
	Nitrite N		MBAS		Copper		
	Nitrate N		Phenols		Lead		
	Ammonia N		COD	X	Arsenic 11.4		
	Total Kjel. N		Iron		Zinc		

□ = NON DETECTABLE I.E. BELOW DETECTABLE LIMITS RE MEMO # 4

NOV 19 1979

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

REPORT SUBMITTED
DIV. OF LABORATORIES & EPID.

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

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H2069

Chem-25
Sept. 76

RECEIVED
DEC 7 2 16 PM '79
DIVISION OF ENVIRONMENTAL RESOURCES
AS&E

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection AUGUST 2 19 79
Hour 3:49 A.M. _____ P.M. X
Composite Period GRAB Interval _____
Collected by G. CUNNINGHAM + C. JOHNSON
Residual Chlorine:
Immediate _____
Developed _____
Flow Rate _____
Temperature _____

Sample No. C35388

Municipality NEWARK
Plant TROY CHEMICAL
Stream PIERSON CREEK
Location 1 AVENUE L

Description and Remarks: DOWNSTREAM SEDIMENT SAMPLE. IMMEDIATELY INSIDE FENCE LINE

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	VOLATILE ORGANIC
	Turbidity (units)		Ash		Cyanide		SCAN
	pH		Total Solids	X	Chromium Total 138.34		
	Acidity to pH 4		Ash		Chromium Hex.		
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4	X	MERCURY 4.3 PPM
	Nitrite N		MBAS		Copper		
	Nitrate N		Phenols		Lead		chloroform > 50,000 ppb
	Ammonia N		COD	X	Arsenic 46.		1,2 dichloroethane 7,815 ppb
	Total Kjel. N		Iron		Zinc		[illegible] 12,500 ppb

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

NOV 30 1979

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H2069

Chem-28
Sept. 75

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

JAN 7 1 55 PM '80

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

NJ DEPT. ENV. PROTECTION
DIV WATER RESOURCES
MS&E

Date of Collection AUGUST 2 1979
Hour 2:45 A.M. _____ P.M. X

Sample No. C 35383

Composite Period GRAB Interval _____

Collected by GREGORY CUNNINGHAM + C. JOHNSON

Municipality NEWARK

Residual Chlorine:
Immediate _____
Developed _____

Plant TROY CHEMICAL CORPORATION

Stream PIERSON CREEK

Flow Rate _____

Location 2 AVENUE L

Temperature _____

Description and Remarks: SANITARY AND CHEMICAL SEWER DISCHARGE

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____

Fecal Streptococci:MPN/100 ml. _____ Other _____

Benzene 1350
tetrachloro ethylene 1368
1,2 dichloro ethene 19250

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids	X	Grease & Oil 367.0	X	VOLATILE ORGANIC
	Turbidity (units)		Ash		Cyanide		SCAN/ppb
	pH (FIELD) >12		Total Solids	X	Chromium Total 0.229		
	Acidity to pH 4		Ash		Chromium Hex.	X	MERCURY Interference
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		
	Nitrite N		MBAS		Copper		
	Nitrate N		Phenols		Lead	X	PESTICIDE LAB accident
	Ammonia N		COD	X	Arsenic 0.020		
	Total Kjel. N		Iron		Zinc		

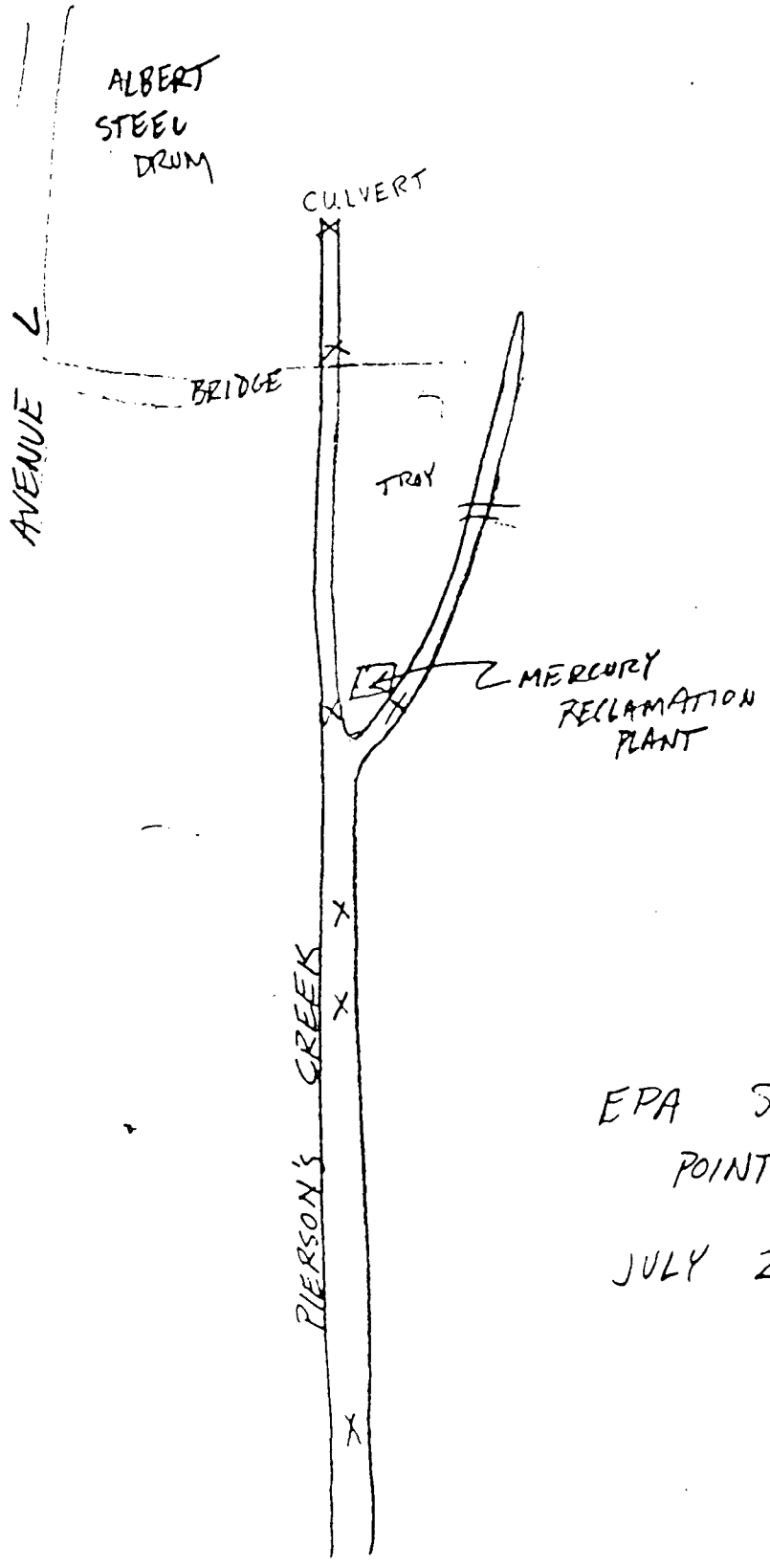
ND = NON-DETECTABLE; I.E. BELOW DETECTABLE LIMITS REPORTED = 4

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		JAN 1980		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5										REPORT SUBMITTED DIV. OF LABORATORIES & CTS		

H1916

PART 1-CHEMISTRY COPY



EPA SAMPLING
POINTS

JULY 27, 1979

NOT DRAWN TO SCALE

File

COMPLETED ANALYSIS REPORT — REPORT DATE: 79/08/14

PROJECT NO:1360 — PROJECT NAME:TROY CHEMICAL CO. — PROJECT DATE:79/07/27

STATION NO	DATE FROM TO	TIME OF DAY	DEPTH	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE & REMARK		SD OR RSD	QC VALID
TROY02	79/07/12	1500	0.5	54662	34215	ACRYLONITRILE	UG/L	TOTAL	1.00000	U	20.000	
					34210	ACROLEIN	UG/L	TOTAL	1.00000	U	20.000	
					34268	BIS(CHLOROMETHYL)-ET.	UG/L	TOTAL	1.00000	U	20.000	
					34030	BENZENE	UG/L	TOTAL	63.0000		20.000	
					32104	BROMOFORM	UG/L	TOTAL	1.00000	U	20.000	
					32102	CARBON TETRACHLORIDE	UG/L	TOTAL	1.00000	U	20.000	
					32106	CHLOROFORM	UG/L	TOTAL	37.0000		20.000	
					34301	CHLOROBENZENE	UG/L	TOTAL	1.00000		20.000	
					32105	CHLORODIBROMOMETHANE	UG/L	TOTAL	1.00000	U	20.000	
					34311	CHLOROETHANE	UG/L	TOTAL	1.00000	U	20.000	
					32101	DICHLOROBROMOMETHANE	UG/L	TOTAL	4.00000		20.000	
					34332	DICHLORODIFLUOROMETHANE	UG/L	TOTAL	1.00000	U	20.000	
					34371	ETHYLBENZENE	UG/L	TOTAL	7.00000		20.000	
					34413	METHYL BROMIDE	UG/L	TOTAL	1.00000	U	20.000	
					34418	METHYL CHLORIDE	UG/L	TOTAL	1.00000	U	20.000	
					34423	METHYLENE CHLORIDE	UG/L	TOTAL	4.20000		20.000	
					39180	TRICHLOROETHYLENE	UG/L	TOTAL	69.0000		20.000	
					34488	TRICHLOROFLUOROMETHANE	UG/L	TOTAL	1.00000	U	20.000	
					34010	TOLUENE	UG/L	TOTAL	22.0000		20.000	
					39175	VINYL CHLORIDE	UG/L	TOTAL	23.0000		20.000	
					34496	1,1-DICHLOROETHANE	UG/L	TOTAL	3.20000		20.000	
					34501	1,1-DICHLOROETHYLENE	UG/L	TOTAL	1.00000	U	20.000	
					34506	1,1,1-TRICHLOROETHANE	UG/L	TOTAL	23.0000		20.000	
					34511	1,1,2-TRICHLOROETHANE	UG/L	TOTAL	1.00000	U	20.000	
					32103	1,2-DICHLOROETHANE	UG/L	TOTAL	2.00000		20.000	
					34541	1,2-DICHLOROPROPANE	UG/L	TOTAL	1.00000	U	20.000	
					34546	1,2-TRANS-DICHLOROETHYLENE	UG/L	TOTAL	91.0000		20.000	
					34561	1,3-DICHLOROPROPYLENE	UG/L	TOTAL	1.00000	U	20.000	
					34576	2-CHLOROETHYL VINYL ET.	UG/L	TOTAL	1.00000	U	20.000	
					34516	1,1,2,2-TETRACHLOROETHANE	UG/L	TOTAL	2.00000		20.000	
					34475	TETRACHLOROETHYLENE	UG/L	TOTAL	27.0000		20.000	
TROY01	79/07/12	0900	0.5	55616	01077	SILVER	UG/L	TOTAL	24.0000		20.000	
					01002	ARSENIC	UG/L	TOTAL	2.00000	N	61.700	
					01012	BERYLLIUM	UG/L	TOTAL	1.00000	N	20.000	
					01027	CADMIUM	UG/L	TOTAL	3.00000	U	21.400	
					01034	CHROMIUM	UG/L	TOTAL	31.0000		14.200	
					01042	COPPER	UG/L	TOTAL	57.0000		13.500	
					71900	MERCURY	UG/L	TOTAL	0.200000	N	23.500	
					71921	MERCURY	S MG/KG	SEDIMENT	140.000		20.000	
					01067	NICKEL	UG/L	TOTAL	9.00000	N	13.000	
					01051	LEAD	UG/L	TOTAL	20.0000	N	29.100	
					01097	ANTIMONY	UG/L	TOTAL	20.0000	N	20.000	
					01147	SELENIUM	UG/L	TOTAL	10.0000	N	20.000	
					01059	THALLIUM	UG/L	TOTAL	10.0000	N	20.000	

Grab sample of Crison Creek for POA.

Upstream past below Alves outlet

Frank T. Bragaglia

COMPLETED ANALYSIS REPORT

REPORT DATE: 79/08/14

PROJECT NO:360

PROJECT NAME:TROY CHEMICAL CO.

PROJECT DATE:79/07/27

STATION NO	DATE FROM TO	TIME OF DAY	DEPTH	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE	A	REMARK	SD OR RSD	QC VALID
					00680	TOTAL ORGANIC CARBON	MG/L	TOTAL	4.50000			0.409	
					01092	ZINC	UG/L	TOTAL	100.000		U	9.500	
TROY02	79/07/12	0950	0	55617	34215	ACRYLONITRILE	UG/L	TOTAL	1.00000		U	20.000	
					34210	ACROLEIN	UG/L	TOTAL	1.00000		U	20.000	
					01077	SILVER	UG/L	TOTAL	15.0000			20.000	
					01002	ARSENIC	UG/L	TOTAL	2.00000			61.700	
					34268	BIS(CHLOROETHYL) ET.	UG/L	TOTAL	1.00000		U	20.000	
					01012	BERYLLIUM	UG/L	TOTAL	1.00000			20.000	
					34030	BENZENE	UG/L	TOTAL	1.10000			20.000	
					32104	BROMOFORM	UG/L	TOTAL	1.00000		U	20.000	
					32102	CARBON TETRACHLORIDE	UG/L	TOTAL	1.00000		U	20.000	
					01027	CADMIUM	UG/L	TOTAL	3.00000			21.400	
					32106	CHLOROFORM	UG/L	TOTAL	33.0000			20.000	
					34301	CHLOROBENZENE	UG/L	TOTAL	0.000000			20.000	
					32105	CHLORODIBROMOMETHANE	UG/L	TOTAL	1.00000		U	20.000	
					34311	CHLOROETHANE	UG/L	TOTAL	1.00000		U	20.000	
					01034	CHROMIUM	UG/L	TOTAL	25.0000			14.200	
					01042	COPPER	UG/L	TOTAL	76.0000			13.500	
					32101	DICHLOROBROMOMETHANE	UG/L	TOTAL	4.00000			20.000	
					34332	DICHLORODIFLUOROMETHANE	UG/L	TOTAL	1.00000		U	20.000	
					34371	ETHYLBENZENE	UG/L	TOTAL	0.000000			20.000	
					71900	MERCURY	UG/L	TOTAL	55.0000			23.900	
					71921	MERCURY	UG/KG	SEDIMENT	191.000			20.000	
					34413	METHYL BROMIDE	UG/L	TOTAL	1.00000		U	20.000	
					34418	METHYL CHLORIDE	UG/L	TOTAL	1.00000		U	20.000	
					34423	METHYLENE CHLORIDE	UG/L	TOTAL	0.20000			20.000	
					01067	NICKEL	UG/L	TOTAL	9.00000			13.000	
					01051	LEAD	UG/L	TOTAL	20.0000			29.100	
					01097	ANTIMONY	UG/L	TOTAL	20.0000			20.000	
					01147	SELENIUM	UG/L	TOTAL	10.0000			20.000	
					39180	TRICHLOROETHYLENE	UG/L	TOTAL	7.0000			20.000	
					34488	TRICHLOROFLUOROMETHANE	UG/L	TOTAL	1.00000		U	20.000	
					01059	THALLIUM	UG/L	TOTAL	10.0000			20.000	
					00680	TOTAL ORGANIC CARBON	MG/L	TOTAL	4.00000			0.409	
					34010	TOLUENE	UG/L	TOTAL	1.20000			20.000	
					39175	VINYL CHLORIDE	UG/L	TOTAL	11.0000			20.000	
					01092	ZINC	UG/L	TOTAL	100.000			9.500	
					34496	1,1-DICHLOROETHANE	UG/L	TOTAL	0.700000			20.000	
					34501	1,1-DICHLOROETHYLENE	UG/L	TOTAL	1.00000		U	20.000	
					34506	1,1,1-TRICHLOROETHANE	UG/L	TOTAL	6.00000			20.000	
					34511	1,1,2-TRICHLOROETHANE	UG/L	TOTAL	1.00000		U	20.000	
					32103	1-2-DICHLOROETHANE	UG/L	TOTAL	2.20000			20.000	
					34541	1-2-DICHLOROPROPANE	UG/L	TOTAL	1.00000		U	20.000	
					34546	1,2-TRANS DICHLOROETHYLENE	UG/L	TOTAL	34.0000			20.000	

Upstream just before bridge

COMPLETED ANALYSIS REPORT

REPORT DATE: 79/08/14

PROJECT NO: 360

PROJECT NAME: TROY CHEMICAL CO.

PROJECT DATE: 79/07/27

STATION NO	DATE FROM TO	TIME OF DAY	DEPTH	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE	REMARK	SD OR MSD	QC VALID
					34561	1,3-DICHLOROPROPYLENE	UG/L	TOTAL	1.00000	U	20.000	
					34576	2-CHLOROETHYL VINYL ET.	UG/L	TOTAL	1.00000	U	20.000	
					34516	1,1,2,2-TETRACHLOROETHANE	UG/L	TOTAL	1.00000	U	20.000	
					34475	TETRACHLOROETHYLENE	UG/L	TOTAL	44.0000		20.000	
TROY03	79/07/12	1030	0.5	55618	34215	ACRYLONITRILE	UG/L	TOTAL	1.00000	U	20.000	
					34210	ACROLEIN	UG/L	TOTAL	1.00000	U	20.000	
					01077	SILVER	UG/L	TOTAL	4.00000	U	20.000	
					01002	ARSENIC	UG/L	TOTAL	34.0000		-1.700	
					34268	BIS(CHLOROMETHYL) ET.	UG/L	TOTAL	1.00000	U	20.000	
					01012	BERYLLIUM	UG/L	TOTAL	1.00000	-	20.000	
					34030	BENZENE	UG/L	TOTAL	55.0000		20.000	
					32104	BROMOFORM	UG/L	TOTAL	1.00000	U	20.000	
					32102	CARBON TETRACHLORIDE	UG/L	TOTAL	1.00000	U	20.000	
					01027	CADMIUM	UG/L	TOTAL	2.00000	U	21.400	
					32106	CHLOROFORM	UG/L	TOTAL	36.0000		20.000	
					34301	CHLOROBENZENE	UG/L	TOTAL	2.10000		20.000	
					32105	CHLORODIBROMOMETHANE	UG/L	TOTAL	1.00000	U	20.000	
					34311	CHLOROETHANE	UG/L	TOTAL	1.00000	U	20.000	
					01034	CHROMIUM	UG/L	TOTAL	22.0000		14.200	
					01042	COPPER	UG/L	TOTAL	45.0000		13.500	
					32101	DICHLOROBROMOMETHANE	UG/L	TOTAL	4.50000		20.000	
					34332	DICHLORODIFLUOROMETHANE	UG/L	TOTAL	1.00000	U	20.000	
					34371	ETHYLBENZENE	UG/L	TOTAL	11.0000		20.000	
					71900	MERCURY	UG/L	TOTAL	44.0000		23.400	
					71921	MERCURY	MG/KG	SEDIMENT	3120.00		20.000	
					34413	METHYL BROMIDE	UG/L	TOTAL	1.00000	U	20.000	
					34418	METHYL CHLORIDE	UG/L	TOTAL	1.00000	U	20.000	
					34423	METHYLENE CHLORIDE	UG/L	TOTAL	4.80000		20.000	
					01067	NICKEL	UG/L	TOTAL	5.00000	A	13.000	
					01051	LEAD	UG/L	TOTAL	20.0000	A	29.100	
					01097	ANTIMONY	UG/L	TOTAL	20.0000	A	20.000	
					01147	SELENIUM	UG/L	TOTAL	10.0000	-	20.000	
					39180	TRICHLOROETHYLENE	UG/L	TOTAL	58.0000		20.000	
					34488	TRICHLOROFLUOROMETHANE	UG/L	TOTAL	1.00000	U	20.000	
					01059	THALLIUM	UG/L	TOTAL	10.0000	A	20.000	
					00680	TOTAL ORGANIC CARBON	MG/L	TOTAL	7.60000		0.809	
					34010	TOLUENE	UG/L	TOTAL	24.0000		20.000	
					39175	VINYL CHLORIDE	UG/L	TOTAL	20.0000		20.000	
					01092	ZINC	UG/L	TOTAL	50.0000	U	9.500	
					34496	1,1-DICHLOROETHANE	UG/L	TOTAL	5.10000		20.000	
					34501	1,1-DICHLOROETHYLENE	UG/L	TOTAL	1.00000	U	20.000	
					34506	1,1,1-TRICHLOROETHANE	UG/L	TOTAL	31.0000		20.000	
					34511	1,1,2-TRICHLOROETHANE	UG/L	TOTAL	1.00000	U	20.000	
					32103	1,2-DICHLOROETHANE	UG/L	TOTAL	2.50000		20.000	

Downstream — 100 yds. so. of Plant Property

COMPLETED ANALYSIS REPORT

REPORT DATE: 79/08/14

PROJECT NO:360

PROJECT NAME:TROY CHEMICAL CO.

PROJECT DATE:79/07/27

STATION NO.	DATE FROM TO	TIME OF DAY	DEPTH	LABNO	PARNO	PARAMETER NAME	UNITS	CHEMISTRY	VALUE	REMARK	SD OR RSD	QC VALID
					34541	1,2-DICHLOROPROPANE	UG/L	TOTAL	1.00000	U	20.000	
					34546	1,2-TRANS DICHLOROETHYLENE	UG/L	TOTAL	90.0000		20.000	
					34561	1,3-DICHLOROPROPYLENE	UG/L	TOTAL	1.00000	U	20.000	
					34576	2-CHLOROETHYL VINYL ET.	UG/L	TOTAL	1.00000	U	20.000	
					34516	1,1,2,2-TETRACHLOROETHANE	UG/L	TOTAL	2.90000		20.000	
					34475	TETRACHLOROETHYLENE	UG/L	TOTAL	39.0000		20.000	
TROY04	79/07/12	1045	0.5	55619	34215	ACRYLONITRILE	UG/L	TOTAL	1.00000	U	20.000	
					34210	ACROLEIN	UG/L	TOTAL	1.00000	U	20.000	
					01077	SILVER	UG/L	TOTAL	3.00000	U	20.000	
					01002	ARSENIC	UG/L	TOTAL	8.00000	U	61.700	
					34260	BIS(CHLOROMETHYL) ET.	UG/L	TOTAL	1.00000	U	20.000	
					01012	BERYLLIUM	UG/L	TOTAL	1.00000	U	20.000	
					34030	BENZENE	UG/L	TOTAL	52.0000		20.000	
					32104	BROMOFORM	UG/L	TOTAL	1.00000	U	20.000	
					32102	CARBON TETRACHLORIDE	UG/L	TOTAL	1.00000	U	20.000	
					01027	CADMIUM	UG/L	TOTAL	3.00000	U	21.400	
					32106	CHLOROFORM	UG/L	TOTAL	32.0000		20.000	
					34301	CHLOROBENZENE	UG/L	TOTAL	1.10000		20.000	
					32105	CHLORODIBROMOMETHANE	UG/L	TOTAL	1.00000	U	20.000	
					34311	CHLOROETHANE	UG/L	TOTAL	1.00000	U	20.000	
					01034	CHROMIUM	UG/L	TOTAL	10.0000	U	14.200	
					01042	COPPER	UG/L	TOTAL	25.0000		13.500	
					32101	DICHLOROBROMOMETHANE	UG/L	TOTAL	3.90000		20.000	
					34332	DICHLORODIFLUOROMETHANE	UG/L	TOTAL	1.00000	U	20.000	
					34371	ETHYLBENZENE	UG/L	TOTAL	5.30000		20.000	
					71900	MERCURY	UG/L	TOTAL	71.0000		23.900	
					71921	MERCURY	S MG/KG	SEDIMENT	244.000		20.000	
					34413	METHYL BROMIDE	UG/L	TOTAL	1.00000	U	20.000	
					34418	METHYL CHLORIDE	UG/L	TOTAL	1.00000		20.000	
					34423	METHYLENE CHLORIDE	UG/L	TOTAL	7.40000		20.000	
					01067	NICKEL	UG/L	TOTAL	9.00000		13.000	
					01051	LEAD	UG/L	TOTAL	20.0000		29.100	
					01097	ANTIMONY	UG/L	TOTAL	20.0000	U	20.000	
					01147	SELENIUM	UG/L	TOTAL	10.0000	U	20.000	
					39100	TRICHLOROETHYLENE	UG/L	TOTAL	32.0000		20.000	
					34488	TRICHLOROFLUOROMETHANE	UG/L	TOTAL	1.00000	U	20.000	
					01059	THALLIUM	UG/L	TOTAL	10.0000		20.000	
					00680	TOTAL ORGANIC CARBON	MG/L	TOTAL	5.00000		0.809	
					34010	TOLUENE	UG/L	TOTAL	11.0000		20.000	
					39175	VINYL CHLORIDE	UG/L	TOTAL	17.0000		20.000	
					01092	ZINC	UG/L	TOTAL	50.0000	U	9.500	
					34496	1,1-DICHLOROETHANE	UG/L	TOTAL	3.30000		20.000	
					34501	1,1-DICHLOROETHYLENE	UG/L	TOTAL	1.00000	U	20.000	
					34506	1,1,1-TRICHLOROETHANE	UG/L	TOTAL	19.0000		20.000	

Downstream -
250 yds so. of
Plant property

COMPLETED ANALYSIS REPORT

REPORT DATE: 79/08/10

PROJECT NO:1369

PROJECT NAME:TROY CHEMICAL CO.

PROJECT DATE:79/07/27

STATION NO	DATE FROM TO	TIME OF DAY	DEPTH	LABNO	PARNO	PARAMETER NAME		UNITS	CHEMISTRY	VALUE & REMARK		SD OR RSD	QC VALID
					34511	1,1,2-TRICHLOROETHANE		UG/L	TOTAL	1.00000	U	20.000	
					32103	1,2-DICHLOROETHANE		UG/L	TOTAL	1.30000		20.000	
					34541	1,2-DICHLOROPROPANE		UG/L	TOTAL	1.00000	U	20.000	
					34546	1,2-TRANS DICHLOROETHYLENE		UG/L	TOTAL	40.0000		20.000	
					34551	1,3-DICHLOROPROPYLENE		UG/L	TOTAL	1.00000	U	20.000	
					34576	2-CHLOROETHYL VINYL ET.		UG/L	TOTAL	1.00000	U	20.000	
					34516	1,1,2,2-TETRACHLOROETHANE		UG/L	TOTAL	1.00000		20.000	
					34475	TETRACHLOROETHYLENE		UG/L	TOTAL	21.0000		20.000	
TRCY05	79/07/12	1110	0.5	55620	01077	SILVER		UG/L	TOTAL	13.0000		20.000	
					01002	ARSENIC		UG/L	TOTAL	2.00000	*	51.700	
					01012	BERYLLIUM		UG/L	TOTAL	1.00000	U	20.000	
					01027	CADMIUM		UG/L	TOTAL	2.00000	U	21.400	
					01034	CHROMIUM		UG/L	TOTAL	24.0000		14.200	
					01042	COPPER		UG/L	TOTAL	63.0000		13.500	
					71900	MERCURY		UG/L	TOTAL	26.0000		23.000	
					71921	MERCURY	S	MG/KG	SEDIMENT	11600.0		20.000	
					01067	NICKEL		UG/L	TOTAL	4.00000	*	13.000	
					01051	LEAD		UG/L	TOTAL	20.0000	*	25.100	
					01097	ANTIMONY		UG/L	TOTAL	20.0000	*	20.000	
					01147	SELENIUM		UG/L	TOTAL	10.0000	*	20.000	
					01059	THALLIUM		UG/L	TOTAL	10.0000	*	20.000	
					00680	TOTAL ORGANIC CARBON		MG/L	TOTAL	5.40000		0.409	
					01092	ZINC		UG/L	TOTAL	100.000	U	9.500	
TRCY06	79/07/12	1125	0.5	55621	01077	SILVER		UG/L	TOTAL	14.0000		20.000	
					01002	ARSENIC		UG/L	TOTAL	2.00000	*	51.700	
					01012	BERYLLIUM		UG/L	TOTAL	2.00000	U	20.000	
					01027	CADMIUM		UG/L	TOTAL	4.00000	U	21.400	
					01034	CHROMIUM		UG/L	TOTAL	23.0000		14.200	
					01042	COPPER		UG/L	TOTAL	70.0000		13.500	
					71900	MERCURY		UG/L	TOTAL	21.0000		23.000	
					71921	MERCURY	S	MG/KG	SEDIMENT	22400.0		20.000	
					01067	NICKEL		UG/L	TOTAL	4.00000	*	13.000	
					01051	LEAD		UG/L	TOTAL	20.0000	*	25.100	
					01097	ANTIMONY		UG/L	TOTAL	20.0000	*	20.000	
					01147	SELENIUM		UG/L	TOTAL	10.0000	*	20.000	
					01059	THALLIUM		UG/L	TOTAL	20.0000	*	20.000	
					00680	TOTAL ORGANIC CARBON		MG/L	TOTAL	3.40000		0.409	
					01092	ZINC		UG/L	TOTAL	100.000	U	9.500	
TRCY07	79/07/12	1135	0.5	55622	01077	SILVER		UG/L	TOTAL	3.00000	*	20.000	
					01002	ARSENIC		UG/L	TOTAL	1300.00		51.700	
					01012	BERYLLIUM		UG/L	TOTAL	1.00000	U	20.000	
					01027	CADMIUM		UG/L	TOTAL	6.00000	U	21.400	
					01034	CHROMIUM		UG/L	TOTAL	20.0000	U	14.200	
					01042	COPPER		UG/L	TOTAL	60.0000		13.500	

50' from southern end of plant property in Pearson Creek

Sample on plant property upstream from TRCY05 just so of old Hg discharge point

East ditch 75' north of southern boundary of plant property

COMPLETED ANALYSIS REPORT

PROJECT #01360

PROJECT NAMETROY CHEMICAL CO.

PROJECT DATE79/07/27

STATION NO	DATE FROM TO	TIME OF DAY	DEPTH	LABNO	PARNO.	PARAMETER NAME		UNITS	CHEMISTRY	VALUE & REMARK		SD CH MSD	QC VALID
					71900	MERCURY		UG/L	TOTAL	886.000		23.000	
					71921	MERCURY	S	MG/KG	SEDIMENT	81200.0		20.000	
					01067	NICKEL		UG/L	TOTAL	40.0000		13.000	
					01051	LEAD		UG/L	TOTAL	170.000		29.100	
					01097	ANTIMONY		UG/L	TOTAL	20.0000	K	20.000	
					01147	SELENIUM		UG/L	TOTAL	10.0000	K	20.000	
					01059	THALLIUM		UG/L	TOTAL	20.0000	K	20.000	
					00680	TOTAL ORGANIC CARBON		MG/L	TOTAL	78.000		0.909	
					01092	ZINC		UG/L	TOTAL	270.000		9.600	

REGION II - Edison, New Jersey

September 7, 1979

Inspection and Sampling Survey of Troy Chemical Co. Plant in Newark, New Jersey for mercury pollution.

John Ciancia, Chief
Source Monitoring Section

Paul Jacobi, Enforcement Division
Water Enforcement

THRU: R. D. Spear, Chief
Surveillance and Monitoring Branch

THRU: Barbara Metzger, Director
Surveillance and Analysis Division

On July 12, 1979, an unannounced inspection and sampling survey for mercury discharges was conducted at the Troy Chemical Company Plant in Newark, New Jersey. This survey was requested by the Enforcement Division based upon finding an increase in mercury level in Pearson's Creek downstream of the Troy plant compared to an upstream sampling location while investigating mercury contamination on adjacent property owned by the Newark Housing Authority.

The following people participated in the survey:

John Ciancia, Chief Source Monitoring, Region II, EPA
David Cesareo, Environmental Engineer, Region II, EPA
Mark Maulenbeek, Physical Scientist, Region II, EPA
Randy Braun, Physical Scientist, Region II, EPA
John Alonso, Physical Scientist, Region II, EPA
Robert Bent, Newark Dept. of Engineering

Upon arrival at the plant, a warrant for inspection was presented to Mr. Milton Novak, Vice President of Research and Production for Troy Chemical Corporation located at One Avenue L in Newark, New Jersey. Mr. Novak provided the background information on the facility as well as showed the group the manufacturing and waste treatment operations.

Troy Chemical Company initiated manufacturing chemicals at this location, including mercury compounds, in 1956. The facility presently employs about 90 people and operates 5 days per week, 24 hours per day. The manufacturing at the plant is carried out in batch type operations. A general description of the types of materials manufactured are described in the attached bulletin entitled "A Quick Review of Troy Products".

The plant presently purchases mercury metal which is converted into mercuric oxide. The oxide is then used to manufacture about 500,000 lbs/year of organic mercury chemicals which represents roughly 10 percent of the plant's total chemical production. The mercury chemicals manufactured and the relative amounts produced are as follows: phenylmercuric acetate (45%), chloromethoxypropylmercuric acetate (45%), phenyl mercuric sulfide (5%), and phenylmercuric oleates (5%).

The mercury manufacturing operations involve washing the mercury metal purchased to triple distilled purity, the production of mercuric oxide from mercury metal, and the manufacture of the four organic mercury compounds previously indicated.

There is practically no waste water from the mercury metal washing operation. The mercury is washed by falling through a column containing an acidic solution. The total volume of acid solution disposed of is only about 2-3 gallons every few months.

The major source of mercury bearing waste water is the mercuric oxide manufacturing operation. Basically, it involves the reaction of mercury metal with concentrated nitric acid (about 60%) and then reacting the mercuric nitrate formed with sodium hydroxide. The solid mercuric oxide produced is removed by filtration. The filtrate is a major source of mercury waste water (700 gallons/batch with an average of 10 batches/week) at the plant. Other sources of mercury bearing waste water from this operation are spillage, leakage and the washing of equipment and floors.

In the manufacture of the organic mercury compounds from the oxide, the only waste water discharged from the processing operations is in the production of phenylmercuric sulfide. After the formation of phenyl mercuric sulfide solids is completed in a reaction vessel, the solution is filtered to remove the product, and the filtrate is discharged to waste. In addition, there are small amounts of mercury bearing waste waters resulting from spills, leaks and washings in all of the organic mercury chemical manufacturing operations.

According to Mr. Novak, all mercury bearing waste waters enter a sulfide precipitation treatment system. This mercury removal treatment system consists of two settling tanks, a batch reaction and precipitation tank where sodium and iron sulfide are added, a plate and frame filter press for removing the precipitated mercury sulfide, and then another settling tank.

The treated mercury waste water as well as the process waste waters from all other chemical manufacturing operations at the facility are discharged to a general plant waste treatment system consisting of a 15,000 gallon settling tank, where suspended solids and oil are removed, and then a neutralization tank from which the waste water is discharged into the Passaic Valley Sewerage Commission system. The precipitated mercury sulfide is stored in drums on the property and then reprocessed on site to recover the mercury. There are generally on the average about 75 drums of mercury sulfide in storage on the property awaiting reprocessing.

The waste waters from chemical manufacturing other then mercury processing operations consist essentially of spills, leaks and equipment/floor washings, since only dry manufacturing is carried out.

Mr. Nowak stated that since 1965 the mercury bearing waste water has been treated by sulfide precipitation. Up to 1976, the treated mercury waste water was discharged directly into Pearson's Creek rather than the septic tank-leach field system. Small amounts of untreated waste water from chemical manufacturing other than the production of mercury compounds were also discharged directly into the creek. Around 1976, the overall plant waste treatment system was constructed, and the treated mercury bearing waste water and all other process effluents from the chemical operation were diverted into this system which discharges into the Passaic Valley Sewerage Commission system. The septic tank-leach field has always been used to treat only the sanitary waste water from the plant, according to Mr. Nowak.

All water used at the plant for processing, cooling water, boiler feed and sanitary purposes is from the City of Newark municipal system.

The plant has a NPDES Permit which covers the period May 31, 1978 through September 30, 1980. It authorizes the permittee to discharge from outfalls designated 001-006 into Pearson's Creek and has limits for COD and temperature. Mr. Nowak stated that these outfalls receive only noncontact cooling water, boiler blowoff and steam condensates. About 80-90 percent of the noncontact cooling water which comprises the bulk of all these discharges enters the creek from Outfall 001.

Missing
Pages 1+2 in Film

The septic tank-leach field system used to treat sanitary waste water is located just south of Building 99 and is surrounded by concrete. Also, the ground on top of this system has a hard rock-like surface which would be very difficult to penetrate for sampling. Therefore, in order to verify that the septic tank had never received mercury waste waters, a sediment sample (also water) was taken in an adjacent ditch about 50 feet downstream of the septic tank-leach field system. This ditch surfaces from an underground pipe on their property upstream of the leach field.

As shown on the attached plot plan of the Troy Chemical Company property, Pearson's Creek runs through about the center of the plant with the various manufacturing and other operations relatively close by on either side of the creek. Water and sediment samples were taken for mercury and TOC analysis in Pearson's Creek about 5 feet and 100 feet upstream of the plant grounds and about 100 and 250 yards downstream of the plant property. Water and sediment samples were also taken from Pearson's Creek for mercury and TOC at two locations within the plant property. One sample was taken about 50 feet above the downstream edge of the plant near the cooling water outfall designated 001. The other sample was taken just below the outside mercuric oxide manufacturing area which is also downstream of the other mercuric oxide manufacturing operation carried out in Building 40.

In addition, samples were taken in the creek for volatile organic analysis (particularly benzene which is a significant chemical used in manufacturing) at points 5 feet upstream of the plant, 100 and 250 yards downstream of the plant, as well as within the plant downstream of all the manufacturing areas.

In order to determine whether any mercury from the processing areas or the waste treatment system was entering the creek through the direct discharges, dye was dumped into the mercury chemical manufacturing drains as well as the discharge from the waste treatment system. No dye was subsequently observed in the creek. It was observed entering the Passaic Valley Sewerage Commission sewer.

After Pearson's Creek leaves the Troy Chemical property, it travels a distance of a few miles before entering the north channel of Newark Bay.

There were large numbers of drums stored outside on pallets throughout the plant property. The drum storage was located almost entirely on concrete surfaces. Runoff from the plant property drains into Pearson's Creek. In general, the plant housekeeping was poor at the time of the inspection.

The analytical results of the mercury sampling program are shown on Table I. The water sampling indicates that there is a small increase in mercury level in Pearson's Creek downstream as compared to upstream of the plant. However, the sediment samples from Pearson's Creek are much more significant. The results of the sediment sampling show that there is relatively little mercury (140-191 mg/kg) upstream of the plant, but a large amount (11,600 - 22,400 mg/kg) in the bottom of the stream within the plant property. There is also a substantial amount of mercury (3,120 mg/kg) one hundred yards downstream of the plant which drops off to 244 mg/kg at a distance of 250 yards from the plant. Since the mercury in the waste waters associated with the plant's manufacturing operations are essentially in the insoluble form, it would be expected that the bulk of any mercury entering the stream would settle and appear in the sediment.

The high levels of mercury found in the stream sediment inside the plant property are undoubtedly due to a long term accumulation. Untreated mercury bearing waste waters were discharged to the creek until 1965 and then treated mercury bearing waste waters until 1976, when they were diverted to the sewer system. The relatively high level of mercury just downstream of the plant is probably due to the movement of sediment caused by the stream flow as well as by the slow settling portion of the suspended solids in the waste water. However, it should also be noted that the water samples indicated a very small amount of mercury continues to enter the creek.

Another significant finding of the survey is that the sediment and water samples in the ditch adjacent to the leach field showed mercury levels of 33,200 mg/kg and 836 µg/liter, respectively. Two possible sources of this mercury would be from rainwater infiltration of contaminated soil if the leach field received mercury bearing waste water over some period of time, or runoff from the nearby area where mercury sulfide precipitate is stored in drums until it can be reprocessed. In the case of the runoff, contamination could be due to improper storage or handling as well as spillage, which was not observed during the survey.

In order to verify that all process waste waters enter the Passaic Valley Sewerage Commission system, water samples were taken from Pearson's Creek upstream, within the plant property, and downstream for a volatile organic (priority pollutants) analysis scan, but particularly for benzene which is a raw material. As shown in Table II, there is a significant increase in the benzene level in the stream within the plant property, as well as downstream of the facility. However, several other priority pollutant organics that are not raw materials or products also showed an increase, but to a much lesser extent.

TABLE I

Results of Analyses for Mercury Samples

SAMPLING NO.	SAMPLING LOCATION	WATER SAMPLE Mercury Conc. (ug/l)	SEDIMENT SAMPLE Mercury Conc. (mg/kg)
	PEARSON'S CREEK		
55616	100 feet upstream of plant (near culvert outlet)	ND	140.0
55617	5 feet upstream of plant	55.0	191.0
55621	Within plant property just downstream of mercury wastewater treatment system	21.0	22,400.0
55620	Within plant 50 feet before downstream edge of property	26.0	11,600.0
55618	100 yards downstream of plant	84.0	3,120.0
55619	250 yards downstream of plant	71.0	244.0
	DRAINAGE DITCH		
55622	50 feet downstream from septic tank leach field	886.0	89,200.0

ND = Less than detection limit of 0.2 ug/l.

MEMO

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

TO Spill File Prosecution

FROM Edward J. Faille DATE December 13, 1979

SUBJECT Troy Chemical Corporation, Newark, New Jersey

I arrived on-scene at approximately 0930, on December 11, 1979. I performed an inspection of the above facility with Mr. Jim Mitchell, Plant Engineer. On inspecting the facility, I made the following observations:

1. Filter fences that were installed on previous visits were not in proper working condition. Mr. Mitchell informed me that because the City of Newark had dredged the stream from Delancey Street to Newark Bay, the water level in the stream had dropped 12 - 18 inches, thus causing the filter materials inside the filter boxes to flood away. Also, the boxes that were installed in the northern and southern end of the streams were not operating now because the material was flowing underneath the old bottoms. Finally, there was a slight rainbow type sheen flowing in the stream. I told Mr. Mitchell that these boxes and filter boxes should be re-built to handle the low flow in the stream. He told me the matter would be taken care of immediately, and proceeded to call the contractor on the phone. Mr. Mitchell then informed me that most of the work would be done on Friday, December 13, 1979, at which time I will inspect same.

2. The condition of the plant had greatly improved since my last inspection. The areas within the plant had been cleaned up. Mr. Mitchell informed me that they had disposed of 1,000 drums by re-working, re-packing or disposing of them via the Passaic Valley Sewerage Commission. At the present time, Earthline is working on a price for disposal for 2,000 to 3,000 drums of Troy's product. Most of these drums are now stored on concrete paths, and the leaking drums have been re-packed or disposed of.

3. The dikes around the various storage tanks had been cleaned on the inside and some of the walls had been patched to eliminate leakage if there is a spill. The area around the garbage dumpster had a concrete pad installed to eliminate any chemicals from saturating the ground area. If chemicals get on the concrete pad, they are immediately packed with some kind of absorbent and disposed of. Mr. Mitchell still had not done anything with the concrete walls on both sides of the stream, and in various spots, you could still see small amounts of leaching into the stream. He informed me, that he was getting prices on removing the sediment in the bottom of the stream. I told him it was find to get prices, but he should contact this department before contracting with anyone.

4. In the mercury recovery area, there were still signs of metallic mercury on the concrete and ground areas behind this building. You could actually see metallic mercury on the concrete block walls.

5. The tank farm, jsut in front of this area, should be replaced because of cracks in the walls and the floors.

6. The area in the back of the drum storage, which still has soil in various spots, had a few discolored areas, showing that there was some form of material spilled. Here are my recommendations to Mr. Mitchell to correct the problems and make his plant environmentally sound:

a. Dredge the ditch and dispose of the resulting sludge in a proper and safe manner.

b. Remove the 2,000 to 3,000 drums of waste product to a proper disposal facility.

c. Remove the contaminated soil in the mercury recovery area to a proper disposal facility.

d. Install test wells for ground-water testing to check on probable contaminated areas.

e. Design and implement engineering studies for accumulated waters from flooding and rain.

(1) Pre-treatment system should be up-graded with review by the Division of Water Resources and the Passaic Valley Sewerage Commission.

f. All berms and concrete walls should be re-built to specifications.

Mr. Mitchell and I both agreed that these were the things that should be done to get this plant environmentally safe.

At 1600 hours I secured.

EJF:afw

MEMO

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION

TO Assistant Commissioner Arbesman

FROM Illse Heacox

DATE DEC 17 1979

SUBJECT Troy Chemical Pretreatment Issue

Troy Chemical came to the Division's attention through the Office of Sludge Management and Industrial Pretreatment (OSMIP). OSMIP has been cooperating with the Passaic Valley Sewerage Commission in conducting a comprehensive heavy metals study required for the issuance of an interim ocean dumping permit under the Marine Protection, Research and Sanctuaries Act of 1972, as amended, regulations 40 CFR 2468 (Section 227.25(b), Interim Permits under Section 102 of the Act). The study was to support the feasibility of PVSC's choice of incineration as a land-based alternative to ocean dumping.

The study reported on the quantity and quality of PVSC's influent and effluent. Initial testing indicated large amounts of mercury entering the facility. Testing known major industries indicated that the source of at least half of the mercury was not known. PVSC then tested key manholes in subareas thereby pinpointing a sewer servicing a single industry, Troy Chemical.

Working with OSMIP, PVSC began taking split samples in January, 1979. The impact of the discharge from Troy Chemical on PVSC's system is most accurately portrayed in terms of pounds per day loading rather than concentration (ppm), because of the dilution factor.

Troy Chemical has contributed approximately 327 pounds per day to PVSC on those days tested in the Heavy Metals Study. Since PVSC is a primary treatment plant, there is no removal of the mercury. Approximately 10% of the mercury entering the plant can be expected to precipitate out with other suspended solids in the influent, thereby contaminating the sludge. This will directly effect PVSC's plans for incineration. More important is the fact that the remaining 90% of the mercury will pass through the plant and be directly discharged in the effluent.

If Troy Chemical were to pretreat its process wastewater, much of Troy's mercury can be removed before it reaches PVSC. If our information is accurate as to the type of manufacturing process engaged in by Troy, a fairly straight-forward heavy-metals pretreatment, where the flocculent is added and the precipitate removed, would be adequate. The cost of the system would depend on several variables, e.g., type of wastewater or amount of flow.

The Department, as of yet, is not in a position to demand pretreatment be added to Troy's system. The State Pretreatment Regulations are presently under draft. It may not be until late 1980 that pretreatment discharge permits are ready. However, it would be a wise business decision to consider the pretreatment needs now in anticipation of the inevitable.

IH:nb

cc: Assistant Director Bennett
Director Schiffman
DAG Larry Stanley
Dr. Marwan Sadat

Chem-28
Sept. 78

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received _____
By Labs
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection April 29 1980
Hour 12:30 A.M. _____ P.M. X
Sample No. C27083
Composite Period GRAB Interval _____
Collected by JOHNSON & MARCK
Municipality Newark
Residual Chlorine:
Immediate _____
Plant Troy Chemical
Developed _____
Stream Overflow from Collection System
Flow Rate _____
Location East Bank of Pierson's Creek
Temperature _____
Description and Remarks: _____

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)	X	Chloride 135		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	Mercury 0.400
	Turbidity (units)		Ash	X	Cyanide 0.012	X	Pesticides ND
	pH		Total Solids		Chromium Total	X	V.O. SCAN
	Acidity to pH 4		Ash		Chromium Hex.		- Quantity
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		BENZENE 528 ppb
	Nitrite N		MBAS	X	Copper 0.013		
	Nitrate N		Phenols	X	Lead 0.046		ND = NOT DETERMINED OR BELOW
	Ammonia N	X	COD 1302	X	Arsenic 0.019		DETECTION LIMITS ND = 4
	Total Kjel. N		Iron	X	Zinc 0.884		

JUN 1 1980
REPORT COMPLETED
DIV. OF LABORATORIES & EPID.

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

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11832

Chem-25
Sept. 75

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HJ DIV WATER RESOURCES
MS&E

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

FIELD INFORMATION

Date of Collection April 28 1980
Hour 1:00 A.M. _____ P.M. X
Composite Period GRAB Interval _____
Collected by JOHNSON & MARCK
Residual Chlorine:
Immediate _____
Developed _____
Flow Rate _____
Temperature _____

Sample No. C 27084
Municipality Newark
Plant Troy Chemical
Stream Ground Water
Location Tank Farm E.
Description and Remarks: Ground Water Discharge Through cracks in wall into Pierson's Creek

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

Color (units)	X	Chloride 26		Sulfate		Other Determinations	
Odor (cold)		Suspended Solids		Grease & Oil	X	Mercury	1.500
Turbidity (units)		Ash	X	Cyanide 0.096	X	Pesticides	ND
pH		Total Solids		Chromium Total	X	V.O. Scan	
Acidity to pH 4		Ash		Chromium Hex.		Quantify	Arb
Alkalinity to pH 4		Total PO_4		Ortho - PO_4		mesitylene	51
Nitrite N		MBAS	X	Copper 0.228		o-xylene	42
Nitrate N		Phenols	X	Lead 0.333		Styrene	33
Ammonia N	X	COD 500	X	Arsenic 0.015			
Total Kjel. N		Iron	X	Zinc 0.919			

JUN 1 1980

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

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Chem-29 Sept. 75 RLR

JUN 12 11 46 AM

NJ DEPT. OF HEALTH DIV WATER RESOURCES HS&E

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____

Lab. No. _____

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

FIELD INFORMATION

Date of Collection April 28 1980

Hour 1:20 A.M. _____ P.M. X

Sample No. 27085

Composite Period Grab Interval _____

Collected by JOHNSON & MARCK

Residual Chlorine:
Immediate _____
Developed _____

Municipality Newark

Plant Troy Chemical

Stream Storm water

Location Near Maintenance Shed.

Flow Rate _____

Temperature _____

Description and Remarks: Overflow over berm south of Maintenance Building into Pierson's Creek

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____

Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)	X	Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	Mercury 3.00
	Turbidity (units)		Ash	X	Cyanide 0.080	X	Pestidides ND
	pH		Total Solids		Chromium Total	X	V.O. Scan
	Acidity to pH 4		Ash		Chromium Hex.		Quantify ppb
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		Benzene 1245
	Nitrite N		MBAS	X	Copper 0.382		Styrene 25000
	Nitrate N		Phenols	X	Lead 2.533		
	Ammonia N	X	COD 2579	X	Arsenic 0.002		
	Total Kjel. N		Iron	X	Zinc 14.33		

JUN 1 1 1980

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

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Chem-25 Sept. 73 RR

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____

Lab. No. _____

JUN 12

DIV. RATEMAN HSGE

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection April 28 19 80

Hour 1:40 A.M. _____ P.M. _____

Sample No. C 27086

Composite Period Grab Interval _____

Collected by JOHNSON & MARK

Municipality Newark

Residual Chlorine: Immediate _____

Plant Troy Chemical

Developed _____

Stream _____

Flow Rate _____

Location NEAR DUMPSTER

Temperature _____

Description and Remarks: COMPOSITE SOIL SAMPLE

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS

BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____

Fecal Streptococci:MPN/100 ml. _____ Other _____

TRichloroethane 3900
OCTANE 4250
BENZENE 1900
MIBK 50000 L

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	Mercury 60.0 L
	Turbidity (units)		Ash		Cyanide	X	V.O. Scan ppb Quantify
	pH		Total Solids		Chromium Total		
	Acidity to pH 4		Ash		Chromium Hex.	X	Pesticides ppb
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		pp DDT 32.76
	Nitrite N		MBAS	X	Copper 899.12		pp DDD 32.86
	Nitrate N		Phenols	X	Lead 110.0		op DDT 25.0
	Ammonia N		COD	X	Arsenic 0.005 K		pp DDE 8.3
	Total Kjel. N		Iron	X	Zinc 3958.73		

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

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DIV WATER RESOURCES
HS&E

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

COC 30

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection April 28 19 80
Hour 1:50 A.M. _____ P.M. X
Composite Period GRAB Interval _____
Collected by JOHNSON & MAACK
Residual Chlorine:
Immediate _____
Developed _____
Flow Rate _____
Temperature _____

Sample No. C 27088
Municipality Newark
Plant Troy Chemical
Stream _____
Location South of Fungicide Plant
Description and Remarks: COMPOSITE SOIL SAMPLE CONTAINING Hg Droplets

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./~~liter~~ kg, unless otherwise noted)

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	Mercury 60.0 L
	Turbidity (units)		Ash		Cyanide		
	pH		Total Solids		Chromium Total		
	Acidity to pH 4		Ash		Chromium Hex.		
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		[illegible]
	Nitrite N		MBAS	X	Copper 361.84		
	Nitrate N		Phenols	X	Lead 500.0		JUN 1 1 1980
	Ammonia N		COD	X	Arsenic 3.361		
	Total Kjel. N		Iron	X	Zinc 1195.75		DIV. OF LABORATORIES & EPID.

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

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NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection April 28 1980
Hour 2:00 A.M. _____ P.M. X
Composite Period Grab Interval _____
Collected by JOHNSON & MARCK
Residual Chlorine:
Immediate _____
Developed _____
Flow Rate _____
Temperature _____

Sample No. C27089
Municipality Newark
Plant Troy Chemical
Stream _____
Location South of Warehouse
Description and Remarks: 55 Gallon drum spillage
COMPOSITE SOIL SAMPLE

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs. ~~liter~~ kg, unless otherwise noted)

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	V.O. Scan/PPB
	Turbidity (units)		Ash		Cyanide		Quantify
	pH		Total Solids		Chromium Total	X	Mercury 60.0L
	Acidity to pH 4		Ash		Chromium Hex.	X	Pesticides ND
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		
	Nitrite N		MBAS	X	Copper 3289.47		OCTANE 900
	Nitrate N		Phenols	X	Lead 105.00		BENZENE 1300
	Ammonia N		COD	X	Arsenic 2.185		MIBK 26000
	Total Kjel. N		Iron	X	Zinc 2447.22		

NO — [illegible] BELOW [illegible]

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

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DIV WATER RESOURCES
HS&E

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

FIELD INFORMATION

Date of Collection April 28 1980
Hour 2:10 A.M. _____ P.M. X

Sample No. C 27090

Composite Period Comp Interval _____

Collected by JOHNSON & MARK

Municipality Newark

Residual Chlorine:
Immediate _____

Plant Troy Chemical

Developed _____

Stream _____

Flow Rate _____

Location Yard Storage Area

Temperature _____

Description and Remarks: 55 Gallon drum spillages
COMPOSITE SOIL SAMPLE

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____

Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	V.O. SCAN
	Turbidity (units)		Ash		Cyanide		Quantify
	pH		Total Solids		Chromium Total		500 ppb
	Acidity to pH 4		Ash		Chromium Hex.	X	Mercury 60.0 L
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		
	Nitrite N		MBAS	X	Copper 67.98		
	Nitrate N		Phenols	X	Lead 90.0		
	Ammonia N		COD	X	Arsenic 0.798		
	Total Kjel. N		Iron	X	Zinc 57.19		JUN 1980

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

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COC

COC 30

Chem-25
Sept. 75

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JUN 12 11 46 AM '80
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JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection April 28 1980
Hour 11:10 A.M. X P.M. _____
Composite Period Grab Interval _____
Collected by JOHNSON & MAACK
Residual Chlorine:
Immediate _____
Developed _____
Flow Rate _____
Temperature _____

Sample No. C27091

Municipality Newark
Plant Troy Chemical
Stream Runoff discharge
Location East side of tank farm A
Description and Remarks: Discharge into east Branch of Pierson's Creek

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____
Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	Mercury 3.00 L
	Turbidity (units)		Ash		Cyanide		
	pH		Total Solids		Chromium Total		
	Acidity to pH 4		Ash		Chromium Hex.		
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		
	Nitrite N		MBAS	X	Copper		
	Nitrate N		Phenols	X	Lead		
	Ammonia N		COD	X	Arsenic		
	Total Kjel. N		Iron	X	Zinc		

QNS Rec'd 125 ml bottle

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

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Chem-29
Sept. 75

NEW JERSEY STATE DEPARTMENT OF HEALTH
JOINT STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____

Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection April 28 19 80

Hour 12:00 A.M. _____ P.M. X

Sample No. C 27082

Composite Period Grab Interval _____

Collected by JOHNSON & MARCK

Municipality Newark

Residual Chlorine:
Immediate _____
Developed _____

Plant Troy Chemical

Stream Stormwater from

Flow Rate _____

Location Blue Building Area

Temperature _____

Description and Remarks: Discharge through crack in wall

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____

Fecal Streptococci MPN/100 ml. _____ Other _____

JUN 1980

REPORT SUBMITTED
DIV. OF LABORATORIES & EPID

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

Color (units)	X	Chloride 202		Sulfate		Other Determinations	
Odor (cold)		Suspended Solids		Grease & Oil	X	Mercury	0.350
Turbidity (units)		Ash	X	Cyanide 0.117	X	V.O. Scan / Quantity	ppb
pH		Total Solids		Chromium Total			
Acidity to pH 4		Ash		Chromium Hex.		m,p xylene	55
Alkalinity to pH 4		Total PO_4		Ortho - PO_4		o xylene	75
Nitrite N		MBAS	X	Copper 0.195		propylbenzene	100
Nitrate N		Phenols	X	Lead 1.750		mesitylene	180
Ammonia N	X	COD 698	X	Arsenic 0.006		Styrene	150
Total Kjel. N		Iron	X	Zinc 3.021			

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

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Chem-25
Sept. 75

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs _____
Lab. No. _____

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection April 28 1980
Hour 11:30 A.M. X P.M. _____
Composite Period Grab Interval _____
Collected by JOHNSON & MAACK
Residual Chlorine:
Immediate _____
Developed _____
Flow Rate _____
Temperature _____

Sample No. C27081

Municipality Newark
Plant Troy Chemical
Stream Stormwater Pipe
Location into Pierson's Creek

Description and Remarks: _____

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____

Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)	X	Chloride 1 K		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	Mercury 0.300
	Turbidity (units)		Ash		Cyanide	X	~~Zinc~~
	pH		Total Solids		Chromium Total	X	V.O. Scan
	Acidity to pH 4		Ash		Chromium Hex.		Quantify
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		25 ppb / K
	Nitrite N		MBAS	X	Copper 0.013		
	Nitrate N		Phenols	X	Lead 0.079		
	Ammonia N	X	COD 44	X	Arsenic 0.011		
	Total Kjel. N		Iron	X	Zinc 0.104		

JUN [illegible] 1980

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

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COC

COC 30

Chem-29
Sept. 75

NEW JERSEY STATE DEPARTMENT OF HEALTH
STREAM OR WASTEWATER ANALYSIS

Time & Date Received By Labs
Lab. No.

FIELD INFORMATION

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

Date of Collection April 28 1980
Hour 11 10 A.M. X P.M.

Sample No. C 27080

Composite Period Grab Interval

Collected by JOHNSON & MAACK

Residual Chlorine:
Immediate
Developed

Municipality Newark

Plant Troy Chemical

Stream East Branch Pierson's Creek

Location East Side of Tank Farm A

Flow Rate

Temperature

Description and Remarks: Run-off

ITEMS CIRCLED BELOW ARE UNSATISFACTORY

Dilutions Requested (Bacteriological)	10	1	10^{-1}	10^{-2}	10^{-3}	10^{-4}	10^{-5}	10^{-6}

LABORATORY RESULTS
BACTERIOLOGICAL

Coliform MPN/100 ml. _____ (Confirmed Test); Fecal Coliform MPN/100 ml. _____

Fecal Streptococci:MPN/100 ml. _____ Other _____

CHEMICAL AND PHYSICAL ANALYSES (mgs./liter, unless otherwise noted)

	Color (units)		Chloride		Sulfate		Other Determinations
	Odor (cold)		Suspended Solids		Grease & Oil	X	Mercury 0.350 B
	Turbidity (units)		Ash	X	~~Cyanide~~		
	pH		Total Solids		Chromium Total		
	Acidity to pH 4		Ash		Chromium Hex.		
	Alkalinity to pH 4		Total PO_4		Ortho - PO_4		
	Nitrite N		MBAS	X	Copper 0.188		[illegible]
	Nitrate N		Phenols	X	Lead 0.333		
	Ammonia N		COD	X	Arsenic QNS		JUN 1 1 1980
	Total Kjel. N		Iron	X	Zinc 5.692		[illegible]

DIV. OF LABORATORIES & EPID.

BIOCHEMICAL OXYGEN DEMAND (mgs./liter)

Field D.O.		Lab. D.O.			Seed Required:			Yes		No		
Sample Conc. %	PLEASE CIRCLE	0.1	0.2	0.5	1.0	2.0	5.0	10	25	50	75	100
BOD_5												

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COUNSELLORS AT LAW
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ROSELAND, NEW JERSEY 07068
TELEPHONE 201 992-8700

80 PARK PLAZA
NEWARK, NEW JERSEY 07102
TELEPHONE 201 624-4600

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DANIEL A. SCHWARTZ
DAVID L. HARRIS
ROBERT L. BILDNER
ZULIMA V. FARBER
INA B. LEWISOHN
EDMUND A. MIKALAUSKAS
WILLIAM P. MUNDAY
MARION PERCELL
LINDA P. TORRES
KENNETH R. COHEN
JOSEPH F. LAGROTTERIA
DEANNE WILSON PLANK

PLEASE REPLY TO ROSELAND

REFER TO FILE NO

November 11, 1981

Mr. Darryl Smith
Troy Chemical Company
1 Avenue L
Newark, New Jersey 07105

Dear Darryl:

As you know, we have attempted to determine the ownership and obligations incident to the ditches through the center of the property and adjacent to the property. Unfortunately, the old records have poor deed descriptions and surveys. As of now, our tentative conclusion is as follows:

1. The ditch through the center of the property is part of a private drainage ditch system that once extended far upstream and out to what was known as Dead Creek. The original conveyance of the property in 1852 required that the owner of the property contribute one-quarter to the cost of maintaining the entire ditch system. It appears that these were purely private arrangements to insure good drainage of the area. In 1910, the ditch which is now adjacent to the property on the westerly side appears to be a stormwater sewer easement conveyed to the City of Newark in 1910. It extends from Wilson Avenue all the way out to the "Creek" at the southerly end of the Troy property.

Based on the foregoing, I would proceed with DEP on the premise that the so-called Pierson's Creek is in fact part

BBLCCC7
BBLCCC

November 11, 1981

of a stormwater sewer system whose right-of-way once belonged to the City of Newark, and whose responsibility today may be Passaic Valley Sewerage Commission. The realignment plan merely conveys stormwater from upgradient of Troy into that system and should only require the permission of the property owner, the Newark Housing Authority. We do not as yet know who owns the rights to the drainage pipe that runs under the Newark Housing Authority property, but that ought not to be part of our concern.

Finally, the survey confirms the fact that we own approximately 8-10 feet on the far side of the fence. It is a fairly narrow buffer in spots, however. It does not appear that we can reroute the flow entirely on our own property.

Very truly yours,

Michael L. Rodburg (al)

Michael L. Rodburg

MLR:al

(Dictated but not read)

cc: Mr. Richard Peluso

Sample Identification	Results in - (mg/l) Mercury
81576 B-1 S-1	0.0223
81577 B-1A S-2	0.0313
81578 B-2 S-5	0.5070
81579 B-2A S-4	1.0333
81580 B-3 S-3	0.2382

LABORATORY
Middletown, New York

LABORATORY REPORT

Client: TROY CHEM. CO.

Sample No. 81577 Date, Time Sampled 11/12/81 -1130 Job No. 0236 1216

Sample Type / Quantity GROUND WATER / 2500 ML.

Sample Source B-1A S-2 DEEP

Analysis Requested PURGEABLES, PESTICIDES, C.O.D., CHLORIDE, Hg, Cu, Pb, Zn

Sampler S. MACMILLIN

Analyst E. COCOZZA, R. MAY, F. MUTHIG

ANALYTICAL DATA

PHYSICAL AND CHEMICAL

	Acidity		Nitrogen, Ammonia		Silica
	Alkalinity		Nitrogen, Kjeldahl		Sulfate
	Appearance		Nitrogen, Organic		Sulfite
	B.O.D.5		Nitrogen, Nitrate		Surfactants (MBAS)
	Bromide		Nitrogen, Nitrite		Tannin & Lignin
	Carbon Dioxide		Odor		Temperature
✓	Chloride 457		Oil & Grease		Total Organic Carbon
	Chlorine, Free		Oxygen, Dissolved		Turbidity
	Chlorine, Tot. Res.		pH		Volatile Acids
✓	C.O.D. 546		Phenols		
	Color		Phosphate, Ortho		
✓	Cond. Sp. (25°C) 3700 micromhos/cm.		Phosphate, Total		
	Cyanide				
	Fluoride				
	Hardness, Total				

SOLIDS

Total	
Volatile Total	
Fixed Total	
Total Suspended	
Fixed Suspended	
Total Dissolved	
Volatile Dissolved	
Fixed Dissolved	
Settleable	

BACTERIOLOGICAL

Total Coliform	Per 100 ML.
Fecal Coliform	Per 100 ML.
Fecal Streptococci	Per 100 ML
Standard Plate Count (35°C)	Per ML.

METALS (TOTAL)

	Aluminum		Chromium, Total		Nickel
	Antimony		Cobalt		Potassium
	Arsenic	✓	Copper 1.02		Selenium
	Barium		Iron		Silicon
	Beryllium	✓	Lead <0.05		Silver
	Bismuth		Lithium		Sodium
	Boron		Magnesium		Tin
	Cadmium		Manganese		Titanium
	Calcium		Mercury 0.0013		Vanadium
	Chromium, Hex.		Molybdenum	✓	Zinc 0.24

Additional Data / Remarks: FIELD DATA SHEET ATTACHED.

< = LESS THAN

NOTES: 1. All Results in Milligrams/Liter Unless Otherwise Noted.

2. Sample Stored at 0° to 4°C. and Chemically Preserved as Required.

Eugene P. Cocozza, Laboratory Director

12/11/81

Date Reported

LABORATORY
Middletown, New York

LABORATORY REPORT

Client: TROY CHEM. CO.

Sample No. 81528 Date, Time Sampled 11/12/81 Job No. 02361216

Sample Type / Quantity GROUND WATER / 2600 ML.

Sample Source B-2 S-5 Shallow

Analysis Requested PURGEABLES, PESTICIDES, C.O.D., CHLORIDE, Hg, Cu, Pb, Zn

Sampler S. MACMILLIN

Analyst E. COCOZZA, R. MAY, F. MUTHIG

ANALYTICAL DATA

PHYSICAL AND CHEMICAL

	Acidity		Nitrogen, Ammonia		Silica
	Alkalinity		Nitrogen, Kjeldahl		Sulfate
	Appearance		Nitrogen, Organic		Sulfite
	B.O.D.5		Nitrogen, Nitrate		Surfactants (MBAS)
	Bromide		Nitrogen, Nitrite		Tannin & Lignin
	Carbon Dioxide		Odor		Temperature
✓	Chloride	2283	Oil & Grease		Total Organic Carbon
	Chlorine, Free		Oxygen, Dissolved		Turbidity
	Chlorine, Tot. Res.		pH		Volatile Acids
✓	C.O.D.	437	Phenols		
	Color		Phosphate, Ortho		
✓	Cond. Sp. (25°C)	7100 μmhos/cm.	Phosphate, Total		
	Cyanide				
	Fluoride				
	Hardness, Total				

SOLIDS

Total	
Volatile Total	
Fixed Total	
Total Suspended	
Fixed Suspended	
Total Dissolved	
Volatile Dissolved	
Fixed Dissolved	
Settleable	

BACTERIOLOGICAL

Total Coliform	Per 100 ML.
Fecal Coliform	Per 100 ML.
Fecal Streptococci	Per 100 ML.
Standard Plate Count (35°C)	Per ML.

METALS (TOTAL)

	Aluminum		Chromium, Total		Nickel
	Antimony		Cobalt		Potassium
	Arsenic	✓	Copper 0.70		Selenium
	Barium		Iron		Silicon
	Beryllium	✓	Lead 0.20		Silver
	Bismuth		Lithium		Sodium
	Boron		Magnesium		Tin
	Cadmium		Manganese		Titanium
	Calcium		Mercury 0.507		Vanadium
	Chromium, Hex.		Molybdenum	✓	Zinc 1.97

Additional Data / Remarks: FIELD DATA SHEET ATTACHED.

NOTES: 1. All Results in Milligrams/Liter Unless Otherwise Noted.
2. Sample Stored at 0° to 4°C. and Chemically Preserved as Required.

E. Cocozza
Eugene P. Cocozza, Laboratory Director

11/11/81
Date Reported

LABORATORY
Middletown, New York

LABORATORY REPORT

Client: TROY CHEM. CO.

Sample No. 81579 Date, Time Sampled 11/17/81 Job No. 02361216

Sample Type / Quantity GROUND WATER / 2600 ML.

Sample Source B-2A S-4 DEEP

Analysis Requested PURGEABLES, PESTICIDES, C.O.D., CHLORIDE, Hg, Cu, Pb, Zn

Sampler S. MACMILLIN

Analyst G. COCOZZA, R. MAY, F. MUTHIG

ANALYTICAL DATA

PHYSICAL AND CHEMICAL

Acidity	Nitrogen, Ammonia	Silica
Alkalinity	Nitrogen, Kjeldahl	Sulfate
Appearance	Nitrogen, Organic	Sulfite
B.O.D.5	Nitrogen, Nitrate	Surfactants (MBAS)
Bromide	Nitrogen, Nitrite	Tannin & Lignin
Carbon Dioxide	Odor	Temperature
✓ Chloride 3652	Oil & Grease	Total Organic Carbon
Chlorine, Free	Oxygen, Dissolved	Turbidity
Chlorine, Tot. Res.	pH	Volatile Acids
✓ C.O.D. 312	Phenols	
Color	Phosphate, Ortho	
✓ Cond. Sp. (25°C) 7100 μmhos/cm.	Phosphate, Total	
Cyanide		
Fluoride		
Hardness, Total		

SOLIDS

Total
Volatile Total
Fixed Total
Total Suspended
Fixed Suspended
Total Dissolved
Volatile Dissolved
Fixed Dissolved
Settleable

BACTERIOLOGICAL

Total Coliform	Per 100 ML.
Fecal Coliform	Per 100 ML.
Fecal Streptococci	Per 100 ML
Standard Plate Count (35°C)	Per ML.

METALS (TOTAL)

Aluminum	Chromium, Total	Nickel
Antimony	Cobalt	Potassium
Arsenic	✓ Copper 1.70	Selenium
Barium	Iron	Silicon
Beryllium	✓ Lead 0.15	Silver
Bismuth	Lithium	Sodium
Boron	Magnesium	Tin
Cadmium	Manganese	Titanium
Calcium	Mercury 0.123	Vanadium
Chromium, Hex	Molybdenum	✓ Zinc 0.73

Additional Data Remarks: FIELD DATA SHEET ATTACHED.

NOTES: 1. All Results in Milligrams/Liter Unless Otherwise Noted.
2. Sample Stored at 0° to 4°C. and Chemically Preserved as Required.

E. Cocozza
Eugene P. Cocozza, Laboratory Director

11/11/81
Date Reported

LABORATORY
Middletown, New York

LABORATORY REPORT

Client: TROY CHEM. CO.

Sample No. 81580 Date, Time Sampled 11/12/81 - 1215 Job No. 0236 1216

Sample Type / Quantity GROUND WATER / 2600 ML.

Sample Source R-3 S-3 SHALLOW

Analysis Requested PURGEABLES, PESTICIDES, C.O.D., CHLORIDE, Hg, Cu, Pb, Zn

Sampler S. MACMILLIN

Analyst E. COCOZZA, R. MAY, F. MUTHIG

ANALYTICAL DATA

PHYSICAL AND CHEMICAL

Acidity	Nitrogen, Ammonia	Silica
Alkalinity	Nitrogen, Kjeldahl	Sulfate
Appearance	Nitrogen, Organic	Sulfite
B.O.D.5	Nitrogen, Nitrate	Surfactants (MBAS)
Bromide	Nitrogen, Nitrite	Tannin & Lignin
Carbon Dioxide	Odor	Temperature
✓ Chloride 125	Oil & Grease	Total Organic Carbon
Chlorine, Free	Oxygen, Dissolved	Turbidity
Chlorine, Tot. Res.	pH	Volatile Acids
✓ C.O.D.	Phenols	
Color	Phosphate, Ortho	
✓ Cond. Sp. (25°C) 1660 mmhos/cm.	Phosphate, Total	
Cyanide		
Fluoride		
Hardness, Total		

SOLIDS

Total
Volatile Total
Fixed Total
Total Suspended
Fixed Suspended
Total Dissolved
Volatile Dissolved
Fixed Dissolved
Settleable

BACTERIOLOGICAL

Total Coliform	Per 100 ML.
Fecal Coliform	Per 100 ML.
Fecal Streptococci	Per 100 ML.
Standard Plate Count (35°C)	Per ML.

METALS (TOTAL)

Aluminum	Chromium, Total	Nickel
Antimony	Cobalt	Potassium
Arsenic	✓ Copper 1.00	Selenium
Barium	Iron	Silicon
Beryllium	✓ Lead <0.05	Silver
Bismuth	Lithium	Sodium
Boron	Magnesium	Tin
Cadmium	Manganese	Titanium
Calcium	Mercury 0.2382	Vanadium
Chromium, Hex	Molybdenum	✓ Zinc 0.13

Additional Data / Remarks: FIELD DATA SHEET ATTACHED.
< = LESS THAN

NOTES. 1. All Results in Milligrams/Liter Unless Otherwise Noted.
2. Sample Stored at 0° to 4°C. and Chemically Preserved as [illegible]

E. Cocozza
Eugene P. Cocozza, Laboratory Director

11/16/81
Date Reported

19

Form VST-001
8/79

PLEASE TYPE OR PRINT
WITH BALLPOINT PEN

STATE OF NEW JERSEY
Department of Environmental Protection
Water Analysis

COC

BACT. LAB NO	
DATE REC'D.	
BOTTLE NO.	06959
DATE REC'D.	
STORET ENT.	
STORET READ	

MUNICIPALITY: City of Newark	COUNTY: Essex	STREAM: 1 10 11 102
FACILITY: Trd, Chemical Corp.	LOCATION: Ave L	
REPRESENTATIVE	TITLE	DIV. COLL NAME: Mack
REMARKS: MONITORING WELL # 1B (DEEP)		R. McBRIDE
		J. MUMMAN

Station Identification Number	YR. MO. DAY	HOUR	Sample No.
SC	81 11 17	1230	PB 06959

FIELD ANALYSIS

- ☐ Water Temp °C P00010,
- ☐ D.O. - Winkler P00300,
- ☐ D.O. - Probe P00299,
- ☐ pH (Field) P00400,
- ☐ Sample Depth-ft. P00003,
- ☐ Stream Flow-CFS P00061,
- ☐ Gage Height-ft P00065,
- ☐ Spec. Cond. @ 25°C P00095,
- ☐ Salinity ‰ P00480,
- ☐ Tide Stage P70211,

CONDITION CODES

- ☐ Weather Conditions P00041,
- ☐ Flow Severity P01351,
- ☐ _____ Severity P013__,
- ☐ _____ Severity P013__,

NUTRIENTS

LEVEL ☐ HIGH ☐ LOW

- ☐ NO_2 - N P00615,
- ☐ NO_2 + NO_3 N P00630,
- ☐ NH_3 N P00610,
- ☐ Tot Kjeldhal N P00625,
- Orthn PO_4 as P / PO_4 ☐ P671, ☐ P660,
- Phosphorus tot as P / PO_4 ☐ P665, ☐ P650,

BACTERIOLOGICAL – DILUTIONS (REQUESTED)

Fecal Coliform / Total Coliform: 1 10 / 1 10 / +1 10 / +2 10 / +3 10 / +4 10 / +5 10 / +6 10

Fecal Streptococci: 1 10 / 1 10 / +1 10 / +2 10 / +3 10 / +4 10 / +5 10 / +6 10

Fecal coli #100 ml ☐ MPN P31615, ☐ MF P31613,

☐ Fecal Strept MPN/100ml P31677,

☐ Tot coli MPN/100 ml P31505,

BIOCHEMICAL OXYGEN DEMAND

INITIAL D.O. (%) _____ SAMPLE

	SEED YES	NO
CONC. %		
BOD		

☐ BOD ☐ 5-DAY P310, ☐ 6-DAY P312,

COD ☐ Low Level P335, ☒ High Level P340, 385

☐ TOC P00680,

- ☐ Color Pt. Cou P00080,
- ☐ Turbidity P00070,
- ☐ Suspended Solids P00530,
- ☐ Suspended Solids fixed P00540,
- ☐ Tot. Solids P00500,
- ☐ Tot. Solids fixed P00510,
- ☐ Tot. Dissolved Solids (TDS) P70300,

- ☐ pH (LAB) P00400,
- ☐ Alkalinity as $CaCO_3$ P00410,
- ☐ Min. Acidity as $CaCO_3$ P00436,
- ☒ Chloride P00940, 110
- ☐ MBAS P38260,
- ☐ Phenols P32730,
- ☐ Hardness - tot as $CaCO_3$ P00900,
- ☐ Sulfate P00945,
- ☐ Oil & Grease P00556,
- ☐ Petroleum Hydrocarbons P45501,
- ☐ Cyanide P00720,

- ☐ As - tot ug/l P01002,
- ☐ Cd - tot ug/l P01027,
- ☐ Cr - tot ug/l P01034,
- ☒ Cu - tot ug/l P01042, 811
- ☐ Fe - tot ug/l P01045,
- ☒ Hg - tot ug/l P71900, 5.6
- ☐ Mn - tot ug/l P01055,
- ☐ Ni - tot ug/l P01067,
- ☒ Pb - tot ug/l P01051, 333
- ☒ Zn - tot ug/l P01092, 1445

ADDITIONAL ANALYSIS

- ☐ _____ P _____
- ☐ _____ P _____
- ☐ _____ P _____

RESULTS mg/L unless otherwise noted

CHAIN OF CUSTODY

Date	Time	From (Name)	To (Name)

Chemist Review _____

Part 1 ( ) - Water Quality Inventory Copy
Part 2 ( ) - Chemistry Copy
Part 3 ( ) - Water Resources Copy (For Transmission)
Part 4 ( ) - Bacteriology Copy

Form VST-001
8/79

STATE OF NEW JERSEY
Department of Environmental Protection
Water Analysis

COC

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

MUNICIPALITY: CITY OF NEWARK	COUNTY: ESSEX	STREAM:
FACILITY: TROY CHEMICAL CORP	LOCATION: AVE L.	
REPRESENTATIVE:	TITLE:	COLLECTOR: C. Maack, K. McBride, J. Mummale
REMARKS: MONITORING WELL # 3B		

BACT. LAB NO.
DATE REC'D.
BOTTLE NO. 06960
DATE REC'D.
STORET ENT. READ

Station Identification Number	YR.	MO	DAY	HOUR	Sample No.
SC.	8	1	17	1445	P8. 06960

FIELD ANALYSIS

☐ Water Temp °C	P00010	
☐ D.O. - Winkler	P00300	
☐ D.O. - Probe	P00299	
☐ pH (Field)	P00400	
☐ Sample Depth-ft.	P00003	
☐ Stream Flow-CFS	P00061	
☐ Gage Height-ft	P00065	
☐ Spec. Cond. @25°C	P00095	
☐ Salinity ‰	P00480	
☐ Tide Stage	P70211	

BACTERIOLOGICAL – DILUTIONS (REQUESTED)

Fecal Coliform / Total Coliform		
Fecal Streptococci		
Fecal coli. /100 ml	☐ MPN P31615, ☐ MF P31613	
☐ Fecal Strept MPN/100ml	P31677	
☐ Total coli. MPN/100 ml	P31505	

BIOCHEMICAL OXYGEN DEMAND

INITIAL D.O. ... SAMPLE
SEED ... NO
CONC. %
DOC - L

☐ BOD	☐ 5-DAY P310, ☐ 6-DAY P312	
COD	☐ Low Level P335, ☒ High Level P340	780
☐ TOC	P00680	

☐ Color Pt. Co.	P00080	
☐ Turbidity	P00070	
☐ Suspended Solids	P00530	
☐ Suspended Solids Fixed	P00540	
☐ Total Solids	P01000	
☐ Total Solids Fixed	P00510	
☐ Total Dissolved Solids TDS	P01100	

☐ pH (LAB)	P00400	
☐ Alkalinity as $CaCO_3$	P00410	
☐ Min. Acidity as $CaCO_3$	P00436	
☒ Chloride	P00940	2400
☐ MBAS	P38260	
☐ Phenols	P32730	
☐ Hardness - tot as $CaCO_3$	P00900	
☐ Sulfate	P00945	
☐ Oil & Grease	P00556	
☐ Petroleum Hydrocarbons	P45501	
☐ Cyanide	P00720	

CONDITION CODES

☐ Weather Conditions	P00041	
☐ Flow Severity	P01351	
☐ _____ Severity	P01[illegible]	
☐ _____ Severity	P01[illegible]	

NUTRIENTS

LEVEL ☐ HIGH ☐ LOW

☐ NO_2 N	P00615	
☐ $NO_2 + NO_3$ N	P00630	
☐ NH_3 N	P00610	
☐ Tot. Kjeldahl N	P00625	
Ortho PO_4 as P / Total PO_4 as P	☐ P671, ☐ P665	
Hydrolizable PO_4 as P / Total PO_4 as P	☐ P662, ☐ P650	

☐ As - tot ug/l	P01002	
☐ Cd - tot ug/l	P01027	
☐ Cr - tot ug/l	P01034	
☒ Cu - tot ug/l	P01042	1027
☐ Fe - tot ug/l	P01045	
☒ Hg - tot ug/l	P71900	41.0
☐ Mn - tot ug/l	P01055	
☐ Ni - tot ug/l	P01067	
☒ Pb - tot ug/l	P01051	156
☒ Zn - tot ug/l	P01092	1865

ADDITIONAL ANALYSIS

☐ _____	P _____	
☐ _____	P _____	
☐ _____	P _____	

RESULTS mg/L unless otherwise noted

CHAIN OF CUSTODY

Date	Time	Relinquished by	Received by	Purpose

Part 1(White) - Water Quality Inventory Copy
Part 2(Green) - Chemistry Copy
Part 3(Pink) - Water Resources Copy (For Transmission)
Part 4(Yellow) - Bacteriology Copy

Form VST-001
8/79

STATE OF NEW JERSEY
Department of Environmental Protection
Water Analysis

COC

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

MUNICIPALITY: CITY OF NEWARK	COUNTY: ESSEX	STREAM:
FACILITY: TROY CHEMICAL CORP	LOCATION: AVE L.	
REPRESENTATIVE:	TITLE:	COLL NAME: C. Maack
REMARKS: MONITORING WCH # 3A (SHALLOW)		DIV: K. McBRIDE, J. MUMMAN

BACT. LAB NO. ____
DATE REC'D. ____
BOTTLE NO. 06962
DATE REC'D ____
STORET ENT ____ READ ____

Station Identification Number	YR. MO. DAY	HOUR	Sample No.
SC	811117	1350	FB 06962

FIELD ANALYSIS

☐ Water Temp °C	P00010	
☐ D.O. Winkler	P00300	
☐ D.O. Probe	P00299	
☐ pH (Field)	P00400	
☐ Sample Depth-ft.	P00003	
☐ Stream Flow-CFS	P00061	
☐ Gage Height ft	P00065	
☐ Spec. Cond. 0.25°C	P00095	
☐ Salinity ‰	P00480	
☐ Tide Stage	P70211	

CONDITION CODES

☐ Weather Conditions	P00041	
☐ Flow Severity	P01351	
☐ ____ Severity	P013	
☐ ____ Severity	P013	

NUTRIENTS

LEVEL ☐ HIGH ☐ LOW

☐ NO_2 N	P00615	
☐ NO_2 + NO_3 N	P00630	
☐ NH_3 N	P00610	
☐ Tot Kjeldhal N	P00625	
☐ Ortho PO_4 P / PO_4	P671 / P660	
☐ Phosphorus tot as P / PO_4	P665 / P650	

BACTERIOLOGICAL – DILUTIONS (REQUESTED)

Fecal Coliform / Total Coliform		
Fecal Streptococci		
Fecal coli #100 ml	☐ MPN P31615, ☐ MF P31613	
☐ Fecal Strept MPN/100ml	P31677	
☐ Tot coli MPN 100 ml	P31505	

BIOCHEMICAL OXYGEN DEMAND

INITIAL D.O. ____ SAMPLE
SEED ____ NO
CONC. ____
BOD ____

☐ BOD	☐ 5-DAY P310, ☐ 6-DAY P312	
COD ☐ Low Level / ☒ High Level	P335, P340	688
☐ TOC	P00680	
☐ Color Pt. Coli	P00080	
☐ Turbidity	P00070	
☐ Suspended Solids	P00530	
☐ Suspended Solids fixed	P00540	
☐ Tot. Solids	P00500	
☐ Tot. Solids fixed	P00510	
☐ Tot. Dissolved Solids TDS	P00500	

☐ pH (LAB)	P00400	
☐ Alkalinity as $CaCO_3$	P00410	
☐ Min. Acidity as $CaCO_3$	P00436	
☒ Chloride	P00940	510
☐ MBAS	P38260	
☐ Phenols	P32730	
☐ Hardness - tot as $CaCO_3$	P00900	
☐ Sulfate	P00945	
☐ Oil & Grease	P00556	
☐ Petroleum Hydrocarbons	P45501	
☐ Cyanide	P00720	
☐ As - tot ug/l	P01002	
☐ Cd - tot ug/l	P01027	
☐ Cr - tot ug/l	P01034	
☒ Cu - tot ug/l	P01042	1840
☐ Fe - tot ug/l	P01045	
☒ Hg - tot ug/l	P71900	7.6
☐ Mn - tot ug/l	P01055	
☐ Ni - tot ug/l	P01067	
☒ Pb - tot ug/l	P01051	630
☒ Zn - tot ug/l	P01092	4010

ADDITIONAL ANALYSIS

☐ ____ P ____
☐ ____ P ____
☐ ____ P ____

RESULTS mg/L unless otherwise noted

CHAIN OF CUSTODY

~~NPP Not properly preserved by [illegible]~~

Part 1(White) - Water Quality Inventory Copy
Part 2(Green) - Chemistry Copy
Part 3(Pink) - Water Resources Copy(For Transmission)
Part 4(Yellow) - Bacteriology Copy

Form VST-001
8/79

STATE OF NEW JERSEY
Department of Environmental Protection
Water Analysis

Coa

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

MUNICIPALITY: CITY OF NEWARK	COUNTY: ESSEX	STREAM:
TROY CHEMICAL CORP	LOCATION: AVE L.	
REPRESENTATIVE:	TITLE:	COLLECTOR: C. MOACR, K. McBRIDE, J. MOMMAN, HS&E
REMARKS: MONITORING WELL #2A (SHALLOW)		

BACT. LAB NO. ____
DATE REC'D. ____
BOTTLE NO. 06964
DATE REC'D. ____
STORET ENT. ____ READ ____

Station Identification Number	YR. MO. DAY	HOUR	Sample No.
SC	811117	1430	FB 06964

FIELD ANALYSIS

☐ Water Temp °C	P00010	
☐ D.O. Winkler	P00300	
☐ D.O. Probe	P00299	
☐ pH (Field)	P00400	
☐ Sample Depth-ft.	P00003	
☐ Stream Flow-CFS	P00061	
☐ Gage Height ft.	P00065	
☐ Spec. Cond. @ 25°C	P00095	
☐ Salinity ‰	P00480	
☐ Tide Stage	P70233	

CONDITION CODES

☐ Weather Conditions	P00041	
☐ Flow Severity	P01351	
☐ ____ Severity	P013	
☐ ____ Severity	P013	

NUTRIENTS

LEVEL ☐ HIGH ☐ LOW

☐ NO_2 N	P00615	
☐ NO_2 + NO_3 N	P00630	
☐ NH_3 N	P00610	
☐ Tot Kjeldahl N	P00625	
Orth PO_4 as P / PO_4	☐ P671, ☐ P660	
Phosphorus tot as P / PO_4	☐ P665, ☐ P650	

BACTERIOLOGICAL – DILUTIONS (REQUESTED)

Fecal Coliform / Total Coliform		
Fecal Streptococci		
Fecal col. #100 ml	☐ MPN P31615, ☐ MF P31613	
☐ Fecal Strept MPN/100ml	P31677	
☐ Tot coli MPN 100 ml	P31505	

BIOCHEMICAL OXYGEN DEMAND

☐ BOD	☐ 5-DAY P310, ☐ 6-DAY P312	
COD	☐ Low Level P335, ☒ High Level P340	958
☐ TOC	P00680	
☐ Color Pt. Co.	P00080	
☐ Turbidity	P00070	
☐ Suspended Solids	P00530	
☐ Suspended Solids fixed	P00540	
☐ Tot. Solids	P00500	
☐ Tot. Solids fixed	P00510	
☐ Tot. Dissolved Solids TDS	P00400	

☐ pH (LAB)	P00400	
☐ Alkalinity as $CaCO_3$	P00410	
☐ Min. Acidity as $CaCO_3$	P00436	
☒ Chloride	P00940	1150
☐ MBAS	P38260	
☐ Phenols	P32730	
☐ Hardness - tot as $CaCO_3$	P00900	
☐ Sulfate	P00945	
☐ Oil & Grease	P00556	
☐ Petroleum Hydrocarbons	P45501	
☐ Cyanide	P00720	
☐ As - tot ug/l	P01002	
☐ Cd - tot ug/l	P01027	
☐ Cr - tot ug/l	P01034	
☒ Cu - tot ug/l	P01042	2055
☐ Fe - tot ug/l	P01045	
☒ Hg - tot ug/l	P71900	74.0
☐ Mn - tot ug/l	P01055	
☐ Ni - tot ug/l	P01067	
☒ Pb - tot ug/l	P01051	556
☒ Zn - tot ug/l	P01092	1430

ADDITIONAL ANALYSIS

☐ ____ P ____
☐ ____ P ____
☐ ____ P ____

RESULTS mg/L unless otherwise noted

CHAIN OF CUSTODY

Date	Time	Relinquished by	To (Name)
			DEC [illegible] 1981

Part 1 (White) - Water Quality Inventory Copy
Part 2 (Green) - Chemistry Copy
Part 3 (Pink) - Water Resources Copy (For Transmission)
Part 4 (Yellow) - Bacteriology Copy

Form VST-001
8/79

PLEASE TYPE OR PRINT WITH BALLPOINT PEN

STATE OF NEW JERSEY
Department of Environmental Protection
Water Analysis

COC

BACT. LAB NO.	
DATE REC'D.	06965
BOTTLE NO.	~~06966~~
DATE REC'D	
STORET ENT / READ	

MUNICIPALITY: City of Newark	COUNTY: Essex	STREAM:
FACILITY: Troy Chemical Corp.	LOCATION: Ave. L.	
REPRESENTATIVE:	TITLE:	COLL NAME: Dave Mack
REMARKS: MONITORING WELL #1A (SHALLOW) ~~McBRIDE~~ J. Murman		

Station Identification Number: S C

YR. MO. DAY: 81 11 17

HOUR: 1250

Sample No.: P B 06965

FIELD ANALYSIS

☐ Water Temp °C	P00010,	
☐ D.O. - Winkler	P00300,	
☐ D.O. - Probe	P00299,	
☐ pH (Field)	P00400,	
☐ Sample Depth-ft.	P00003,	
☐ Stream Flow-CFS	P00061,	
☐ Gage Height-ft.	P00065,	
☐ Spec. Cond. @ 25 °C	P00095,	
☐ Salinity ‰	P00480,	
☐ Tide Stage	P70211,	

CONDITION CODES

☐ Weather Conditions	P00041,	
☐ Flow Severity	P01351,	
☐ _____ Severity	P013__,	
☐ _____ Severity	P013__,	

NUTRIENTS

LEVEL ☐ HIGH ☐ LOW

☐ NO_2 - N	P00615,	
☐ NO_2 + NO_3 N	P00630,	
☐ NH_3 N	P00610,	
☐ Tot Kjeldahl N	P00625,	
Ortho PO_4 as P	☐ P671, ☐ P660,	
Hydrolyzable tot as P PO_4	☐ P665, ☐ P650,	

BACTERIOLOGICAL – DILUTIONS (REQUESTED)

Fecal Coliform / Total Coliform	10	1	-1 10	-2 10	-3 10	-4 10	-5 10	-6 10
Fecal Streptococci	10	1	-1 10	-2 10	-3 10	-4 10	-5 10	-6 10

Fecal coli @100 ml	☐ MPN P31615, ☐ MF P31613,	
☐ Fecal Strept MPN/100ml	P31677,	
☐ Tot coli MPN/100 ml	P31505,	

BIOCHEMICAL OXYGEN DEMAND

INITIAL D.O. (IAD) _____ SAMPLE

	SEED	YES	NO
CONC. %			
BOD _			

☐ BOD	☐ 5-DAY P310, ☐ 6-DAY P312,	
COD ☐ Low Level / ☒ High Level	P335, P340,	628
☐ TOC	P00680,	

☐ Color Pt - Co	P00080,	
☐ Turbidity	P00070,	
☐ Suspended Solids	P00530,	
☐ Suspended Solids fixed	P00540,	
☐ Tot. Solids	P00500,	
☐ Tot Solids - fixed	P00510,	
☐ Tot Dissolved Solids (TDS)	P70300,	

☐ pH (LAB)	P00400,	
☐ Alkalinity as $CaCO_3$	P00410,	
☐ Min. Acidity as $CaCO_3$	P00436,	
☒ Chloride	P00940,	800
☐ MBAS	P38260,	
☐ Phenols	P32730,	
☐ Hardness - tot as $CaCO_3$	P00900,	
☐ Sulfate	P00945,	
☐ Oil & Grease	P00556,	
☐ Petroleum Hydrocarbons	P45501,	
☐ Cyanide	P00720,	

☐ As - tot ug/l	P01002,	
☐ Cd - tot ug/l	P01027,	
☐ Cr - tot ug/l	P01034,	
☒ Cu - tot ug/l	P01042,	449
☐ Fe - tot ug/l	P01045,	
☒ Hg - tot µg/l	P71900,	8.0
☐ Mn - tot ug/l	P01055,	
☐ Ni - tot ug/l	P01067,	
☒ Pb - tot ug/l	P01051,	48
☒ Zn - tot ug/l	P01092,	191

ADDITIONAL ANALYSIS

☐ _____	P _____	
☐ _____	P _____	
☐ _____	P _____	

RESULTS mg/L unless otherwise noted

CHAIN OF CUSTODY

Date	Time	From (Name)	To (Name)

Sampler _____

Part 1.) - Water Quality Inventory Copy
Part 2.) - Chemistry Copy
Part 3.) - Water Resources Copy (For Transmission)
Part 4. Bacteriology Copy

MEETING AT TROY CHEMICAL
12/10/82

PRESENT	REPRESENTING
Milton Nowak, Vice President	Troy Chemical
Arthur Straubing, P.E.	Consultant to Troy
Mike Nalbone	NJDEP - Region II
Ferdinand Scaccetti	NJDEP - Region II
Mario J. Graglia	PVSC
Jay Stewart	Lowenstein Sandler, Brochin, Kohl Fisher and Boylan for Troy Chemical

The purpose of the meeting was a RCRA Inspection by members of the NJDEP. The reason for PVSC representation at this meeting was to resolve questions of solvent disposal by Troy Chemical.

In response to a question by Mr. Nalbone, Mr. Nowak stated that the products manufactured by Troy Chemical in descending order of volume were:

Metallic Soaps

Organic Fungicides

Mercury Compounds

Mr. Nowak then outlined the basic process for manufacturing these products.

Metallic Soaps - An organic acid such as Napthenic acid is reacted with a solvent, usually mineral spirits and Litharge (Lead Oxide) to produce a lead soap containing 24% lead. Mr. Nowak claimed that there was no waste material that goes to the sewer from this process. This product is made in runs or campaigns where a predeterminated number of batches are produced for inventory. The reactors are

cleaned with solvents at the end of the campaign and the washings are put into drums and labeled "lead wash", "cobalt wash", etc. The main user of metallic soaps is as driers in the paint industry.

Organic Fungicides - Monethanolamine is reacted with paraformaldehyde to make product. As in the case of metallic soaps, this product is made in campaigns and the reaction vessel is only cleaned between product changes. The reactor is cleaned with water and is put into drums labeled "174 wash", "192 wash", etc. The main use of organic fungicides is in the paint industry.

Mercury Compounds - Benzene, acetic acid and mercuric oxide are reacted together to produce Phenyl Mercuric Acetate (PMA). Reactors are cleaned with Benzene and the washes are used in subsequent batches. The mercury and solvents that find their way into the sewer are from the filtration steps after the basic PMA is made. Mercury compounds are used as bacteriacides.

Mr. Nowak claims that when he filled out the PVSC Sewer Connection Application they did not have any waste hauled away by private haulers. When Troy Chemical was sold to another group, it was decided to make a thorough clean-up of the area. Many unidentified drums and discontinued batch washes were sent to SRS in Elizabeth, N.J. for recovery. Mr. Nowak claims that they now separate the solvent in house instead of sending it off site. In response to a question about the solvents used at Troy Chemical, Mr. Nowak stated that they use Mineral Spirits and Super Flash Naptha. He also claimed that they may have a 55 gallon drum of xylene on site for research or customer service application. Water soluble solvents such as methanol and ketones are also used.

Benzene is used as a reactant and not as a solvent.

Mr. Nowak later stated that they were accumulating oil from their solvent recovery tank and would send it out to SRS when they had accumulated a sufficient amount.

An inspection of the Troy Chemical facilities was then made. They had recently experienced a spill which Mr. Nowak claimed came from their solvent separation tank. It appeared to me that the spill came from an overflow of an open tub under what appeared to be a filter alongside the solvent separation tank. Sand, which was used to sop up the spill seemed heaviest around the open tub. We then went to the sample point. The LEL recorder chart had run out and the pen was recording on an empty roller. The LEL reading was 18 with very little flow going thru the flow measurment flume. The pH recorder was operating and the pH was 8 which was within PVSC limits. The sampling jug was full to overflowing. A small sample of material was taken from the sample jug. No layering of solvent was observed. The sample had a slight detergent odor. Mr. Nowak stated that he would see to it that the LEL and sampling system were properly maintained.

Mario J. Graglia
Supv. Mont. & Surv.

MJG:dk

DRAFT

DEVELOPMENT OF PERMIT LIMITATIONS FOR:

TROY CHEMICAL CORPORATION
NEWARK, NEW JERSEY

NJ 0031453

Submitted to:

New Jersey Department of Environmental Protection
1474 Prospect Street
Trenton, New Jersey

Submitted by:

JRB Associates
One Sears Drive
Paramus, New Jersey 07652

N.J. P.O. Number P51564
JRB Project Number 2-835-07-198-00

April 29, 1985

BBEC00000

TABLE 3 (Cont.)

TOXIC AND HAZARDOUS MATERIALS INVENTORY

For Chemicals Purchased or Used over 1000 pounds per year

Company Name Troy Chemical Corporation

Plant Location (city or state) One Avenue L, Newark, N.J. 07105

Plant Name Troy Chemical Corporation

Permit No. NJ0031453

Chemical Name	Annual Qty. Purchased or used, lbs.	Avg. Qty. Stored lbs.	Method of Storage (1)	Usage (2)	Potential for Aqueous Contact (3)	Secondary Containment (4)
Zirconium	240000	20000	A&C	B	C	A
Benzene	100000	28000	A	B	C	A
Lead Oxide	80000	10000	F	B	C	C
Styrene	90000	10000	C	B	C	C
Mercury	240000	7600	G	B	C	C
Toluene	10000	6000	C	A	C	C
Iodine	360000	100000	C	B	C	C
142	30000	8000	F	D	C	C
Tributyl Tin Oxide	20000	4000	C	B	C	C
Dioctyl Phthalate	1600	800	C	A	C	C

Notes:

1. (a) Tanks - above ground
   (b) Tanks - below ground
   (c) Drums
   (d) Rail Cars
   (e) Tank Trucks
   (f) Other bags

2. (a) Solvent
   (b) Raw Material
   (c) Intermediate Material
   (d) Final Product
   (e) Co/By-Product
   (f) Catalyst
   (g) Contaminant
   (h) Other _____

3. (a) High
   (b) Medium
   (c) Low
   (d) None

4. (a) Concrete tank farms
   (b) Earthen berms or dik
   (c) None
   (d) None required (i.e. underground tank, gaseous material)
   (e) Other _____

TABLE 6

Occidental Chemical Corporation

Enumeration and Comparison of Wastewater Parameters

Samples Collected April 28, 1980 by NJDEP

Parameter	Stormwater Runoff				Overflow from Collection System
	C27080	C27081	C27082	C27085	C27083
Chloride (mg/l)	NA	1K	202	2579	135
COD (mg/l)	NA	44	698	NA	1302
Cyanide (mg/l)	NA	NA	0.117	0.080	0.012
Copper (mg/l)	0.188	0.013	0.195	0.382	0.013
Lead (mg/l)	0.333	0.079	1.750	2.533	0.046
Arsenic (mg/l)	QNS	0.011	0.006	0.002	0.019
Zinc (mg/l)	5.692	0.104	3.021	14.33	0.884
Mercury (mg/l)	0.350	0.300	0.350	3.00L	0.400
Benzene (mg/l)	NA	NA	NA	245	523
Styrene (ug/l)	NA	NA	150	25,000	NA
m,p - xylene (ug/l)	NA	NA	55	NA	NA
o-xylene (ug/l)	NA	NA	75	NA	NA
Propyl Benzene (ug/l)	NA	NA	100	NA	NA
Mesitylene (ug/l)	NA	NA	180	NA	NA

NA - Not addressed or omitted

QNS - Quantity not sufficient - Test not conducted

K - Less than

L - Greater than

TROY CHEMICAL COMPANY, INC.
ONE AVENUE L
NEWARK, ESSEX COUNTY, NJ
EPA ID # NJD002144517

GENERAL INFORMATION AND SITE HISTORY

Troy Chemical Company, Inc. is located at 1 Avenue L in a heavily industrialized section of Newark, Essex County. The company has manufactured specialty paint additives at this 6 acre facility since approximately 1956. Prior to 1956 the site was utilized by numerous industries including American Cyanamid/Calco, Heller and Merz, and Amalgamated Dyestuff and Chemicals for the manufacture of a variety of chemicals and dyes.

The site has been subdivided many times since the early 1900s making it difficult to assess exactly who previously owned/operated which portions of the present Troy site. However, review of Sanborn Fire Insurance Maps covering the time period between the early 1900s and 1951 revealed the current Troy site, along with the Albert Steel Drum/Prentiss Drug and Chemical site located directly north of Troy's facility, were actually part of one large operation. This facility extended from Wilson Avenue almost to Delancey Street in a north to south direction, and from Avenue L to the railroad tracks in a west to east direction. It is unknown exactly when the larger site was divided into its present day dimensions but it is believed the final subdivision occurred sometime in the early to mid-1950s.

According to the Sanborn Maps, Heller and Merz Company, a manufacturer of colors and dyes, operated here from 1908 to 1931. From 1931 to 1951 the maps indicate that Calco Chemical Company and American Cyanamid occupied the property. The dates provided in the Sanborn Maps are very rough estimates since these maps were only updated periodically. It is probable other industries also operated at the site between 1908 and 1951 but commenced and ceased operations between the periodic updates of the maps.

A deed search at the Essex County Hall of Records indicates the following ownership chronology: (note: due to the lack of records prior to 1951, accurately determining the exact owners is difficult)

Current owners - Troy Chemical Company, Inc.

June 24, 1980 - New Chemical Corporation purchased the property from the Troy Chemical Corporation. In actuality, New Chemical was formed to purchase the assets of Troy Chemical, and immediately after the acquisition changed its name to the Troy Chemical Corporation, Inc. (current owners). The name New Chemical Corp. was used to avoid confusion at the time of aquisition. (note: many of the principles of the former Troy chemical Corportation are involved with Troy Chemical Corp. Inc. and New Chemical in similar capacities).

November 5, 1960 - Troy Chemical Corporation purchased the property from the Pulaski Skyway Realty Corporation. At this time a separate industry, the Wilson Refining Company, was leasing and operating out of Building 61.

February 20, 1951 - The Pulaski Skyway Realty Corporation purchased the property from the Pulaski Skyway Realty Company.

December 28, 1945 and August 7, 1946 - The Pulaski Skyway Realty Company purchased portions of the property from American Cyanamid/Calco.

April 20, 1938 - Calco purchased a portion of the property from Amalgamated Dyestuff and Chemical.

December 29, 1932 - Calco purchased a portion of the property from Harry L. Huelsenbeck, sheriff of Essex County. This portion of the site was formerly owned by the Monarch Distributing Company and apparently auctioned off in a sheriff's sale by Mr. Huelsenbeck.

March 12, 1930 - Calco purchased 28 tracts of land from the Heller and Merz Company.

Further searching through the deeds revealed much of this area was owned by private citizens prior to 1930.

Although land use in the immediate vicinity of the site is characterized by heavy industry, numerous large residential sections of Newark, Kearny and Harrison exist within a 3 mile radius of the site. The nearest residential area to the site lies approximately 0.5 mile to the north within the City of Newark. Additionally, demography for the area cannot be limited to the established populations. Extensive "transient" populations are continuously present at the Newark Airport and the New Jersey Turnpike and may be susceptible to sudden releases from the Troy facility. The Newark Airport is approximately 1 mile south of the site and the Turnpike is less than 2000 feet to the east.

SITE OPERATIONS OF CONCERN

Troy Chemical Company manufactures a variety of specialty chemicals used in the paint industry as preservatives, biocides, dryers, rheology agents (flow agents), surfactants and dispersants. Non-mercurial biocides are the company's major product, accounting for approximately 52% of Troy's total operations (based on 1987 percentages). The remainder of Troy's total operations are incorporated in the production of driers (19%), surfactants

(12%), LLBA (6%), defoamers (4%), dispersants (3%), rheology agents (3%), catalysts (<1%) and anti-skinning agents (<1%). The company also formerly manufactured mercury based compounds which were used as preservatives and bacteriocides in paint. According to company officials, mercury related operations accounted for approximately 6% (based on 1986 production totals) of the company's total operations; however, the manufacture of these compounds ceased in February 1987. The company maintains the above referenced information concerning the production totals is confidential, and should remain confidential under statutes set forth in section

Production of the speciality chemicals occurs almost exclusively through batch mixing and blending operations. Due to the extensive number of compounds manufactured by the company and the limited knowledge of the majority of the manufacturing processes, only general process schemes for organic fungicides, metallic soaps (drying agents) and mercury compounds will be discussed in this report.

The production of Troysan Polyphase products, the tradename for Troy's organic fungicides, involves mixing monoethanolamine and paraformaldehyde in a reactor and then heating the mixture. The resulting product is filtered off and the filtrant is adjusted to the proper concentration. According to company officials, no waste is generated in this process. Spent filter paper from all manufacturing processes is reportedly shipped off site as hazardous; however, the fate of the filtrate is unknown.

Metallic soaps, including those containing zinc, lead, zirconium, cobalt, copper, magnesium and calcium are manufactured in Buildings 90 and 91. Each specific type of metallic soap is manufactured to a predetermined content of the particular metal. For instance, the metallic soap Troymax Lead 24% (tradename) would be a lead soap containing 24% lead.

The general process scheme for the production of the metallic soaps involves mixing an organic acid and a solvent in a reactor. The metal source (usually a metal oxide) is added and a reaction is accomplished through heating and agitation. The metal source, as well as the organic acid and solvent, varies for the production of each specific type of soap. Excess solvent/water is separated and used in the next batch for that particular soap. According to company officials, there is no waste generated during these processes.

The production of the mercury compounds appears to have been the most involved of all of Troy's manufacturign operations. Mercury was purchased in metallic form and converted to mercuric oxide. The mercuric oxide was the major precursor in the production of organic mercuric compounds such as phenylmercuric acetate, choromethoxypropyl mercuric acetate, phenyl mercuric sulfide and phenylmercuric oleates.

This first step in this process involved washing mercury metal to triple distilled purity by allowing the mercury to fall through a column containing an acid solution. This mercury washing generated approximately 2 to 3 gallons of acid solution every few months (note: the fate of this acid solution is unknown). The washed mercury metal was then reacted with concentrated nitric acid to form mercuric nitrate. The mercuric nitrate was reacted with sodium hydroxide and the resultant mercuric oxide removed by filtration. The filtrate from this process was one of the major sources of mercury bearing wastewater, accounting for approximately 700 gallons of wastewater per batch with an average of 10 batches per week. Spills, leaks and equipment washings from this operation were another source of mercury-bearing wastewater.

In the manufacture of the organic-mercuric compounds from the mercuric oxide, only the production of the phenyl mercuric sulfide resulted in wastewaters to be discharged (not recycled back into operation).

Of the four organic-mercuric compounds manufactured by the company, only

described in any detail. This process involved the mixing of benzene, acetic acid and mercuric acid in a reactor. The resulting PMA was adjusted to the proper concentration by the addition of solvent. After the reaction was complete, the vessels were rinsed with benzene and the solution generated placed in drums for use in the next batch.

Reportedly all discharged mercury bearing wastewater, including that generated in the production of mercuric oxide and phenyl mercuric sulfide, entered a sulfide precipitation treatment system. This system should not be confused with the company's overall wastewater treatment system and therefore, to avoid confusion in the report, we will refer to the two systems separately as the mercury bearing wastwater treatment system and the overall plant wastewater treatment system.

Prior to 1965, all process wastewaters, including untreated mercury bearing wastewaters, were discharged to Pierson's Creek which roughly bisects the site north to south. From 1965 to 1976, the mercury bearing wastewaters were treated by sulfide precipitation prior to being discharged to Pierson's Creek; however, all other process wastewaters were still being discharged untreated into the creek. In 1976, the overall plant wastewater treatment system was installed, receiving both the effluent from the mercury bearing wastewater treatment system (prior to cessation of the mercury operation) and the wastewaters from all of the "non-mercury" processes.

The mercury-bearing wastewater treatment system consisted of two settling tanks (A and B), a reaction and precipitation tank, a plate and frame filter press and another settling tank. The mercury bearing wastewater was discharged to Settling Tank A and liquid was allowed to overflow to Settling Tank B where the pH was adjusted to approximately 9.0. The wastewater was apparently discharged to the neutralization tank where calcium sulfide and iron sulfate were added. After agitation, the wastes were filtered and the filtrate recycled until the mercury content was reduced sufficiently for discharge to the Passaic Valley Sewage Commission (PVSC). However, prior to discharge to the PVSC the wastewater was treated in the overall plant wastewater system. Filter cake remaining on the filter paper was heated to drive off the mercury. This heating probably occurred in the three on site muffle type furnaces used by the company to recover mercury from sludges and other solid materials. A discussion of the muffle furnaces will be included in the section on the air route. After the mercury was driven from the filter cake, the remaining material was disposed of in the on site dumpster. According to Mr. Milton Nowak, Vice President of Troy Chemical, the material disposed of in the dumpster consisted basically of clay and iron oxide; however, it is unknown if this material had been analyzed.

The overall plant wastewater treatment system received the wastes from the mercury bearing wastewater treatment system in addition to waste streams from other company processes. However, as was previously stated, the company reincorporates much of their cleaning solutions generated from washing the process equipment back into the next reaction for that particular process, thereby limiting the amount of wastewater generated. Herein lies a disparity between various reports as the company's IWMF worksheet states wastewaters entering the treatment system are "generated from the washing of reactors used during production process operations".

The wastewater from the washings and spills is collected in sumps located in the process building. From here the wastewater is discharged to a 10,000 gallon collection tank. An oil/solvent layer is allowed to form on the surface and is then discharged to a 5,000 gallon tank where it is stored until a large enough quantity is collected for offsite removal. According to company officials, it takes approximately 1.5 to 2 years for a large enough quantity to accumulate to make it economically feasible for removal. This waste is considered hazardous.

The "water" remaining in the 10,000 gallon collection tank is then pumped to a second 10,000 gallon tank where neutralization and precipitation occur. The wastewater is then filtered and the filtrate is discharged to the Passaic Valley Sewage Commission (PVSC) under provisions provided in a sewage connection permit (#20403290). Troy Chemical continuously monitors the effluent discharge to the PVSC for LEL and pH. The effulent is also monitored quarterly for Biological Oxygen Demand (BOD), Total Suspended Solids (TSS) and petroleum hydrocarbons (PHCs). The effluent was formerly monitored for mercury triweekly prior to the cessation of the mercury processes.

The fate of the precipitate, filtrant and spent filter material (cloth) generated during the filtration and precipitation stages of the overall wastewater treatment system is unknown. According to Ed Capasso, Environmental Manager for Troy, the filter material consists of a cloth mesh; however, he believes most of the solid passes through. Also of interest is the fact that the wastewater remaining after the oil/solvent layer is not analyzed for volatile organics because it is not believed to be necessary. However, this does not take into consideration the possible presence of substances such as TCE and tetrachloroethylene which are more dense than water and would sink rather than float.

Another source of confusion concerning the Troy facility is the determination of the company's RCRA status. In November 1980, the company submitted a Part A RCRA application for storage of hazardous wastes in containers and tanks. The company was subsequently listed as a RCRA TSD facility. However, when the EPA requested submission of the Part B application in 1982, the company claimed they "need not store hazardous wastes on site for more than 90 days and accordingly hereby withdraws its application for a RCRA permit". Troy was delisted to generator only status in October 1983 by the USEPA and, after considerable controversy, by the NJDEP in August 1984. The two separate dates for delisting occurred as a result of variance in the state and federal regulations concerning classificastion of TSD facilities. Under New Jersey regulations, a facility which stores hazardous wastes in tanks for a period of time is considered a TSD whereas, under federal regulations, tank storage of hazardous waste must occur for more than 90 days for a facility to be classified as a TSD.

The company's RCRA status becomes even more confusing in light of the fact that hazardous waste (the oil/solvent layer from the wastewater treatment plant) is currently stored on site in tanks for a period exceeding 90 days. Based on this information, the company would be considered a TSD under both state and federal regulations. However, under criteria set forth in NJAC 7:14A-4.2(a), the company avoided TSD classification by being considered a Industrial Waste Management Facility (IWMF) under Division of

wastewater treatment facility receiving an influent wastewater which is a hazardous waste and generating a residue (the oil/solvent layer) which is also considered hazardous. Since the hazardous waste storage tank is an integral part of the wastewater treatment system, the tank falls under IWMF regulations. A "gray" area exists between IWMF and RCRA classification in that a company can be considered a TSD as well as an IWMF if the residue generated is stored in containers for longer than 90 days. However, the same does not apply for tank storage. Since containers and tanks would both be considered RCRA regulated units under normal circumstances, the loopholes which exist in the current regulations do not appear to be justifiable. The major concern with the company being classified as an IWMF only is that no secondary containment is required around the IWMF hazardous waste units.

As was previously stated, the oil/solvent layer from the wastewater treatment process is collected in a tank until enough has been generated to make it economically feasible to transport it off site. Solvents Recovery Service (SRS) of Linden, New Jersey formerly received the majority of Troy's oil/solvent wastes. According to Mr. Cappasso, the last shipment of the hazardous oil/solvent material occurred sometime in 1986. Mr. Capasso stated another shipment should be made sometime in 1988.

Other hazardous waste (from a RCRA standpoint) generated at the facility included spent sorbent booms from Pierson's Creek as well as filtrate and spent filter paper from the manufacturing processes. It is believed these wastes are stored in drums; however, drum storage reportedly occurs for less than 90 days. The filtrate and filter paper are assumed to be hazardous and have been shipped by AETC to an incinerator in North Carolina operated by Stablex. The sorbent booms which were placed in Piersons Creek to contain spills will be discussed in the section on surface water.

A review of aerial photographs at the NJDEP, Office of Environmental Analysis revealed numerous suspicious areas which also warrant further investigation. Areas of concern from the photographs reviewed will be discussed in turn.

Photographs covering the period 1934 to 1940 (photos dated November 1934, April 6, 1940 and April 28, 1940) revealed that most of the current Troy site was undeveloped; however, a few buildings were present on the eastern side of Pierson's Creek. These buildings were probably part of the American Cyanamid/Calco site previously referenced. It appears that landfilling operations had begun throughout much of the remainder of the current Troy site, especially on the western side of Pierson's Creek. In the 1954 photo, what appears to be drums are located in the landfill area. It is unknown if the landfilling was related to the American Cyanamid/Calco operations.

Photographs dated April 7, 1951 and December 5, 1953 revealed a more defined landfill area. An access road to the landfill(which is outlined in white) is visible in the 1951 photograph. Buildings and a few above ground tanks are present on the eastern side of the creek. The 1953 photo reveals a suspicious white area in the approximate center of the landfill and possible stained ground near what would be the northern border of the current Troy site.

The most revealing of all of the photographs was that taken on April 20, 1961. More buildings and aboveground tanks are present on the eastern side of Pierson's Creek. Although it cannot be substantiated by the aerial photographs only, it appears hundreds of drums were stacked for burial in the southwestern quadrant of the landfill area. It is difficult to assess if this suspicious area would actually be on the present-day Troy site as the landfill area appears to have extended well beyond (in a westerly direction) the present day Avenue L.

The March 25, 1972 aerial photograph revealed the majority of the facilities are still located on the eastern side of Pierson's Creek although aboveground tanks are also present on the western side of the creek. Most, if not all of the site is still unpaved.

Photographs from August 6, 1978 revealed the company's operations had grown immensely. Above ground tanks and thousands of drums are evident throughout the site. Most of the site still appears to be easily accessible.

The most recent photographs reviewed were taken on March 23, 1986. Most of the site appears to be unpaved and resembles its present day state; however, one suspicious area was noted in the southwestern portion of the property.

GROUNDWATER ROUTE

The Troy Chemical Company site lies within the Piedmont physiographic province of the Appalachian Highlands physiographic division. Geology in the area is characterized by formations of Recent, Pleistocene and Triassic Age deposits.

Each of these units as they relate to the site will be discussed in turn. General information pertaining to geology in the vicinity of the site was obtained from the USGS Special Report #10 entitled, "Preliminary Report on the Geology and Groundwater Supply of the Newark, New Jersey Area" and Special Report #28 entitled "Groundwater Resources of Essex County, New Jersey". More site specific data was obtained from a hydrogeological study performed for Troy Chemical by Wehran Engineering in 1981. This study included installation and monitoring of six onsite monitor wells.

Since the two streams which transverse the site are actually man-made drainage ditches, unconsolidated recent deposits, originating from stream deposition are not an integral part of the site geology.

According to boring logs developed during installation of the onsite monitor wells, the uppermost "geologic" unit at the site would consist of fill material ranging from 6 to 10 feet in depth. The presence of fill is consistent with the information obtained during review of the aerial photographs. It is interesting to note that Boring Log 3A indicates a huge void was encountered at a depth of 6.2 feet. The location of Boring 3A would very roughly approximate the area of possible drum burial observed in the 1961 aerial photograph. According to the boring logs, the fill material appears to consist of concrete, bricks, cinders, wood and boulders as well as sand and gravel. Monitor Well 3A is screened exclusively in this unit.

The first naturally occurring geologic unit encountered would be the unconsolidated sediments of Pleistocene Age. The Pleistocene sediments could be divided into two general categories, stratified or unstratified drift. These sediments consist basically of clay, silt, sand, gravel and boulders. The deposits in the Newark area are mostly considered unstratified drift deposits and are therefore not heavily utilized as a groundwater source since sufficient quantities of water can only be obtained from deposits in the stratified drift. For the purpose of this report, the lithologic units described in the Wehran Engineering boring logs occurring between the fill material and the residual bedrock encountered in Boring 1 will be considered as the Pleistocene Deposits. According to the boring logs these include lacustrine as well as glacial till deposits. Only one boring (Boring 1) was progressed into the Brunswick Formation, therefore the thickness of the Pleistocene deposits at the site can only be assessed from this one boring (assuming the Pleistocene deposits are the entire unit between the fill and the Brunswick Formation). The depth of this unit, as determined from Boring 1, is approximately 65 feet thick. According to the boring logs, no extensive aquifer system (sand or gravel) is present at the site, however most of the units within the Pleistocene deposits, especially within Borings 2 and 3, were reported to be saturated, possibly indicating that this system does not serve as an adequate aquitard and is capable of groundwater storage and transmittal. Therefore, vertical and horizontal migration of contamination is possible. All of the wells, with the exception of Monitor Well 3A, are at least partially screened within the Pleistocene deposits. Groundwater flow in these deposits appears to be in a south-southeast direction.

The last unit encountered is the Brunswick Formacion, which consists of consolidated shales in the vicinity of the site. Although the primary porosity of the shale itself is extremely low and inadequate for storage and transmittal of groundwater, secondary porosity resulting from cracks and fractures provides ample space for groundwater storage. Numerous industrial and cooling water wells in the vicinity of the site draw from the Brunswick Formation. Review of well records at the NJDEP/Division of Water Resources/Bureau of Water Allocation also indicated a few wells in the Newark area utilize the Brunswick Formation for domestic purposes; however, officials of the Newark City Water Department claim that everyone in Newark is connected to the city water supply. This water is obtained from the Pequannock and Wanaque water sheds. Only Boring 1 was progressed into the Brunswick Formation; however, the well screen was ended in the Pleistocene deposits. Due to the nature of the Brunswick Formation, with groundwater transmittal occurring through cracks and fractures, no definitive grounwater flow direction can be ascertained.

Contamination of the Brunswick Formation resulting from site activities is possible due to the leaky nature of the Pleistocene deposits and the fact that the Brunswick Formation probably receives most of its recharge from the overlying units.

The six Monitor Wells were sampled on four occasions between August 1981 and May 1982 by the Wehran Engineering Company. Split samples were obtained by NJDEP on two of these occasions. A summary of the available groundwater data is included in Tables 1 through 6.

The wells were initially sampled by Wehran Engineering on August 25, 1981

detected in all six wells; however, only the concentration in Monitor Well 1A (9.3 ppm) exceeded the Groundwater Quality Criteria Guidelines of 5 ppm. Mercury was detected in five of the wells with the concentrations above the Groundwater Quality Guidlelines of 2 ppb in each of these wells. Concentrations of mercury ranged from 85 ppb in Monitor Well 2 to 22.96 ppm in Monitor Well 2A.

Both the NJDEP and Wehran collected samples from the six wells on November 11, 1987 (see tables 2 and 5). Samples collected by the NJDEP were analyzed for mercury, copper, lead, zinc, pesticides/PCBs, chloride and COD. The Wehran samples were analyzed for purgable organics, pesticides/PCBs, COD, chloride, mercury, copper, lead and zinc. Analysis of the Wehran samples again revealed mercury contamination above the Groundwater Quality Guidelines in the same five wells as during the August 25, 1981 sampling episode. In addition, the levels of copper in Monitor Wells 1A, 2A, 3; lead in 2, 2A and 3; benzene in 1A, 2 and 3A; chlorobenzene in 1A; tetrachloroethylene in well 3A; 1,1,1-trichloroethane in 3A; and TCE in 2A and 3A were above the Groundwater Quality Criteria. Toluene was also detected in low concentrations in all six wells. Extremely high concentrations of chlorides were also detected in all six wells, but this probably attributable to salt water infiltration. The NJDEP samples also revealed concentrations of mercury above the Groundwater Quality Criteria in every well with the exception of Monitor Well 2. The metals fraction for the Monitor Well 2 sample was not properly preserved and therefore not analyzed. It should be noted that although the mercury concentrations were above the Groundwater Quality Criteria, they were at levels much lower than those detected in the Wehran samples. The discrepancies in the concentrations may be a result of differing sampling and/or analytical protocols. Also, since it cannot be ascertained whether the samples were actually split properly between the two sampling groups (DEP and Wehran), it is possible the aliquots collected by each group had varying concentrations of contaminants. Of special interest in the NJDEP samples was the presence of 7.5 and 6.5 ppb of Aroclor-1254 in Monitor Wells 2 and 2A, respectively. Since Aroclors do not readily migrate through the soil column and into groundwater, the source of the Aroclor contamination in these wells may be the result of "tainted" fill or the actual disposal and burial of Aroclor wastes. Another possibility is that migration was facilited by the presence of solvents which acted as carriers. The wells were again sampled by Wehran Engineering on May 14, 1982 (see Table 3). The samples were analyzed for mercury only, with the concentrations in all six wells above the Groundwater Quality Criteria. The highest concentration, at 12.5 ppm was again detected in Monitor Well 2A.

On May 27, 1982, the wells were sampled again by NJDEP and Wehran (see Tables 4 and 6). The NJDEP samples were analyzed for a variety of parameters including arsenic, cadmium, lead, mercury, hexavalent chromium, cyanide, chloride, COD and volatile organics. The Wehran samples were analyzed for mercury only. The concentrations of mercury in all six wells for both the NJDEP and Wehran samples were above the Groundwater Quality Criteria, with the concentrations detected in the Wehran samples again well above the concentrations in the NJDEP samples. Here again the differences in concentration may be attributable to varying sampling and/or analytical procedures. Other analytes surpassing the Groundwater Quality Guidelines included arsenic in Wells 1, 1A and 3A; lead in 2 and 3; cyanide in 2A and

benzene in 1A, 2A and 3A; and chlorobenzene in 1A and 2A. Numerous aromatic compounds were also detected in many of the samples.

On November 17, 1989, NJDEP Bureau of Planning and Assessment (BPA) conducted a Site Inspection (SI) which included the sampling of Monitor Wells 2 and 2A to be analyzed for the Target Compound List (TCL) plus 30 peaks and PHCs. Analysis of Monitor Well 2 showed levels of cadmium (18 ppb), chromium (241 ppb), lead (1,140 ppb), PHCs (7,600 ppb), and benzene (2,600 ppb) above Groundwater Quality Criteria Guidlines as well as low levels of other organic compounds. Analysis of the deeper well (Monitor Well 2A) revealed levels of chromium (118 ppb), lead (515 ppb), mercury (4.96 ppb), benzene (2,200 ppb), and toluene (18 ppb) over clean-up levels as well as low levels of other organic compounds. See Table 11 for complete results.

Monitor Wells 1 and 1A were not sampled due to the fact that they had been destroyed and covered over with macadam. Monitor Wells 3 and 3A were not sampled because the covers could not be removed without removing part of the well casing.

It is important to note that many of the contaminants detected including mercury, lead, copper, zinc and benzene are highly utilized in many of the company processes possibly implicating Troy Chemical as at least a partial contributor to groundwater contamination in the area. Also noteworthy is the presence of contamination in both the shallow and deep monitor wells indicating vertical migration of the contaminants. The extremely high concentrations of mercury consistently detected in Monitor Wll 2A, especially in the Wehran samples, may represent evidence of a small pocket (plume) of contamination in the vicinity of this well.

SURFACE WATER ROUTE

Two small drainage ditches exist within the Troy Chemical site. The two ditches converge near the approximate southern border of the Troy site, eventually discharging to Newark Bay. Tank farms, process buildings and storage areas line both sides of the westernmost drainage ditch known as Pierson's Creek which bisects the site north to south. According to reports, Pierson's Creek was originally part of a private drainage system which extended to a stream known as Dead Creek. This system was constructed sometime in the mid 1800s when this area of Newark was first being developed. Although the current origin of Pierson's Creek is unknown (Dead Creek cannot be located on present day maps), it appears to run underground upstream of the Troy Site, at least partially through the Albert Steel Drum/Prentiss Drug Site, finally surfacing at a point approximately 50 yards north of Troy's property. As the creek enters the Troy site, the drainage ditch turns into a concrete flume. The City of Newark installed the flume in 1956; however, it is not known if it is continuous until the creek terminates at Newark Bay. In June 1977, the company installed a containment wall along the flume to prevent the migration of spilled/leaking materials into Pierson's Creek; however, numerous inspections revealed cracks and holes in the wall which permitted materials to discharge directly into the creek.

The easternmost creek roughly borders the eastern edge of the Troy site and is labeled as a tributary to Pierson's Creek on various reports. This creek was reportedly part of Newark's storm drainage system as early as 1910. The origin of this creek is unknown. This creek is also concrete lined.

As previously stated, all of Troy's process wastewaters (including mercury bearing wastewaters) had been discharged untreated into Pierson's Creek from the mid-1950s to 1965. From approximately 1965 to 1976, mercury bearing wastewaters were treated by sufide precipitation prior to being discharged to the creek; however, all other process wastewaters continued to be discharged untreated. Finally in 1976, the overall plant wastewater treatment system was installed resulting in the treatment of all wastewater before discharge. The fate of precipitate generated from the sulfide precipitation process (operating from 1965 to approximately 1987) is unknown.

In July 1977, Troy applied for a NJPDES permit to discharge noncontact cooling water, boiler blowdown and condensates into Pierson's Creek. This permit (#0031453) was effective from May 31, 1978 to September 30, 1980. Six discharges, designated 001 to 006, where included in the initial permit. The following describes the sources of the discharges:

001 - non contact cooling water from reactor vessels and blowdown from cooling towers.

002-003 - boiler blowdown - only active in winter.

004-006 - steam condensate from steam traps on heaters and other steam lines.

In March 1980, Troy submitted a renewal application for their NJPDES permit, however as a result of deficiencies in the renewal application due

in part to the transfer of the company's assets, which occurred at this time, the NJDEP refused to recertify Troy's NJPDES permit. Although the permit was not renewed until August 1985, the company continued to discharge to Pierson's Creek. According to Michael Russo of the NJDEP/Division of Water Resources/Bureau of Industrial Waste Management, a company would be allowed to continue discharging under the previous permit limitations as long as the revised permit renewal application was submitted in a timely manner, which apparently occurred in this case. Prior to obtaining the renewed permit, Troy discontinued the discharges from Discharges 002 to 006. Under provisions of the renewed permit, which is valid until September 30, 1990, the company is required to monitor Discharge 001 on a monthly basis for flow, pH, temperature, TSS, COD and oil and grease. In addition, this discharge is monitored quarterly for benzene, mercury, zirconium, cobalt and iodine. Review of the Discharge Monitoring Reports (DMRs) for the period covering January 1986 to June 1988 revealed the company has had only one excursion of any of the permit limitations. The excursion occurred in April 1988 when the Total Suspended Solids limitation of 50 ppm was exceeded by a TSS of 70 ppm. It should also be noted, that 20 ppb of benzene was reported in the January 1988 DMR.

Although the DMRs, especially those from 1986 to the present, show commendable NJPDES compliance, non NJPDES regulated sampling (either sampling conducted prior to the company obtaining their NJPDES permit or samples of non NJPDES regulated discharges) reveal gross contamination of Pierson's Creek and its sediment. Due to the extensive sampling of discharges to the creek, the creek sediment and the creek itself, each individual sample will not be discussed in this report. However, a brief description of significant data collected will follow.

On August 18, 1977, the NJDEP/Division of Water Resources collected samples of discharges to Pierson's Creek, as well as samples of the creek itself. The sources of the discharges included an onsite septic tank, cooling water from the Mercury Distillant Plant, the fungicide plant and the boiler room. The parameters selected for each sample were specific to the discharge source location. For example, the septic tank discharge was analyzed for parameters usually associated with sewage such as nitrates, nitrites, ammonia, chloride and various indicator parameters. The indicator parameters include, but are not limited to, color, pH, total solids and COD. (Note: these indicator parameters were also analyzed in other samples but for the remainder of the report will be referenced only as indicator parameters). Two water samples, one upstream and one downstream of the septic tank, were collected from Pierson's Creek and analyzed for the same parameters as the septic tank discharge samples. Of interest in the two stream samples was the increase in ammonia and nitrites in the downstream sample. The highest level of these contaminants was detected in the discharge sample itself with the level in the downstream sample approximately one half the concentration detected in the discharge sample:

	DISCHARGE SAMPLE	DOWNSTREAM SAMPLE
Ammonia	26.1 ppm	16.4 ppm
Nitrite	0.010 ppm	0.0006 ppm

The results of these samples indicate that the company's septic system was discharging sewage into Pierson's Creek. Dye testing of the company's toilet facilities during a previous NJDEP inspection revealed the location of the septic tank discharge.

The sample of the cooling water discharge from the Mercury Distillant Plant was analyzed for chromium (total and hexavalent), copper, lead, zinc, mercury and indicator parameters. High levels of mercury (42.2 ppb) as well as low concentrations of lead (0.001 ppm), copper (0.020 ppm), total chromium (0.002 ppm) and zinc (0.525 ppm) were detected in this sample.

The Fungicide Plant sample was analyzed for mercury, lead, zinc, chromium (hexavalent and total), calcium, iodine, pesticides and indicator parameters. In addition to 39 ppb of mercury, significant concentrations of iodine (4.0 ppm) and ronnel (8.7 ppm), an insecticide, were detected in this sample. Low concentrations of zinc, lead and total chromium were also detected. The pH of this sample was reported to be 10.3.

Stream and discharge samples were again collected by the NJDEP on September 1, 1977. Two stream samples were collected from Pierson's Creek, one upstream sample near the northern portion of site just as the stream enters the Troy site and one onsite sample from near the Mercury Reclaiming Plant. Both samples were analyzed for mercury, lead, zinc, chromium (hexavalent and total in the downstream sample, total only in the upstream), sulfate and indicator parameters. Of greatest significance in these two samples was a greater than five fold increase in mercury concentration in the downstream sample indicating a discharge from an onsite source was contributing to contamination of the creek.

Two discharge samples were also collected on September 1, 1977. Sources of these samples consisted of overflows from the wooden cooling water tank and the boiler room. Both of these samples were analyzed for similar parameters including mercury, lead, zinc, sulfate, total chromium, calcium and indicator parameters. In addition, the sample from the wooden cooling tower was analyzed for iron. Mercury, zinc, calcium and sulfate were detected in low concentrations in both of the samples. Iron and total chromium were also detected in the wooden cooling tower and boiler room overflow samples, respectively.

Mercury and zinc were detected in a sample of cooling water discharge from the Mercury Distillant Plant collected by the NJDEP on December 8, 1977. Besides zinc and mercury this sample was also analyzed for arsenic and indicator parameters.

Nine samples, including four surface water and five sediment samples, were collected along and near Pierson's Creek during an inspection by the USEPA on June 6, 1979. All of the samples were analyzed for mercury content only. Two of the water samples were collected directly from Pierson's Creek, one upstream and one downstream of the Troy facility. A significant increase in mercury in the downstream water sample (56 ppb versus 0.5 ppb) indicates the Troy facility is the source of the largest portion of the contamination. It should be noted that the concentration of mercury detected in the sediment samples decreased in the downstream versus upstream sample. This may be due to migration of insoluble forms of

mercury from the upgradient Albert Steel Drum/Prentiss Drug site which also has documented mercury contamination. However, since Pierson's Creek can be considered tidal, contaminated sediment can also be carried short distances upstream during tidal stages. This effect (higher concentrations in upstream versus downstream samples) would not be apparent in water samples unless sampling occurred as the tide was coming in.

As a result of the information obtained during the June 6, 1979 inspection, the USEPA requested a search warrant to investigate the site under provisions provided in section 1318(a) (B) of the Clean Water Act. In the request for the warrant, the USEPA indicated the company was discharging mercury in possible violation of their NJPDES permit. The warrant was subsequently issued by the U. S. District Court for the New Jersey District with an investigation being conducted by the USEPA on July 12, 1979. During the investigation, water and sediment samples were collected from Pierson's Creek at locations 5 and 100 feet upstream of the Troy Site, 100 and 250 yards downstream and at two locations within the site. Of the four samples collected on site (two water and two sediment), two samples (one water and one sediment) were collected approximately 50 feet upstream of the southern edge of the plant near Dicharge 001, and the two other samples (one water and one sediment) were collected near the mercuric oxide manufacturing area. All of the water samples were analyzed for heavy metals and Total Organic Carbon (TOC). The sediment samples were analyzed for mercury only. Four additional water samples were collected from Pierson's Creek and analyzed for volatile organics. Of the four additional samples, one was collected approximately 5 feet upstream of the Troy Site, one within the site, downstream of all the manufacturing processes and two at locations 100 and 250 yards downstream of the Troy property. A summary of the data is included in Table 7.

The majority of volatile organics detected in the downstream water samples were at higher concentrations than in the upstream (background) sample, indicating most of the contamination is emanating from the Troy site. Also of interest are the concentrations of mercury in the sediment samples, especially those collected from within the Troy site boundary. A substantial increase in mercury concentration in Pierson's Creek is evident in the samples collected from onsite sources versus samples collected from upgradient offsite sources. Although the mercury concentrations detected in the upgradient offsite samples should be considered significant (140 ppm, 100 feet upstream and 191 ppm, 5 feet upstream), the concentrations in the onsite samples (22,400 ppm and 11,600 ppm) are indicative of continuous discharges and/or spills of insoluble forms of mercury over several decades. Also of interest is the increase of mercury concentration in the downstream (3,120 ppm, 100 yards downstream and 244 ppm, 250 yards downstream) versus the upgradient offsite samples (see above).This further substantiates that the company's activities have seriously impacted the quality of Pierson's Creek. In addition to the sediment samples from Pierson's Creek, one sediment sample was also collected from the easternmost creek. Mercury was detected at 83,200 ppm in this sample.

The NJDEP performed additional sampling of the creek and discharges to such on August 2, 1979. A total of eleven samples were collected including seven discharge samples, two stream samples from Pierson's Creek and two sediment samples from Pierson's Creek. Apparently, one of the discharge samples actually discharged to the sanitary sewer, and therefore will not

collected from the designated NJPDES Discharges 001, 005 and 006. The sample from Discharge 001, which was analyzed for volatile organics, mercury, arsenic, COD, and oil and grease, contained low concentrations of mercury (11 ppb), oil and grease (1.6 ppm) and COD (19 ppm).

Discharge 005 was analyzed for mercury and COD only, with 45 ppb of mercury and 12 ppm COD being detected. Similar concentrations of mercury (51 ppb) and COD (8 ppm) were detected in the Discharge 006 sample which was analyzed for volatile organics in addition to mercury and COD. Although the limitations for the six discharges in the initial NJPDES permit (issued in May 1978) are unknown, the concentrations detected in these samples were well below the current NJPDES limitation for Discharge 001. It should be noted however, that no mercury limitation has been established. One of the other discharges sampled on August 2, 1979 reportedly originated from the oil/water separator influent which discharges to Pierson's Creek (the oil/water separator was apparently located within Pierson's Creek).

This sample was analyzed for volatile organics and oil and grease. Significant quantities of benzene (726 ppb), tetrachloroethylene (500 ppb), and 1,2-dichloroethane (7250 ppb) were detected in this sample. A sample of the intake from Pierson's Creek leading to the oil/water separator also revealed the presence of benzene, tetrachloroethylene and 1,2-dichloroethylene, but at much lower concentrations than in the oil/water separator influent sample entering Pierson's Creek. The last discharge sample collected originated from the onsite locker room and was analyzed for parameters associated with sewage. Extremely high coliform counts in this sample indicated untreated sewage was being discharged directly into the creek.

Two water samples were collected from the creek itself, one from a location 5 feet upstream of the northern property line and one directly downstream of the southern property line. The upstream sample was analyzed for oil and grease, total chromium, arsenic, mercury and volatile organics; the downstream sample for phenols, oil and grease, total chromium, arsenic, volatile organics, mercury and pesticides.

A comparison of the concentrations of mercury, benzene, and arsenic detected in the two samples revealed a very slight increase in the downstream sample for each analyte, again indicating the company was contributing to surface water contamination. Phenols (102 ppb) and diazinon (1.62 ppb) were also detected in the downstream sample. Tetrachloroethylene, 1,2-dichloroethane, toluene and xylenes were detected in the upstream sample but not in the downstream sample, leading to the conclusion that the Troy Chemical Company is not the sole contributor to the contamination of Pierson's Creek. Sediment samples were also collected at upstream (10 feet north of the northern property line) and downstream (immediately inside the southern site boundary) locations. Both samples were analyzed for volatile organics, mercury, arsenic and total chromium. Although the concentration of mercury was lower in the downstream sample, 4.3 ppm versus 4.6 ppm in the upstream sample, the concentrations of arsenic and chromium were approximately four and ten times greater respectively, in the downstream versus upstream samples. Also of interest were the concentrations of chloroform (>50 ppm), 1,2-dichloroethane (7.815 ppm) and benzene (12.5 ppm) in the downstream sample. No volatile organics were detected in the upstream sample. A point worthy of reiteration is

are (or have been) heavily utilized in the company's processes.

On April 28, 1980, six discharge samples and four soil samples were collected by the NJDEP. The soil samples will be discussed in the section concerning soils. Two of the discharge samples were collected from stormwater discharges to the easternmost drainage ditch (the tributary to Pierson's Creek) and were to be analyzed for mercury, copper, lead, arsenic and zinc. However, due to insufficient sample quantities, only mercury analysis was performed on one of the samples; the arsenic analysis was deleted on the other sample. In one of the samples a mercury concentration of greater than 3 ppm was reported. Mercury droplets were reportedly only as further substantiation of the company's continuing contribution to contamination of Pierson's Creek, but also as evidence that secondary containment at the site is inadequate to prevent spills and leaks from migrating to the creek. Based on these results, it could also be concluded that spills are not contained and removed promptly creating numerous "non-point source discharges" which ultimately permit the contaminants to migrate to the creek via stormwater runoff, overflows, etc.

Wehran Engineering collected water and sediment samples from Pierson's Creek in August of 1981 (exact date unknown). Three sediment samples identified as Upstream #1, Midstream #2 and Downstream #3 were analyzed for total solids, volatile solids, COD and mercury. The supernatant from the sediment samples was analyzed for total organic carbon and mercury. Review of the data for sediment and supernatant samples revealed elevated levels of mercury in the upstream samples relative to the downstream samples. However, all three samples were collected well within the Troy site, therefore, the upgradient sample cannot be considered truly indicative of the contamination being contributed by offsite sources. It should also be noted that many of the mercury process areas were located along Pierson's Creek near the Upstream #1 sample location. Also of interest in the sediment samples was the progressive increase in the concentration of volatile solids and COD in the midstream and downstream samples revealing the presence of oxygen demanding constituents (possibly the volatile solids) in the middle and lower sections of the creek. Two water samples were also collected from the creek, one just as the creek enters the site (background) and one as the creek leaves the site. The samples were analyzed for mercury and zinc with elevated levels of both contaminants present in the downstream sample. Here again, the increase in contamination in the downstream sample revealed soluble forms of zinc and mercury are continuously being discharged to the creek from the Troy site.

On May 1, 1985, one sample was collected at NJPDES Discharge 001 by the NJDEP. The sample was analyzed for indicator parameters including chloride and COD. A field pH measurement using pH paper was also taken, with the reported value of 5.0 being below the NJPDES permit limitation of 6.0 standard units. Also, the level of COD (220 ppm) exceeded the NJPDES permit limitation of 50 ppm. The level of COD was estimated, however, since the sample was improperly preserved.

During the November 17, 1989 NJDEP, BPA Site Inspection, five surface water and seven sediment samples were collected and analyzed for the TCL plus 30 peaks. Surface Water/Sediments 1 through 4 were collected in Pierson's Creek with 1 being slightly upgradient of the facility and 2,3 and 4 located progressively downgradient.

The following contaminants were detected in Surface Water (SW)-1: benzene (10 ppb), lead (103 ppb), mercury (10.8 ppb) and PHCs (5,300 ppb). Analysis of SW-2 revealed detectable levels of volatile and semi-volatile organic compounds as well as elevated levels of lead (105 ppb), mercury (8.2 ppb) and PHCs (1,400 ppb). Detectable levels of volatile and semi-volatile organic compounds were found in SW-3 as well as elevated levels of 1,1,1-trichoroethane (210 ppb), trichoroethene (100 ppb), benzene (70 ppb), tetrachloroethene (60 ppb), lead (194 ppb), mercury (7.5 ppb) and PHCs (1,700 ppb). Analysis of SW-4 revealed detectable levels of volatile and semi-volatile organic compounds along with lead (263 ppb), mercury (66 ppb) and PHCs (7,400 ppb). SW-5, which was collected from a storm drain in the center of the current operational portion of the site, showed elevated levels of methylene chloride (460 ppb), lead (230 ppb) and PHCs (28,000 ppb).

While the surface water samples show a pattern of slightly elevated levels of organics, metals and PHCs from upstream to downstream samples, results of the concurrent sediment sampling are much more indicative of long-term discharges.

Progressively increasing levels of some organic and inorganic substances were found in Sediments-1 through 3 with Sediment-4 exhibiting lower values than Sediments-2 and 3. Of significance to this investigation is the pattern of increasing volatile organic, copper, lead and mercury concentrations. Table 8 represents upstream to downstream concentrations in Pierson's Creek sediment. See Table 11 for complete results.

Additionally, 4,4'-DDD, cadmium, chromium and zinc were detected in significant amounts in these samples; however, the higher upstream concentrations may be indicative of contaminants migrating from offsite sources.

Sediments-5, 6 and 7 were collected in the tributary to the east of the site, with Sediment-5 located upstream, Sediment-6 midstream and Sediment-7 downstream. As with Sediments-1,2 and 3, these samples indicate a pattern of increasing contamination from upstream to downstream locations. Table 9 summarizes the significant results.

The numerous samples which have been collected by the NJDEP, the USEPA and Wehran Engineering indicate that both permitted and unpermitted discharges by the company have had a detrimental impact on surface water quality in Pierson's Creek and its tributary. Although most of the samples collected were from continuous or common sources, another source of contamination from the conpany's activities, direct spill discharges, should also be considered. Historically, spills, leaks and poor housekeeping have contributed to contamination of the surface water by migrating to the creeks via storm water runoff, overflows, etc. Since the runoff, overflows, etc. would actually dilute the concentration of contaminants present, these discharges, although significant, may not be as deleterious to the creek as the direct spill discharges of pure product and/or wastes. Review of available information has revealed at least three "minor" spills of various substances including naptha, mineral spirits and sewage have occurred at the site since February 1987. These spills were reportedly contained and the spilled materials removed before any of the materials migrated off site. It is unknown if any unreported spills have occurred

Prior to 1987, however, direct spill discharges to Pierson's Creek apparently were commonplace. Many of these spills were not reported to the NJDEP by the company, as required in the Spill Act, but rather from complaints or "tips."

One such spill incident occurred in January of 1984 with the NJDEP being notified of the spill by the New Jersey Division of Criminal Justice. Samples collected by Division of Criminal Justice personnel revealed the creek upgradient of the site was clear, while downgradient of the site a brown and green liquid covered the surface of the stream. Field testing indicated the brown liquid was flammable. The exact source of the spill could not be determined by Marc Gruslovic of the NJDEP who responded to the spill, however the source was believed to be from near or within Building 91. Building 91 is currently a process building and probably served a similar function at the time of the spill. It is unknown if the aforementioned samples were ever analyzed. Troy Chemical contracted Clean Venture to contain and remove the spill material. The company claimed the green material observed was a dye, formerly manufactured by American Cyanamid when they operated at the site, which emanates from the ground whenever it rains.

A series of spills had also occurred in the fall of 1978 and the winter of 1979. The succession of events pertaining to these spills were reported by Ed Faille of the NJDEP. These events as they pertain to discharges to Pierson's Creek will be discussed in the following paragraphs. Further information concerning Mr. Faille's inspections will be discussed in the <u>Other Considerations</u> section under the heading "Unstable Containment of Wastes."

The first spill was inadvertently discovered by Mr. Faille on October 12, 1978 while inspecting the adjacent Albert Steel Drum site. Mr. Faille reported that oil was present in Pierson's Creek within the Troy site boundry. Upon further investigation of the Troy facility, numerous point source and non-point source discharges were discovered entering Pierson's Creek. The point source discharges included, "a pump that was leaking around the packing, discharging the waste materials into the stream", and a sump pump within the containment area for a tank whose contents were reported to be "metallic dryers and metallic naphthalene". The non-point source discharges included substances leaching into the creek from varoius onsite locations. The exact source of the oil observed by Mr. Faille was not reported, however, officials of Troy Chemical claimed that it originated from upstream sources. Several samples were colected during the inspection but apparently were never analyzed.

On October 19. 1978, Mr. Faille reinspected the site and observed numerous environmental problems including a white substance in the stream sediment. Several samples were collected but apparently were never analyzed.

Mr. Faille again inspected the site on October 26, 1978. During the inspection, it was observed that many of the discharges had been discontinued and a collection box was installed to prevent the leachate from discharging directly to the creek. In addition, the white sediment was removed from the creek and a boom was placed in the creek near the downstream property boundary. An inspection on November 1, 1978 revealed the collection systems were working effectively and the company was about to install an oil skimmer in the creek. According to company official, the material entrapped in the collection box was placed in drums for disposal off site. The disposal location for these wastes is unknown.

On January 17, 1979, a spill originating from a process room behind the offices (probably Building 91), had again entered Pierson's Creek. The spilled material reportedly contained mineral spirits, high flash naptha, oleic acid, naphthenic acid and alkali soluble methacrylate polymer. In addition, the overall conditions of the entire facility had deteriorated to its previous state. The company contracted Olsen and Hassold to contain the spill which, due to the large quantities involved, took more than a week to contain and remove. The spill reportedly extended downstream to Delancey Street. In response to the spill and the continuous discharges leaching from the walls of concrete flume, filter fences were installed by Olsen and Hassold. Leach boxes were also to be installed at the south side of the site.

A followup inspection on January 29, 1979, however, revealed another spill had entered the creek and again apparently originated from Building 91. According to Troy's maintenance personnel, they were ordered to pump this material into the stream because heavy rains caused flooding in the process building. Mr. Nowak, Vice President for the company, denied that the maintenance personnel had beeen ordered to discharge to the creek. The spilled material was subsequently rerouted to the company's pretreatment system under the direction of Mr. Faille and a contractor (Olsen and Hassold, Inc.) was hired to clean up the spill.

A followup inspection was performed by Mr. Faille on December 11, 1979. Although the overall facility conditions had improved, the pollution

abatement systems installed in Pierson's Creek were not operating properly. Company officials reported they would repair these systems to proper operating conditions. However, a final inspection on December 13, 1979 by NJDEP personnel had revealed the conditions at the site were again deteriorating and the pollution abatement devices in the creek were not working properly.

Another noteworthy incident occured during an inspection by NJDEP personnel on June 2, 1977. At this time, Milton Nowak, Vice President of Troy Chemical, claimed that the only discharge entering the easternmost drainage ditch originated from a cesspool overflow. The exact location and current status of the cesspool is unknown. During the inspection, numerous discharges were also observed entering Pierson's Creek.

Based on the information available it is clearly evident that past and present activities by Troy Chemical have seriously impacted the quality of water and sediment in Pierson's Creek and its tributary, both onsite and downstream of the facility. The surface water in this area is used for recreational, industrial and commercial purposes.

AIR ROUTE

The NJDEP/Division of Environmental Quality has received numerous complaints concerning odors and releases from the Troy facility, however inspections conducted to verify these complaints have been inconclusive.

On August 30, 1983, an explosion in one of the reactor vessels resulted in a release of contaminants including butyl isocyanate into the atmosphere. Although the exact cause of the explosion was not determined, it was believed an improperly operating agitation unit within the reactor was at least partially responsible. According to company officials the reactor contained hydroiodo propene which was dissolved in high flash naptha. The reactor was then charged with butyl isocyanate which normally results in an exothermic reaction. Apparantly the mixture was not properly agitated, allowing a layer of butyl isocyanate to form and causing the reaction to proceed with an increase in heat and pressure which could not be controlled by the cooling coils. According to reports, the entire contents of the reactor vessel was emptied in the explosion.

Improperly operating muffle type mercury recovery furnaces have also resulted in atmospheric releases of contaminants. On May 28, 1981 a stack test was performed on the three recovery furnaces to determine if mercury vapors were being emitted. The furnaces had been operating for approximately two years under a temporary certificate (#40322) prior to the stack test. The furnaces were designed to recover mercury from various solid materials including sludges and batteries. These materials would be placed on a pan which was sealed inside the furnace. The furnace was heated by underfired gas burners to a temperature where the charge material (sludge and batteries) reached the vaporization point of mercury. At this point the mercury to be recovered volatilized resulting in mercury emissions which were run through a series of water cooled condensors. The liquified mercury was then collected from the condensors. However, during the stack test it was noted very little flow was being emitted through the ejector Venturi Scrubber where the emission test was to take place indicating emissions were leaking from the system before reaching the air pollution control device (the scrubber). It was determined mercury

contaminated emissions were leaking from the charge doors on the furnaces. It was also believed that contaminants other than products of combustion were being emitted from the stacks. As a result of the improperly operating furnaces and control devices, notices of violation were issued to the company by the DEQ and it was recommended further stack testing be conducted prior to issuance of an approved permit (certificate). According to the Division of Environmental Quality's stack log for the company, the muffle furnaces were deleted from active operation on June 12, 1985. It is unknown if a subsequent stack test was ever performed on these furnaces.

To date, no environmental air sampling data for the site is available.

It should be noted that 74 stacks are listed on DEQ's stack log for the facility. Of the 74, 59 currently have certificate (permit) numbers although many have been deleted (currently inactive) and others are temporary. The sources of the stacks include but are not limited to, above ground tanks, reactor vessels and furnaces.

During a October 6, 1989 NJDEP,BPA Presampling Assessment (PSA) ambient air readings of up to 18 ppm on the OVA as methane and over 20 ppm on the HNu as isobutylene were observed. Additonally, numerous point sources of elevated readings were noted as well as a strong paint or acrylic odor.

SOIL

Much of the site was recently paved, thereby covering most of the exposed soil surfaces; however, inspections by the NJDEP in the late 1970s and early 1980s revealed visibly contaminated soil throughout the site, apparently the result of spills, leaks and overall poor housekeeping. On numerous occasions leaking drums were observed being stored on the exposed ground surface. Many areas of the site were also noted to contain mercury droplets.

On May 7, 1976, it was reported that cobalt hexoate and calcium hexanoate were leaking from one of the tank farms into the surrounding soil, eventually discharging into one of the on site drainage ditches. Reportedly the contaminated soil was subsequently removed and disposed of at Kin Buc Landfill in Edison, New Jersey. Apparently no analysis of the soil in this area was performed before or after it was removed, therefore it cannot be determined if all the contaminated soil was properly removed.

In September 1977, the company collected soil samples at various locations throughout the site. These samples were analyzed for mercury content only. Concentrations of mercury ranged from 0.046 ppm in the sample identified as Clean Fill #2 collected near the polyphase plant, to 0.55 ppm in the sample indentified as Container #1 taken near Avenue L. The sample collection procedures and exact sample locations are unknown.

On April 28, 1989, NJDEP collected four soil samples in addition to the surface water samples which were referenced previously. The data is summarized on Table 8. The most contaminated of the four samples was collected near an onsite dumpster. The exact location of this dumpster is unknown. This sample was analyzed for copper, lead, arsenic, mercury, pesticides and volatile organics. As indicated in Table 8, seven of the contaminants detected were above the NJDEP/Recommended Cleanup Levels for

these contaminants. In fact, the concentration of each individual volatile organic detected was above the cleanup level for total volatiles of 1 ppm. Relatively high concentrations of DDT and many of its breakdown products were also detected. Another highly contaminated sample was collected on the south side of the Fungicide Plant. This sample was analyzed for copper, lead, arsenic, zinc and mercury, with the concentrations of copper, lead, zinc and mercury above the NJDEP recommended action/cleanup levels.

Two soil samples were also collected from drum storage areas where obvious spillage had occurred. One of the storage areas is located on the south side of the Warehouse Building. The sample collected from this location was analyzed for copper, lead, arsenic, zinc, mercury, pesticides and volatile organics. The concentrations of copper, zinc, mercury and total volatile organics (as well as benzene and methyl isobutyl ketone, individually) were above the NJDEP recommended action/cleanup levels. The second drum storage area where a sample was collected was located in the "yard area", however it is unknown exactly where the yard area is located within the site. The sample collected from this area was analyzed for copper, lead, arsenic, zinc, mercury and volatile organics. Only the level of mercury exceeded the NJDEP action/cleanup levels.

Since each of these four samples was labeled as a composite sample, the concentrations reported were probably lower than the actual concentration due to the dilution which occurs when samples are composited.

During the November 17, 1989 NJDEP/BPA Site Inspection, five soil samples were collected and analyzed for the TCL plus 30 peaks and PHCs. Soil-1S and Soil-1D were collected in the north-central portion of the site to the west of Pierson's Creek at depths of 8 to 10 inches and 16 to 18 inches, respectively. Both samples showed concentrations in excess of clean-up levels for volatile and semi-volatile organic compounds, numerous heavy metals and PHCs. The shallow sample showed consistently higher levels than the deep samples for the majority of contaminants detected. Soils 2 and 3 were also located in the north-central portion of the site but on the east side of Pierson's Creek, with Soil-2 being slightly to the north of Soil-3. Soil-2 was collected at a depth of 12 inches while Soil-3 was collected at 0 to 6 inches. Low, but detectable, levels of some semi-volatile organic compounds and pesticides were found in both samples. In Soil-2, lead (153 ppm), mercury (355 ppm) and PHCs (340,000 ppb) were detected above clean-up levels. Also above clean-up levels in Soil-3 were: lead (246 ppm), mercury (736 ppm) and PHCs (960,000 ppb). Soils-4 and 5 were collected along the southern border of the site. Soil-4, which was collected at a depth of 2.5 feet, showed detectable levels of semi-volatile organic compounds as well as elevated levels of barium (1320 ppm), copper (174 ppm), lead (3920 ppm), mercury (2590 ppm) zinc (1320 ppm) and PHCs (4,4000,000 ppb). Soil-5 was collected in the western portion of the site at a depth of 6 inches. Analysis revealed detectable levels of volatile organics and elevated levels of semi-volatiles, arsenic (55.7 ppm), barium (584 ppm), copper (185 ppm), lead (2840 ppm) mercury (210 ppm), zinc (1835 ppm) and PHCs (14,000,000 ppb). Complete results of all soil samples can be found on Table 11.

Sampling events over the years have confirmed widespread, extreme contamination of substances that can be directly attributed to Troy's processes such as copper, lead, zinc, mercury and benzene.

stated that there had been numerous explosions in Building 91 in the past.

Due to the nature (flammables, reactives, combustibles etc.) of materials used and stored by the company, a potential for future fires/explosions exists. Past inspections by the NJDEP revealed that extremely poor housekeeping practices employed by the company had permitted many chemicals to intermix. If similar conditions persist, which is likely, incompatible materials may mix resulting in potentially explosive and/or hazardous conditions.

OTHER CONSIDERATIONS

DAMAGE TO FLORA AND FAUNA

The deterioration of water quality in Pierson's Creek as a result of releases of hazardous substances may have a detrimental impact on aquatic biota in the creek. Aquatic organisms in Newark Bay may also be affected since Pierson's Creek discharges to the bay.

Migratory bird species are also susceptible to damage as the site lies along the flyway for many of the birds and hazardous substances, especially from spills and leaks, are easily accessible to the birds.

CONTAMINATION OF FOOD CHAIN

The presence of many bioaccumulative and biomagnification threats such as DDT, mercury and lead in soil, surface water and sediment leads to a potential for food chain contamination. The aquatic ecosystems of Pierson's Creek and Newark Bay appear to be the most susceptible to food chain contamination.

DAMAGE TO OFFSITE PROPERTY

The Albert Steel Drum/Prentiss Drug Site located directly north of Troy Chemical was recently acquired by the Newark Housing and Redevelopment Authority for redevelopment. During an investigation of the property by the Newark Engineering Department and the U.S. Attorney's Office on June 8, 1979, hundreds of bags labeled "Troysan-Mercury Acetate" were found strewn throughout the Albert Steel Drum/Prentiss Drug Site. The bags were reportedly empty (unused) but a silver gray material was observed on the ground surface in the vicinity of the bags. Samples of the silver gray material were collected and analysis revealed the presence of phenylmercuric acetate and high concentrations of mercury (0.5% or 5000 ppm). Since mercury and phenylmercuric acetate are major components of Troysan, it is likely the silver gray material was off-spec Troysan and was disposed of on the Albert Steel Drum/Prentiss Drug Site with excess container bags. It is probable other wastes from Troy Chemical were also disposed on the Albert Steel Drum/Prentiss Drug Site.

During many of the previous inspections at the Troy site by the USEPA and NJDEP, in which stream and/or sediment samples were collected from Pierson's Creek, background (upgradient) samples were collected from Pierson's Creek on the Albert Steel Drum/Prentiss Drug Site. Since many of the Troysan bags and the silver gray material observed on the Albert Steel Drum/Prentiss Drug Site were found near the drainage ditch (Pierson's Creek), it is questionable whether the upgradient samples actually monitor background conditions, as it appears Troy Chemical is at least partially responsible for upgradient (background) contamination.

dition, the migration of contaminants offsite via Pierson's Creek may have impacted downstream offsite properties.

CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs

As was previously stated, Troy Chemical was issued a sewer connection permit (#204013290) to discharge treated process wastewater, various blowdowns and sanitary sewage to the Passaic Valley Sewage Commission (PVSC) Treatment Plant. The discharge to PVSC is monitored continuously for LEL and pH as well as quarterly for BOD, TSS and petroleum hydrocarbons. The discharge was formerly monitored triweekly for mercury prior to the cessation of the mercury processes. This permit is in conjunction with the NJPDES permit by rule category which delegates regulatory responsibility for discharge to an approved Publically Owned Treatment Works (POTW) to the POTW itself. In addition, as per federal regulations, the POTW is required to develop an Industrial Pretreatment Program (IPP) ensuring contributor compliance with the POTW regulations. On numerous occasions Troy Chemical has exceeded limitations of these permits allowing contamination, including excessive quantities of mercury, to be discharged to the sewage system.

Prior to connection to the PVSC sewage system, process wastewaters were discharged to Pierson's Creek and sanitary wastes to the onsite septic tank/leach field system. The leach field system apparently also discharged to Pierson's Creek; however, Newark City ordinances prohibited the use of septic systems in areas serviced by sanitary sewers and New Jersey State Regulations prohibited the use of septic systems in flood prone areas. the company was in violation of both state and local regulations they were required to tie into the PVSC system. The exact date in which they were permitted to tie into the PVSC system is unknown; however, as early as March of 1977, a former Troy Chemical employee alleged that the company's newly installed septic tank was actually tied into the sanitary sewer system. The septic system reportedly had a cutoff valve which permitted wastes, including biocides and flammables to be discharged to the sanitary sewer system at will; however, these allegations could not be substantiated.

A sample of the discharge to the city sewer was collected by the NJDEP on September 1, 1977 and analyzed for iodine, mercury, zinc, chromium (hexavalent and total), sulfate, chlorides, volatile organics and a variety of indicator parameters including pH. Analysis of the sample revealed low concentrations of mercury, total chromium, lead and zinc and 17,400 ppm of chloride. The volatile organic analysis was postive for methylene chloride and carbon tetrachloride. The pH of the sample was 11.6, which is above the current sewage connection permit limitation; however, it is unknown what the permit limitation for this parameter was at the time of the incident.

On August 2, 1979, a discharge to the sewage system was again collected by the NJDEP. This sample was analyzed for volatile organics, mercury, total chromium, arsenic, and oil and grease. A field pH of this sample was reported to be over 12.0. Extremely high concentrations of benzene (1,350 ppb), tetrachloroethylene (1,368 ppb), 1,2-dichloroethene (19,250 ppb), and oil and grease (367 ppm) were detected in this sample. Low concentrations of total chromium and arsenic were also detected. Due to interference, the concentration of mercury in the sample could not be determined. Of greatest significance in this sample is the presence of volatile organics

UNSTABLE CONTAINMENT OF WASTES

As previously addressed, waste management practices by the Troy Chemical Company, especially prior to 1986, have been inadequate and have contributed to soil, air, surface water and groundwater contamination. Many of these practices were referenced in previous sections and therefore will only be discussed briefly here.

Site conditions were best exemplified in various reports concerning inspections conducted by the NJDEP and the USEPA in the late 1970s and early 1980s. Although the numerous inspections spanned a period of greater than five years, overall site conditions remained relatively unchanged. Included in many of these inspection reports was reference to 4000 plus drums of wastes, raw materials and unknowns which were being stored throughout the site. Many of the drums were also reported to be in poor condition and were leaking. Since many of the drums were being stored on the unprotected ground surface, leaks and spills from the drums may have had a direct impact on soil contamination at the site.

In addition to the overall poor conditions of drums, tanks, etc. and the poor operational practices undertaken by the company, the inadequacy of secondary containment should also be considered. As was stated previously, many of the drums were stored on the unprotected ground surface, and even in areas where wastes were being stored on concrete or asphalt, berms were either non existent, inadequate or insecure to contain spills or leaks. Inspections had also revealed numerous cracks in the containment walls surrounding the tank farms and, in some instances, materials were observed leaking from the cracks. Numerous pipes were also observed throughout the site, many of which were leaking or discharging untreated wastes directly to Pierson's Creek. It should also be noted that reference was made to waste pits on site during an inspection by NJDEP personnel on June 6, 1977. The location and current status of these pits is unknown.

Another point worthy of consideration is the ultimate fate of the spills, leaks, drums, etc. which were removed for offsite disposal. In many cases, especially that relating to the removal of the 4,000 plus drums, the actual fate of the materials could not be determined due to conflicting reports concerning the removal and disposal. One report claims approximately 1,000 drums were hauled offsite for disposal by the Lightman Drum Company to Chemical Waste Management in early 1980. A report dated June 19, 1981 again states approximately 1,000 drums were removed by the Lightman Drum Company, but the disposal location was not reported. It is uncertain if these reports are actually addressing the same removal episodes. Yet still another report dated December 13, 1979 by Mr. Edward Faille of the NJDEP stated wastes from thousands of the drums were disposal via the PVSC, but the exact method of disposal was not specified. If the wastes were disposed in the sewage system, it is likely this represented an unpermitted illegal discharge as file reviews did not reveal any approvals from the PVSC for such disposal. The company claims that no manifests for the removal or disposal of any of these drums are available.

ILLEGAL/UNAUTHORIZED DUMPING

Known and suspected instances of illegal/unauthorized dumping were also addressed in previous sections and include the disposal of Troysan on the Albert Steel Drum/Prentiss Drug Site and those incidents observed on the aerial photography.

One alleged incident of illegal disposal which has not been referenced in previous sections occurred in the early 1980s and involved disposal of mercury wastes in the on site dumpster. Allegedly, mercury wastes were mixed with sand in 55-gallon drums and disposed of in the dumpster. Surveillance by the NJDEP, however, could not substantiate these allegations.

ENFORCEMENT ACTIONS

Numerous enforcement actions have been levied against the company resulting from violations of NJPDES, RCRA, air quality and local sewage commission regulations. A brief outline of some of the past regulatory/enforcement actions and the issuing agency is as follows:

- Issuing agency: NJDEP/Division of Hazardous Waste Management

August 19, 1987 - Amended Administrative Order and Notice of Civil Administrative Penalty Assessment (AAO/NCAPA)for failing to conduct semi-annual drills with local emergency response agencies and for failing to include in their contingency plan the emergency actions to be undertaken by facility personnel in case of releases of hazardous materials.

July 6, 1987 - Administrative Order and Notice of Civil Administrative Penalty Assessment (AO/NCAPA) for failing to arrange hazardous waste containers so the identification label is visible and for the violations referenced above The violation for failing to arrange the containers properly was later rescinded resulting in the Amended Administrative Order of August 19, 1987.

July 10, 1984 - Notice of Violation (NOV) for failing to submit a TSD annual report for 1983.

- Issuing agency: EPA

June 16, 1981 - Complaint, Compliance Order, and Notice of Opportunity for a Hearing regarding storage of ignitable waste without rendering them non-ignitable or protecting them from ignition; failing to operate the facility in a manner which would minimize the possibility of fires, explosions, releases, etc.; lacking adequate internal communication/alarm systems; and for failing to take precautions to prevent accidental ignition of ignitable wastes.

- Issuing agency: NJDEP/Division of Environmental Quality

June 14, 1984 - Notice of Prosecution (NOP) for failing to obtain a permit to construct, install or alter control equipment from the Department.

August 27, 1981 - Notice of Prosecution (NOP) for allowing benzene to be emitted into the atmosphere without registering the equipment with the Department.

June 25, 1981 - Notice of Prosecution (NOP) for utilizing three muffled mercury recovery furnaces, one of which was functioning improperly thereby permitting emissions to escape from the charging door.

March 26, 1981 - Notice of Prosecution (NOP) for using a recovery furnace without the Venturi Scrubber in use or functioning properly; and for failing to obtain a "Permit to Construct, Install or Alter Control Apparatus or Equipment" and a "Certificate to Operate Control Apparatus or Equipment" from the Department prior to installing/using a carbon adsorbtion unit.

July 14, 1980 - Notice of Prosecution (NOP) for using a mercury still and condenser without water service to the water layer emission reducer.

January 18, 1979 - Notice of Prosecution (NOP) for failing to obtain a "Permit to Construct, Install or Alter Control Apparatus or Equipment" prior to installing an 1800 gallon reactor.

July 10, 1978 - Notice of Prosecution (NOP) for failing to obtain a "permit" or "certificate" prior to installing/operating control equipment.

- Issuing agency: NJDEP/Division of Water Resources

June 28, 1987 - Directive Letter issued as a result of observations made during a Compliance Evaluation Inspection requiring Troy to cease unpermitted discharges of boiler blowdown water and steam condensate to Pierson's Creek, provide a timetable for implementation of a Best Management Practices Plan; and to inform DWR of any future spills through written notification.

February 24, 1987 - Thirty day notice for failure to submit a Discharge Monitoring Report.

March 27, 1986 - Thirty day notice for failure to submit a Discharge Monitoring Report.

June 21, 1985 - Directive Letter to correct deficiencies noted during a Compliance Evaluation Inspection. Deficiencies cited included violations of permit limitations for COD, poor housekeeping throughout the site, and the use of the company's lab to perform the NJPDES analysis however the lab was not certified for this analysis.

- Issuing agency: Passaic Valley Sewage Commission

May 9, 1986 - Numerous deficiencies were noted during a compliance inspection regarding the use of an IFI

monitor which resulted in submission of a violation letter by the PVSC.

August 17, 1986 - Violation of PVSC rules and regulations for failing to submit a Baseline Monitoring Report.

August 13, 1986 - Numerous deficiencies were again noted in the company's Baseline Monitoring Report. Most of the deficiencies regarded improper reporting of various aspects of the Baseline Monitoring Report.

August 18, 1986 - Violation of PVSC Rules and Regulations by exceeding limitations of mercury on 59 of 60 occasions for the period spanning 4/1/86 to 6/30/86.

It should be noted that the ultimate result of many these enforcement actions is unknown. However, some of the actions were rescinded as a result of corrective actions taken by the company.

PRIORITY DESIGNATION

Becuase damage to human health or the environment is not likely due to the location of the site in a highly industrialized area, a low priority is assigned.

RECOMMENDATIONS

If feasible, investigation of this site should be coordinated in conjunction with the RI/FS at the adjacent Albert Steel Drum/Prentiss Drug Site. It appears these two sites were actually part of one large operation for a long period of time and therefore many of the problems associated with both sites may be comparable. Additional sampling to determine the vertical and horizontal extent of contamination may be necessary.

Further investigation of the suspicious areas observed on the aerial photography is also necessary. Boring and/or sampling, as appropriate, is recommended for these areas. A full photographic interpretation should also be included to identify other areas of concern(i.e. the cesspool as referenced during the June 2, 1977 inspection and the waste pits referenced during the June 6, 1977 inspection).

The company should provide unambiguous information concerning the removal and ultimate fate of hazardous and potentially hazardous materials from the Troy facility from 1956 to date. This information should include, but not be limited to, the removal and disposal of spills, contaminated soils, sludges, process wastes (filter paper, residues, etc.) and the 4000 plus drums.

A definitive RCRA/IWMF status should be applied to the facility to address the gray areas currently present in the regulations including tank storage and secondary containment issues. Also, the NJDEP/Division of Hazardous Waste Management/Bureau of Environmental Evaluation and Cleanup Responsibility Assessment should be notified as to the cessation of the mercury processes in 1987 to determine if ECRA status is applicable.

Future inspections of the facility should address operational practices and equipment utilized by the company to ensure proper measures have been undertaken by the company to eliminate the occurrence of releases and spills. Secondary containment should also be upgraded or repaired in response to the insecure conditions noted during previous inspections by the NJDEP.

The company's current SPCC plan is totally inadequate as it does not address potential releases or spills from "non-oil" related storage areas. Because of the enormous quantities of hazardous materials stored on site and the numerous releases from the storage areas in the past, a plan addressing all storage areas is necessary. Secondary containment of the oil/solvent storage tank should also be taken into consideration although IWMF regulations do not require secondary containment for this type of unit.

Further development of the site, including the planned redirection of Pierson's Creek should be restricted until all environmental concerns have been addressed.

Due to the documented contamination of the soil, sediment surface water and groundwater by a variety of hazardous constituents, the lead for this case should be assigned to the Bureau of Case Management (BCM) with a Responisble Party search referred to the Bureau of Compliance and Technical Services (BCTS).

TABLE 1

WEHRAN ENGINEERING SAMPLING RESULTS
AUGUST 25, 1981 RESULTS IN PPM (MG/L)

PARAMETER	MW1	MW1A	MW2	MW2A	MW3	MW3A
MERCURY	0.385*	0.185*	0.085*	22.96*	0.502*	<0.0004
ZINC	1.0	9.3*	1.2	3.3	4.0	0.37

ALL SAMPLES WERE ANALYZED FOR ZINC AND MERCURY
* INDICATES CONTAMINATION ABOVE NJDEP ACTION/CLEANUP LEVELS.

TABLE 2

WEHRAN ENGINEERING SAMPLING RESULTS
NOVEMBER 17, 1981 - RESULTS IN PPM (MG/L)

PARAMETER	MW1	MW1A	MW2	MW2A	MW3	MW3A
MERCURY	0.0223*	0.0313*	0.507*	1.0333*	0.2382*	-
COPPER	0.94	1.02*	0.70	1.70*	1.00*	0.72
LEAD	<0.05	<0.05	0.20*	0.15*	<0.05	1.00*
ZINC	0.57	0.24	1.97	0.73	0.13	0.83
ALDRIN	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
BHC	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
B-BHC	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
BHC	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
BHC	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
CHLORDANE	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
4,4'-DDT	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
4,4'-DDE	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
4,4'-DDD	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
DIELDRIN	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
ENDOSULFAN	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
B-ENDOSULFAN	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
ENDOSULFAN SULFATE	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
ENDRIN	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010

TABLE 3
WEHRAN ENGINEERING SAMPLING RESULTS
MAY 14, 1982 - RESULTS IN PPM (MG/L)

PARAMETER	MW1	MW1A	MW2	MW2A	MW3	MW3A
MERCURY	0.036*	0.027*	0.018*	12.50*	0.055*	1.85*

ALL SAMPLES WERE ANALYZED FOR MERCURY ONLY.
* INDICATES CONTAMINATION ABOVE NJDEP ACTION\CLEANUP LEVELS.

TABLE 4
WEHRAN ENGINEERING SAMPLING RESULTS
MAY 24, 1982 - RESULTS IN PPM (MG/L)

PARAMETER	MW1	MW1A	MW2	MW2A	MW3	MW3A
MERCURY	0.035*	0.224*	0.047*	25.29*	0.059*	0.024*

ALL SAMPLES WERE ANALYZED FOR MERCURY ONLY.
* INDICATES CONTAMINATION ABOVE NJDEP ACTION/CLEANUP LEVELS.

TABLE 5
NJDEP SAMPLING RESULTS
NOVEMBER 17, 1981 - RESULTS IN PPM (MG/L)

PARAMETER	MW1	MW1A	MW2	MW2A	MW3	MW3A
MERCURY	.0056*	.008*	-	.074*	.041*	.0176*
COPPER	.811	.449	-	2.055*	1.027*	1.840*
LEAD	.333*	.048	-	.556*	.156*	.630*
ZINC	1.445	.191	-	1.43	1.065	4.010
COD	385	628	399	958	780	688
CHLORIDE	110	800*	980*	1150*	2400*	510*
AROCHLOR 1254	ND	ND	.0075*	.0065*	ND	ND

ALL SAMPLES WERE ANALYZED FOR COPPER, MERCURY, LEAD, ZINC, PESTICIDE/PCBs, CHLORIDE AND COD. ALTHOUGH THE ENTIRE PESTICIDE/PCBs SCAN WAS RUN ON ALL SAMPLES, AROCLOR 1245 WAS DETECTED IN ONLY TWO OF THE SAMPLES.

* INDICATES CONTAMINATION ABOVE NJDEP ACTION/CLEANUP LEVELS.

TABLE 6
NJDEP SAMPLING RESULTS
MAY 24, 19822 - RESULTS IN PPM (MG/L)

PARAMETER	MW1	MW1A	MW2	MW2A	MW3	MW3A
MERCURY	.0005	.0005K	.0065*	.0335*	.073*	.265*
ARSENIC	.194*	.188*	.005K	.016	.005K	.244*
CADMIUM	1K	.004	.002	.001	.005	.001
LEAD	.013	.045	.143*	.013	.511*	.016
CHROMIUM, HEXAVALENT	.005K	.013	.005K	.008	.024	.005K
CYANIDE	.001K	.001K	.024	.691*	.001K	.483*
CHLORIDE	120	640*	2570*	1330*	520*	760*
COD	365	415	180	590	114	510
1,1-DICHLOROETHANE	ND	ND	ND	.030*	ND	.058*
1,2-DICHLOROTHENE	ND	ND	ND	.520*	ND	.150*
1,1,1-TRICHLOROETHENE	ND	ND	ND	ND	ND	1.360*
TRICHLOROETHYLENE	ND	ND	ND	.380*	ND	.100*
TETRACHLOROETHYLENE	ND	ND	ND	.110*	ND	.007*
BENZENE	ND	.012*	ND	.700*	ND	.062*
TOLUENE	ND	.004	.004	.006	ND	.036
ETHYLBENZENE	ND	ND	ND	ND	ND	.023
P-XYLENE	ND	ND	ND	ND	ND	.006
N-PROPYLBENZENE	ND	ND	ND	ND	ND	.041

TABLE 7
WATER SAMPLES (cont.)
JULY 12, 1979

METALS (13)	SAMPLE CONC. UG/L (PPB)	100 FEET UPSTREAM OF SITE	5 FEET UPSTREAM OF SITE	WITHIN PLANT DOWNSTREAM OF WWTP	WITHIN PLANT 50 FEET BEFORE DOWNSTREAM SIDE OF PROPERTY	100 YARDS DOWNSTREAM OF PLANT	250 YARDS DOWNSTREAM OF PLANT	EASTERN DRAINAGE DITCH 50 FT. STREAM SEPTIC LEACH F
ANTIMONY	-	-	-	-	-	-	-	-
ARSENIC	PPB	BDL	BDL	BDL	BDL	36	8J	1300
BERYLLIUM	PPB	BDL	BDL	2J	1J	BDL	BDL	1J
CADMIUM	PPB	3J	3J	4J	2J	2J	3J	6J
CHROMIUM	PPB	31	26	23	24	22	10J	20J
COPPER	PPB	97	76	70	63	45	28	60
LEAD	PPB	BDL	BDL	BDL	BDL	BDL	BDL	170
MERCURY (WATER)	PPB	BDL	55	21	26	84	71	886
NICKEL	PPB	BDL	BDL	BDL	BDL	BDL	BDL	405
SELENIUM	PPB	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SILVER	PPB	24	BDL	14	13	8J	BDL	BDL
THALLIUM	PPB	BDL	BDL	BDL	BDL	BDL	BDL	BDL
ZINC	PPB	100J	100J	100J	100J	50J	50J	270

TABLE 8

NOVEMBER 17, 1989

(all results in ppb unless otherwise indicated)

	SED-1	SED-2	SED-3	SED-4
vinyl chloride			29,000	4
methylene chloride			37,000	
1,1-dichloroethene		1,900		
1,1-dichloroethane	21	36,000	240,000	11
1,2-dichloroethene	7	2,300	1,300,000	22
chloroform			190,000	9
2-butanone			250,000	
1,1,1-trichloroethane		1,400,000	3,100,000	41
trichloroethene		61,000	430,000	
Benzene	40	43,000	1,200,000	45
4-methyl-2-pentanone		5,200		29
tetrachloroethene	7	2,300,000	2,100,000	46
chlorobenzene		4,100	31,000	10
2-methylphenol			56,000	
2,4-dimethylphenol			89,000	
naphthalene		5,500	31,000	
2-methylnapthalene		17,000	190,000	
bis(2-ethylhexyl)phthalate	26,000	160,000		
Arsenic (ppm)	70.2	115	167	71.7
Copper (ppm)	188	1,090	1,040	694
Lead (ppm)	1,880	5,270	25,200	2,460
Mercury (ppm)	690	4,500	607,000	1,790
PHC's	21,000,000	38,000,000	31,000,000	83,000,000

TABLE 9

NOVEMBER 17, 1989

(all results in ppb unless otherwise indicated)

	SED-5	SED-6	SED-7
methylene chloride		35,000	9
acetone		120,000	
2-butanone		110,000	
xylene	21	130,000	7
benzene		300,000	55
toluene		37,000	
1,4-dichlorobenzene			1,700
1,2-dichlorobenzene			3,600
nitrobenzene		—	7,500
1,2,4-trichlorobenzene			10,000
2-methylnaphthalene		67,000	35,000
diethylphthalate		1,700	
fluorene		7,100	2,200
phenanthrene	760	24,000	11,000
anthracene	100	13,000	11,000
di-n-butylphthalate	140	24,000	
fluoranthene	1,200	11,000	14,000
pyrene	710	5,900	9,300
butylbenzylphthalate		62,000	
chrysene	460	3,000	4,800
bis(2-ethylhexyl)phthalate	340	340,000	420,000
di-n-octylphthalate		21,000	21,000
4,4'-DDD	840	180,000	
4,4'-DDT	340	66,000	
Aroclor-1242			650,000
Arsenic (ppm)	20.1	1,390	1,980
Barium (ppm)		7,960	766
Cadmium (ppm)		74.5	77.2
Chromium (ppm)		254	419
Copper (ppm)		1,200	1,680
Lead (ppm)	175	13,400	5,150
Mercury (ppm)	210	9,641	2,270
PHC's	260,000	270,000	14,000,000

TABLE 10

	CONCENTRATION	NEAR DUMPSTER	SOUTH OF FUNGICIDE PLANT	DRUM STORAGE SOUTH OF WAREHOUSE	DRUM STORAGE "YARD AREA"	NJDEP AC CLEANUP LEVEL
COPPER	MG/KG PPM	899.12*	361.84*	3289.47*	67.98	170
LEAD	MG/KG PPM	110.0	500.0*	105.0	90.0	250-1000
ARSENIC	MG/KG PPM	ND	3.361	2.185	0.798	20
ZINC	MG/KG PPM	3950.73*	1195.75*	2447.22*	51.19	350
MERCURY	MG/KG PPM	>60*	>60*	>60*	>60*	1
p,p-DDT	UG/KG PPB	32.76		ND		1,000-10,000
p,p-DDD	UG/KG PPB	32.86		ND		1,000-10,000
o,p-DDT	UG/KG PPB	25.0		ND		1,000-10,000

TABLE 11

Troy

SUMMARY OF SAMPLING DATA
METALS

DATE SAMPLED	11-17-88													
SAMPLE NO.														
MATRIX	ppb							ppm						
UNITS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Aluminum														
Antimony								[illegible]						
Arsenic								[illegible]	115	[illegible]	71.7	20.1	[illegible]	[illegible]
Barium									[illegible]				[illegible]	[illegible]
Beryllium														
Cadmium	[illegible]							[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
Calcium														
Chromium	[illegible]	[illegible]						[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
Cobalt														
Copper								[illegible]	[illegible]	[illegible]	674		[illegible]	[illegible]
Iron														
Lead	[illegible]	515	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5270	25,200	2460	[illegible]	[illegible]	550
Magnesium														
Manganese														
Mercury		4.96	10.8	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	1770	[illegible]	[illegible]	[illegible]
Nickel														
Potassium														

TABLE 11

SUMMARY OF SAMPLING DATA
METALS

Troy

DATE SAMPLED 11-17-88
SAMPLE NO.
MATRIX
UNITS ppm

	S-1D	[illegible]		[illegible]	[illegible]	[illegible]
Aluminum						
Antimony						
Arsenic						55.7
Barium		10[illegible]			[illegible]	[illegible]
Beryllium	8.4	[illegible]				
Cadmium						[illegible]
Calcium						
Chromium	151	3[illegible]				
Cobalt						
Copper		4010			174	125
Iron						
Lead	[illegible]	[illegible]	[illegible]	246	3920	[illegible]
Magnesium						
Manganese						
Mercury	910	2810	[illegible]	[illegible]	[illegible]	[illegible]
Nickel	503	1860				
Potassium						

RESPONSIBLE PARTY INVESTIGATIONS UNIT
INVESTIGATIVE SUMMARY

Case name: Troy Chemical Corporation, Inc.
AKA: Troy Chemical Company

CASE SUMMARY

Troy Chemical Corporation Inc. (Troy) has been manufacturing specialty paint additives since approximately 1956 on its 5.42 acre site. Troy is located in a heavily industrialized section of Newark at 1 Avenue L (Block 5038 Lot 98), Essex County, New Jersey.

Historically, the parcel of land that constitutes present day Troy was once part of a larger property. Industrial use of this land extended from Wilson Avenue almost to Delancey Street in a north to south direction and from Avenue L to the railroad tracks in a west to east direction. This larger property, which includes the subject site, was also known as 338 Wilson Avenue (see map 1 & 2).

The subject site is divided approximately in half by Pierson's Creek in a north to south direction. Pierson's Creek surfaces north of Troy from a reported 36 inch storm sewer that borders the west side of the Albert Steel Drum/Prentiss Drug & Chemical (ASD/PDC) site (map 3). Troy's eastern border is a ditch extending from a reported flume west of the location of the Albert Steel Drum operation (map 3). The direction of flow is south through the ASD/PDC site and Troy to the Newark Bay.

Companies that may have contributed to contamination of Troy were Albert Steel Drum (ASD) and Prentiss Drug and Chemical (ASD/PDC) situated directly north; the Welch, Holmes and Clark Company facility northeast and the Frema Smelting and Refining Co. located east of Troy. ASD has also been referred to as Greenpoint Drum & Barrel Corp. and the New Albert Steel Drum Co.. The area west of the PDC building (map 3) was used as an auto junkyard and for the storage of shipping containers belonging to Courtesy Container Corporation. It has been alleged that Courtesy Container Corp. was involved in the illegal dumping of solid waste at 338 Wilson Avenue. The illegal dumping allegedly occurred between 1982 and 1984.

Three solid waste hauling companies, R. Ciuba Company, T. Fiore and Sons and Courtesy Container Corporation allegedly used the ASD/PDC site and possibly the area west of ASD/PDC for the disposal of solid and/or chemical waste. The waste hauling companies were reported to have operated at 338 Wilson Avenue from the late 1960's to the mid 1980's.

All of the aforementioned companies either operated at and/or used 338 Wilson Avenue for the illegal disposal of solid and chemical waste.

The subject property (as part of the larger property) was purchased by Frederick Heller and Henry Merz in the late 1860's to early 1870's. The property was originally used by the Heller and Merz

Company/American Ultramarine and Globe Aniline Works for the manufacture of ultramarine and aniline colors. Production of these commodities commenced in 1869 and 1881 respectively.

American Ultramarine and Globe Aniline Works incorporated in January of 1889; changing in name to the Heller and Merz Company a month later. Sanborn Fire Insurance Maps (Sanborn) for 1892 and 1908 depict the Heller and Merz Company at Hamburgh Place Road (now known as Wilson Avenue) in Newark. Due to the periodic revisions of the Sanborn Maps, the possibility exists that other industries had commenced and ceased operations at the subject site between the updates. In December of 1917 the Heller and Merz Company submitted an amended certificate of incorporation changing their name to the Heller and Merz Investing Company.

Between the years of 1901 to 1927 the Heller and Merz Co. is recorded in the New Jersey Industrial Directory (NJID) as being located at Hamburgh Place Road (Wilson Avenue). The 1927 NJID specifically notes 338 Wilson Avenue in Newark. The 1927 Robinson Atlas shows the Heller and Merz Company situated at Wilson Avenue in Newark.

American Cyanamid Company (Cyanamid) acquired Calco in January of 1929. The Heller and Merz Company was purchased by Calco Chemical Company Inc. (Calco) in February of 1930. At the time of the purchase Eugene and August Merz remained as vice-presidents of the Heller and Merz Division of Calco.

Calco was founded in 1915, eventually to become a leading producer of coal tar dyes and intermediates with principle facilities located in Bound Brook and Newark, NJ. Calco incorporated on 27 February 1929 in Delaware to acquire the assets of a NJ company of the same name. Sanborn Maps for 1931 show Calco at the former Heller and Merz Company facility on Wilson Avenue in Newark. Cyanamid acquired Calco's Newark facility on 31 October 1939 (deed X95 page 528)prior to Calco's dissolution. Calco operated as a subsidiary of American Cyanamid Co. until Calco was dissolved on 1 November 1939 with Cyanamid obtaining all company assets.

Calco is registered in the NJID starting in 1931 through the 1952-53 edition. The street address, when provided, is 338 Wilson Avenue, Newark. After Calco was dissolved in November 1939; it was referred to as a Division of American Cyanamid Co..

Aerial photographs taken on 6 April 1940 show what appears to be four buildings, east of Pierson's Creek and west of the drainage ditch, on the present day Troy site. This area did not appear to be paved. The northwest corner of the site has what appears to be a landfill with a light toned substance visible along the perimeter. Similarly toned material appears on the property to north of the site.

The area south and east of the landfill appears to be a ditched tidal marsh draining towards Pierson's Creek. Dark toned sections are visible west of the ditched marsh land, west of the convergence of the ditch and Pierson's Creek and between the buildings along the east

side of Pierson's Creek.

What appear to be vehicle paths are visible east of Pierson's Creek extending north to south heading in an easterly direction.

Aerial photographs taken on 28 April 1940 reveal that the landfill operation may be expanding and has a light toned material along the outer edge. The surface of the landfill appears to be grayish in tone.

The region south and east of the landfill appears to be a ditched tidal marsh draining towards Pierson's Creek. Dark toned sections are present at similar locations in these photographs as in the 6 April 1940 photographs.

It appears that a railroad siding may exist with tank cars possibly present. East and adjacent to the ditch appears to be stockpiled material that has a light toned appearance with a railroad siding to the north.

On 28 December 1945 (deed M106 page 447) the American Cyanamid Company sold the property to the Pulaski Skyway Realty Corp.(Pulaski). Included in the purchase price of one (1) dollar and other valuable considerations were condensate pumps, well pumps and effluent disposal equipment.

The location of the disposal equipment has not been ascertained but such equipment may have been situated so that any discharge would be to Pierson's Creek and/or the ditch.

It appears that Cyanamid may have leased or rented the property from Pulaski between 1945 and 1951, but no record of lease or rental agreements between Cyanamid and Pulaski have been discovered.

The 1951 (updated version of 1931) Sanborn Map depicts American Cyanamid Co., Calco Chemical Co. Division-Newark Works, operating at the location of the original Heller and Merz Co. facility.

On 29 January 1951 (DB 2919 page 466) Maurice Pollak, Gustave Greene and Muriel Pollack as co-partners of the Pulaski Skyway Realty Company purchased the property in its entirety from the Pulaski Skyway Realty Corp.

The Pulaski Skyway Realty Corp. was incorporated on 8 December 1945 and dissolved on 30 January 1951 with Maurice Pollak as President and Charles A. Duelfer as Secretary.

Aerial photographs taken on 7 April 1951 reveal that the landfill that was visible in the April 1940 photograph has been greatly expanded. The exposure at the perimeter of the landfill is of a light toned nature. The surface area of the landfill has a grayish aspect to it. The appearance of tidal marsh ditching is visible only at the southeast corner of the landfill west of Pierson's Creek. Dark toned areas are visible around the buildings east of Pierson's Creek.

A large number of container-like objects can be seen on the property to the north of the subject site.

Troy Chemical was formed in 1952 to market a paint additive formulated by Elias Singer, a chemist. Documents filed with the NJ Secretary of State's Division of Commercial Recording (DCR) indicates that Troy Chemical Corporation incorporated on 10 August 1956 with the corporate objective to manufacture, use and/or vend; sodium, potassium, silicon, chlorine, magnesium, aluminum, boron, muriatic acid and any or all metals and chemicals.

Aerial photographs taken on 5 December 1953 indicate that the landfill seems to have further expanded. There is no sign of the tidal marsh or ditching of such. The light tone along the perimeter and the grayish tone of the surface observed in previous photographs are again present.

Light toned mounds of material are located on the property east of the ditch in an area similar to that observed in the 28 April 1940 photographs. Additional light toned mounds are visible north of railroad spur on the property east of the ditch. Several light toned mounds can be seen northeast of the middle building adjacent to Pierson's Creek.

A dark tone is visible west of the ditch with several lighter toned areas south and east of the buildings.

Troy filed an Annual Report on 6 October 1959 with the DCR stating that the registered office was located at 338 Wilson Avenue, Newark. The character of the business was described as paint chemical jobbers. Elias Singer, Milton Goll and Ernest Lubell were listed as the directors and were serving as the corporation's president, vice-president and secretary, respectively.

The 1958-59 and 1960-61 NJ Industrial Directories denote a company named the Wilson Refining Co. Inc. (Wilson Refining) as operating at 338 Wilson Avenue, Newark. The 1960-61 printing of the NJID has a Wilson Refining advertisement stating they are custom distillers for industrial solvents and distributors of new and reclaimed perchloroethylene and trichloroethylene. The ad continues to state that Wilson Refining services the chemical, machine, plating, electronic, paint enameling and dry cleaning trades with tank truck delivery and pick-ups. Railroad service was also available.

On 5 November 1960 a deed (3754 page 567) was executed between the Pulaski Skyway Realty Company, a co-partnership, and Troy Chemical Corp. for one (1) dollar and other good and valuable considerations. The deed delineated the property boundaries and included several easement and conditions. The deed references the Wilson Refining Company Inc. as being a tenant of building 61 with a lease in effect until 31 December 1965. During the course of the lease Troy would allow Wilson Refining access to and use of building 61 with the Pulaski Skyway Realty Company receiving the rent payment.

Review of records kept by the City of Newark-Division of Inspections revealed that Wilson Refining submitted an application to "Install Equipment" on 4 November 1960. The building had previously been approved and was occupied by Wilson Refining for chemical manufacturing. Further approvals were granted by the City of Newark's Zoning and Bureau of Combustibles and Fire Risk on 10 November 1960.

Inspection notes written on the application, to Install Equipment, indicated that work started on the building 28 November 1960 and continued until 2 February 1961. Between 2 February 1961 and 19 September 1961 inspection notes implied that further work had ceased and ended with the comment, "moved, no one here". No records have been found indicating that Wilson Refining moved to another building, continued to operate at Building 61 or terminated its lease. The corporate status of the company in New Jersey is void as of on 3 February 1965.

Aerial photographs taken on 26 April 1961 reveal what appears to be an active landfill in the area west of Pierson's Creek. What appears to be a vehicle path begins inside the southern property line of the company directly north of the site. This vehicle path extends in a south westerly direction along the western edge of the landfill. The exposed perimeter of the landfill is of a dark toned nature with the exception of a light toned area in the southwest corner. The vehicle path bisects this light toned area at the perimeter of the landfill.

Identification of the western property boundary is not possible at this time in the 26 April 1961 photograph.

It appears that a ditch or road exists along the inside of the northern boundary of the landfill. The area bordering Pierson's Creek seems to be elevated somewhat with a vee-shaped indentation on the east side at approximately the center of the landfill.

Pierson's Creek and the east boundary ditch are well defined.

Barrel-shaped objects line the eastern edge of the road between the ditch and Pierson's Creek.

The number of buildings have increased including possible tank structures between buildings at the center and to the south on the site.

It appears that barrel-shaped objects may be stockpiled at the northern edge of the property east of the possible tank structures.

On 1 July 1963 a Certificate of Change of Principle Office and Change of Agent was filed by Troy stating the principle office moved to 338 Wilson Avenue, Newark from 60 Park Place, Newark. Prior to being at 60 Park Place, Newark; the principle office was located at 51 Newark Street, Hoboken. Elias Singer, President, became the corporation's registered agent at this time.

In 1966 the New Jersey Industrial Directory (NJID) denotes Troy at 338 Wilson Avenue in Newark. F. Singer was noted president of this paint additive manufacturing company. Troy was using the Standard Industrial Classification (SIC) number 2873.

The 1967 NJID listed Elias Singer as President and Milton Nowak as V. President of Research and Development of Troy. The company was listed as manufacturing paint additives with the SIC number of 2873. The address, manufactured product and SIC number remained as previously given through 1970.

Information concerning production quantities and disposal prior to the 1970's is infrequent and sketchy. Troy had two wastewater treatment facilities: one for mercury-bearing wastewater and another for the plant overall. Development of the treatment systems in 1965 saw the end of direct disposal of mercury-bearing wastewaters to Pierson's Creek. The mercury-bearing wastewaters were then treated by a sulfide precipitation before being released to Pierson's Creek. In 1976 the overall plant wastewater treatment system was installed. That system received both the effluent from the mercury bearing wastewater treatment system and the wastewaters from all of the "non-mercury" processes.

The City of Newark, Division of Inspections, issued permits for the construction of a warehouse, steel support structures, concrete tank slabs, concrete dike walls and a tank storage area. The permits discovered were issued at various times between 1960 and 1970. A Certificate of Occupancy (#1686) was issued 22 May 1964 for a warehouse for chemical storage. This was stated on the certificate.

The NJ Department of Health (DOH) ordered the Greenpoint Drum and Barrel Corp. (GDBC) to cease discharging industrial waste into the Newark Bay on 19 December 1969. DOH ordered the discharges stopped by 1 April 1970.

In January 1970 the DOH inspected the GDBC facility. Note: GDBC has been reported to be the same as Albert Steel Drum. The inspector stated that open head and oil type drums were cleaned and reconditioned at the site. The open head drums were baked followed by blasting. Oil type drums were put through a caustic wash, a stripper and a hot water wash. The DOH inspector indicated the yard where the drums were stored flooded during storms and that flooding may occur during high tide.

An inspection by the NJ Department of Environmental Protection (Department) of the GDBC facility on 11 August 1970 revealed continued discharge of contaminated wastewater. During the interview with Mr. B. Moshen and Mr. M. Shapiro the inspector was informed that no engineering studies had been conducted nor were any planned on the problem of wastewater disposal.

The 1971 NJID lists Troy at 1 Avenue L in Newark as a manufacturer of chemicals. Also included in the listing were Elias Singer, President; Milton Nowak, V. President/General Manager; and William Singer,

Secretary.

Aerial photographs taken on 14 May 1971 depicts Avenue L as having been completed and paved. The area, west of Pierson's Creek and northeast of Delancy Street, where landfilling activities appear to have occurred is no longer evident. This area does not appear to be paved and is light-toned in nature.

East of Pierson's Creek three structures are readily apparent with a smaller structure and tank-like objects northeast of the convergence of the ditch and Pierson's Creek. These buildings may be the center of operations during this time. The structures are located adjacent to Pierson's Creek.

Barrel-shaped objects appear on the west side of Pierson's Creek opposite the center building east of Pierson's Creek. Another group of barrel-shaped objects is evident west of the ditch, east of the buildings and north-northwest of the bend in the ditch. Barrel-shaped objects appear to be located between the largest structure at the south end of the property and the building approximately in the center of the site. Cylindrical tank-like structures appear to be present along the west side of Pierson's Creek with quonset hut-like structures to the southwest.

An extensive number of barrel-shaped objects appear on the property to the north of the site. What appears to be roll-off containers are situated on the property north of Troy at the point where Pierson's Creek appears to have surfaced.

A Waste Effluent Survey (WES) was submitted to the PVSC on 3 April 1972 stating the firm was a chemical manufacturer that produced approximately 75 different types of paint additives. The WES, issued by the Passaic Valley Sewerage Commissioners (PVSC), indicated the water used by Troy for production purposes in 1971 was purchased from the Pulaski Skyway Realty Company. No discharges were made to the sanitary sewer; instead all sanitary waste was discharged to a septic tank and leach field. Troy indicated that 300,000 gallons of water were directed to the septic tanks and leach field on the property in 1971.

The WES required a description of all discharges to the storm sewer, river or ditch. Placed at the top of the survey on the first page is Pierson's Creek. Troy provided descriptions and samples of discharge(s) to the north and south side of the bridge.

Troy reported that mercury was precipitated out of the wastewater, the solids were recovered and the liquid was released to the flume (either Pierson's Creek or the east ditch). Troy indicated in a report submitted to the PVSC that the detection of metallic ions was difficult to determine due to varied and intermittent discharges. No toxic materials were reportedly discharged. However, mineral spirits, methanol and resins were reported discharged to Pierson's Creek. The concentration of the solvents and resins depended upon if Allied Testing & Research, Inc. obtained the sample from the north or south

side of the bridge. The exact location of the sampling conducted by Allied Testing & Research, Inc., north and south of the bridge for Troy in April 1972, has not been discovered by the Responsible Party Investigations Unit (RPIU).

Troy International Corporation, also situated at 1 Avenue L in Newark, was incorporated on 21 September 1972 with Elias Singer as President and William Singer as Secretary.

Aerial photographs taken on 11 April 1974 reveal the area west of Pierson's Creek as being more extensively used and unpaved. This part of the site is divided nearly in half by what appears to be a vehicle access way.

The southern section has numerous barrel-shaped objects along the north and west perimeters with concentrations northeast of the quonset hut-like structures.

Several cylindrical tank-like structures appear on the west side adjacent to Pierson's Creek. Three additional structures are also evident on the west side adjacent to Pierson's Creek.

In the section north of the vehicle access way, possible trailer/container-shaped objects are visible northeast of the access way and east of Avenue L. In this area barrel-shaped objects appear in close vicinity to some of the possible trailer/container-shaped objects.

A light-toned structure with dark-toned areas extending toward the southeast and southwest is evident in the north corner of this section.

Several cylindrical tank-like structures appear on the west side adjacent to Pierson's Creek south and west of a rectangular structure. Cylindrical tank-like structures, surrounded by what appears to be a dike, are evident to the north and east of the rectangular structure on the west side adjacent to Pierson's Creek.

Light-toned material is visible along the southern border west of Pierson's Creek that may represent the southern and western most expansion of landfilling activities.

In June of 1975 Troy submitted to the PVSC the Waste Effluent Survey (WES) submitted in April of 1972. Milton Nowak, Vice President of Troy, indicated their operations had essentially remained the same and that for 1975 production was nearly the same as 1972. Troy stated that mercury in the effluent from the mercuric oxide plant was being precipitated before discharged to the flume (map #3).

The Newark Department of Public Works issued a permit to install a sewer connection at 1 Avenue L on 30 June 1975.

On 16 December 1975 Albert Steel Drum (ASD), at Wilson Avenue in Newark, was reported to the NJ Department of Environmental Protection

(Department) for discharging chemical waste into a tributary of Newark Bay. The amount of material spilled was indicated as unknown, but continuous. Samples were collected, but the RPIU has not been able to locate the sample results in Departmental files.

The 1976 NJID indicated that Troy manufactured paint additives, driers, preservatives, and printing ink additives.

On 6 May 1976 the United States Coast Guard (USCG) responded to a discharge of mercury salts; during an inspection of the facility it was observed that cobalt naphthenate was flowing from a partially secured valve. This continued for approximately one-half hour before an employee secured the valve. As the inspection continued another discharge was observed into a creek (possibly Pierson's) in the area of eight (8) tanks surrounded by a concrete dike wall. The dike wall was discovered to have a hole roughly one (1) inch in diameter. A mixture of mineral spirits and calcium naphthenate was then observed entering the creek. Approximately 50-75 gallons of this mixture was visible in the stream. In the incident report filed by the USCG, it was believed that Troy attempted to cover up the spill.

An inspection of Troy's facility was conducted by the Department on 10 May 1976 in response to the spill of cobalt naphthenate that occurred on 6 May 1976. John Hoffman, Troy's plant manager, explained that the treatment system had recently been repaired and that an unsecured by-pass valve was left open. This allowed the cobalt naphthenate to enter a tidal ditch.

The Inspector described the operations at the site as being sloppy. A 12,000 gallon tank, used for the storage of #4 oil, was described as being situated on the slope of the tidal ditch. The inspection report states that the soil surrounding the oil tank was saturated. The containment dike for the oil tank had a drain that opened to the exposed soil.

A discoloration of the stream was noticed and traced to Troy's metallic soap tank farm. Troy was told to stop the metallic soap from entering the tidal ditch. Troy was then instructed to remove all contaminated soil from the area of the metallic soap tank farm (map #5 shows building 91 as the location of the metallic soap).

The Department's inspector observed rotting waste drums with their contents leaking onto the soil. Mr. Hoffman was informed that this area would have to be cleaned (removal of old and rotted drums along with the contaminated soil) to keep the material from entering the creek, especially during periods of wet weather. When asked what the contents of the drums were Mr. Hoffman did not know, but indicated that some of the drums had come from the Ventron Plant when it closed. The location of the Ventron plant was not mentioned in the inspection report. It should also be noted that the specific location of the leaking and rotted drums at Troy was not indicated in the inspection report.

It was noted during the inspection that the treatment plant suffered a

burned out pump bearing that shut the plant down with effluent being bypassed to the creek. Mr. Hoffman stated that all piping had bypass valves leading to the creek. The inspector informed Mr. Hoffman that all bypass valves needed to have State seals affixed and the Department would be informed whenever a seal was broken. The Troy official stated that all bypass valves would be replaced with blank plates that would prevent discharges to the creek.

On 11 May 1976 the United States Environmental Protection Agency (EPA) investigated the spill at Troy reported by the USCG on 6 May 1976. The materials reportedly spilled on 6 May 1976 were identified by Mr. Hoffman (plant manager for Troy) as mineral spirits, cobalt and calcium hexoate. Mineral spirits were used as a solvent with these chemicals.

Preliminary action was being taken by Troy for the removal of the contaminated soil and determining the source of the leak. At that time Troy was instructed by the EPA to include naphthenic acid (an oil) in their Spill Prevention, Control and Countermeasure (SPCC) plan.

A reinspection by the Department and EPA was conducted on 25 May 1976 at the Troy facility. The contaminated soil around the storage tanks had been removed. Removal of bypass valves and installation of blanks on all lines was completed. Troy was in the process of removing contaminated soil from around the metallic soap tank farm. A wall was being constructed along the creek in an attempt to halt the erosion of the bank. The soil from the waste drum storage area was being scraped and stockpiled pending removal.

In a letter to Gaess Environmental Services Co., on 28 June 1976, Troy stated that the three containers of oil soaked soil, that were to be disposed of by Troy, were actually saturated with an edible lecithin. This material was spilled from open head drums kept in an area where hydrocarbon solvents were stored. The drums were being sampled to determine the means of proper disposal. Troy further stated that the soil was removed and replaced with clean fill. Troy assured Gaess that the soil did not contain mercury. The soil that was removed was reportedly taken to Kin Buc landfill.

On 18 March 1977 Troy submitted an Industrial Waste Survey (IWS) to the Department's Solid Waste Administration (SWA). Elias Singer was identified as the president of Troy. Troy specified the industry type as manufacturing with the principal products as paint additives. The Standard Industrial Classification number provided was 2879.

The three process descriptions provided in the IWS were: paint additives, mercury compounds and mercury recovery. Troy estimated each process to produce 15 tons of filter clay; one ton of filter clay and ten tons of still residue, respectively. The hazardous constituents in the paint additives waste were manganese at 700 ppm and zirconium at 500 ppm; the mercury compounds filter clay contained 0 ppm mercury and the mercury recovery still residue contained 10 ppm of mercury.

The waste properties of the paint additives filter clay were classified both flammable and toxic and the waste properties of the mercury processes were classified as toxic. According to the IWS the waste material was stored in metal or non-metal drums or barrels prior to disposal. The waste material derived from the paint additives and mercury compounds required that protective clothing be worn when handling; while the waste from mercury recovery required protective clothing and specialized personnel.

Troy indicated it had a random disposal frequency in the IWS. All hazardous waste was sent offsite for disposal. The waste from the paint additives process was disposed by land burial. The waste from the mercury processes were destined disposal in a chemical landfill.

On 25 March 1977 a Notice of Violation and Offer of Settlement (NOV/OOS) for the breach of N.J.S.A. 58:10-23.1 et seq. and N.J.S.A. 23:5-28 was issued to Troy by the Department. The NOV/OOS disclosed that waste chemicals were allowed to enter a tributary of Newark Bay via a drainage ditch. The NOV/OOS was sent to Elias Singer, Registered Agent and president of Troy Chemical Corporation at 338 Wilson Avenue in Newark, New Jersey.

Troy settled the NOV/OOS as stipulated in a letter to the Department on 15 April 1977.

On 23 May 1977 the Department inspected the Troy facility. The inspector observed that numerous drums were rusted and leaking onto concrete (possibly a pad) and into a tidal stream (possibly the ditch at the eastern border).

The inspector informed Milton Nowak, vice-president of Troy, to remove all leaking drums and to have that area cleaned. The inspector noticed continuous seepage from Troy's side of the stream bank. The seepage was across from Troy's office. Mr. Nowak told the inspector the seepage was from a septic tank (see map #5).

On 24 May 1977 the Department received permission to dye test the lavatory in the office building. Approximately 20 minutes after the dye entered the lavatory system it was seen flowing into the stream from the Troy side of the bank.

The inspector observed that some of the leaking drums had been removed and sand was used to absorb the spilled material. The absorbent had not been removed. The inspector saw many drums in the tidal stream; Mr. Nowak agreed to their removal. Mr. Nowak agreed to remove the contaminated soil from the stream bank and to determine the extent of contamination. The soil was to be replaced with crushed stone.

In the course of the inspection several discharge pipes were discovered directed toward a concrete lined stream or ditch on the other side of Troy (map #4). The inspector indicated the water had a greenish tinge to it and that an oil sheen was present. When the inspector checked upstream of Troy the water was reported to be clean.

On 2 June 1977 the Department inspected the facilities of Albert Steel Drum (ASD); Troy; Welch, Holmes and Clark Company (WHC); and the Frema Smelting and Refining Company (FSR).

Upon arrival at ASD the inspectors observed a heavy oil sheen passing from the property and into the drainage ditch (map 3). The oil sheen was traced to an outfall by the loading dock where water mixed with oil was seen bubbling out of the ground. This discharge was coming from the exterior drum wash area. All interior drum wash waste was restricted by court order and discharged to a tank trailer.

Oily material was seen on the floor around washing equipment inside the building. The Department inspectors were told that the oily material possibly migrated to the ground. In addition to this; it was reported that ASD's operation of external/internal cleaning and rinsing, dent removal and external painting produced approximately 200,000 gallons of wastewater per week. The wastewater may have been released to the ditch (map 3).

The following chemicals were reportedly used in the cleaning operations: muriatic acid (HCL) and caustic (NaOH) for cleaning; sodium metasilicate (Na2SiO3) and sodium nitrate (NaNO2) as acid rinse additives.

The Department inspectors next visited Troy to conduct an inspection. Milton Nowak stated that sanitary overflow discharged to the eastern drainage ditch and that only cooling waters were discharged to the western drainage ditch (map 3). A sheen was seen on the west ditch and spilled material was present in a diked area that had a pipe discharging to the ditch. Drums of waste chemicals were stockpiled at the rear of the property and some were leaking.

On 6 June 1977 during an inspection of the Troy facility the Department's inspector was informed of waste pits by the drum area at the rear of the property. The inspection then continued at Frema Smelting and Refining Company (FSR) located east of Troy. FSR stated no chemicals were used in the metal crushing process. There were discharges from two sumps and a cesspool to the ditch bordering Troy on the east.

In a letter dated 6 June 1977, Troy was informed by the Department that a "Permit to Locate" pursuant to N.J.S.A. 58:10-17 to 21 inclusive is required for the Newark facility, specifically the fungicide plant. This was a result of an inspection conducted on 23 May 1977 by Department representatives and a subsequent file review by the Division of Water Resources (DWR).

On 7 June 1977 during an inspection of Troy by the Department; it was observed that contaminated soil forming the banks of the western ditch had been removed. The inspector then noticed a sheen on the water in the western drainage ditch north of Troy (map 3). The facility north of Troy, Prentiss Drug and Chemical Company (PDC), manufactured different types of pesticides. The inspector was told that a green

dye was used in the production of Rax Powder [3-(α-acetonyl benzene)-4-hydroxycoumarin], a rodenticide.

In addition, PDC was reported to have produced pentachlorophenol (PCP) and purchased Lindane for formulation of insecticide dusts, wettable powders, oil solutions and emulsifiable concentrates. PDC reported the waste associated with Lindane formulation consisted of empty fiber drums and liners, filter media, spill disposal media and floor sweepings.

A survey by Department inspectors of the facility revealed floor drains that emptied outside which PDC confirmed. The discharge location of the floor drains was not specified in the inspection report. The PDC official stated that any discharge of chemicals and all waste went directly to the sanitary sewer.

On 18 June 1977 the DWR received an application from Troy for a Permit to Locate for the fungicide plant. The general information indicated that Troy was engaged in chemical manufacture at the subject site. Troy stated that the facility would be adequately served by the Passaic Valley Sewerage Commission (PVSC) for the treatment of sanitary and industrial wastewater. The signature of the PVSC official was not apparent on the application.

Addendum #1 to the application for a Permit to Locate outlines, in pounds per day, the raw materials to be used; the material that may be recovered; the solid waste material; the contaminated water being discharged to the PVSC and the end product identified as a fungicide (see attachment).

Addendum #2 to the application for a Permit to Locate indicated the following: construction of the fungicide plant began in September of 1975 with production commencing in June of 1976. Permits were secured by Troy from the Newark Bureau of Combustion and Fire Risks on 10 May 1976 and from the Newark Department of Health and Welfare (building permit) on 7 July 1976.

All material used in the production of the fungicide were to be delivered directly into a receptacle located within a curbed concrete pad. The location of the concrete pad in relation to the receptacle is not known. Materials not maintained within the fungicide plant would be pumped directly into the process as needed. The City of Newark supplied the water used by Troy for the processing of the fungicide.

Troy has indicated that no sanitary, cooling, non-contact cooling or blowdown wastewater would be leaving the fungicide plant. Wastewater that would be entering PVSC's system would be from the manufacturing process and from two floor drains tied to the sanitary sewer. Troy stated that the entire production of the fungicide would be inside the building. The storage areas were located within the production area.

The Department conducted an inspection of Troy's facility on 21 July 1977 in response to the submittal of the Permit to Locate. At this

time Troy officials provided the inspectors with a detailed site plan and a revised Permit to Locate application for the entire facility. The Responsible Party Investigation Unit (RPIU) has not located the revised permit during this investigation.

The Troy official explained the new plan was to include the recently installed pretreatment tanks. According to the Troy official only the fungicide plant and parts of the main plant would be serviced by the sanitary sewer system. Other buildings, such as the office building, were to be serviced by the septic tank. The cooling water and condensate discharges were to be released straight into the stream that flows through the site. A New Jersey Pollutant Discharge Elimination System (NJPDES) permit was applied for in relation to all discharges made directly to the stream.

Inspection of the facility's grounds revealed what appeared to be oil on the surface of the stream. The Troy official explained this as a regular occurrence during the week; even though oil filtering equipment was in place. The Troy official explained that Frema (located east of Troy and south of ASD along the ditch, map 3) had recently been ordered to cleanup the stream banks by the State.

While the cleanup by Frema was underway, Troy removed waste drums stored in the parking lot west of the stream and diked the perimeter to prevent future spillage from entering the stream. Troy officials said that disposing of drums containing waste material was difficult because so few firms did that type of work. The final disposition of the waste material is unknown.

The Troy official indicated that the septic tank and leach field were situated under the parking lot. The Department inspectors, using a dye, discovered that material leached from the septic system to the stream.

The mercury reclamation area was not identified on the initial site plan. But according to a Troy official; old mercury batteries were placed in an oven and heated; the mercury vapor was then condensed and placed into containers. The cooling waters were then discharged into the stream.

At the time of the 21 July 1977 inspection the fungicide plant was the most recent addition to the Troy facility. The fungicide plant was to be completely serviced by the sanitary sewer. The area encompassing the fungicide plant was used to store drums containing raw materials (i.e. diacetone alcohol and ethyl ether) or waste materials. The storage area did not have an impervious surface nor were dikes present to contain spills. The inspectors observed some of the drums containing waste material leaking onto the ground.

Other drum storage areas were (raw and waste material) inspected at the facility were not on impervious surfaces and did not have containment berms. The inspectors again observed spillage of material stored in those areas. The inspectors explained to the Troy official that all waste material would have to be removed and properly

disposed.

Inspection of the open storm sewer (possibly Pierson's Creek) revealed numerous pipes discharging to the stream. None were identified on the site plan. A sink in the Troy facility was discharging directly into the stream and a pipe from the employee's locker room was leaking onto the ground allowing raw sewage to enter the stream.

The inspectors advised the Troy official to immediately remedy the flows from the sink and the locker room lavatory. The Troy official told the inspectors that they were most likely connected to another septic tank. This tank then leached into the stream. This septic tank also was not shown on the site plan.

Further inspection of the facility revealed numerous storage tanks containing oil and oil by-products adjacent to the stream without containment dikes. Troy was informed that Federal regulations require a SPCC Plan for the storage of oil products.

Troy officials were told that the septic tank was malfunctioning and that it possibly was in violation of state and local laws. Troy officials stated that since the plumbing inspector had given his approval, nothing would have to be done.

The Department inspectors later determined that the approval by the plumbing inspector was not satisfactory for the Permit to Locate application. Troy officials said that the locker room would be relocated in approximately three months. The office building would take longer (approximately one to two years) to be relocated. Troy stated that they felt the relocation of the two buildings would be a justifiable solution to the problem of the septic tank. Department inspectors informed Troy officials that problems with the septic system on site would have to be immediately remedied.

The report of the inspection concluded that the site plan and application submitted to the Department were inaccurate representations of Troy's facility. Many important details were omitted from the site plan, such as: discharge pipes, drum storage areas, and the septic systems.

The Department inspectors also stated that Troy's housekeeping measures were very poor. They made this statement in light of numerous spillage areas, the deterioration of the locker room's septic discharge pipe and the lack of concern for cleanliness of the site.

On 22 July 1977 a denial of the Permit to Locate pursuant to N.J.S.A. 58:10-17 to 21, inclusive was issued to Troy Chemical Corporation. The denial appears to have been based on information submitted by Troy and the inspection conducted on 21 July 1977 by Department inspectors.

On 1 September 1977 Department inspectors visited Troy to obtain samples and observe the removal of contaminated soil.

The mercury reclamation plant was being fitted with a concrete pad and

berm adjacent to Pierson's Creek. Troy officials stated the cooling water collection sump at the mercury reclamation plant was not large enough to handle the entire flow. When capacity was exceeded it would enter the Pierson's Creek through a 4 inch pipe.

Department inspectors observed that more drums had been removed. All leaking drums waiting for reprocessing or removal were stored on plastic sheets or in stainless steel pans.

Contaminated soil was being scraped and put into a dumpster provided by Duane Marine. Additional concrete pads were being installed between the warehouse and the stream (possibly Pierson's Creek). The pads were sloping towards the warehouse. Troy officials were having a concrete block dike constructed around the oil storage tanks adjacent to the stream.

An open collection tank was suspended over the stream that received discharges from the process building. Troy officials stated that the waste was pumped from the tank to the pretreatment unit, except the tank was not equipped with a high water alarm.

Samples were taken from six (6) locations on site. The RPIU has not been able to determine the final disposition of these samples.

On 21 September 1977 the Department issued a letter outlining the course of action to be taken by Troy through a Pollution Abatement Program. Eight points of agreement were outlined, pursuant to the meeting of 30 August 1977, as follows:

1. Cease all discharges into Pierson's Creek.
2. Sewage must be connected to Newark's sanitary system to eliminate Troy's septic system.
3. All other discharges must be hooked into Troy's pretreatment system before release to Newark's sanitary system. Troy would have to comply with Newark's and the PVSC discharge requirements.
4. Proper disposal of leaking drums and contaminated soil at a location approved by the Department.
5. Provide proper storage of raw materials, intermediates and finished products. Contaminated stormwater not containing toxic or hazardous substances will be sent through Troy's pretreatment before release into the Newark/PVSC system.
6. Construct impervious containment areas around oil and hazardous materials storage tanks. The dikes would have to be able to contain the entire contents of the largest single tank.
7. All floor drains would have to be plugged to prevent discharges from chemical spills.
8. Termination of the septic system in the existing locker room adjacent to Pierson's Creek.

Troy responded to the letter of 21 September 1977 through their attorney, Theodore Schwartz. The following is a synopsis of that 30 September 1977 letter.

The disposal field for the existing septic system has been

repaired (possibly the area adjacent to the ditch that is the east border of the facility. map 4). That disposal field was no longer covered by pavement. The ditch was blocked off at some point by the Albert Steel Drum Company (map 3) and because of this action "the creek no longer constitutes a stream".

Mr. Schwartz states that the only alleged discharge concerns cooling water and some steam condensate. Mr. Schwartz implied that steam condensate should not be considered a pollutant and that cooling water is not contaminated preventing its discharge to the stream. The attorney did ask the Department for a determination allowing direct discharge to the stream of cooling water.

Mr. Schwartz stated that all so-called leaking drums had been removed and disposed of properly. The soil these drums had been sitting on and allegedly contaminated was removed and placed in containers for disposal by Duane Marine Inc..

Raw materials and intermediates were being stored in concrete areas, whereas, finished products would be stored in warehouses or concrete areas.

Berms were installed to keep contaminated waters from reaching Pierson's Creek. Mr. Schwartz stated that contaminated waters were discharged to Troy's "effluent" system. Stormwater that became contaminated with toxic and hazardous substances was directed through the pretreatment unit.

Mr. Schwartz stated that dikes for oil storage areas had always been present. And that the major part of the storage of raw materials had always been carried out in the diked areas. Troy had berms constructed around the fungicide process tank to keep "so-called" drippings from contaminating nearby soil.

Troy provided a list of raw materials and finished product kept on site in the letter of 30 September 1977 (refer to appendix #1).

Aerial photographs taken on 6 September 1978 show an increase in the number of structures along with changes to existing structures. The surface of the site appears to be paved. Light-toned areas are visible throughout the site.

Barrel-shaped objects are located in proximity to four (4) structures with the exception of a group of barrel-shaped objects located south of the possible vehicle access way and adjacent to Avenue L.

Trailer/container-shaped objects appear south of a large structure in the northwest corner east of Avenue L. Cylindrical tank-like objects appear along the west side of Pierson's Creek with a possible dike around a group of cylindrical tank-like objects next to the north perimeter.

Auto/truck-like objects are noticeable at the facility to the north.

It appears that landfill activity may be occurring at the area north of the point where Pierson's Creek surfaces. Barrel-shaped objects can be seen bordering the southeast perimeter extending to the ditch that constitutes Troy's eastern boundary.

On 12 October 1978 during an inspection by the Department of the Albert Steel Drum site numerous five and 55 gallon drums were seen leaking on the ground. The Department inspector noticed oil on the stream that ran through the site (it is not clear if the inspector is referencing Pierson's Creek or the ditch along the east side - map 3).

Troy officials were asked by the inspector if they were the source of the oil in the stream. Their reply was that it was due to excavation work in the stream being done by the Newark Housing Authority (NHA). The NHA was removing debris in an attempt to alleviate the flooding of Wilson Avenue (map 3). Further inspection of Troy's facility revealed discharges of non-contact water from a wooden tank and a two-inch steel pipe into the stream. The inspector observed pumps leaking and many other places where materials were leaching into the stream.

A tank, containing metallic dryers/metallic naphthalene, located inside concrete retaining walls and with a concrete bottom had a sump pump with a discharge line placed directly into the stream.

Samples were taken by the Department inspector at several locations during this inspection, but the RPIU has not been able to determine the final disposition of these samples.

The Department inspected the Troy facility on 19 October 1978 because of the observations made during the 12 October 1978 inspection of the Albert Steel Drum site. This inspection revealed the following:

- Seepage from the bank of Pierson's Creek 70 ft. south of Troy's driveway.
- Puddles of chemicals on the ground in various areas around the plant.
- Bermed areas were leaking chemicals onto the ground.
- Approximately 1,000 drums of waste chemicals, some of them leaking, were stored at the site.
- A white sediment was visible on the bottom of the stream.

Mr. Nowak informed the inspector that Troy was having difficulty disposing of their waste chemicals. The inspector said he would inform the Solid Waste Administration (SWA) of Troy's disposal problem.

On 17 January 1979 a spill occurred at the Troy facility. Upon the inspectors arrival at the site the Department's inspector observed a considerable amount of an oily-like material on the stream surface. Mr. Mitchell (Troy official) told the inspector that the material contained significant amounts of mineral spirits and super high flash naphtha.

Trace amounts of oleic and naphthenic acids including small amounts of a methacrylic polymer were also said to be present according to the

Mr. Mitchell. The cleanup crew of Olsen & Hassold Inc. began to remove the material from the stream and install new absorbent pads. Further inspection of the site revealed the spill originated behind the office building. This inspection also revealed a deterioration in the site's cleanliness.

On 22 January 1979 the inspector returned to check the progress of the cleanup. The oil and other chemicals floating on the water's surface were removed as the cleanup continued for the remainder of the facility.

During an inspection on 24 January 1979 the Department Jim Mitchell told the inspector that he thought a lot of oil was coming from above the Troy plant. The oil was then picked up by Troy's containment system making it look like they were putting more oil into the stream than was true.

When the inspector arrived at Troy on 29 January 1979 he found that the stream had product in it again. The inspector traced the spill to the process building behind the office. The spill was blamed on flooding, caused by heavy rains, that was pumped to the stream by the maintenance department. Troy's maintenance department claimed that they were following the instructions given by Milton Nowak. When the inspector asked Milton Nowak about this he denied that he had instructed the maintenance department to pump the product contaminated water into the stream.

Troy contacted their cleanup contractor and pumped the spilled material into the pre-treatment plant. Jim Mitchell said that the material in the stream was naphthenic acid and naphtha. The inspector stated the rest of the site appeared clean except for around the drum storage area.

The Department was notified of a spill of zinc naphthenate at the Troy facility on 1 February 1979.

The inspection of 6 February 1979 revealed noticeable improvement at the site. The cleanup contractor had commenced with the cleanup of the drum storage area.

On 3 May 1979 the Newark Engineering Department conducted an inspection of the former Albert Steel Drum (now ASD/PDC, map 3) site owned by the Newark Housing Authority (Block 5038 Lot 70 [97-98]). The inspection report states the site was formerly owned by ASD but taken over by the city for non-payment of back taxes.

The report further specifies that part of the building was leased to Welch, Holme, Clark and Prentiss Drug (a vitamin company). The RPIU has found no information to substantiate the previous report linking Prentiss Drug and Chemical with Welch, Holme and Clark.

The Albert Steel Drum/Prentiss Drug and Chemical site has been assigned to the Department's Division of Publicly Funded Site Remediation.

The Newark City inspectors reported that drums of chemicals were scattered throughout the ASD/PDC site. A grayish powder was also seen throughout the site with plastic bags marked specifying a mercury compound. Samples were taken of the grayish powder and delivered to Earthline/SCA Services for analysis.

The analysis by Earthline/SCA Services indicated that the sample contained a level of 0.5% mercury. The lab concluded this to be an extremely high level of mercury for any normal sediment sample.

Inspection of Pierson's Creek, particularly the banks, revealed signs of underground disposal of drums containing chemical waste. The exact location where the barrels were in Pierson's Creek, at the ASD/PDC site, is not indicated in the report.

On 6 June 1979 the EPA visited the ASD/PDC site at the request of the U.S. Attorney's office (map 3). The site, owned by the Newark Housing Authority (NHA), consisted of several buildings with two to three acres of vacant land. A drainage ditch separates much of the land from the buildings. This drainage ditch flows into Pierson's Creek that eventually drains into Newark Bay (map 3).

According to the EPA inspectors the site was littered with various types of debris. EPA inspectors found mounds of dirt and debris, including rusted drums, along the drainage ditch. According to Walter Janicek, of the Newark Department of Engineering, the mounds of excavated material were the result of the NHA attempts to find the source of Pierson's Creek. The drainage ditch was reported to be non-existent when the excavation took place. But an inspection conducted by the EPA in late 1976 revealed the drainage ditch with a depth of approximately five to six feet.

Soil in the vicinity of the drainage ditch had patches of grayish-black material. These patches were specific in location rather than being dispersed over the entire area. Soil further from the drainage ditch showed characteristic color, but contained assorted debris (the characteristic color reported is not known). Samples previously gathered and analyzed were reported to contain phenylmercuric acetate and mercury.

Found among the debris in the vicinity of the drainage ditch (also the area of grayish-black soil) were plastic bags labeled "Troysan". No EPA registration numbers were on the bags, but indicated the bags (these were discovered at the site on 3 May 1979) were for manufacturing purposes. These bags appeared to have contained none of the product nor any other material. The bags seemed to have been fused at one corner and appeared not to have been extensively weathered.

Soil samples were gathered from two mounds of the grayish-black material. The report states that one of the mounds appeared to be covered with a layer of coal type ash and a ponded area near a mound contained a reddish material. The liquid was sampled. The sediment of the ponded area did not appear to contain any of the red material.

The EPA inspectors were shown a place where it was believed that Pierson's Creek surfaced, intersected the drainage ditch and then continued on as Pierson's Creek (this intersection has not been specifically identified).

Nine samples, including four surface water and five sediment samples, were collected along and near Pierson's Creek during the EPA inspection. The EPA determined, after analysis, that elevated levels of mercury were present in all samples collected during the inspection of 6 June 1979. Newark Department of Engineering then requested to be informed of future plans the NHA would have for this property, including any remedial activities. (Troy Chemical Corp. Inc. currently owns Block 5038 lot 98)

In a letter of 29 June 1979 to Assistant U.S. Attorney Charles Walsh, the EPA indicates that conditions at the NHA lot (Albert Steel Drum/PDC) did not pose an acute health impact. At that time the immediate area was non-residential. EPA officials stated that the concentration of mercury in the drainage ditch, soil samples from piles of excavated material and from downstream of Pierson's Creek did present a cause for concern. The EPA implied that the conditions which existed could not be wholly attributable to the past disposal practices of former occupants. They alleged that the activities from an adjacent site (Troy) may be the likely source of contamination.

The EPA planned to put together a technical team to visit the adjoining site (Troy) for the purpose of identifying process constituents and tracing wastewater streams (map 3).

The United States Coast Guard responded to a spill of benzene at Troy on 6 July 1979.

On 11 July 1979 the Newark Department of Engineering (NDE) informed the Newark Housing Authority (NHA) that the EPA was investigating possible hazardous chemical waste dumping at Wilson Avenue and Avenue L (Block 5038 lot 70 [97 & 98]; (maps 1 & 3).

On 12 July 1979 the EPA, after obtaining a search warrant, conducted an unannounced inspection and sampling survey of the Troy Chemical Company plant in Newark, New Jersey. The search warrant was issued by the U.S. District Court for the New Jersey District under provisions provided in section 1318 (a) (B) of the Clean Water Act. The search warrant was requested because of the findings of the 6 June 1979 inspection and sampling episode conducted at the adjacent NHA property (ASD/PDC; map #3).

Milton Nowak, Vice President of Research and Production, was served the warrant for Troy Chemical Company at the subject site. Mr. Nowak provided the background information on the facility and showed the inspectors the manufacturing and waste treatment operations.

Troy informed the EPA that they began manufacturing chemicals, including mercury, at this location in 1956. The manufacturing was

carried out in batch type operations.

Mercury metal was converted into mercuric oxide that was used in the manufacture of organic mercury chemicals. When the EPA inspection was conducted the following mercury chemicals were manufactured: phenylmercuric acetate (45%), chloromethoxypropylmercuric acetate (45%), phenyl mercuric sulfide (5%) and phenylmercuric oleates (5%).

The manufacturing of mercuric oxide produced the greatest amount of mercury bearing wastewater. Production was in batch format consisting of 700 gallons per batch at an average of ten (10) batches per week. Other sources that contributed to the mercury bearing wastewater were from spillage, leakage and the washing of equipment and floors.

In the manufacture of organic mercury compounds from the oxide; the only wastewater discharged from the processing operation was from the production of phenylmercuric sulfide.

Since 1965 mercury bearing wastewater had been treated by sulfide precipitation. Up to 1976 the treated mercury bearing wastewater had been discharged directly to Pierson's Creek instead of the septic tank system. Untreated wastewaters from other chemical processes were discharged in small amounts directly into Pierson's Creek. Around 1976 Troy constructed a treatment system to accept treated mercury wastewaters and the effluents from all other chemical processes. This system then discharged into the PVSC system. Mr. Nowak stated that the septic tank-leach field had always been used to treat only the sanitary wastewater from the facility.

Mr. Nowak stated that all mercury bearing wastewater went into a sulfide precipitation treatment system. This system consisted of two settling tanks, a batch reaction and precipitation tank. Sodium and iron sulfide were added to the precipitation tank including a plate and frame filter press for removal of the precipitated mercury sulfide. The wastewater then entered another settling tank.

All process wastewaters were discharged to a general waste treatment system at the facility. Suspended solids and oils were removed at the settling tank before transfer to the neutralization tank. The wastewater was then discharged to the PVSC. The precipitated mercury sulfide was then drummed for reprocessing on site.

The City of Newark provided the water used for all processes conducted at the facility.

Troy had a New Jersey Pollutant Discharge Elimination System (NJPDES) permit for the period from 31 May 1978 through 30 September 1980. This permit allowed discharges from the outfalls designated 001-006 into Pierson's Creek that included specific limits on Chemical Oxygen Demand (COD) and temperature. According to Mr. Nowak the outfalls received only non-contact cooling water, boiler blowoff and steam condensates. The majority of discharge was through outfall 001 with that being non-contact cooling water.

The location of the septic tank-leach field was south of Building 99 and surrounded by concrete (map 4). The area covering the leach field was covered with hard rock-like material that was difficult to penetrate for sampling. For verification that mercury bearing wastewater was never discharged to the septic system, samples were gathered from several locations at the facility during the 12 July 1979 inspection.

Dye was introduced to the mercury chemical manufacturing drains and then discharged from the waste treatment system. No dye was seen entering Pierson's Creek but was observed entering the PVSC sewer.

Samples were also taken from Pierson's Creek for volatile organic (priority pollutants) analysis, particularly for benzene.

Map 4 provides an outline of the Troy facility and where samples were gathered during that inspection. Not all sample locations are identified. This map also indicates areas where both raw and waste materials may have been stored.

Sampling results of surface water indicate that there was a small increase in the mercury level of Pierson's Creek downstream when compared to upstream of the plant. The sediment sample results were more significant. The results showed that there was relatively little mercury upstream of the plant (140-191 mg/kg); while large amounts were detected in the sediment of the stream within the facility (11,600 - 22,400 mg/kg). Substantial levels of mercury were found at 100 yards downstream (3,120 mg/kg) dropping off to 244 mg/kg 250 feet downstream of the facility. Because the manufacturing operations essentially left the mercury in the insoluble form; it was expected that any mercury in the wastewater entering the stream would settle out into the sediment.

Sediment and water samples taken in the ditch adjacent to the leach field exhibited mercury levels of 83,200 mg/kg and 886 ug/l, respectively (map 4). The EPA inspectors identified two possible sources for the contamination. One may have been from rainwater infiltrating the soil contaminated by mercury bearing wastewater; if such wastewater was released to the leach field. The second source may have been due to runoff from the area nearby where the mercury sulfide precipitate was stored for reprocessing. This would indicate improper storage or handling, including spillage, that was not observed during the course of the inspection.

This inspection attributed the high levels of mercury to long term accumulation. The inspectors also noted that water samples indicated a very small amount of mercury continued to enter Pierson's Creek at that time.

Sampling for volatile organics (priority pollutants) was done to confirm that all process wastewater was going into the PVSC system. Analysis indicated that there was a significant increase in the benzene level in the stream within Troy's boundary. Also, the survey revealed increased levels of benzene downstream of the facility.

Benzene was a raw material used by Troy.

Lastly, it was noted that several other priority pollutants organics that were not listed as raw materials or products were present to a lessor extent.

EPA inspectors said that a large number of drums were being stored outside on pallets throughout the site. Drum storage was almost entirely on concrete surfaces. The report stated that runoff from the facility drained into Pierson's Creek. Troy's housekeeping at the facility was rated as poor by the inspectors.

Department inspectors were accompanied by Milton Nowak, vice president of Troy, during an inspection on 2 August 1979. The inspectors observed the oil skimmer and water separator removing oil from Pierson's Creek. As the oil was transferred to a 55 gallon drum the inspectors observed oil leaking from the drum onto the concrete pad. The oil was then seen entering a pipe, in the concrete berm, and discharging to the stream. The oil was immediately transferred to another drum and the pipe cemented closed.

Open leaking drums of oil and unknown chemicals were found in the area of the skimmer. Drums containing similar materials and in similar condition were discovered near the warehouse on the northside of the property (the exact locations are not known; map 5).

Unpermitted discharges were found near the locker room. Samples were collected. The liquid coming from the locker room smelled of raw sewage. It was confirmed that the discharge was coming the locker room by means of a dye test. The RPIU has been unable to locate the results of the analysis.

The inspectors noticed that some cleanup of the facility had occurred but that the general housekeeping was poor.

An inspection was conducted by the Department on 6 August 1979. A few waste drums were noted to be leaking, and the filter fences needed to be cleaned and repaired. A new concrete wall by the north end of the plant had been installed to keep waste from getting into the stream.

The Troy official, Jim Mitchell, told the inspector that they were having a hard time finding a disposal site for his waste materials.

In a letter of 25 September 1979 PVSC reported the results of analyses of samples collected between January and May at a manhole outside Troy on Avenue L. Differences arose in the results obtained by the PVSC, Rutgers and E. T. Killam laboratories for various reasons. Even so, the PVSC official indicated the results were sufficiently high enough to verify a significant mercury discharge violation.

An inspection conducted by the Department on 11 December 1979 revealed filter fences not in proper working order. The Inspector observed a slight rainbow type sheen on the stream.

Troy said they had disposed of 1,000 drums by reworking, repacking or disposal via the PVSC. The RPIU has found no information regarding the content of those drums.

During this inspection, 2,000 to 3,000 drums of waste material were awaiting disposal. The Inspector found most of the drums stored on concrete pads. Leaking drums had been repacked or disposed of. The RPIU has found no information pertaining to the location or method of disposal.

Containment areas of various storage tanks had been cleaned and the walls patched. The dumpster had been placed on a concrete pad to keep chemicals from the ground. Troy officials told the Department inspectors that in the event that chemicals did get on the concrete pad they were covered by an absorbent and disposed. The concrete walls lining the stream had not yet been repaired and material could still be seen leaching into the stream. The inspector did not identify the specific location where material could be seen leaching into the stream.

Metallic mercury was visible on the ground and on the mercury recovery building itself.

The containment structure for a tank farm, in the area of the mercury recovery building needed to be replaced because of cracks in the walls and floors.

During an inspection conducted by the Department on 13 December 1979 with Troy's plant engineer, Jim Mitchell, problems similar to those noted during previous inspections. As the inspectors left the office/laboratory building a bright blue substance was noticed solidified next to a leaky drum (maps 4 & 5). This material was removed and placed into another container.

The inspectors also found several problems at the mercury reclamation process area (map 5 & 7). This area was on a concrete pad and bermed. The berm adjacent to the tributary of Pierson's Creek had a large opening leading directly to it. The inspectors observed contaminated runoff flowing into the tributary. Large cracks were seen in the concrete pad allowing surface runoff to drain directly into the tributary. Mercury droplets were seen on this pad and all areas surrounding the mercury reclamation building. The building floor and concrete pad were graded to direct runoff towards a sump for discharge to the pretreatment system. The discharge pump appeared not to be functioning properly. An overflow pipe possibly directed into Pierson's Creek was observed. The bermed area behind the mercury reclamation building contained water that could have overflowed into Pierson's Creek. The inspectors observed non-contact cooling waters being directly discharged to Pierson's Creek through open overflow and underflow valves.

Inspection of the oil/water separator revealed the skimmer mechanism was stuck below the water line. The pump was not in operation nor did it look as if it had recently been in operation. The filter fence at

this point in Pierson's Creek was not functioning. Behind a berm on a concrete pad adjacent to the filtering apparatus contaminated water overflowed directly into Pierson's Creek. The concrete pad showed signs of numerous spills and leaking drums.

A dumpster on a concrete pad near the fungicide plant had signs of numerous chemical spills. This pad was not bermed allowing spilled chemicals to flow onto the exposed ground and toward Pierson's Creek. A metal drum of thionyl chloride, a fuming highly corrosive material, was found behind the fungicide plant. The inspectors discovered that this material fumes upon exposure to the atmosphere. In the presence of moisture this chemical decomposes into hydrogen chloride and sulfur dioxide.

A thick blue-green semi-solid material was found at the end of a pipe adjacent to the fungicide building. This plant was not in operation.

Oil and other contaminants were seen in the leachate collection boxes installed in Pierson's Creek. This observation suggested that the ground water may be highly contaminated.

The inspectors discovered mercury on the floor of the blue building (building #40; maps 5 & 6) and outside on the concrete pad adjacent to Pierson's Creek.

The old locker room was still in use and discharging sanitary waste directly into Pierson's Creek.

On 21 December 1979 the Department replied to an inquiry of the Federal Department of Housing and Urban Development. HUD requested information in regard to site conditions at Troy's facility in Newark, New Jersey. The Department's response was based upon inspections conducted over the past year, but more recently the inspections conducted the week of 10 December 1979. The RPIU has discovered no information regarding the inquiry to the Department nor what the results were to the Department's response.

Troy was referred by Division of Water Resources (DWR) to the Bureau of Hazardous Waste in the Solid Waste Administration on 25 January 1980 due to the existing environmental problems. The problems included 2,000 plus drums of waste material stored at the site.

On 6 February 1980 the Department was informed of a spill of organic mercury at Troy.

Troy submitted a Renewal Application for NJPDES permit #NJ0031453 on 27 March 1980. Troy's chief engineer, Jim Mitchell, stated that they had an open storm sewer running through the facility. The storm sewer that surfaced approximately 50 yards north of their facility continued on through a 10 foot wide concrete flume. Mr. Mitchell stated that the flow through the sewer was approximately 3,000 gallons per minute (gpm) and that it varied considerably. Troy had buildings on both sides of the sewer (maps 2 & 3).

Mr. Mitchell stated that no process or sanitary discharges were made to the storm sewer.

On 28 April 1980 a sampling inspection was conducted by the Department at Troy. The results revealed that Pierson's Creek (water and soil samples) was contaminated with heavy metals and volatile organics.

In a letter dated 20 June 1980 Troy Chemical Corporation transferred ownership and control of the facility to Darryl Smith of New Chemical Corporation.

Troy accepted responsibility for all violations prior to this date and stated that New Chemical agreed to accept responsibility after this date. The letter was signed by S. Gonge, President of New Chemical Corporation.

Troy was purchased by New Chemical Corp. on 20 June 1980 for $675,000. The deed (4685 p315) for this transaction was signed by Elias Singer, President and William Singer, Secretary. It is noted within the Dun & Bradstreet report for Troy that the company was last organized in 1980; this coincides with the purchase of the company by New Chemical Corporation.

Information furnished by Troy to the Department states that New Chemical Corporation was formed in April of 1980 for the sole purpose of acquiring the business and assets of Troy. The acquisition took place on 20 June 1980 and was executed as explained to prevent confusion during the takeover.

Upon completion of the transaction New Chemical Corporation filed a Certificate of Amendment of Certificate of Incorporation with the DCR (23 June 1980) changing its name to Troy Chemical Corporation Inc. This document was signed by S. Gonge, President.

Documents were filed with the DCR on 23 June 1980 changing Troy Chemical Corporation's name to E.W.H. Chemical Corporation. This transaction was approved by the directors on 18 June 1980 and signed on 20 June 1980 by Elias Singer, President and William Singer, Secretary.

On 23 June 1980 a Certificate of Amendment of Certificate of Incorporation of Troy International Corporation was filed with the DCR for the corporate change of name to E.W.H. International Corporation. The document was signed on 20 June 1980 by Elias Singer, President and William Singer, Secretary.

The attorney representing Troy, John Mackay 2nd, submitted a letter to the DCR on 24 June 1980 that confirmed the change of names of Troy Chemical Corporation to E.W.H. Chemical Corporation and Troy International Corporation to E.W.H. International Corporation. E.W.H. International Corporation dissolved effective 6 May 1988.

In July 1980 twenty soil borings and 80 soil samples were collected by the Department's DWR at various locations covering the ASD/PDC site.

Three borings were taken south of the ASD/PDC site at Troy. Water was encountered at a depth of five to six feet below grade and the drill water became blue-black with a chemical odor between eight and nine feet.

In the building formerly used by Albert Steel Drum a concrete pit had been observed by Department inspectors. The pit measured ten by fifteen feet containing a thick black liquid. The depth of the pit was unknown. The RPIU has discovered no information indicating the pit was sampled.

Soil samples collected during this inspection were analyzed for heavy metals, total volatile organics and pesticides. Metals detected at concentrations above typical background levels included cadmium, lead, zinc, and mercury. In some samples pesticides, including Lindane, Heptachlor, o,p-DDD and Dieldrin, were detected at low levels (less than 5 ppb). In ten soil samples analyzed concentrations of volatile organics were very high.

On 6 August 1980 an inspector from the Department's Air Pollution section reported that Troy had thousands of drums of waste being stored on site. Many of the drums were old, rusty and leaking. Troy said that they were in the process of testing and removing the drums. The disposal location for the material in these drums is not known.

A spill of cobalt octoate at Troy was reported to the Department on 18 September 1980.

In a report of phone call taken on 2 October 1980 by the DWR, it was revealed that a Troy employee was hospitalized for mercury poisoning (180 ppm in his bloodstream). This employee then indicated that Troy had been dumping material at the site.

An inspection by the Department on 6 November 1980 revealed a regression in the cleanup efforts undertaken at Troy. Mercury had been spilled over the exposed ground surface north of the blue building (#40; maps 5 & 6). The mercury droplets were approximately 20 feet from Pierson's Creek. The plant engineer claimed the spill had been caused by vandals.

Waste treatment collection sumps were observed overflowing with the wastewater going directly into Pierson's Creek. This had been caused by a large stone placed on the pump float rendering the pump inoperable. The RPIU has been unable to determine who placed the large stone on the pump.

The number of 55 gallon drums had been reduced since the last inspection. Drums stored in the area of the new locker room were observed to be leaking. A purple colored oily material was found in a puddle in the vicinity of the new locker room.

While inspecting the blue building another wastewater collection sump pump was observed to be inoperable. Wastewater could be seen flowing directly into Pierson's Creek.

The oil skimmer in the stream was inoperable; the filter fences were coated with oil and other material.

A dumpster was seen leaking and multi-colored chemicals were noticed around the dumpster on the bare ground surface. Mercury droplets were also observed in the vicinity of the dumpster. This area was said to be within 15 feet of Pierson's Creek.

Mercury droplets were seen around the mercury reclamation area (maps 5 & 7) in an area where surface runoff could possibly put the droplets into the east branch of Pierson's Creek.

On 14 November 1980 the PVSC investigated the cause of three consecutive days of explosive discharges emanating from Troy. Explosimeter readings were taken at a manhole at Avenue L and a manhole on the Troy property. According to the PVSC inspector, it appeared that the effluent had become predominantly solvent due either to equipment malfunction or improper oversight by Troy personnel.

Reinspection was conducted by the PVSC on 17 November 1980. The inspector was informed that a blocked line created the problem and that it had been rectified. The PVSC inspector also discussed Troy's high percentage of mercury and a high pH level of the effluent being discharged to the PVSC system.

On 3 March 1981 Troy responded to a 22 February 1981 inquiry from the EPA concerning hazardous waste activity. The information submitted by Troy was for the disposal of hazardous waste generated from September of 1980 to 19 February 1981. Troy stated that it was not their intention to store hazardous waste for longer than 90 days from the date of generation.

During that time; Troy reported that hazardous waste was removed six (6) times.

Oil and oil sludges, emulsion; classified as D001 (characteristic of ignitability) waste was delivered to Solvents Recovery Services (NJD002182897) on 19 November 1980; 21 November 1980; 4 December 1980; and 15 December 1980 in 5,000 gallon shipments except for 19 February 1981 the shipment of D001 waste was 4,250 gallons. On 26 November 1980 a 37,350 pound shipment of latex residue waste type NOI was delivered to Chemical Waste Management Inc. in Emelle, Alabama. Two of the three transporters were based in Sayreville, New Jersey (Narrows Carriers Inc. and Kisko Transportation Co.) with the third from Dover, Delaware (Atlantic Coast Environmental).

Differences exist between waste information supplied by Troy to the EPA and that reported by manifests to the Department. On 17 December 1980, 33,750 gallons of a material classified as chemical process-liquid, NOS was sent by manifest (NJA00002850) to Chemical Waste Management in Emelle, AL. This shipment was not included in the report given to the EPA. The next discrepancy occurs in the quantity of D001 waste shipped on 19 November 1980. Troy reported to the EPA

that 5,000 gallons shipped that day, but the Department's manifest record (NJA00007209) shows 50,000 gallons were shipped. The shipment Troy reported to the EPA for 19 February 1981 does not appear on a Department manifest printout from 1 January 1980 to 31 December 1986.

During an EPA RCRA generator inspection in March 1981 of the Prentiss Drug and Chemical (PDC) Company's facility at Wilson Avenue in Newark, Lindane drum liners, methoxychlor bags and an unidentified filter cake were listed as being hazardous waste. Methoxychlor is an insecticide that can be described as a close relative of DDT.

The Newark Department of Engineering (NDE) compiled information regarding numerous hazardous waste sites found within the City. This information appeared in a 3 March 1981 memorandum from Alvin Zach to John Teare, Corporation Counsel for the City of Newark. On of the sites mentioned in the memo was the Newark Housing Authority (formerly Albert Steel Drum/Prentiss Drug & Chemical), Avenue L (Wilson Avenue), Block 5038 Lots 70, 97 & 98 (maps 1 & 3). The NDE memo also included the property currently operated and owned by Troy (Block 5038 Lot 98).

The NDE memorandum indicated that an unknown amount of hazardous waste were buried at the site. According to the memo samples were collected that revealed high levels of heavy metals (the results have not been located by the RPIU). The specific type of sampling conducted was not identified in the memo. Soil samples had been previously collected in May of 1979 by the NDE that revealed high levels of mercury.

On 19 May 1981 an inspection of Troy's facility by the Department revealed approximately 400 drums of waste on site. Mr. Hoffman, a Troy official, stated that most of the waste would be "reworked". Mr. Hoffman stated that 41 drums (55 gallon steel) contained hazardous waste. Two of these drums were leaking and another three were not labeled. Mr. Hoffman indicated that most the material was methacrylic acid. The Department's inspector indicated that most of the drum storage areas and tank farms were without containment countermeasures.

A stack test was conducted on 28 May 1981 by Trace Technologies, Inc. (Trace) in the presence of Department inspectors. During this test fugitive emissions were detected coming from the door of furnace #2. The Trace representative indicated this was not a major problem. The fugitive emission continued until the door on furnace #2 was sealed.

In the course of this inspection metallic mercury was seen dripping from the doors of furnaces #1 and #3. The mercury was collected on a metal plate, supported by a 55 gallon drum, in front of the furnaces. The mercury was supposed to be collected in a receiver at the end of the condenser.

The EPA took administrative action on 6 June 1981 against Troy for violations of 40 CFR Part 265 under Section 3008 of the Solid Waste Disposal Act, as amended. It had been determined that Troy was in violation of 40 CFR Parts 265.198; 265.31; 265.32; and 265.17.

In August of 1981 the Department's Bureau of Groundwater Management

recommended installing five ground water monitoring wells. Four wells were selected to monitor the quality of water moving onto and off of the site and beneath areas of surface contamination. The fifth well was to be a deep well designed to monitor the water quality of a lower aquifer (see map 6 for locations).

A memorandum of 20 August 1981 from M. Nowak to the file indicates the disposition of materials from the 4500 drum mountain and the 270 drum mountain. According to the memo, drums of finished product were obtained from the 4500 drum mountain and used in the manufacture of various products or were consolidated to form new batches of material. The 270 drum mountain consisted primarily of raw materials. These materials were designated for disposal or put back into stock for use (Appendix 2).

On 2 March 1982 a Certificate of Dissolution of E.W.H. Chemical Corporation was filed with the DCR having an effective date of 15 February 1982. The document was signed by Elias Singer, President. The registered agent was Elias Singer and the principle office was located at 338 Wilson Avenue, Newark. The directors of this company were Elias Singer, William Singer and Herman Singer with Elias and William also designated as president and secretary/treasurer, respectively.

In May of 1982 Troy signed a Consent Agreement and Final Compliance Order with EPA to settle violations cited in the administrative action of 6 June 1981.

Mario Graglia, of the Passaic Valley Sewerage Commission, was in attendance with Department inspectors for a Resource Conservation and Recovery Act (RCRA) inspection of Troy's facility on 10 December 1982. Upon inspection of the facility Milton Nowak, Vice President, claimed a spill occurred (recently) and the material came from the solvent separation tank. Mr. Graglia indicated that it appeared as though the spill came from an overflow of an open tub under a possible filter alongside the solvent separation tank. The Department inspectors were informed that the spill occurred because the separation tank was left unattended.

Two samples were collected by the Department inspectors of the material in the tank for analysis. These were labeled FXS002A and FXS002B. The results of sample FXS002B have not been discovered by the RPIU. The analysis of sample FXS002A was classified hazardous due to ignitability, flash point under the 140 degree limit, D001; and with mercury above the 0.2 mg/L limit, D009.

During 1982, Troy apparently did not manifest and/or ship any waste offsite. Troy reportedly bought finished product for resale.

Troy manifested waste classified D001 during May, June, August and October of 1988 totaling 12,030 gallons for disposal at Safety Kleen Corp. in Linden, NJ. In November 1983 Troy manifested 800 gallons of X722 waste (waste oil/bottom sludge from residential/commercial fuel oil tanks) for disposal at Ra-Mar Waste Management Corp., Orangeburg,

NY.

On 28 January 1984 a Department inspector responded to a spill at Troy's facility on Avenue L in Newark. Division of Criminal Justice (DCJ) investigators reported the incident. A dark brown and green colored liquid were present in the stream (possibly Pierson's Creek). The dark brown liquid was floating on top of the water, while the green liquid was beneath the surface. Each liquid was field tested for flammability. The dark brown liquid ignited and the green liquid did not.

The DCJ investigators collected samples upstream and downstream of Troy's facility (the results of these samples have not been located by the RPIU). The Department's inspector was allowed access to the plant to investigate the spill. The inspector observed areas of blue and orange liquids under storage tanks on the ground in the vicinity of processing building 91. The inspector again observed the dark brown and green liquids in the stream outside building 91 (maps 5 & 6).

At the rear of building 91 (facing Delancy Street) was a small concrete diked area that was adjacent to the stream that contained a red brown liquid. Troy employees indicated this was part of the facilities effluent reserve system. The inspector observed the red brown liquid inside building 91. The floor inside building 91 was diked but cracks were visible in the wall facing the stream.

Mr. Bralczyk, Troy's Maintenance Supervisor, stated that the green liquid was an old dye that comes out of the ground when it rains. Mr. Bralczyk also indicated that the brown material could possibly have been mineral spirits.

Troy manifested waste classified D001 during May, June, September and November of 1984 totaling 12,204 gallons for disposal at Safety Kleen Corp. in Linden, NJ.

An Organic Chemicals Questionnaire was completed by Troy for the PVSC in March of 1985. Troy was to indicate if they purchased and used any of the 21 organic chemicals listed. Out of the 21 organic chemicals; Troy indicated that only two were purchased. They were: 7,000 pounds of benzene and 1,204 pounds of toluene. The questionnaire was signed by Milton Nowak, Vice President.

During a NJPDES Compliance Inspection on 1 May 1985 a Department inspector observed a green material rising from the bottom of the creek (possibly Pierson's Creek). The inspector indicated that the topography of the facility allowed for some of the runoff to enter the ditch at the rear of the property. The inspector further indicated that the water in the ditch was greenish and because of the weeds the area resembled a swamp.

The inspector noted minimal spillage in the warehouse and throughout the facility. Housekeeping remained a problem. One of the defoamer tanks had a leaking jacket and the containment area was full of a brown, shiny substance and water.

Troy manifested waste classified D001 during March, April, May, June, July, August, September, October and December of 1985 totaling 89,736 gallons for disposal at Safety Kleen Corp. in Linden, NJ.

The USCG reported an anonymous call on 5 March 1986 to the Department stating that a green/black dye-like material could be seen in Pierson's Creek 1 Avenue L, Newark.

The Department's DWR investigated the incident on 10 March 1986 Upon arrival at Troy the inspector observed that the creek (possibly Pierson's Creek) was discolored greenish/black. There was no evidence of a spill upgradient of Troy. The inspector met with Igor Khalev, Supervising Engineer of Troy, both agreed that the greenish/black material was coming from the ground at the Troy site and may be part of an existing soil contamination problem.

The Passaic Valley Sewerage Commission (PVSC) advised Troy on 13 August 1986 not to exceed the 0.4 pounds per day mercury limitation as specified within their permit.

The PVSC informed Troy on 18 August 1986 that during the monitoring period 1 April 1986 to 30 June 1986 59 mercury analyses out of 60 exceeded the specified 0.4 pounds per day limit. Troy was permitted to discharge 24 pounds of mercury during this monitoring period, but actually discharged 69.6 pounds of mercury.

Troy informed the PVSC in the letter of 27 August 1986 that a decision would be made on the continued manufacturing of mercury products in September of 1986. If the decision was made to discontinue, the operation would cease as of February 1987 based upon the raw material inventory and customer requirements.

The waste manifested for disposal by Troy during 1986 was classified D001; X722; X725 (oil spill cleanup material), and X940 (poison/pesticide, nos) totaling 4,350 gallons and 10,400 pounds, respectively.

The Department received notification on 10 February 1987 from Troy concerning a spill of approximately one gallon of naphtha. Troy indicated the spill may have resulted from an open effluent line but that source had yet to be verified. According to Troy, the naphtha was discharged to the creek but was believed to not have gone beyond Troy's boundary (map 5).

On 12 February 1987 Troy reported that approximately 20 gallons of mineral spirits were discharged to the creek. The cause of the spill was due to a frozen process line.

In a 10 March 1987 letter to the PVSC, Troy stated that a malfunctioning LEL (lower explosive limit) meter had been fixed. Troy also submitted mercury analysis results as required by the Metallo-Organic Pesticide Chemical Category regulations. Troy then indicated that, as of February 1987, it no longer manufactured mercury

containing products that discharged to the sewer effluent.

John Anderson, of Troy, reported a discharge of 20 - 40 gallons of mineral spirits to Pierson's Creek on 10 March 1987. The incident occurred due to an overflow of the effluent tank.

During an EPA NPDES inspection of 27 March 1987 the inspector stated the receiving water as well as the mud and dirt in the channel were discolored. A facility representative (Ed Capasso) indicated that the discoloration was a result of past activities in the area (the NPDES Compliance Inspection Report for this inspection does not indicate if the "past activities" were those of Troy).

The Newark Office of Emergency Management was notified on 10 July 1987 by the Newark Fire Department that a 10 pound box of mercuric chloride was found at 183 Frelinghuysen Avenue. The label on the box stated Troy Chemical Co. of 1 Avenue L, Newark as the manufacturer and included the name of Woodridge Chemical Co..

A LEL Compliance Review conducted by the PVSC for the Troy facility on July 31, 1991 revealed three instances in July 1987 where Troy exceeded the permitted levels.

An inspection by the Newark Fire Department on 20 April 1987 revealed a large drum storage area (possibly inside a warehouse) of flammable liquids without sprinkler protection. The follow-up inspection of 29 July 1987 found the sprinkler system installed as required. The inspector also noticed storage of 55 gallon drums, four on a pallet, three pallets high and 30 gallon fiber drums, five on a pallet, four pallets high.

In 1987 Troy manifested waste during January, March, June, September and December. The waste was classified D001, X725, X900 (chemical process-liquid, nos), and X940 for disposal at Advanced Environmental Tech. in Morris Plains, NJ.

The Passaic Valley Sewerage Commission (PVSC) inspected Troy's facility on 29 September 1987 to visually acknowledge the cessation of mercury processes. Troy official, Ed Capasso, indicated that all mercury processes ended in January 1987. The PVSC inspector indicated that 26 barrels of mercury sludge remained on site. According to the PVSC inspector these drums were to be manifested to India.

While checking the pH at Troy on 19 February 1988 the PVSC inspector noticed a distinct odor around the monitoring equipment. Upon checking for the source the inspector discovered the manhole cover to the sewer was off. Troy indicated work was going in the sewer and the lid would be replaced as soon as possible. During a routine LEL review on 1 March 1988 the PVSC inspector found the sewer lid to be open again. The inspector informed Troy to close the lid.

In a letter dated 28 April 1988 to the PVSC from Troy, Ed Capasso stated that mercury production has ceased since February 1987 and that mercury contaminated equipment had been decontaminated at various

times during the year. All decontamination was expected to be accomplished by November 1988.

In a letter dated 1 June 1988 from the PVSC to Troy, the PVSC expressed difficulty with the explanation "cleaning contaminated equipment" when it had been over a year since mercury containing production ceased. Troy had continued to exceed the effluent permit limit of 0.4 pounds per day of mercury.

The Department received a report of an incident by Ed Capasso of Troy Chemical on 17 June 1988. Mr. Capasso reported a black liquid that smelled like sulfide as being on the creek. Mr. Capasso also indicated that it was coming from the plant upstream (map 3). Department inspectors investigated the incident on the same day (map 8). The inspectors observed that the color of the stream was purplish brown near Delancy Street and Avenue L.

On 30 June 1988 the Department inspected Pierson's Creek and the stream adjacent to Delancy Street (map 8). Pierson's Creek was noted having a dark color at the time with no sulfide odor. The inspector indicated this stream was an open culvert used for discharges by the Turnpike with a landfill along the banks.

Troy manifested waste during February, March, May, July, August, September and October of 1988. The waste was classified as follows: D001, D002, D007, D009, F001, F003, F005, P030, U012, U019, U052, U170, X722, X725, X850, X900 and X910 (see appendix 3 for descriptions).

On 4 November 1988 Troy reported a deviation of the LEL to the PVSC. A spill of approximately 600 gallons of methanol and water mixture entered the PVSC system when the line to the methanol recovery unit ruptured.

A Notice of Violation was issued by the PVSC to Troy on 23 January 1989 for exceeding mercury permit levels on three occasions between 3 October 1988 and 31 December 1988.

In response to the 23 January 1989 Notice of Violation Troy reassured the PVSC that all mercury production had ceased. Troy indicated that effluent flows had been miscalculated thus providing an inaccurate representation of the daily discharge. Furthermore, Troy indicated that processes follow routes within the plant that historically contained mercury.

On 9 February 1989 the PVSC issued a Notice of Violation to Troy for pH deviations above the limit specified within the connection permit. The PVSC recorded, during the period between 24 December 1988 to 24 January 1989, a total of 25.25 hours or 2.9% that Troy's pH level was out of compliance. In addition, the PVSC recorded four deviations that each lasted over an hour.

On 18 April 1989 the PVSC issued a Notice of Violation to Troy for exceeding the mercury discharge limit specified in the sewer

connection permit. Troy was informed in the Notice that the sewer connection permit would be revised to specify the mercury limitation as 0.01 mg/L.

The Department responded to a chemical fire at Troy on 16 June 1989. The fire resulted as sparks from a welding operation ignited toluene in floor troughs. The fire was extinguished by the Newark Fire Department prior to the inspectors arrival. Two people were hospitalized for smoke inhalation.

On 28 July 1989 the Division of Criminal Justice (DCJ) interviewed a former employee ("John") of R. Ciuba Disposal, which was formerly located at 338 Wilson Avenue, Newark, New Jersey. At the time of the interview "John" was an inmate at Northern State Prison in Newark. R. Ciuba Disposal was located to the north and east of Troy in the vicinity of the Albert Steel Drum site (map 3).

John started working for R. Ciuba Disposal in 1970 as a loader, then as a driver of garbage trucks. John said that during the day he would pick up solid waste for disposal at the Petrozello dump in Kearny, NJ. In the afternoon John would then use a flatbed truck to pick up 30 and 55 gallon drums containing liquid waste. The drums were picked up from several chemical companies in Newark and taken back to the Ciuba yard at 338 Wilson Avenue for storage.

John alleged that at least once a week, always at night, himself or another driver would take a rolloff container loaded with drums to the Newark City dump. This continued until 1974 when employees from a construction company were caught dumping chemicals from a tanker at the site.

Starting sometime in 1974 continuing until sometime in 1979; John alleged that drum disposal occurred on the Ciuba yard at 338 Wilson Avenue, Newark. Pits were dug in the yard for the disposal of chemical wastes. During the evening hours the contents of the drums (chemical waste) were dumped into the pits. John stated that a brick waterhole eighty feet deep at the Ciuba yard was also used for the disposal of waste.

Several buildings were torn down and the debris was used to cover the pits where the chemical waste were dumped.

John indicated a number of companies in Newark from which R. Ciuba Disposal collected chemical waste for disposal. Among these companies were Prentiss Drugs (Wilson Avenue) and Troy Chemical (Avenue L).

On 2 November 1989 Department investigators interviewed Robert Ciuba in regard to his knowledge of waste disposal activities in the Newark area from the mid 1960's to the present. Mr. Ciuba stated that he started the business R. Ciuba around 1966. Mr. Ciuba claimed to be the sole company principle. Ciuba had two vehicles; a rolloff capable of handling various sized containers and a 25 yard Mack Leach. Ciuba stated this company ceased operation in 1986.

Ciuba stated he used a garage located at 338 Wilson Avenue in Newark. This location served primarily for dispatching the company vehicles. Ciuba stated that he leased the garage from the Pulaski Skyway Realty Company whom he identified as the property owner. Ciuba claims that when the Newark Housing Authority (NHA) acquired the property in the 1970's all tenants were forced to leave.

Mr. Ciuba provided the following information in regard to Albert Steel Drum (ASD), Prentiss Drug and Chemical (PDC), and Troy Chemical Corp..

Mr. Ciuba recalled ASD as one of the tenants at 338 Wilson Avenue in Newark. Ciuba stated that the 338 Wilson Avenue site usually flooded after a heavy rain and that occasionally drums from ASD would float to other portions of the property.

PDC was identified by Mr. Ciuba as a tenant at 338 Wilson Avenue and as a former account of R. Ciuba Disposal. Mr. Ciuba recalled hauling paper bags, burlap bags and wood from PDC.

Mr. Ciuba stated that Troy was located behind the ASD facility but that Troy was not one of his clients.

Mr. Ciuba stated that he may have dumped several loads of demolition debris at the 338 Wilson Avenue location in an attempt to impede the flooding that commonly occurred after heavy rains. The material disposed by Ciuba consisted of cardboard, brick, and dirt. Mr. Ciuba also indicated that T. Fiore & Sons may have disposed demolition debris at the site.

Troy manifested waste for disposal during January, February, March, June, September, and October of 1989. The waste was classified as follows: D001, D002, D003, D005, D006, D008, D009, F005, P030, P048, P014, P028, P029, U039, U019, U052, U048, U129, U144, U101, U201, U247, U328, X725, X850, X900 and X910.

The Right To Know Survey for 1 January to 30 December 1990 revealed numerous mercury compounds, volatile organics, corrosives and other hazardous chemicals being stored/used at Troy's facility in Newark.

Troy manifested waste for disposal during February, May, August and October of 1990. The waste was classified as D001, D002, F003, U056, X900 and X910.

On 20 March 1990 the PVSC issued a Notice of Violation to Troy for a three hour deviation, over 40%, on the LEL meter on a day the company was not in operation. When the PVSC inspector checked the LEL meter the monitoring tape was missing. Furthermore, the PVSC inspector was informed that only one person knew how to calibrate the LEL meter.

An explosion occurred on 31 December 1990 in a refrigerator at Troy's Research and Development laboratory. The cause of the explosion was not identified but the suspected cause was the spontaneous decomposition of an acrylic monomer.

The EPA announced that Troy voluntarily agreed to cancel the pesticide registration permitting mercury in the production of exterior coatings and paints. According to the Chemical Marketing Reporter (27 May 1991), the cancellation goes into effect 31 days after publication in the Federal Register.

Between January and June of 1991 Troy manifested waste during January and March. The waste was classified as D001, D002, and X900.

A spill of a low level bonding agent or LLBA at Troy was reported to the Department on 16 January 1991. LLBA is high molecular copolymer used in paints. Approximately 400 pounds of this non-hazardous material was discharged to the containment area. The total amount of the spill was 1500 pounds because of rain. This mixture was then discharged to Troy's wastewater treatment plant.

No further Departmental actions have been documented at the subject site by the RPIU since January 1991.

DISCHARGE/ABANDONMENT INFORMATION

Troy Chemical Corporation Inc.
1 Avenue L
Newark
Essex County
Block: 5038 Lot: 98

CURRENT OWNER

New Chemical Corporation c/o Richard Burns
1-39 Avenue L
Newark
Essex County
Block: 5038 Lot: 98

tax assessor + records of deeds

SUBSTANCES DISCHARGED/ABANDONED

Sediment Contaminants (as identified in samples collected by NJDEP/BPA in November 1989): acetone; xylene; toluene; 1,4-dichlorobenzene; 1,2-dichlorobenzene; nitrobenzene; vinyl chloride; methylene chloride; 1,1-dichloroethene; 1,2,4-trichlorobenzene; 2-methylnaphthalene; diethylphthalate; flourene; phenanthrene; anthrocene; di-n-butylphthalate; 1,1-dichloroethane; 1,2-dichloroethene; chloroform; 2-butanone; 1,1,1-trichloroethane; fluoranthene; pyrene; butylbenzylphthalate; chrysene; di-n-octylphthalate; 4,4'-DDD; 4,4'-DDT; aroclor 1242; trichloroethene; benzene; 4-methyl-2-pentanone; tetrachloroethene; chlorobenzene; 2-methylphenol; 2,4-dimethylphenol; naphthalene; 2-methynaphthalene; bis(2-ethylhexeyl)phthalate; arsenic; barium; cadmium; chromium; copper; lead; mercury; petroleum hydrocarbons.

Groundwater Contaminants (as identified in samples collected by NJDEP/BPA in November 1989): cadmium; chromium; lead; PHC's; benzene; mercury; toluene; 1,1-dichloroethane; 1,2-dichloroethene; xylene; benzene; tetrachloroethene.

Surface Water Contaminants (as identified in samples collected by NJDEP/BPA in November 1989): methylene chloride; 1,1-dichloroethane; 1,2-dichloroethene; chloroform; 1,1,1-trichloroethane; xylene; trichloroethene; benzene; 4-methyl-2-pentanone; tetrachloroethene; toluene; naphthalene; 2-methylnaphthalene; bis(2-ethylhexyl)phthalate; lead; mercury; PHC's.

Soil Contaminants (as identified in samples collected by the NJDEP in April 1989): copper; lead; arsenic; zinc; mercury; p,p-DDT; p,p-DDD; o,p-DDT; pp DDE; trichloroethane; octane; benzene; MIBK.

Soil Contaminants (as identified in samples collected by NJDEP/BPA in April 1989): copper; lead; arsenic; zinc; mercury; p,p-DDT; p,p-DDD; o,p-DDT; p,p-DDE; trichloroethane; octane; benzene; MIBK.

Groundwater Contaminants (as identified in samples collected by NJDEP in May 1982): mercury; arsenic; cadmium; lead; chromium, hexavalent; cyanide; chloride; 1,1-dichloroethane; 1,2-dichlorothene; 1,1,1-trichloroethylene; trichloroethylene; tetrachloroethylene; benzene; toluene; ethylbenzene; p-xylene; n-propylbenzene; tert-butylbenzene; sec-butylbenzene; 1,2,4-trimethylbenzene; 2,3-benzofuran; 1,1,2-trichloroethane; o-xylene; chlorobenzene; o-chlorotoluene; p-chlorotoluene; 1,3,5-trimethybenzene; p-dichlorobenzene; cyclopropyl benzene;

Groundwater Contaminant (as identified in samples collected by Wehran Engineering in May 1982): mercury.

Groundwater Contaminants (as identified in samples collected by NJDEP in November 1981): mercury; copper; lead; zinc; chloride; arochlor 1254.

Groundwater Contaminants (as identified in samples collected by Wehran Engineering in November 1981): mercury; copper; lead; zinc; benzene; chlorobenzene; tetrachloroethylene; toluene; 1,1,1-trichloroethane; trichloroethylene; chloride.

Groundwater Contaminants (as identified in samples collected by Wehran Engineering in August 1981): mercury; zinc.

Stormwater/Groundwater Contaminants (as identified in samples collected by NJDEP/DWR in April 1980): copper; lead; zinc; mercury; arsenic; chloride ions; cyanide; m,p xylene; o xylene; propylbenzene; mesitylene; styrene.

Soil Contaminants (as identified in samples collected by NJDEP/DWR in April 1980): copper; lead; arsenic; zinc; K; mercury; octane; benzene; MIBK; trichloroethane; p,p-DDT; p,p-DDD; o,p-DDT; p,p-DDE.

Soil Contaminants (as identified in samples collected by USEPA/REGION II/Source Monitoring Section in July 1979): mercury.

Surface Water Contaminants (as identified in samples collected by USEPA/REGION II/Source Monitoring Section in July 1979): mercury; benzene; chlorobenzene; 1,1-dichloroethane; 1,2-dichloroethane; 1,1,1-trichloroethane; 1,1,2,2-tetrachloroethane; chloroform; 1,2-trans-dichloroethylene; ethylbenzene; methylene chloride; dichlorobromomethane; tetrachloroethylene; toluene; trichloroethylene; vinyl chloride; TOC; arsenic; chromium; copper; lead; nickel; silver; zinc.

Surface Water contaminants (as identified in samples collected by the USEPA/REGION II/Source Monitoring Section in June 1979): mercury.

Sediment contaminants were collected in June 1979 by the USEPA/REGION II/Source Monitoring Section for mercury identification specifically.

Waste Sample of silver gray material were collected at the ASD/PDC site in May 1979 by the Newark Department of Engineering; the results

revealed phenylmercuric acetate and mercury.

Aqueous samples were collected from Pierson's Creek and discharges to Pierson's Creek from the wooden cooling water tank and the boiler room. Sampling was conducted by the NJDEP in September of 1977: mercury; zinc; calcium; sulfate; iron; chromium; lead.

Samples of unregulated discharges to Pierson's Creek from the septic tank, mercury distillation plant and the fungicide plant collected by NJDEP/DWR in August of 1977: mercury; lead; copper; chromium; zinc; iodine; ronnel, an insecticide.

Two Aqueous samples were collected by Allied Testing & Research Inc., one from the north side of the bridge and one from the south side of the bridge, from Pierson's Creek in April 1972: chlorides; chromium; lead; antimony; mercury; copper; vanadium; nickel; solvents; resins; solids-total, volatile, suspended, mineral; floatable and emulsified oils; chemical oxygen demand; biochemical oxygen demand; pH.

DESCRIPTION OF SITE CONTAMINATION

Troy Chemical Corporation Inc. (Troy) is an active entity that produces chemicals ranging from paint additives to pesticides. Troy operates on 5.42 acres of land nearly bisected by Pierson's Creek, in a north to south direction, with an unnamed ditch as the eastern boundary (map 1 & 3). Troy has a history of poor housekeeping in regard to buildings, fixtures and chemical storage.

Troy is situated on property previously owned by American Cyanamid Co., the Pulaski Skyway Realty Corporation and the Pulaski Skyway Realty Company. The operators (and possibly owners) may have contributed fill material to the area west of Pierson's Creek to Avenue L and nearly to Delancy Street on the south. Exactly what was put in the area filled is not known.

The original property had been used from the late 1800's to the early 1950's for the production of ultramarine, aniline colors, dyestuffs, intermediates and possibly coal tar dyes (map 2). The property was first used by the Heller and Merz Company, then the Calco Chemical and finally by American Cyanamid through the Calco Division for the production of coal tar dyes and intermediates.

The following are brief descriptions of ultramarine, aniline and coal tar in the production of dyes.

Ultramarine is a blue pigment that is naturally occurring known as the mineral lapis lazuli. Ultramarine can be manufactured by reacting Kaolin, $NaCO_3$(or Na_2SO_4), sulfur and carbon. The result is blue lumps or powder that is insoluble in water; readily decomposed by acids with the liberation of hydrogen sulfide.

Aniline (aka aniline oil; phenylamine; aminobenzene; aminophen) is manufactured from benzene by nitrating; then reducing the nitrobenzene with iron and hydrochloric acid. Aniline is colorless when first

produced but upon exposure to air and light it darkens. This material is poisonous and flammable; miscible with alcohol, benzene, chloroform, and most other organic solvents. Aniline will dissolve in water under specific conditions and will volatilize with steam. When combined with acids salts are formed. Aniline will dissolve alkaline metals with the evolution of hydrogen and formation of anilides.

Coal tar is the by-product in the destructive distillation of coal producing the following constituents: benzene, toluene, naphthalene, anthracene, xylene, and other aromatic hydrocarbons; phenol, cresol, and other phenolic bodies; ammonia, pyridine, and some other organic bases; thiophene.

Coal tar is almost black and can be a thick liquid or a semi-solid; with a small portion dissolving in water. Coal tar almost completely dissolves in alcohol, ether, chloroform, carbon disulfide, methanol, acetone, petroleum ether or sodium hydroxide solution.

Troy began production of paint additives in the mid 1950's on the property currently owned by the company (map 3). The property was acquired by Troy from the Pulaski Skyway Realty Company (Pulaski) in 1960. No record of a lease was discovered between Pulaski and Troy.

The deed between Pulaski and Troy contained an agreement between Pulaski and the Wilson Refining Co. Inc (Wilson Refining) allowing Wilson Refining access to building 61 until the lease expired in 1965. This company was reported to be distillers of industrial solvents and distributors of new and reclaimed perchloroethylene and trichloroethylene.

Mercury contamination has been found in significant concentration in the sediment of both Pierson's Creek and the ditch at the eastern boundary of the facility, in particular, east of the septic system leach field (map 4). Chemicals have been reported leaking from drums and storage tanks.

Volatile organic, semi-organic, metals and pesticides have been detected in soil, surface water/sediment and groundwater samples that may coincide with the processes conducted by Troy. Aroclor wastes have been detected in groundwater samples that may be a result of contaminated fill.

Aspects of the contamination found at Troy may be attributable to the activities conducted on the site to the north known as Albert Steel Drum/Prentiss Drug and Chemical (ASD/PDC). A Remedial Investigation/Feasibility Study is in progress for this site.

To the north of Troy was Albert Steel Drum (aka Greenpoint Drum and Barrel Corp. and New Albert Steel Drum Co.; map 3) operating as an external/internal drum cleaning and external painting company. ASD used muriatic acid, caustic soda and acid rinse additives in its cleaning operation. In 1977 wastewater produced by the internal drum washing was discharged to a tank trailer in a accordance with a court order. Until that time the company is reported to have discharged

approximately 200,000 gallons of wastewater per week to the ditch comprising Troy's eastern border (map 3).

Prentiss Drug and Chemical (map 3) located north of Troy produced pesticides from Lindane, pentachlorophenol (PCP), methoxychlor; and a rodenticide known as Rax which is a powder consisting of warfarin [3-(α-acetonylbenzene)-4-hydroxycoumarin]. Disposal of waste materials reportedly occurred offsite. Soil samples collected from Prentiss revealed the presence of heavy metals, pesticides, PCB's and volatile organics.

The extent of contamination possibly contributed by Welch, Holme and Clark, Frema Smelting and Refining, R. Ciuba Disposal, T. Fiore & Sons, and Courtesy Container Corporation has not been completely ascertained by the RPIU.

Two known waste disposal companies, R. Ciuba Company and T. Fiore and Sons, used the ASD/PDC site as a place for solid waste disposal and possibly for chemical waste disposal. The possibility exists that other companies may have operated on the property during the time when Pulaski was the owner.

The potential for the general public to come into contact with these contaminants is unlikely due to the security at the site. Contact with pollutants is more likely to result through the offsite migration by means of groundwater, surface water, sediment migration and airborne particles.

Newark Bay is threatened by continued contamination from runoff, migration of contaminated sediment, groundwater and possibly leachate.

RESPONSIBLE PARTY:

Troy Chemical Corporation Inc. 201-589-2500
1 Avenue L
Newark, NJ 07105-3895
Block 5038 Lot 98

Registered Agent:
John R. MacKay
65 Livingston Avenue
Roseland, New Jersey 07068

Corporate Status:
Active; Incorporated 10 April 1980 in New Jersey

Financial Status:
Sales 1988 $20,000,000 Dun & Bradstreet 1991

Principals:
Darryl Smith, President
Milton Nowak, Vice President
William Singer, Vice President

Property:
5.42 acres Classified Industrial
$135,500 Land
$527,100 Improvements
$662,600 Total

Comments:
The corporate status, indicating incorporation on 10 April 1980, could mislead the reader to believe that this company/facility has not been operating at this location since the mid-1950's. Troy was first incorporated as Troy Chemical Corporation in 1956 and changed to E.W.H. Chemical Corporation in 1980.

D&B has identified two subsidiaries of the subject company. The first is known as the Fermone Corporation Inc., 2620 North 37th Dr., Phoenix, AZ. This business manufactures pheromones under the SIC number of 2879/28790000 - agricultural chemicals, nec, nsk. D&B lists Jane Yuster as President of the subsidiary, while the 1991 McRae's Industrial Directory lists Jane Yuster as Vice-President of Marketing.

The second subsidiary is Troy International Corporation (TIC) located at 1 Avenue L, Newark, NJ. D&B indicates that TIC is in the wholesale and exporting business of paint additives and agricultural pesticides. This company was incorporated in New Jersey on 21 September 1972. The principles are: Scott Gonge, President; Milton Nowak, Vice President; John Oates, Vice President; and Darryl Smith, Executive Vice President.

RESPONSIBLE PARTY

New Chemical Corporation (initial registered office)
Suite 2900
744 Broad Street
Newark, New Jersey 07102
Incorporator and initial Registered Agent:
John R. MacKay 2nd, Esq.

Corporate Status:
Incorporated in New Jersey on 10 April 1980. Name was changed effective 23 June 1980.

Financial Status:
No information available.

Principles: (first board of directors)
Daryl Smith
Scott Gonge
Conrad Plimpton

Comments:
The corporation changed its name to Troy Chemical Corporation, Inc..

RESPONSIBLE PARTY

Troy Chemical Corporation
1 Avenue L
Newark, New Jersey 07105
Block 5038 Lot 98
(address was 338 Wilson Avenue until 1971)

Registered Agent:
Elias Singer
338 Wilson Avenue
Newark, New Jersey 07105

Corporate Status:
Incorporated in New Jersey on 8 August 1956. Name was changed effective 23 June 1980

Financial Status:
No information available

Principals:
Elias Singer, President
Milton Goll, Vice President
Ernest Lubell, Secretary

Comments:
Troy Chemical Corporation (TCC) changed its name to E.W.H. Chemical Corporation (EWH) on 23 June 1980. Dissolution papers were filed by EWH with the Secretary of State on 2 March 1982. Elias Singer was the Registered Agent for EWH residing at 338 Wilson Avenue, Newark, New Jersey.

Troy International Corporation (TIC), a subsidiary, incorporated in New Jersey on 21 September 1972 and changed its name to E.W.H. International Corporation (EWHIC) on 23 June 1980. Dissolution papers were filed by EWHIC with the Secretary of State on 6 May 1988. Milton Nowak was the Registered Agent for EWHIC residing at 1 Avenue L, Newark, New Jersey.

The corporation number for TCC and EWH is 8957575000 and the corporation number for TIC and EWHIC is 8958310000.

RESPONSIBLE PARTY

American Cyanamid Company
One Cyanamid Plaza
Wayne, New Jersey 07470

Registered Agent:
Corporation Trust Company
28 West State Street
Trenton, New Jersey 08608

Corporate Status:
Active; Incorporated in Maine on 10 March 1916; manufactures and sells medical products, such as pharmaceuticals, vaccines, vitamins and other hospital products; agricultural products such as animal feed and care, agricultural chemicals, and fertilizers; personal care and grooming products; formica brand laminates, adhesives, and solvents; also manufactures terpene products and refines crude tall oil, and produces acrylic and related products.

Financial Status:
Sales 1990 $4,570,000,000 Dun & Bradstreet 1991.

Principles:
George J. Sella Jr., Chairman of the Board, Chief Executive Officer.
Albert J. Costello, President.
William A. Liffers, Vice Chairman of the Board, Subsidiary Officer.
Frank V. Atlee, Executive Vice President.
Darryl D. Fry, Executive Vice President.
Donald C. Droste, Vice President, Legal Counsel.
Frederick W. Armstrong, Vice President.

Comments:
American Cyanamid sold the property in its entirety on 28 December 1945 (DB M106 p.447) to the Pulaski Skyway Realty Corp.. A corrective deed (C107 p.514) was filed on 7 August 1946 encompassing the original property with no apparent effect to Troy. This conveyance included condensate pumps, well pumps and effluent disposal equipment in the purchase price of $1.00 and other valuable considerations.

Calco Chemical Co. Inc. was acquired by American Cyanamid in January 1929. Calco Chemical Co. Inc. operated as a subsidiary of American Cyanamid until it was dissolved in November 1939 with American Cyanamid obtaining all company assets.

The 1951 (updated version of 1931) Sanborn Fire Insurance Map depicts American Cyanamid Co., Calco Chemical Co. Division-Newark Works, operating at the location of the original Heller and Merz Co. facility.

Aerial photographs taken in April 1940 and April 1951 revealed landfilling of the area west of Pierson's Creek. Light toned material can be observed along the perimeter of the landfill and on the property to the north of the subject site.

The RPIU has discovered no information indicating that other companies used the facility during American Cyanamid's ownership.

Responsible Party

Maurice Pollack, individually
Address unknown

Registered Agent:

Joseph E. Irenas for Pulaski Skyway Realty Company
McCarter & English, Esqs.
550 Broad Street
Newark, New Jersey 07104

Financial Status:

Unknown

Property:

Unknown

Comments:
Last known as a partner of the Pulaski Skyway Realty Company.

Responsible Party

Muriel Pollack, individually
Address unknown

Registered Agent:

Joseph E. Irenas for Pulaski Skyway Realty Company
McCarter & English, Esqs.
550 Broad Street
Newark, New Jersey 07104

Financial Status:

Unknown

Property:

Unknown

Comments:
Last known as a partner of the Pulaski Skyway Realty Company.

Responsible Party

Lois P. Broder, individually
470 Cedar Avenue
West Long Branch, NJ 07764-1849

Registered Agent:

Joseph E. Irenas for Pulaski Skyway Realty Company
McCarter & English, Esqs.
550 Broad Street
Newark, New Jersey 07104

Financial Status:

Unknown

Property:

Unknown

Comments:
Last known as a partner of the Pulaski Skyway Realty Company.

Responsible Party

The Eatate of Gustave Greene, individually
Address unknown

Registered Agent:

Joseph E. Irena for Pulaski Skyway Realty Company
McCarter & English, Esqs.
550 Broad Street
Newark, New Jersey 07104

Financial Status:

Unknown

Property:

unknown

Comments:
Last known as a partner of the Pulaski Skyway Realty Company.

POTENTIAL RESPONSIBLE PARTY

Prentiss Inc. (Parent company)
21 Vernon Street
P.O. Box CB2000
Floral Park, New York 11001-2714

Registered Agent:
John W. Englert Jr (last known for Prentiss Drug & Chemical Co. Inc.)
322-398 Wilson Avenue
Newark, New Jersey 07105

Corporate Status:
Incorporated in New York on 26 September 1919; Manufactures Insecticides and Rodenticides (1991 D&B)

Financial Status:
Sales 1989 $16,000,000 Dun & Bradstreet 1991.

Principles:
Malcolm Miller, Chairman of the Board/Chief Executive Officer
Richard Miller, President
Jeffrey Miller, Vice President
Nina Miller, Secretary

Comments:
Prentiss Drug & Chemical Co., Inc.(PDC) operated at the facility (Block 5038 Lot 70) south of Wilson Avenue; west of Avenue L and north of the Troy Chemical facility. The address reported for past companies operating at this location was 338 Wilson Avenue. PDC operated at the facility under lease from the Pulaski Skyway Realty Company manufacturing insecticides and rodenticides. PDC incorporated in New York on 20 July 1956 withdrawing from New Jersey effective 1 July 1985. The last known Registered Agent and address has been provided. The corporate status report from the NJ Secretary of State indicates that annual reports have been returned undelivered since 1984.

This company had reportedly operated at 338 Wilson Avenue from 1953 to the summer of 1982.

POTENTIAL RESPONSIBLE PARTY

320 South Street Corp. **AKA** Albert Steel Drum Co. Inc.
Last known address of Albert Steel Drum Co. Inc.
338 Wilson Avenue
Newark, New Jersey 07105

Registered Agent:
Albert Greenman
338 Wilson Avenue
Newark, New Jersey 07105

Corporate Status:
Void through proclamation effective 8 March 1985; Incorporated in New Jersey on 30 June 1966.

Financial Status:
No information available.

Comments:
Albert Steel Drum has been known to be referred to as Greenpoint Drum and Barrel Corp.(GDBC) and the New Albert Steel Drum Co.(NASD).

GDBC incorporated on 4 January 1961 in New Jersey. The status of this company is void through proclamation with the suspension beginning on 1 March 1977. The Registered Agent was Benjamin Moshen located at 338 Wilson Avenue Bldg 72, Newark, NJ. The corporate status report from the NJ Secretary of State indicates that annual reports have been returned as undeliverable.

NASD incorporated on 28 December 1973 in New Jersey. The status of this company is void through proclamation with the suspension beginning on 1 September 1988. The registered agent was Jack Okin located at 338 Wilson Avenue, Newark, NJ. The corporate status report from the NJ Secretary of State indicates that annual reports have been returned as undeliverable. The last annual report was filed on 31 December 1979 for the year 1979.

This company was located north of Troy situated in proximity to the ditch forming Troy's eastern border.

POTENTIAL RESPONSIBLE PARTY

Wilson Refining Company Inc.
338 Wilson Avenue Bldg. 61 (last known address)
Newark, New Jersey 07105

Registered Agent:
Irvin N. Yankowitz
17 Academy Street
Newark, New Jersey 07105
or
11 Commerce Street
Newark, New Jersey 07105

Corporate Status:
Void as of 3 February 1965; incorporated on 5 October 1955 in New Jersey.

Financial Status:
No information available.

Principle:
Robert Wilson, President.

Comments:
In the 1958-59 New Jersey Industrial Directory (NJID) this company listed experience with chemicals, solvents and chemical waste refining. In the 1960-61 NJID this company was noted as a distiller of industrial solvents and a distributor of new and reclaimed perchloroethylene and trichloroethylene. The company further indicated that it serviced the chemical, machine, plating, electronic, paint enameling and dry cleaning trades that included tank truck delivery and pick-up. Railroad service may have also been provided.

According to the deed (3754 p.567) between Troy and Pulaski Skyway Realty Company; Wilson Refining Co. Inc. was operating out of building 61 on the subject property at the time of the sale.

POTENTIAL RESPONSIBLE PARTY

Morton International, Inc.
100 North Riverside Plaza
Chicago, IL 60608-1518

Registered Agent:
Not available at time of report.

Corporate Status:
Active, organized in 1848, incorporated in Illinois in April 1989.
Specialty Chemicals Salts and Inflatable Restraint Systems.

Financial:
Sales $1,638,700,000 1991 Dun & Bradstreet.

Principles:
Charles S. Locke, Chairman of the Board/Chief Executive Officer
S.J. Stewart, President
Kenneth D. Holmgren, Group Vp-Corporate Vice President
Richard B. Kron, Group Vp-President Specialty Chemicals
P.M. Phelps, Vice President-Secretary
Bruce Wolfe, Treasurer

Comments:
During an inspection of Troy by the NJ Department of Environmental Protection in May 1976 John Hoffman, plant manager, indicated that some of the drums on site had come from the Ventron Corporation when the company ceased operations.

In 1976 Thiokol Corporation acquired 96% of the outstanding shares of the Ventron Corporation. Ventron Corporation was then merged into Thiokol Corporation on 31 December 1978. Morton-Norwich Products, Inc. merged with Morton International, Inc. in April 1969. In September 1982 Morton-Norwich Products, Inc. merged with Thiokol Corporation with the corporate name changing to Morton Thiokol, Inc.
Morton Thiokol, Inc. has reportedly reorganized into the separate entities of Morton International, Inc. and Thiokol Corporation.

The 1980 Moody's Industrial Manual reports the Thiokol Corp. having principle plants in Beverly and Danvers, Massachusetts, these coincide with former locations of the Ventron Corp. The 1988 Moody's Industrial Manual reports Morton Thiokol, Inc. having a principle plant in Danvers, MA. According to the 1991 Dun & Bradstreet, Morton International, Inc. has a Ventron Division located at 150 Andover Street, Danvers, Massachusetts.

CONCLUSIONS AND RECOMMENDATIONS

Troy Chemical Corporation, Inc. (TCCI), New Chemical Corporation (NCC), Troy Chemical Corporation (TCC), American Cyanamid Company (ACC), Maurice Pollack (individually) Muriel Pollack (individually), Lois P. Broder (individually) and the Estate of Gustave Green (individually) doing business as Pulaski Skyway Realty Company (Pulaski) are responsible parties (RPs) for contamination at the subject site.

The current owner of the site, TCCI, has been operating this chemical manufacturing facility since 1980. Chemicals primarily produced are paint additives-fungicides and preservatives. One of the principal components in the manufacturing process was mercury. Spills of mineral spirits, cobalt octoate and an unknown greenish/black liquid were reported to the Department during the 1980s. Inspections by Department personnel of the subject site revealed metallic mercury on exposed soil and colored liquids in various containment structures. The PVSC has issued numerous Notices of Violation due to deviations of permit levels for mercury, pH and LEL. Reportedly the company discontinued using mercury in 1987. Information discovered during this investigation indicates the company may have used mercury until 1991. Access to the site is restricted along the west and south sides, by chain link fence, however, no physical barriers are present along the north and east sides.

New Chemical Corporation (NCC) was incorporated in April 1980 to acquire the assets of Troy Chemical Corporation (TCC) which was incorporated in 1956. After the acquisition of TCC's assets was completed NCC changed its corporate name to Troy Chemical Corporation, Inc.

Troy Chemical Corporation (TCC) operated on the site from the mid-1950s to June 1980. TCC purchased the subject property from Pulaski Skyway Realty Company in November 1960.

Site inspections conducted by the Department from May 1976 to April 1980 revealed numerous incidents where site operations have contributed to the contamination present at the site.

Mercury bearing wastewater was treated with sulfide precipitation from 1965 to 1976. During this time treated mercury bearing wastewater was discharged directly to Pierson's Creek. Untreated wastewaters from other chemical processes were discharged in small amounts directly into Pierson's Creek.

Department inspectors, using a dye, in July 1977 discovered that material leached from the septic system adjacent to the east ditch. Sediment samples gathered by the EPA in July 1979 from the east ditch adjacent to the septic tank/leach field revealed significant levels of mercury. These findings indicate that at one time mercury bearing wastewater was discharged to the on-site septic system.

According to documents reviewed by the RPIU (see Case Summary) drums containing raw material, waste material and product were improperly stored on site. Many of these drums were noted as being unsound. Poor housekeeping practices, malfunctioning equipment and containment structures that were in disrepair or lacking were documented on site.

American Cyanamid Company (ACC) sold the industrial complex to Pulaski in the mid-1940s. ACC had operated the industrial complex from the late 1800s to approximately 1950 (see Case Summary). ACC produced dyes and intermediates from ultramarine, aniline and coal tar. Information gathered from deeds indicated that ACC included effluent disposal equipment in the sale of the property to Pulaski.

The investigation has identified four additional companies as potentially responsible parties (PRPs). They are as follows:

Prentiss, Inc. - Prentiss Drug and Chemical Co.
Albert Steel Drum Co. Inc.
Wilson Refining Co. Inc.
Morton International, Inc. - Ventron Corporation

Only two of the PRPs, Prentiss, Inc. and Morton International, Inc. appear to be viable companies. Limited corporate information has been discovered for Albert Steel Drum Co. Inc. and Wilson Refining Co. Inc. A Remedial Investigation/Feasibility Study is in progress for the Albert Steel Drum/Prentiss Drug and Chemical (ASD/PDC) site located at 338 Wilson Avenue (Block 5038, Lot 70), Newark, New Jersey.

The Responsible Party Investigations Unit recommends additional sampling of various areas on site (i.e., the two waterways, areas of former mercury buildings) to determine the extent of off-site migration. It is further recommended that RPs and PRPs are given the opportunity to discuss a course of action to be taken for the remediation of this site with the Department. The remedial investigation should consider the impact of the ASD/PDC site which is located north of the subject site.

Future Departmental actions relative to this case should include administrative cost recovery for this investigation (Project Activity Code DNW was used for this investigation). Please contact this bureau to review case file documents or request additional information and assistance.

Investigator:

Rodney F. Murray, HSMS IV
NJDEPE/DRPSR
Bureau of Site Assessment
300 Horizon Center
CN 407
Trenton, New Jersey 08625-0407
(609) 584-4280

11/91 - acc. to memo of 2/16/92

FILES UTILIZED

Files:

City of Newark, Div. of Inspections
920 Broad Street
Newark, NJ 07102
(201) 733-8068
Contact: Louis Zafra
Content: Building applications, electrical applications, Certificates of Occupancy.

Troy Chemical Corp.
Passaic Valley Sewerage Commissioners
600 Wilson Avenue
Newark, NJ 07105
(201) 817-5716
Contact: Anthony Gammaro
Content: Inspection reports, monitoring reports, Notice of Violations, correspondence from Troy.

Deed Information
Essex County Hall of Records
465 High Street
Newark, NJ 07102
(201) 621-5000
Content: Deed search for Block 5038 Lot 98 and original property owners.

City of Newark, Tax Assessment Division
920 Broad Street
Newark, NJ 07102
(201) 733-3950
Contact: Anthony Masi
Content: Block and Lot information.

Industrial Waste Survey
NJDEPE/DRPSR, Bureau of Site Assessment
300 Horizon Center
CN 407
Trenton, NJ 08625
(609) 584-4280
Contact: Carlton Dudley
Content: IWS for Troy Chemical Corp.

Corporate Records
NJ Department of State, Div. of Commercial Recording
Mountainview Office Complex
820 Bear Tavern Road
West Trenton, NJ 08628
Telefax (609) 530-6433
Telephone (609) 771-1297
Content: Corporate records/status

Troy Chemical Corporation
EPA Region II, Superfund Support Section
Woodbridge Avenue
Building 209
Edison, NJ
(201) 321-6700
Contact: John Bourbon
Content: Inspection report, correspondence.

Albert Steel Drum/Prentiss Drug and Chemical
TRC Environmental Consultants Inc.
5 Waterside Crossing
Windsor, CT 06095
(203) 289-8631
Contact: NJDEPE/DPFSR, Bureau of Environmental Evaluation & Risk Assessment. (609) 633-7413
Content: Final Background Investigation Interim Report.

Troy Chemical Corp.
NJDEPE, Division of Environmental Quality
2 Babcock Place
West Orange, NJ 07052
(201) 669-3935
Contact: Donald Patterson, Assistant Director
Content: Permit applications, inspection reports, correspondence.

Troy Chemical Corp.
NJDEPE, Div. of Responsible Party Site Remediation
2 Babcock Place
West Orange, NJ 07052
(201) 669-3960
Contact: Yacoub Yacoub
Content: Inspection reports, correspondence, incident reports.

Newark Files
NJDEPE, Division of Enforcement Policy
2 Babcock Place
West Orange, NJ 07052
(201) 669-3900
Contact: Peter Lynch, Bureau Chief
Content: Miscellaneous information concerning actions, investigations and incidents.

Troy Chemical Corp.
Newark Department of Engineering, Environmental Section
920 Broad Street
Newark, NJ 07102
(201) 733-7994
Contact: Paul Butler
Content: Inspection reports, Right to Know information, correspondence.

Troy Chemical Corp.
NJDEPE, Div. of Responsible Party Site Remediation
401 East State Street
Trenton, NJ 08625
(609) 633-0708
Contact: Dawn Stillwell
Content: Inspection reports, enforcement actions, correspondence.

NJ Department of Education, Division of State Library
185 West State Street
Trenton, NJ 08625
(609) 292-6220
Content: Sanborn Fire Insurance Maps, Robinson Atlas of Newark 1927, New Jersey Industrial Directories, Scarlett and Scarlett Atlas of Newark 1889.

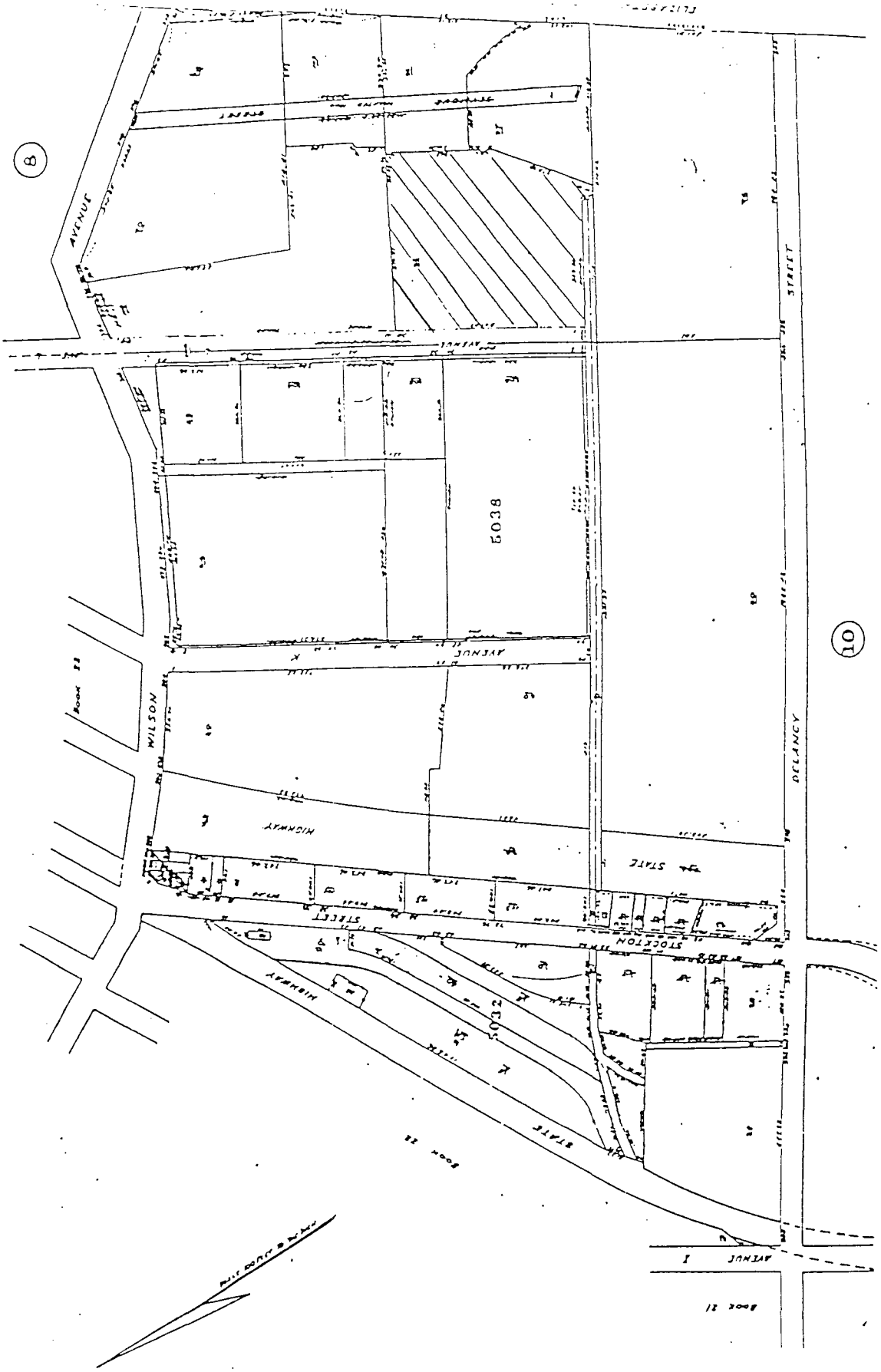
Aerial Photographs
NJDEPE, Land Use Permitting Element
501 East State Street
Trenton, NJ 08625
(609) 633-7369
Contact: Mike Ryan
Content: Aerial photographs

Trenton Public Library
120 Academy Street
Trenton, NJ 08625
(609) 392-7188
Content: Moody's Industrial, Poor's Industrial, American Chemical Industry - A History.

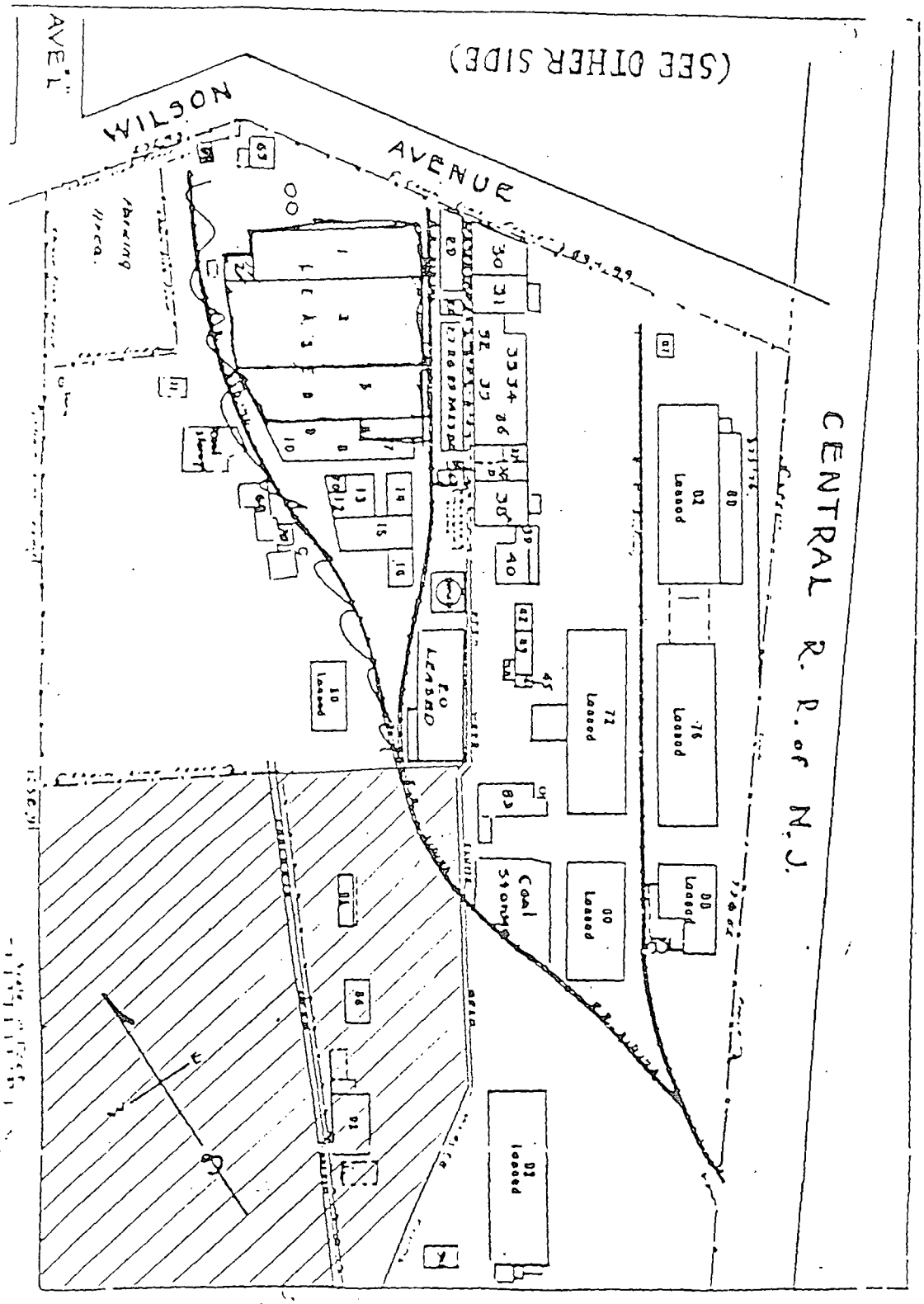
Troy Chemical Corp.
NJDEPE, Central Services
Carroll Building
432 East State Street
Trenton, NJ 08625
(609) 633-2987
Contact: Laverna Jones
Content: Inspection reports, correspondence.

Troy Chemical Corp.
NJDEPE, Hazardous Waste Engineering
401 East State Street
Trenton, NJ 08625
(609) 633-1418
Contact: Ferd Scaccetti
Content: Hazardous Waste Manifest report January 1980 to June 1991.

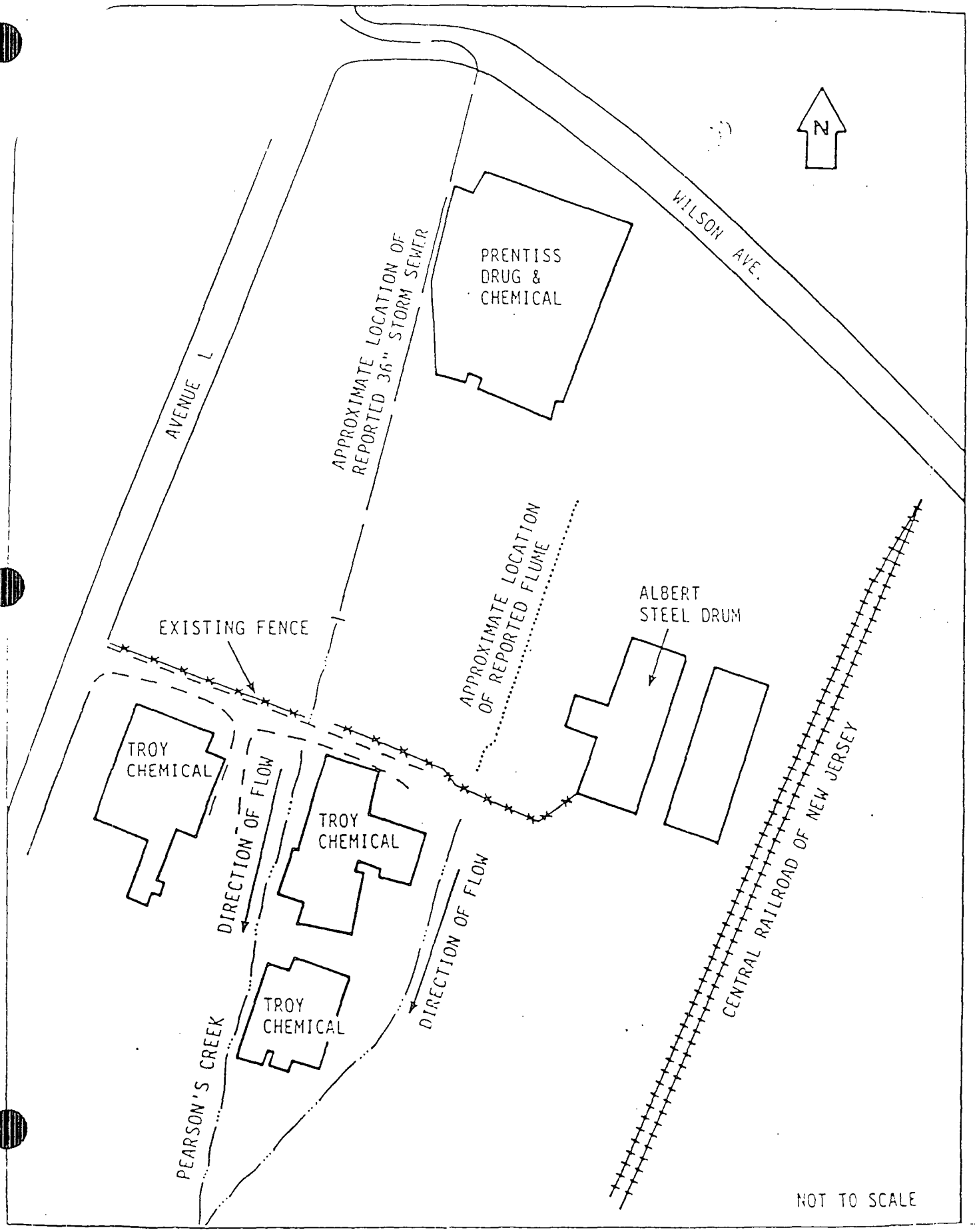
Troy Chemical Corp.
NJDEPE, Division of Environmental Quality
401 East State Street
Trenton, NJ 08625
Contact: Alan Bookman (609) 292-6714
Content: Right To Know survey



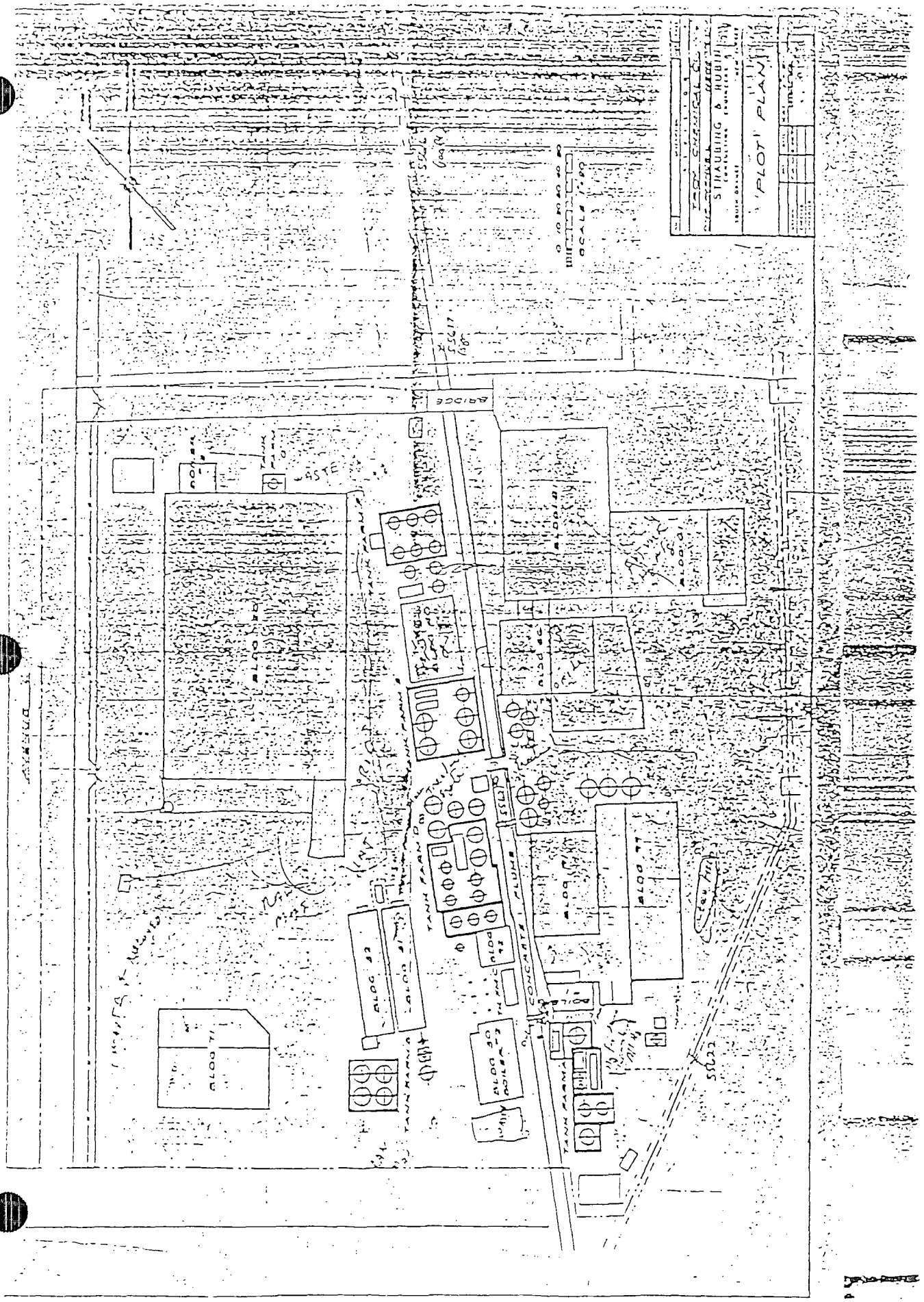
Map 1. The subject site is represented by ▨ at Block 5038 Lot 98. REDI Realty Atlas 1990, Vol. 1 City of Newark.



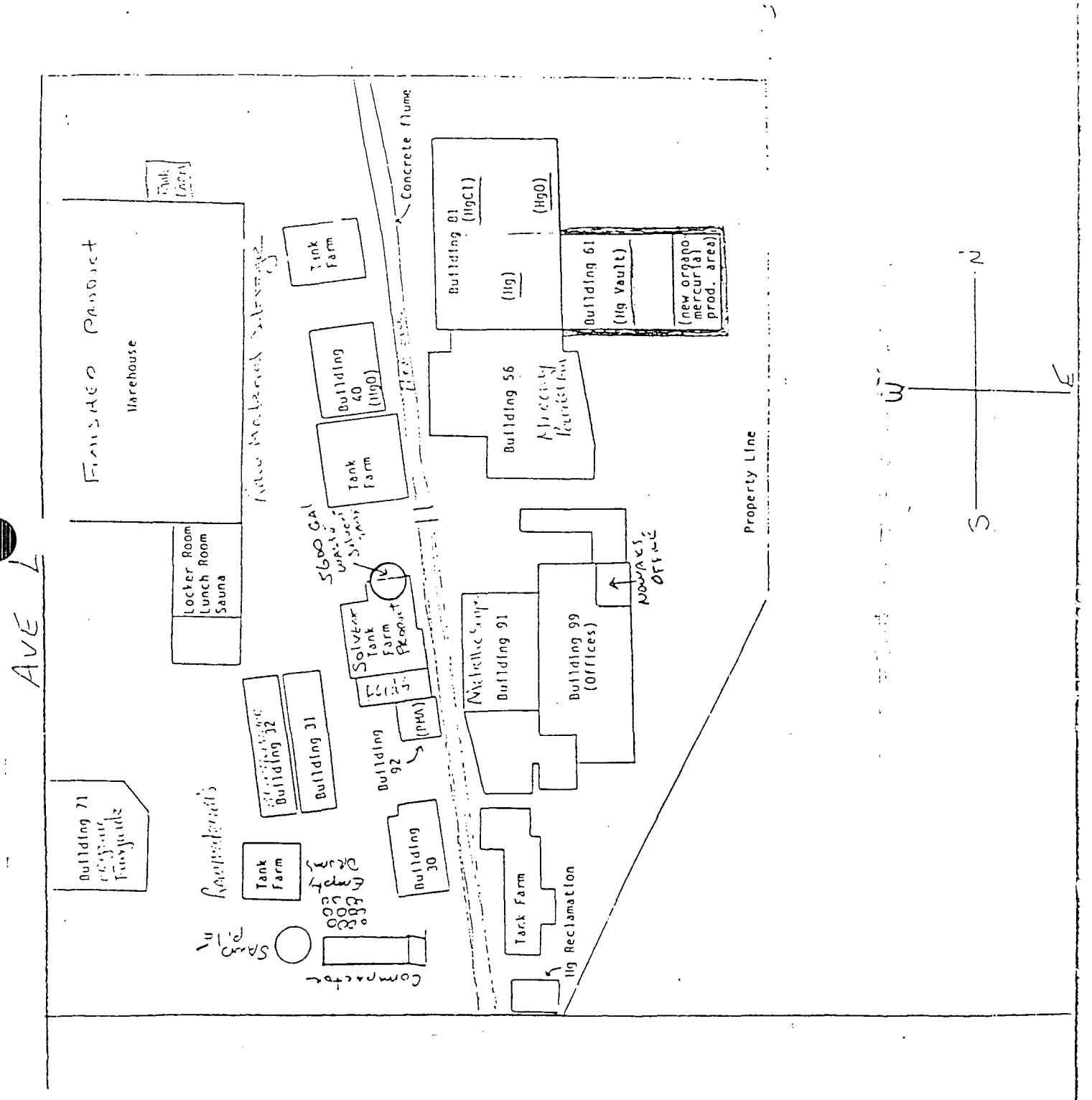
Map 2. The subject site is represented by ////// approximating the current location on this undated City map, courtesy TRC Environmental Consultants.



Map 2 Approximate locations of Albert Steel Drum, Prentiss Drug & Chemical, Troy Chemical

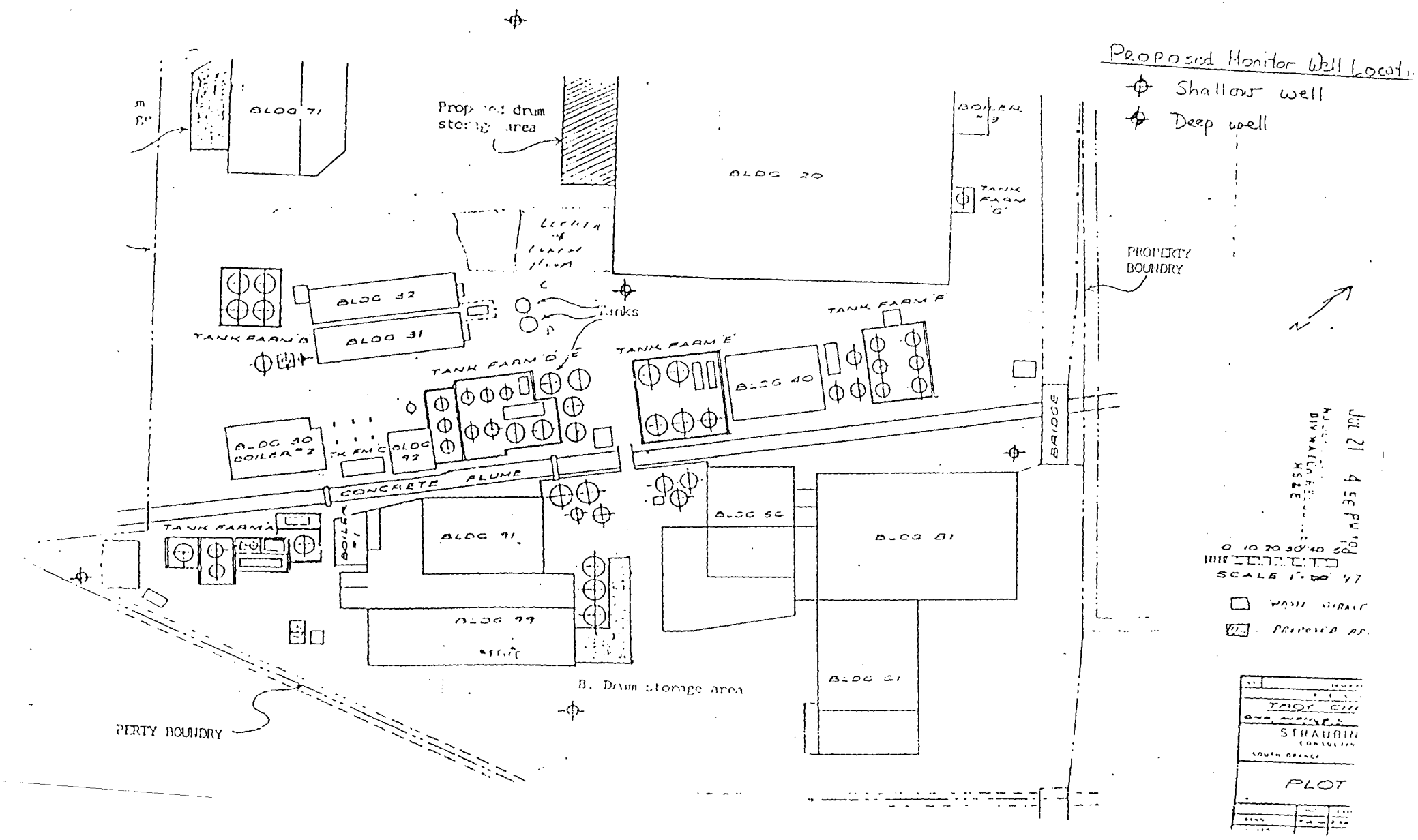


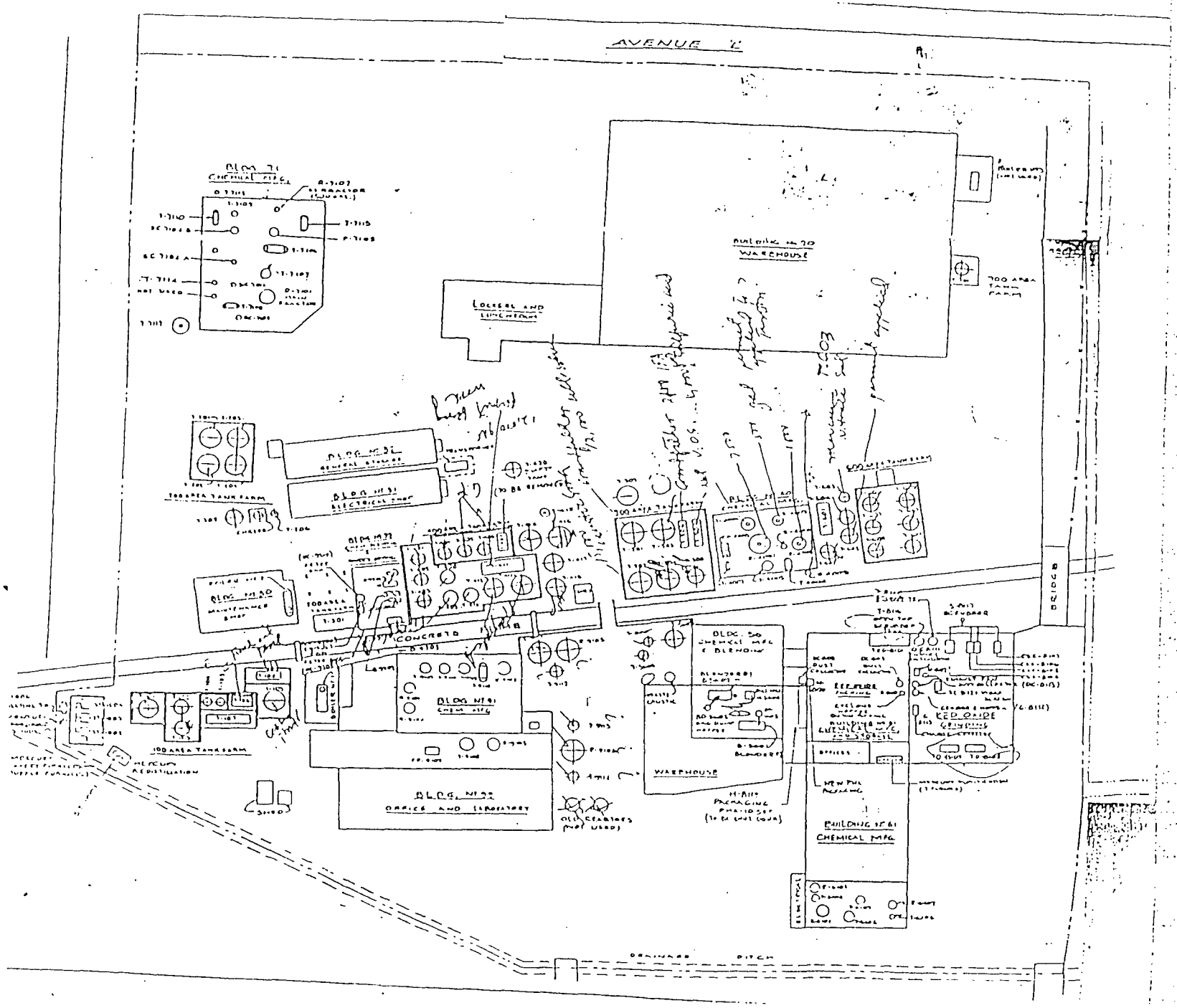
Map 4. Plot Plan by Straubing & Rubin provided by Dow Chemical Corporation to the



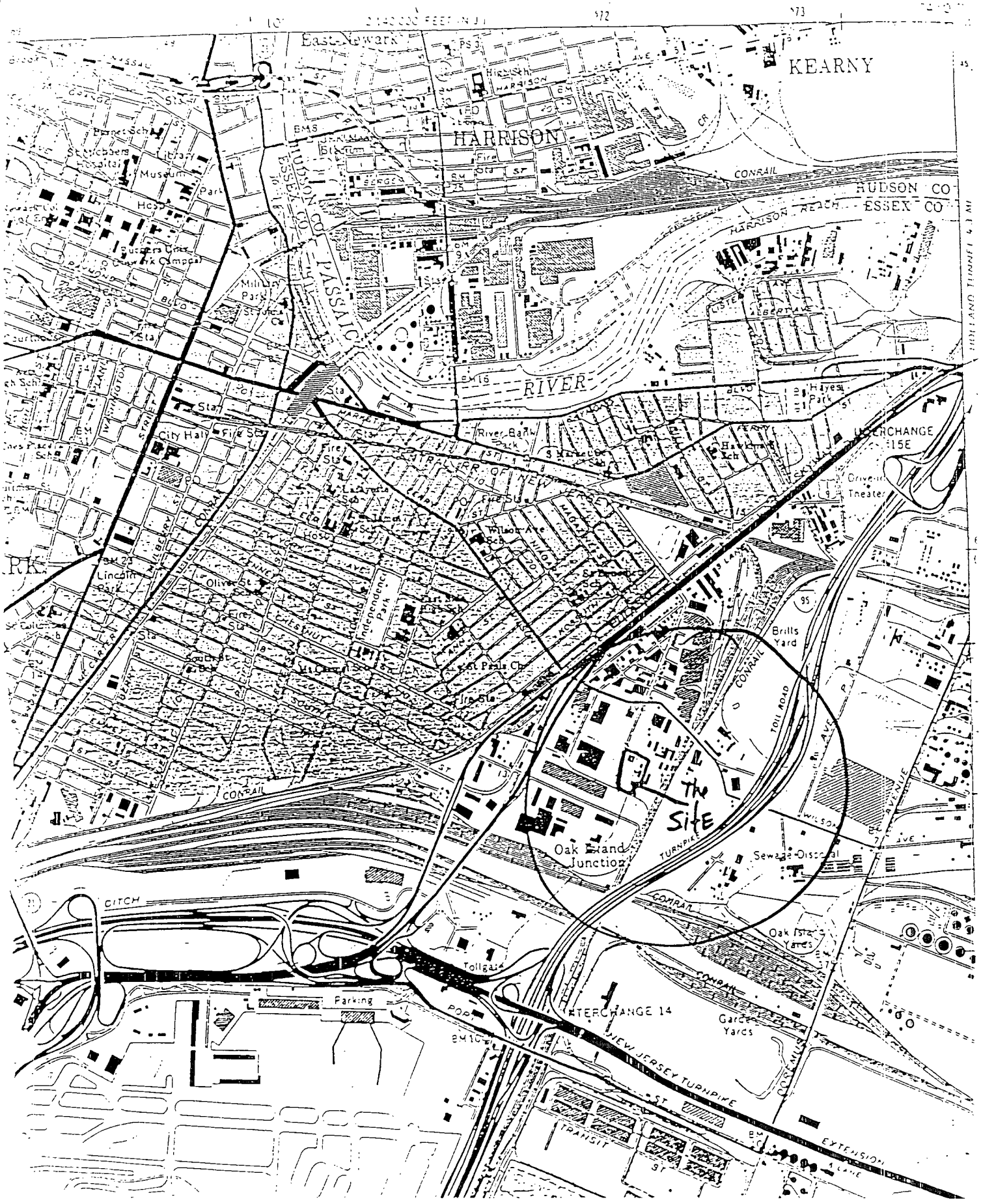
Map 5. 1982 facility map for Troy Chemical Corporation, Inc. Additional information included as a result of the investigation.

Map 6. Proposed locations for monitoring wells recommended by NJDEP/Division of Water Resources 1981.




AVENUE "L"
BUILDING No 70
WAREHOUSE
LOCKERS AND LUNCHROOM
BLDG No 71
CHEMICAL MFG
BLDG No 32
GENERAL STORAGE
BLDG No 31
ELECTRICAL SHOP
BLDG No 30
MAINTENANCE SHOP
CONCRETE
BLDG No 91
CHEM MFG
BLDG No 92
OFFICE AND LABORATORY
WAREHOUSE
BUILDING No 61
CHEMICAL MFG
RED OXIDE
GRINDING
BRIDGE
DRAINAGE DITCH

Map 8. Elizabeth Quadrangle
New Jersey - New York
7.5 Minute Series (Topographic)
1967, Photorevised 1981



ADDENDUM I

RAW MATERIALS STORAGE

Quantities noted below represent maximum amounts which constitute 30 to 60 day supply.

LIQUID

Naphthenic Acid	6,000 gallons
Oleic Acid	1,000 gallons
Mineral Spirits (Safety Solvent)	8,000 gallons
Super High Flash Naphtha	5,000 gallons
Mineral Oil	8,000 gallons
Tall Oil	2,500 gallons
Fuel Oil	12,000 gallons
Nitric Acid	5,000 gallons
Caustic Soda (25%)	12,000 gallons
2-ethylhexoic Acid	6,000 gallons
Ammonium Hydroxide (28%)	3,000 gallons
Methanol	4,000 gallons
Propylene Glycol	6,000 gallons
Dipropylene Glycol	4,000 gallons
Diacetone Alcohol	3,500 gallons
Ethyl Ether	500 gallons*
Sodium Hypochlorite	5,000 gallons
Styrene	2,000 gallons*
Methacrylic Acid	2,000 gallons*
Benzene	5,000 gallons
Acetic Acid	4,000 gallons
Monoethanolamine	5,000 gallons
Alkyd Resin	3,000 gallons
Propargyl Alcohol	300 gallons*
Butyl Isocyanate	1,000 gallons*
Allyl Chloride	500 gallons
Ethylene Glycol	1,000 gallons
Cellosolve	2,000 gallons
Butyl Cellosolve	1,000 gallons
Isononanoic Acid	5,000 gallons
Lecithin	4,000 gallons
Decyl Alcohol	500 gallons

OTHER RAW MATERIALS

Cobalt Metal	5,000 pounds
Copper Hydrate	4,000 pounds
Calcium Hydroxide	10,000 pounds
Zirconium Carbonate	10,000 pounds
Calcium Carbonate	20,000 pounds

* Appendix 1. Raw material and finished product stored on site in 1977.

OTHER RAW MATERIALS - continued

Iodine	5,000 pounds
Chlorine	2,000 pounds
Sodium Chloride	5,000 pounds
Litharge	10,000 pounds
Mercury Metal	500 flasks
Paraformaldehyde	5,000 pounds
Captan	5,000 pounds
Clay	3,000 pounds
Hydrogenated Castor Oil	10,000 pounds
Bentonite	10,000 pounds
Manganese Oxide	10,000 pounds
Manganese Sulphate	5,000 pounds
Zinc Oxide	3,000 pounds
Boric Acid	5,000 pounds
Rhodamine B Dye	200 pounds

FINISHED PRODUCTS

gures below indicate quantities which may be stored on the premises.

Most material is shipped immediately upon production to one of warehouses which we maintain throughout the country.

Troysan PMA-100	1,000 pounds
Troysan PMA-30	1,500 gallons
Troysan CMP Acetate	1,500 gallons
Troysan PMDS-10	1,000 gallons
Troysan PMO-30	500 gallons
Troysan PMA-10-SEP	500 pounds
Troysan 174	1,500 gallons
Troysan 192	1,500 gallons
Troysan 364	500 gallons
Troysan 142	2,000 pounds
Troysan Polyphase Anti-Mildew	1,500 gallons
Troysan Anti-Mildew O	2,000 pounds
Troykyd Latex Leveling & Bodying Agent-LLBA	6,000 gallons
Troykyd Gloss-Leveling Agent GLA	3,000 pounds
Troykyd Universal Grinding Liquid	750 gallons
Troykyd Latex Anti-Crater	1,000 gallons
Troykyd Solvent Anti-Cratering Agent 366	500 gallons
Troykyd Emulsoil	500 gallons
Troykyd Anti-Sag Special	1,000 pounds
Troykyd-98C	1,000 gallons
Troykyd Emulso Wet	500 gallons
Troykyd Lecithin W.D.	1,500 gallons
Troykyd Colloidisperse #1	2,000 gallons
Troykyd Colloidisperse #2	1,000 gallons
Troykyd Anti-Skin B	2,000 gallons
Troykyd Anti-Skin BTO	500 gallons
Troykyd Anti-Skin	1,000 gallons
Troykyd Anti-Skin Odorless Powder	5,000 pounds
Troykyd Defoamer 333	6,000 gallons
Troykyd Defoamer 666	6,000 gallons
Troykyd Defoamer 999	3,000 gallons
Troykyd Powdered Defoamer 262	3,000 pounds
Troykyd Specialty Defoaming/Anti-Cratering Agent, Q-148 & Q-154	500 gallons each
Troykyd Anti-Float Powder	30,000 pounds
Troykyd Anti-Float Liquid	4,000 gallons
Troykyd Bodying and Puffing Agent 21BA	2,500 gallons
Troykyd Compound XYZ	40,000 pounds
Troythix A	5,000 pounds
Troykyd Compound ABC	5,000 pounds
Troykyd Anti-Sag 4	2,000 gallons
Troykyd Anti-Settle	5,000 pounds
Troykyd Anti-Settle Special	3,000 pounds

FINISHED PRODUCTS

Troymax Calcium 4%	4,000 gallons
Troykyd Calcium 4%	2,000 gallons
Troykdy Calcium 4%	200 gallons
Troymax Calcium 5%	4,000 gallons
Troychem 5%	*
Troymax Calcium 6%	2,000 gallons
Troykyd Cerium 6%	200 gallons
Troymax Cobalt 6%	2,000 gallons
Troykyd Cobalt 6%	1,000 gallons
Troychem Cobalt 6%	*
Troykyd W.D. Cobalt 6%	200 gallons
Troymax Cobalt 12%	2,000 gallons
Troychem Cobalt 12%	*
Troykyd Copper 8%	2,000 gallons
Troymax Iron 6%	200 gallons
Troykyd Iron 6%	200 gallons
Troychem Iron 6%	*
Troymax Iron 9%	200 gallons
Troymax Lead 24%	4,000 gallons
Troykyd Lead 24%	2,000 gallons
Troychem Lead 24%	*
Troykyd W.D. Lead 24%	200 gallons
Troymax Lead 36%	3,000 gallons
Troymax Manganese 6%	2,000 gallons
Troykyd Manganese 6%	
Troychem Manganese 6%	*
Troykyd W.D. Manganese 6%	200 gallons
Troymax Manganese 9%	3,000 gallons
Troymax Zinc 8%	1,000 gallons
Troykyd Zinc 8%	500 gallons
Trochem Zinc 8%	*
Troymax Zinc 16%	
Troymax Zirconium 6%	2,000 gallons
Troychem Zirconium 6%	*
Troymax Zirconium 12%	4,000 gallons
Troykyd W.D. Zirconium 12%	200 gallons
Troymax Zirconium 18%	1,000 gallons

*Made only on special order

Troykyd Perma-Dry	500 gallons
Troykyd Ever-Dri	500 gallons
Mercuric Oxide	3,000 pounds
Mercuric Chloride	3,000 pounds

PHYSICAL INVENTORY, RAW MATERIALS, FINISHED PRODUCTS AND INTERMEDIATES

PRODUCT	SIZE	UNIT COST	QUANTITY	AMOUNT
LIBA, PART I	10 drums			
Troykyd Emulsoil	6 drums + 212 lbs.			
A-8 Modsol Mixed 22.9% solids	11			
Modsol Mixed 33.6% solid	10			
Troykyd 390	1			
Troykyd 428A	4			
A148	1			
Dow Corning 200 Fluid	1			
Q-154	8			
PGMO	6			
DIDM	2			
CMP Acetate	1			
Trustan #7	1			
Propylene Glycol,	4			
PMDS-10	1 and part drum			
Yelkin Lecithin	5			
Troysan PMO-30	20			
Troysan 174	1			
Troykyd 366 Solvent Anti Crater	1			
Troykyd Defoamer 333	1			
Troykyd Defoamer 333	1			
Troykyd Defoamer 333	1			
Troykyd Defoamer 999	part drum			
Troykyd Defoamer 999	1			
Solvent Anti-Crater	1			
Solvent Anti Crater	1			
Troykyd Anti Skin	1			
Troykyd Latex Anti Crater	1			
Troykyd UGL	1			
Troykyd Anti Skin	1			
Troykyd Anti Skin	2			
White Olein	4			
Ethylene glycol	2			
[illegible]	[illegible]			
Dow Frost	10			
Troymax Cobalt 6%	1			
DeFoe 333	1			

Appendix 2. Material identified as being part of the 4500 drum mountain and 270 drum mountain.

PRODUCT	SIZE	UNIT COST	QUANTITY	AMOUNT
Isostearyl chloride	2 partial			
Hexylene glycol	1 drum			
Recovered benzene	1			
Hydrazine Hydrate	1			
Dow Frost (Propylene Glycol use 1 with 5 parts regular)	2			
DIDM	2			
Red Oil	1			
Polypropylene Glycol	2			
Amyl Acid Phosphate	1			
50% Caustic Soda	1 x 55			
40% Caustic Soda	2 x 55			
White Oleine	1			
Methanol	1			
Dipropylene Glycol	1			
Benzene	4			
Dioctyl Phthalate	1			
Lactic Acid	2			
Butyl Cellosolve	140 lbs.			
Dow Frost (Propylene glycol)	4			
Isostearyl Chloride	1			
Ethylene glycol	1			
Pine Oil	1			
Adol	3			
Recovered Benzol	3			
Mineral Seal Oil	1			
Anti Skin BTO	1			
Tergitol NPX	2			
Propylene glycol	3			
DIDM	2			
Lecithin, Yelkin	1			
White Olein	1			
Soybean oil	2			
Defoamer 666 (for 262)	2			
Tripropylene glycol	1			
Toluene	1			
Tergitol NPX	1			
Tergitol NP 14	1			
Tergitol NP 14	1 (2 partials)			
Methoxybutanol	1			

These drums were double checked and are part of the same 270 drums

PRODUCT	SIZE	UNIT COST	QUANTITY	AMOUNT
Dimethyl sulfoxide	1			
X-lol	1			
[illegible] pylene glycol	1			
[illegible]	1			

Description of Hazardous Waste Codes for material manifested by Troy between January 1980 and June 1991.

D001: Characteristic of Ignitability
D002: Characteristic of Corrosivity
D003: Characteristic of Reactivity
D005: Barium
D006: Cadmium
D007: Chromium
D008: Lead
D009: Mercury
F001: Spent halogenated solvent & sludge used in degreasing
F003: Spent non-halogenated solvent & still bottom
F005: Non-halogenated solvent & still bottom
P014: Benzenethiol
P028: Alpha-chlorotoluene
P029: Copper Cyanide
P030: Cyanides
P048: 2,4,Dinitrophenol
U012: Aniline (I)
U019: Benzene
U039: P-chloro-m-cresol
U048: 2-chlorophenol
U052: Cresols
U056: Cyclohexane (I)
U101: 2,4-dimethylphenol
U129: Hexachlorocyclohexane
U144: Lead Acetate
U170: 4-nitrophenol
U201: Resourcinol
U247: Methoxychlor
U328: 2-amino-1-methylbenzene
X722: Waste oil/bottom sludge from residential/commercial tank cleanouts
X725: Oil spill cleanup material
X850: Packed laboratory chemicals
X900: Chemical process-liquid,nos
X910: Chemical process-solid,nos
X940: Poison/pesticide,nos

Appendix 3.

PRODUCT	SIZE	[illegible]	[illegible]	[illegible]
[illegible]etate	1 x 500#	.4503	500	315
[illegible]mer 666	2 x 350#	.2882	700	202
	2 x 400	.4570	800	366
[illegible]max Lead 24%	47 x 500#	5.3673	23500	5631
[illegible]ax Lead 36%	29 x 500#	.4948	14500	7175
[illegible]yd Lead 24%				
Anti Crater	23 x 450#	.5031	10,350	5207
[illegible]mer 999				
[illegible]max Zirconium 6	3 x 375#	.5325	1175	599
[illegible]oymax Zirconium 12	3 x 400#	.8063	1200	968
Troykyd EX-307				
Troykyd UGL	19 x 450#	.4734	8550	4048
Troymax Calcium 4				
Troymax Calcium 5				
Troymax Calcium 6				
Troykyd Calcium 5				
Troykyd Calcium 4	11 x 400#	.2966	4400	1305
Troymax Cobalt 6%	13 x 400#	1.8751	5200	9751
Troymax Cobalt 12%	6 x 400#	3.5249	2400	8700
Troymax Copper 6%	3 x 430#	1.7456	1290	2251
Troysan Copper 8%	15 x 450#	.3682	7200	2651
Troysan Copper Oleate 8%	1 x 400#	.4774	400	191
Troymax Manganese 9	3 x 425#	.5003	1275	637
Troymax Manganese 6	12 x 400#	.4107	4800	1971
Troykyd Manganese 5	11 x 430#	.657	4730	3107
Troymax Zinc 6	39 x 420#	.3513	16380	5754
Troykyd Zinc 8	21 x 420#	.3513	8820	3097
Troykyd 99C	2 x 400#	.6269	800	502
Troykyd Anti-Float Liquid	20 x 400#	.4169	8000	3335
Troysan PMA-30	16 x 500#	1.2931	8000	10345
Troysan PMO-30				
Troysan PMDS-10	1½ x 500#	.6503	750	488
Troysan 192	12 x 450#	.6305	5400	3405
Troysan EX-364				
Troysan 174				
Troysan LLBA				
Emulsowet				
Lecithin WD	23 x 400#	.4463	9200	4106
Anti Skin B	1 x 400#	.950	400	380
Collidisperse #1	1 x 410#	.475	410	195
Perma Dry	10 x 450#	2.4681	4500	11106
Anti Skin BTO				
Anti Sag Special	4 x 400#	.3299	1600	528
A-148				
Anti Gel	3 x 440#	.7783		
Zirconium 18	3 X 450	1.0693	1320	1027
Anti Sag 4	7 x ~~5~~ 400	.7175	1350	1448
PGMO	7 x 420	.7250	3020	2216
			2940	2132
				108,148

A-62

REMEDIAL INVESTIGATION/REMEDIAL ALTERNATIVE ANALYSIS WORK PLAN ADDENDUM, QUALITY ASSURANCE PROJECT PLAN ADDENDUM, HEALTH AND SAFETY PLAN ADDENDUM

TROY CHEMICAL CORPORATION
NEWARK, NEW JERSEY

EMCON

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Figure 4-6 Proposed Soil and Groundwater Investigation

Table 4-1

Summary of Area of Concern Selection
Remedial Investigation/Remedial Alternative Analysis
Troy Chemical Corporation, Inc.

AOC Number	Location	Rationale
1	Southeastern corner of site	Location of former mercury recovery still
2	Just east of man-made ditch in center of site	Location of former mercury treatment system
3	Southeastern portion of site to east of Building 99	Location of historical septic tank
4	Northeastern portion of site just to west of man-made ditch	Historical groundwater and soil contamination Groundwater: VOCs up to 2200 ug/l (B-2/2A) Maximum reported mercury concentration (25,300 ug/l) Lead up to 566 ug/l Soil: VOCs up to 23 mg/kg (1S1D) Maximum reported mercury concentration (2810 mg/kg) Lead reported at concentration near maximum (3830 mg/kg)
5	Southwestern boundary of site west of Building 30a	Historical groundwater and soil contamination Groundwater: Maximum reported total VOC concentration (150,000 ug/l) (B-3/3A) Mercury up to 502 ug/l Maximum reported lead concentration (1000 ug/l) Soil: Mercury up to 3120 mg/kg (4S) Maximum reported lead concentration (3920 mg/kg)

Table A–1
TROY CHEMICAL CORPORATION, INC.
GROUNDWATER DATA

CONSTITUENT	WELL MW–1							NEW JERSEY GROUNDWATER STANDARD[1]
	8/25/81	9/17/81	11/17/81		5/14/82	5/24/82		
			WE	NJDEP		WE	NJDEP	
Volatile Organics	(NA)	(NA)			(NA)	(NA)		
Benzene			0.010 U	NA			U	0.001
2,3–Benzofuran			NA	NA			U	NA
sec–Butylbenzene			NA	NA			U	NA
tert–Butylbenzene			NA	NA			U	NA
Chlorobenzene			0.010 U	NA			U	0.004
o–Chlorotoluene			NA	NA			U	NA
p–Chlorotoluene			NA	NA			U	NA
Cyclopropylbenzene			NA	NA			U	NA
p–Dichlorobenzene			NA	NA			U	0.075
1,1–Dichloroethane			NA	NA			U	0.070
1,2–Dichloroethane			NA	NA			U	0.002
Ethylbenzene			0.010 U	NA			U	0.700
n–Propylbenzene			NA	NA			U	NA
Tetrachloroethene			0.010 U	NA			U	0.001
Toluene			0.010 U	NA			U	1.000
1,1,1 Trichloroethane			0.010 U	NA			U	0.030
1,1,2–Trichloroethane			NA	NA			U	0.003
Trichloroethene			0.010 U	NA			U	0.001
1,2,4–Trimethylbenzene			NA	NA			U	NA
1,3,5–Trimethylbenzene			NA	NA			U	NA
Xylene			NA	NA			U	0.040
TOTAL VOCs			0					
Total Petroleum Hydrocarbons	NA		NA	NA			NA	NA
Aroclor 1254	NA		0.010 U	U			NA	0.0005 [PCBs]
Inorganics								
Arsenic	NA		NA	NA	NA	NA	0.194	0.008
Cadmium	NA					NA	1 U	0.004
Chromium^{+6}	NA					NA	0.005 U	NA
Cobalt	NA	0.033 U	NA	NA	NA	NA	NA	NA
Copper	NA		0.940	0.811	NA	NA	NA	1.000
Lead	NA		0.050 U	0.333	NA	NA	0.013	0.010
Mercury	0.385	0.013	0.0223	0.0056	0.036	0.035	0.0005	0.002
Zinc	1.0		0.570	1.445	NA	NA	NA	5.000
Chloride	NA			110		NA	120	NA
Cyanide	NA					NA	0.001 U	0.200
Chemical Oxygen Demand	NA		112	385		NA	365	NA

All concentrations in mg/l (ppm)

U – Undetected – Value shown is detection limit.

J – Estimated

NA – Not analyzed

[1] – N.J.A.C. 7:9–6; effective date 2/1/93

Table A–1
TROY CHEMICAL CORPORATION, INC.
GROUNDWATER DATA

CONSTITUENT	WELL MW–1A						NEW JERSEY GROUNDWATER STANDARD[1]
	8/25/81	11/17/81		5/14/82	5/24/82		
		WE	NJDEP		WE	NJDEP	
Volatile Organics	(NA)		(NA)		(NA)		
Benzene		0.036		NA		0.012	0.001
2,3–Benzofuran		NA				U	NA
sec–Butylbenzene		NA				U	NA
tert–Butylbenzene		NA				U	NA
Chlorobenzene		0.347		NA		1.030	0.004
o–Chlorotoluene		NA				U	NA
p–Chlorotoluene		NA				U	NA
Cyclopropylbenzene		NA				0.320	NA
p–Dichlorobenzene		NA				0.007	0.075
1,1–Dichloroethane		NA				U	0.070
1,2–Dichloroethane		NA				U	0.002
Ethylbenzene		0.010 U		NA		U	0.700
n–Propylbenzene		NA				U	NA
Tetrachloroethene		0.010 U		NA		U	0.001
Toluene		0.012		NA		U	1.000
1,1,1 Trichloroethane		0.010 U		NA		U	0.030
1,1,2–Trichloroethane		NA				U	0.003
Trichloroethene		0.010 U		NA		U	0.001
1,2,4–Trimethylbenzene		NA				U	NA
1,3,5–Trimethylbenzene		NA				U	NA
Xylene		NA		NA		U	0.040
TOTAL VOCs		0.383				1.37	
Total Petroleum Hydrocarbons	NA	NA	NA		NA	NA	NA
Aroclor 1254	NA	NA	U		NA	NA	0.0005 [PCBs]
Inorganics							
Arsenic	NA	NA	NA	NA	NA	0.188	0.008
Cadmium	NA				NA	0.004	0.004
Chromium^{+6}	NA				NA	0.013	NA
Cobalt	NA	NA	NA	NA	NA	NA	NA
Copper	NA	1.02	0.449	NA	NA	NA	1.000
Lead	NA	0.050 U	0.048	NA	NA	0.045	0.010
Mercury	0.185	0.0313	0.008	0.027	0.224	0.005 U	0.002
Zinc	9.3	0.240	0.191	NA	NA	NA	5.000
Chloride	NA		800		NA	640	NA
Cyanide	NA				NA	0.001 U	0.200
Chemical Oxygen Demand	NA	NA	NA	NA	NA	415	NA

All concentrations in mg/l (ppm)
U – Undetected
J – Estimated
NA – Not analyzed
1 – N.J.A.C. 7:9–6; effective date 2/1/93

Table A-1
TROY CHEMICAL CORPORATION, INC.
GROUNDWATER DATA

CONSTITUENT	WELL MW-2								NEW JERSEY GROUNDWATER STANDARD[1]
	8/25/81	9/17/81	11/17/81		5/14/82	5/24/82		11/17/88	
			WE	NJDEP		WE	NJDEP		
Volatile Organics									
Benzene	NA		0.015	NA	NA	NA	U	2.1	0.001
2,3-Benzofuran	NA		NA	NA		NA	U		NA
sec-Butylbenzene	NA		NA	NA		NA	U		NA
tert-Butylbenzene	NA		NA	NA		NA	U		NA
Chlorobenzene	NA		0.010 U	NA	NA	NA	U	0.050 U	0.004
o-Chlorotoluene	NA		NA	NA		NA	U		NA
p-Chlorotoluene	NA		NA	NA		NA	U		NA
Cyclopropylbenzene	NA		NA	NA		NA	U		NA
p-Dichlorobenzene	NA		NA	NA		NA	U		0.075
1,1-Dichloroethane	NA		NA	NA		NA	U		0.070
1,2-Dichloroethane	NA		NA	NA		NA	U		0.002
Ethylbenzene	NA		0.010 U	NA	NA	NA	U	0.037 J	0.700
n-Propylbenzene	NA		NA	NA		NA	U		NA
Tetrachloroethene	NA		0.010 U	NA	NA	NA	U	0.050 U	0.001
Toluene	NA		0.012	NA	NA	NA	0.004	0.050 U	1.000
1,1,1 Trichloroethane	NA		0.010 U	NA	NA	NA	U	0.050 U	0.030
1,1,2-Trichloroethane	NA		NA	NA		NA	U		0.003
Trichloroethene	NA		0.010 U	NA	NA	NA	U	0.050 U	0.001
1,2,4-Trimethylbenzene	NA		NA	NA		NA	U		NA
1,3,5-Trimethylbenzene	NA		NA	NA		NA	U		NA
Xylene	NA		NA	NA	NA	NA	U	0.030 J	0.040
TOTAL VOCs		0	0.027				0.004	2.2	
Total Petroleum Hydrocarbons	NA			NA		NA	NA	4.4	NA
Aroclor 1254	NA			0.0075		NA	NA		0.0005 [PCBs]
Inorganics									
Arsenic	NA		NA	NA	NA	NA	0.005 U		0.008
Cadmium	NA				NA	NA	0.002		0.004
Chromium^{+6}	NA				NA	NA	0.005 U		NA
Cobalt	NA	0.033 U	NA	NA	NA	NA	NA	0.050 U	NA
Copper	NA		0.700	NA	NA	NA	NA		1.000
Lead	NA		0.200	NA	NA	NA	0.143	0.123	0.010
Mercury	0.085	0.012	0.507	NA	0.018	0.047	0.0085	0.0832	0.002
Zinc	1.2		1.97	NA	NA	NA	NA	0.808	5.000
Chloride	NA			980	NA	NA	2570		NA
Cyanide	NA				NA	NA	0.024		0.200
Chemical Oxygen Demand	NA			399	NA	NA	180		NA

All concentrations in mg/l (ppm)

U – Undetected

J – Estimated

NA – Not analyzed

[1] – N.J.A.C. 7:9-6; effective date 2/1/93

Table A–1
TROY CHEMICAL CORPORATION, INC.
GROUNDWATER DATA

CONSTITUENT	WELL MW–2A								NEW JERSEY GROUNDWATER STANDARD[1]
	8/25/81	9/17/81	11/17/81		5/14/82	5/24/82		11/17/88	
			WE	NJDEP		WE	NJDEP		
Volatile Organics									
Benzene	NA		0.010 U	NA	NA	NA	**0.700**	**1.7**	0.001
2,3–Benzofuran	NA		NA			NA	U		NA
sec–Butylbenzene	NA		NA			NA	U		NA
tert–Butylbenzene	NA		NA			NA	U		NA
Chlorobenzene	NA		0.010 U	NA	NA	NA	0.010	0.050 U	0.004
o–Chlorotoluene	NA		NA			NA	0.030		NA
p–Chlorotoluene	NA		NA			NA	0.021		NA
Cyclopropylbenzene	NA		NA			NA	U		NA
p–Dichlorobenzene	NA		NA			NA	0.033		0.075
1,1–Dichloroethane	NA		NA			NA	0.030		0.070
1,2–Dichloroethane	NA		NA			NA	**0.520**		0.002
Ethylbenzene	NA		0.010 U	NA	NA	NA	U	0.037 J	0.700
n–Propylbenzene	NA		NA			NA	U		NA
Tetrachloroethene	NA		0.010 U	NA	NA	NA	**0.110**	**0.030**	0.001
Toluene	NA		0.013	NA	NA	NA	0.006	0.050 U	1.000
1,1,1 Trichloroethane	NA		0.01 U	NA	NA	NA	U	0.050 U	0.030
1,1,2–Trichloroethane	NA		NA			NA	0.008		0.003
Trichloroethene	NA		**0.011**	NA	NA	NA	**0.380**	0.050 U	0.001
1,2,4–Trimethylbenzene	NA		NA			NA	U		NA
1,3,5–Trimethylbenzene	NA		NA			NA	0.013		NA
Xylene	NA		NA	NA	NA	NA	0.009	0.050 U	0.040
TOTAL VOCs			0.024				1.87	1.8	
Total Petroleum Hydrocarbons	NA		NA	NA		NA	NA	9.0	NA
Aroclor 1254	NA		NA	**0.0065**		NA	NA		0.0005 [PCBs]
Inorganics									
Arsenic	NA		NA	NA	NA	NA	**0.016**		0.008
Cadmium	NA					NA	0.001		0.004
Chromium^{+6}	NA					NA	0.008		NA
Cobalt	NA	0.033 U	NA	NA	NA	NA	NA	0.050 U	NA
Copper	NA		**1.700**	**2.055**	NA	NA	NA		1.000
Lead	NA		**0.150**	**0.556**	NA	NA	**0.013**	**0.328**	0.010
Mercury	**22.96**	**0.330**	**1.03**	**0.074**	**12.5**	**25.3**	**0.0335**	**0.0802**	0.002
Zinc	**3.3**		0.730	**1.43**	NA	NA	NA	0.140	5.000
Chloride	NA			1150		NA	1330		NA
Cyanide	NA					NA	**0.691**		0.200
Chemical Oxygen Demand	NA			958		NA	590		NA

All concentrations in mg/l (ppm)

U – Undetected

J – Estimated

NA – Not analyzed

[1] – N.J.A.C. 7:9–6; effective date 2/1/93

Table A-1
TROY CHEMICAL CORPORATION, INC.
GROUNDWATER DATA

CONSTITUENT	WELL MW-3							NEW JERSEY GROUNDWATER STANDARD[1]
	8/25/81	9/17/81	11/17/81		5/14/82	5/24/82		
			WE	NJDEP		WE	NJDEP	
Volatile Organics	(NA)	(NA)						
Benzene			0.010 U	NA	NA	NA	U	0.001
2,3-Benzofuran			NA			NA	U	NA
sec-Butylbenzene			NA			NA	U	NA
tert-Butylbenzene			NA			NA	U	NA
Chlorobenzene			0.010 U	NA	NA	NA	U	0.004
o-Chlorotoluene			NA			NA	U	NA
p-Chlorotoluene			NA			NA	U	NA
Cyclopropylbenzene			NA			NA	U	NA
p-Dichlorobenzene			NA			NA	U	0.075
1,1-Dichloroethane			NA			NA	U	0.070
1,2-Dichloroethane			NA			NA	U	0.002
Ethylbenzene			0.010 U	NA	NA	NA	U	0.700
n-Propylbenzene			NA			NA	U	NA
Tetrachloroethene			0.010 U	NA	NA	NA	U	0.001
Toluene			0.012	NA	NA	NA	U	1.000
1,1,1 Trichloroethane			0.010 U	NA	NA	NA	U	0.030
1,1,2-Trichloroethane			NA			NA	U	0.003
Trichloroethene			0.010 U	NA	NA	NA	U	0.001
1,2,4-Trimethylbenzene			NA			NA	U	NA
1,3,5-Trimethylbenzene			NA			NA	U	NA
Xylene			NA	NA	NA	NA	U	0.040
TOTAL VOCs		0	0.072				0	
Total Petroleum Hydrocarbons	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254	NA	NA	NA	U	NA	NA	NA	0.0005 [PCBs]
Inorganics								
Arsenic	NA	0.033	NA	NA	NA	NA	0.073	0.008
Cadmium	NA					NA	0.005 U	0.004
Chromium^{+6}	NA					NA	0.024	NA
Cobalt	NA	0.033 U	NA	NA	NA	NA	NA	NA
Copper	NA		1.0	1.027	NA	NA	NA	1.000
Lead	NA		0.050 U	0.156	NA	NA	0.511	0.010
Mercury	0.502	0.024	0.238	0.041	0.055	0.059	0.073	0.002
Zinc	4.0		0.130	1.065	NA	NA	NA	5.000
Chloride	NA			2400		NA	520	NA
Cyanide	NA					NA	0.001 U	0.200
Chemical Oxygen Demand	NA	NA		780	NA		114	NA

All concentrations in mg/l (ppm)

U – Undetected

J – Estimated

NA – Not analyzed

[1] – N.J.A.C. 7:9-6; effective date 2/1/93

Table A-1
TROY CHEMICAL CORPORATION, INC.
GROUNDWATER DATA

CONSTITUENT	WELL MW-3A						NEW JERSEY GROUNDWATER STANDARD[1]
	8/25/81	9/17/81	11/17/81	5/14/82	5/24/82		
					WE	NJDEP	
Volatile Organics	(NA)	(NA)					
Benzene			0.074	NA	NA	0.062	0.001
2,3-Benzofuran					NA	0.010	NA
sec-Butylbenzene					NA	0.029	NA
tert-Butylbenzene					NA	0.023	NA
Chlorobenzene			0.010 U	NA	NA	U	0.004
o-Chlorotoluene					NA	U	NA
p-Chlorotoluene					NA	U	NA
Cyclopropylbenzene					NA	U	NA
p-Dichlorobenzene					NA	U	0.075
1,1-Dichloroethane					NA	0.058	0.070
1,2-Dichloroethane					NA	0.150	0.002
Ethylbenzene			0.010 U	NA	NA	0.023	0.700
n-Propylbenzene					NA	0.041	NA
Tetrachloroethene			0.032	NA	NA	0.007	0.001
Toluene			0.055	NA	NA	0.036	1.000
1,1,1 Trichloroethane			0.032	NA	NA	1.36	0.030
1,1,2-Trichloroethane					NA	U	0.003
Trichloroethene			0.232	NA	NA	0.100	0.001
1,2,4-Trimethylbenzene					NA	U	NA
1,3,5-Trimethylbenzene					NA	0.060	NA
Xylene			NA	NA	NA	0.006	0.040
TOTAL VOCs			0.425			1.97	
Total Petroleum Hydrocarbons	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254	NA	NA	NA	U	U	U	0.0005 [PCBs]
Inorganics							
Arsenic	NA		NA	NA	NA	0.244	0.008
Cadmium	NA					0.001	0.004
Chromium^{+6}	NA					0.005 U	NA
Cobalt	NA	0.033 U	NA	NA	NA	NA	NA
Copper	NA		0.720	1.850	NA	NA	1.000
Lead	NA		1.0	0.630	NA	0.016	0.010
Mercury	0.0004 U	7	NA	0.0176	0.024	0.265	0.002
Zinc	0.4		0.830	4.010	NA	NA	5.000
Chloride	NA			510		760	NA
Cyanide	NA					0.483	0.200
Chemical Oxygen Demand	NA	NA		688		510	NA

All concentrations in mg/l (ppm)

U – Undetected

J – Estimated

NA – Not analyzed

[1] – N.J.A.C. 7:9-6; effective date 2/1/93

TABLE A–2
TROY CHEMICAL CORPORATION, INC.
SURFACE WATER/SEDIMENT DATA
JULY 12, 1979

CONSTITUENT	SAMPLE LOCATION							NEW JERSEY SURFACE WATER STANDARD[1]
	100 FEET UPSTREAM OF SITE	5 FEET UPSTREAM OF SITE	WITHIN PLANT		100 YARDS DOWNSTREAM OF PLANT	250 YARDS DOWNSTREAM OF PLANT	EASTERN DRAINAGE DITCH	
			DOWNSTREAM OF WWTP	50 FEET FROM DOWNSTREAM SIDE OF PROP.				
Inorganics								
Arsenic	U	U	U	U	**0.036**	**0.008 J**	**1.3**	0.000136
Beryllium	U	U	0.002	0.001 J	U	U	0.001 J	NA
Cadmium	0.003 J	0.003 J	0.004	0.002 J	0.002 J	0.003 J	0.006 J	NA
Chromium	0.031	0.026	0.023	0.024	0.022	0.010 J	0.020 J	3.23
Copper	0.097	0.076	0.070	0.063	0.045	0.028	0.060	NA
Lead	U	U	U	U	U	U	0.170	NA
Mercury	U	**0.055**	**0.021**	**0.026**	**0.084**	**0.071**	**0.886**	0.000146
Nickel	U	U	U	U	U	U	0.405	3.9
Selenium	U	U	U	U	U	U	U	NA
Silver	0.024	U	0.014	0.013	0.008 J	U	U	NA
Thallium	U	U	U	U	U	U	U	0.00622
Zinc	0.100 J	0.100 J	0.100	0.100 J	0.050 J	0.050 J	0.270	NA
TOC	4.5	5.8	3.6	5.4	7.6	5.0	78.5	NA
SEDIMENT								
Mercury (mg/kg)	**140**	**191**	**22400**	**11600**	**3120**	**244**	**83200**	1.3[2]

U – Undetected
J – Estimated
1 – Surface Water Quality Criteria for Class SE3 waters; N.J.A.C.7:9B–1.14
NA – Not available or not applicable
All values in mg/l (ppm) except where noted
2 – ER–M Concentration, Guidance for Sediment Quality Evaluations, March 1991

TABLE A–3
TROY CHEMICAL CORPORATION, INC.
NJDEP SOIL DATA
APRIL 28, 1989

	SAMPLE LOCATION				Soil Cleanup Criterion[1]		
CONSTITUENT	NEAR DUMPSTER	SOUTH OF FUNGICIDE PLANT	DRUM STORAGE SOUTH OF WAREHOUSE	DRUM STORAGE "YARD AREA"	Direct Contact (Residential)	Direct Contact (Non–Residential)	Impact to Groundwater
Pesticides		(NA)		(NA)			
p,p–DDT	0.033		U		2	9	500
p,p–DDD	0.033		U		3	12	50
o,p–DDT	0.025		U		–	–	–
p,p–DDE	0.0083		U		2	9	50
Volatile Organics		(NA)					
Trichloroethane	3.9		U	U	23	54	1
Octane	4.25		0.900	U	–	–	–
Benzene	1.9		1.3	U	3	13	1
2–Butanone	>50		26	U	1000	1000	50
Inorganics							
Copper	889	362	3290	68.0	600	600	–
Lead	110	500	105	90.0	100	600	–
Arsenic	ND	3.36	2.185	0.798	20	20	–
Zinc	4000	1200	2450	51.2	1500	1500	–
Mercury	>60	>60	>60	>60	14	270	–

U – Undetected

All concentrations in mg/kg (ppm)

1 – Last revised 2/3/94; never adopted as part of the Cleanup Standards for Contaminated Sites (N.J.A.C. 7:26D); therefore, for guidance purposes only; dashes indicate no criterion available

TABLE A-4
TROY CHEMICAL C PORATION, INC.
SEDIMENT DATA
NOVEMBER 17, 1988

CONSTITUENT	SED-1		SED-2		SED-3		SED-4	
	NJDEP	WE	NJDEP	WE	NJDEP	WE	NJDEP	WE
Semovolatile Oganics		(NA)		(NA)	(NA)	(NA)	(NA)	(NA)
Anthracene								
Bis(2-ethylhexyl)phthalate	26		160					
Butylbenzylphthalate								
Chrysene								
Diethylphthalate								
2,4-dimethylphenol					89			
Di-n-butylphthalate								
Di-n-octylphthalate								
Fluoranthene								
Fluorene								
2-methylnapthalene			17		190			
2-methylphenol					56			
Naphthalene			5.5		31			
Phenanthrene								
Pyrene								
TOTAL SEMIVOCs	26		183		366		0	
Inorganics								
Arsenic	70		115		167		72	
Barium								
Cadmium		NA		NA		NA		NA
Chromium		NA		NA		NA		NA
Cobalt		20 U		86		456		177
Copper	188	NA	1,090	NA	1,040	NA	694	NA
Lead	1,880	1,790	5,270	4,240	25,200	16,800	2,460	6,920
Mercury	690	745	4,500	8,810	601,000	71,400	1,790	6,110
Diphenyl mercury		NA		NA	12,000	NA		NA
Zinc		1,900		1,702		1,046		1,540

All concentrations in mg/kg (ppm)
NJDEP - Collected by the New Jersey Department of Environmental Protection
WE - Collected by Wehran Engineering (split sample)
B - Constituent found in associated blank - qualitatively suspect
J - Estimated
E - Exceeds calibration range
U - Undetected
NA - Not analyzed
* - Excludes lab contaminants

TABLE A
TROY CHEMICAL CORPORATION, INC.
SEDIMENT DATA
NOVEMBER 17, 1988

CONSTITUENT	SED-5		SED-6		SED-7		ER - M Guidance[1]
	NJDEP	WE	NJDEP	WE	NJDEP	WE	
Semovolatile Oganics	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	
Anthracene	0.100		13		11		0.96
Bis(2-ethylhexyl)phthalate	0.340		340		420		NA
Butylbenzylphthalate			62				NA
Chrysene	0.460		3		5		2.80
Diethylphthalate			2				NA
2,4-dimethylphenol							NA
Di-n-butylphthalate	0.140		24				NA
Di-n-octylphthalate			21		21		NA
Fluoranthene	1.200		11		14		3.60
Fluorene			7		2		NA
2-methylnapthalene			67		35		0.60
2-methylphenol							NA
Naphthalene							2.10
Phenanthrene	0.760		24		11		1.38
Pyrene	0.710		6		9		2.20
TOTAL SEMIVOCs	3.71		580		528		
Inorganics							
Arsenic	0.020		1.39		1.98		85
Barium			7.96		0.766		
Cadmium			0.075		0.077		9
Chromium			0.254		0.419		145
Cobalt		12 U		0.123		77	
Copper			1200		1680	NA	390
Lead	0.175	147	13400	49800	5150	5040	110
Mercury	0.210	536	964	10600	228	15300	1
Diphenyl mercury							
Zinc		138		3090		2563	270

All concentrations in mg/kg (ppm)
NJDEP - Collected by the New Jersey Department of Environmental Protection
WE - Collected by Wehran Engineering (split sample)
B - Constituent found in associated blank - qualitatively suspect
J - Estimated
E - Exceeds calibration range
U - Undetected

NA - Not analyzed
* - Excludes lab contaminants
1 - Guidance for Sediment Quality Evaluations, NJDEP, March 1991.

TABLE A-5
TROY CHEMICAL COMPANY
SOIL DATA
NOVEMBER 17, 1988

CONSTITUENT	North-central portion of site West of Man-Made Drainage Ditch				North-central portion of site East of Man-Made Drainage Ditch	
	S-1S (8-10")		S-1D (16-18")		S-2S (0-6")	
	NJDEP	WE	NJDEP	WE	NJDEP	WE
Semivolatiles		(NA)		(NA)		(NA)
Acenaphthylene						
Anthracene						
Benzo (a) anthracene						
Benzo(a)pyrene						
Benzo(b)fluoranthene						
Benzo(g,h,i)perylene						
Benzo(k)fluoranthene						
di-n-Butylphthalate						
Chrysene						
Dibenz(a,h)anthracene						
Diethylphthalate					0.013 J	
Fluoranthene					0.140 J	
Fluorene						
Indeno(1,2,3-cd)pyrene						
2-Methylnaphthalene	320		47.0			
Naphthalene	35.0		6.4 J			
di-n-Octylphthalate						
Phenanthrene	24.0 J				0.076 J	
Pyrene					0.085 J	
TOTAL SEMIVOCs	379		53.4		0.314	
Inorganics						
Arsenic		NA		NA		NA
Barium	1,000	NA		NA		NA
Beryllium	43.2	NA	8.4	NA		NA
Cadmium		NA		NA		NA
Chromium	398	NA	151	NA		NA
Cobalt		187		171		20 U
Copper	4,010	NA		NA		NA
Lead	3,830	3220	2,380	3830	153	275
Mercury	2,810	1060	910	1120	355	469
Nickel	1,860	NA	503	NA		NA
Silver		NA	8.2	NA		NA
Vanadium	148	NA		NA		NA
Zinc	127,000	12900	4,030	11500		735

All concentrations in mg/kg (ppm)
NJDEP - Collected by the New Jersey Department of Environmental Protection
WE - Collected by Wehran Engineering (split sample)
NA - Not analyzed
B - Constituent found in associated blank - qualitatively suspect
J - Estimated
* - Excludes Laboratory Contaminants
1 - Last revised 2/3/94; never adopted as part of the Cleanup Standards for Contaminated Sites (N.J.A.C. 7:26D); therefore, for guidance purposes only; dashes indicate no criterion available

TABLE A–5
TROY CHEMICAL COMPANY
SOIL DATA
NOVEMBER 17, 1988

CONSTITUENT	North–central portion of site East of Man–Made Drainage Ditch Slightly south of S–2S		Southern border of site		Western portion of site Along southern border		Soil Cleanup Criterion[1]		
	S–3S (12")		S–4S (30")		S–5S (6")		Direct Contact (Residential)	Direct Contact (Non–Residential)	Impact to Groundwater
	NJDEP	WE	NJDEP	WE	NJDEP	WE			
Semivolatiles	(NA)		(NA)		(NA)				
Acenaphthylene	0.075 J							–	–
Anthracene	0.200 J						3,400	10,000	100
Benzo (a) anthracene	0.480						900	4	500
Benzo(a)pyrene	0.456						660	660	100
Benzo(b)fluoranthene	0.530						900	4	500
Benzo(g,h,i)perylene	0.266 J						–	–	–
Benzo(k)fluoranthene	0.510						900	4	500
di–n–Butylphthalate	0.100 J						5,700	10,000	100
Chrysene	0.580						9	40	500
Dibenz(a,h)anthracene	0.034 J						660	660	100
Diethylphthalate							10,000	10,000	50
Fluoranthene	2.10		0.750 J		2.30 J		2,300	10,000	100
Fluorene	0.044 J						2,300	10,000	100
Indeno(1,2,3–cd)pyrene	0.260 J						900	4	500
2–Methylnaphthalene					1.10 J		–	–	–
Naphthalene					0.630 J		230	4,200	100
di–n–Octylphthalate			1.9 J				1,100	10,000	100
[illegible]anthrene	1.50						–	–	–
Pyrene	0.910		0.430 J		1.70 J		1,700	10,000	100
TOTAL SEMIVOCs	8.05 J		3.08		5.73				
Inorganics									
Arsenic		NA		NA	55.7	NA	20	20	–
Barium		NA	1,320	NA	584	NA	700	47	–
Beryllium		NA		NA		NA	1	1	–
Cadmium		NA		NA	4	NA	1	100	–
Chromium		NA		NA		NA	–	–	–
Cobalt		11 U		111		26	–	–	–
Copper		NA	174	NA	185	NA	600	600	–
Lead	246	264	3,920	3120	2,840	2680	100	600	–
Mercury	736	573	2,540	3120	210	79.7	14	270	–
Nickel		NA		NA		NA	250	2400	–
Silver	5.9	NA		NA		NA	110	4100	–
Vanadium		NA		NA		NA	370	7100	–
Zinc		188	1,320	1480	1,835	1630	1500	1500	–

All concentrations in mg/kg (ppm)
NJDEP – Collected by the New Jersey Department of Environmental Protection
WE – Collected by Wehran Engineering (split sample)
NA – Not analyzed
B – Constituent found in associated blank – qualitatively suspect
J – Estimated
* – Excludes Laboratory Contaminants
1 – Last revised 2/3/94; never adopted as part of the Cleanup Standards for Contaminated Sites (N.J.A.C. 7:26D); therefore, for guidance purposes only; dashes indicate no criterion available

TABLE A-6
TROY CHEMICAL CORPORATION, INC.
NJDEP SOIL DATA
APRIL 28, 1989

	SAMPLE LOCATION				Soil Cleanup Criterion[1]		
CONSTITUENT	NEAR DUMPSTER	SOUTH OF FUNGICIDE PLANT	DRUM STORAGE SOUTH OF WAREHOUSE	DRUM STORAGE "YARD AREA"	Direct Contact (Residential)	Direct Contact (Non-Residential)	Impact to Groundwater
Pesticides		(NA)		(NA)			
p,p-DDT	0.033		U		2	9	500
p,p-DDD	0.033		U		3	12	50
o,p-DDT	0.025		U		–	–	–
p,p-DDE	0.0083		U		2	9	50
Volatile Organics		(NA)					
Trichloroethane	3.9		U	U	23	54	1
Octane	4.25		0.900	U	–	–	–
Benzene	1.9		1.3	U	3	13	1
2-Butanone	>50		26	U	1000	1000	50
Inorganics							
Copper	889	362	3290	68.0	600	600	–
Lead	110	500	105	90.0	100	600	–
Arsenic	ND	3.36	2.185	0.798	20	20	–
Zinc	4000	1200	2450	51.2	1500	1500	–
Mercury	>60	>60	>60	>60	14	270	–

U – Undetected

All concentrations in mg/kg (ppm)

1 – Last revised 2/3/94; never adopted as part of the Cleanup Standards for Contaminated Sites (N.J.A.C. 7:26D); therefore, for guidance purposes only; dashes indicate no criterion available

AMENDMENT TO

SOIL REUSE PLAN

ROUTE 1 & 9, SECTION 2AG
NEWARK, NEW JERSEY

for

DELANCY STREET STORM SEWER AND PIERSON'S CREEK CLEANING

Prepared for:

State of New Jersey
Department of Transportation
Bureau of Environmental Services
Trenton, New Jersey

October 15, 1996

Prepared by:

Joseph W. D'Andrea
Project Manager

Mark E. Anderson, PG, PE, CHMM
Project Engineer

L. Robert Kimball & Associates,
Architects and Engineers, Inc.
Ebensburg, PA Pleasantville, NJ

TABLE 2
SUMMARY OF FINDINGS OF CONCERN
PIERSON'S CREEK
WORK AREA 2

Parameter	Sed-1 Conc. (mg/kg)	Sed-2 Conc. (mg/kg)	Sed-3 Conc. (mg/kg)	Sed-4 Conc. (mg/kg)	Sed-5 Conc. (mg/kg)	Sed-6 Conc. (mg/kg)	Cleanup Criteria[a] (mg/kg)
TCL Volatiles None Detected Above Cleanup Criteria	ND	ND	ND	ND	ND	ND	10,000
TCL Semi-Volatiles							
Benzo(A)anthracene	**7**	**13**	2.5	3.25	**13.3**	3.5	4
bis(2-Ethyhexyl)phthalate	**7640**	**12700**	130	**768**	**4820**	**7290**	210
Benzo(b)fluoranthene	**8.88**	**15.6**	3.3	**7.95**	**17**	3.07	4
Benzo(a)pyrene	**1**	**10.3**	**1.5**	**1**	**7.41**	0.2	0.66
TCL Pesticides							
Heptachlor	**0.7**	0.06	0.56	0.004	0.08	0.0	0.65
Dieldrin	**0.62**	0.011	**0.22**	0.008	0.167	0.0	0.18
TCL PCBs	**21.3**	**8.9**	**63.2**	**3.6**	**7.5**	0.0	2
TAL Metals							
Arsenic	**110**	**87**	**346**	**190**	**243**	**502**	2
Cadmium	32	**100**	21	40	23	**187**	100
Copper	**900**	**1440**	**632**	**1670**	**664**	**6440**	600
Lead	**1270**	**1900**	**1670**	**2420**	**1100**	**14400**	600
Mercury	**829**	**1440**	**1420**	**1210**	**347**	**5020**	270
Nickel	240	160	130	1100	190	**2890**	2,400
Silver	428	591	120	240	61	647	4,100
Zinc	2190	**1770**	983	**7350**	**5490**	**6540**	1,500

Notes:
(1) Based on Sample LRK SED-1 through SED-6.
(2) Parameters in bold were detected above Non-Residential Direct Contact Surface Soil Cleanup Criteria.
(3) ND - None Detected.
(a) New Jersey Non-Residential Direct Contact Surface Soil Cleanup Criteria.

TABLE 4
SUMMARY OF FINDINGS OF CONCERN
PIERSON'S CREEK
WORK AREA 4

Parameter	Conc. (mg/kg)	Cleanup Criteria[a] (mg/kg)
TCL Volatiles None Detected Above Cleanup Criteria	ND	10,000
TCL Semi-Volatiles None Detected Above Cleanup Criteria	ND	10,000
TCL Pesticides None Detected Above Cleanup Criteria	ND	Varies
TCL PCBs	0.64	2
TAL Metals		
Arsenic	**53**	2
Mercury	**426**	270
Silver	2.9	4,100

Notes:
(1) Based on Sample LRK SED-8.
(2) Parameters in bold were detected above Non-Residential Direct Contact Surface Soil Cleanup Criteria.
(3) ND - None Detected.
(a) New Jersey Non-Residential Direct Contact Surface Soil Cleanup Criteria.

Kimball
L. Robert Kimball & Associates

Corporate Headquarters
615 West Highland Avenue, P.O. Box 1000, Ebensburg, PA 15931 Tel: 814-472-7700 Fax: 814-472-7712 E-Mail: aande@lrkimball.com

December 3, 1996

Mr. Howard Lazarus, Director of Engineering
City of Newark
Broad Street
Newark, NJ

Re: Pierson's Creek Sampling
LRK&A.I 93-1340-C048

Dear Mr. Lazarus:

Enclosed is a copy of the Report of Investigation for the Pierson's Creek sediment sampling that we performed for the New Jersey Department of Transportation. Please contact us if you have any questions

Sincerely,

Mark E. Anderson

Mark E. Anderson, PG, PE, CHMM

cc: Paul Butler, City of Newark Engineering
Claude Walker, City of Newark Law
Dave Lambert, NJDOT
Brian Mulcahy, NJDOT
Karl Bevins, NJDOT
Dennis Brizick, Edwards and Kelcey

h:\proj\93-0048\es-engr\docs\96le1203

TABLE 3
SUMMARY OF FINDINGS OF CONCERN
PIERSON'S CREEK
WORK AREA 2

Parameter	Sed-1 Conc. (mg/kg)	Sed-2 Conc. (mg/kg)	Sed-3 Conc. (mg/kg)	Sed-4 Conc. (mg/kg)	Sed-5 Conc. (mg/kg)	Sed-6 Conc. (mg/kg)	Cleanup Criteria[a] (mg/kg)
TCL Volatiles None Detected Above Cleanup Criteria	ND	ND	ND	ND	ND	ND	10,000
TCL Semi-Volatiles							
Benzo(A)anthracene	7	13	2.5	3.25	13.3	3.5	4
bis(2-Ethyhexyl)phthalate	7640	12700	130	768	4820+	7290	210
Benzo(b)fluoranthene	8.88	15.6	3.3	7.95	17	3.07	4
Benzo(a)pyrene	1	10.3	1.5	1	7.41	0.2	0.66
TCL Pesticides							
Heptachlor	0.7	0.06	0.56	0.004	0.08	0.0	0.65
Dieldrin	0.62	0.011	0.22	0.008	0.167	0.0	0.18
TCL PCBs	21.3	8.9	63.2	3.6	7.5	0.0	2
TAL Metals							
Arsenic	110	87	346	190	243	502	2
Cadmium	32	100	21	40	23	187	100
Copper	900	1440	632	1670	664	6440	600
Lead	1270	1900	1670	2420	1100	14400	600
Mercury	829	1440	1420	1210	347	5020	270
Nickel	240	160	130	1100	190	2890	2,400
Silver	428	591	120	240	61	647	4,100
Zinc	2190	1770	933	7350	5490	6540	1,500

Notes:

(1) Based on Sample IJRK SED-1 through SED-6.

(2) Parameters in bold were detected above Non-Residential Direct Contact Surface Soil Cleanup Criteria.

(3) ND - None Detected.

(a) New Jersey Non-Residential Direct Contact Surface Soil Cleanup Criteria.

TABLE 5
SUMMARY OF FINDINGS OF CONCERN
PIERSON'S CREEK
WORK AREA 4

Parameter	Conc. (mg/kg)	Cleanup Criteria[a] (mg/kg)
TCL Volatiles None Detected Above Cleanup Criteria	ND	10,000
TCL Semi-Volatiles None Detected Above Cleanup Criteria	ND	10,000
TCL Pesticides None Detected Above Cleanup Criteria	ND	Varies
TCL PCBs	0.64	2
TAL Metals		
Arsenic	53	2
Mercury	426	270
Silver	2.9	4,100

Notes:
(1) Based on Sample LRK SED-8.
(2) Parameters in bold were detected above Non-Residential Direct Contact Surface Soil Cleanup Criteria.
(3) ND - None Detected.
(a) New Jersey Non-Residential Direct Contact Surface Soil Cleanup Criteria.

TABLE 7

NJDOT - ROUTE 1 9 PIERSON'S CREEK

TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) TESTING RESULTS SUMMARY

Parameters	SED-1 (mg/l)	SED-2 (mg/l)	SED-3 (mg/l)	SED-4 (mg/l)	SED-5 (mg/l)	SED-6 (mg/l)	SED-7 (mg/l)	SED-8 (mg/l)	SED-9 (mg/l)	NJ Toxicity Criteria (1) (mg/l)
Heavy Metals										
Arsenic	<.40	-	0.64	J .23	<.40	<.40	<.40	-	-	5.0
Cadmium	<.016	J .011	.016	<.016	J .011	0.026	-	-	-	1.0
Lead	<.18	<.18	<.18	<.18	<.18	J .071	J .046	-	0.42	5.0
Mercury	<.0020	<.0020	-	<.0020	<.0020	-	-	<.0020	-	0.2
Pesticides										
Heptachlor	ND	-	ND	-	-	-	ND	-	-	0.008
Corrosivity										
pH - see Note (2)	6.77	6.84	7.07	6.72	6.8	7.56	7.37	7.30	5.07	Corrosive
Ignitability	Non-Ignitable	Non-Ignitable	Non-Ignitable	Non-Ignitable	Non-Ignitable	Non-Ignitable	Non-Ignitable	Non-Ignitable	Non-Ignitable	Ignitable
Reactivity	Non-reactive	Non-reactive	Non-reactive	Non-reactive	Non-reactive	Non-reactive	Non-reactive	Non-reactive	Non-reactive	Reactive

Notes:

(1) New Jersey Toxicity Criteria are those described in Section 7:26-8.12 Characteristics of toxicity in the April 1992 New Jersey Hazardous Waste Regulations
(2) pH was determined using USEPA Method 9045D. Results are not part of the RCRA Corrosivity test, but have been provided to enhance generator knowledge of the waste
(3) Results indicate that samples are non-toxic when compared to the New Jersey Toxicity Criteria.

3-7021

Ed
Frankel
4-3706

DRAFT

Hydrologic and Hydraulic Study
for the
Rehabilitation of Pierson's Creek

Prepared for:

City of Newark
Newark, New Jersey
Job No. 15752-002-175

2325 Maryland Road Willow Grove, PA 19090
(215) 657-5000

August 8, 1997

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Surface Water

Arsenic	Cadmium	Lead
Mercury	Methylene Chloride	1,2-Dichloroethane
Benzene	Bis(2-ethylhexyl)phthalate	Carbon Tetrachloride
Chloroform	Tetrachloroethene	Trichloroethene
Vinyl Chloride	beta-BHC	Chlordane
Dieldrin		

Sediment

Arsenic	Cadmium	Lead
Mercury	2-Methylnapthalene	Acenapthene
Anthracene	Benzo(a)anthracene	Benzo(a)pyrene
Chrysene	Dibenz(a,h)anthracene	Fluoranthene
Dieldrin	Naphthalene	Phenanthrene
Pyrene	Chlordane	DDT
PCBs		

4.3.2 Troy Chemical Site (Stations 97+01 to 91+71)

The Troy Chemical Corporation, Inc. (Troy) Site is an operational chemical plant which is currently involved in a Memorandum of Agreement (MOA) with the NJDEP for the remediation of this site. Troy has manufactured specialty paint additives at this facility since 1956. Prior to 1956, the site was utilized by numerous industries including American Cyanamid/Calco, Heller and Merz, and Amalgamated Dyestuff and Chemicals for the manufacture of a variety of chemicals and dyes.

The additives manufactured (now or formerly) at the site are (or have been) used in the paint industry as preservatives, biocides, dryers, rheology agents (flow agents), surfactants, and dispersants. Reportedly the production of the various chemical additives are done almost exclusively through batch mixing and blending operations.

The information contained in the NJDEP file focused on the process schemes for organic fungicides, metallic soaps (drying agents) and mercury compounds. The file also indicated that facility routinely discharged process wastewaters, including untreated mercury bearing wastewaters, into Pierson's Creek until 1965. From 1965 to 1976, the mercury bearing wastewaters were treated by sulfide precipitation and discharged to the Passaic Valley Sewage Commission (PVSC); however, all other

process wastewaters were still being discharged to the creek in untreated form. In 1976, an overall plant wastewater system was installed and treated wastewaters were routed to the PVSC. In 1977, Troy applied for a permit to discharge noncontact cooling water, boiler blowdown and condensates into Pierson's Creek. The permit was granted with an effective period from May 1978 to September 1980. In 1980, Troy renewed the permit through September 1990. The current status of Troy's discharge permit is not known as no further renewal information was available in the file.

According to information contained in the NJDEP's file, "the numerous samples have been collected by the NJDEP, the USEPA, and Wehran Engineering indicate that both permitted and unpermitted discharges by the company (Troy) have had a detrimental impact on surface water quality in Pierson's Creek." Furthermore, numerous enforcement actions have been levied against Troy. The agencies which issued these actions include the NJDEP - Division of Waste Management, US Environmental protection Agency (USEPA), NJDEP - Division of Environmental Quality, NJDEP - Division of Water Resources and the Passaic Valley Sewage Commission(PVSC). Sampling data contained in the NJDEP and City of Newark Municipal files indicate the presence of the following contaminants.

Surface Water

Arsenic	Beryllium	Cadmium
Chromium	Copper	Lead
Mercury	Nickel	Silver
Zinc	1,2-Dichloroethane	1,2-Dichloroethene
1,2-trans-Dichloroethylene	1,1,2,2-Tetrachloroethane	1,1,1-Trichloroethane
Benzene	Chlorobenzene	Chloroform
Dichlorobromethane	Ethylbenzene	Methylene Chloride
Tetrachloroethylene	Toluene	Trichloroethylene
Vinyl Chloride		

Sediment

Arsenic	Barium	Cadmium
Chromium	Copper	Lead
Mercury	1,2-Dichlorobenzene	1,2-Dichlorobenzene
1,4-Dichlorobenzene	1,1-Dichloroethane	1,1-Dichloroethene
1,2-Dichloroethene	2,3-Dimethylphenol	2-Methylnapthalene
2-Methylphenol	4-Methyl-2-pentanone	1,1,1-Trichloroethane
1,2,4-Trichlorobenzene	Acetone	Anthracene
Benzene	Bis(2-ethylhexyl)phthalate	Butylbenzylphthalate

Chlorobenzene	Chloroform	Chrysene
Diethylphthalate	di-n-Butylphthalate	di-n-Octylphthalate
Fluoranthene	Fluorene	Methylene Chloride
Naphthalene	Nitrobenzene	Phenanthrene
Pyrene	Tetrachloroethene	Toluene
Trichloroethene	Vinyl Chloride	Xylene
4,4'-DDD	4,4'-DDT	PCB Arochlor 1242
Petroleum Hydrocarbons		

4.3.3 Engelhard Corporation Site (Stations 86+05 to 75+01)

The Engelhard Corporation purchased and began to develop the site in 1952. Prior to 1952, the entire site was used as a municipal dump by the City of Newark. During the early 1950's, the northwestern corner of the site (away from the creek) was purchased by Cummins Diesel Company. Cummins operated a truck repair garage on the parcel until 1956, at which time Engelhard bought the property. Engelhard's operations have involved the refining of precious metals, research and the manufacturing of catalysts and other specialty chemicals. Radioactive materials were reportedly used at the site, however, radioactive wastes were reportedly not generated.

Limited operational information was available in the numerous environmental reports reviewed. However, information contained in the reports indicate that three 100,000-gallon, open top effluent holding tanks are alleged to have overflowed several times due to wind-related wave action. Two former drainage ditches (now paved over) received runoff, spillage, and discharges from process and reclaiming activities. The chemical sewer and pipe system of the facility is known to have had a number of releases. Transformers and capacitors containing PCBs are known to have leaked in at least five locations on-site. Two areas of the site are known to have been used for land disposal of potentially hazardous materials (photographic chemical sludge and contaminated dredge spoils from Pierson's Creek. Sampling data contained in the NJDEP and City of Newark Municipal files indicate the presence of the following contaminants.

<u>Sediment</u>

Arsenic	Cadmium	Chromium
Copper	Lead	Mercury
Nickel	Platinum	Silver
Thallium	Zinc	

REMEDIAL INVESTIGATION ADDENDUM

TROY CHEMICAL CORPORATION, INC.

NEWARK, NEW JERSEY

Prepared for

Troy Chemical Corporation, Inc.

June 1998

Prepared by

EMCON
Crossroads Corporate Center
One International Blvd., Suite 700
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Project 83611-001.000

Remedial Investigation Addendum
Troy Chemical Corporation, Inc.

The material and data in this report were prepared under the supervision and direction of the undersigned.

EMCON

Tamara L. Sorell, PhD
Project Manager

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Troy Chemical RI/RAA
RI Addendum Report

Summary of Inorganics and Field Parameters in Surface Water

Sample ID Date Sampled	NJ Surface Water Standard[1]	SW-01 5/14/97	SW-01 11/24/97	SW-04 5/14/97	SW-04 11/24/97	SW-08 5/14/97	SW-08 11/24/97	SW-09 5/14/97	SW-09 11/24/97
Inorganic Elements (ug/l)									
DL Multiplier			1		1		1		1
Aluminum	NA	486	U	272	U	503	U	122	U
Antimony	4300	U	U	U	U	U	U	U	U
Arsenic	0.136	**26**	U	U	U	**56**	**19.8**	**97**	**131**
Barium	2000	471	U	91	U	128	U	386	U
Beryllium	NA	U	U	U	U	U	U	U	U
Cadmium	0.363	**2.0**	U	**0.7**	U	**0.9**	U	U	U
Calcium	NA	300,000	44,000	26,800	27,500	37,500	30,500	76,000	56,500
Chromium	3230	U	2.3		2.8	U	4.5	U	7.8
Cobalt	NA	U	U	U	U	U	U	U	U
Copper	NA	72	8.1	U	17	U	23.4	U	54.6
Iron	NA	3290	1220	2240	1510	7260	2480	10,100	8510
Lead	NA	43	7.5	U	19.2	136	24.4	6	57.2
Magnesium	NA	3820	3130	4180	2880	7210	6150	12,000	4650
Manganese	100	**814**	**108**	**134**	75	39.4	**209**	**611**	**375**
Mercury	0.146	U	U	U	U	U	U	U	U
Nickel	3900	U	U	U	U	U	U	U	U
Potassium	NA	11,900	3750	4490	2000	6050	5100	17,600	9600
Selenium	NA	U	U	U	U	U	U	U	U
Silver	NA	U	U	U	U	U	U	U	U
Sodium	NA	4220	35,000	32,900	20,000	72,700	61,000	182,000	134,000
Thallium	6.22	U	U	U	U	U	U	U	U
Vanadium	NA	U	U	U	U	U	U	U	U
Zinc	NA	286	70	117	140	158	160	78	290
Field Parameters									
Temperature (°C)	NA[2]	15.9	4.60	15.20	9.25	15.3	5.28	14.6	6.24
pH	6.5-8.5	7.12	7.39	7.38	6.95	6.53	**6.44**	**6.30**	**6.43**
ORP (mV)	NA	15.2	192.0	27.6	189.7	17.0	224.5	26.5	221.2
Dissolved Oxygen (mg/l)	>3.0	11.20	4.84	**0.61**	3.82	**0.94**	5.02	**0.80**	4.57
Salinity (%)	NA	NA	0.21	NA	0.30	NA	0.46	NA	0.55

[1]Class SE3 waters.
[2]The site is not a heat dissipation area.

Table 4
Troy Chemical RI/RAA
RI Addendum Report

Summary of Inorganics and Field Parameters in Surface Water

Sample ID Date Sampled	NJ Surface Water Standard[1]	SW-10 5/14/97	SW-10 11/24/97	SW-12 5/14/97	SW-12 11/24/97	SW-13 5/14/97	SW-13 11/24/97	Detection Limit	
								5/97	11/97
Inorganic Elements (ug/l)									
DL Multiplier			1		1		1		
Aluminum	NA	1110	U	525	U	867	U	100	3000
Antimony	4300	U	U	U	U	U	U	8	5
Arsenic	0.136	**2380**	**401**	**2710**	**7450**	**206**	**14.1**	20	8
Barium	2000	219	U	334	U	467	U	20	500
Beryllium	NA	U	U	U	U	U	U	4	1
Cadmium	0.363	**5.8**	U	**2.7**	U	**1.8**	U	0.6	4
Calcium	NA	101,000	94,500	169,000	73,500	194,000	58,500	2000	250
Chromium	3230	U	3.9	U	6.1	21	3.2	20	2
Cobalt	NA	U	U	U	U	U	U	40	250
Copper	NA	194	20.6	U	45	61	19	40	5
Iron	NA	27,600	7210	11900	6210	12,500	461	100	25
Lead	NA	168	15.5	105	44.5	66	14.3	8	5
Magnesium	NA	18,700	16,000	16300	7230	22,700	10,000	2000	25
Manganese	100	**1150**	**682**	**808**	**238**	**2410**	37	10	25
Mercury	0.146	U	**1.67**	**5.2**	**14.3**	**2.5**	**12.4**	0.5	0.5
Nickel	3900	U	16.5	U	U	U	U	60	10
Potassium	NA	9800	8700	8420	3800	7530	6200	2000	100
Selenium	NA	U	U	U	U	U	U	8	8
Silver	NA	U	U	U	U	U	U	0.4	1
Sodium	NA	87,500	67,000	38.2	51,000	14,700	16,000	2000	50
Thallium	6.22	U	U	U	U	U	U	8	5
Vanadium	NA	U	U	U	U	U	U	30	25
Zinc	NA	494	110	226	190	254	90	20	20
Field Parameters									
Temperature (°C)	NA[2]	14.8	4.41	15.4	6.65	9.1	2.65	NA	NA
pH	6.5-8.5	**5.89**	**5.88**	6.87	7.14	6.64	6.76	NA	NA
ORP (mV)	NA	45.5	229.3	1.9	190.0	16.6	182.7	NA	NA
Dissolved Oxygen (mg/l)	>3.0	**0.76**	3.16	**0.86**	3.06	**1.36**	6.67	NA	NA
Salinity (%)	NA	NA	0.48	NA	0.41	NA	0.22	NA	NA

[1]Class SE3 waters.
[2]The site is not a heat dissipation area.

Table 6
Troy Chemical RI/RAA
RI Addendum Report

Summary of Inorganics and Field Parameters in Groundwater

Sample ID	NJ Class IIA	MW-1				
Date Sampled	Groundwater	Total		Dissolved		Low Flow
	Criterion[1]	11/19/96	5/14/97	11/19/96	5/14/97	11/26/97
Inorganic Elements (ug/l)						
Aluminum	200	**11,200**	**3000**	U	U	U
Antimony	20	U	U	U	U	U
Arsenic	8	**1320** J	**840**	**887** J	690	**819**
Barium	2000	484	467	342	330	U
Beryllium	20	U	U	U	U	U
Cadmium	4	U	1.3	U	U	U
Calcium	NA	104,000	133,000	101,000	113,000	89,000
Chromium	100	**150** J	57	U	U	5
Cobalt	NA	U	U	U	U	U
Copper	200	U	U	U	U	U
Iron	300	**32,300**	**36,900**	**18,500**	**20,300**	**13,600**
Lead	10	**216** J	**27.2**	U	U	U
Magnesium	NA	28,800	30,300	28,600	28,000	21,300
Manganese	50	**2,030**	**2,440**	**1,580**	**1,630**	**1,340**
Mercury	2	**1,300** J	**3.5**	1.0 J	U	2
Nickel	100	U	U	U	U	U
Potassium	NA	26,000	18,600	24,800	17,900	14,900
Selenium	50	U	U	U	U	U
Silver	NA	U	U	U	U	U
Sodium	50,000	**89,400**	**119,000**	**93,000**	**117,000**	**116,000**
Thallium	10	U	U	**10.3**	U	U
Vanadium	NA	U	34	U	U	U
Zinc	5000	441 J	270	U	29	91

Table 6
Troy Chemical RI/RAA
RI Addendum Report

Summary of Inorganics and Field Parameters in Groundwater

Sample ID	NJ Class IIA	MW - 3				
Date Sampled	Groundwater	Total		Dissolved		Low Flow
	Criterion[1]	11/19/96	5/14/97	11/19/96	5/14/97	11/26/97
Inorganic Elements (ug/l)						
Aluminum	200	**4370**	**3730**	U	U	U
Antimony	20	U	U	U	U	U
Arsenic	8	**343** J	**540**	**401** J	**670**	**350**
Barium	2000	U	211	U	124	U
Beryllium	20	U	U	U	U	U
Cadmium	4	U	U	U	U	U
Calcium	NA	69,000	81,400	66,700	74,000	59,500
Chromium	100	66.1 J	73	U	U	5
Cobalt	NA	U	U	U	U	U
Copper	200	U	U	U	U	U
Iron	300	**18,800**	**22,500**	**10,400**	**10,200**	**10,100**
Lead	10	**155** J	**17.3**	U	U	U
Magnesium	NA	8960	9030	8340	8390	7,330
Manganese	50	**733**	**788**	**614**	**630**	**445**
Mercury	2	**2040** J	**8.4**	1.1 J	U	**12**
Nickel	100	U	U	U	U	U
Potassium	NA	11,800	10,400	11,000	10,100	8,700
Selenium	50	U	U	U	U	U
Silver	NA	U	U	U	U	U
Sodium	50,000	**72,000**	**124,000**	**71,900**	**116,000**	**108,000**
Thallium	10	U	U	**10.4**	U	U
Vanadium	NA	U	U	U	U	U
Zinc	5000	239 J	205	31.4 J	48	51

Table 6
Troy Chemical RI/RAA
RI Addendum Report

Summary of Inorganics and Field Parameters in Groundwater

Sample ID	NJ Class IIA	MW - 4				
Date Sampled	Groundwater	Total		Dissolved		Low Flow
	Criterion[1]	11/19/96	5/14/97	11/19/96	5/14/97	11/26/97
Inorganic Elements (ug/l)						
Aluminum	200	7630	3870	U	U	U
Antimony	20	U	U	U	U	U
Arsenic	8	U	11	25.8 J	6	19.7
Barium	2000	355	213	210.	104	U
Beryllium	20	U	U	U	U	U
Cadmium	4	U	0.7	U	U	U
Calcium	NA	177,000	164,000	155,000	146,000	180,000
Chromium	100	33.2 J	27	U	U	4
Cobalt	NA	U	U	U	U	U
Copper	200	U	U	U	U	19
Iron	300	18,900	14,500	3050	2120	6,180
Lead	10	577 J	105	U	U	43
Magnesium	NA	17300	11300	15000	10100	12,900
Manganese	50	1060	631	759	458	549
Mercury	2	2460 J	U	U	U	U
Nickel	100	U	U	U	U	U
Potassium	NA	50,600	21,100	47,600	20,900	10,000
Selenium	50		U	U	U	U
Silver	NA		U	U	U	U
Sodium	50,000	152,000	310,000	158,000	308,000	392,000
Thallium	10	11.5		U	U	U
Vanadium	NA	104	71	U	U	U
Zinc	5000	503 J	305	U	43	93

Table 6
Troy Chemical RI/RAA
RI Addendum Report

Summary of Inorganics and Field Parameters in Groundwater

Sample ID	NJ Class IIA	MW - 5					Detection/Quant. Limits		
Date Sampled	Groundwater	Total		Dissolved		Low Flow	11/96	5/97	11/97
	Criterion[1]	11/19/96	5/14/97	11/19/96	5/14/97	11/26/97			
Inorganic Elements (ug/l)									
Aluminum	200	**11700**	**506**	U	114	U	200	100	3000
Antimony	20	U	9.59	U	U	U	60.0	8	5
Arsenic	8	**74.3** J	**36**	**74.7** J	7.2	**102**	10.0	4	8
Barium	2000	1110	881	876	1,070	U	200	20	500
Beryllium	20	U	U	U	U	U	5.0	4	1
Cadmium	4	U	0.7	U	U	U	5.0	.6	4
Calcium	NA	182,000	176,000	171,000	168,000	138,000	5000	2000	250
Chromium	100	60.7 J	U	U	U	14	10.0	20	2
Cobalt	NA	U	U	U	U	U	50.0	40	250
Copper	200	U	99	U	48	U	25.0	40	5
Iron	300	**26,600**	**7360**	**14,000**	**1,780**	**8,520**	100	100	25
Lead	10	**97.8** J	**14.4**	U	U	U	3.0	4	5
Magnesium	NA	20200	18,500	20,400	15,500	12,400	5000	2000	25
Manganese	50	**853**	**775**	**744**	**708**	**466**	15.0	10	25
Mercury	2	**28.4** J	U	U	U	U	0.20	.5	1
Nickel	100	U	U	U	U	U	40.0	60	10
Potassium	NA	124,000	69,600	120,000	69,700	64,000	5000	2000	100
Selenium	50	U	8.96	U	U	U	5.0	8	8
Silver	NA	U	1.2	U	U	U	10.0	0.4	1
Sodium	50,000	**106,000**	**2,120,000**	**108,000**	**2,930,000**	**3,000,000**	5000	2000	50
Thallium	10	**12.0**	U	U		10	10.0	8	5
Vanadium	NA	63.6	88	U	125	118	50.0	30	25
Zinc	5000	398 J	454	24.9 J	246	40	20.0	20	20

EMCON

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September 15, 1998
Project 83611-001.000

Mr. Gregory Zalaskus
Case Manager
New Jersey Department of
Environmental Protection
Site Remediation Program
Bureau of State Case Management
P.O. Box 28
401 East State Street
Trenton, New Jersey 08625-0028

Re: Remedial Investigation
MOA Dated July 20, 1993

Dear Mr. Zalaskus:

On behalf of Troy Chemical Corporation, Inc. (Troy), below please find responses to the comments provided in your correspondence of June 25, 1998. In order to facilitate your review, the responses are numbered and presented as they appear in your letter.

As an attachment to this letter, Troy is submitting an RI Addendum Report that presents and interprets additional groundwater and surface water sampling performed in December 1997. These additional results provide confirmation and clarification of site conditions. The data from this report are referenced as appropriate in this response letter.

As indicated in the relevant responses below, Troy intends to continue with additional investigation to characterize the site and provide input into the evaluation of remedial alternatives.

2.1 Project History

1. Agreed: The text will state that the postponement of the creek investigation was a Troy recommendation agreed to by the Department.

2. Agreed: references to the status of the Newark investigation will be deleted.

3. The Department's position on the general scope of the soil investigation is acknowledged. Troy would like to note that, issues of the scope aside, the Department did not provide final comments on the procedural aspects of the program. However, since, Troy proceeded in accordance with the Technical Regulations for Site Remediation ("Tech Regs"), and since

ATTACHMENTS

Table 13
Troy Chemical RI/RAA
Summary of Inorganics in Sediments

Sample ID Date Sampled	Sediment Screening Value[1]	SD-01 5/20/97	SD-02 5/20/97	SD-03 5/20/97	SD-04 5/20/97	SD-05 5/20/97	SD-06 5/20/97	SD-07 5/20/97
Inorganic Elements (mg/kg)								
Aluminum	NA	14200	6280	12300	14100	16600	12200	16500
Antimony	NA	36.0	52.7 U	23.5 U	26.1 U	25.8 U	27.9 U	36.3 U
Arsenic	8.2[2]	**357**	**9.40**	**14.4**	**17.4**	**22.1**	**135**	**52.0**
Barium	NA	344	381	330	284	314	350	297
Beryllium	NA	1.64	1.82	1.17	1.19	1.32	1.32	1.71
Cadmium	1.2[2]	**16.2**	**9.25**	**11.5**	**11.4**	**14.1**	**19.9**	**16.8**
Calcium	NA	13200	6430	11100	12200	11400	12700	13400
Chromium	81[2]	78.7	140	62.0	76.1	89.6	150	152
Cobalt	NA	22.7	19.7	11.3	10.5	22.0	84.5	130
Copper	34[2]	**474**	**364**	**322**	**417**	**521**	**544**	**569**
Iron	NA	47100	27000	23500	26200	32400	31100	41300
Lead	47[2]	**1070**	**1680**	**678**	**765**	**972**	**1860**	**4500**
Magnesium	NA	5560	2490	4480	5820	7220	4760	6350
Manganese	NA	270	118	154	186	261	300	274
Mercury	0.15[2]	**101**	**138**	**21.5**	**7.33**	**12.5**	**1890**	**3030**
Nickel	21[2]	**72.5**	**91.5**	**119**	**64.9**	**77.6**	**62.2**	**83.7**
Potassium	NA	1460	867	1400	1710	1740	1480	1845
Selenium	NA	36.6 U	52.7 U	23.5 U	26.1 U	25.8 U	27.9 U	36.3 U
Silver	1.0[2]	3.96 U	5.47 U	2.35 U	2.49 U	2.63 U	22.0	8.00
Sodium	NA	3030	4560	2240	3870	4850	4360	4660
Thallium	NA	1.46 U	2.11 U	0.940 U	1.04 U	1.03 U	1.11 U	1.45 U
Vanadium	NA	54.1	24.1	46.3	55.0	63.0	55.5	68.0
Zinc	150[2]	**1390**	**906**	**1020**	**1300**	**1650**	**1560**	**1680**
Total Cyanide (mg/kg)	NA	37.1	U	U	22.6	6.96	27.9	22.4
Total Organic Carbon (%)		29.8%	12.5%	27.7%	24.5%	58.3%	24.3%	16.0%
Grain Size								
% Clay		15.0	12.0	12.5	15.4	13.3	10.7	12.4
% Silt		69.2	47.3	53.1	75.2	78.9	60.9	46.3
% Sand		15.8	40.7	34.3	9.4	7.8	28.4	41.3
% Gravel		0.0	0.0	0.0	0.0	0.0	0.0	0.0

NA- Not available

[1] NJDEP, 1997.

[2] Screening Level. NOAA Effects Range-Low (ER-L) values for marine/ estuarine sediments.

[3] MDLs are based on no dilution. As and Hg were analyzed at varying dilutions

Table 13
Troy Chemical RI/RAA
Summary of Inorganics in Sediments

Sample ID Date Sampled	Sediment Screening Value[1]	SD-08 5/20/97	SD-09 5/20/97	SD-10 5/20/97	SD-11 5/20/97	SD-12 5/20/97	SD-13 5/20/97	Detection Limit[3]
Inorganic Elements (mg/kg)								
Aluminum	NA	17100	14200	15300	13300	8900	10600	50.0
Antimony	NA	20.7 U	21.7 U	28.9 U	32.1 U	24.1 U	34.8 U	10.0
Arsenic	8.2[2]	**126**	**294**	**412**	**5760**	**791**	**284**	0.02
Barium	NA	369	330	312	156	153	196	1.00
Beryllium	NA	1.32	1.10	1.29	2.51	1.14	1.48	0.2
Cadmium	1.2[2]	**26.6**	**13.5**	**15.5**	**9.46**	**12.6**	**8.54**	1.0
Calcium	NA	15800	10400	10400	11300	17100	29100	100
Chromium	81[2]	135	113	101	396	56.4	80.4	3.00
Cobalt	NA	235	71.0	33.3	88.0	25.8	19.1	2.00
Copper	34[2]	**544**	**470**	**572**	**3590**	**305**	**254**	2.00
Iron	NA	43200	34000	37300	89000	21000	22100	30.0
Lead	47[2]	**2440**	**1240**	**862**	**1130**	**447**	**489**	10.0
Magnesium	NA	7180	6070	6980	7450	4760	4700	100
Manganese	NA	323	241	304	557	251	362	0.50
Mercury	0.15[2]	**2070**	**449**	**107**	**171**	**1520**	**1010**	0.025
Nickel	21[2]	**81.1**	**72.8**	**92.9**	**948**	**55.8**	**50.2**	3.00
Potassium	NA	1920	1770	1540	1290	898	1410	100
Selenium	NA	20.7 U	21.7 U	28.9 U	32.1 U	24.1 U	34.8 U	10.0
Silver	1.0[2]	20.1	16.1	13.3	18.4	2.46 U	3.65 U	1.00
Sodium	NA	3220	2940	4020	3150	2630	2780	200
Thallium	NA	0.829 U	0.868 U	1.16 U	1.28 U	0.964 U	1.39 U	0.40
Vanadium	NA	77.8	71.3	68.8	58.2	29.2	32.7	1.50
Zinc	150[2]	**1940**	**1770**	**1810**	**2690**	**1170**	**838**	5.00
Total Cyanide (mg/kg)	NA	15.8	U	U	U	U	U	0.05
Total Organic Carbon (%)		17.2%	29.3%	19.7%	17.2%	13.8%	11.5%	5.1-31.3%
Grain Size				default				
% Clay		9.0	9.5	12.2	16.7	16.0	11.0	
% Silt		67.4	53.5	72.2	73.1	65.4	56.6	
% Sand		23.6	37	25.6	10.2	18.6	32.4	
% Gravel		0.0	0.0	0.0	0.0	0.0	0.0	

NA- Not available

[1] NJDEP, 1997.

[2] Screening Level. NOAA Effects Range-Low (ER-L) values for marine/ estuarine sediments.

[3] MDLs are based on no dilution. As and Hg were analyzed at varying dilutions.

REMEDIAL INVESTIGATION REPORT FOR ADDITIONAL SOIL AND GROUND WATER SAMPLING AND REMEDIAL ACTION SELECTION REPORT FOR SOIL TROY CHEMICAL CORPORATION, INC.

for the Property Located at One Avenue L
Newark, New Jersey

Prepared for:

Troy Chemical Corp., Inc.
Newark, New Jersey

September 27, 2000

Prepared by:

Environmental Liability Management, Inc.
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Project Manager

Peter P. Brussock, Ph.D., P.G.
Vice President

Reviewed by:

Joseph R. Fallon, R.E.M.
President

CERTIFICATIONS
N.J.A.C. 7:26E-1.2, *et seq.*

Any person making a submission to the Department required by this chapter and pursuant to N.J.A.C. 7:26E shall include the following signature and notarized certification, for each technical submittal. Additionally, the certification shall indicate the case name and address, case number, type of documents submitted, e.g., Remedial Action Report, for each technical submittal.

TYPE OF DOCUMENT Remedial Investigation Report/Remedial Action Selection Report

CASE NAME Troy Chemical Corporation, Inc.

CASE ADDRESS One Avenue L, Newark, NJ 07105

CASE NUMBER

The following certification shall be signed by:

1. For a corporation; by a principal executive officer of at least the level office of vice president;
2. For a partnership or sole proprietorship, by a general partner of the proprietor, respectively, or;
3. For a municipality, State, Federal or other public agency, by either a principal executive officer or ranking elected official.
4. For persons other than 1 through 3 above, by the person with legal responsibility for the site.

"I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement that I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties."

PRINTED NAME WILLIAM RUDLOF TITLE V. PRES. - OPER.

SIGNATURE [signature] DATE 9-15-00

NOTARY SIGNATURE Margaret Lejins DATE 9-15-00

MARGARET LEJINS-PITTA
A Notary Public of New Jersey
My Commission Expires 10/31/04

EXECUTIVE SUMMARY

The Troy Chemical Corporation, Inc. (Troy) is conducting a remedial investigation (RI) of its active chemical manufacturing facility located at One Avenue L, Newark, Essex County, New Jersey (Figure 1). The property has a long history of industrial operations under numerous owners and is located in an area of similar industrial-use properties surrounding the Troy facility, including the Albert Steel Drum/Prentiss Drug Superfund Site.

The RI is being conducted pursuant to a Memorandum of Agreement (MOA) with the New Jersey Department of Environmental Protection (NJDEP). The results from soil and ground water (shallow and deep) investigations completed during this phase of the RI supplement the data collected from previous investigations completed under the MOA, including soil, ground water, surface water and sediment sampling and analyses (Emcon. 1998a, 1998b). The most recent investigations included soil and ground water sampling consistent with the "Remedial Investigation Workplan for Additional Soil and Ground Water Sampling (RIW) (ELM. 1999)" approved by the NJDEP in a letter dated January 24, 2000. The RIW was developed following the agreement with the NJDEP that, due to the site history and constraints associated with current buildings and operations, a general site-wide characterization could be implemented as part of additional activities required to comply with the Technical Requirements for Site Remediation (N.J.A.C. 7:26E, *et seq.*).

The RI results provide a sufficient database to evaluate the distribution of site-related constituents in soil. An evaluation of the data supports the conclusion that many of the constituents detected can be attributed to historic fill used during the site development. Three primary constituents that may be related to site-operations included benzene, lead and mercury. These constituents were detected at the highest concentrations in AOCs 1, 5, 6 and 10. In some soil samples the concentrations of lead and mercury were very high (lead up to 61,000 mg/kg and mercury up to 4,000 mg/kg); however these concentrations are limited in areal extent and depth, and the data do not support that these concentrations represent a significant source to ground water. Based on the current and future use of the property, a remedial alternatives analysis was conducted for soil considering: (1) No Action;

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Attachment E:	Soil Boring Logs
Attachment F:	Analytical Data (One Copy Only, Bound Separately in 11 Volumes)

predicted to discharge to Pierson's Creek, thereby facilitating substantial attenuation prior to reaching Newark Bay. Because the Troy property is in an area of discharge near Newark Bay, ground water from within the bedrock below the property would be predicted to have an upward head, reducing the potential for transport from within the glacial till to the bedrock. No potable users have been identified downgradient of the site (see well search results, Attachment A), and none is projected in the future, as municipal water is supplied from abundant surface water sources.

Based on the conceptual site model, no direct exposures are predicted for human or ecological receptors on the property, except as related to Pierson's Creek. This is consistent with previous interpretations of data collected during other environmental investigations. For the creek, the RI soil and ground water data were evaluated to determine if any potential sources exist that continue to adversely affect shallow or deep ground water quality in a manner that would adversely affect sediment and surface water in Pierson's Creek and to determine the most appropriate approach for continuing the investigation of Pierson's Creek.

4. REMEDIAL INVESTIGATION

4.1. Objectives

The soil and ground water sampling was conducted to collect additional data necessary to support the development of a Remedial Alternatives Analysis and Remedial Action Selection Report for soil and ground water. Based on the existing data (Emcon. 1998a, 1998b), the primary COCs for both soil and ground water included:

- Mercury
- Lead
- Arsenic (related to historic fill)
- Benzene

(average = 443 μg/l; ND to 2,500 μg/l), and trichloroethene (average = 442; ND to 2,600 μg/l) (Figure 12). MW-2 had the highest VOA concentrations, while MW-1, MW-3, MW-4 and MW-6 had substantially lower constituent concentrations, and no VOAs were detected in MW-5 at concentrations above the ground water quality standards.

Analyses for semi-volatile organic compounds (SVOCs) were performed for MW-6. No SVOCs were detected at concentrations above GWQS. The only pesticide detected was alpha-BHC (0.2 μg/l vs. GWQS of 0.02 μg/l); alpha-BHC was not produced on-site, is not attributable to current or historical site operations, was not detected in MW-6D (see below), and was not detected in soil from AOC 9. No PCBs were detected in MW-6.

Arsenic (average = 277 μg/l; 5.7 to 580 μg/l), lead (average = 9.2 μg/l; ND to 27 μg/l) and mercury (average = 2.8 μg/l; ND to 9.2 μg/l) were the only inorganic constituents detected at concentrations above GWQS in the shallow monitoring wells (Figures 9-11). The heterogeneity of the arsenic concentrations and the lack of any site-related uses of arsenic support the conclusion that the arsenic concentrations are related to the historic fill (see historic fill discussion, Section 5.3), not former site operations. For mercury, previously a significant ground water concern, the concentrations only slightly exceed GWQS (1 μg/l) and were only detected in MW-2 and MW-4 at concentrations greater than GWQS. For lead, the average ground water concentration was less than GWQS (10 μg/l) and only was detected above GWQS in MW-2 and MW-6.

5.1.2. Peat Monitoring Wells

Chlorinated VOAs were detected at concentrations above the ground water quality standards (although NJDEP ground water quality standards are not applicable to the ground water in the peat layer) in MW-2P. The constituents included 1,1-dichloroethane (2,000 μg/l), 1,1-dichloroethene (230 μg/l), tetrachloroethene (33,000 μg/l), and trichloroethene (12,000 μg/l). For MW-4P, benzene (290 μg/l), tetrachloroethene (1.2 μg/l), trichloroethene (3.3 μg/l), and

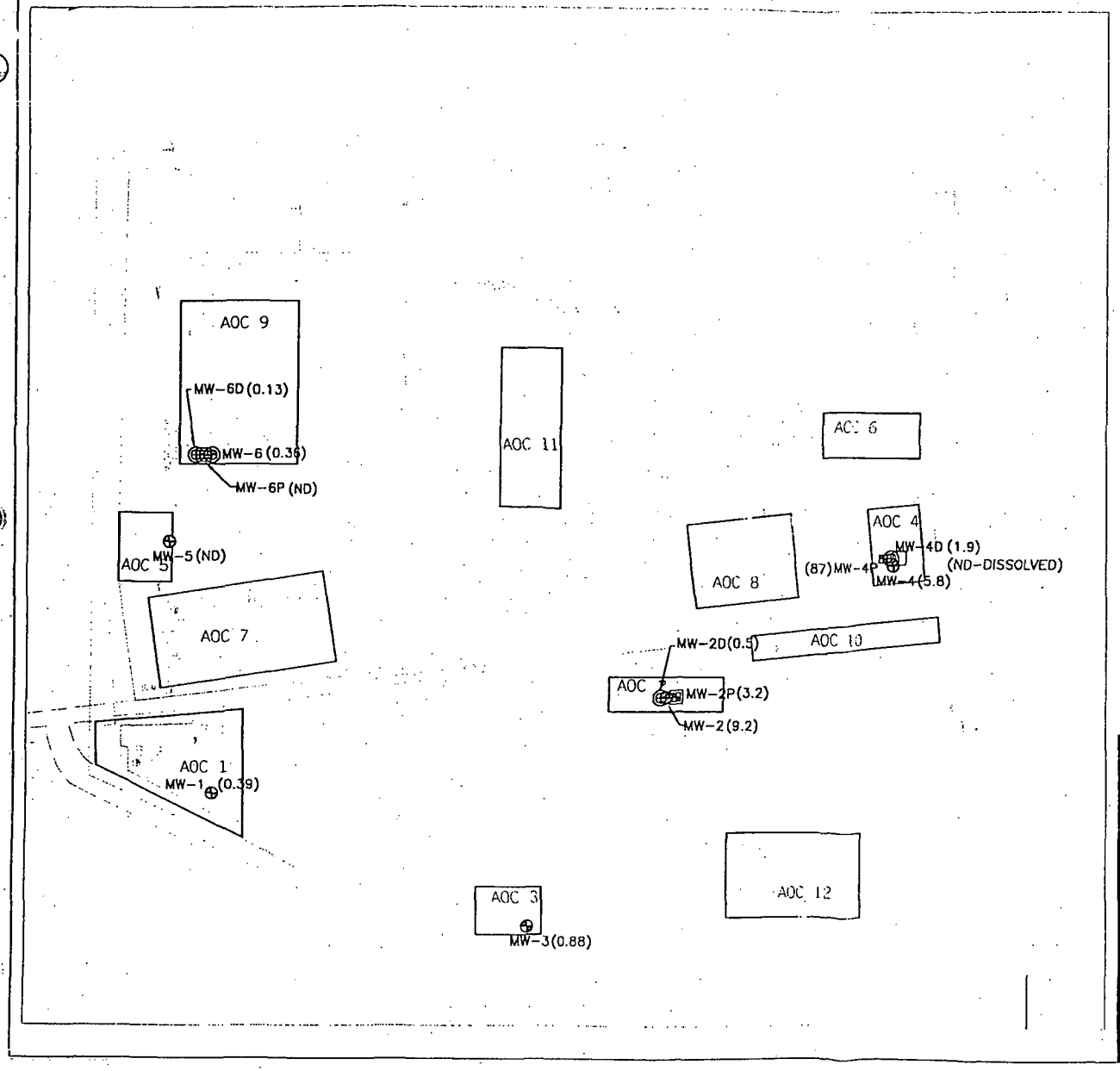
inorganics, pesticides, etc.) detected in soil/fill material across the property are related to historic fill, not to historical operations at the facility.

5.2.2. AOC 1 – Former Mercury Recovery Still and Tank Farm Area

Three additional borings were installed to determine the horizontal and vertical distribution of VOCs detected during previous sampling (Emcon. 1998) (Table 8). Benzene (average = 7,300 μg/kg; ND to 33,000 μg/kg), tetrachloroethene (average = 800 μg/kg; ND to 2,700 μg/kg) and trichloroethene (average = 1,800 μg/kg; ND to 4,100 μg/kg) were detected at concentrations slightly above the New Jersey impact to ground water (IGW) criteria (1,000 μg/kg for these VOCs). During the 1996 sampling, benzene (3,000 μg/kg) along with toluene (200 μg/kg 'J'), xylenes (1,700 μg/kg), tetrachloroethene (700 μg/kg 'J') and several PAHs were detected. Of the PAHs, fluorene (16,000 μg/kg) was detected above the IGW; however it was not detected in the ground water, while others (e.g., benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, etc.) were detected above the non-residential direct contact criteria.

The soil samples were also analyzed for arsenic, lead, and mercury. Arsenic was detected in all six samples (average = 288 mg/kg; 35.3 to 890 mg/kg) with no pattern in the distribution of concentrations. As a result, the arsenic was attributed to the historic fill. For both lead (average = 15,145 mg/kg; 352 to 61,000 mg/kg) and mercury (average = 730 mg/kg; 13.2 to 2,380 mg/kg), the shallow concentrations were substantially higher than deeper concentrations. Arsenic (22.5 mg/kg), copper (694 mg/kg), lead (2,470 mg/kg), and mercury (4290 mg/kg) were detected in TB-1 S-1 during the 1996 RI investigation (Table 2; Emcon. 1998a).

These inorganic constituents were detected at concentrations above the non-residential soil cleanup criteria; however, the fill/soil is below a concrete/asphalt cover that precludes direct contact. Because lead and mercury were not detected in ground water at concentrations above GWQS, the fill/soil does not adversely affect ground water quality.



LEGEND:

- MW-1 — MW-1 MONITORING WELL LOCATION AND ID
- MW-6 — SHALLOW MONITORING WELL LOCATION AND ID
- MW-D — DEEP MONITORING WELL LOCATION AND ID
- MW-2P — PEAT MONITORING WELL LOCATION AND ID
- (87) — ANALYTICAL RESULT IN ug/l
- SOIL BORING LOCATION AND ID
- SANITARY SEWER MANHOLE
- TRENCH DRAIN
- INTERMITTENT DRAINAGE FEATURE
- WATER LINE
- GAS LINE
- PROCESS SEWER
- AOC 1 — AREA OF CONCERN

NOTES:

SOURCE: EMCON, TROY CHEMICAL CORPORATION, INC., NEWARK, NJ, "SITE INVESTIGATION PLAN", FIGURE: 2, DATE: SEPTEMBER 1998.

0 60 120

SCALE: 1" = 60'

TITLE:

FIGURE 13
SUMMARY OF GROUND WATER MERCURY RESULTS

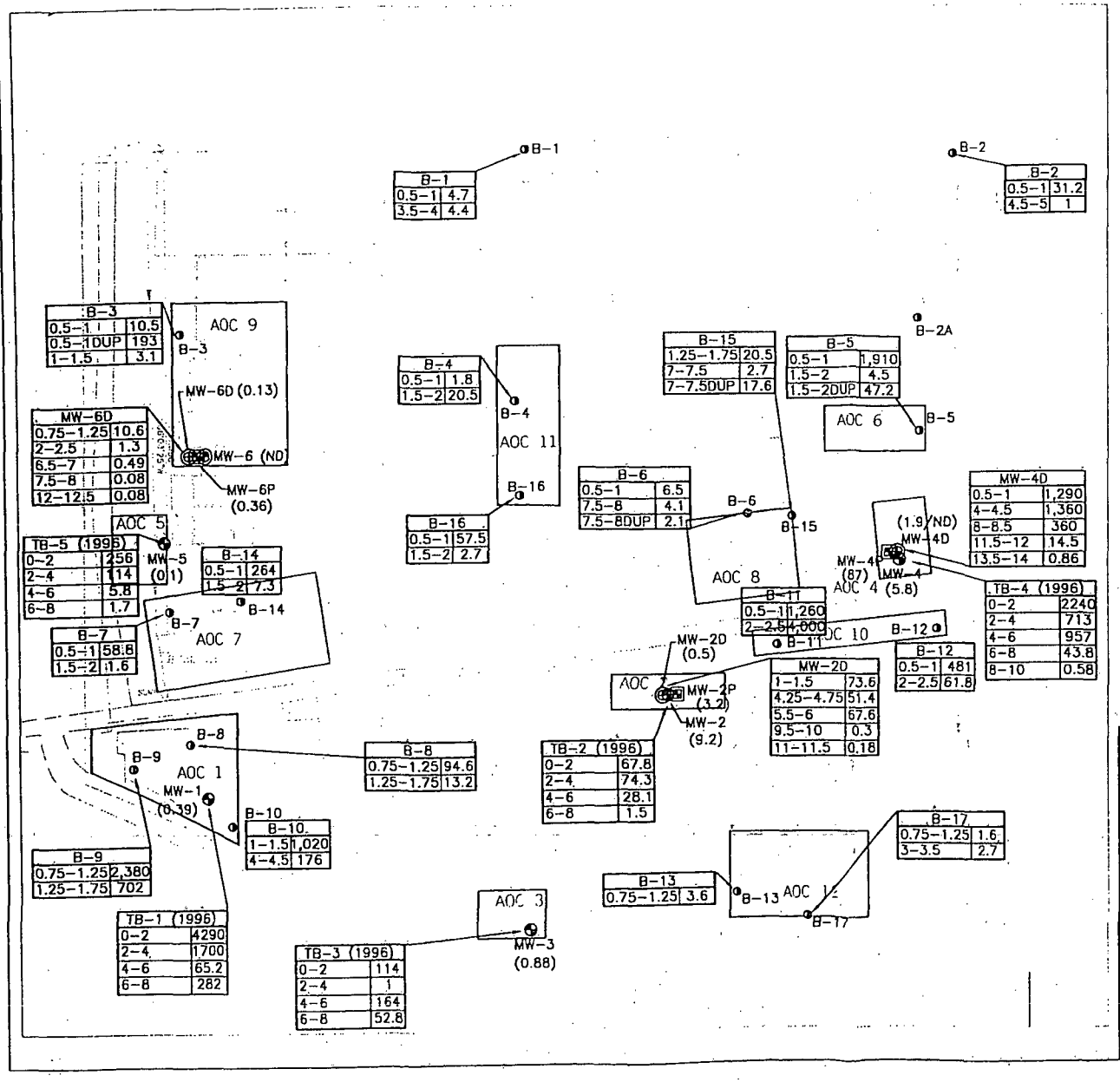
LOCATION: TROY CHEMICAL CORPORATION, INC. NEWARK, NEW JERSEY

DATE: 7/6/00

PROJECT NO.: 95127

FILENAME: 95127_GWDATA

ENVIRONMENTAL LIABILITY MANAGEMENT, INC.



LEGEND:

- MW-1 — MW-1 MONITORING WELL LOCATION AND ID
- MW-6 — SHALLOW MONITORING WELL LOCATION AND ID
- MW-D — DEEP MONITORING WELL LOCATION AND ID
- MW-2P — PEAT MONITORING WELL LOCATION AND ID
- B-1 — SOIL BORING LOCATION AND ID
- SANITARY SEWER MANHOLE
- TRENCH DRAIN
- INTERMITTENT DRAINAGE FEATURE
- WATER LINE
- GAS LINE
- PROCESS SEWER
- AOC 1 — AREA OF CONCERN
- B-5 / 0.5-1 9.7 / 1.5-2 4.8 / 1.5-2DUP 9.3 — SOIL SAMPLE ID, SAMPLE DEPTH (FEET) AND ANALYTICAL RESULT (mg/kg)
- (9.2) — GROUND WATER ANALYTICAL RESULT (ug/l)

NOTES:

SOURCE: EMCON, TROY CHEMICAL CORPORATION, INC., NEWARK, NJ, "SITE INVESTIGATION PLAN", FIGURE: 2, DATE: SEPTEMBER 1998.

0 60 120

SCALE: 1" = 60'

TITLE:

FIGURE 11

SUMMARY OF MERCURY SOIL AND GROUND WATER RESULTS

LOCATION: TROY CHEMICAL CORPORATION, INC. NEWARK, NEW JERSEY

DATE: 7/6/00

PROJECT NO.: 95127

FILENAME: 95127_SOILDATA

ENVIRONMENTAL LIABILITY MANAGEMENT, INC.

Table 2: Analytical Results for Soil Samples Collected in 1996 Remedial Investigation
Troy Chemical Corporation Inc.
Newark, New Jersey

Sample ID Date Sampled Sample Depth	TB-1 S-1 10/07/96 0-2'	TB-1 S-2 10/07/96 2-4'	TB-1 S-3 10/07/96 4-6'	TB-1 S-4 10/07/96 6-8'	TB-2 S-1 10/10/96 0-2'	TB-2 S-2 10/10/96 2-4'	TB-2 S-3 10/10/96 4-6'	TB-2 S-4 10/10/96 6-8'	TB-3 S-1 10/08/96 0-2'	TB-3 S-2 10/08/96 2-4'	TB-3 S-3 10/08/96 4-6'	TB-3 S-4 10/08/96 6-8'
Inorganic Elements(mg/kg)												
Aluminum	4630 J	3400 J	7750 J	8030 J	4970	4660	4670	8080	6440 J	1170 J	15700 J	5080 J
Antimony	11.0	3.0 J	3.2 J	2.5	1.0 J	1.8 J	1.2 J	1.3 J	6.5 J	1.4	5.4 J	1.6
Arsenic	**22.5 J**	**29.2 J**	**187 J**	**859 J**	**98.3**	**25.7**	**33.4**	1.4 J	**179 J**	**25.8 J**	**212 J**	**266 J**
Barium	318.0 J	72.3 J	145 J	75.2 J	53.5	212	39.5 J	167	127 J	35.4 J	76.9 J	99.7 J
Beryllium	0.82	0.23	0.44 J	0.42	0.25 J	0.25 J	0.21	0.47 J	0.28 J	0.24	0.63 J	0.29 J
Cadmium	27.1 J	8.8 J	4.5 J	3.5 J	0.92 J	2.8 J	0.80 J	1.9 J	2.5 J	0.55 J	8.5 J	0.69 J
Calcium	18300	7760	4000	7120	5150	15600	4710	1830	4880	542	3760	4020
Chromium	47.0 J	50.0 J	77.3 J	43.4 J	9.6	20.3	7.3	14.0	68.9 J	6.1 J	100 J	7.6 J
Cobalt	570	21.9	8.8 J	10.0 J	4.0 J	6.4 J	3.5 J	8.7 J	10.9 J	1.8 J	15.7	1.6 J
Copper	**694 J**	221 J	120 J	46.6 J	57.4 J	39.8 J	12.6 J	13.3 J	289 J	48.7 J	166 J	10.3 J
Iron	54700 J	26400 J	22800 J	13900 J	7600	6760	4210	13000	13300 J	2470 J	81500 J	5660 J
Lead	**2470 J**	256 J	587 J	104 J	77.5 J	558 J	45.0 J	9.3 J	**739 J**	73.9 J	406 J	21.8 J
Magnesium	3160	1450	2870	1840	1310	1680	998.	4870	1590	74.0 J	383	1370
Manganese	2040 J	453 J	267 J	386 J	151 J	118 J	73.6 J	292 J	159 J	16.5 J	377 J	96.0 J
Mercury	**4290**	**1700**	65.2	**282**	67.8 J	74.3 J	28.1 J	1.5 J	114	1.0	164	52.8
Nickel	92.9 J	40.3 J	21.8 J	14.7 J	6.4 J	11.2	5.1 J	19.7	14.7 J	4.9 J	23.9 J	3.9 J
Potassium	918	207 J	932	562	488	446	309	1320	319	56.6 J	1380	228 J
Selenium	6.6	4.2	4.1	3.4	1.9 J	0.84 J	1.5 J	2.0 J	3.3	1.0 J	8.5	1.7
Silver	48.4	25.9	1.2 J	6.6	0.17	0.44 J	0.21	0.21	2.2 J	0.24	1.1 J	0.96 J
Sodium	U	215 J	1240 J	2380 J	195	403	1120	1590	602 J	190 J	3780 J	1200 J
Thallium	1.9	U	2.0	U	U	U	U	U	U	U		U
Vanadium	36.5	30.8	28.3	18.2 J	10.4	10.3	7.9 J	16.9	26.2	11.8	13.8	10.7 J
Zinc	721 J	252 J	1140 J	169 J	93.9	364	55.8	49.9	549 J	163 J	312 J	21.1 J
Classical Chemistry												
Bromide (mg/kg)	47.0	48.1	53.4	91.2	47.2	52.2	49.6	47.9	53.7	55.2	54.5	59.7
Iodide (mg/kg)	47.0	48.1	53.4	91.2	47.2	52.2	49.6	47.9	53.7	55.2	54.5	59.7
Hydrous Metal Oxide (%)	16.7%	10.7%	32.1%	8.82%	9.68%	8.57%	30.0%	46.9%	2.86%	2.00%	2.94%	18.2%
Chloride (mg/kg)	128	1510	78.9	287	179	373	472	277	108	58.4	64.9	242
pH (S.U.)	9.83	9.95	7.72	8.01	10.9	11.6	10.4	7.92	7.90	7.89	7.52	6.68
Organic Carbon (mg/kg)	121,000	160,000	160,000	108,000	7860	92,900	11,600	2420	160,000	160,000	136,000	21,300

Table 2: Analytical Results for Soil Samples Collected in 1996 Remedial Investigation
Troy Chemical Corporation Inc.
Newark, New Jersey

Sample ID Date Sampled Sample Depth	TB-4 S-1 10/09/96 0-2'	TB-4 S-2 10/09/96 2-4'	TB-4 S-3 10/09/96 4-6'	TB-4 S-4 10/09/96 6-8'	TB-4 S-5 10/09/96 8-10'	TB-5 S-1 10/07/96 0-2'	TB-5 S-2 10/07/96 2-4'	TB-5 S-3 10/07/96 4-6'	TB-5 S-4 10/07/96 6-8'
Inorganic Elements(mg/kg)									
Aluminum	4060 J	4990 J	4020 J	5250 J	9450	5770 J	6190 J	13600 J	4310 J
Antimony	7.5 J	3.5 J	8.4 J	44.3	1.4 J	5.2 J	11.3 J	1.4	1.2
Arsenic	18.1 J	**49.4** J	18.1 J	**20.2** J	**80**	13.1 J	**65.9** J	**28.9** J	**26.3** J
Barium	106 J	81.3 J	92.2 J	159 J	28.7 J	125 J	3380 J	75.7 J	39.2 J
Beryllium	0.38 J	0.89 J	0.35 J	0.30 J	0.27 J	0.26 J	0.38 J	0.42 J	0.20
Cadmium	3.9 J	2.5 J	3.7 J	7.0 J	0.72 J	3.2 J	87.8 J	1.3 J	0.75 J
Calcium	15900	25600	27100	23000	1140	16000	14600	2080	1320
Chromium	35.3 J	27.1 J	28.2 J	82.0 J	21.7	56.7 J	798 J	52.2 J	17.5 J
Cobalt	26.2	13.3	16.8	4.6 J	3.0 J	21.5	25.7	4.5 J	2.7 J
Copper	211 J	112 J	143. J	190 J	11.7 J	129 J	842 J	35.2 J	19.0 J
Iron	14200 J	10800 J	13400 J	13800 J	4230	**24500** J	20800 J	8250 J	4430 J
Lead	**768** J	588 J	546 J	**1810** J	29.6 J	430 J	**10800** J	103 J	40.2 J
Magnesium	2580	3070	3080	1570	1250	2290	2630	408	300
Manganese	237 J	202 J	318 J	196 J	31.0 J	180 J	214 J	48.0 J	20.5 J
Mercury	**2240**	**713**	**957**	43.8	0.58 J	256.	114	5.8	1.7
Nickel	39.8 J	21.0 J	26.0 J	36.4 J	11.9	38.3 J	47.7 J	6.9 J	5.2 J
Potassium	318	306		470	428	1000	720	731	262
Selenium	1.8	2.5	2.5	3.5	2.1 J	3.0	3.0	2.4	1.6
Silver	5.1	5.8	5.8	4.5	U	4.7	8.5	U	U
Sodium	457 J	570 J	601 J	803 J	753	551 J	1200 J	2690 J	1560 J
Thallium	U	U	U	U	U	U	U	U	U
Vanadium	20.9	17.5	25.4	75.7	20.6	26.6	59.1	18.6	9.7 J
Zinc	447 J	251 J	296 J	347 J	87.3	277 J	3990 J	113 J	63.8 J
Classical Chemistry									
Bromide (mg/kg)	44.3	45.3	47.2	58.5	51.5	45.4	54.7	54.6	53.4
Iodide (mg/kg)	44.3	45.3	47.2	58.5	51.5	45.4	54.7	197	193
Hydrous Metal Oxide (%)	10.3%	6.06%	9.38%	21.4%	21.9%	14.9%	52.8%	0.139	14.8%
Chloride (mg/kg)	32.7	54.3	110	451	167	59.1	390	1360	1000
pH (S.U.)	8.93	9.46	9.02	9.40	7.90	10.6	8.45	7.76	7.58
Organic Carbon (mg/kg)	77,100	49,000	60,800	102,000	16,300	160,000	160,000	160,000	160,000

Table 6: Ground Water Analytical Results for May 2000
Troy Chemical Corporation, Inc.
Newark, New Jersey

Sample ID	New Jersey Higher of PQLs and Ground Water Quality Criteria (ug/l)	MW-1	MW-2	MW-2P	MW-2D	MW-3	MW-4	MW-4P	MW-4D
Lab Sample Number		202222	202221	202219	202220	202223	202216	202229	202217
Sampling Date		05/03/00	05/03/00	05/03/00	05/03/00	05/03/00	05/03/00	05/03/00	05/03/00
Matrix		WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
Dilution Factor		NA	NA	NA	NA	NA	NA	NA	NA
Units		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
METALS									
Antimony	20	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	13.5 U
Arsenic	8	**580**	**246**	**28.6**	3.6 U	**462**	5.7	**215**	**94.7**
Beryllium	20	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	**22.7**
Cadmium	4	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	**25.0**	**5.9**
Chromium	100	1.5	7.9	1.1 U	58.3	1.9	1.1 U	27.6	**507**
Copper	1,000	2.7 U	14.0	2.7 U	12.8	2.7 U	4.2	54.3	545
Lead	10	2.1 U	**27.0**	2.1 U	2.1 U	2.1 U	5.7	**213**	**274**
Mercury	2	0.39	**9.2**	**3.2**	0.50	0.88	**5.8**	**87.0**	1.9
Nickel	100	4.4	9.9	4.0	12.7	3.1	1.4 U	27.9	**799**
Selenium	50	4.5 U	4.5 U	4.5 U	9.0 U	4.5 U	4.5 U	4.5 U	13.5 U
Silver	NA	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	3.0	3.3 U
Thallium	10	4.1 U	8.2 U	8.2 U	4.1 U	4.1 U	4.1 U	4.1 U	*12.3 U*
Zinc	5,000	5.3	42.5	9.3	13.5	7.2	7.6	134	1980

Qualifiers

U - The compound was not detected at the indicated concentration.

B - Reported value is less than the Method Detection Limit but greater than or equal to the Instrument Detection Limit.

N - The spiked sample recovery is not within control limits.

NR - Not analyzed.

* During the sampling, the sample for MW-6 was labelled MW-6P and vice versa.

Table 6: Ground Water Analytical Results for May 2000
Troy Chemical Corporation, Inc.
Newark, New Jersey

mple ID	New Jersey Higher of	MW-4D_Dup	MW-4D-Diss	MW-5	MW-6P	MW-6	MW-6D	MW-6D_Dup	Trip_Blank
ıb Sample Number	PQLs and	202218	202232	202224	202225	202228	202226	202227	202230
mpling Date	Ground Water Quality	05/03/00	05/03/00	05/03/00	05/03/00	05/03/00	05/03/00	05/03/00	05/02/00
atrix	Criteria (ug/l)	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WATER
lution Factor		NA	NA	NA	NA	NA	NA	NA	
nits		ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	
ETALS									
Antimony	20	9.0 U	4.5 U	4.5 U	4.5 U	9.0 U	4.5 U	4.5 U	NR
Arsenic	8	**65.5**	3.6 U	325	42.0	3510	14.3	12.2	NR
Beryllium	20	13.5	0.20 U	0.20 U	0.20 U	21.1	0.20 U	0.20 U	NR
Cadmium	4	0.80 U	0.40 U	0.40 U	0.64	28.7	0.50	0.40 U	NR
Chromium	100	**329**	1.1 U	5.7	7.1	1130	10.5	9.9	NR
Copper	1,000	339	2.7 U	2.7 U	5.8	2950	10.0	12.9	NR
Lead	10	**172**	2.1 U	2.1 U	19.6	11800	21.0	21.8	NR
Mercury	2	1.0	0.10 U	0.10 U	0.10 U	0.36	0.13	0.73	NR
Nickel	100	**481**	2.4	5.3	7.4	503	25.1	24.2	NR
Selenium	50	9.0 U	4.5 U	9.0 U	4.5 U	45.0 U	4.5 U	4.5 U	NR
Silver	NA	2.2 U	1.1 U	1.1 U	1.1 U	15.4	1.1 U	1.1 U	NR
Thallium	10	8.2 U	4.1 U	4.1 U	4.1 U	8.2 U	4.1 U	4.1 U	NR
Zinc	5,000	1210	5.2 U	5.5	14.0	4030	15.8	13.6	NR

ualifiers

U - The compound was not detected at the indicated concentration.
B - Reported value is less than the Method Detection Limit but greater than or equal to the Instrument Detection Limit.
N - The spiked sample recovery is not within control limits.
NR - Not analyzed.

* During the sampling, the sample for MW-6 was labelled MW-6P and vice versa.

Table 7: Comparison of Ground Water Concentrations of Chlorinated Volatile Organic Constituents, Arsenic, Lead, and Mercury Concentrations in Shallow, Peat, Deep Wells - May 2000
Troy Chemical Corporation, Inc.
Newark, New Jersey

Constituent	MW-2	MW-2P	MW-2D	MW-4	MW-4P	MW-4D	MW-6	MW-6P	MW-6D
Total PCE, TCE	5,100	45,000	1,750	ND	4.4	3.5	ND	ND	ND
Total DCE, VC	2,970	ND	ND	ND	16.2	ND	ND	ND	ND
Arsenic	246	28.7	ND	5.7	215	94.7	42	3510	14.3
Lead	14	ND	ND	5.7	213	274	19.6	11.8	21.8
Mercury	27	3.2	0.5	5.8	87	1.9	ND	0.36	0.73

Note: MW-4P and MW-6P were highly turbid.

Table 20: Summary of Primary Inorganic Constituent Concentrations in Ground Water 1996 to 2000
Troy Chemical Corporation, Inc.
Newark, New Jersey

Sample ID	NJ Class IIA	MW-1														
Date Sampled	Ground Water	Total				Dissolved				Low Flow						
	Criterion	11/19/96		5/14/97		11/19/96		5/14/97		11/26/97		11/24/98		7/1/99	5/3/00	
Inorganic Elements (ug/l)																
Antimony	20	*60*	*U*	8	U	*60*	*U*	8	U	5	U	*60*	*U*	NS	4.5	U
Arsenic	8	**1320**	J	**840**		**887**	J	**690**		**819**		**890**		NS	**580**	
Barium	2000	484		467		342		330		500	U	296		NS		
Beryllium	20	5	U	4	U	5	U	4	U	1	U	5	U	NS	0.20	U
Cadmium	4	*5*	*U*	1.3		*5*	*U*	0.6	U	4	U	5	U	NS	0.40	U
Chromium	100	**150**	J	57		10	U	20	U	5.3		10	U	NS	1.5	
Cobalt	NA	50	U	40	U	50	U	40	U	250	U	50	U	NS		
Copper	1000	25	U	40	U	25	U	40	U	5	U	20	U	NS	2.7	U
Iron	300	**32300**		**36900**		**18500**		**20300**		**13600**		**17000**		NS		
Lead	10	**216**	J	**27.2**		3	U	4	U	5	U	8.51		NS	2.1	U
Magnesium	NA	28800		30300		28600		28000		21300		25300		NS		
Manganese	50	**2030**		**2440**		**1580**		**1630**		**1340**		**1580**		NS		
Mercury	2	**1300**	J	**3.5**		1	J	0.5	U	1.82		**5.59**		NS	0.39	
Nickel	100	40	U	60	U	40	U	60	U	10	U	40	U	NS	4.4	
Selenium	50	5	U	8	U	5	U	8	U	8	U	5	U	NS		
Silver	NA	10	U	0.4	U	10	U	0.4	U	1	U	10	U	NS	1.1	U
Thallium	10	10	U	8	U	10.3		8	U	5	U	14.6		NS	4.1	U
Vanadium	NA	50	U	34		50	U	30	U	25	U	50	U	NS		
Zinc	5000	441	J	270		20	U	29		91		12.7		NS	5.3	

Notes:
J: Not detected at listed detection limit.
J: Estimated concentration, detection below quantitation limit.
Italics: detection limit exceeds GWQS
Bold: Concentrations exceeds GWQS

Table 20: Summary of Primary Inorganic Constituent Concentrations in Ground Water 1996 to 2000
Troy Chemical Corporation, Inc.
Newark, New Jersey

Sample ID	NJ Class IIA	MW - 2															
Date Sampled	Ground Water	Total				Dissolved				Low Flow							
	Criterion	11/19/96		5/14/97		11/19/96		5/14/97		11/26/97		11/23/98		7/1/99		5/3/00	
Inorganic Elements (ug/l)																	
Antimony	20	*60*	*U*	8	U	*60*	*U*	8	U	5	U	*60*	*U*	1.5	U	4.5	U
Arsenic	8	**258**	J	**197**		**317**	J	**82**		**355**		**477**		**330**		**246**	
Barium	2000	200	U	149		200	U	86		500	U	32.5		26			
Beryllium	20	5	U	4	U	5	U	4	U	1	U	5	U	0.86	U	0.20	U
Cadmium	4	*5*	*U*	**4.6**		*5*	*U*	0.6	U	4	U	5	*U*	1.2	U	0.40	U
Chromium	100	10	U	20	U	10	U	20	U	5.9		10	U	63		7.9	
Cobalt	NA	50	U	40	U	50	U	40	U	250	U	50	U				
Copper	1000	25	U	40	U	25	U	50		5	U	20	U	12		14.0	
Iron	300	**5590**		**7210**		**3690**		**447**		**9630**		**9340**					
Lead	10	9.5	J	**21**		3	U	4	U	5	U	7.49		**19**		**27.0**	
Magnesium	NA	40500		24700		39200		20600		48600		126000					
Manganese	50	**2090**		**1630**		**1920**		**1060**		**3800**		**11200**					
Mercury	2	0.2	U	0.5	U	0.2	U	0.5	U	1	U	0.3	U	0.97		9.2	
Nickel	100	40	U	60	U	40	U	60	U	10	U	40	U	21		9.9	
Selenium	50	5	U	8	U	5	U	8	U	8	U	10	U	3.7	U		
Silver	NA	10	U	0.4	U	10	U	0.4	U	1	U	10	U	0.78	U	1.1	U
Thallium	10	**11.3**		8	U	10	U	8	U	5	U	15.6		3.6	U	8.2	U
Vanadium	NA	50	U	30	U	50	U	30	U	25	U	50	U				
Zinc	5000	50.9	J	114		20	U	28		84		10	U	40		42.5	

Notes:
J: Not detected at listed detection limit.
J: Estimated concentration, detection below quantitation limit.
Italics: detection limit exceeds GWQS
Bold: Concentrations exceeds GWQS

Table 20: Summary of Primary Inorganic Constituent Concentrations in Ground Water 1996 to 2000
Troy Chemical Corporation, Inc.
Newark, New Jersey

Sample ID	NJ Class IIA	MW - 3															
Date Sampled	Ground Water	Total				Dissolved				Low Flow							
	Criterion	11/19/96		5/14/97		11/19/96		5/14/97		11/26/97		11/24/98		7/1/99		5/3/00	
Inorganic Elements (ug/l)																	
Antimony	20	*60*	*U*	8	U	*60*	*U*	8	U	5	U	*60*	*U*	1.5	U	4.5	U
Arsenic	8	**343**	J	**540**		**401**	J	**670**		**350**		**445**		**400**		**462**	
Barium	2000	200	U	211		200	U	124		500	U	133		100			
Beryllium	20	5	U	4	U	5	U	4	U	1	U	5	U	0.86	U	0.20	U
Cadmium	4	*5*	*U*	0.6	U	*5*	*U*	0.6	U	4	U	*5*	*U*	1.2	U	0.40	U
Chromium	100	66.1	J	73		10	U	20	U	4.6		10	U	34			
Cobalt	NA	50	U	40	U	50	U	40	U	250	U	50	U			1.9	
Copper	1000	25	U	40	U	25	U	40	U	5	U	88.4		8.2			
Iron	300	**18800**		**22500**		**10400**		**10200**		**10100**		**12200**				2.7	U
Lead	10	**155**	J	**17.3**		3	U	4	U	5	U	6.24		**25**			
Magnesium	NA	8960		9030		8340		8390		7330		9170				2.1	U
Manganese	50	**733**		**788**		**614**		**630**		**445**		**723**					
Mercury	2	**2040**	J	**8.4**		1.1	J	1	U	**11.8**		**24.2**		**100**		0.88	
Nickel	100	40	U	60	U	40	U	60	U	10	U	40	U	12	U	3.1	
Selenium	50	5	U	8	U	5	U	8	U	8	U	5	U	3.7	U		
Silver	NA	10	U	0.4	U	10	U	0.4	U	1	U	10	U	0.78	U	1.1	U
Thallium	10	10	U	8	U	10.4		8	U	5	U	10	U	3.6	U	4.1	U
Vanadium	NA	50	U	30	U	50	U	30	U	25	U	50	U				
Zinc	5000	239	J	205		31.4	J	48		51		10	U	38	U	7.2	

Notes:
U: Not detected at listed detection limit.
J: Estimated concentration, detection below quantitation limit.
Italics: detection limit exceeds GWQS
Bold: Concentrations exceeds GWQS

Table 20: Summary of Primary Inorganic Constituent Concentrations in Ground Water 1996 to 2000
Troy Chemical Corporation, Inc.
Newark, New Jersey

Sample ID	NJ Class IIA	MW - 4															
Date Sampled	Ground Water	Total				Dissolved				Low Flow							
	Criterion	11/19/96		5/14/97		11/19/96		5/14/97		11/26/97		11/24/98		7/1/99		5/3/00	
Inorganic Elements (ug/l)																	
Antimony	20	*60*	*U*	8	U	*60*	*U*	8	U	5	U	NS		1.5	U	4.5	U
Arsenic	8	10	U	11		**25.8**	J	6		**19.7**		NS		**10**		5.7	
Barium	2000	355		213		210		104		500	U	NS		110			
Beryllium	20	5	U	4	U	5	U	4	U	1	U	NS		0.86	U	0.20	U
Cadmium	4	*5*	*U*	0.7		*5*	*U*	0.6	U	4	U	NS		1.2	U	0.40	U
Chromium	100	33.2	J	27		10	U	20	U	4		NS		84		1.1	U
Cobalt	NA	50	U	40	U	50	U	40	U	250	U	NS					
Copper	1000	25	U	40	U	25	U	40	U	19		NS		7.3		4.2	
Iron	300	**18900**		**14500**		**3050**		**2120**		**6180**		NS					
Lead	10	**577**	J	**105**		3	U	4	U	**42.6**		NS		**39**		5.7	
Magnesium	NA	17300		11300		15000		10100		12900		NS					
Manganese	50	**1060**		**631**		**759**		**458**		**549**		NS					
Mercury	2	**2460**	J	0.5	U	0.5	U	0.5	U	1	U	NS		1		5.8	
Nickel	100	40	U	60	U	40	U	60	U	10	U	NS		12	U	1.4	U
Selenium	50			8	U	5	U	8	U	8	U	NS		3.7	U		
Silver	NA			0.4	U	10	U	0.4	U	1	U	NS		0.78	U	1.1	U
Thallium	10	**11.5**				10	U	8	U	5	U	NS		3.6	U	4.1	U
Vanadium	NA	104		71		50	U	30	U	25	U	NS					
Zinc	5000	503	J	305		20	U	43		93		NS		38	U	7.6	

Notes:
U: Not detected at listed detection limit.
J: Estimated concentration, detection below quantitation limit.
Italics: detection limit exceeds GWQS
Bold: Concentrations exceeds GWQS

Table 20: Summary of Primary Inorganic Constituent Concentrations in Ground Water 1996 to 2000
Troy Chemical Corporation, Inc.
Newark, New Jersey

Sample ID	NJ Class IIA	MW - 5														MW-6	
Date Sampled	Ground Water	Total				Dissolved				Low Flow							
	Criterion	11/19/96		5/14/97		11/19/96		5/14/97		11/26/97		11/23/98		7/1/99		5/3/00	
Inorganic Elements (ug/l)																	
Antimony	20	*60*	*U*	9.59		*60*	*U*	8	U	5	U	*60*	*U*	1.5	U	4.5	U
Arsenic	8	**74.3**	J	**36**		**74.7**	J	7.2		**102**		**244**		**510**		**325**	
Barium	2000	1110		881		876		1070		500	U	373		240			
Beryllium	20	5	U	4	U	5	U	4	U	1	U	5	U	0.86	U	0.20	U
Cadmium	4	*5*	*U*	0.7		*5*	*U*	0.6	U	4	U	*5*	*U*	1.2	U	0.40	U
Chromium	100	60.7	J	20	U	10	U	20	U	14.3		16.8		**460**		5.7	
Cobalt	NA	50	U	40	U	50	U	40	U	250	U	50	U				
Copper	1000	25	U	99		25	U	48		5	U	20	U	9.3		2.7	U
Iron	300	**26600**		**7360**		**14000**		**1780**		**8520**		**3920**					
Lead	10	**97.8**	J	**14.4**		3	U	4	U	5	U	7.54		3.1	U	2.1	U
Magnesium	NA	20200		18500		20400		15500		12400		21800					
Manganese	50	**853**		**775**		**744**		**708**		**466**		**407**					
Mercury	2	**28.4**	J	0.5	U	0.2	U	0.5	U	1	U	0.3	U	0.18	U	0.10	U
Nickel	100	40	U	60	U	40	U	60	U	10	U	40	U	12	U	5.3	
Selenium	50	5	U	8.96		5	U	8	U	8	U	10	U	3.7	U	9.0	U
Silver	NA	10	U	1.2		10	U	0.4	U	1	U	10	U	0.78	U	1.1	U
Thallium	10	**12**		8	U	10	U			9.5		**19.8**		3.6	U	4.1	U
Vanadium	NA	63.6		88		50	U	125		118		74.6					
Zinc	5000	398	J	454		24.9	J	246		40		32.2		38	U	5.5	

Notes:
U: Not detected at listed detection limit.
J: Estimated concentration, detection below quantitation limit.
Italics: detection limit exceeds GWQS
Bold: Concentrations exceeds GWQS

CLEAN SLUDGE COALITION

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A Project of the Ironbound Community Corporation

Board Members:
Clean Ocean Action
Concerned Citizens, Linden
Cornucopia Network
Environmental Defense Fund
Ironbound Committee Against Toxic Waste
Natural Resources Defense Council
NJ Environmental Federation
NJ Grass Roots Environmental Organization
NJ Public Interest Research Group

Associate Members:
American Littoral Society
Alliance for a Living Ocean
Concerned Citizens, Rahway
Eco-Alert - Essex Co.
Friends of Clearwater, Monclair Co.
Monclair U.K. - U.S.A. Chapter
Speak Out for Clean Air - Middlesex Co.
St. Joseph's Social Services, Elizabeth
Stop The Stack, Monmouth Co.

About the Clean Sludge Coalition -

The Clean Sludge Coalition (CSC) is an organization of national, state, and local groups advocating the environmentally sound utilization of clean sewage sludge. CSC was formed in 1989 when 5 of the 6 New Jersey sewerage authorities banned from dumping sludge into the ocean chose incineration as their long term disposal method. The CSC was instrumental in convincing all these sewerage authorities to examine beneficial uses of their sludge, such as fertilizer, topsoil replacement, soil conditioner or landfill cover. Due to the efforts of the CSC, the New Jersey Department of Environmental Protection and Energy (DEPE) has issued "Sludge Management Policy Guidelines" that advocate "pollution prevention, advanced pretreatment and beneficial uses of sludge as preferred management alternatives" and calls incineration a "disfavored method of long-term sludge management." The CSC will continue its efforts to ensure this new DEPE policy is implemented and that the sewerage authorities successfully follow through with their plans to implement beneficial use. CSC will also continue to educate the public on the need to beneficially use clean sludge.

About this report-

The report was written by Jeannie Jenkins, CSC staff scientist. The CSC would like to thank the following people and organizations for making this report possible: RTK-NET for providing access to the Toxic Release Inventory (TRI) data used in this report. We would also like to thank the Geraldine R. Dodge Foundation, the Fund for New Jersey and the New Jersey Environmental Endowment for helping to fund this report and the work of the Clean Sludge Coalition.

Arnold Cohen, Coordinator

Jeannie Jenkins, Staff Scientist

KL L02137

in reclamation projects. Sludges not meeting Class B criteria generally have limited use in reclamation projects and as landfill cover.

PVSC's sludge is currently classified as a Class B sludge. PVSC's sludge fails to meet the Class A criteria set by NJDEPE for copper and zinc according to the Hazen and Sawyer report (4). Existing sludge quality is compared to NJDEPE Class A standards in Table 1.

Both the USEPA and NJDEPE are presently reassessing sludge contaminant limits. Future limits from both agencies are anticipated to be more stringent for some metals than current NJDEPE Class A limits.

TABLE 1
EXISTING SLUDGE CONDITIONS

	NJDEPE CLASS A (mg/kg)	PVSC SLUDGE QUALITY (mg/kg)	METAL REDUCTION REQUIRED
Arsenic	10	0.98	No
Cadmium	20	18.2	No
Chromium	1,000	559.	No
Copper	600	612	Yes
Lead	2,400	722	No
Mercury	10	2.8	No
Molybdenum	----	43.4	No
Nickel	625	61.6	No
Selenium	----	0.84	No
Zinc	1,200	2,275	Yes

Note: Existing sludge quality numbers are based on geometric means for 1989 and 1990.

Adapted from Hazen and Sawyer, Beneficial Use of Sludge Study, for PVSC (Draft), January 1992.

A sludge quality assessment performed by Hazen and Sawyer for PVSC (5) examined sludge quality under four scenarios. The worst case included the loss of pulp wastes from two paper companies in the service area, Garden State Paper Company and Marcal Paper Mills. According to Hazen and Sawyer, these two companies contribute large quantities of wastes containing relatively low levels of contaminants.

Loss of the pulp wastes from these facilities would result in increased levels of contaminants due to less dilution of contaminants in the sludge. Under the scenario offering the highest quality sludge, both paper companies continue to discharge industrial wastes to PVSC.

Table 2, adapted from the Hazen and Sawyer report, demonstrates the relationship between future sludge quality and the anticipated USEPA and NJDEPE regulatory contaminant levels if no further improvements in PVSC sludge quality are made.

Table 2
FUTURE SLUDGE CONDITIONS

	ANTICIPATED REGULATORY LIMITS (mg/kg)	PVSC SLUDGE QUALITY (mg/kg)	METAL REDUCTION REQUIRED
Arsenic	10	1.1	No
Cadmium	18	19.4	Yes
Chromium	1,000	596	No
Copper	600	653	Yes
Lead	300	771	Yes
Mercury	10	3	No
Molybdenum	17	46	Yes
Nickel	500	66	No
Selenium	64	0.9	No
Zinc	1,200	2,429	Yes

Notes: 1)Hazen and Sawyer based the anticipated regulatory limits on a combination of anticipated USEPA and NJDEPE sludge contaminant limits.
2) PVSC sludge quality is based on several assumption made by Hazen and Sawyer. These include a) PVSC discontinues use of the Zimpro process, b) that no significant reductions in metal loadings to PVSC occur, and c) that both Garden State Paper Company and Marcal Paper Mills cease sending industrial wastes to PVSC.

Hazen and Sawyer's assessment of PVSC's current sludge quality found that significant reductions in levels of metals will be needed before sludge quality meets future anticipated regulatory limits. Three metals, lead, molybdenum and zinc, will require reduction in excess of 60%. In addition, copper and cadmium levels need to be reduced by

million pounds or approximately 20% of these discharges were metals. Industries discharging to PVSC are responsible for approximately 8% of all toxics reported discharged to sewer systems nationwide (Figure 1).

INDUSTRIAL FACILITITIES DISCHARGING TO PVSC

Only a small fraction of the industrial facilities discharging to PVSC are required to report TRI information. In 1990, federal law required that only 106 industrial facilities discharging to PVSC report discharges of toxics under the Right To Know law.

These 106 facilities represent approximately 2% of the total industrial and commercial facilities discharging to PVSC and approximately 25% of the facilities issued discharge permits by PVSC. PVSC reported to its Community Advisory Committee (CAC) that it has not used the TRI database as a source of information on types or amounts of discharges to PVSC.

Toxic Metal Discharges to PVSC

Thirty eight companies reported discharges of TRI metals to the PVSC sewer system. The twelve facilities that reported discharges of at least 1,000 pounds of any single TRI metal to PVSC are listed in Table 4. These twelve facilities were responsible for the release of almost 6.9 million pounds of eight metals to PVSC. This total represents virtually all the metals discharges reported under the federal Right to Know law.

Lead, molybdenum and zinc are the three metals requiring the highest levels of reduction if PVSC is to meet future sludge quality criteria for the USEPA and the NJDEPE. Four of the top twelve metal dischargers to PVSC reported large discharges of zinc or lead. In addition, eleven other industrial facilities from the complete list of companies reporting discharges of TRI metals to PVSC in 1990 reported lead or zinc discharges (see Appendix A for complete list of metal dischargers to PVSC).

Ten industrial facilities reported zinc discharges to PVSC. Three of these facilities reported discharging over 1,000 pounds of zinc in 1990. Norac Co. in Lodi reported discharging 1,031 pounds, Alliance Chemical of Newark reported discharging 512,900 pounds, and Crompton and Knowles Corp. of Newark reported discharging 28,419 pounds of zinc compounds.

TABLE 4
FACILITIES DISCHARGING 1,000 POUNDS OR MORE OF ANY TRI METAL

FACILITY	LOCATION	METAL	POUNDS
Givaudan	Clifton	Manganese	6,063,868
Magruder Color Co. Inc.	Elizabeth	Barium Cmpds	87,000
Mobay Corp.	Haledon	Barium Cmpds	1,655
Norac Co. Inc., Mathe Div.	Lodi	Zinc Cmpds	1, 031
Alliance Chemical Inc.	Newark	Zinc Cmpds	512,900
Cookson Pigments Inc.	Newark	Lead	104,399
		Chromium	58,437
		Barium	4,532
		Copper	1,741
Crompton & Knowles Inc.	Newark	Zinc Cmpds	28,419
Seton Co.	Newark	Chromium	10,400
Witco Corp. Humko Chem Div.	Newark	Nickel	3,946
Crompton & Knowles Inc..	Nutley	Copper Cmpds	7,772
Hoffman-La Roche	Nutley	Cobalt	2,321
Fabricolor Manufact. Corp.	Paterson	Copper Cmpds	1,084

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Five industrial facilities reported discharging lead to PVSC. One facility, Cookson Pigment, reported discharging 104,399 pounds of lead to the treatment facility in 1990.

One facility, Troy Chemical Corporation in Newark, reported discharging 250 pounds of mercury to PVSC. General Color Co. reported a discharge of 250 pounds of cadmium to PVSC. Both cadmium and mercury are highly toxic metals that are persistent in the environment and readily bioaccumulate in animal tissue.

While manganese, cobalt and barium are not currently regulated under sludge quality standards by the NJDEPE, they were discharged in significant quantities. Givaudan of Clifton reported discharging over six million pounds of manganese in 1990. Five facilities, Magruder Color Co. Inc., Mobay Corporation, Hoboken Paints, Cookson Pigments, Inc., and General Color Company reported discharging 93,442 pounds of barium and two facilities, Troy Chemical and Hoffman La Roche, reported cobalt discharges totaling 2,571 pounds.

Over half of the top twelve facilities listed in Table 4 showed increases in levels of metals discharged to PVSC between 1989 and 1990 (Table 5). Givaudan reported an increase in manganese discharges to PVSC of 313, 868 pounds. Cookson Pigments of Newark reported an increased discharge of over 86,000 pounds of lead to PVSC between 1989 and 1990. In addition, Cookson Pigments reported a chromium increase of more than 45,000 pounds.

Crompton and Knowles reported increased zinc discharges at both its Newark and Nutley facilities. The Newark facility reported an increase of 1,549 pounds and the Nutley facility, which reported no zinc discharge in 1989, reported sending almost 8,000 pounds of the metal to PVSC in 1990.

The Seton Company reported an increase of 7,900 pounds of chromium to PVSC in the one year period and Fabricolor Manufacturing, while eliminating its barium discharge, reported a new copper discharge of 1,084 pounds in 1990.

PVSC's Discharge Contributes to Non-Attainment of Water Quality

In addition to contaminating sludge, discharges of heavy metals have contributed to poor water quality in the Upper New York Bay. PVSC has been identified by the NJDEPE under the Federal Clean Water Act 304 (l) program, better known as the "toxic hot spot" program, as a significant contributor of toxic pollutants to the New York Bay (9). Reductions in toxic loadings to PVSC would improve both sludge quality and reduce levels of pollutants released in treated wastewater to the Bay.

OVERVIEW OF PVSC'S INDUSTRIAL PRETREATMENT PROGRAM

PVSC has issued 394 permits to industrial and commercial users of the treatment system (10). Three-quarters of PVSC's permitted facilities, 281 in all, have been designated by PVSC as significant industrial users because of the toxicity and/or volume of their wastewater discharge. PVSC largely relies on the phone book, voluntary identification, and newspapers to identify its users.

Over 200 of PVSC's significant industrial users have discharge limits determined by the USEPA under the pretreatment provisions in the federal Clean Water Act. Categories of industry with discharge limits set by the EPA must meet these nationwide standards or be subject to enforcement action.

PVSC has not set its own limits on toxic pollutants, also known as local limits, for the remaining significant users. In other words, PVSC has not set restrictions on the levels of Clean Water Act toxic pollutants that may be discharged into the treatment facility. This means that unless EPA categorical standards apply to an industrial user, the discharge of toxic pollutants is unregulated.

As a result, approximately one-quarter of the industrial facilities PVSC has identified as significant, as well as approximately 100 other permitted users, presently have no limits on discharges of metals or toxic organics into the treatment facility. Further, if PVSC, the DEPE, or citizens demonstrated that any of the remaining several thousand unpermitted industrial and commercial users were discharging toxics, the issuance of a permit at this time would not affect the levels or

performed by Hazen and Sawyer demonstrate that significant reductions in toxic discharges will be necessary to meet anticipated future sludge quality standards. PVSC has relied on residential users and large industrial facilities with relatively low toxic loadings to dilute the millions of pounds of toxic metals and synthetic organics discharged to the system. This is not an acceptable substitute for stringent limitations on toxic discharges to the treatment facility.

The CH2M Hill pretreatment study currently in progress will provide important information to PVSC. However, PVSC should not wait until this study is completed to begin regulating its industrial users. Discharge information available to PVSC through the TRI database provides an excellent first step toward limiting toxic discharges into the treatment facility.

Comparison of 1989 and 1990 TRI data demonstrate that toxic loadings to PVSC from many of the largest facilities are increasing. New sludge quality standards and a growing understanding of the dangers of land application of toxics-contaminated sludge requires that limits on toxics discharges from known sources be put in place immediately.

The DEPE's Sludge Management Policy Guidelines recognize beneficial use as the preferred management strategy for sludge. PVSC must improve sludge quality through industrial toxics use reduction measures and the establishment of local limits if it is to maximize beneficial use and keep sludge management costs to a minimum.

RECOMMENDATIONS

The millions of pounds of toxics discharged to PVSC demonstrate that PVSC is not taking its obligation to reduce industrial discharges seriously. We recommend that the following steps be taken to improve the quality of PVSC's sludge, to protect human health and to maximize the potential for beneficial use.

*We strongly recommend that the DEPE set legally enforceable milestones requiring PVSC to meet the highest sludge quality standards. These milestones should be subject to formal public comment through the public hearing process.

*The TRI database should be used to target industries reporting the largest discharges of toxic pollutants into PVSC for immediate toxics reduction measures.

*As a short-term measure, permits for significant toxics dischargers and other facilities listed in the TRI database, should be modified to include limitations on discharges of metals and synthetic organic pollutants.

*For the longer term, local limits, setting facility-wide limitations on discharges of specified toxic pollutants, should be developed to protect water, air and sludge quality.

*The industrial and commercial user fee should be amended to include toxic loadings to PVSC as part of the assessment.

*The USEPA should link any extension of PVSC's consent agreement with concrete efforts on the part of PVSC to reduce industrial toxic discharges to the facility.

*PVSC's success in meeting sludge quality improvement milestones should be a condition of continued delegation of the pretreatment program.

APPENDIX A

DISCHARGES OF METALS TO PVSC 1990

COMPANY	CHEMICAL NAME	POUNDS
ALFRED HELLER HEAT TREATING CO.		
Clifton	Zinc Cmpds	250
GIVAUDAN CORP.		
Clifton	Manganese	6,063,868
INTERNATIONAL DYESTUFFS CORP.		
Clifton	Copper Cmpds	5
	Chromium Cmpds	5
MAGRUDER COLOR CO. INC.		
Elizabeth	Barium Cmpds	87,000
CUSTOM CHEMICALS CORP.		
Elmwood Park	Chromium	5
	Lead	5
	Copper Cmpds	5
SANDOZ CHEMICALS FAIR LAWN		
Fair Lawn	Copper Cmpds	5
	Zinc Cmpds	5
PRIMEX PLASTICS CORP.		
Garfield	Zinc Cmpds	5
MOBAY CORP.		
Haledon	Nickel Cmpds	400
	Barium Cmpds	1,655
DRIVER-HARRIS ALLOYS INC.		
Harrison	Nickel Cmpds	5
	Chromium	5
	Copper	5
DANIEL PRODUCTS CO.		
Jersey City	Copper Cmpds	5

COMPANY	CHEMICAL NAME	POUNDS
HERACUS PRECIOUS METALS MANAGEMENT INC.		
Newark	Silver	5
HILTON DAVIS CO. NEWARK		
Newark	Chromium Cmpds	250
NEW JERSEY TANNING CO. INC.		
Newark	Chromium Cmpds	703
SETON CO. LEATHER DIV.		
Newark	Chromium Cmpds	10,400
SHERWIN-WILLIAMS		
Newark	Zinc Cmpds	87
	Antimony Cmpds	10
	Nickel Cmpds	2
TROY CHEMICAL CORP.		
Newark	Mercury	250
	Cobalt Cmpds	250
WITCO CORP. HUMKO CHEM. DIV.		
Newark	Nickel	3,946
CROMPTON & KNOWLES CORP.		
Nutley	Copper Cmpds	7,772
	Chromium Cmpds	11
HOFFMANN-LA ROCHE INC.		
Nutley	Cobalt	2,321
PNC INC.		
Nutley	Copper Cmpds	250
CRAFT TEXTILE PRINTING CO. INC.		
Paterson	Chromium	187
FABRICOLOR MANUFACTURING CORP.		
Paterson	Copper Cmpds	1,084
KIKUCHI COLOR & CHEMICALS CO. USA		
Paterson	Lead	250
	Chromium	250

TRACE TECHNOLOGIES, INC

STACK TEST REPORT

ON

MERCURY EMISSIONS

FROM

MERCURY RECOVERY FURNACES

AT

TROY CHEMICAL COMPANY
ONE AVENUE L
NEWARK, N.J.

TRACE PROJECT P1181
SUBMITTED JUNE 3, 1981

John W Featherdale

Troy Chemical Testing

Subject: Mercury Emissions Testing from Recovery Furnaces

EPA Test Method 101

Date of Sampling: May 28, 1981

Personnel Observing Test: Mr. John Strong, Newark Field Office
Mr. Frank Papp, Technical Services Section
Bureau of Air Pollution Control Operations

Test Personnel: Mr. A. Platt, Mr. J.W. Leatherdale

Description of Process Operation

Troy Chemical Company operates three (3) gas fired muffle type furnaces for the recovery of mercury from various solid materials. These charge materials normally consist of mercury bearing sludges and mercury batteries. The charge material is placed in a pan which is then sealed inside the furnace. The furnace temperature is then raised using a series of underfired gas burners. When the temperature of the charge material reaches the vaporization point of mercury, the sludge will then volatilize and yield mercury vapor emissions. These emissions are taken as a vapor sidestream from the sealed furnace box and run through a series of two counter-flow double pipe condensers. The condensers are water cooled. The primary purpose of the operation is to collect the condensed mercury from the two water condensers. There is no contact cooling of water and mercury vapor at this point. Please refer to the attached diagram for the condenser configuration. Due to the condensation of the mercury vapor, it is possible to maintain a very slight vacuum on the furnace operation since the pressure in the condensers will be lowered by the condensation vapor phase. For this reason, there may be no apparant flow from the furnace system. As a back-up to the condenser section, all three of the muffle furnaces are manifolded together through the roofline into a common line going to a ejector venturi. This ejector venturi will maintain a very slight negative pressure on the system at all times. The recycle tank for the venturi is vented to the atmosphere. It was at the vent of the recycle tank that the test program was set up. The ejector venturi also serves a secondary purpose of providing an emergency backup to the condenser system in the event that the condensers become plugged. This is due to the contact cooling that would be provided by the ejector.

Field Testing

As per prior agreement with EPA Region Two Test personnel and N.J. D.E.P. test personnel, the sampling was to be conducted as a single point traverse on the 3 1/2"

diameter discharge vent from the recycle tank. The furnaces were charged and the heat was started at approximately 8:00 a.m. the morning of the sampling. Personnel from Trace Technologies were on sight at approximately 9:00 a.m. to begin equipment set-up for EPA Reference Procedure 101. Due the extremely low discharge velocity anticipated from the recycle vent, a standard pitot tube was connected to a Dwyer micro-manometer and monitored every half hour during the course of the day. No positive flow rate was observed during any reading on May 28th. Since there was no flow rate from the recycle tank, it was determined by the State observers and the test personnel that there were no emissions from the control equipment. As such, no sampling was conducted.

The only emissions that were observed during the day were from a leak in the seal of No. 2 furnace which was corrected at the request of Trace Technologies personnel and no further emissions were noted from that point on.

^ummary of Testing

Personnel from the N.J. Department of Environmental Protection and Trace Technologies were present at the test sight on May 28th to observe and perform emissions testing for mercury from the recovery furnaces. No positive discharge rate from the furnaces were observed during the course of the day. For this reason, no samples were required since there were no overall emissions from the process. The emission rate can therefore be determined within the permit application since there were no positive emissions.

JWL:sk

PASSAIC VALLEY SEWERAGE COMMISSION
NEWARK NEW JERSEY

HEAVY METALS SOURCE DETERMINATION STUDY

IN COMPLIANCE WITH OCEAN DUMPING PERMIT
NO. II NJ003 INTERIM SECTION 3(c)

Passaic Valley Sewerage Commissioners

JOSEPH M. KEEGAN	- Chairman
BEN W. GORDON	- Vice Chairman
THOMAS J. CIFELLI	- Commissioner
VINCENT CORRADO	- Commissioner
ROBERT J. DAVENPORT	- Commissioner
RICHARD M. GIACOMARRO	- Commissioner
CHARLES A. LAGOS	- Commissioner
CARMINE T. PERRAPATO	- Executive Director
ROCCO D. RICCI	- Chief Engineer

PHASE II

APRIL 1980

DRAFT

Elson T. Killam Associates, Inc.

Environmental and Hydraulic Engineers

KLL013746

PASSAIC VALLEY SEWERAGE COMMISSION - HEAVY METAL SOURCE DETERMINATION
PHASE II INDUSTRIAL CONTRIBUTION
SUB-AREA O

CONTROL NO.	NAME AND ADDRESS OF INDUSTRY	FLOW MGD	TOTAL CADMIUM LBS/DAY (MG/L)	TOTAL CHROMIUM LBS/DAY (MG/L)	TOTAL COPPER LBS/DAY (MG/L)	TOTAL LEAD LBS/DAY (MG/L)	TOTAL NICKEL LBS/DAY (MG/L)	TOTAL ZINC LBS/DAY (MG/L)	TOTAL ARSENIC LBS/DAY (MG/L)	TOTAL MERCURY LBS/DAY (MG/L)
1570	SHIMAN INDUSTRIES INC. 109 MONROE ST. NEWARK	0.0090	0.001 (0.013)	0.004 (0.057)	0.122 (1.620)	0.009 (0.125)	0.011 (0.142)	0.084 (1.120)	0.001 (0.007)	0.0002 (0.003)
1580	THE STANDARD TALLOW CORP. 61 BLANCHARD ST. NEWARK	0.0360	0.002 (0.008)	0.018 (0.059)	0.058 (0.192)	0.054 (0.179)	0.004 (0.012)	0.087 (0.290)	0.001 (0.002)	0.0000 (0.000)
1590	STIRRUP METAL PRODUCTS CORP. 215 EMMET ST. NEWARK	0.0040	0.000 (0.008)	0.033 (1.000)	0.036 (1.080)	0.003 (0.100)	0.008 (0.237)	0.017 (0.510)	0.000 (0.003)	0.0000 (0.001)
1600	SUN CHEMICAL CORP. 185 FOUNDRY ST. NEWARK	0.0010	0.000 (0.023)	0.002 (0.245)	0.000 (0.057)	0.016 (1.930)	0.000 (0.040)	0.001 (0.131)	0.008 (0.926)	0.0000 (0.000)
1610	THOMASSET COLORS DIVISION 120 LISTER AVE. NEWARK	0.3380	0.014 (0.005)	0.166 (0.059)	106.837 (37.900)	0.062 (0.022)	0.273 (0.097)	3.749 (1.330)	0.003 (0.001)	0.0012 (0.001)
1625	TROY CHEMICAL CORP. AVENUE L NEWARK	0.0280	0.013 (0.054)	0.068 (0.291)	0.712 (3.050)	1.705 (7.300)	0.049 (0.208)	1.009 (4.320)	0.000 (0.001)	327.8619 (1404.0)
1630	VICTORY OPTICAL MANUFACTURING CO. 9 MULBERRY PLACE NEWARK	0.0120	0.001 (0.006)	0.001 (0.005)	1.241 (12.400)	0.002 (0.022)	17.914 (179.000)	0.291 (2.910)	0.000 (0.002)	0.0001 (0.001)
1650	WESTINGHOUSE ELECTRIC CORP. 90 ORANGE ST. NEWARK	0.2520	0.032 (0.015)	0.181 (0.086)	6.452 (3.070)	0.132 (0.063)	5.927 (2.820)	4.960 (2.360)	0.002 (0.001)	0.0008 (0.000)
1670	J. WISS & SONS INC. 400 WEST MARKET ST. NEWARK	0.1320	1.040 (0.945)	0.741 (0.673)	0.260 (0.236)	2.818 (2.560)	2.708 (2.460)	0.636 (0.578)	0.332 (0.302)	0.0003 (0.000)
	SUB-AREA O TOTAL INDUSTRIAL HEAVY METALS LOCATED-PHASE II		51.682	709.748	401.760	3282.164	312.616	1409.173	1.105	328.1803

U.S. Industrial Chemicals

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
EXECUTIVE SUMMARY

U.S. Industrial Chemical Corporation, National Distillers & Chemical Corp.	NJD002447860
Site Name	EPA Site ID Number
300 Doremus Avenue Newark, New Jersey 07036	02-8412-16
Address	TDD Number

Date of Site Visit: 1/16/85

SITE DESCRIPTION

U.S. Industrial Chemical Corporation, a division of National Distillers & Chemical Corp. is located in a highly industrialized area in the Ironbound section of Newark, Essex County, New Jersey. The facility is in the business of alcohol denaturing and chemical distribution and has occupied the 3.42-acre since 1955. Processes there involve the transfer of chemicals, particularly the addition of denaturants into ethanol. There are no hazardous substances or wastes generated at the site, however large quantities of chemicals are stored. Alcohols and such additives as acetone, toluene, methyl isobutyl ketone and diethylphthalate are stored in well maintained above ground tanks.

NUS FIT II conducted a site inspection on January 16, 1985. Soil and aqueous samples were collected throughout the site and analyzed for organic and inorganic Priority Pollutants. Acetone was detected in a storm drain that flows to the Passaic River. Areas of soil contamination, by compounds related to the prior property occupant, were detected throughout the site.

HAZARD RANKING SCORE: Sm = 1.77 SFE = 7.5 SDC = 12.5

Prepared by: Charles LoBue of NUS Corporation

Date: 7/9/85

ANALYTICAL DATA
NATIONAL DISTILLERS
SAMPLING DATA : 1/16/85
CASE NUMBER : 3808

INORGANICS

SAMPLE NUMBER	NJI1-S1	NJI1-S2	NJI1-S4	NJI1-S5
MATRIX	SOIL	SOIL	SOIL	SOIL
UNITS	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	2300	3670	5410	2380
Antimony	41			
Arsenic	423	84	28	23
Barium	1090.	527	1400	200
Beryllium		[0.52]	[0.63]	
Cadmium			4	
Calcium	4230	2940	20700	[670]
Chromium	100	116	65	69
Cobalt	[7.1]	[10]	[10]	
Copper	535	184	34	38
Iron	38100	34900	52100	26000
Lead	1130	2350	394	317
Magnesium	[1270]	[1570]	7480	[537]
Manganese	710	486	452	75
Mercury	2.8	1.7 J	2.7 J	1.4
Nickel	[17]	28	[19]	38
Potassium	[891]	[1170]	[1130]	
Selenium				
Silver	[4.1]	6.8	[4]	6
Sodium	[943]	[514]	[834]	[574]
Thallium	8			
Tin	49	37	41	45
Vanadium	32	42	30	86
Zinc	644	701	933	152

NOTES:
Blank space - compound analyzed for but not detected
E - analysis did not pass QA/QC requirements
J - compound present below the specified detection limit
N - no analysis performed for this compound

ANALYTICAL DATA
RATIONAL DISTILL
SAMPLING DATA :
CASE NUMBER : 38

INORGANICS

SAMPLE NUMBER	NJI1-S6	NJI1-S7	NJI1-SW1	NJI1-SW2	NJI1-SW3
MATRIX	SOIL	BLANK	AQUEOUS	AQUEOUS	AQUEOUS
UNITS	mg/kg	mg/kg	ug/l	ug/l	ug/l
Aluminum	2130		1470	26800	
Antimony				12550	
Arsenic	114			100	
Barium	618		431	1290	
Beryllium					
Cadmium			E	53	
Calcium	[920]	17900	717000	176000	
Chromium	259		14	677	
Cobalt	[6.9]			[53]	
Copper	177		72	262	
Iron	34900		7420	138000	
Lead	1330		112	3880	
Magnesium	[5543]	4600	11900	364000	
Manganese	227		543	964	
Mercury	2.9 J		1.5 J	5.2 J	
Nickel	[24]		[22]	[59]	
Potassium	[9443]		24700	112000	
Selenium					
Silver	7.2			[32]	
Sodium	[9483]	4630	50500	3090000	
Thallium			E	E	
Tin	49			E	
Vanadium	114			[167]	
Zinc	213		2020	2890	

NOTES:
blank space - compound analyzed for but not detected
E - analysis did not pass QA/QC requirements
J - compound present below the specified detection limit
N - no analysis performed for this compound

FACILITY REPORT (BRS DATA)

search used- Facility : ALL
City : ALL
State : ALL
EPA ID : NJD980784292
Year : 1999
Level of Detail: HIGH

Results:

This search was taken from RTK NET's (the Right-To-Know Network)'s copy of EPA's BRS database. RTK NET is run by OMB Watch at 1742 Connecticut Ave. NW, Washington DC 20009 Phone: 202-234-8494
The search was done on 09/17/2002.
This copy of the database was last updated on 05/29/2002.

Note: "Federal" waste is waste with at least one Federal EPA waste code. Non-Federal waste is regulated by the state only.
"RCRA" waste is Federal waste that is managed (treated, disposed, or recycled) in a RCRA-permitted TSD unit. The waste is classified according to assumptions made about where it ends up.

If you don't see the words *END OF REPORT* at the end of this search, then this Web search didn't complete -- back up and try it again.

Facility Name: US POSTAL SERVICE DVD P&DC/VMF Reporting Year: 1999
Street : 850 NEWARK TURNPIKE
City : KEARNY State: NJ Zip: 079089998
County : HUDSON EPA ID: NJD980784292
Mailing Address: 850 NEWARK TURNPIKE
Mailing City : KEARNY State: NJ Zip: 079089998

Year: 1999	Total Waste	Federal Wst.
Tons Generated :	2.71	2.71
Tons Shipped :	2.53	2.53

SIC Code(s):
Contact: RICHARD ORLUSKY Phone: 9734687046
Generator Status : Large Quantity Generator (LQG)
Storage Status : No RCRA-permitted or interim status storage
RCRA TDR Status :
Exempt TDR Status: No on-site TDR; site has no plans to develop system

---

List of wastes generated by this facility:

Waste Desc.: COMPUTER EQUIPMENT/MONITORS CONTAINING LEAD
EPA Waste Code(s) for this generated waste-
D008 Lead
Tons Generated: 0.50
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
UNKNOWN/BAD EPA ID
System type: Transfer Facility Storage
Tons sent: 0.50 EPA ID: MDD987367216

Waste Desc.: INK/INK WASTE
EPA Waste Code(s) for this generated waste-
D018 Benzene
Tons Generated: 0.47
Tons Generated & Managed On-site: 0.00

This waste was sent off-site to-
SAFETY-KLEEN SYSTEMS (LINDEN)
LINDEN, NJ
System type: Transfer Facility Storage
Tons sent: 0.47 EPA ID: NJD002182897

Waste Desc.: LIGHT FIXTURES CONTAINING MERCURY
EPA Waste Code(s) for this generated waste-
D009 Mercury
Tons Generated: 1.54
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
1SAFETY-KLEEN (TS) INC
LAUREL, MD
System type: Transfer Facility Storage
Tons sent: 0.53 EPA ID: MDD980554653

AERC
ALLENTOWN, PA
System type: Transfer Facility Storage
Tons sent: 1.01 EPA ID: PAD987367216

Waste Desc.: DISPOSAL OF UNUSED CAUSTIC
EPA Waste Code(s) for this generated waste-
D001 Ignitable waste
D003 Reactive waste
Tons Generated: 0.20
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
1SAFETY-KLEEN (TS) INC
LAUREL, MD
System type: Transfer Facility Storage
Tons sent: 0.02 EPA ID: MDD980554653

END OF REPORT

JACK McCORMICK & ASSOCIATES, INC.
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1 August 1977

INVESTIGATIONS OF AQUATIC AND TERRESTRIAL MERCURY CONTAMINATION IN THE VICINITY OF THE FORMER LOCATION OF THE WOOD-RIDGE CHEMICAL CORPORATION PROCESSING PLANT, BOROUGHS OF WOOD-RIDGE AND CARLSTADT, BERGEN COUNTY, NEW JERSEY

Submitted to: Office of the Commissioner
New Jersey Department of
Environmental Protection
Labor and Industry Building
Trenton, New Jersey 08625

Jack McCormick, Ph.D.
President

Frank A. Camp, Ph.D.
Vice President

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1. INTRODUCTION

1.1. Purpose

This report contains the results of an investigation of the concentrations of mercury in soil, groundwater, surface water, and sediment on, and in the vicinity of, the site formerly occupied by a chemical manufacturing plant in the Borough of Wood-Ridge, New Jersey. The purpose of the investigation was to determine if the site currently is contributing mercury to the aquatic environment to West Riser Ditch of Berrys Creek.

The procedures used in this investigation were discussed with, and approved by, personnel of the New Jersey Department of Environmental Protection before the initiation of the fieldwork. Personnel from the Department were present during most of the time that work was conducted on the site by the contractor. All deviations from the scope of work as originally proposed were made with the approval, or at the recommendation, of personnel from the Department.

1.2. Location of the Subject Site

The Subject Site is located in the Borough of Wood-Ridge and in the Borough of Carlstadt, County of Bergen, State of New Jersey (Figure 1). The Site includes properties that currently are owned by the United States Life Insurance Company, Robert and Rita Wolf, operating as Wolf Realty, and the Velsicol Chemical Corporation. These properties are identified on Figure 2. Also identified on Figure 2 are the sampling locations for surface water (and sediment), groundwater, and soil. Soil sampling locations remote from the Subject Site are identified on Figure 1.

Using this more conservative estimate, the total amount of mercury present in the 19 acres, within 2 feet from the surface, is 28 tons (19 acres X 43,560 square feet X 2 feet X 80 pounds = 132 million pounds X 425 pounds of mercury ÷ 2,000 pounds = 28 tons).

The average concentration of mercury in thirteen samples of soil from the northerly part of the Velsicol property at depths from 2 feet to 10 feet in the seven well cores (Table 5) is 567.55 ppm. To be conservative, the value of any sample that exceeded 1,000 ppm can be discounted to 1,000 ppm. The revised average concentration, then is 504 ppm. Using the same formula, this conservative average indicates that there are 133 tons of mercury in this 8-foot thick section of soil on the part of the Velsicol property that was investigated. The total amount of mercury on the Velsicol tract, therefore, must exceed 160 tons.

The presence on the Subject Site of soil that is contaminated with several tons of mercury is a substantial hazard to public health, to terrestrial wildlife, and to the aquatic environment. Except where it has been covered or disturbed recently, the surface of the soil throughout the Subject Site is vegetated. Particularly on the property owned by the Velsicol Chemical Corporation, tall stands of plume grass (Phragmites communis) and other plants provide a dense cover that is utilized by cottontail rabbits, pheasants, and other wildlife. The plants that grow in the contaminated soil certainly contain measurable concentrations of mercury. Rabbits, which eat the foliage, pheasants, which eat the seeds, and other herbivorous wildlife, thus ingest mercury in their foods.

Particles of soil that are blown by the wind, carried by storm runoff, or which adhere to footwear, clothing, or vehicles may be carried off of the site and thereby will contaminate other areas. Particularly, soil materials that are carried into Berrys Creek will contaminate the aquatic environment.

Mercury also may vaporize and be transported to other areas by means of air movements. Insoluble forms of mercury also may be transformed biologically or abiologically to other forms, particularly to organic forms, which are soluble and can be carried by surface water and/or by groundwater.

Persons who visit or work on the Subject Site are exposed directly to the mercury-bearing soils. Mercury that enters wildlife may reach humans who hunt or trap for game. Fishermen and crabbers may be exposed to mercury that enters the aquatic environment. Mercury carried in the air as a vapor or on particulate matter may enter the bodies of human beings through the respiratory system.

5.1.2. Mercury in Groundwater

The US-EPA maximum contaminant level for mercury in drinking water at the point where such water enters the distribution system is 0.002 mg/l, or 2 ppb (Table 14). The concentrations of mercury in filtered samples of water drawn from wells at Stations W1 through W8 on or near the Subject Site on 13 July 1977 were less than 0.3 ppb (Table 9). Soluble mercury does not appear to be reaching the groundwater at these stations. In samples of water from the South Well (Station WS), the concentrations of mercury were 0.8 ppb and 0.9 ppb (Table 9). Although these levels do not exceed the standard, they demonstrate that a source of dissolved mercury is present at Station WS. The observed levels of mercury in the East Well (Station WE), 4.3 ppb and 8.8 ppb, substantially exceed the standard. The groundwater at Station WE, therefore, can be considered to be polluted by mercury. The water represents a threat to the aquatic environment, and it is a potential hazard to human health.

In summary, measurable concentrations of mercury were found in filtered samples from wells at Stations WE and WS, but not in samples from wells at Stations W1 through W8. The results of an analysis of a sample of water drawn by William Althoff of NJ-DEP from the well inside of the building on the Wolf Realty property on 8 March 1977 show that the total concentration of mercury in an unfiltered sample was 67.0 ppb, and that the concentration of dissolved mercury (filtered sample) was 66 ppb. These facts indicate that groundwater on the property owned by Wolf Realty, both inside and outside of the building, contains dissolved mercury, and that the concentrations of dissolved mercury are high enough to present a hazard to the health of human beings. The facts indicate further that the containment system installed during the construction of the building is not functioning properly. The concentration gradient (66 ppb inside containment system; 4.3 ppb and 8.8 ppb at the East Well, and 0.8 ppb and 0.9 ppb at the South Well, outside of the building) indicates that dissolved mercury is moving from the building (containment system) to the East Well and the South Well.

5.1.3. Mercury in Channel Sediments

No finite concentration can be said universally to represent the threshold of contamination in sediments from stream channels. Sediments that contain mercury in excess of 0.2 ppm probably are contaminated, and sediments that contain mercury in excess of 1.0 ppm almost certainly are contaminated (McCormick 1976). Based on this criterion, the 15 samples of sediment collected from four stations on the Subject Site (Stations 3, 4, 5, and 6) and the 12 samples of sediment collected from the channel of Berrys Creek (Stations 7, 8, and 9) all are contaminated with mercury (Table 10).

In the perspective of the natural condition of sediments, which is characterized by studies of sediments in other localities, all of the sediments from the Subject Site and from nearby places in Berrys Creek are contaminated grossly. To facilitate this narrative description, however, four arbitrary ranges of concentrations of mercury can be recognized: less than 100 ppm; 100 to 499 ppm; 500 to 899 ppm; and greater than 899 ppm. The results of the analyses (Table 10) are rearranged according to these categories in the following tabulation:

<100 ppm	100-499 ppm	500-899 ppm	>899 ppm
#3 6-11 in.	#4 6-9 in.	#3 0-6 in.	#7 0-12 in.
#5 0-12 in.	#6 0-6 in.	#4 0-6 in.	#8 0-3 in.
#8 6-12 in.	#8 3-6 in.	#6 6-12 in.	
#9 0-12 in.			

Water is known to flow from Station 3 to Station 4, thence through a buried culvert to Station 6, through an open ditch to the invert of another buried culvert, and thence through the culvert to its end at Berrys Creek (Station 7). The surficial sediments (0 to 3 inches) at Stations 3 and 4 contain mercury at concentrations of 882 ppm and 679 ppm; those at Station 6 contain 361 ppm mercury; and those at Station 7 contain 2,825 ppm (Table 10). There is a direct pathway for the movement of mercury from Station 3, on the United States Life Insurance Company property, to Station 4, on the property of Wolf Realty, to Station 6, on the property of the Velsicol Chemical Corporation, and to Station 7 and Berrys Creek.

Several samples of surface water were contaminated by sediments that were entrained during the collecting operations (Section 5.1.4.). These incidents demonstrate (1) that sediments contaminated by mercury also occur in the paved swale at Stations 1 and 2, and (2) that the contaminated sediments in the swales, ditches, and culverts on the Subject Site, as well as those in Berrys Creek, are mobilized easily and remain in suspension in the water column, at least temporarily. The contaminated sediments in the swales, ditches, and culverts on the Subject Site, therefore, can be transported to Berrys Creek by upland runoff and/or by the action of the tides. These sediments are hazards to the aquatic environment of Berrys Creek and the waters to which it is a tributary. Rabbits, pheasants, and other wildlife also may be exposed to the ingestion of mercury on sediments roiled as the animals drink from ditches on the Subject Site.

[illegible] of mercury in the sediments at Stations 3, [illegible] progression. Because the stations are hydrologically [illegible] affected by the rise and fall of the tide, one would [illegible] concentrations of mercury to be approximately equal in the [illegible] If mercury-rich materials were discharged or deposited at [illegible] stations, the concentration of mercury in the sediments at that station would be expected to be higher than the concentrations in the sediments at the other stations. In point of fact, the concentrations of mercury in the sediments at Stations 3, 4, and 6 are relatively similar -- 361 ppm to 882 ppm in the upper 6 inches. The concentrations of mercury in the upper 6 inches of sediments at Station 7, however, were determined to be 2,825 ppm (0 to 3 inches) and 39,940 ppm (3 to 6 inches) -- or 45 to 110 times as great as those at the stations upstream along the drainageway.

These data indicate that the mercury-rich material that caused the extreme contamination of the sediments at Station 7 did not move across the sediments at Stations 3, 4, or 6. This, in turn, means that (1) the extremely high concentrations of mercury at Station 7 reflect the discharge of effluents from the former chemical manufacturing plant through a route that was different from the existing system, but which terminated at the same point; or (2) the former routing was similar to the modern routing, but when the buried culverts were installed (allegedly during the 1960's) the ditches that were to remain open were widened, deepened, or otherwise excavated; or (3) there is a source of mercury-rich materials in the culvert between Station 6 and Station 7; or (4) mercury-rich materials were deposited (i.e., dumped) at Station 7. If explanation (1) or (2) were correct, the original source of the contaminant has been abated by the closure of the manufacturing plant formerly on the Subject Site. If explanation (4) were correct, presumably the contamination occurred through one event, or it was the act of an irresponsible person who may have been employed at the former plant, but now is gone. If explanation (3) were correct, it would be logical to suspect that a concrete block structure about 450 feet southeast of Station 6, which is an access shaft to the culvert, and may have been used by an irresponsible person as a convenient avenue for the disposal of waste materials. There is a catch basin, or sediment trap, associated with this access shaft (VE-17), and it may contain [illegible] accumulation of mercury-rich materials.

5.1.4. Mercury in Surface [illegible]

The standard for the allowable maximum concentration of mercury (total) in the surface waters (unfiltered) of the State of New Jersey is 5 ppb (Table 14). This standard was exceeded by concentrations detected in seven of the thirteen samples of water collected at Station 6 on the Subject Site on 19 May 1977 (Table 11); and it was exceeded in one of the thirteen samples from Station 6 on 8 June 1977 (Table 12). In determinations of water collected at the outfall point of the Subject Site (Station 7), the standard was exceeded by levels in six of the eleven valid samples collected on 8 June 1977 (Table 12).

Concentrations of mercury in excess [illegible] were detected in many of the samples that were collected [illegible] and 2, which are located in a paved swale between [illegible] the property of the United States Life Insurance Company and in the property of Wolf Realty, and from Station 5, which is located in an unlined ditch that is situated to the southwest of the building on the Wolf Realty property. These concentrations are believed to have been produced by the entrainment of sediments during the removal of samples from the shallow water. Similarly, the high concentrations of mercury in samples collected at Station 4 (1720 hours), Station 7 (1850 and 1955 hours), Station 8 (1845 hours), and Station 9 (1850 hours) on 8 June 1977 are believed to reflect the entrainment of sediments during the collecting operation (Table 12).

The presence of mercury in samples of water taken during periods of low water, when water flows from the Site (from Station 6 to Station 7), demonstrates that mercury from the Site is entering Berrys Creek (Table 11, entries annotated with the word "Eastward"). All of the samples of water that were collected during this investigation were obtained on days when no rain was falling. Stormwater drainage from areas with mercury-rich soil and the roiling of sediments in the channels by raindrop impact and by more rapid flows will mobilize sediments, and will to increase the amount and the concnetration of mercury in the water.

The maximum concentration of mercury (total) in surface waters should not exceed 0.1 ppb to ensure protection of marine aquatic life (Table 14). All measurements from Stations 4, 6, and 7 on the Subject Site and all measurements in Berrys Creek at Stations 8 and 9 exceeded the concentration recommended (Tables 11, 12, and 13). The aquatic environment on the Subject Site and in its vicinity, therefore, is considered to be hazardous to the survival and reproduction of fish and other marine and freshwater aquatic organisms.

5.2. Arsenic

5.2.1. Arsenic in the Soil

The concentrations of arsenic in soil in the United States generally range from 0 ppm to 120 ppm, and the average concentration is about 5 ppm (Curry and Gigliotti 1973). The soils at several stations on the Velsicol property had levels of arsenic that appear to be less than to only slightly greater than the nationwide average (Stations W1, W2, W3, and W6 in Table 5; Stations 9S, 11S, 14S, 15S 18S, 19S, and 23S in Table 6). These concentrations probably represent the regional background level of arsenic.

6. SUMMARY OF FINDINGS AND RECOMMENDATIONS

6.1. Findings

6.1.1. Soil

The soil throughout the Subject Site has been enriched extraordinarily with mercury (to 123,000X background levels). The available measurements indicate that at least 126 tons of mercury are present on the Wolf Realty property, and at least 160 tons of mercury are contained in 19 acres of the Velsicol site. Enrichments with lead (to 890X background levels) and zinc (to 655X background levels) also are extreme and relatively uniform. Cadmium enrichment is evident throughout the site (to 240X background levels), but the concentrations vary irregularly from place to place. Enrichment by nickel is moderate (to 18X background levels), and materials with the highest concentrations are confined to the southwestern half of the Site. Concentrations of arsenic are high at two stations in the southwestern section of the Site (to 16X background levels), but the levels are near background throughout the remainder of the Site.

6.1.2. Groundwater

Dissolved mercury is present at a concentration in excess of the drinking water standard in the East Well (4.3 to 8.8 ppb). The concentration of mercury satisfies the standard, but is measurable, in the South Well (0.8 to 0.9 ppb). Dissolved cadmium (13 ppb) exceeds the drinking water standard in Well 6, and it is present at relatively high concentrations (5.6 to 9.0 ppb) in the East Well, the South Well, Well 5, and Well 8.

The concentration of zinc in the South Well (2,800 to 4,700 ppb) is high, but does not exceed health standards. The observation suggests that zinc may be highly mobile in the vicinity of the well.

6.1.3. Channel Sediments

Sediments in the drainage ditches on the subject site are contaminated uniformly and substantially with mercury (882X background level). Zinc (29X background level) and lead (4.7X) are present in abnormal concentrations throughout most of the drainage system. The concentrations of cadmium (9X background levels) are high at two stations. Nickel and arsenic both are within their background ranges on the Site.

Mercury (89,162X) is extraordinarily concentrated at the discharge point. The levels of zinc (48X), lead (11X), arsenic (7X), and nickel (2.4X), at the discharge point are substantially higher than normal. In other sections of Berrys Creek, mercury (993X), cadmium (21X), lead (11X), arsenic (5X), and zinc (5X) are above background levels.

5.1.4. Surface Water

Concentrations of mercury (4.8X standard) and lead (1.8X standard) in waters on the site or at the outfall exceeded the applicable State standards during this investigation. All concentrations of mercury observed at relevant stations exceeded the level recommended to avoid harm to aquatic organisms.

In 76% of the samples examined, the concentrations of zinc exceeded (1.3X criterion) the level considered to be hazardous to aquatic biota.

Concentrations of arsenic and cadmium at stations on the Subject Site satisfied the State standards. Levels of arsenic at Stations on Berrys Creek also were less than the concentration considered to be hazardous to aquatic life. Concentrations of cadmium in Berrys Creek, however, exceeded the biological safety limit repeatedly.

6.2. Recommendations

6.2.1. Specific Evaluation of the Containment System.

The building that now occupies the property owned by Wolf Realty was designed and constructed to act as a containment system for mercury-rich soils. Allegedly, soils with the highest concentrations of mercury were scraped before the erection of the warehouses and placed in the area now enclosed by the building.

The concentration of dissolved mercury in a sample of water that was drawn from a well within the containment system during March 1977 was 66 ppb. Tests made during this investigation revealed high concentrations of dissolved mercury in the groundwater at two wells adjacent to the building. No dissolved mercury was detected during tests on eight other wells on the Site. One of these wells (#6) is approximately 100 feet south-southeast of the East Well. These data indicate that the containment system is not functioning as intended, and is a source of mercury contamination.

The escape of mercury from the Wolf Realty property must be prevented to protect the delicate environmental balance of Berrys Creek, the Hackensack Meadowlands District, and other areas on the Newark Bay-Raritan Bay estuarine system. It is recommended, therefore, that a revised version of Alternate 4 that was formulated for the Rovic Construction Company, Inc., by Joseph S. Ward, Inc. (WV-25), be implemented.

Alternate 4 was intended to be a supplement to the construction of the building on the Wolf Realty property as a mercury containment system. It is described in a letter of 29 January 1975 by Mr. Thomas J. Scheil, P.E., as follows:

Buried culverts, particularly the section between Stations 6 and 7, probably contain accumulations of sediments that are resuspended by the actions of the tides, by stormflow events, and by other agents. These culverts should be excavated, inspected carefully, cleaned, and removed. All other ditches on or adjacent to the properties of the United States Life Insurance Company, Wolf Realty, and the Velsicol Chemical Corporation should be cleaned by excavating and removing contaminated sediments. The drainage system that serves these properties should be revised, and the discharge of runoff should be rerouted to the ditch that extends generally between Stations 7S and 22S. The existing drainage system that discharges at Station 7 should be sealed. All ditches used in the revised drainage system should be surfaced with an impermeable liner, such as concrete. No buried culverts should be designed into the system.

The channel of Berrys Creek also should be cleaned with a small suction dredge. Until more comprehensive restoration plans are devised, the area from the West Riser Ditch Tide Gate to a point upstream at which the levels of contamination are at or near background should be cleaned. Excavations made during the removal of the culverts could be considered for use as basins to accept spoil dredged from Berrys Creek.

The Tide Gate should be reconstructed before, or concurrent with, the restoration dredging of Berrys Creek. The repairs to the tide gate are essential to protect the West Riser Ditch (upper Berrys Creek) from recontamination by mercury-rich sediments that are carried upstream by the tides. The tide gate also will prevent high waters from surcharging the drainage system onthe Subject Site. To provide further protection to the Site, the new drainage system also should be equipped with a tide gate at the point where it joins the existing ditch between Stations 7S and 22S.

6.2.3. Termination of Dumping on the Velsicol Property

Dumping, whether by authorization or not, has continued on the Velsicol property. All authorized dumping should be discontinued, and the site should be posted and fenced to prevent or minimize unauthorized dumping and to prevent trespassing. Conspicuous signs should be erected on the upland boundaries and along Berrys Creek to warn possible trespassers of the hazards that exist on the site.

6.2.4. Velsicol Property: Alternative 1. Removal of Mercury

There are at least 160 tons of mercury on the 19 acres of the Velsicol property that were investigated during this project. To protect Berrys Creek, the Hackensack River, and the remainder of the Newark Bay-Raritan Bay estuarine system from further contamination, the mercury-rich soils on the Velsicol property should be removed and decontaminated. The mercury that is recovered can be returned to the industrial/commercial market for proper and productive use.

The soil [illegible] to have been used as chemical waste dump sites, [illegible] which the concentrations of mercury exceed 500 ppm [illegible] decontaminated. The remaining soil should be [illegible] to provide a slope away from Berrys Creek. If the property [illegible] as much as possible of the surface should be covered with impervious pavement or structures. If the property is not improved, the surface should be planted to develop a complete, dense cover of vegetation, such as a thick lawn. This will minimize the movement of the contaminated soil by stormwater and by wind.

Plans for any alteration of the site and/or for the installation of any improvement to the property should be submitted to the Department of Environmental Protection. The written approval of the Department should be made a mandatory requirement for any such alterations or improvement in perpetuity. This condition, and a notice concerning the hazard contained on the site, should be entered against the deed in the Office of the County Clerk.

6.2.5. Velsicol Property: Alternative 2. Containment of Mercury

If it is not feasible to excavate the severely contaminated soil and reclaim mercury from it, the mercury must be securely contained within the site. The soil in areas that are known to have been used as chemical waste dump sites, and the soil in any other areas in which the concentrations of mercury exceed 500 ppm should be excavated and moved to the area between Stations 10S and 13S. The severely contaminated materials then should be surrounded by a cutoff wall, based on the impermeable varved clay, and enclosed by a concrete structure similar to the foundation of the building on the Wolf Realty property.

The remainder of the site should be recontoured to provide a slope away from Berrys Creek. The surface then should be paved or planted with a dense cover of vegetation to hold the soil.

Plans for any alteration of the site and/or for the installation of any improvement to the property should be submitted to the Department of Environmental Protection. The written approval of [illegible] should be made a mandatory requirement for any such alte[illegible] improvement in perpetuity. This condition, and a notice concerni[illegible] hazard contained on the site, should be entered against the deed in [illegible] of the County Clerk.

6.2.6. Monitoring for the Wolf Realty Property

Regardless of the method used to provide a secure containment for mercury on the Wolf Realty property, a program of regular monitoring should be instituted to verify the performance of the system. This program should utilize a pattern of observation wells placed at intervals of 100 feet along the boundary of the property, four wells near the midpoints of the walls inside the building, and two wells near Stations 1 and 2. Recording

gauges should be installed to track changes [illegible] well inside the building, the well at Station 1, [illegible] northeast corner, and one well near the southeast corner. [illegible] readings of the levels in all of the wells should be made at least one time each month.

Initially, tests for mercury and other constituents in filtered samples of water from these wells should be made one time each month. After 12 months, if the results of the analyses do not indicate that mercury is continuing to move from the property, the frequency of the analyses for mercury can be reduced to one set of samples each three months (quarterly). The actual scheduling, of course, should be determined by the Department of Environmental Protection (NJ-DEP).

The selection by the property owner of the persons or firm to conduct this monitoring should be subject to the approval of NJ-DEP. Timely reports on the results of the monitoring, including water levels and concentrations of mercury, should be submitted to NJ-DEP. The Department also should evaluate these data to determine whether or not mercury is continuing to move from the property. Any change in the schedule of sampling, the location of observation wells, the number of observation wells, the parameters to be measured, or other procedures should be made only upon the recommendation of NJ-DEP or with the approval of the Department.

6.2.7. Monitoring for the Velsicol Property

Regardless of the method used to remove or contain the severely contaminated soil on the Velsicol property, a program of regular monitoring should be instituted to verify that the method is successful in preventing the escape of hazardous materials from the property. This program should utilize observation wells to monitor the quality and flow of groundwater and stations on ditches, at the discharge point, and in Berrys Creek to monitor the quality of the surface waters. The purpose of the program is to ensure that no significant pollution can leave the Velsicol property without detection, and to provide an instantaneous warning if a release should occur.

The program of monitoring should be devised and detailed in collaboration with NJ-DEP. It is recommended, however, that automatic equipment for water quality monitoring be installed in the drainage system and on Berrys Creek. These monitors, if equipped with alarms, would warn of unexpected breakthroughs, embankment failures, and similar emergencies without need for a resident monitor.

Contingency plans should be developed so that the necessary emergency personnel and equipment can be mustered to contain and control any problem. Written reports on the results of the monitoring should be prepared in a timely way and submitted to DEP and any other agencies with jurisdiction or special expertise.

VENTRON/VELSICOL
NJD980529879 OU: 00
1.0 PRE-REMEDIAL
1.4 Site Investigation (SI)
No.: 1
0000065963

MERCURY SAMPLING REPORT

August 10-15, 1978

BBC000075

INTRODUCTION

Sampling for ambient mercury was conducted for the State of New Jersey by the Environmental Monitoring and Support Laboratory (EMSL)/RTP in Woodridge, New Jersey from August 10-15, 1978. This monitoring study was initiated as the result of Region II requesting technical assistance from the Environmental Monitoring and Support Laboratory, Research Triangle Park, NC.

MONITORING

A. General

Monitoring was conducted in several locations on a 40 acre site. The majority of the 40 acres were undeveloped and were heavily overgrown with tall (approximately 5 feet) weeds. Approximately 9 of the 40 acres were paved and contain warehouse and office buildings. Sampling was conducted at four (4) sites representing various areas within the 40 acres. See Figure 1 for site locations.

Two types of sampling systems were used in this study. One consisted of a sampling box which contained four parallel sampling tubes. The other sampling system consisted of an orifice system which contained five parallel sampling tubes. Diagrams showing the two different systems are shown in Figure 2. The samplers collect elemental mercury on silver wool collectors. Prior to the collectors, various devices can be placed in the system to distinguish various forms of mercury. The box samplers were designed with a split manifold system. Part of the air stream flowed through filters directly to the collectors. Since organic mercury compounds are not collected on silver wool, this part of the system collected only elemental mercury. The other part of the air stream passed through a pyrolyzer which converted the organic mercury compounds to elemental mercury. Total Hg (organic and elemental) was collected by this technique. The orifice samplers were designed without an inlet manifold system, therefore they collected only elemental Hg.

B. Specifics

Site 1 -- Site 1 was located on the Wolf property in the west half of the building on the first floor. This site was located several feet from the southwest wall approximately equidistant from the side walls. Sampling was conducted during the work day (8 hours) on August 14 and 15, 1978. Four replicate samples were collected each day. On August 14th a box sampler was operated, while on August 15th an orifice sampler was operated. Due to a shortage of tubes, only four sample tubes were used with the orifice system on August 15, 1978.

A comparison of side-by-side sampling of orifice sample boxes results in values that are relatively close and in all cases, the orifice meter values are higher. The true value for each of these days probably lies somewhere between the box values and the orifice values. Table 1, a comparison of the average values for each sampling system, shows that there is close agreement of value at each site. In this table, the corresponding "12 hour samples" were averaged using a time based weighted average. Note that in all cases, the orifice meter sampling systems values are higher than the box samplers as predicted.

TABLE 2

MERCURY SAMPLING

RAW DATA

Site No.	Date(s)	Sampling Period	Mean ng/m^3	Values ng/m^3
1	8/14/78	900-1646 D	382.25 B	396, 380, 372, 381
1	8/15/78	817-1622 D	738.00 O	731, 748, 763, 710
2	8/10-8/11/78	[illegible]	[illegible]	[illegible]
2	8/11/78	1010-2050 D	551.25 B	573, 500, 485, 546
2	8/11-8/12/78	2032-1947	462.60 O	396, 501, 502, 434, 476
2	8/11-8/12/78	2055-0900 N	471.67 B	427, 494, 494
2	8/12/78	908-1947 D	357.00 B	436, 460, 175
2	8/12-8/13/78	2045-2000	522.5 O	598, 278, 17, 615, 599
2	8/12-8/13/78	2045-826 N	379.00 B	372, 349, 366, 429
2	8/13/78	830-2000 D	443.25 B	432, 497, 431, 413
2	8/13-8/14/78	2015-1954	1012.80 O	1191, 854, 885, 952, 1182
2	8/13-8/14/78	2015-803 N	788.00 B	822, 695, 787, 848
2	8/14/78	807-1954 D	721.00 B	702, 814, 647
2	8/14-8/15/78	2001-800 N	1541.25 B	1708, 1340, 1423, 1694
2	8/14-8/15/78	2001-800 N	1651.20 O	1720, 1536, 2023, 1291, 1692
3	8/10-8/11/78	2037-817 N	1678.40 O	2176, 869, 1723, 2089, 1535
3	8/11-8/12/78	926-740	290.50 B	277, 295, 296, 294
3	8/11-8/12/78	900-740	296.8 O	321, 281, 314, 288, 280
3	8/11/78	921-1936 D	213.75 B	186, 200, 241, 228
3	8/11-8/12/78	1945-740 N	247.25 B	203, 335, 102, 349
3	8/12-8/13/78	820-737	386.40 O	399, 380, 382, 360, 411
3	8/12-8/13/78	800-737	264.75 B	235, 302, 179, 343
3	8/12/78	800-1930 D	179. B	230, 236, 71
3	8/12-8/13/78	1936-737 N	500.00 B	511, 495, 520, 474
3	8/13-8/14/78	847-820	1019.00 O	996, 1029, 1010, 1163, 897
3	8/13-8/14/78	847-820	750.67 O	869, 604, 779
3	8/13/78	847-1937 D	382.00 B	357, 382, 411, 378
3	8/13-8/14/78	1939-820 N	1272.75 B	1356, 1331, 926, 1478
3	8/14-8/15/78	820-738	2396.50 B	2924, 1869
3	8/14-8/15/78	820-738	2846.00 B	2976, 2629, 2933
3	8/14/78	820-1213	607.00 B	597, 617
3	8/14/78	820-1932 D	996.00 O	1056, 947, 985
3	8/14-8/15/78	1938-728 N	3259.33 O	3052, 3911, 2815
4	8/12-8/13/78	930-812	195.25 B	198, 198, 187, 198
4	8/13-8/14/78	820-915	2085.25 B	1252, 2702, 2274, 2113
4	8/14-8/15/78	922-722	2210.00 B	3922, 1532, 1176

Site Descriptions

For Hazardous Waste Sites In New Jersey

1984/85

N.J. Department of Environmental Protection

Division of Waste Management • Hazardous Site Mitigation Administration

Site Name

Berry's Creek (Morton-Thiokol/Velsicol)
(Formerly known as Ventron/Velsicol)
Wood-Ridge, Carlstadt, Moonachie and East Rutherford Boroughs
Bergen County

Site Description

The site encompasses 40 acres in the Hackensack Meadowlands, just east of Carlstadt on the western bank of Berry's Creek. From 1929 until 1974 a mercury processing plant was operated on the site by the following companies: F.W. Berk & Co. (1929-1960); Wood Ridge Chemical Co. which is a subsidiary of Velsicol Chemical Corp. (1960-1968); and Ventron Corp.* (1968-1974). The mercury processing facilities occupied 7 acres; the remaining 33-acre tract of marshland, presently owned by Velsicol Chemical Corp., was utilized to landfill waste spoils from the plant operation. In 1974, the 7-acre tract was bought by a realty company that demolished the processing facilities, excavated the mercury contaminated top soil, partly entombed the site, and constructed two industrial warehouses on the site. Records are scant or nonexistent for much of the operating history of the facility. It is known that plant operations included the refining of metallic mercury and the production of various amalgams, inorganic mercury compounds and phenyl mercuric salts. Estimates of the amount of mercury contamination range from 50 tons to 400 tons.

Environmental Impact

The mercury contamination has spread throughout the Berry's Creek ecosystem including the sediments of the creek for a stretch of several thousand feet downstream of the site and the contiguous wetlands. Although the mercury is considered stable at this time, the potential exists for its mobilization and release into the environment resulting in aquatic and terrestrial organism bioaccumulation. Utlimately, this bioaccumulation could pose a human health threat.

Status

In 1976, the New Jersey Department of Environmental Protection (NJDEP) initiated legal action against Ventron, Velsicol, et. al. for their part in the long-term mercury contamination of the Berry's Creek ecosystem. The State has been successful in litigating this case including appeals through the New Jersey Supreme Court relative to the liability of Ventron and Velsicol for the cost of the cleanup and removal of the mercury-contaminated sediments in Berry's Creek. Ventron and Velsicol Chemical Corporations requested that the State consider cooperating in a joint investigation of the site which would be funded by both companies. In January 1984, the corporations initiated negotiations with the State for the purpose of developing a mutually acceptable Consent Agreement to conduct a comprehensive Remedial Investigation/Feasibility Study (RI/FS) addressing the mercury contamination in Berry's Creek, at the 40 acre site and in the contiguous wetlands. The companies' failure to sign a Consent Order by the July 1, 1984 deadline resulted in NJDEP, filing a Cooperative Agreement application with the United States Environmental Protection Agency (USEPA) for $1,220,000 in Superfund monies to conduct the RI/FS. However, the companies have since signed an Agreement with NJDEP, precluding the Cooperative Agreement, in which they have agreed to finance the RI/FS. Of 97 New Jersey sites on the National Priorities List, the Berry's Creek site is ranked 21st.

*In the late 1970's, Ventron Corporation was purchased by Thiokol and in 1982, Thiokol merged with Morton to form Morton-Thiokol.

BBC000007

SAMPLING PLAN RESULTS AND PROPOSED REMEDIATION PLAN

MAY 1987

C & F REALTY
MITIGATION/DEVELOPMENT PLAN
CARLSTADT, NEW JERSEY SITE

ACOE, Application/Public Notice #12672-86-773-J1

PAULUS
SOKOLOWSKI
and SARTOR INC
CONSULTING ENGINEERS

67A MOUNTAIN BOULEVARD EXTENSION
P.O. BOX [illegible]
WARREN, NEW JERSEY 07059

SAMPLING PLAN RESULTS
AND
PROPOSED REMEDIATION PLAN

C&F REALTY, LTD.
CARLSTADT, NEW JERSEY
00448-0017-04

Prepared by:

PAULUS, SOKOLOWSKI &
SARTOR, INC.

May 7, 1987

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1.0 SUMMARY AND CONCLUSIONS

C&F Realty Ltd (C&F) is the owner of property, located in the Borough of Carlstadt and under the jurisdiction of the Hackensack Meadowlands Development Commission (HMDC), a state planning and zoning agency. Proceeding on the basis of guidance from HMDC that the Army Corps of Engineers (ACOE) had no jurisdiction over their property, C&F began the development and filling of wetlands for a series of office/warehouse buildings. On August 1, 1985, the ACOE issued a stop-work order and advised C&F that an ACOE permit was required under Section 404 of Federal Clean Water Act. Shortly thereafter, C&F retained Paulus, Sokolowski & Sartor (PS&S) to act as their agents in the filing of the ACOE Permit Application.

The ACOE accepted the C&F application and wetland mitigation plan as complete for filing and issued a Public Notice of the application on May 27, 1986. In response to the Public Notice, the United States Environmental Protection Agency (USEPA), one of the federal reviewers of ACOE Permit Applications, commented on the potential mercury and arsenic contamination levels in the C&F site soils, in view of the known problems of mercury contamination in the local area, and they requested that additional sampling be conducted in specific project areas to be excavated and disturbed.

In response, PS&S prepared and submitted to the USEPA a plan for the requested additional sampling of site soils. After this plan was approved by the USEPA, PS&S acquired the additional samples on February 24 thru 26, 1987.

The results of these new samples, received in March and April 1987, revealed the presence of significant concentrations of arsenic and mercury within the site soils, up to depths of two to three feet. At a few spots within the mitigation areas, significant concentrations were found at depths of 3 to 4 feet. Additional leachate testing, however, determined that arsenic and mercury were bound up within the soils and that the arsenic and mercury, contained within these soils, has had a minor impact upon the existing environment.

what proof?

NOTES:

1. In accordance with the USEPA approval and the recommendations of WES, soil sampling at 21 locations (see Location Plan) on the C&F Realty, Carlstadt site was performed by PS&S on February 24 thru 26, 1987. Soil samples, acquired in this program, were analyzed for the presence of arsenic and mercury, by both bulk (USEPA Manual 600/4-79-020) and EP extraction procedures (USEPA Method SW846, 2nd Edition).

2. USEPA has informally identified a criterion of 10 mg/Kg, as determined by bulk testing procedures, for the identification of "acceptable" levels of either arsenic or mercury in soils (personal communication, D. Suszkowski, USPEA).

3. The Interagency Technical Advisory Group (TAG) on the remediation of mercury contamination in the Berry's Creek Basin has informally identified 20 mg/Kg as an indication of "acceptable" levels of either arsenic or mercury, reflective of the high ambient levels found in the Berry's Creek Basin (personal communication, P. Galluzzi, HMDC).

4. After reviewing the results of bulk testing, completed on the 2/24/87 soil samples, the lowest depth at which mercury and arsenic concentrations contravened the USEPA and TAG criterions was determined for each sample location. The depth that is shown is the deeper of the arsenic or mercury contraventions.

5. The distribution of contamination associated with the 21 soil sampling locations was estimated by a graphical technique known as the Theissen method. In this method, polygons are constructed around each sample location by drawing radial lines from each location to an adjacent location and then constructing perpendicular lines thru the midpoints of the radial lines, with polygons formed from the intersections of perpendicular lines. The area within each of the polygons was calculated and is tabulated for each sample location. This area represents the zone of influence of each sample location.

6. The contamination volume for the USEPA and TAG criterions is computed for each sample location area by multiplying the appropriate depth and the influence area.

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above the limit of detection with the exception of mercury and zinc. No organic compounds were analyzed in on-site surface water.

Mercury in air was analyzed during two surveys, both in 1978. The maximum concentration of mercury reported in air was 54 ug/m. A single sample was collected off-site which reported 0.0 mercury detected. No ambient air criteria are established for mercury.

A total of ten wells were sampled for ground water from the site. Most ground-water analyses for mercury were from unfiltered samples with values ranging from 0 to 3,770 ppb. Filtered samples ranged in concentration from 0.8 ppb to 8.8 ppb (drinking water quality criteria = 0.144 ppb). No arsenic was reported from filtered ground-water samples. The maximum mean arsenic value for any one well was 71 ppb (drinking water quality criteria = 0.022 ppb). Cadmium was not detected in unfiltered samples with a detection limit of 50 ppb. Filtered samples were detected to a maximum value of 13 ppb cadmium (drinking water quality criteria = 10 ppb). Lead was detected to a maximum of 3,000 ppb in unfiltered samples and was not detected in filtered samples (drinking water quality criteria = 50 ppb). Nickel was not detected in filtered or unfiltered samples. Zinc was found on many occasions to a maximum value of 25,200 ppb in unfiltered samples and 4,700 ppb in filtered samples. No organic contaminants were analyzed in ground water (drinking water quality criteria = 5,000 ppb).

A limited number of analyses were conducted for off-site soils. Mercury was detected to a maximum of 75 ppm in off-site soil with 22 analyses having a mean value of 15.6 ppm. Off-site arsenic soil concentrations ranged from 2 to 96.5 ppm with a mean value of 17.6. Off-site cadmium values ranged from a concentration of 0.5 to 71 ppm

with a mean value of 7.2 ppm. Nickel concentration in off-site soils ranged from 9.8 to 700 ppm. Lead off-site soils values range from 37 to 1,470 ppm. Zinc off-site soils values ranged from 31 to 7,478 ppm. Chromium off-site soil samples ranged from 23 to 950 ppm. Copper off-site soil values ranged from 10.2 to 330 ppm. Iron off-site soil concentrations ranged from 8,675 to 32,700 ppm. All of the mean off-site heavy metal values were higher than the mean value for model New Jersey soils with the exception of iron. Organic compounds were analyzed in one sample. No criteria are established for organic compounds in soil. No off-site soil was sampled for organic compounds.

Sediment and surface water data are discussed specifically for Berrys Creek. The maximum value for mercury reported in Berrys Creek sediment was 89,162 ppm. The range of mercury values downstream of Paterson Plank Road was 1.4 to 117.9 ppm. Upstream of the Paterson Plank Road mercury concentration ranged from 26.5 to 89,162 ppm to go with a mean value of approximately 250 ppm. Maximum concentration was detected in 1977 at station 9 which is in Berrys Creek near the point of the original plant discharge. No conclusions can be made of temporal trends in mercury concentration, however, it appears that the vertical distribution of mercury is highest in the upper sediments, i.e., 0 to 4 inches. Other heavy metal contaminants were compared to recommended New Jersey sediment quality criteria. These criteria were developed in 1979 by the United States Geological Survey (USGS) and are not criteria utilized by the State of New Jersey. These criteria are discussed because they provide reference numbers for comparison of the site data. The mean value for arsenic was 12.4 ppm which is less than the 200 ppm recommended for New Jersey sediment. A mean value for cadmium was

The only specific sample type discussed for the adjacent marshlands is sediments. Over 250 records of marsh sediment data are reported on the small-scale map. Almost 200 records are reported on the large-scale map. The range of mercury contamination in marsh sediments in the upper Berrys Creek area is from 0.6 ppm to 2,006 ppm. The range of mercury contaminations in the middle Berrys Creek area is from 0.3 ppm to 246 ppm and downstream of Route 3 bridge (lower Berrys Creek area) the range is from 0 to 62 ppm. A temporal trend indicated by marshland sediment mercury concentration is an apparent buildup in mercury concentration in the upper sediment layers, i.e., 0 to 6 inches from the period 1972 to 1977. No data exists to verify this trend after 1977. However, contaminants in marsh sediments were analyzed by Bergen Associates in 1978 for the Berrys Creek Center Environmental Impact Statement. All values reported for nine heavy metals by Bergen indicate that they are less than the New Jersey sediment quality criteria with the exception of chromium.

The resident biological community of the Berrys Creek area are discussed for fish, plants and other animals. Other animals include invertebrates, birds and mammals. The FDA (Food and Drug Administration) criteria for mercury in edible fish and shell fish is 1 ppm. Relatively few records are provided for edible fish portions, i.e., muscle, with the majority of records concerning killifish whole body samples. Whole body mercury level in killifish exceed the 1 ppm in areas adjacent to the site and for approximately one mile downstream. Other exceedances of 1 ppm in fish were reported the length of Berrys Creek to the Hackensack River, however, these records were for specific tissues, i.e., heart, brain, liver, etc. The maximum mercury level

found in fish was 59 ppm in killifish heart; while the maximum whole body analyses was 3.3 ppm in killifish. Whole body killifish analyses for mercury indicate no change in mercury concentration from 1978 to 1983 at two locations with an apparent increase in concentration at station 32, Paterson Plank Road.

A total of seven plant species were analyzed for mercury concentration. Primary species analyzed were Phramites (common reed), Spartina (cord grass) and Typha (cattail). The majority of plant tissue analyses were reported for distinct structures, i.e., stem, rhizome, leaf, etc. Plant tissue analyses exceeding 1 ppm were widespread throughout the Berrys Creek area with a maximum value of 13.46 ppm recorded from a spikerush at station 13 which is on the Hackensack River. The next highest value was 7.9 ppm from a cattail rhizome downstream of the tidal pool below the West Riser Ditch tidegate. Rhizome tissues typically indicated the greatest accumulation as compared to other plant parts. Mercury concentration in rhizome was apparently associated with mercury concentration in surrounding sediments, however, similar comparisons were not true for other specific tissues. Data for other biological species also indicate an accumulation of mercury is in the resident biological community. Invertebrates generally reported the highest concentrations of mercury with 51 percent of the records greater than 1 ppm to a maximum of 150 ppm in a whole snail tissue. Birds were also found to have high frequency of mercury levels with 43 percent greater than 1 ppm. Mammals were relatively low in exceeding 1 ppm with a total of 6 percent of the records.

the major regulatory responsibility; the activities of the newly-created DEP regarding the plant were minimal. With the reduction in Ventron's water-borne mercury discharge and with the discovery in 1974-75 that the soils surrounding the plant were heavily contaminated with mercury, the major regulatory responsibility shifted back into the State's hands, and in particular to the DEP.

With the commitment of EPA and with improved analytical techniques, sampling and analysis of the WRCC/Ventron industrial wastewater for mercury was conducted. The results indicated that, at that time, the WRCC/Ventron plant was discharging from two to four pounds of mercury a day into Berrys Creek. In addition, the mercury concentration in sediment samples taken in the vicinity of the industrial wastewater discharge into Berrys Creek was reported to be greater than any previously recorded. EPA decided that the contaminated sediments would have to be removed, but such a decision should be deferred until a solution for the ongoing discharge could be carried out. The regulatory agencies directed WRCC/Ventron to reduce their mercury discharges. While general suggestions were offered, such as improving housekeeping procedures, EPA offered no specific suggestions and WRCC/Ventron cooperated and learned with the agencies by studying the problem and letting the pollution continue.

Meetings were held with WRCC/Ventron personnel at which time they were advised by EPA that mercury discharges would be limited to no more than 0.5 pounds of mercury a day after January 31, 1971 and that this limitation would be further reduced to 0.1 pounds of mercury a day by July 1, 1971. WRCC/Ventron initiated a two-phase industrial wastewater treatment plan which they claimed would achieve the required results.

Phase I consisted of the segregation of known mercuric inplant wastewater streams from the non-mercuric streams, isolation of certain drains, and primary treatment of the mercuric wastewaters. Phase I was operational by February 1971.

Completion of this phase resulted in a reduction in the quantity of mercury being discharged, but brought to light a condition which came to be known as the "residual problem". Samples were taken at two locations described as the "treated effluent" and the "total effluent". The "treated effluent" was the discharge from the Phase I industrial wastewater treatment system. The "total effluent" was the combination of the treated effluent plus all other wastestreams (including stormwater, boiler blowdown and on-mercuric process wastewaters) which did not pass through the Phase I treatment system. The "total effluent" sample had a higher concentration of mercury than was present in the "treated effluent." It was speculated that residual mercury that had been deposited over years of untreated discharging was slowly being released into the effluent.

The discovery of the "residual problem" resulted in numerous meetings, discussions and correspondence between EPA, DEP and WRCC/Ventron from 1971 until the closing of the plant in 1974. Many avenues were explored in an effort to identify the source of the unexplained mercury in the total effluent and WRCC/Ventron initiated Phase II of its treatment plan (in March 1971). Phase II consisted of chemically treating all mercuric wastewaters, isolation of additional existing lines and drains, repiping, installation of recovery tanks, and treatment of settled sludge; this phase was completed in the fall of 1971. However, the "residual problem" continued and, as a result of the

methodology and thus "reliable." Table 5-1 summarizes the Phase 2 evaluation criteria by listing the approved, and acceptable analytical methods for mercury determination in various matrices. All reliable data passed Phase 1 criteria and then were analyzed by a method comparable to or identical to those listed in Table 5-1. These methods utilized to create reliable data are referenced in Chapter 1.2.C. "Inventory of Analytical Methodologies," Task I, Volume 2.

It must be understood that the colored figures are intended to present the general view of contamination and are not capable of depicting precise points and exact concentrations. The ranges of concentrations selected were based on the total range of concentrations for each sample type. The range of concentration and thus color represented at each specific location on each figure are the mean value of the various contaminants (mercury, zinc, lead, etc.) for any one station. For example on Figure 5-1, station 1 (confluence of Berrys Creek Creek and the Hackensack River), 15 data points from three different surveys were averaged to get a mean value of 7.7 ppm mercury thus the green dot indicates that mercury values range less than 10 ppm.

In addition to the colored display of ranges of contamination data in this chapter were sorted into various sample types (i.e., sediment, air, fish, etc.) by station. Locations of the stations from which data were collected are represented on two base maps (Figure 5-1 and Figure 5-2). Data collected from the station represented on Figures 5-1 and 5-2 are listed in Appendices 1 and 2, respectively. The sample types from stations presented on both base maps include analyses of soil, sediment, ground water, surface water, air, and biota. Biota is separated into three categories: fish, plants and other animal life.

The spatial distribution of arsenic, cadmium, lead, nickel and zinc in soils, marsh sediments and channel sediments are depicted in colored Figures 5-23 through 5-32. Each map contains the range of values for each of the three sample types. Sample types are indicated on each figure using the following code:

C = channel sediment

M = marsh sediment

S = soil

5.2.1.1.1 Mercury. Soils in the filled section of the Wood-Ridge site and wetlands of the southern 11 acres of the site are contaminated with mercury. Soils on the Wolf and U.S. Life property are "entombed" in concrete and asphalt but had been reported at high levels as this was the original location of the plant site. Twelve of the 27 samples obtained from the 33-acre area exceed 1,000 ppm with only two of 134 analyses less than 1.0 ppm. The maximum value was 123,000 ppm (Figure 5-33).

Summarized in Figure 5-34 are mercury concentrations in soils greater than 100 ppm on the large scale map with the specific values given in Table 5-6. A total of 47 records were processed for 21 stations for Table 5-6. The maximum value (123,000 ppm) was reported by JMA 1977 in an 18 to 24-inch section of a soil core at Station 37 which is near the Wolf building on the Wood-Ridge site. Soil values greater than 100 ppm are limited to the site with the exception of three samples from the banks of small tributaries at the confluence of Berrys Creek and Peach Island Creek (#126, #132 and #130).

Only 27 records from seven sampling locations (stations 8, 26, 35, 36, 38, 40, 43 large-scale map) are available for site sediments and

MAP2DATA..	STATION	SAMPLE....	CONTAMINANT	VALUE.....	UNITS.	LIMIT.	MONTH	YEAR	DESCIPTION.....	REF.....
2761	5	sed	Hg	882.00	ppm		6	77	0-3 inch	JMA 77
2762	5	sed	Hg	695.00	ppm		6	77	3-6inch	JMA 77
2766	6	sed	Hg	679.00	ppm		6	77	0-3inch	JMA 77
2767	6	sed	Hg	625.00	ppm		6	77	3-6inch	JMA 77
2768	6	sed	Hg	179.00	ppm		6	77	6-9inch	JMA 77
2779	8	sed	Hg	361.00	ppm		6	77	0-3inch	JMA 77
2780	8	sed	Hg	420.00	ppm		6	77	3-6inch	JMA 77
2781	8	sed	Hg	624.00	ppm		6	77	6-9inch	JMA 77
2782	8	sed	Hg	528.00	ppm		6	77	9-12inch	JMA 77
2796	9	sed	Hg	165.00	ppm		2	75	ng	JMA 77
2795	9	sed	Hg	700.00	ppm		4	80	dry avg.PONAR Grab	AW 80
2791	9	sed	Hg	2825.00	ppm		6	77	0-3inch	JMA 77
2792	9	sed	Hg	39940.00	ppm		6	77	3-6inch	JMA 77
2793	9	sed	Hg	89162.00	ppm		6	77	6-9inch	JMA 77
2794	9	sed	Hg	66533.00	ppm		6	77	9-12inch	JMA 77
2805	10	sed	Hg	147.00	ppm		2	75	PONAR Grab	JMA 77
2804	10	sed	Hg	410.00	ppm		4	80	dry avg.PONAR Grab	AW 80
2800	10	sed	Hg	993.00	ppm		6	77	0-3inch	JMA 77
2801	10	sed	Hg	307.00	ppm		6	77	3-6inch	JMA 77
2925	43	sed	Hg	150.00	ppm		4	80	dry avg.PONAR Grab	AW 80
3120	44	marsh sed	Hg	208.00	ppm			72	4-6 inch	JMA 76
2927	44	sed	Hg	420.00	ppm		4	80	dry avg.PONAR Grab	AW 80
2926	44	sed	Hg	776.00	ppm		7	78	br.&bk.	Stop 78
2936	48	sed	Hg	110.00	ppm		4	80	dry avg.PONAR Grab	AW 80
2934	48	sed	Total Hg	131.00	ppm		2	84	PONAR Grab	Bart 84
2939	49	sed	Hg	152.00	ppm		2	84	Lowtide 1	Weis 84
2941	49	sed	Hg	164.00	ppm		2	84	Lt 1	Weis 84
2943	49	sed	Hg	105.00	ppm		2	84	Lt 1	Weis 84
2946	49	sed	Hg	124.00	ppm		2	84	Lt 2	Weis 84
2948	49	sed	Hg	307.00	ppm		2	84	Lt 2	Weis 84
2951	49	sed	Hg	182.00	ppm		2	84	Lt 1	Weis 84
2952	49	sed	Hg	271.00	ppm		2	84	Lt 2	Weis 84
2955	49	sed	Hg	152.00	ppm		2	84	Lt 1	Weis 84
2956	49	sed	Hg	346.00	ppm		2	84	Lt 2	Weis 84
2957	49	sed	Hg	122.00	ppm		2	84	Lt 1	Weis 84
2959	49	sed	Hg	133.00	ppm		2	84	Lt 1	Weis 84
2965	49	sed	Hg	137.00	ppm		2	84	Lt 1	Weis 84
2968	49	sed	Hg	186.00	ppm		2	84	Lt 2	Weis 84
2970	49	sed	Hg	383.00	ppm		2	84	Lt 2	Weis 84
2971	49	sed	Hg	276.00	ppm		2	84	Lt 1	Weis 84
2972	49	sed	Hg	807.00	ppm		2	84	Lt 2	Weis 84
2973	49	sed	Hg	1142.00	ppm		2	84	Lt 1	Weis 84

LARGE-SCALE MAP - SOIL AND MERCURY CONCENTRATION GREATER THAN 100.0 ppm

MAP2DATA.. STATION SAMPLE.... CONTAMINANT VALUE..... UNITS. LIMIT. MONTH YEAR DESCRIPTION..... REF..... 13:16:53 27 SEP 1985

STATION	SAMPLE		CONTAMINANT	VALUE	UNITS	LIMIT	MONTH	YEAR	DESCRIPTION	REF
2974	49	sed	Hg	1392.00	ppm		2	84	Lt 2	Weis 84
2938	49	sed	Hg	570.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
2937	49	sed	Total Hg	192.50	ppm		2	84	PONAR Grab	Bart 84
2977	50	sed	Hg	170.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
2975	50	sed	Total Hg	576.00	ppm		2	84	PONAR Grab	Bart 84
2980	51	sed	Hg	220.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
2978	51	sed	Total Hg	452.00	ppm		2	84	PONAR Grab	Aw 80
2983	54	sed	Hg	140.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
2984	55	sed	Hg	171.00	ppm		4	80	dry AVG. PONAR Grab	Wood 82
3176	56	sed	Hg	700.00	ppm		3	82	3-18 inorganic	Wood 82
3177	56	sed	Hg	1700.00	ppm		3	82	18-38 inorganic	Wood 82
3178	56	sed	Hg	300.00	ppm		3	82	18-38 inorganic	Aw 80
2986	57	sed	Hg	370.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
2987	58	sed	Hg	140.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
2988	59	sed	Hg	230.00	ppm		4	80	dry AVG. PONAR Grab	JMA 77
2990	60	sed	Hg	167.00	ppm		2	75	ng	Aw 80
2989	60	sed	Hg	120.00	ppm		4	80	dry AVG. PONAR Grab	JMA 77
2992	60	sed	Hg	577.00	ppm		8	76	ng	HMDC 80
7900	61	sed	Hg	1730.00	ppm		12	80	0-4	Aw 80
2994	62	sed	Hg	140.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
2995	63	sed	Hg	520.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
2996	64	sed	Hg	130.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
2997	65	sed	Hg	310.00	ppm		4	80	dry AVG. PONAR Grab	NJDEP 85
3193	65	ch sed	Hg	349.26	ppm		10	81	west PONAR Grab	NJDEP 85
3194	65	ch sed	Hg	151.89	ppm		10	81	east PONAR Grab	Aw 80
2998	66	sed	Hg	200.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
2999	67	sed	Hg	260.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
3004	68	sed	Hg	490.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
3005	69	sed	Hg	160.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
3006	70	sed	Hg	240.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
3007	71	sed	Hg	460.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
3009	73	sed	Hg	120.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
3010	74	sed	Hg	260.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
3011	75	sed	Hg	240.00	ppm		4	80	dry AVG. PONAR Grab	Wood 82
3211	76	sed	Hg	110.00	ppm		3	82	1-34 inorganic	NJDEP 85
3215	76	ch sed	Hg	106.46	ppm		10	81	west PONAR Grab	Aw 80
3013	77	sed	Hg	350.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
3016	80	sed	Hg	130.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
3018	82	sed	Hg	320.00	ppm		4	80	dry AVG. PONAR Grab	Aw 80
3019	83	sed	Hg	220.00	ppm		4	80	dry AVG. PONAR Grab	JMA 77
3021	83	sed	Hg	4480.00	ppm		8	76	ng	Aw 80
3023	85	sed	Hg	150.00	ppm		4	80	top PONAR Grab	

PAGE 1 LARGE-SCALE MAP - SOIL AND MERCURY CENTRATION GREATER THAN 100.0 ppm 13:17:28 27 SEP 1985

MAP2DA.....	STATION	SAMPLE....	CONTAMINANT	VALUE.....	UNITS.	LIMIT.	MONTH	YEAR	DESCIPTION.....	REF.....
3222	85	ch sed	Hg	116.07	ppm		10	81	east PONAR Grab	NJDEP 85
3223	85	ch sed	Hg	118.47	ppm		10	81	center PONAR Grab	NJDEP 85
3027	87	sed	Hg	280.00	ppm		4	80	T.core PONAR Grab	Aw 80
3028	87	sed	Hg	280.00	ppm		4	80	center core PONAR	Aw 80
3228	88	sed	Hg	110.00	ppm		3	82	1-26inchinorganic	Wood 82
3234	90	ch sed	Hg	288.89	ppm		10	81	center PONAR Grab	NJDEP 85
3239	96	ch sed	Hg	108.33	ppm		10	81	center PONAR Grab	NJDEP 85
3240	96	ch sed	Hg	121.28	ppm		10	81	east PONAR Grab	NJDEP 85
3244	119	ch sed	Hg	128.47	ppm		10	81	west PONAR Grab	NJDEP 85
3246	119	ch sed	Hg	275.27	ppm		10	81	center PONAR Grab	NJDEP 85
3267	126	ch sed	Hg	128.00	ppm		9	83	composite	Crow 84
3271	129	ch sed	Hg	331.00	ppm		9	83	composite	Crow 84

96 Records Processed

sampling method. Stopford detected mercury at 35 ug/m^3 utilizing the "vapor" method, however, the probe was inserted in a barrel which apparently contained waste material including mercury. The major areas of contamination were within the central and northern areas of the Wood-Ridge site boundary. In addition, there were three points of mercury air contamination found on the U.S. Life and Wolf properties. These concentrations ranged from 0.38 ug/m^3 to 4.03 ug/m^3.

5.2.1.4 Ground Water. A total of ten wells have been sampled for metals, on the 40-acre site. All samples were collected and analyzed by JMA. Two wells are located on the Wolf property while the remaining eight wells are located on the 33-acre site.

Samples have been collected under several different conditions. On June 2, 1977 samples were collected from the top and bottom of the screened aquifer. These samples were analyzed unfiltered. All ten wells were analyzed for Hg, As, Cd, Pb, Ni and Zn. On June 6, 1977 samples were collected at high and low tide. These samples were analyzed unfiltered. Samples from all wells except 7 and 115 were analyzed for Hg, As, Cd, Pb, Ni and Zn. On July 13, 1977 filtered samples were analyzed. These samples were collected at high and low tide and analyzed for the above metals.

5.2.1.4.1 Mercury. The test data indicates several areas in which mercury contamination exists in the ground water. High levels of mercury were found on the northwest corner of the Wood-Ridge site boundary. The values range from 0.00 ppb to a high of 3,770 ppb (unfiltered samples) and are located adjacent to the Wolf properties on the eastern side. Mercury was detected in two of the ten wells from filtered samples, both of which are located on the Wolf site ranging

from 0.8 ppb to 8.8 ppb. The southwestern and eastern areas within the Wood-Ridge site boundary showed lower concentrations of mercury.

A total of 52 records are reported for ten ground-water stations by JMA in 1977. All sampling was conducted in June and July 1977. Both filtered and unfiltered samples were collected at both high and low tide, as well as unfiltered at the top (T) and bottom (B) of the water column in the well. Mercury was detected in all unfiltered samples with the exception of the high tide sample at Station 114. Station 114 and 112 were lowest in mercury while Station 116 (well 5) had the highest unfiltered mercury value with 3,770.0 ppb detected in the bottom sample. Typically (80%) the mercury values were greater during low tide versus high tide samples for unfiltered samples. Mercury was detected in filtered samples at Stations 115 and 7 at both high and low tide. however, higher concentrations were detected during high tide sampling. The single sampling event does not permit analysis of trends in the ground-water data.

The condition of the ground-water sampling wells were inspected by ERM personnel June 12, 1985. The eight wells constructed in June 1977 on the 33-acre Wood-Ridge site, were not found after an intensive effort to locate these wells. One of the three wells constructed by EPA on the 7-acre portion of the site (Wolf property) was located. This was the well that was originally designated WS and is south of the Wolf warehouse. This 4-inch diameter PVC well is in good condition and has a screw cap but was not locked. This well is station 7 on Figure 5-2. The other well outside the Wolf building (WE) is apparently destroyed. A third well on the Wolf property was originally constructed inside the warehouse. All attempts to contact responsible parties for information

of the 20 filtered samples exceeded the 100 ppb detection limit established for nickel using GF/AA.

5.2.1.4.6 Zinc. The 38 unfiltered zinc samples ranged from 20 to 23,200 ppb with a mean and standard deviation of 2,610 ± 6,570 ppm. This mean value exceeds the background level of zinc found in this area.

The 20 filtered zinc samples ranged from 20 to 4,700 ppb with a mean and standard deviation of 470 ± 1,170. It is likely this mean also exceeds the background level for zinc in area ground water.

5.2.1.4.7 Organic Contaminants. No organic contaminants were analyzed in ground-water samples.

5.2.3 Off-Site Soils

Limited data exists defining metal contaminants, in addition to mercury, for off-site soils in the Berrys Creek area (Eight Day Swamp). The metals analyzed included Hg (14), As (9), Ba (1), Cd (9), Cr (3), Cu (3), Fe (2), Pb (9), Ni (9), Se (1), Ag (1) and Zn (8), where the number in parenthesis is the number of sample sites analyzed for the particular metal. (Soil concentrations discussed are not corrected for differences in sample depth or number of samples analyzed at an individual sampling site. Soil values were averaged for each sample site for this discussion.)

5.2.3.1 Mercury. Off-site soil values ranged from 0.0 ppm south of Route 3 bridge to 75.0 ppm across the street north of the original plant site. The average value for 22 analyses was 15.6 ppm. These values clearly exceed those given in Table 5-5, however, aerial fallout,

mean zinc concentration upstream of this line is six times the downstream mean, the upstream Cu mean is 2 1/2 times the downstream mean, the Ni mean is only 1 1/2 times the downstream mean, the upstream Cr mean is almost five times the downstream mean and the upstream Cd mean is 3 1/2 times the downstream. The one other observation concerning spatial distribution is that there exists a wide variation in metals values between adjacent stations. This difference can be several hundred times within 1,000 linear feet.

5.2.4.1.1 Mercury. The distribution of mercury in the sediments of Berrys Creek indicates that the source of the mercury contamination was the Wood-Ridge site. There is a significant mercury concentration gradient in Berrys Creek as one moves upstream from the Hackensack River. Figures 5-35 and 5-36 indicate the concentration of mercury in channel sediments in the area on the small-scale and large-scale maps, respectively. Concentrations of mercury in channel sediments are relatively low in the section of Berrys Creek downstream of Paterson Plank Road, ranging from 1.4 to 117.9 ppm with the 117.9 value a high point ten times the highest value (NJDEP 1983) reported in channel sediment Berrys Creek Creek. Upstream of the Paterson Plank Road bridge the mercury levels are significantly and consistently higher than the downstream levels; whereas marsh sediments are at similar concentrations upstream and downstream of Paterson Plank Road. Consistently high mercury levels have been reported in Berrys Creek upstream of the confluence with the East Riser Ditch. These levels range from 26.5 to 4,480 ppm, with typical levels of about 250 ppm reported. Levels of mercury contamination are reported for several hundred feet upstream of the tide gate up to 776 ppm between the

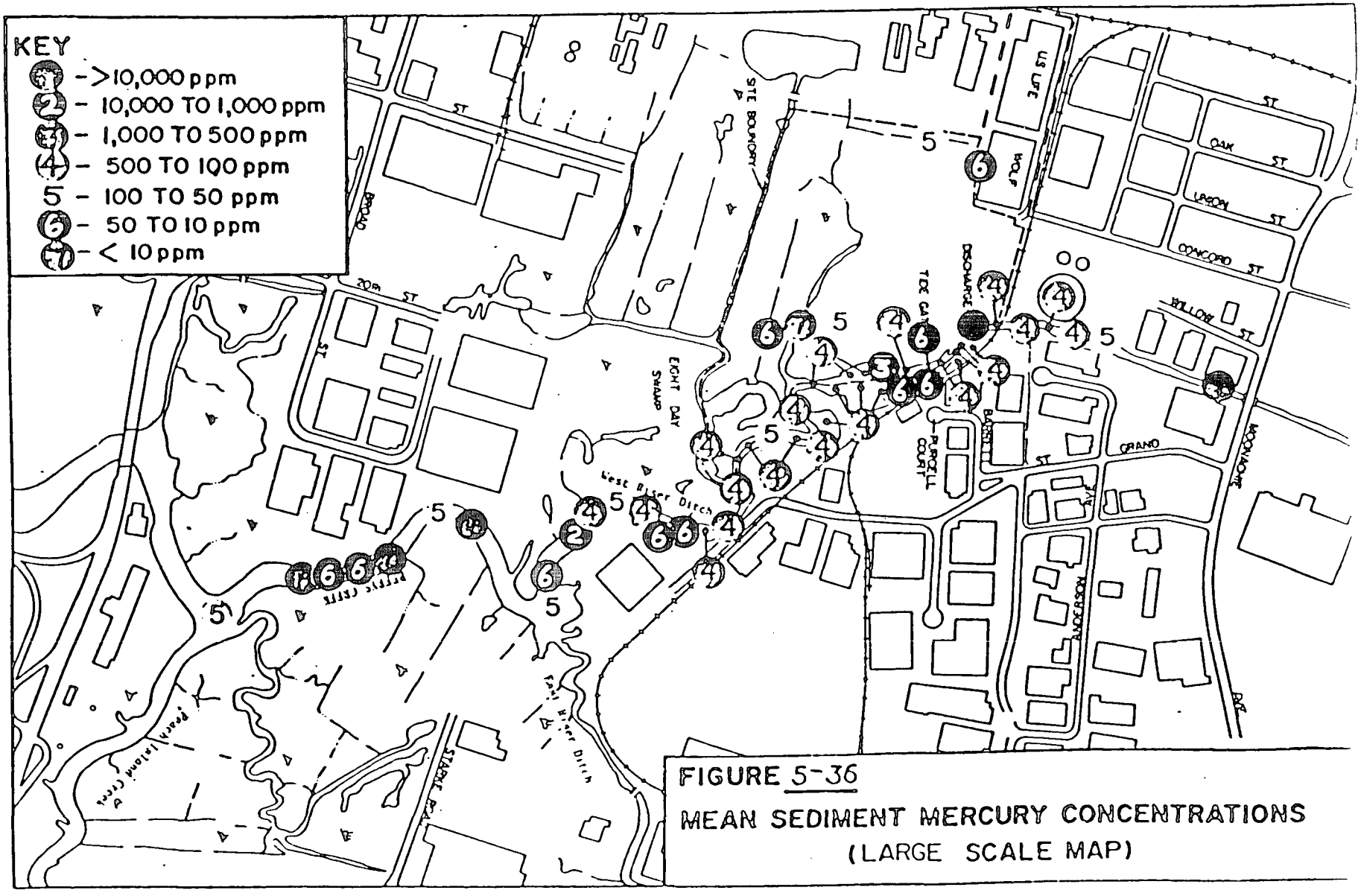


FIGURE 5-36

MEAN SEDIMENT MERCURY CONCENTRATIONS

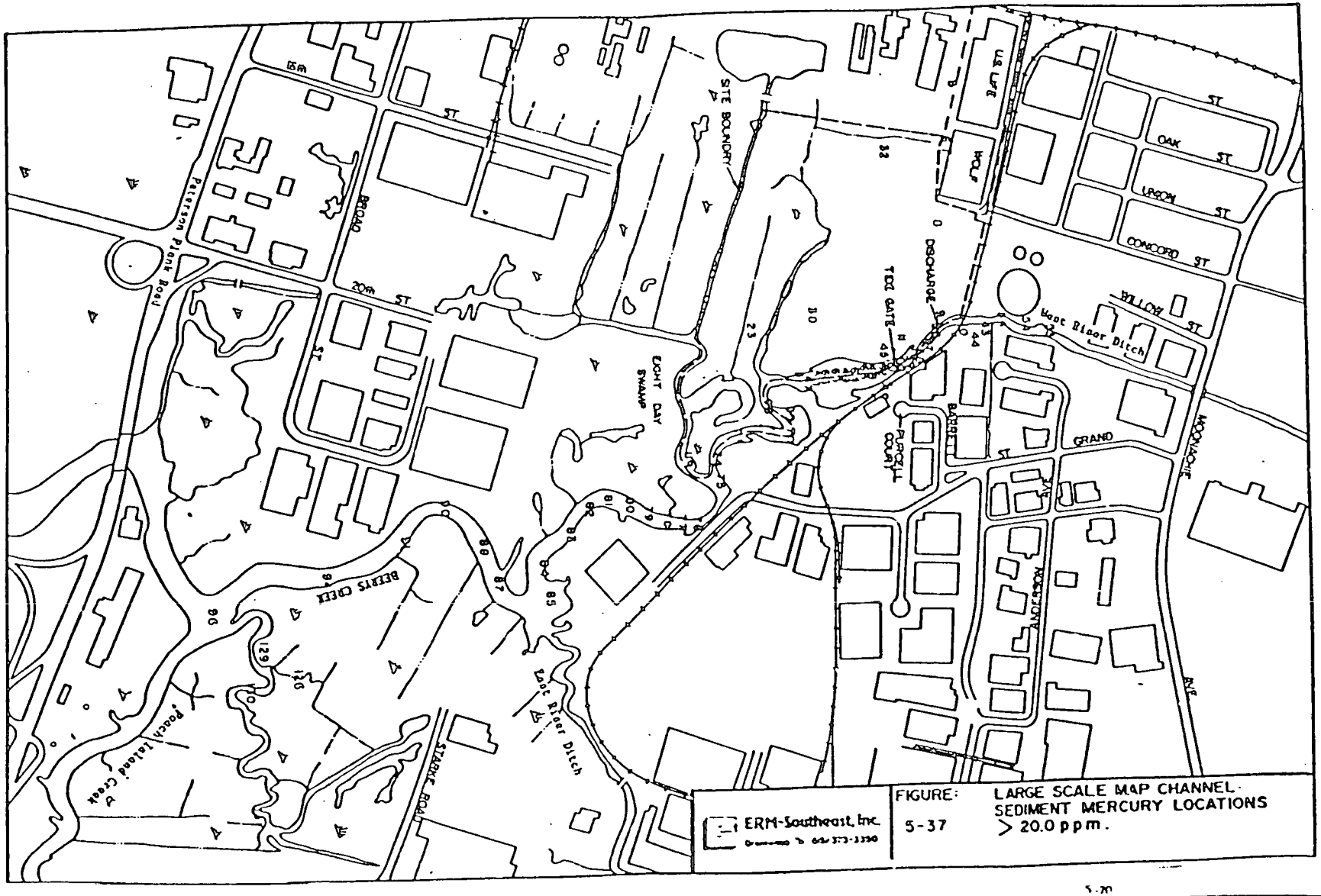
(LARGE SCALE MAP)

original discharge and the Wood-Ridge sewage treatment plant discharge. Based on both wet weight and dry weight data mercury contaminated sediments do not extend upstream of the Moonachie Ave. Bridge.

Sediment data are primarily available on a dry weight basis with a total of 373 records available. The location of 224 of these records is [illegible] on the small-scale map. In addition, 13 records for wet-weight analyses are indicated on the large-scale map and 31 records on the small-scale.

The large-scale map data are discussed first. A total of 75 stations are represented in the mercury sediment data, with numerous stations reporting single samples. Figure 5-37 illustrates those stations where sediment data exceed the 20 ppm value developed by the USGS for New Jersey sediment. The corresponding values are given in Table 5-8. A total of 165 of the 248 records indicate values greater than 20 ppm. Figure 5-38 of the small-scale map sediment data indicate that 39 of the 149 records indicate exceedance of the 20 ppm value and are given in Table 5-9.

Data is reported from three or more surveys for seven stations. However, comparability is difficult as both core sampling and grab sampling is reported at numerous stations. The grab samples were collected with a similar apparatus (PONAR dredge) in two studies, i.e., AWARE 1980 and NJDEP in 1981. The PONAR dredge can be utilized to collect a grab sample from 1 to approximately 6 inches depending upon firmness of the sediment. Another problem with data compatibility is that sampling of the channel sediments was only conducted at the same station a maximum of three times. The high degree of variability in sample results from a particular station suggests that even though



ERM-Southeast, Inc.

FIGURE: 5-37 LARGE SCALE MAP CHANNEL SEDIMENT MERCURY LOCATIONS > 20.0 ppm.

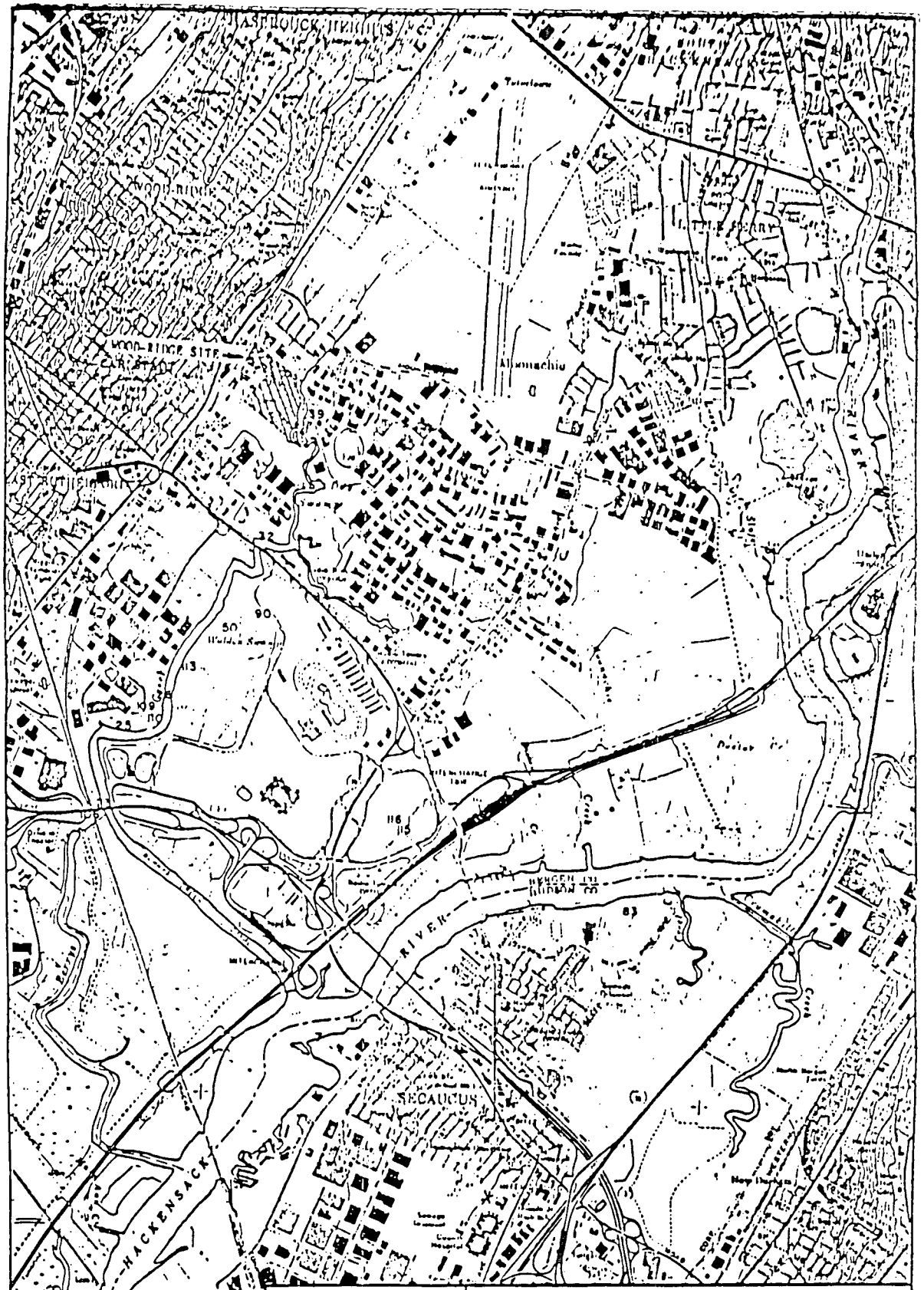
5-20

SMALL-SCALE MAP CHANNEL SEDIMENT MERCURY VALUES GREATER THAN 20.0 ppm

16:13:35 26 SEP 1985

MAPIDATA..	STATION	SAMPLE....	CONTAMINANT	VALUE.....	UNITS.	LIMIT.	MONTH	YEAR	DESCIPTION.....	REF.....
3287	3	ch sed	Hg	67.90	ppm		10	81	west side	NJDEP 85
3288	3	ch sed	Hg	32.08	ppm		10	81	east side	NJDEP 85
3292	4	ch sed	Hg	35.86	ppm		10	81	center	NJDEP 85
3293	4	ch sed	Hg	40.75	ppm		10	81	east side	NJDEP 85
3297	5	ch sed	Hg	117.88	ppm		10	81	west side	NJDEP 85
3298	5	ch sed	Hg	101.61	ppm		10	81	center	NJDEP 85
3299	5	ch sed	Hg	76.60	ppm		10	81	east side	NJDEP 85
1544	7	ch sed	Hg	32.00	ppm		10	76	0-2 inch	JMA 74
7777	23	ch sed	Hg	36.00	ppm	10	12	80	0-4 inch	HMDC 80
3361	25	sed	Hg	60.00	ppm	1	6	84	0 inch	Crow 84
3362	25	sed	Hg	44.00	ppm	1	6	84	4 inch	Crow 84
3363	25	sed	Hg	242.00	ppm	1	6	84	10 inch	Crow 84
3364	25	sed	Hg	165.00	ppm	1	6	84	16 inch	Crow 84
3365	25	sed	Hg	77.00	ppm	1	6	84	22 inch	Crow 84
3367	26	sed	Hg	28.00	ppm	1	6	84	comp	Crow 84
6674	32	sed	Hg	21.20	ppm		6	77	bl silt 18 inch	Huch 77
2133	39	ch sed	HG	276.00	ppm	.10		72	0-4 inch	HMDC 72
2134	39	ch sed	HG	807.00	ppm	.10		72	4-8 inch	HMDC 72
2135	39	ch sed	HG	1142.00	ppm	.10		72	8-12 inch	HMDC 72
2136	39	ch sed	HG	1392.00	ppm	.10		72	12-18 inch	HMDC 72
2221	50	ch sed	HG	58.00	ppm	.10		72	0-2 inch	HMDC 72
2222	50	ch sed	HG	438.00	ppm	.10		72	2-4 inch	HMDC 72
2223	50	ch sed	HG	247.00	ppm	.10		72	4-6 inch	HMDC 72
2393	83	ch sed	HG	36.00	ppm	.10		74	12-18 inch	HMDC 78
2394	84	ch sed	HG	218.00	ppm	.10		72	0-2 inch	HMDC 72
2395	84	ch sed	HG	37.00	ppm	.10		72	2-4 inch	HMDC 72
6675	90	sed	Hg	45.40	ppm		6	77	gy st/cl 9 inch	Huch 77
3399	109	sed	Hg	78.00	ppm	1	6	84	comp	Crow 84
3401	110	sed	Hg	46.00	ppm	1	6	84	0inch	Crow 84
3402	110	sed	Hg	66.00	ppm	1	6	84	2 inch	Crow 84
3403	110	sed	Hg	64.00	ppm	1	6	84	4 inch	Crow 84
3404	110	sed	Hg	47.00	ppm	1	6	84	7 inch	Crow 84
3405	110	sed	Hg	60.00	ppm	1	6	84	9 inch	Crow 84
4005	113	ch sed	Hg	74.00	ppm		5	78	0-2 inch	JMA 78
4006	113	ch sed	Hg	38.00	ppm		5	78	2-4 inch	JMA 78
4015	115	sed	Hg	32.40	ppm		5	78	4-6 inch	JMA 78
4016	116	sed	Hg	20.80	ppm		5	78	0-2 inch	JMA 78
4017	116	sed	Hg	29.90	ppm		5	78	2-4 inch	JMA 78
4018	116	sed	Hg	48.90	ppm		5	78	4-6 inch	JMA 78

39 Records Processed



ERM-Southeast, Inc.
Brentwood, Th. 615/373-3350

FIGURE: 5-38

SMALL SCALL MAP CHANNEL SEDIMENT MERCURY LOCATIONS > 20.0 ppm

MAP2DATA.. STATION SAMPLE.... CONTAMINANT VALUE..... UNITS UNIT. MONTH YEAR DESCIPTION..... REF.....

2761	5		sed		Hg	882.00	ppm	6	77	0-3 inch	JMA 77
2762	5		sed		Hg	695.00	ppm	6	77	3-6inch	JMA 77
2763	5		sed		Hg	81.00	ppm	6	77	6-9inch	JMA 77
2766	6		sed		Hg	679.00	ppm	6	77	0-3inch	JMA 77
2767	6		sed		Hg	625.00	ppm	6	77	3-6inch	JMA 77
2768	6		sed		Hg	179.00	ppm	6	77	6-9inch	JMA 77
2771	7		sed		Hg	23.00	ppm	6	77	3-6inch	JMA 77
2779	8		sed		Hg	361.00	ppm	6	77	0-3inch	JMA 77
2780	8		sed		Hg	420.00	ppm	6	77	3-6inch	JMA 77
2781	8		sed		Hg	624.00	ppm	6	77	6-9inch	JMA 77
2782	8		sed		Hg	528.00	ppm	6	77	9-12inch	JMA 77
2796	9		sed		Hg	165.00	ppm	2	75	ng	JMA 77
2795	9		sed		Hg	700.00	ppm	4	80	dry avg.PONAR Grab	AW 80
2791	9		sed		Hg	2825.00	ppm	6	77	0-3inch	JMA 77
2792	9		sed		Hg	39940.00	ppm	6	77	3-6inch	JMA 77
2793	9		sed		Hg	89162.00	ppm	6	77	6-9inch	JMA 77
2794	9		sed		Hg	66533.00	ppm	6	77	9-12inch	JMA 77
2788	9		sed		Hg	76.43	ppm	7	78	bk./br	Stop 78
2789	9		sed	Total	Hg	82.00	ppm	2	84	PONAR Grab	Bart 84
2805	10		sed		Hg	147.00	ppm	2	75	PONAR Grab	JMA 77
2804	10		sed		Hg	410.00	ppm	4	80	dry avg.PONAR Grab	AW 80
2800	10		sed		Hg	993.00	ppm	6	77	0-3inch	JMA 77
2801	10		sed		Hg	307.00	ppm	6	77	3-6inch	JMA 77
2802	10		sed		Hg	23.00	ppm	6	77	6-9inch	JMA 77
2799	10		sed		Hg	42.78	ppm	7	78	br. sand	Stop 78
2810	11		sed		Hg	57.00	ppm	6	77	0-3 inch	JMA 77
2811	11		sed		Hg	24.00	ppm	6	77	3-6 inch	JMA 77
2813	11		sed		Hg	23.00	ppm	6	77	9-12inch	JMA 77
3084	23		sed		Hg	25.00	ppm	3	80	PONAR Grab	AW 80
3095	32		sed		Hg	68.00	ppm	3	80	PONAR Grab	AW 80
3098	36	marsh	sed		Hg	27.00	ppm	3	76	PONAR Grab	JMA 76
3102	36	marsh	sed		Hg	30.00	ppm	3	76	ng	JMA 76
3104	36	marsh	sed		Hg	22.00	ppm	3	76	ng	JMA 76
3105	36	marsh	sed		Hg	36.00	ppm	3	76	ng	JMA 76
3106	36	marsh	sed		Hg	30.00	ppm	3	76	ng	JMA 76
3107	36	marsh	sed		Hg	32.00	ppm	3	76	ng	JMA 76
3111	38		sed		Hg	87.60	ppm	11	79	ng	AW 79
2925	43		sed		Hg	150.00	ppm	4	80	dry avg.PONAR Grab	AW 80
2924	43		sed		Hg	83.32	ppm	7	78	bk,surface	Stop 78
3120	44	marsh	sed		Hg	208.00	ppm		72	4-6 inch	JMA 76
3117	44	marsh	sed		Hg	61.70	ppm		74	0-3 inch	JMA 76
2927	44		sed		Hg	420.00	ppm	4	80	dry avg.PONAR Grab	AW 80

LARGE-SCALE MAP CHANNEL SEDIMENT MERCURY VALUES GREATER THAN 20.0 ppm

16:19:28 26 SEP 1985

MAP2DATA..	STATION	SAMPLE....	CONTAMINANT	VALUE.....	UNITS.	LIMIT	MONTH	YEAR	DESCIPTION.....	REF.....
2937	49	sed	Total Hg	192.50	ppm		2	84	PONAR Grab	Bart 84
2977	50	sed	Hg	170.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
2975	50	sed	Total Hg	576.00	ppm		2	84	PONAR Grab	Bart 84
2980	51	sed	Hg	220.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
2978	51	sed	Total Hg	452.00	ppm		2	84	PONAR Grab	Bart 84
2982	53	sed	Hg	96.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
2983	54	sed	Hg	140.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
2984	55	sed	Hg	171.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3175	56	sed	Hg	65.00	ppm		3	82	0-1inchinorganicHg	Wood 82
3176	56	sed	Hg	700.00	ppm		3	82	3-18inchinorganicH	Wood 82
3177	56	sed	Hg	1700.00	ppm		3	82	18-30inchinorganic	Wood 82
3178	56	sed	Hg	300.00	ppm		3	82	18-30inchorganic	Wood 82
2985	56	sed	Hg	38.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
2986	57	sed	Hg	370.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
2987	58	sed	Hg	140.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
2988	59	sed	Hg	230.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
2990	60	sed	Hg	167.00	ppm		2	75	ng	JMA 77
2989	60	sed	Hg	120.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
2992	60	sed	Hg	577.00	ppm		8	76	ng	JMA 77
2991	60	sed	Hg	35.00	ppm		11	75	ng	JMA 77
2993	61	sed	Hg	48.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
7900	61	sed	Hg	1730.00	ppm		12	80	0-4 in	HMDC 80
7901	61	sed	Hg	68.00	ppb		12	80	4-8 in	HMDC 80
2994	62	sed	Hg	140.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
2995	63	sed	Hg	520.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
2996	64	sed	Hg	130.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
2997	65	sed	Hg	310.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3193	65	ch sed	Hg	349.26	ppm		10	81	west PONAR Grab	NJDEP 85
3194	65	ch sed	Hg	151.89	ppm		10	81	east PONAR Grab	NJDEP 85
2998	66	sed	Hg	200.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
2999	67	sed	Hg	260.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3004	68	sed	Hg	490.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3199	68	ch sed	Hg	42.49	ppm		10	81	right PONAR grab	NJDEP 85
3200	68	ch sed	Hg	40.19	ppm		10	81	left PONAR grab	NJDEP 85
3201	68	ch sed	Hg	60.00	ppm		10	81	center PONAR grab	NJDEP 85
3005	69	sed	Hg	160.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3205	70	sed	Hg	38.00	ppm		3	82	0-1inchinorganic	Wood 82
3006	70	sed	Hg	240.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3007	71	sed	Hg	460.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3008	72	sed	Hg	79.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3009	73	sed	Hg	120.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3010	74	sed	Hg	260.00	ppm		4	80	dry avg.PONAR Grab	Aw 80

LARGE-SCALE MAP CHANNEL SEDIMENT MERCURY VALUES GREATER THAN 20.0 ppm

16:20:03 26 SEP 1985

MAP2DATA..	STATION	SAMPLE....	CONTAMINANT	VALUE.....	UNITS.	LIMIT.	MONTH	YEAR	DESCIPTION.....	REF.....
3011	75	sed	Hg	240.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3209	76	sed	Hg	30.00	ppm		3	82	0-11inchinorganic	Wood 82
3211	76	sed	Hg	110.00	ppm		3	82	1-34inchinorganic	Wood 82
3215	76	ch sed	Hg	106.46	ppm		10	81	west PONAR Grab	NJDEP 85
3216	76	ch sed	Hg	72.33	ppm		10	81	east PONAR Grab	NJDEP 85
3217	76	ch sed	Hg	33.83	ppm		10	81	center PONAR Grab	NJDEP 85
3013	77	sed	Hg	350.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3014	78	sed	Hg	46.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3015	79	sed	Hg	44.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3016	80	sed	Hg	130.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3017	81	sed	Hg	100.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3018	82	sed	Hg	320.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3019	83	sed	Hg	220.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3021	83	sed	Hg	4480.00	ppm		8	76	ng	JMA 77
3022	84	sed	Hg	41.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3023	85	sed	Hg	150.00	ppm		4	80	top corePONAR Grab	Aw 80
3222	85	ch sed	Hg	116.07	ppm		10	81	east PONAR Grab	NJDEP 85
3223	85	ch sed	Hg	118.47	ppm		10	81	center PONAR Grab	NJDEP 85
3027	87	sed	Hg	280.00	ppm		4	80	T.core PONAR Grab	Aw 80
3028	87	sed	Hg	280.00	ppm		4	80	center core PONAR	Aw 80
3029	87	sed	Hg	65.00	ppm		4	80	B.core PONAR Grab	Aw 80
3227	88	sed	Hg	45.00	ppm		3	82	0-11inchinorganic	Wood 82
3228	88	sed	Hg	110.00	ppm		3	82	1-26inchinorganic	Wood 82
3030	88	sed	Hg	30.00	ppm		4	80	T.core PONAR Grab	Aw 80
3034	90	sed	Hg	56.00	ppm		4	80	top corePONAR Grab	Aw 80
3232	90	ch sed	Hg	44.37	ppm		10	81	WEST PONAR Grab	NJDEP 85
3234	90	ch sed	Hg	288.89	ppm		10	81	center PONAR Grab	NJDEP 85
3037	91	sed	Hg	52.00	ppm		4	80	T.core PONAR Grab	Aw 80
3041	94	sed	Hg	35.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3043	96	sed	Hg	35.00	ppm		4	80	dry avg.PONAR Grab	Aw 80
3239	96	ch sed	Hg	108.33	ppm		10	81	center PONAR Grab	NJDEP 85
3240	96	ch sed	Hg	121.28	ppm		10	81	east PONAR Grab	NJDEP 85
3244	119	ch sed	Hg	128.47	ppm		10	81	west PONAR Grab	NJDEP 85
3245	119	ch sed	Hg	100.00	ppm		10	81	east PONAR Grab	NJDEP 85
3246	119	ch sed	Hg	275.27	ppm		10	81	center PONAR Grab	NJDEP 85
3267	126	ch sed	Hg	128.00	ppm		9	83	composite	Crow 84
3271	129	ch sed	Hg	331.00	ppm		9	83	composite	Crow 84
3273	130	ch sed	Hg	99.50	ppm		9	83	composite	Crow 84
3275	131	ch sed	Hg	25.20	ppm		9	83	composite	Crow 84

165 Records Processed

LARGE-SCALE MAP [illegible] MERCURY [illegible] ppm

16:18:54 26 SEP 1988

PAGE MAP2DAY	STATION	SAMPLE....	CONTAMINANT	VALUE.....	UNITS.	MONTH	YEAR	DESCIPTION.....	REF.. .....
2926	44	sed	Hg	776.00	ppm	7	78	br.&bk.	
2928	45	sed	Hg	76.43	ppm	7	78	bk.br.	Stop 78
2929	46	sed	Hg	30.56	ppm	7	78	br. sand	Stop 78
2936	48	sed	Hg	110.00	ppm	4	80	dry avg.PONAR Grab	Stop 78
2934	48	sed	Total Hg	131.00	ppm	2	84	PONAR Grab	Aw 80
3121	49	mrsh sed	Hg	40.60	ppm		74	0-6 inch	Bart 84
2939	49	sed	Hg	152.00	ppm	2	84	Lowtide 1	JMA 76
2940	49	sed	Hg	38.00	ppm	2	84	Lt 2	Weis 84
2941	49	sed	Hg	164.00	ppm	2	84	Lt 1	Weis 84
2942	49	sed	Hg	38.00	ppm	2	84	Lt 2	Weis 84
2943	49	sed	Hg	105.00	ppm	2	84	Lt 1	Weis 84
2945	49	sed	Hg	39.00	ppm	2	84	Lt 1	Weis 84
2946	49	sed	Hg	124.00	ppm	2	84	Lt 2	Weis 84
2947	49	sed	Hg	59.00	ppm	2	84	Lt 1	Weis 84
2948	49	sed	Hg	307.00	ppm	2	84	Lt 2	Weis 84
2949	49	sed	Hg	93.00	ppm	2	84	Lt 1	Weis 84
2950	49	sed	Hg	35.00	ppm	2	84	Lt 2	Weis 84
2951	49	sed	Hg	182.00	ppm	2	84	Lt 1	Weis 84
2952	49	sed	Hg	271.00	ppm	2	84	Lt 2	Weis 84
2953	49	sed	Hg	74.00	ppm	2	84	Lt 1	Weis 84
2954	49	sed	Hg	70.00	ppm	2	84	Lt 2	Weis 84
2955	49	sed	Hg	152.00	ppm	2	84	Lt 1	Weis 84
2956	49	sed	Hg	346.00	ppm	2	84	Lt 2	Weis 84
2957	49	sed	Hg	122.00	ppm	2	84	Lt 1	Weis 84
2958	49	sed	Hg	44.00	ppm	2	84	Lt 2	Weis 84
2959	49	sed	Hg	133.00	ppm	2	84	Lt 1	Weis 84
2960	49	sed	Hg	40.00	ppm	2	84	Lt 2	Weis 84
2961	49	sed	Hg	32.00	ppm	2	84	Lt 1	Weis 84
2962	49	sed	Hg	93.00	ppm	2	84	Lt 2	Weis 84
2963	49	sed	Hg	57.00	ppm	2	84	Lt 1	Weis 84
2964	49	sed	Hg	74.00	ppm	2	84	Lt 2	Weis 84
2965	49	sed	Hg	137.00	ppm	2	84	Lt 1	Weis 84
2966	49	sed	Hg	45.00	ppm	2	84	Lt 2	Weis 84
2967	49	sed	Hg	67.00	ppm	2	84	Lt 1	Weis 84
2968	49	sed	Hg	186.00	ppm	2	84	Lt 2	Weis 84
2969	49	sed	Hg	82.00	ppm	2	84	Lt 1	Weis 84
2970	49	sed	Hg	383.00	ppm	2	84	Lt 2	Weis 84
2971	49	sed	Hg	276.00	ppm	2	84	Lt 1	Weis 84
2972	49	sed	Hg	807.00	ppm	2	84	Lt 2	Weis 84
2973	49	sed	Hg	1142.00	ppm	2	84	Lt 1	Weis 84
2974	49	sed	Hg	1392.00	ppm	2	84	Lt 2	Weis 84
2938	49	sed	Hg	570.00	ppm	4	80	dry avg.PONAR Grab	Weis 84
									Aw 80

samples are from the same location for various years, differences in the sampling techniques, the dynamic nature of the estuarine system, and the extremely heterogeneous nature of the sediment make it difficult for an accurate comparison of data.

The maximum mercury value reported was 89,162 ppm at Station 9 by JMA 1977. The average value for this core was 49,815 ppm. Station 9 is the original location of the plant discharge. A sample was also collected at this site in 1975 and reported 165 ppm. AWARE reported 700 ppm at this site during 1980 from a grab sample with 84 ppm reported by Bartha (1984). Similar variances are observed at Station 10 (upstream of 9) as depicted on Figure 5-39.

A small amount of comparable data exists that describes vertical distribution of mercury in channel sediments cores (Table 5-10). In Lower Berrys Creek, the highest mercury concentration is typically in the upper section of the core, however, the lowest concentration of mercury was detected in the top, middle, and bottom of three separate core samples. In core samples collected from the middle Berrys Creek area the highest concentration of mercury is more consistently located in the upper section of the cores and lowest concentration in the bottom section. A single set of datum exists to discuss stratification of mercury in upper Berrys Creek at the tidal pool. Within this station highest mercury concentration was at the bottom of the core and lowest at the top. Upstream of the tidal pool on the West Riser Ditch and in Peach Island Creek, however, the reverse is observed. Although a great deal of data exist, poor compatibility and lack of trend do not permit the discussion of definite conclusions in the data.

The Freshwater and Saltwater Water Quality Criteria for mercury are listed in Table 5-11. Along with the criteria are number of exceedances for filtered samples and analyses. Other contaminants were not analyzed from filtered samples, therefore, criteria cannot be applied to them. Water quality criteria data available for organic compounds analyzed are in Table 5-12.

5.2.4.2.1 Mercury. Within Berrys Creek surface water was collected in the creek as well as its tributaries and side channels in the marshes. In the upper Berrys Creek area (upstream of Paterson Plank Road) concentrations ranged from 0.0 to 47.0 ppb for unfiltered samples and from 0.0 to 0.27 ppb for filtered samples. A single station was sampled in the middle Berrys Creek area with two samples collected by the NJDEP during 1981. The filtered value reported 1.4 ppb while the unfiltered sample was 0.2 ppb (Station 26).

Six stations were sampled in the lower Berrys Creek areas (downstream of Route 3 to the Hackensack River). Unfiltered samples ranged from 0.0 to 46.6 ppb while filtered samples ranged from 0.0 to 4.0 ppb. Seven exceedances of the 0.2 ppb water quality criteria were noted out of 86 filtered analyses. Suspended solids were also reported in this section of the creek at Route 3 bridge in August 1982 by HMDC. Mercury attached to suspended solids ranged from 53.4 ppm to 940.3 ppm with an average value of 298 ppm.

Three stations were also sampled outside the Berrys Creek system (60, 73, 76 small-scale map). Unfiltered values ranged from 0.0 to 4.2 ppb while filtered samples ranged from 0.0 to 0.17 ppb. Although the values in surface water are commonly greater than 0.2 ppb for either map the criteria are established based upon water filtered with a 0.45 u

TABLE 5-11

EXCEEDANCE OF WATER QUALITY VALUES IN SURFACE, FRESHWATER AND SALTWATER: SMALL- AND LARGE-SCALE MAP DATA BERRYS CREEK AREA

Contaminant	Freshwater	Saltwater	# Exceedances	#Analyses	Stations
Mercury	0.2	0.1	7	86	23,26,32, 39(sm-scale)
			1	1	1 lg-scale

data points were 45 and 50, each with three similar marsh sediment samples reported from various documents from the Hackensack Meadowlands Development Commission (HMDC) and Jack McCormick and Associates (JMA). Both Stations 45 and 50 are located in Walden Swamp. At Station 45 marsh sediments were reported for the years 1972, 1974 and 1976 with similar data for 0-2 in. to 0-6 in. depth cores. The upper layer of sediment for each sample increased in concentration from 1972 to 1976 from 6.0 ppm in 1972 to 36.7 ppm in 1974 and 136 ppm in 1976. No data were found at Station 45 after 1976. At Station 50, data are available for the years 1972, 1976, and 1977. Values at 0-2 in. depths for those years are 2.3 ppm, 35.0 ppm and 64.0 ppm, respectively. Deeper sediment data may also be compared for Station 50 at depths of 4-6 in. in 1972, 2-8 in. in 1976 and 2-6 in. in 1977. The values reported for these levels are 8.2 ppm, 84.0 ppm and 76.0 ppm, respectively. Both 0-2 in. and 2-8 in. samples indicate an increase of mercury concentration over time. Additional stations in the Walden Swamp area where sediment was sampled include: 27, 46, 47 and 48. The latest date of sampling for sediment in Walden Swamp sediment is 1977. Marsh sediment of 0-2 in. depth can be compared for two events at Station 48 where mercury concentration was reported at 6.7 ppm in 1972 and 53.0 ppm in 1976. The sediment data are very sporadic and lack similarity to determine definite trends but suggest that marsh sediments in Walden Swamp tended to increase in mercury concentration from 1972 to 1977.

The distribution of mercury with depth is difficult to assess as there are very few depth profile analyses at any single station for more than one period at identical depths. Therefore, mercury in the sediment with depth may be discussed only in a very general sense. Mercury

profiles in the marshes indicate that the highest concentration is typically in the top 0 to 6 inches; especially in the lower (Route 3 to Hackensack River) Berrys Creek area, Table 5-15. In the middle (Route 3 to Paterson Plank Road) and upper (Paterson Plank Road to West River Ditch tide gate) sections of Berrys Creek the mercury distribution with depth appears somewhat more mixed with the highest concentrations detected primarily in the top layer but at times detected in the lower to mid-sections of the sediment cores (core depths 12 to 25 inches were evaluated). In deeper cores (to 80 inches) collected by JMA in 1976, mercury appears to be associated primarily with the upper layer of peat (0-30 inches), and then to decrease through the middle sand layer and deep clay.

5.2.5.2 Marsh Sediment - Other Contaminants. Other contaminants (heavy metals) were sampled in marsh sediments primarily during one survey by Bergen Associates 1978 and by JMA 1978. Bergen's work was done for the Berrys Creek Center EIS. The stations sampled are in the lower Berrys Creek area (downstream of Route 3) while JMA sampled two locations in Walden Swamp. Arsenic and chromium were reported in Walden Swamp ranging from 29.8 to 67.6 ppm and 260 to 740.0 ppm, respectively. Arsenic is lower than the New Jersey sediment criteria recommended by the USGS while chromium was greater.

Four stations were sampled by Bergen 1978. Arsenic, cadmium, chromium, copper, iron, lead, nickel and zinc were analyzed. Table 5-16 gives the ranges and mean concentration for each heavy metal for all stations. All values reported by Bergen were less than USGS recommended sediment criteria.

BBC000140

Site Review And Update

VENTRON/VELSICOL

WOOD-RIDGE BORO, BERGEN COUNTY, NEW JERSEY

CERCLIS NO. NJD980529879

AUGUST 27, 1992

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Section 2

Field and Laboratory Investigations

Table B1-14. Monitoring well borehole data for MW-1 through MW-12 metals as reported by NJDEP (1993) with SSL comparisons for metals (Supplement to Table B1-2d)

Analyte	Units (dry wt.)	SSL	MW-1 1/1/91 MW0001 0–2 ft	MW-1 1/1/91 MW0021 2–4 ft	MW-1 1/1/91 MW0031 14–16 ft	MW-1 1/1/91 MW0041 18–20 ft	MW-10 1/1/91 MW0010 0.5–2.5 ft	MW-10 1/1/91 MW0102 2.5–4.5 ft	MW-10 1/1/91 MW0103 6.5–8.5 ft	MW-10 1/1/91 MW0104 8.5–10.5 ft	MW-10 1/1/91 MW0105 10.5–12.5 ft	MW-10 1/1/91 MW0106 12.5–14.5 ft
Arsenic	mg/kg	1										
Chromium	mg/kg	2										
Copper	mg/kg	--										
Mercury (total)	mg/kg	0.1	21.6	19.1	7.4	4.0	1,820	407	12.5	353	18.1	0.7
Nickel	mg/kg	7										
Silver	mg/kg	2										
Thallium	mg/kg	0.04										
Zinc	mg/kg	620										

Table B1-14. (cont.)

Analyte	Units (dry wt.)	SSL	MW-10 1/1/91 MW0107 14.5–16.5 ft	MW-10 1/1/91 MW0108 16.5–18.5 ft	MW-11 1/1/91 MW0011 2.5–4.5 ft	MW-11 1/1/91 MW0112 6.5–8.5 ft	MW-11 1/1/91 MW0113 8.5–10.5 ft	MW-11 1/1/91 MW0114 10.5–12.5 ft	MW-12 1/1/91 MW0012 0–2 ft	MW-12 1/1/91 MW0122 4–6 ft	MW-12 1/1/91 MW0123 6–8 ft
Arsenic	mg/kg	1									
Chromium	mg/kg	2									
Copper	mg/kg	--									
Mercury (total)	mg/kg	0.1	1.2	5.3	4.3	3.1	1.7	1.3	4.1	2.5	0.27
Nickel	mg/kg	7									
Silver	mg/kg	2									
Thallium	mg/kg	0.04									
Zinc	mg/kg	620									

Table B1-14. (cont.)

Analyte	Units (dry wt.)	SSL	MW-12 1/1/91 MW0125 10–12 ft	MW-12 1/1/91 MW0128 16–18 ft	MW-2 1/1/91 MW0002 0–2 ft	MW-2 1/1/91 MW0022 2–4 ft	MW-2 1/1/91 MW0032 12–14 ft	MW-2 1/1/91 MW0052 16–18 ft	MW-2 1/1/91 MW0062 18–20 ft	MW-3 1/1/91 MW0003 0–2 ft	MW-3 1/1/91 MW0023 6–8 ft	MW-3 1/1/91 MW0033 10.5–11.25 ft
Arsenic	mg/kg	1										
Chromium	mg/kg	2										
Copper	mg/kg	--										
Mercury (total)	mg/kg	0.1	0.48	0.28	588	549	0.44	0.35	0.15	98.3	217	107
Nickel	mg/kg	7										
Silver	mg/kg	2										
Thallium	mg/kg	0.04										
Zinc	mg/kg	620										

Table B1-14. (cont.)

Analyte	Units (dry wt.)	SSL	MW-3 1/1/91 MW0043 15–17 ft	MW-4 1/1/91 MW0004 0–2 ft	MW-4 1/1/91 MW0024 4–6 ft	MW-4 1/1/91 MW0034 6–8 ft	MW-4 1/1/91 MW0044 8–10 ft	MW-4 1/1/91 MW0054 10–12 ft	MW-4 1/1/91 MW0064 12–14 ft	MW-4 1/1/91 MW0074 16–18 ft	MW-5 1/1/91 MW0005 0–2 ft	MW-5 1/1/91 MW0025 4–6 ft
Arsenic	mg/kg	1										
Chromium	mg/kg	2										
Copper	mg/kg	--										
Mercury (total)	mg/kg	0.1	110	1.6	29.5	35.2	3.9	3.3	8.3	0.29	50.7	287
Nickel	mg/kg	7										
Silver	mg/kg	2										
Thallium	mg/kg	0.04										
Zinc	mg/kg	620										1,410

Table B1-14. (cont.)

Analyte	Units (dry wt.)	SSL	MW-5 1/1/91 MW0035 6–8 ft	MW-5 1/1/91 MW0045 8–10 ft	MW-5 1/1/91 MW0055 16–18 ft	MW-6 1/1/91 MW0006 0–2 ft	MW-6 1/1/91 MW0026 2–4 ft	MW-6 1/1/91 MW0036 4–6 ft	MW-6 1/1/91 MW0046 6–8 ft	MW-6 1/1/91 MW0056 8–10 ft	MW-6 1/1/91 MW0066 10–12 ft	MW-6 1/1/91 MW0076 12–14 ft
Arsenic	mg/kg	1									23	
Chromium	mg/kg	2										
Copper	mg/kg	--										
Mercury (total)	mg/kg	0.1	78.2	53	5.3	395	37.3	66.3	27.9	1,550	90.9	10.6
Nickel	mg/kg	7										
Silver	mg/kg	2										
Thallium	mg/kg	0.04										
Zinc	mg/kg	620										

Table B1-14. (cont.)

Analyte	Units (dry wt.)	SSL	MW-6 1/1/91 MW0086 14–16 ft	MW-6 1/1/91 MW0096 16–18 ft	MW-7 1/1/91 MW0007 0–2 ft	MW-7 1/1/91 MW0027 2–4 ft	MW-7 1/1/91 MW0037 4–6 ft	MW-7 1/1/91 MW0047 6–8 ft	MW-7 1/1/91 MW0057 8–10 ft	MW-7 1/1/91 MW0067 10–12 ft	MW-7 1/1/91 MW0077 12–14 ft	MW-7 1/1/91 MW0087 14–16 ft
Arsenic	mg/kg	1										
Chromium	mg/kg	2			136							
Copper	mg/kg	--			332							
Mercury (total)	mg/kg	0.1	115	19.4	352	56.6	31.4	3.6	174	153	8.4	4.5
Nickel	mg/kg	7			193							
Silver	mg/kg	2			30							
Thallium	mg/kg	0.04			10							
Zinc	mg/kg	620			10,600			379				

Table B1-14. (cont.)

Analyte	Units (dry wt.)	SSL	MW-7 1/1/91 MW0097 16–18 ft	MW-8 1/1/91 MW0008 6–8 ft	MW-8 1/1/91 MW0028 8–10 ft	MW-8 1/1/91 MW0038 10–12 ft	MW-8 1/1/91 MW0048 14–16 ft	MW-9 1/1/91 MW0009 0–2 ft	MW-9 1/1/91 MW0029 2–4 ft	MW-9 1/1/91 MW0039 4–6 ft	MW-9 1/1/91 MW0049 6–8 ft	MW-9 1/1/91 MW0059 8–10 ft
Arsenic	mg/kg	1										
Chromium	mg/kg	2										
Copper	mg/kg	--							592			
Mercury (total)	mg/kg	0.1	3	55.6	10.1	3.6	0.5	149	27.5	0.44	1.4	2
Nickel	mg/kg	7										
Silver	mg/kg	2										
Thallium	mg/kg	0.04										
Zinc	mg/kg	620										

Table B1-15. Ventron/Velsicol Phase I subsurface soil analytical results with SSL comparisons for metals (Supplement to Table B1-4b)

Analyte	Units (dry wt)	SSL	TP-01 SB0001 3/16/98 1-1.5 ft	TP-01 SB0002 3/16/98 2-3 ft	TP-02 SB0003 3/16/98 7-9 ft	TP-02 SB0004 3/16/98 5-7 ft	TP-03 SB0009 3/16/98 7-9 ft	TP-03 SB0010 3/16/98 5-7 ft	TP-04 SB0005 3/16/98 4-6 ft	TP-04 SB0006 3/16/98 2-4 ft	TP-05 SB0011 3/16/98 7.5-9.5 ft	TP-05 SB0012 3/16/98 5.5-7.5 ft
Aluminum	mg/kg	--	7,640	5,610	10,600	5,260	6,420	6,900	5,220	7,480	4,330	11,600
Antimony	mg/kg	0.3	6.00	9.40	1.40	3.80	7.40	4.70	5.30	8.60	1.80	26.7
Arsenic	mg/kg	1	21.1 J	18.3 J	23.3 J	13.8 J	9.10 J	8.50 J	11.8 J	6.10 J	6.60 J	19.0 J
Barium	mg/kg	82	563 J	597 J	186 J	511 J	766 J	335 J	514 J	1,140 J	1,120 J	1,290 J
Beryllium	mg/kg	3	0.880 U	1.20 U	0.780 U	0.740 U	0.630 U	0.660 U	0.580 U	0.620 U	0.470 U	0.720 U
Cadmium	mg/kg	0.4	2.60	1.80	0.460	0.670	4.19	1.70	2.10	5.30	3.30	12.3
Calcium	mg/kg		6,430	5,360	7,850	5,990	13,900	7,040	10,400	26,700	17,900	20,800
Chromium	mg/kg	2	59.8 J	51.2 J	45.5 J	29.6 J	31.1 J	38.5 J	45.1 J	58.8 J	35.1 J	65.5 J
Cobalt	mg/kg	-	13.1	9.50	6.10	8.90	6.40	9.20	8.10	6.70	3.50	11.5
Copper	mg/kg	-	348	388	50.4	228	138	202	259	194	30.3	2,190
Iron	mg/kg	-	67,400	43,500	30,200	65,900	17,700	19,500	29,400	21,500	12,800	47,300
Lead	mg/kg	400	1,300	1,020	112	574	772	855	1,270	2,580	1,680	3,140
Magnesium	mg/kg	--	1,340	1,950	3,030	1,010	2,200	2,210	2,380	6,470	1,600	2,850
Manganese	mg/kg	--	462 J	335 J	178 J	317 J	23,300 J	264 J	315 J	352 J	250 J	511 J
Mercury (total)	mg/kg	0.1	43.7 J	21.2 J	21.8 J	9.10 J	27.6 J	455 J	44.3 J	12.8 J	21.0 J	222 J
Nickel	mg/kg	7	51.2	39.1	14.9	31.3	34.2	36.6	38.4	58.9	20.1	118
Potassium	mg/kg	--	687	566	1,550	640	822	928	596	1,050	314	940
Selenium	mg/kg	0.3	1.40	2.30	3.60	2.90	5.80	0.620 U	0.890	0.670 U	0.890	1.60
Silver	mg/kg	2.0	2.50	1.50	0.360 U	1.20	12.3	0.940	1.50	2.60	0.510	8.20
Sodium	mg/kg	--	55.8 U	57.4 U	595	60.3 U	85.4	85.0	50.3 U	48.9 U	45.7 U	55.0 U
Thallium	mg/kg	0.04	1.40 U	0.790 U	1.60 U	0.830 U	12.7	1.80 U	9.40	1.40 U	0.630 U	12.9
Vanadium	mg/kg	300	41.6	28.7	74.8	31.2	38.0	39.8	32.6	40.9	18.0	49.9
Zinc	mg/kg	620	1,070	952	88.8	1,090	2,210	1,330	1,000	1,990	962	3,700

Table B1-15. (cont.)

Analyte	Units (dry wt)	SSL	TP-06 SB0007 3/16/98 6–8 ft	TP-06 SB0008 3/16/98 4–6 ft	TP-07 SB0013 3/17/98 3–5 ft	TP-07 SB0014 3/17/98 1–3 ft	TP-08* SB0038/40 3/18/98 4–6 ft	TP-08 SB0039 3/18/98 2–4 ft	TP-09 SB0017 3/17/98 5–7 ft	TP-09 SB0018 3/17/98 3–5 ft	TP-10 SB0022 3/17/98 5.5–7.5 ft	TP-10 SB0023 3/17/98 3.5–5.5 ft
Aluminum	mg/kg	--	7,340	6,980	9,350 J	6,010 J	14,000 J	6,520 J	10,100 J	6,260 J	9,600	6,240
Antimony	mg/kg	0.3	13.0	6.10	5.60 J	0.480 UJ	0.48 J	2.50 J	1.30 J	1.70 J	3.80	4.72
Arsenic	mg/kg	1	13.1 J	8.70 J	14.1	3.30	3.60 J	4.10	10.1	4.90	49.6	13.8
Barium	mg/kg	82	1,190 J	822 J	1,070	403	66.3	216	262	960	590	244
Beryllium	mg/kg	3	0.620 U	0.630 U	0.680 U	0.530 U	0.693 U	0.550 U	0.780 U	0.480 U	2.10	0.548 U
Cadmium	mg/kg	0.4	4.80	3.50	4.90	1.10	0.64	11.4	5.40	3.10	16.0	7.58
Calcium	mg/kg	--	14,200	12,400	24,900	7,190	1,300	2,410	13,100	26,600	16,600	8,550
Chromium	mg/kg	2	54.8	36.0 J	85.9	39.0	16.8	320	58.9	66.6	426	106
Cobalt	mg/kg	--	12.2	15.4	8.40	5.50	7.94	11.2	10.0	4.90	23.7	9.2
Copper	mg/kg	--	528	166	452	49.1	6.73 J	268	170	175	1,060 J	363 J
Iron	mg/kg	--	39,200	19,700	31,500 J	13,800 J	22,800 J	29,700 J	40,600 J	13,000 J	61,000 J	50,800 J
Lead	mg/kg	400	2,410	1,390	3,830	121	11.7	508	959	290	2,060	930
Magnesium	mg/kg	--	2,420	2,530	3,720 J	2,310 J	3,360 J	1,110 J	1,790 J	1,620 J	3,670	2,110
Manganese	mg/kg	--	340 J	225 J	365	213	404 J	269	157	186	520 J	456 J
Mercury (total)	mg/kg	0.1	5.30 J	85.8 J	60.5 J	92.5 J	3.90 J	921 J	17.0 J	10.3 J	57.7	28.7
Nickel	mg/kg	7	40.7	22.9	110	16.0	13.9	135	44.1	42.8	133	45.0
Potassium	mg/kg	--	921	767	1,180	718	700	336	484	456	1,040	567
Selenium	mg/kg	0.3	1.10	1.00	1.20 U	1.70 U	0.84 UJ	2.30 U	1.50 U	0.690 U	1.10 U	1.11
Silver	mg/kg	2.0	1.70	1.20	3.70	0.250	0.150	2.70	0.770	1.40	5.10	1.66
Sodium	mg/kg	--	56.1 U	50.8 U	53.4 U	174	584	58.8 U	291	298	82.2 U	133
Thallium	mg/kg	0.04	0.770 U	0.700 U	3.50 U	0.650 U	0.660 UJ	0.810 U	1.10 U	0.690 U	1.10 U	0.680 U
Vanadium	mg/kg	300	35.2	37.7	59.6	19.4	29.8	32.0	43.8	12.4	113	58.9
Zinc	mg/kg	620	1,820	1,020	3,140	679	59.5	787	698	736	2,590	1,080

Table B1-15. (cont.)

Analyte	Units (dry wt)	SSL	TP-11 SB0037 3/18/98 0.5-2.5 ft	TP-12 SB0036 3/18/98 1-3 ft	TP-13 SB0024 3/17/98 6.5-8.5 ft	TP-13 SB0025 3/17/98 4.5-6.5 ft	TP-14 SB0034 3/18/98 4-6 ft	TP-14 SB0035 3/18/98 2-4 ft	TP-15 SB0026 3/17/98 5-7 ft	TP-15 SB0027 3/17/98 3-5 ft	TP-16 SB0030 3/17/98 3-5 ft	TP-16 SB0031 3/17/98 1-3 ft
Aluminum	mg/kg	--	8,400 J	1,560	6,390	7,800	5,760	1,520	9,220	6,640	7,410	10,600
Antimony	mg/kg	0.3	0.470 UJ	0.470 U	25.2	8.10	3.20	0.710 U	13.3	41.2	1.10	0.450 U
Arsenic	mg/kg	1	1.40	3.80 J	8.80	12.7	32.5 J	0.890 UJ	29.2	120	4.10	1.40
Barium	mg/kg	82	58.6	114	1,260	778	162	29.5	310	259	160	68.7
Beryllium	mg/kg	3	0.470 U	0.580 U	0.460 U	0.640 U	0.640 U	0.510 U	0.630 U	0.360 U	0.460 U	0.330 U
Cadmium	mg/kg	0.4	0.400	0.620	16.6	5.20	3.30	0.680	13.0	36.1	2.70	0.670
Calcium	mg/kg	--	1,330	1,500	13,600	8,960	8,500	229,000	8,620	7,030	8,990	9,640
Chromium	mg/kg	2	14.1	21.8	606	405	40.3	6.40	357	322	30.6	201
Cobalt	mg/kg	--	3.50	2.10	10.3	8.20	8.20	0.940	22.3	42.5	7.60	12.5
Copper	mg/kg	--	8.60	17.8 J	476 J	215 J	253 J	181 J	369 J	1,030 J	202 J	64.3 J
Iron	mg/kg	--	11,300 J	26,900 J	49,800 J	22,000 J	27,900 J	1,840 J	103,000 J	293,000 J	20,900 J	18,100 J
Lead	mg/kg	400	5.90	56.8	3,710	1,980	439	10.4	1,030	657	372	35.3
Magnesium	mg/kg	--	1,770 J	982	2,270	2,590	1,720	979	2,360	1,530	3,940	9,430
Manganese	mg/kg	--	34.3	16.5 J	375 J	342 J	528 J	42.2 J	536 J	908 J	212 J	190 J
Mercury (total)	mg/kg	0.1	0.260 J	1.80 J	690	25.6	25.7 J	11.3 J	36.6	10.6	145	32.4
Nickel	mg/kg	7	8.20	59.7	43.8	50.3	24.8	50.0	216	317	34.5	57.0
Potassium	mg/kg	--	500	538	448	905	531	103	911	448	648	555
Selenium	mg/kg	0.3	0.630 U	6.40 J	2.50 U	2.20 U	0.700 UJ	0.960 UJ	4.90 U	8.80 U	0.660 U	0.600 U
Silver	mg/kg	2.0	0.140 U	0.140 U	4.10	3.70	1.40	0.210 U	4.00	6.30	2.40	0.560
Sodium	mg/kg	--	250	2,780	63.0	202	332	186	60.7 U	645 U	279	1,530
Thallium	mg/kg	0.04	0.630 U	3.90 UJ	0.830 U	0.850 U	0.700 UJ	0.960 UJ	0.830 U	8.80 U	1.00 U	1.90 U
Vanadium	mg/kg	300	22.6	980	30.3	42.1	33.8	7.40	60.4	39.5	48.7	36.2
Zinc	mg/kg	620	41.5	119	1,240	810	644	2,480	2,320	4,960	1,210	189

Table B1-15. (cont.)

Analyte	Units (dry wt)	SSL	TP-17 SB0028 3/17/98 6-8 ft	TP-17 SB0029 3/17/98 4-6 ft	TP-18 SB0032 3/18/98 4-6 ft	TP-18 SB0033 3/18/98 2-4 ft	TP-19 SB0015 3/17/98 6-8 ft	TP-19 SB0016 3/17/98 4-6 ft	TP-20 SB0019 3/17/98 4-6 ft	TP-20 SB0020 3/17/98 2-4 ft
Aluminum	mg/kg	--	10,800	5,040	5,940	4,020	6,010 J	8,790 J	8,600 J	6,940
Antimony	mg/kg	0.3	4.00	4.30	0.600 U	0.690	26.4 J	9.50 J	1.85 J	3.60
Arsenic	mg/kg	1	13.6	10.8	3.50 J	6.60 J	12.7	12.9	8.25	11.1
Barium	mg/kg	82	805	477	118	96.0	362	602	594	267
Beryllium	mg/kg	3	1.10	0.670 U	0.470 U	0.440 U	0.700 U	0.570 U	0.470 U	0.620 U
Cadmium	mg/kg	0.4	2.80	25.4	0.970	6.60	7.40	7.40	5.40	4.90
Calcium	mg/kg	--	32,800	85,900	3,970	16,800	12,200	7,580	14,200	7,960
Chromium	mg/kg	2	29.7	94.2	39.0	32.6	292	67.3	171	58.9
Cobalt	mg/kg	--	6.40	10.3	3.10	5.70	21.6	10.3	5.55	10.1
Copper	mg/kg	--	336 J	486 J	14.9 J	76.1 J	363	381	157 J	267 J
Iron	mg/kg	--	18,600 J	71,100 J	10,000 J	29,700 J	70,500 J	32,100 J	25,300 J	64,900 J
Lead	mg/kg	400	1,130	622	26.4	198	2,390	2,010	1,800	898
Magnesium	mg/kg	--	8,120	5,220	1,420	2,590	4,230 J	2,610 J	1,280 J	1,850
Manganese	mg/kg	--	793 J	456 J	46.1 J	270 J	733	609	317 J	429 J
Mercury (total)	mg/kg	0.1	46.1	34,700	10.0 J	38.8 J	983 J	68.0 J	1.80 J	7.60
Nickel	mg/kg	7	37.3	222	10.0	42.7	132	49.4	25.4	109
Potassium	mg/kg	--	1,200	571	509	321	689	1,020	348	635
Selenium	mg/kg	0.3	1.20	0.860 U	0.820 UJ	0.910 UJ	2.40 U	1.70 U	1.30 U	1.20 U
Silver	mg/kg	2.0	4.00	84.8	0.180 U	1.20	2.70	4.40	3.30	3.00
Sodium	mg/kg	--	162	316 U	225	66.5 U	64.2 U	54.3 U	84.3	76.4
Thallium	mg/kg	0.04	3.40 U	1.80 U	0.820 UJ	0.910 UJ	0.880 U	3.20 U	0.690 U	0.740 U
Vanadium	mg/kg	300	86.5	153	31.8	25.1	44.9	44.6	19.4	304
Zinc	mg/kg	620	2,010	43,200	235	1,790	2,550	1,850	920	798

Note: * - average value of field duplicates
SSL - soil screening level for migration to groundwater (U.S. EPA 1996)
J - indicates an estimated concentration
U - undetected at detection limit shown

Boxed entries indicate measurements at or above the criteria value.
Shaded entries indicate detection limits above the screening criteria value.

Supplemental Table B1-1. (cont.)

Analyte	Units (dry wt.)	NRDCSCC	SS-05 SS0005 10/24/97	SS-05 SS0006 10/24/97	SS-15 SS0043 10/31/97	SS-15 SS0044 10/31/97
Lead	mg/kg	600	75.7	105	24.6 *J*	10.9 *J*
Magnesium	mg/kg	--	2,710 *J*	5,160	967 *J*	575 *J*
Manganese	mg/kg	--	279 *J*	362 *J*	129 *J*	122 *J*
Mercury (total)	mg/kg	270	1,720	1,250	77.4	26.7
Nickel	mg/kg	2,400	23.0 *J*	30.7	5.7 *J*	3.6 *J*
Potassium	mg/kg	--	802	1,530	274	201
Selenium	mg/kg	3,100	0.54 *UJ*	0.52 *U*	0.54 *UJ*	0.54 *UJ*
Silver	mg/kg	4,100	8	7.3	0.42 *U*	0.41 *U*
Sodium	mg/kg	--	272 *U*	261 *U*	271 *U*	270 *U*
Thallium	mg/kg	2	1.6 *U*	3.0 *U*	0.86 *U*	0.96 *U*
Vanadium	mg/kg	7,100	29.1	55.8	6.8	5.2
Zinc	mg/kg	1,500	779 *J*	1,010 *J*	112 *J*	65.8
Methylmercury						
Methylmercury	mg/kg	--				
Total Solids (dry wt. as % of wet wt.)	%	--	88.2	91.8	88.54	88.80

Note: *J* - indicates an estimated concentration
NRDCSCC - *Non-Residential Direct Contact Soil Cleanup Criteria* (NJAC 7:26; May 1999)
U - undetected at detection limit shown

Supplemental Table B1-2a. Ventron/Velsicol Phase IA borehole soil analytical results with NRDCSCC comparisons (field duplicates)

Analyte	Units (dry wt.)	NRDCSCC	MW-13 SS0109 11/19/99 1–3 ft	MW-13 SS01024 11/19/99 1–3 ft
Conventional Parameters				
Total solids	%	--	84.1	86.9
Metals				
Arsenic	mg/kg	20	11.7	8.1
Barium	mg/kg	47,000	922	713
Cadmium	mg/kg	100	2	2.2
Chromium	mg/kg	--	22.4	36.1
Copper	mg/kg	600	397	181
Iron	mg/kg	--	38,900	31,900
Lead	mg/kg	600	412	137
Manganese	mg/kg	--	307	307
Mercury (total)	mg/kg	270	3,430	4,230
Nickel	mg/kg	2,400	49.6 *J*	39.6
Selenium	mg/kg	3,100	0.43 *U*	0.43 *U*
Silver	mg/kg	4,100	4.3	1.1
Thallium	mg/kg	2	1.3	0.49 *U*
Zinc	mg/kg	1,500	499	342
Volatiles				
Benzene	µg/kg	13,000	81 *J*	330 *J*
Chlorobenzene	µg/kg	680,000	6.1 *UJ*	6.2 *UJ*
meta & para Xylenes	µg/kg	1,000,000	6.1 *UJ*	2.1 *J*
ortho-Xylene	µg/kg	1,000,000	6.1 *UJ*	6.2 *UJ*
Toluene	µg/kg	1,000,000	6.1 *UJ*	2 *J*

Note: *J* - indicates an estimated concentration
NRDCSCC - Non-Residential Direct Contact Soil Cleanup Criteria (NJAC 7:26; May 1999)
U - undetected at detection limit shown

Supplemental Table B1-2b. Ventron/Velsicol Phase IA borehole soil analytical results with IGWSCC comparisons (field duplicates)

Analyte	Units (dry wt.)	NJ IGWSCC	MW-13 SS0109 11/19/99 (1–3)	MW-13 SS0109 11/19/99 (1–3)
Conventional Parameters				
Total solids	%	--	84.1	86.9
Metals				
Arsenic	mg/kg	--	11.7	8.10
Barium	mg/kg	--	922	713
Cadmium	mg/kg	--	2.0	2.2
Chromium	mg/kg	--	22.4	36.1
Copper	mg/kg	--	397	181
Iron	mg/kg	--	38,900	31,900
Lead	mg/kg	--	412	137
Manganese	mg/kg	--	307	307
Mercury (total)	mg/kg	--	3,430	4,230
Nickel	mg/kg	--	49.6 *J*	39.6
Selenium	mg/kg	--	0.43 *U*	0.43 *U*
Silver	mg/kg	--	4.3	1.1
Thallium	mg/kg	--	1.3	0.49 *U*
Zinc	mg/kg	--	499	342
Volatiles				
Benzene	µg/kg	1,000	81 *J*	400 *J*
Chlorobenzene	µg/kg	1,000	6.1 *UJ*	6 *UJ*
meta & para Xylenes	µg/kg	67,000	6.1 *UJ*	2 *J*
ortho-Xylene	µg/kg	67,000	6.1 *UJ*	6 *UJ*
Toluene	µg/kg	500,000	6.1 *UJ*	2 *J*

Note: *J* - indicates an estimated concentration
IGWSCC - Impact to Groundwater Soil Cleanup Criteria (NJAC 7.26; May 1999)
U - undetected at detection limit shown

Supplemental Table B1-4a. (cont.)

Analyte	Units (dry wt.)	NRDCSCC	TP-08 SB0038 3/18/98 4.00–6.00 ft	TP-08 SB0040 3/18/98 4.00–6.00 ft	TP-20 SB0019 3/17/98 4.00–6.00 ft	TP-20 SB0021 3/17/98 4.00–6.00 ft
Iron	mg/kg	--	21,300 *J*	24,200 *J*	26,800 *J*	23,800 *J*
Lead	mg/kg	600	10.5	13.0	2,020	1,570
Magnesium	mg/kg	--	3,410 *J*	3,310	1,270 *J*	1,280
Manganese	mg/kg	--	330	478 *J*	368	266 *J*
Mercury (total)	mg/kg	270	1.90 *J*	5.90 *J*	2.40 *J*	1.20
Nickel	mg/kg	2,400	13.8	13.9	26.1	24.7
Potassium	mg/kg	--	700	704	289	406
Selenium	mg/kg	3,100	0.840 *U*	1.40 *UJ*	1.60 *U*	1.30 *U*
Silver	mg/kg	4,100	0.140 *U*	0.160	5.40	1.20
Sodium	mg/kg	--	539	628	88.6	80.0
Thallium	mg/kg	2	0.920 *U*	0.660 *UJ*	0.710 *U*	0.690 *U*
Vanadium	mg/kg	7,100	29.3	30.2	15.2	23.5
Zinc	mg/kg	1,500	47.8	71.3	1,020	814
Methylmercury						
Methylmercury	mg/kg	--	0.000100			
Other Parameters						
pH	pH	--	7.04		8.01	
Total solids (dry wt. as % of wet wt.)	%	--	83.5	82.4	76.8	78.4

Note: *J* - indicates an estimated concentration
NRDCSCC - Non-Residential Direct Contact Soil Cleanup Criteria (NJAC 7:26; May 1999)
U - undetected at detection limit shown

Supplemental Table B1-4b. (cont.)

Analyte	Units (dry wt.)	IGWSCC	TP-08 SB0038 3/18/98 4.00–6.00 ft	TP-08 SB0040 3/18/98 4.00–6.00 ft	TP-20 SB0019 3/17/98 4.00–6.00 ft	TP-20 SB0021 3/17/98 4.00–6.00 ft
Iron	mg/kg	--	21,300 *J*	24,200 *J*	26,800 *J*	23,800 *J*
Lead	mg/kg	--	10.5	13.0	2,020	1,570
Magnesium	mg/kg	--	3,410 *J*	3,310	1,270 *J*	1,280
Manganese	mg/kg	--	330	478 *J*	368	266 *J*
Mercury (total)	mg/kg	--	1.90 *J*	5.90 *J*	2.40 *J*	1.20
Nickel	mg/kg	--	13.8	13.9	26.1	24.7
Potassium	mg/kg	--	700	704	289	406
Selenium	mg/kg	--	0.840 *U*	1.40 *UJ*	1.60 *U*	1.30 *U*
Silver	mg/kg	--	0.140 *U*	0.160	5.40	1.20
Sodium	mg/kg	--	539	628	88.6	80.0
Thallium	mg/kg	--	0.920 *U*	0.660 *UJ*	0.710 *U*	0.690 *U*
Vanadium	mg/kg	--	29.3	30.2	15.2	23.5
Zinc	mg/kg	--	47.8	71.3	1,020	814
Methylmercury						
Methylmercury	mg/kg	--	0.1			
Other Parameters						
pH	pH	--	7.04		8.01	
Total solids (dry wt. as % of wet wt.)	%	--	83.5	82.4	76.8	78.4

Note: *J* - indicates an estimated concentration
IGWSCC - Impact to Groundwater Soil Cleanup Criteria (NJAC 7:26; May 1999)
U - undetected at detection limit shown

Supplemental Table B1-6a. Ventron/Velsicol Phase I offsite surface soil analytical results with RDCSCC comparisons (field duplicates)

Analyte	Units (dry wt.)	RDCSCC	SS-57 SS0068 05/06/98	SS-57 SS0069 05/06/98	SS-66 SS0079 05/07/98	SS-66 SS0080 05/07/98
Semivolatile Organic Compounds						
Benz[a]anthracene	µg/kg	900	1,200	1,000	450	250
Benzo[a]pyrene	µg/kg	660	2,100	1,700	400	250
Benzo[b]fluoranthene	µg/kg	900	2,800	2,400	460	320
Benzo[k]fluoranthene	µg/kg	900	940	640	170	88
Bis[2-ethylhexyl]phthalate	µg/kg	49,000	450 *U*	450 *U*	120 *U*	120 *U*
Dibenz[a,h]anthracene	µg/kg	660	450 *U*	450 *U*	120 *U*	41
Indeno[1,2,3-cd]pyrene	µg/kg	900	970	840	260	150
Metals						
Antimony	mg/kg	14	0.492 *J*	0.395 *J*	0.604	0.571
Cadmium	mg/kg	39	0.300 *J*	0.268 *J*	0.309	0.320
Copper	mg/kg	600	37 *J*	202 *J*	33.2	33.6
Lead	mg/kg	400	93.1 *J*	106 *J*	92.9 *J*	99.2 *J*
Mercury (total)	mg/kg	14	12.7	13.1	5.38	4.96
Thallium	mg/kg	2	0.981 *U*	1.11 *U*	0.490 *U*	0.418 *U*
Zinc	mg/kg	1,500	94 *J*	112 *J*	106	87.4

Note: *J* - indicates an estimated concentration
RDCSCC - Residential Direct Contact Soil Cleanup Criteria (NJAC 7:26; May 1999)
U - undetected at detection limit shown

Supplemental Table B1-6b. Ventron/Velsicol Phase IA offsite soil analytical results with RDCSCC comparisons (field duplicates)

Analyte	Units	RDCSCC	SS-78 SS0114 0–2 ft	SS-78 SS0115 0–2 ft
Conventional Parameters				
Total solids (dry wt. as % of wet wt.)	%	--	62.6	76.1
Metals				
Mercury (total)	mg/kg	14	1.6	0.899

Note. RDCSCC - Residential Direct Contact Soil Cleanup Criteria (NJAC 7:26, May 1999)

Supplemental Table B1-7b. (cont.)

Analyte	Units	SWQS	MW-6 GW0003 11/11/97	MW-6 GW0004 11/11/97
Iron	µg/L	--	14,300	14,200
Lead	µg/L	5	1.0 *U*	1.00 *U*
Magnesium	µg/L	--	87,200	87,700
Manganese	µg/L	--	3,880	3,800
Mercury (total)	µg/L	0.144	0.2	0.2 *U*
Nickel	µg/L	516	117 *J*	114 *J*
Potassium	µg/L	--	8,810 *J*	9,630 *J*
Selenium	µg/L	10	2.4 *U*	2.4 *U*
Silver	µg/L	164	1.8 *U*	1.8 *U*
Sodium	µg/L	--	484,000 *J*	485,000 *J*
Thallium	µg/L	1.7	8.6 *U*	7.1
Vanadium	µg/L	--	3.5	3.8
Zinc	µg/L	--	28.1 *U*	23.2
Methylmercury				
Methyl mercury	µg/L	--	0.0012	0.0014
Other Parameters				
Biochemical oxygen demand	mg/L	--	2 *U*	2 *U*
Carbonate alkalinity	mg/L	--	600	570
Chemical oxygen demand	mg/L	--	31	58
Orthophosphate-phosphorus	mg/L	--	0.050 *U*	0.050 *U*
Petroleum hydrocarbons	mg/L	--	0.5 *U*	0.5 *U*
Sulfate	mg/L	250	46	57
Total chloride	mg/L	230	870	820
Total dissolved solids	mg/L	500	1,800	1,500

Note: *J* - indicates an estimated concentration
SWQS - New Jersey Surface Water Quality Standards for fresh water (NJAC 7:9B; April 1998)
U - undetected at detection limit shown

Boxed entries indicate measurements above the criteria value.
Shaded entries indicate detection limits above the criteria value.

Supplemental Table B1-7e. Ventron/Velsicol Phase IA groundwater analytical results with GWQS comparisons (field duplicates)

Analyte	Units	GWQS	MW-2 GW0115 12/8/99	MW-2 GW0116 12/8/99
Conventional Parameters				
Ammonia	mg/L	--	3.81	4.09
Biochemical oxygen demand (5-day test)	mg/L	--	15.9	18.3
Chemical oxygen demand	mg/L	--	79.2	79.2
Nitrate	mg/L	--	3.34	3.54
Orthophosphate	mg/L	--	0.0082	0.0079
Petroleum hydrocarbons	mg/L	--	0.5 *U*	0.5 *U*
Sulfate	mg/L	250	59.4	61.9
Sulfides	mg/L	--	1.2	1
Total alkalinity	mg/L	--	483	481
Total chloride	mg/L	250	12.2	12.6
Dissolved organic carbon	mg/L	--	20.5	21.2
Total dissolved solids	mg/L	500	650	654
Metals				
Arsenic	µg/L	8	5.5 *UJ*	5.5 *UJ*
Barium	µg/L	2,000	337	362
Cadmium	µg/L	4	2.1	2.1
Chromium	µg/L	100	0.63	0.64
Copper	µg/L	1,000	16 *U*	14.7 *U*
Iron	µg/L	300	1,610	1,880
Lead	µg/L	10	3.4	2.8 *U*
Manganese	µg/L	50	67	74.6
Mercury (total)	µg/L	2	0.6	0.6
Methyl mercury	µg/L	--	0.028	0.035
Nickel	µg/L	100	15.1	16.3
Selenium	µg/L	--	3.8 *U*	3.8 *U*
Silver	µg/L	--	0.67 *U*	0.67 *U*
Thallium	µg/L	10	14.7	12.3
Zinc	µg/L	5,000	654	644
Volatile Organic Compounds				
Benzene	µg/L	1	9.4	8.6
Chlorobenzene	µg/L	4	4 *U*	4 *U*
meta & para Xylenes	µg/L	40	54	48
ortho-Xylene	µg/L	40	23	20
Toluene	µg/L	1,000	340	320
Semivolatile Organic Compounds				
1,2,4-Trichlorobenzene	µg/L	9	10 *U*	11 *U*
1,2-Dichlorobenzene	µg/L	600	10 *U*	11 *U*
1,3-Dichlorobenzene	µg/L	600	10 *U*	11 *U*
1,4-Dichlorobenzene	µg/L	75	10 *U*	11 *U*
2,2'-Oxybis[1-chloropropane]	µg/L	--	10 *U*	11 *U*
2,4,5-Trichlorophenol	µg/L	700	10 *U*	11 *U*
2,4,6-Trichlorophenol	µg/L	20	10 *U*	11 *U*
2,4-Dichlorophenol	µg/L	20	10 *U*	11 *U*
2,4-Dimethylphenol	µg/L	100	10 *U*	11 *U*
2,4-Dinitrophenol	µg/L	40	52 *UJ*	53 *UJ*
2,4-Dinitrotoluene	µg/L	10	10 *U*	11 *U*
2,6-Dinitrotoluene	µg/L	--	10 *U*	11 *U*
2-Chloronaphthalene	µg/L	--	10 *U*	11 *U*
2-Chlorophenol	µg/L	40	10 *U*	11 *U*
2-Methyl-4,6-dinitrophenol	µg/L	--	52 *U*	53 *U*
2-Methylnaphthalene	µg/L	--	10 *U*	11 *U*
2-Methylphenol	µg/L	--	10 *U*	11 *U*
2-Nitroaniline	µg/L	--	52 *U*	53 *U*

Supplemental Table B1-7g. Ventron/Velsicol supplemental Phase IA groundwater analytical results with GWQS comparisons (field duplicates)

Analyte	Units	GWQS	MW-13 GW0203 6/28/00	MW-13 GW0205 6/28/00
Lab Measured				
Mercury (filtered)	µg/L	2	9.8	7.1
Mercury (unfiltered)	µg/L	2	14	16
Total dissolved solids (filtered)	mg/L	500	946.7	967.3
Total dissolved solids (unfiltered)	mg/L	500	970.7	960.7
Field Measured				
pH	S.U.		7.81	
Conductivity	mS/cm		1.7	
Turbidity	NTU		4	
Dissolved oxygen	mg/L		3.8	
Temperature	°C		21.5	
Salinity	%		0.1	
Total dissolved solids	mg/L		1,100	
ORP	mV		-155	

Note: GWQS - Groundwater Quality Standards (NJAC 7:9–6; January 1993)
ORP - oxidation reduction potential (measured in millivolts)

Field parameters measured immediately before sample collection.

Supplemental Table B1-7h. Ventron/Velsicol supplemental Phase IA groundwater analytical results with GWQS comparisons (field duplicates)

Analyte	Units	GWQS	MW-13 GW0203 6/28/00	MW-13 GW0205 6/28/00
Lab Measured				
Mercury (filtered)	µg/L	0.017	9.8	7.1
Mercury (unfiltered)	µg/L	0.017	14	16
Total dissolved solids (filtered)	mg/L	500	946.7	967.3
Total dissolved solids (unfiltered)	mg/L	500	970.7	960.7
Field Measured				
pH	S.U.		7.81	
Conductivity	mS/cm		1.7	
Turbidity	NTU		4	
Dissolved oxygen	mg/L		3.8	
Temperature	°C		21.5	
Salinity	%		0.1	
Total dissolved solids	mg/L		1,100	
ORP	mV		-155	

Note: GWQS - Groundwater Quality Standards (NJAC 7:9–6; January 1993)
ORP - oxidation reduction potential (measured in millivolts)
SWQS - New Jersey Surface Water Quality Standards for fresh water (NJAC 7:9B; April 1998)
Field parameters measured immediately before sample collection.

Supplemental Table B1-8a. (cont.)

Analyte	Units	GWQS	SE-04 SE0004 10/15/97	SE-04 SE0005 10/15/97
Lead	µg/L	10	0.80 U	0.80 U
Magnesium	µg/L	--	109,000	109,000
Manganese	µg/L	50	1,400	1,390
Mercury (total)	µg/L	2	0.20 U	0.32
Nickel	µg/L	100	11.6	11.0
Potassium	µg/L	--	49,800 J	50,300 J
Selenium	µg/L	--	2.5	2.5 U
Silver	µg/L	--	0.73 U	1.2 U
Sodium	µg/L	50,000	752,000	731,000
Thallium	µg/L	10	6.4 U	6.2 U
Vanadium	µg/L	--	0.86 U	1.7 U
Zinc	µg/L	5,000	142	149
Metals - Unfiltered				
Aluminum	µg/L	200	684 J	179 J
Antimony	µg/L	20	1.4 U	1.4 U
Arsenic	µg/L	8	4.2	2.2 U
Barium	µg/L	2,000	476	465
Beryllium	µg/L	20	0.33 U	0.28 U
Cadmium	µg/L	4	3.7	0.44 U
Calcium	µg/L	--	264,000	286,000
Chromium	µg/L	100	37.7	10.7
Cobalt	µg/L	--	2.6 U	2.1 U
Copper	µg/L	1,000	63.6 J	16.8 J
Iron	µg/L	300	14,800	13,900
Lead	µg/L	10	48.2	11.5
Magnesium	µg/L	--	52,500	55,900
Manganese	µg/L	50	1,170	1,220
Mercury (total)	µg/L	2	33.8	8.4
Nickel	µg/L	100	8.5	6.1
Potassium	µg/L	--	22,100 J	23,600 J
Selenium	µg/L	--	4.1	2.5 U
Silver	µg/L	--	0.90 U	0.73 U
Sodium	µg/L	50,000	231,000	240,000
Thallium	µg/L	10	5.4 U	7.1 U
Vanadium	µg/L	--	17.9	11.4
Zinc	µg/L	5,000	581	158
Methylmercury				
Methylmercury - filtered	µg/L	--	0.00158	0.00285
Methylmercury - unfiltered	µg/L	--	0.0119	0.0543
Other Parameters				
Petroleum hydrocarbons	mg/L	--	0.50 U	0.50 U
Total dissolved solids	mg/L	500	1,700	1,700
Total suspended solids	mg/L	--	77	202

Note: J - indicates an estimated concentration
GWQS - Groundwater Quality Standards (NJAC 7:9-6; January 1993)
U - undetected at detection limit shown

Boxed entries indicate measurements above the criteria value
Shaded entries indicate detection limits above the criteria value

Supplemental Table B1-8b. (cont.)

Analyte	Units	SWQS	SE-04 SE0004 10/15/97	SE-04 SE0005 10/15/97
Lead	µg/L	5	0.80 *U*	0.80 *U*
Magnesium	µg/L	--	109,000	109,000
Manganese	µg/L	--	1,400	1,390
Mercury (total)	µg/L	0.144	0.20 *U*	0.32
Nickel	µg/L	516	11.6	11.0
Potassium	µg/L	--	49,800 *J*	50,300 *J*
Selenium	µg/L	10	2.5	2.5 *U*
Silver	µg/L	164	0.73 *U*	1.2 *U*
Sodium	µg/L	--	752,000	731,000
Thallium	µg/L	1.7	6.4 *U*	6.2 *U*
Vanadium	µg/L	--	0.86 *U*	1.7 *U*
Zinc	µg/L	--	142	149
Metals - Unfiltered				
Aluminum	µg/L	--	684 *J*	179 *J*
Antimony	µg/L	12.2	1.4 *U*	1.4 *U*
Arsenic	µg/L	0.017	4.2	2.2 *U*
Barium	µg/L	2000	476	465
Beryllium	µg/L	--	0.33 *U*	0.28 *U*
Cadmium	µg/L	10	3.7	0.44 *U*
Calcium	µg/L	--	264,000	286,000
Chromium	µg/L	160	37.7	10.7
Cobalt	µg/L	--	2.6 *U*	2.1 *U*
Copper	µg/L	--	63.6 *J*	16.8 *J*
Iron	µg/L	--	14,800	13,900
Lead	µg/L	5	48.2	11.5
Magnesium	µg/L	--	52,500	55,900
Manganese	µg/L	--	1,170	1,220
Mercury (total)	µg/L	0.144	33.8	8.4
Nickel	µg/L	516	8.5	6.1
Potassium	µg/L	--	22,100 *J*	23,600 *J*
Selenium	µg/L	10	4.1	2.5 *U*
Silver	µg/L	164	0.90 *U*	0.73 *U*
Sodium	µg/L	--	231,000	240,000
Thallium	µg/L	1.7	5.4 *U*	7.1 *U*
Vanadium	µg/L	--	17.9	11.4
Zinc	µg/L	--	581	158
Methylmercury				
Methylmercury - filtered	µg/L	--	0.00158	0.00285
Methylmercury - unfiltered	µg/L	--	0.0119	0.0543
Other Parameters				
Petroleum hydrocarbons	mg/L	--	0.50 *U*	0.50 *U*
Total dissolved solids	mg/L	500	1,700	1,700
Total suspended solids	mg/L	40	77	202

Note: *J* - indicates an estimated concentration
SWQS - New Jersey Surface Water Quality Standards for fresh water (NJAC 7.9B, April 1998)
U - undetected at detection limit shown

Boxed entries indicate measurements above the criteria value.
Shaded entries indicate detection limits above the criteria value.

Supplemental Table B1-8c. Ventron/Velsicol Phase IA seep analytical results with GWQS comparisons (field duplicates)

Analyte	Units	GWQS	SE-04A SE0015 12/10/99	SE-04A SE0016 12/10/99
Conventional Parameters				
Total suspended solids	mg/L	--	27.2	19.8
Filtered Metals				
Arsenic	µg/L		5.50 *U*	5.50 *U*
Barium	µg/L	2,000	154	153
Cadmium	µg/L	4	0.620 *U*	0.620 *U*
Chromium	µg/L	100	2.10	2.10
Copper	µg/L	1,000	1.80 *U*	1.80 *U*
Iron	µg/L	300	3,430	3,310
Lead	µg/L	10	2.80 *U*	3.10
Manganese	µg/L	50	856	861
Mercury (total)	µg/L	2	0.0607	0.0727
Methylmercury	µg/L	--	0.00201	0.00175
Nickel	µg/L	100	7.20	7.00
Selenium	µg/L	--	3.80 *U*	3.80 *U*
Silver	µg/L	--	0.670 *U*	0.670 *U*
Thallium	µg/L	10	4.40 *U*	4.40 *U*
Zinc	µg/L	5,000	125	131
Unfiltered Metals				
Arsenic	µg/L	8	5.50 *U*	5.50 *U*
Barium	µg/L	2,000	180	183
Cadmium	µg/L	4	1.00	1.10
Chromium	µg/L	100	2.90	3.20
Copper	µg/L	1,000	9.20 *U*	9.40 *U*
Iron	µg/L	300	5,460	5,670
Lead	µg/L	10	4.20	5.70
Manganese	µg/L	50	877	894
Mercury (total)	µg/L	2	1.4630	1.8590
Methylmercury	µg/L	--	0.00186	0.00267
Nickel	µg/L	100	6.60	6.90
Selenium	µg/L	--	3.80 *U*	3.80 *U*
Silver	µg/L	--	0.670 *U*	0.670 *U*
Thallium	µg/L	10	4.40 *U*	4.40 *U*
Zinc	µg/L	5,000	146	150

Note: *J* - indicates an estimated concentration
GWQS - Groundwater Quality Standards (NJAC 7:9-6, January 1993)
U - undetected at detection limit shown

Boxed entries indicate measurements at or above the criteria value.

Supplemental Table B1-8d. Ventron/Velsicol Phase IA seep analytical results with SWQS comparisons (field duplicates)

Analyte	Units	SWQS	SE-04A SE0015 12/10/99	SE-04A SE0016 12/10/99
Conventional Parameters				
Total suspended solids	mg/L	40	27.2	19.8
Filtered Metals				
Arsenic	µg/L	0.017	5.50 *U*	5.50 *U*
Barium	µg/L	2,000	154	153
Cadmium	µg/L	10	0.620 *U*	0.620 *U*
Chromium	µg/L	160	2.10	2.10
Copper	µg/L	--	1.80 *U*	1.80 *U*
Iron	µg/L	--	3,430	3,310
Lead	µg/L	5	2.80 *U*	3.10
Manganese	µg/L	--	856	861
Mercury (total)	µg/L	0.144	0.0607	0.0727
Methylmercury	µg/L	--	0.00201	0.00175
Nickel	µg/L	516	7.20	7.00
Selenium	µg/L	10	3.80 *U*	3.80 *U*
Silver	µg/L	164	0.670 *U*	0.670 *U*
Thallium	µg/L	1.7	4.40 *U*	4.40 *U*
Zinc	µg/L	--	125	131
Unfiltered Metals				
Arsenic	µg/L	0.017	5.50 *U*	5.50 *U*
Barium	µg/L	2,000	180	183
Cadmium	µg/L	10	1.00	1.10
Chromium	µg/L	160	2.90	3.20
Copper	µg/L	--	9.20 *U*	9.40 *U*
Iron	µg/L	--	5,460	5,670
Lead	µg/L	5	4.20	5.70
Manganese	µg/L	--	877	894
Mercury (total)	µg/L	0.144	1.4630	1.8590
Methylmercury	µg/L	--	0.00186	0.00267
Nickel	µg/L	516	6.60	6.90
Selenium	µg/L	10	3.80 *U*	3.80 *U*
Silver	µg/L	164	0.670 *U*	0.670 *U*
Thallium	µg/L	1.7	4.40 *U*	4.40 *U*
Zinc	µg/L	--	146	150

Note: SWQS - New Jersey Surface Water Quality Standards for fresh water (NJAC 7:9B; January 1997)
U - undetected at detection limit shown

Supplemental Table B1-9b. Ventron/Velsicol Phase IA surface water analytical results with SWQS comparisons (field duplicates)

Analyte	Units	SWQS	SW-12 SW0103 12/09/99
Unfiltered Metals			
Arsenic	µg/L	0.017	5.50 *U*
Barium	µg/L	2,000	39.0
Cadmium	µg/L	10	0.520 *U*
Chromium	µg/L	160	3.20
Copper	µg/L	--	6.90 *U*
Iron	µg/L	--	2,400
Lead	µg/L	5	6.00
Manganese	µg/L	--	143
Mercury (total)	µg/L	0.144	0.623
Methylmercury	µg/L	--	0.00262
Nickel	µg/L	516	2.10
Selenium	µg/L	10	3.80 *U*
Silver	µg/L	164	0.670 *U*
Thallium	µg/L	1.7	4.40 *U*
Zinc	µg/L	--	54.1 *U*

Note: SWQS - New Jersey Surface Water Quality Standards for fresh water (NJAC 7:9B, April 1998)

U - undetected at detection limit shown

Boxed entries indicate measurements at or above the criteria value

Shaded entries indicate detection limits at or above the criteria value.

Walter Kidde & Co. Inc.

LOWENSTEIN, SANDLER, KOHL, FISHER & BOYLAN

A PROFESSIONAL CORPORATION

COUNSELLORS AT LAW

65 LIVINGSTON AVENUE

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September 19, 1996

VIA FEDERAL EXPRESS

Mr. Lance R. Richman, P.G.
Emergency and Remedial Response Division
USEPA
290 Broadway, 19th Floor
New York, New York 10007-1866

Re: Request for Information, Diamond Alkali Site, Passaic River Study Area

Dear Mr. Richman:

Enclosed please find Kidde Technologies Inc.'s final response to the Request for Information, pursuant to section 104(e) of CERCLA, regarding the Passaic River Study Area. This response is submitted in accordance with an agreement reached with the EPA on August 20, 1996.

Very truly yours,

Andrea L. Wolff

Andrea L. Wolff

Enclosure
cc: Ms. Amelia Wagner (w/ enclosure)

RECEIVED
SEP 20 1996

KIDDE TECHNOLOGIES INC.
RESPONSES TO THE
USEPA'S CERCLA 104(e) REQUEST DATED JULY 16, 1996

GENERAL OBJECTIONS AND EXPLANATORY MATERIAL

A. Kidde Technologies Inc. (the "Company") objects to the information request to the extent it is overly broad, or seeks ancient or otherwise irrelevant information, the production of which is unduly burdensome and the value of which is minimal given the United States Environmental Protection Agency's (the "Agency" or "USEPA") authority under CERCLA §104(e)(1) to obtain information only "for the purposes of determining the need for response, or choosing or taking any response action under this subchapter or otherwise enforcing the provisions of the subchapter".

B. The Company objects to the information request to the extent it requires production of information or documents which contain attorney work product or which are covered by the attorney-client privilege.

C. Pursuant to agreement reached with the Agency (see letter attached), the Company is submitting this final certified response to the Request for Information.

D. The Agency's Information Request dated July 16, 1996 was directed to "Walter Kidde & Company" in Roslyn Heights, New York. That address is currently an address for Kidde Technologies Inc. (the "Company"). The Company was organized in 1989 as Fenwal Safety Systems, Inc. and in 1993 merged with Walter Kidde Aerospace Inc. ("Aerospace"), and changed its name to Kidde Technologies Inc. These answers are given with respect to the Company. The Company has never owned or operated the Belleville facility. Upon information and belief, the Belleville facility was owned and operated by Walter Kidde & Company, Inc., a separate and unaffiliated company, which through various name changes and/or mergers was known variously as Kidde, Inc. and Kidde Industries, Inc. For convenience, these will be referred to as "Kidde" to distinguish them from the Company or Aerospace. Upon information and belief, Kidde directly owned and operated the Belleville facility from approximately 1941 until approximately 1983, at which time it was sold. The Belleville facility was utilized by Kidde for several of its divisions, one of which was the Walter Kidde Aerospace Division. This Division was relocated to and became headquartered in Wilson, North Carolina in approximately 1983. On September 30, 1987, Kidde organized Aerospace as a Delaware corporation and on April 2, 1988 Aerospace acquired the assets of Kidde's Walter Kidde Aerospace Division. As stated above, Aerospace merged with the Company (then known as Fenwal Safety Systems, Inc.) in 1993.

A number of the Company's employees were formerly associated with Kidde and have knowledge about Belleville. However, the Company never owned, occupied or operated the Belleville facility, and indeed Kidde sold Belleville a number of years before either the Company or Aerospace were even organized as corporations. Therefore, all responses provided by the Company, with the exception of its of response to Request No. 14, are based upon information

AGB000036

3) Did your company receive, utilize, manufacture, discharge, release, store or dispose of any materials containing the following substances:

Based upon information available to the Company, the following is believed to be true with respect to Kidde's operations at the Belleville facility:

	Yes	No	Unknown
2,3,7,8 tetrachlorodibenzo-p-dioxin or other dioxin compounds	___	___	X
Benzene	___	___	X
Ethyl benzene	___	___	X
Phenol	___	___	X
Poly-Aromatic Hydrocarbons If "yes", please list specific compounds	___	___	X
Toluene	X	___	___
Xylene	X	___	___
PCBs	X	___	___
Arsenic	X	___	___
Cadmium	X	___	___
Chromium	X	___	___
Copper	X	___	___
Lead	X	___	___
Mercury	X	___	___
Nickel	X	___	___
Silver	X	___	___
Zinc	X	___	___
Cyanide	X	___	___
Sodium Bicarbonate	X	___	___
Chloride	___	___	X
Acids	X	___	___
If "yes", please list chemical compounds. ***Sulfuric, nitric, hydrochloric, hydrofluoric***			
Cutting oils	X	___	___
Solvents	X	___	___
If "yes", please list chemical compounds. ***Trichloroethene, Toluene and others listed above***			

4) a) Provide a description of the manufacturing processes for which all hazardous substances, including, but not limited to, the substances listed in response to item (3), were a product or by-product.

CERTIFICATION OF ANSWERS TO REQUEST FOR INFORMATION

State of NORTH CAROLINA :

County of WILSON :

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document (response to EPA Request for Information) and all documents submitted herewith, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete, and that all documents submitted herewith are complete and authentic unless otherwise indicated. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I am also aware that my company is under a continuing obligation to supplement its response to EPA's Request for Information if any additional information relevant to the matters addressed in EPA's Request for Information or the company's response thereto should become known or available to the company.

J. YATES PARKER
NAME (print or type)

CFO
TITLE (print or type)

[signature]
SIGNATURE

Sworn to before me this 17th
day of September, 1996

M. Kathleen Whisner
Notary Public
My Commission Expires Feb. 26, 1999

AGB000035

09/16/960281750.01

PASSAIC VALLEY SEWERAGE COMMISSION
NEWARK NEW JERSEY

HEAVY METALS SOURCE DETERMINATION STUDY

IN COMPLIANCE WITH OCEAN DUMPING PERMIT
NO. II NJ003 INTERIM SECTION 9.0

Passaic Valley Sewerage Commissioners

JOSEPH M. KEEGAN	- Chairman
BEN W. GORDON	- Vice Chairman
THOMAS J. CIFELLI	- Commissioner
VINCENT CORRADO	- Commissioner
ROBERT J. DAVENPORT	- Commissioner
RICHARD M. GIACOMARRO	- Commissioner
CHARLES A. LAGOS	- Commissioner
CARMINE T. PERRAPATO	- Executive Director
ROCCO D. RICCI	- Chief Engineer

PHASE II

APRIL 1980

DRAFT

Elson T. Killam Associates, Inc.

Environmental and Hydraulic Engineers

KLL013740

PASSAIC VALLEY SEWERAGE COMMISSION - HEAVY METAL SOURCE DETERMINATION
PHASE II INDUSTRIAL CONTRIBUTION
SUB-AREA 4

CONTROL NO.	NAME AND ADDRESS OF INDUSTRY	FLOW MGD	TOTAL CADMIUM LBS/DAY (MG/L)	TOTAL CHROMIUM LBS/DAY (MG/L)	TOTAL COPPER LBS/DAY (MG/L)	TOTAL LEAD LBS/DAY (MG/L)	TOTAL NICKEL LBS/DAY (MG/L)	TOTAL ZINC LBS/DAY (MG/L)	TOTAL ARSENIC LBS/DAY (MG/L)	TOTAL MERCURY LBS/DAY (MG/L)
10	CONSOLIDATED BASES INC. 120 GREYLOCK AVE. BELLEVILLE	0.0001	0.000 (0.022)	0.029 (35.000)	0.001 (0.847)	0.000 (0.250)	0.000 (0.223)	0.001 (0.638)	0.000 (0.002)	0.0000 (0.004)
25	IDEAL PLATING & POLISHING 681 MAIN ST. BELLEVILLE	0.0290	0.007 (0.030)	0.014 (0.059)	0.694 (2.870)	0.053 (0.220)	0.168 (0.696)	0.123 (0.507)	0.000 (0.001)	0.0000 (0.000)
40	WALTER KIDDE & CO. INC. 675 MAIN ST. BELLEVILLE	0.1200	0.053 (0.053)	0.413 (0.413)	0.182 (0.182)	0.069 (0.069)	[illegible] ([illegible])	0.440 (0.440)	0.001 (0.001)	0.0042 (0.004)
50	MILLER & SON 24 BELLEVILLE AVE. BELLEVILLE	0.0650	0.109 (0.201)	79.147 (146.000)	2.624 (4.840)	0.130 (0.240)	1.138 (2.100)	0.651 (1.200)	0.001 (0.001)	0.0250 (0.046)
55	MODERN METAL INDUSTRIES 112 GREYLOCK AVE. BELLEVILLE	0.0090	0.010 (0.128)	0.088 (1.170)	0.108 (1.440)	0.179 (2.380)	0.07[illegible] (1.020)	0.081 (1.080)	0.000 (0.001)	0.0137 (0.182)
60	P. N. C. INC. 681 MAIN ST. BELLEVILLE	0.0070	< 0.000 (0.005)	0.001 (0.013)	0.396 (6.780)	0.018 (0.314)	0.007 (0.120)	0.008 (0.136)	0.000 (0.001)	0.0000 (0.000)
80	WALLACE & TIERNAN 25 MAIN ST. BELLEVILLE	0.2600	0.405 (0.187)	0.666 (0.307)	0.525 (0.242)	0.100 (0.046)	0.254 (0.117)	0.935 (0.431)	0.002 (0.001)	0.0846 (0.039)
200	GIVAUDAN CORP. 125 DELAWANNA AVE. CLIFTON	2.2700	1.060 (0.056)	2.026 (0.107)	5.661 (0.299)	17.039 (0.900)	12.116 (0.640)	69.290 (3.660)	0.019 (0.001)	0.0947 (0.005)
320	ROUTE 17 PLATING INC. 112 RIVER RD. CLIFTON	0.0290	0.001 (0.006)	1.417 (5.860)	0.018 (0.075)	0.063 (0.259)	1.993 (8.240)	0.244 (1.010)	0.000 (0.001)	0.0018 (0.008)
850	GOTHAM GRAPHICS 120 PARK AVE. LYNDHURST	0.0060	0.004 (0.080)	0.075 (1.500)	0.062 (1.240)	0.001 (0.029)	0.002 (0.044)	0.008 (0.152)	0.000 (0.001)	0.0004 (0.008)

Western Electric (AT&T;
Lucent Technologies)

ENVIRONMENTAL CLEANUP PLAN

KEARNY WORKS

AT&T TECHNOLOGIES, INC.

(Formerly Western Electric Company)

ERT Document Number D367

October 1984

Received
22 OCT 1984

Prepared for

AT&T Technologies, Inc.
New York, New York

Prepared by

Dr. William A. Duvel, Jr. P.E.
R. John Finn

ENVIRONMENTAL RESEARCH & TECHNOLOGY, INC.
696 Virginia Road, Concord, Massachusetts 01742

TABLE 3-1

RESULTS OF ANALYSES FOR PRIORITY POLLUTANT METALS, CYANIDE AND pH.

(all values are expressed in ppm)

	1A	1B	2A	2B	3A	3B	4A	4B	5A	5B	6A	6B	7A
Arsenic	10.	120	17	29	4.8	21	8.7	110	8.7	110	29	78	13
Antimony	<2.8	<2.7	<6.2	<6.2	<2.8	<2.5	<2.9	3.1	<2.7	<2.6	<6.2	<6.2	<3.0
Barium	<140.	170	<120	210	<140	270	<140	250	<140	250	<120	120	<150
Beryllium	<14.	<14	<12	<12	<14	<12	<14	<14	<14	<13	<12	<12	<15
Cadmium	<14.	<14	<12	<12	<14	<12	<14	<14	<14	<13	<12	<12	<15
Chromium	<28.	160	28	240	<28	110	100	2510	49	850	52	65	<30
Copper	73	200	110	310	82	200	35	320	100	1110	90	330	24
Lead	45.	380	82	460	85	390	41	550	54	520	120	500	46
Mercury	0.022	0.39	0.86	3.1	0.20	0.47	1.5	1.2	0.81	1.8	0.58	0.61	0.40
Nickel	20.	49	<25	62	20	68	20	200	46	110	<25	92	18
Selenium	<2.8	4.1	<2.5	<2.5	<2.8	4.6	<2.9	3.1	<2.7	4.4	<2.5	<2.5	<3.0
Silver	<14	<14	<12	<12	<14	<12	<14	29	<14	<13	<12	<12	<15
Thallium	<140.	<140	<125	<125	<140	<120	<140	<140	<140	<130	<120	<120	<150
Zinc	42.	140	160	200	54	180	49	560	520	1270	920	110	55
Cyanide	-	-	<12	-	-	-	-	-	-	-	54	-	-
pH	5.0	5.6	5.1	4.4	4.2	3.8	5.8	7.1	6.2	7.4	5.5	5.8	6.8

TABLE 3-1 (Continued)

	7A DUPLICATE	7B	7B DUPLICATE	7C	8A	8B	9A	9B	10A	10B	11A	12A
Arsenic	18	37	30	-	7.6	11	-	-	-	-	-	-
Antimony	<2.3	<2.8	<2.5	-	3.4	<2.4	-	-	-	-	-	-
Barium	130	<140	130	-	240	<120	-	-	-	-	-	-
Beryllium	<12	<14	<12	-	<14	<12	-	-	-	-	-	-
Cadmium	<12	<14	<13	-	<14	<12	-	-	-	-	-	-
Chromium	<24	72	110	-	<28	36	-	-	-	-	-	-
Copper	68	210	120	-	90	340	-	-	-	-	-	-
Lead	120	450	710	-	360	300	-	-	-	-	-	-
Mercury	0.47	0.52	0.12	-	0.35	0.53	-	-	-	-	-	-
Nickel	26	32	23	-	28	50	-	-	-	-	-	-
Selenium	<2.3	5.4	<2.5	-	<2.8	3.6	-	-	-	-	-	-
Silver	<11	<14	<12	-	<14	<12	-	-	-	-	-	-
Thallium	<120	<140	<120	-	<140	<120	-	-	-	-	-	-
Zinc	100	100	91	-	87	270	-	-	-	-	-	-
Cyanide	-	-	-	-	-	-	-	-	-	-	-	-
pH	7.8	6.9	7.1	6.9	6.9	7.1	6.6	7.4	6.9	4.9	7.7	7.0

TABLE 3-1 (Continued)

	13A	13B	14A	14B	15A	15B	15C	16A	16B	17A	17B	18A	18B
Arsenic	9.8	16	23	10	-	-	-	12.	20	4.2	20	-	-
Antimony	<6.2	<6.2	<3.4	4.5	-	-	-	<2.7	<2.5	<6.2	<6.2	-	-
Barium	<120	<120	510	<140	-	-	-	910	<140	<120	<120	-	-
Beryllium	<12	<12	<17	<14	-	-	-	<14	<14	<12	<12	-	-
Cadmium	<12	<12	<17	<14	-	-	-	<14	<13	<12	<12	-	-
Chromium	<25	120	180	70	-	-	-	1160	900	<25	270	-	-
Copper	52	60	240	68	-	-	-	220	240	88	400	-	-
Lead	28	120	1200	75	-	-	-	380	1670	<25	600	-	-
Mercury	0.22	0.76	0.69	0.28	-	-	-	0.85	0.67	0.13	0.70	-	-
Nickel	<25	40	54	80	-	-	-	170	76	<25	92	-	-
Selenium	<2.5	<2.5	<3.4	4.8	-	-	-	26	<2.5	<2.5	<2.5	-	-
Silver	<12	<12	<17	<14	-	-	-	<14	<12	<12	<12	-	-
Thallium	<120	<120	<170	<140	-	-	-	<140	<130	<120	<120	-	-
Zinc	30	110	120	110	-	-	-	390	<140	48	680	-	-
Cyanide	<12	<12	<12	<12	-	-	-	-	-	-	-	-	-
pH	6.2	6.0	8.5	6.7	7.4	6.8	7.1	7.2	7.5	8.2	7.1	8.5	9.8

TABLE 3-1 (Continued)

	19A	19A DUPLICATE	19B	20A	20B	20B DUPLICATE	21A	21B	22A	22B	23B
Arsenic	8.9	6.2	3.7	17	15.	12	10	26	10	12	7.3
Antimony	<2.6	<2.6	<2.1	<2.3	<2.6	<2.9	<6.2	<6.2	<6.2	<6.2	<2.5
Barium	<130	<130	100	120	150	<140	<120	160	<120	200	350
Beryllium	<13	<130	<10	<11	<13	<14	<12	<12	<12	<12	<12
Cadmium	<13	<13	<10	<12	<12	<14	<12	<12	<12	<12	<12
Chromium	<27	<28	<21	28	47	32	50	68	52	50	30
Copper	84	68	28	70	130	83	55	160	55	78	78
Lead	54	55	<21	190	150	120	250	700	590	410	45
Mercury	0.36	0.60	0.18	0.56	0.61	0.056	0.10	0.14	0.21	0.12	0.45
Nickel	22	29	16	84	45	43	<25	65	<25	38	30
Selenium	<2.6	<3.4	<2.1	<2.3	<2.6	<2.9	<2.5	<2.5	<2.5	<2.5	<2.5
Silver	<13	<13	<10	<12	<13	<14	<12	<12	<12	<12	<12
Thallium	<130	<130	<100	<120	<130	<140	<120	<120	<120	<120	<120
Zinc	73	120	45	160	230	180	130	420	550	350	170
Cyanide	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12
pH	3.9	3.8	7.9	7.0	7.2	7.6	8.8	7.4	9.8	7.6	8.1

TABLE 3-1 (Continued)

	24B	25A	25B	26A	26B	27A	27B	28A	28B	29A	29B	30A
Arsenic	6.2	5.0	15	8.1	6.9	5.8	8.6	7.5	18	12.	19.	8.0
Antimony	2.0	<6.2	<6.2	<2.9	<2.8	<2.7	<2.6	<6.2	<6.2	<2.7	<3.0	<3.0
Barium	120	<120	<120	<140	<140	<140	<130	190	<120	<140	1940	<150
Beryllium	<9.3	<12	<12	<14	<14	<14	<13	<12	<12	<14	<15	<15
Cadmium	<9.3	<12	<12	<14	<14	<14	<13	<12	<12	<14	<15	<15
Chromium	<19	<25	40	1580	<28	<28	<26	25	32	<28	56	<30
Copper	26	150	42	170	61	58	42	52	22	150	130	45
Lead	<19	88	30	230	<28	47	36	52	<25	200	390	130
Mercury	0.028	0.44	0.42	0.81	0.16	0.35	0.15	1.2	0.052	1.0	0.71	0.48
Nickel	20	<25	25	126	28	22	31	<25	<25	28	51	24
Selenium	<1.9	<2.5	<2.5	<2.9	<2.8	<2.7	<2.6	<2.5	<2.5	<2.7	<3.0	<3.0
Silver	<9.5	<12	<12	<14	<14	<14	<13	<12	<12	<14	<15	<15
Thallium	<93	<120	<120	<140	<140	<140	<130	<120	<120	<140	<150	<150
Zinc	56	750	100	1370	77	94	100	140	45	170	1220	86
Cyanide	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12
pH	8.1	7.8	9.0	10.1	7.6	9.1	7.5	10.4	8.8	7.2	7.3	9.6

TABLE 3-1 (Continued)

	30B	31A	31B	32A	32B	33A	33B	34A	34B	35B	36B
Arsenic	4.4	9.5	14	9.6	7.5	16	85	6.0	8.6	31	5.6
Antimony	<2.5	<6.2	<6.2	<2.8	<2.0	<6.2	<6.2	<2.7	<2.8	<4.9	1.9
Barium	150	120	730	<140	<100	<120	400	<140	<140	280	110
Beryllium	<12	<12	<12	<14	<10	<12	<12	<14	<14	<14	<9.4
Cadmium	<12	<12	<12	<14	<10	<12	<12	<14	<14	<24	<9.4
Chromium	<25	72	55	59	60	110	6500	27	290	220	80
Copper	49	60	230	280	58	65	150	36	180	1370	520
Lead	<25	42	510	150	74	98	380	<27	250	1140	380
Mercury	0.033	0.63	0.53	0.98	0.18	0.58	1.1	0.13	0.66	1.4	0.23
Nickel	32	38	45	53	35	48	510	19	110	110	73
Selenium	<2.5	<2.5	<2.5	17	<2.0	<2.5	<2.5	<2.7	<2.8	<4.9	<1.9
Silver	<12	<12	<12	<14	<10	<12	<12	<14	<14	<24	<9.4
Thallium	<140	<120	<120	<140	<100	<120	<120	<140	<140	<240	<94
Zinc	69	160	1050	120	110	100	720	60	490	1220	920
Cyanide	<12	<12	-	-	-	-	-	-	-	-	-
pH	7.6	9.9	8.9	7.1	7.6	7.8	7.4	7.3	7.1	6.0	7.4

TABLE 3-1 (Continued)

	37A	37A DUPLICATE	37B	37B DUPLICATE	38A	38B	39A	39B
Arsenic	10.	4.9	9.3	6.3	<2.5	13	4.8	12
Antimony	<3.1	<3.1	<2.5	<2.9	<2.6	<2.8	<2.3	<2.7
Barium	<160	<150	<120	190	<130	<140	<120	<160
Beryllium	<16	<15	<12	<14	<13	<14	<12	<14
Cadmium	<16	<15	<12	<14	<13	<14	<11	<14
Chromium	84	74	5830	<29	26	5060	<23	220
Copper	78	46	210	43	13	250	13	130
Lead	110	99	190	66	<26	230	<26	280
Mercury	0.27	0.27	0.42	0.081	0.26	1.5	0.26	0.82
Nickel	22	22	290	23	16	230	18	36
Selenium	<3.1	5.2	<2.5	<2.9	7.7	<2.8	<2.3	<2.7
Silver	<14	<15	<12	<14	<13	<14	<11	<14
Thallium	<160	<150	<120	<140	<130	<140	<120	<140
Zinc	110	86	800	150	32	290	96	230
Cyanide	-	-	-	-	-	-	-	-
pH	7.4	8.3	8.1	8.1	7.4	7.6	7.4	6.9

RECD 12-6-84

ENVIRONMENTAL CLEANUP PLAN
AT&T TECHNOLOGIES, INC.
(Formerly Western Electric)
KEARNY WORKS - PLATING SHOPS
AND WASTE TREATMENT PLANT

ERT Document Number D367-100B/4811A

November 1984

Prepared for

AT&T Technologies, Inc.

Prepared by

Environmental Research & Technology, Inc.
601 Grant Street Pittsburgh, Pennsylvania 15219

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TABLE 3

RESULTS OF ANALYSES PERFORMED ON SAMPLES TAKEN FROM THE AT&T PLATING SHOP AIR DUCTS

Sample #	Plating Line	Vent System	As	Ba	Cd	Cr	Pb	Hg	Se	Ag	CN
1	HOR BAR	A/A	-	-	-	0.37	-	-	-	-	ND
2	HOR BAR	A/A	-	-	-	0.12	-	-	-	-	ND
2A	HOR BAR	A/A (Hood)	-	-	-	0.05	-	-	-	-	ND
3	HOR BAR	A/A	T	ND	ND	0.12	22.0	ND	ND	ND	ND
4	HOR BAR	CN	-	-	-	0.09	-	-	-	-	ND
5	ACID DIP	CN	ND	ND	ND	0.10	0.04	T	ND	0.02	POS
6	ACID DIP	A/A	T	ND	0.01	0.10	0.14	ND	T	0.05	ND
7	ACID DIP	CR	ND	ND	ND	50.1	0.35	T	ND	0.02	ND
8	ST & OB	A/A	-	-	-	-	58.0	-	-	-	ND
9	ST & OB	CN	-	-	-	-	-	-	-	-	ND
10	ST & OB	CN	-	-	-	-	-	-	-	-	ND
12	ST & OB	A/A	-	-	-	-	0.48	-	-	-	ND
13	ST & OB	A/A	ND	ND	ND	0.08	0.02	T	ND	ND	ND
14	HOR BAR	CN (Hood)	-	-	-	-	-	-	-	-	POS
16	PM	CN	-	-	-	-	-	-	-	ND	POS
17	PM	CN (Hood)	-	-	-	-	-	-	-	ND	POS
18	PM	CN (Hood)	-	-	-	-	-	-	-	0.04	POS
19	PM	CN	-	-	-	-	-	-	-	ND	ND
20	PM	CN	ND	ND	ND	0.12	0.05	T	ND	ND	POS
20A	PM	CN(Fan)	ND	ND	ND	0.19	0.33	T	ND	ND	ND
21	PM	A/A	-	-	-	-	-	-	-	ND	ND
22	PM	A/A	-	-	-	-	-	-	-	0.11	ND
30	N/C	A/A	-	-	-	0.19	-	-	-	-	-
31	N/C	A/A	-	-	-	0.03	-	-	-	-	-
32	N/C	A/A(Hood)	-	-	-	0.03	-	-	-	-	-
33	N/C	A/A(Hood)	-	-	-	0.20	-	-	-	-	-
35	N/C	CR	-	-	-	40.4	-	-	-	-	-
38	N/C	A/A	-	-	-	0.10	-	-	-	-	-
39	N/C	A/A	ND	ND	ND	0.39	0.04	ND	T	ND	ND
40	Z1	CN	-	-	-	-	-	-	-	-	ND
41	Z2	CN	-	-	-	-	-	-	-	-	ND
42	Z2	A/A(Hood)	-	-	-	-	-	-	-	-	ND
43	Z2	A/A(Hood)	-	-	-	-	-	-	-	-	ND
44	Z2	A/A	ND	ND	ND	0.01	ND	T	ND	ND	ND
45	N/C	CR(Scrub)	ND	ND	ND	10.1	0.04	T	T	ND	ND
46	N/C	A/A(Scrub)	ND	ND	ND	0.25	0.11	ND	ND	ND	ND

Note: All numerical results are in weight percentages.

TABLE 3-1 (Cont'd)

EXPLANATION OF ABBREVIATIONS

PLATING LINES

PM	Precious Metals
ST & OB	Still and Oblique
ACID DIP	Acid Dip and Clean
HOR BAR	Horizontal Barrel
Z1	Auto Zinc 1
Z2	Auto Zinc 2
N/C	Auto Nickel/Chrome

VENT SYSTEMS

A/A	Acid Alkali
CN	Cyanide
CR	Chrome
(Hood)	Sample Taken from Hood on the Noted Vent System
(Fan)	Sample Taken from Fan on the Noted Vent System
(Scrub)	Sample Taken from Scrubber on the Noted Vent System

TESTS RUN

As	Arsenic
Ba	Barium
Cd	Cadmium
Cr	Chromium
Pb	Lead
Hg	Mercury
Se	Selenium
Ag	Silver
Cn	Cyanide

RESULTS

ND	Tested for but not detected or below the detection limit
T	Tested for and only traces found
-	Not tested for
POS	Cyanide concentrations were not tested for, only its presence is reported, this indicates a concentration of greater than or equal to 0.2 ppm

NOTES:
- All numerical results are in weight percentages. (Weight % $x10^4$ = ppm)
- Breaks in sample numerical sequences occur because samples were not taken at some inspection locations and an intentional break was left between samples 22 and 30.

Document D367-200
July 1985

Prepared for
AT&T Technologies, Inc.
Kearny, NJ

Amended Environmental Clean-up Plan, Kearny Works AT&T Technologies, Inc.

(Formerly Western Electric Company, Inc.)

Prepared by
Dr. William A. Duvel, Jr., P.E.
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ERT
ENVIRONMENTAL RESEARCH & TECHNOLOGY, INC.
ATLANTA · CHICAGO · CONCORD, MA · FORT COLLINS, CO
HOUSTON · LOS ANGELES · PITTSBURGH · WASHINGTON, DC

ABA000328

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ABA000829

TECH
G GROUP INC 350 West 11th Street / New York, New York 10014 (212) 255-2100

June 29, 1981

stern Electric
0 Central Avenue
arry, N.J. 07032

ttn: Mr. Bill Rodney

PROJ. NO.: 06037

REF.:

LABORATORY REPORT

TEST \ SAMPLE DESCRIPTION		Tunnel Sludge			
Chromium	mg/l	<0.02			
Nickel	mg/l	1.5			
Cadmium	mg/l	0.005			
Cyanide	mg/l	0.17			
Arsenic	mg/l	0.018			
Barium	mg/l	0.4			
Lead	mg/l	<0.05			
Mercury	mg/l	<0.0002			
Selenium	mg/l	0.005			
Silver	mg/l	0.01			
Date sample received:		6/8/81			

REMARKS:
RCRA EP leachate procedure.

Alan Schoffman, Ph.D.
Director, Analytical Services

ARA000906

TABLE A-11

RESULTS OF ANALYSES FOR PRIORITY POLLUTANT

METALS, CYANIDE AND pH, JULY 1984.

(all values are expressed in ppm)

	1A	1B	2A	2B	3A	3B	4A	4B	5A	5B	6A	6B	7A
Arsenic	10.	120	17	29	4.8	21	8.7	110	8.7	110	29	78	13
Antimony	<2.8	<2.7	<6.2	<6.2	<2.8	<2.5	<2.9	3.1	<2.7	<2.6	<6.2	<6.2	<3.0
Barium	<140.	170	<120	210	<140	270	<140	250	<140	250	<120	120	<150
Beryllium	<14.	<14	<12	<12	<14	<12	<14	<14	<14	<13	<12	<12	<15
Cadmium	<14.	<14	<12	<12	<14	<12	<14	<14	<14	<13	<12	<12	<15
Chromium	<28.	160	28	240	<28	110	100	2510	49	850	52	65	<30
Copper	73	200	110	310	82	200	35	320	100	1110	90	330	24
Lead	45.	380	82	460	85	390	41	550	54	520	120	500	46
Mercury	0.022	0.39	0.86	3.1	0.20	0.47	1.5	1.2	0.81	1.8	0.58	0.61	0.40
Nickel	20.	49	<25	62	20	68	20	200	46	110	<25	92	18
Selenium	<2.8	4.1	<2.5	<2.5	<2.8	4.6	<2.9	3.1	<2.7	4.4	<2.5	<2.5	<3.0
Silver	<14	<14	<12	<12	<14	<12	<14	29	<14	<13	<12	<12	<15
Thallium	<140.	<140	<125	<125	<140	<120	<140	<140	<140	<130	<120	<120	<150
Zinc	42.	140	160	200	54	180	49	560	520	1270	920	110	55
Cyanide	-	-	<12	-	-	-	-	-	-	-	54	-	-
pH	5.0	5.6	5.1	4.4	4.2	3.8	5.8	7.1	6.2	7.4	5.5	5.8	6.8

ASA003961

TABLE A-11 (Continued)

	13A	13B	14A	14B	15A	15B	15C	16A	16B	17A	17B	18A	18B
Arsenic	9.8	16	23	10	-	-	-	12.	20	4.2	20	-	-
Antimony	<6.2	<6.2	<3.4	4.5	-		-	<2.7	<2.5	<6.2	<6.2	-	-
Barium	<120	<120	510	<140	-	-	-	910	<140	<120	<120	-	-
Beryllium	<12	<12	<17	<14	-	-	-	<14	<14	<12	<12	-	-
Cadmium	<12	<12	<17	<14	-	-	-	<14	<13	<12	<12	-	-
Chromium	<25	120	180	70	-	-	-	1160	900	<25	270	-	-
Copper	52	60	240	68	-	-	-	220	240	88	400	-	-
Lead	28	120	1200	75	-		-	380	1670	<25	600	-	-
Mercury	0.22	0.76	0.69	0.28	-	-	-	0.85	0.67	0.13	0.70	-	-
Nickel	<25	40	54	80	-	-	-	170	76	<25	92	-	-
Selenium	<2.5	<2.5	<3.4	4.8	-	-	-	26	<2.5	<2.5	<2.5	-	-
Silver	<12	<12	<17	<14	-	-	-	<14	<12	<12	<12	-	-
Thallium	<120	<120	<170	<140	-	-	-	<140	<130	<120	<120	-	-
Zinc	30	110	120	110	-	-	-	390	<140	48	680	-	-
Cyanide	<12	<12	<12	<12	-	-	-	-	-	-	-	-	-
pH	6.2	6.0	8.5	6.7	7.4	6.8	7.1	7.2	7.5	8.2	7.1	8.5	9.8

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TABLE A-11 (Continued)

	24B	25A	25B	26A	26B	27A	27B	28A	28B	29A	29B	30A
Arsenic	6.2	5.0	15	8.1	6.9	5.8	8.6	7.5	18	12.	19.	8.0
Antimony	2.0	<6.2	<6.2	<2.9	<2.8	<2.7	<2.6	<6.2	<6.2	<2.7	<3.0	<3.0
Barium	120	<120	<120	<140	<140	<140	<130	190	<120	<140	1940	<150
Beryllium	<9.3	<12	<12	<14	<14	<14	<13	<12	<12	<14	<15	<15
Cadmium	<9.3	<12	<12	<14	<14	<14	<13	<12	<12	<14	<15	<15
Chromium	<19	<25	40	1580	<28	<28	<26	25	32	<28	56	<30
Copper	26	150	42	170	61	58	42	52	22	150	130	45
Lead	<19	88	30	230	<28	47	36	52	<25	200	390	130
Mercury	0.028	0.44	0.42	0.81	0.16	0.35	0.15	1.2	0.052	1.0	0.71	0.48
Nickel	20	<25	25	126	28	22	31	<25	<25	28	51	24
Selenium	<1.9	<2.5	<2.5	<2.9	<2.8	<2.7	<2.6	<2.5	<2.5	<2.7	<3.0	<3.0
Silver	<9.5	<12	<12	<14	<14	<14	<13	<12	<12	<14	<15	<15
Thallium	<93	<120	<120	<140	<140	<140	<130	<120	<120	<140	<150	<150
Zinc	56	750	100	1370	77	94	100	140	45	170	1220	86
Cyanide	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12
pH	8.1	7.8	9.0	10.1	7.6	9.1	7.5	10.4	8.8	7.2	7.3	9.6

ABA000965

TABLE A-11 (Continued)

	37A	37A DUPLICATE	37B	37B DUPLICATE	38A	38B	39A	39B
Arsenic	10.	4.9	9.3	6.3	<2.5	13	4.8	12
Antimony	<3.1	<3.1	<2.5	<2.9	<2.6	<2.8	<2.3	<2.7
Barium	<160	<150	<120	190	<130	<140	<120	<160
Beryllium	<16	<15	<12	<14	<13	<14	<12	<14
Cadmium	<16	<15	<12	<14	<13	<14	<11	<14
Chromium	84	74	5830	<29	26	5060	<23	220
Copper	78	46	210	43	13	250	13	130
Lead	110	99	190	66	<26	230	<26	280
Mercury	0.27	0.27	0.42	0.081	0.26	1.5	0.26	0.82
Nickel	22	22	290	23	16	230	18	36
Selenium	<3.1	5.2	<2.5	<2.9	7.7	<2.8	<2.3	<2.7
Silver	<14	<15	<12	<14	<13	<14	<11	<14
Thallium	<160	<150	<120	<140	<130	<140	<120	<140
Zinc	110	86	800	150	32	290	96	230
Cyanide	-	-	-	-	-	-	-	-
pH	7.4	8.3	8.1	8.1	7.4	7.6	7.4	6.9

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TABLE A-11 (Continued)

	30B	31A	31B	32A	32B	33A	33B	34A	34B	35B	36B
senic	4.4	9.5	14	9.6	7.5	16	85	6.0	8.6	31	5.6
timony	<2.5	<6.2	<6.2	<2.8	<2.0	<6.2	<6.2	<2.7	<2.8	<4.9	1.9
rium	150	120	730	<140	<100	<120	400	<140	<140	280	110
ryllium	<12	<12	<12	<14	<10	<12	<12	<14	<14	<14	<9.4
dmium	<12	<12	<12	<14	<10	<12	<12	<14	<14	<24	<9.4
romium	<25	72	55	59	60	110	6500	27	290	220	80
pper	49	60	230	280	58	65	150	36	180	1370	520
ad	<25	42	510	150	74	98	380	<27	250	1140	380
rcury	0.033	0.63	0.53	0.98	0.18	0.58	1.1	0.13	0.66	1.4	0.23
ckel	32	38	45	53	35	48	510	19	110	110	73
lenium	<2.5	<2.5	<2.5	17	<2.0	<2.5	<2.5	<2.7	<2.8	<4.9	<1.9
lver	<12	<12	<12	<14	<10	<12	<12	<14	<14	<24	<9.4
allium	<140	<120	<120	<140	<100	<120	<120	<140	<140	<240	<94
nc	69	160	1050	120	110	100	720	60	490	1220	920
anide	<12	<12	-	-	-	-	-	-	-	-	-
	7.6	9.9	8.9	7.1	7.6	7.8	7.4	7.3	7.1	6.0	7.4

ABA000966

TABLE A-11 (Continued)

	19A	19A DUPLICATE	19B	20A	20B	20B DUPLICATE	21A	21B	22A	22B	23B
Arsenic	8.9	6.2	3.7	17	15.	12	10	26	10	12	7.3
Antimony	<2.6	<2.6	<2.1	<2.3	<2.6	<2.9	<6.2	<6.2	<6.2	<6.2	<2.5
Barium	<130	<130	100	120	150	<140	<120	160	<120	200	350
Beryllium	<13	<130	<10	<11	<13	<14	<12	<12	<12	<12	<12
Cadmium	<13	<13	<10	<12	<12	<14	<12	<12	<12	<12	<12
Chromium	<27	<28	<21	28	47	32	50	68	52	50	30
Copper	84	68	28	70	130	83	55	160	55	78	78
Lead	54	55	<21	190	150	120	250	700	590	410	45
Mercury	0.36	0.60	0.18	0.56	0.61	0.056	0.10	0.14	0.21	0.12	0.45
Nickel	22	29	16	84	45	43	<25	65	<25	38	30
Selenium	<2.6	<3.4	<2.1	<2.3	<2.6	<2.9	<2.5	<2.5	<2.5	<2.5	<2.5
Silver	<13	<13	<10	<12	<13	<14	<12	<12	<12	<12	<12
Thallium	<130	<130	<100	<120	<130	<140	<120	<120	<120	<120	<120
Zinc	73	120	45	160	230	180	130	420	550	350	170
Cyanide	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12	<12
pH	3.9	3.8	7.9	7.0	7.2	7.6	8.8	7.4	9.8	7.6	8.1

ABA000964

TABLE A-11 (Continued)

	7A DUPLICATE	7B	7B DUPLICATE	7C	8A	8B	9A	9B	10A	10B	11A	12A
enic	18	37	30	-	7.6	11	-	-	-	-	-	-
imony	<2.3	<2.8	<2.5	-	3.4	<2.4	-	-	-	-	-	-
ium	130	<140	130	-	240	<120	-	-	-	-	-	-
yllium	<12	<14	<12	-	<14	<12	-	-	-	-	-	-
mium	<12	<14	<13	-	<14	<12	-	-	-	-	-	-
omium	<24	72	110	-	<28	36	-	-	-	-	-	-
per	68	210	120	-	90	340	-	-	-	-	-	-
d	120	450	710	-	360	300	-	-	-	-	-	-
cury	0.47	0.52	0.12	-	0.35	0.53	-	-	-	-	-	-
kel	26	32	23	-	28	50	-	-	-	-	-	-
enium	<2.3	5.4	<2.5	-	<2.8	3.6	-	-	-	-	-	-
ver	<11	<14	<12	-	<14	<12	-	-	-	-	-	-
llium	<120	<140	<120	-	<140	<120	-	-	-	-	-	-
c	100	100	91	-	87	270	-	-	-	-	-	-
nide	-	-	-	-	-	-	-	-	-	-	-	-
	7.8	6.9	7.1	6.9	6.9	7.1	6.6	7.4	6.9	4.9	7.7	7.0

ABA000962

B. G. STUTTS
NOV 26 1984

ANALYTICAL TESTING LABORATORIES
840 COLFAX AVE.
KENILWORTH NJ. 07033.

OCT. 12. 1984.

ENVIRONMENTAL RESEARCH & TECHN. INC.
601 GRANT STREET
PITTSBURG PA. 15219.

ATT: MR. BARRY G. STUTTS.

DEAR BARRY,

AS PER OUR CONVERSATION, PLEASE FIND THE ANALYTICAL REPORTS, WHICH I SENT TO YOUR ATTENTION.

THE ANALYTICAL METHODS AND THE SOURCES ARE THE FOLLOWING:

THE ANLYSES WERE PERFORMED IN ACCORDANCE WITH THE CURRENT UNITED STATES ENVIRONMENTAL PROTECTION AGENCY PROCEDURAL REQUIREMENTS FOR NATIONAL POLLUTION DISCHARGE ELLIMINATION PERMITS AS SPECIFIED BY THE ENVIRONMENTAL PROTECTION AGENCY, UNLESS MODIFICATION OR ALTERATIONS OF THE SPECIFIC PROCEDURES ARE INDICATED. THE PROCEDURES CAN BE FOUND IN THE FOLLOWING SPECIFIED REFERENCES.

1. METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES. 1979. ENVIRONMENTAL PROTECTION AGENCY, ANALYTICAL QUALITY CONTROL, CINCINNATI, OHIO.

2. STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTE-WATER, AMERICAN PUBLIC HEALTH ASSOCIATION, 14 TH EDITION, 1975.

3. ANNUAL BOOK OF STANDARDS, PART 31, 1979. AMERICAN SOCIETY OF TESTING AND MATERIALS.

4. HAZARDOUS SOLID WASTE TESTING. ASTM STANDARD PROCEDURES 760.

THE DETECTION LIMITS WERE THE FOLLOWING:

CYANIDE	0.2	PPM
SILVER	0.0033	PPM
BARIUM	0.02	PPM
CADMIUM	0.02	PPM
CHROMIUM	0.0055	PPM
MERCURY	0.0004	PPM

ABA001077

ANALYTICAL
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Division Of Plating Products Co., Inc.

40 Colfax Avenue . Kenilworth, NJ 07033 . 201-241-5040

ENVIRONMENTAL RESEARCH & TECHNOLOGY. INC.
601. GRANT STREET. 10 TH. FLOOR.
PITTSBURG PA. 15219

Att: MR. BARRY G. STUTTS

Code No: 30189
Customer No: 96
Date Received: 10-3-84

Type Of Sample: Wastewater
Sample I.D.: # 5
AC. DIP.

COMPONENT	ANALYSIS
Chromium	0.10 % / WT
Lead	0.04 % / WT
Silver	0.02 % / WT
Cadmium	ND
ARSENIC	ND
BARIUM	ND
MERCURY	TRACE
SELENIUM	ND
CYANIDE	POSITIVE

REMARKS:

DILUTION 1 GM / 1000 ML.
METHODS AND DETECTION LIMITS SEE ATTACHED LETTER.

Dr. Michael Banhidi
Technical Director

ABA001084

ANALYTICAL
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Division Of Plating Products Co., Inc.

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ENVIRONMENTAL RESEARCH & TECHNOLOGY. INC.
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PITTSBURG PA. 15219

Att: MR. BARRY G. STUTTS

Code No: 30189
Customer No: 96
Date Received: 10-3-84

Type Of Sample: Wastewater
Sample I.D.: # 7
ACID DIP

COMPONENT	ANALYSIS
Chromium	50.1 % / WT
Lead	0.35 % / WT
Silver	0.02 % / WT
Cadmium	ND
ARSENIC	ND
BARIUM	ND
MERCURY	TRACE
SELENIUM	ND
CYANIDE	ND

REMARKS:

DILUTION 1 GM / 1000 ML.
METHODS AND DETECTION LIMITS SEE ATTACHED LETTER.

Dr. Michael Banhidi
Technical Director

ABA001086

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sion Of Plating Products Co., Inc.

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601. GRANT STREET. 10 TH. FLOOR.
PITTSBURG PA. 15219

Att: MR. BARRY G. STUTTS

Code No: 30189
Customer No: 96
Date Received: 10-3-84

Type Of Sample: Wastewater
Sample I.D.: # 13
STILL & OB

COMPONENT	ANALYSIS
Chromium	0.08 % / WT
Lead	0.02 % / WT
Silver	ND
Cadmium	ND
ARSENIC	ND
BARIUM	ND
MERCURY	TRACE
SELENIUM	ND
CYANIDE	ND

REMARKS:

DILUTON 1 GM / 1000 ML.
METHODS AND DETECTION LIMITS SEE ATTACHED LETTER.

Dr. Michael Banhidi
Technical Director

ABA001091

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ion Of Plating Products Co., Inc.

olfax Avenue . Kenilworth, NJ 07033 . 201-241-5040

ENVIRONMENTAL RESEARCH & TECHNOLOGY. INC.
601. GRANT STREET. 10 TH. FLOOR.
PITTSBURG PA. 15219

Att: MR. BARRY G. STUTTS

Code No: 30189
Customer No: 96
Date Received: 10-3-84

Type Of Sample: Wastewater
Sample I.D.: # 20
PM

COMPONENT	ANALYSIS
Chromium	0.12 % / WT
Lead	0.05 % / WT
Silver	ND
Cadmium	ND
ARSENIC	ND
BARIUM	ND
MERCURY	TRACE
SELENIUM	ND.
CYANIDE	POSITIVE

REMARKS:

DILUTION 1 GM / 1000 ML.
METHODS AND DETECTION LIMITS SEE ATTACHED LETTER.

Dr. Michael Banhidi
Technical Director

ABA001097

ANALYTICAL
TESTING
LABORATORIES

Division Of Plating Products Co., Inc.

840 Colfax Avenue . Kenilworth, NJ 07033 . 201-241-5040

ENVIRONMENTAL RESEARCH & TECHNOLOGY. INC.
601. GRANT STREET. 10 TH. FLOOR.
PITTSBURG PA. 15219

Att: MR. BARRY G. STUTTS

Code No: 30189
Customer No: 96
Date Received: 10-3-84

Type Of Sample: Wastewater
Sample I.D.: # 20 A
PM. (FAN)

COMPONENT	ANALYSIS
Chromium	0.19 % / WT
Lead	0.33 % /WT
Silver	ND
Cadmium	ND
ARSENIC	ND
BARIUM	ND
MERCURY	TRACE
SELENIUM	ND
CYANIDE	ND

REMARKS:

DILUTION 1 GM / 1000 ML.
METHODS AND DETECTION LIMITS SEE ATTECHED LETTER

Dr. Michael Banhidi
Technical Director

ABA001098

ALYTICAL
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BORATORIES

sion Of Plating Products Co., Inc.

oxrax Avenue . Kenilworth, NJ 07033 . 201-241-5040

ONMENTAL RESEARCH & TECHNOLOGY. INC.
RANT STREET. 10 TH. FLOOR.
BURG PA. 15219

MR. BARRY G. STUTTS

Code No: 30189
Customer No: 96
Date Received: 10-3-84

Type Of Sample: Wastewater er
Sample I.D.: # 44
Z 2 CRUBBER

COMPONENT	ANALYSIS
Chromium	0.01 % / WT
Lead	ND
Silver	ND
Cadmium	ND
ARSENIC	ND
BARIUM	ND
MERCURY	TRACE
SELENIUM	ND
CYANIDE	ND

KS:

LUTION 1 GM / 1000 ML
THODS AND DETECTION LIMITS SEE ATTACHED LETTER

Dr. Michael Banhidi
Technical Director

ABA001112

ANALYTICAL
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840 Colfax Avenue . Kenilworth, NJ 07033 . 201-241-5040

ENVIRONMENTAL RESEARCH & TECHNOLOGY. INC.
601. GRANT STREET. 10 TH. FLOOR.
PITTSBURG PA. 15219

Att: MR. BARRY G. STUTTS

Code No: 30189
Customer No: 96
Date Received: 10-3-84

Type Of Sample: Wastewater
Sample I.D.: # 45
CR. SCRUBBER

COMPONENT	ANALYSIS
Chromium	10.1 % / WT
Lead	0.04 % / WT.
Silver	ND
Cadmium	ND
ARSENIC	ND
BARIUM	ND
MERCURY	TRACE
SELENIUM	TRACE
CYANIDE	ND

REMARKS:

DILUTION 1 GM / 1000 ML.
METHODS AND DETECTION LIMITS SEE ATTACHED LETTER.

Dr. Michael Banhidi
Technical Director

ABA001113

WARREN, GOLDBERG, BERMAN & LUBITZ
A PROFESSIONAL CORPORATION
COUNSELLORS AT LAW
118 NASSAU STREET
P. O. BOX 048
PRINCETON, NEW JERSEY 08542
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BBA000075

TRENTON OFFICE
210 EAST HANOVER STREET
TRENTON, NEW JERSEY 08608
(609) 394-7141

TELECOPIER
(609) 924-3000

PLEASE REPLY TO: PRINCETON

November 28, 1986

Hand delivered
Rec'd 11/28 G Torres

Mr. Arnold Schiffman
Administrator
Water Quality Management Element
Division of Water Resources
CN-029
Trenton, New Jersey 08625

central file

Re: NJPDES/SIU Permit No. NJ0020443
AT&T Technologies, Inc., Kearny, NJ
Request For Administrative Hearing

Dear Mr. Schiffman:

This office is special counsel for AT&T Technologies, Inc. (AT&T), One Oakway, Berkeley Heights, New Jersey, with regard to the above described NJPDES permit. This permit was received by AT&T on October 29, 1986. Pursuant to N.J.A.C. 7:14A-8.9, the permittee hereby requests an adjudicatory hearing to reconsider or contest the conditions of this permit.

The legal and factual questions alleged to be at issue and their relevance to the permit decision and the factual areas to be adjudicated are set forth in the attached Technical Memorandum and accompanying tables.

The primary issue to be addressed at the hearing is the permit condition which imposes monitoring requirements for certain metals and compounds previously considered in connection with AT&T's ECRA approved Cleanup Plan. As the attached material indicates a comprehensive site evaluation established that the only significant contaminants present in the groundwater are VOC's. AT&T protests the additional monitoring conditions required under the permit.

The hearing time estimated to be necessary for the adjudication of these matters is two days.

Upon the motion of any party, or upon the order of the Administrative Law Judge or the Judge's own motion and without cost or expense to any part, AT&T will make available to appear and testify the persons set forth in N.J.A.C. 7:14A-8.9(c)(4). These will include as needed:

a. Dr. Duval and other representatives of EBT
b. Mr. Tranchetti and other representatives of AT&T

TABLE 1

RESULTS OF ANALYSES ON GROUND WATER

FROM WELL - 11: METALS

Parameter	Sample Date: 02/26/85
Arsenic	0.007
Antimony	<0.005
Beryllium	<0.05
Cadmium	<0.05
Chromium (Total)	<0.05
Chromium (VI)	<0.10
Copper	<0.05
Lead	<0.10
Nickel	0.06
Mercury	<0.002
Selenium	<0.005
Silver	<0.05
Thallium	<0.25
Zinc	0.75
Cyanide (Total)	<0.026

All concentrations reported in mg/l (ppm)

Source: These data are taken from laboratory analytical reports documented in Dan Raviv Associates, Inc. "Site Hydrogeologic Conditions, Kearny Works, AT&T Technologies, Inc." Revised June 27, 1985.

AT&T

Kearny, New Jersey

Remedial Proposal for Contaminated Soil at Formner Drum Storage Pad ECRA Case No. 84025

ENSR Consulting and Engineering

February 1993

Document Number 0550-263-400(524)

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Summary of Data for Excavated Areas
Data in ppm

Sample ID:	4A	4-1-A	4-1-A (DUP)	4-2-A	4-3-B	4-4-A
Sample Depth (in.):	12-36	12-36	12-36	12-36	0	12-36
Metals						
Antimony	2.9U					
Arsenic	8.7	26	22	20	67	28
Barium	140U					
Beryllium	14U					
Cadmium		0.25U	0.25U	0.52	4.1	0.25U
Chromium	100	400	220	85	6300	58
Copper	35	68	67	88	380	300
Lead	41	59	91	91	780	110
Mercury	1.5					
Nickel	20					
Selenium	2.9U	1.2U	1.2U	2.2	1.1U	1.8U
Silver	14U					
Thallium	140U					
Zinc	49					
Miscellaneous Parameters						
Cyanide		13	5.3	2.7	2.2	410

Sample ID:	4-5-Z	4-5-Z (DUP)	4-6-Z	4-7-Z
Sample Depth (in.):	36	36	36	36
Metals				
Arsenic	7.2	7.9	9.2	7.9
Chromium	15	21	17	37
Copper	38	56	23	18
Lead	120	120	0.25U	25U
Nickel	27	32	12U	13
Zinc	50	820	160	160

Summary of Data for Excavated Areas
Data in ppm

Sample ID:	5A	5-1-A	5-2-A	5-3-A	5-4-A	5-5-A
Sample Depth (in.):	12-36	12-36	12-36	12-36	12-36	12-36
Metals						
Antimony	2.7U					
Arsenic	* 8.7	13	130	1200	590	13
Barium	140U					
Beryllium	* 14U					
Cadmium		0.25U	0.25U	0.37	0.36	0.25U
Chromium	49	19	21	14	25	18
Copper	100	39	43	99	71	68
Lead	* 54	83	150	640	280	110
Mercury	0.81					
Nickel	46					
Selenium	2.7U	1.4U	1.8U	7.3	1.4U	1.5U
Silver	14U					
Thallium	* 140U					
Zinc	520					
Miscellaneous Parameters						
Cyanide			110	12	2.3U	2U

Sample ID:	5-6-A	5-7-A	5-8-Z	5-9-Z
Sample Depth (in.):	12-36	12-36	36	36
Metals				
Arsenic	* 28	200	33	7.7
Cadmium	0.25U	0.25U		
Chromium	* 19	580	17	13
Copper	54	36	45	38
Lead	38	33	25U	25U
Nickel			28	15
Selenium	1.6U	1.4U		
Zinc			470	130
Miscellaneous Parameters				
Cyanide	2.2U	2.1U		

Summary of Data for Excavated Areas
Data in ppm

Sample ID:		6A	6-1-A	6-2-A	6-3-A	6-4-A	6-5-A
Sample Depth (in.):		12-36	12-36	12-36	12-36	12-36	12-36
Metals							
Antimony	14	6.2U					
Arsenic	2	29	120	20	28	11	7.2
Barium	70	120U					
Beryllium	1	12U					
Cadmium	1/100		0.25U	0.25U	0.64	2.2	8.1
Chromium	10/500	52	24	22	54	16	19
Copper	600	90	98	84	170	320	120
Lead	100/500	120	200	81	210	150	100
Mercury	14	0.58					
Nickel	[illegible]	25U					
Selenium	[illegible]	2.5U	1.8	1.6U	1.1U	1.6U	1.3U
Silver	100	12U					
Thallium	2	120U					
Zinc		920					
Miscellaneous Parameters							
Cyanide		54	2.6U	2.8U	1.8	2U	1.7U

Sample ID:	6-6-A	6-7-A	6-8-Z
Sample Depth (in.):	12-36	12-36	36
Metals			
Arsenic	35	12	27
Cadmium	0.25U	0.25U	
Chromium	26	15	17
Copper	52	32	42
Lead	170	56	25U
Nickel			34
Selenium	1.4U	1.4U	
Zinc			420
Miscellaneous Parameters			
Cyanide	1.3U	1.9U	

Data in ppm

Sample ID:	8A	8-5-Z
Sample Depth (in.):	12-36	36
Metals		
Antimony	3.4	
Arsenic	7.6	
Barium	240	
Beryllium	14U	
Cadmium	0.25U	
Chromium	28U	
Copper	90	450
Lead	360	150
Mercury	0.35	
Nickel	28	
Selenium	2.8U	
Silver	14U	
Thallium	140U	
Zinc	87	

Summary of Data for Excavated Areas
Data in ppm

Sample ID:	16A	16-1-A	16-2-A	16-3-A	16-4-A	16-5-A
Sample Depth (in.):	12-36	12-36	12-36	12-36	12-36	12-36
Metals						
Antimony	2.7U					
Arsenic	12	10	57	28	28	63
Barium	910					
Beryllium	14U					
Cadmium	14U	0.25U	2.3	1.3	0.25U	1.5
Chromium	1160	500	630	590	1200	730
Copper	220	78	360	2300	86	85
Lead	380	200	1000	3000	180	300
Mercury	0.85					
Nickel	170					
Selenium	26	2.4	1.2U	1.3U	1.4U	1.4U
Silver	14U					
Thallium	140U					
Zinc	390					

Sample ID:	16-6-A	16-7-A	16-8-A	16-9-Z	16-10-Z
Sample Depth (in.):	12-36	12-36	12-36	36	36
Metals					
Arsenic	33	24	10		9.6
Cadmium	0.8	2.4	0.25U		
Chromium	160	9000	1300	110	31
Copper	94	140	120	74	120
Lead	65	170	120	55	180
Nickel				34	29
Selenium	12	2.4	1.4U		
Zinc				200	120

Summary of Data for Excavated Areas
Data in ppm

Sample ID:	17A	17-1-Z	17-2-Z	17-2-Z
Sample Depth (in.):	12-36	36	36	36 (DUP)
Volatile Organics				
Chloromethane		0.6U	0.6U	0.6U
Bromomethane		0.6U	0.6U	0.6U
Vinyl Chloride		0.6U	0.6U	0.6U
Chloroethane		0.6U	0.6U	0.6U
Methylene Chloride		0.9	0.6U	0.69
Trichlorofluoromethane		0.6U	0.6U	0.6U
1,1-Dichloroethylene		0.6U	0.6U	0.6U
1,1-Dichloroethane		0.6U	0.6U	0.6U
Trans-1,2-dichloroethylene		0.6U	0.6U	0.6U
Chloroform		0.6U	0.69	0.6U
1,2-Dichloroethane		0.6U	0.6U	0.6U
1,1,1-Trichloroethane		3U	6.5	5.5
Carbon Tetrachloride		0.6U	1	0.94
Bromodichloromethane		0.6U	0.6U	0.6U
1,1-Dichloropropane		0.6U	0.6U	0.6U
Trans-1,3-dichloropropene		0.6U	0.6U	0.6U
Trichloroethylene		0.6U	0.63	0.6U
Dibromochloromethane		0.6U	0.6U	0.6U
Cis-1,3-dichloropropene		0.6U	0.6U	0.6U
1,1,2-Trichloroethane		0.6U	0.6U	0.6U
Benzene		0.6U	0.6U	0.6U
1-Chloroethyl-vinyl ether		0.6U	0.6U	0.6U
Bromoform		0.6U	0.6U	0.6U
Tetrachloroethene		0.6U	27	19
1,1,2,2-Tetrachloroethane		0.6U	1.6	0.6U
Toluene		1.9	2.6	1.8
Chlorobenzene		0.6U	0.6U	0.6U
Ethylbenzene		0.6U	0.68	0.6U
Metals				
Antimony	6.2U			
Arsenic	4.2	7	17	
Barium	120U			
Beryllium	12U			
Cadmium	0.25U			
Chromium	25U	19	140	
Copper	88	38	410	
Lead	25U	73	170	
Mercury	0.13			
Nickel	25U	14	83	
Selenium	2.5U			
Silver	12U			
Thallium	120U			
Zinc	48	62	430	

Summary of Data for Excavated Areas
Data in ppm

Sample ID:	21A	21B	21-1-A	21-2-A	21-3-A	21-6-A
Sample Depth (in.):	12-36	0	24-36	24-36	24-36	24-36
Volatile Organics						
Methylene Chloride		0.031				
1,1,1-Trichloroethane		0.008				
Metals						
Antimony	6.2U					
Arsenic	10					
Barium	120U					
Beryllium	12U					
Chromium	50					
Copper	55					
Lead	250					
Mercury	0.1					
Nickel	25U					
Selenium	2.5U					
Silver	12U					
Thallium	120U					
Zinc	130					
Miscellaneous Paramaters						
Cyanide	12U					
PCBs	1.1		2.3	1.6	1U	2.5

Sample ID:	21-7-Z	21-8-X	21-9-X	21-10-Z
Sample Depth (in.):	36	0	0	36
Metals				
Copper		38		
Lead	490		50	96
Nickel		100		
Zinc	350		140	300
Miscellaneous Paramaters				
Cyanide	U	1.7	U	U

Summary of Data for Excavated Areas
Data in ppm

Sample ID:	22B	22-10-X	22-11-X	22-12-Z
Sample Depth (in.):	0	0	0	36
Volatile Organics				
Methylene Chloride	0.013			
Chloroform	0.018			
Metals				
Antimony	6.2U			
Arsenic	12			
Barium	200			
Beryllium	12U			
Chromium	50			
Copper	78			
Lead	410	65	51	150
Mercury	0.12			
Nickel	38			
Selenium	2.5U			
Silver	12U			
Thallium	120U			
Zinc	350	160	120	400

Sample ID:	22B	22-1-A	22-2-A	22-3-A	22-4-A	22-5-A
Sample Depth (in.):	0	24-36	24-36	24-36	24-36	24-36
Miscellaneous Paramaters						
Cyanide	12U					
PCBs	21	19.8	2.9	9.6	5.8	5.4

Sample ID:	22-6-A	22-7-B	22-7-B	22-8-B	22-9-A
Sample Depth (in.):	24-36	0	0 (DUP)	0	24-36
Miscellaneous Paramaters					
PCBs	10U	2.7	4.4	16.5	10U

Sample ID:	22-10-X	22-11-X	22-12-Z
Sample Depth (in.):	0	0	36
Miscellaneous Paramaters			
PCBs	U	U	1.3

Summary of Data for Excavated Areas
Data in ppm

Sample ID:	25A	25-1-Y	25-2-Y	25-3-X
Sample Depth (in.):	12-36	12-36	12-36	0
Metals				
Antimony	6.2U			
Arsenic	5			
Barium	120U			
Beryllium	12U			
Chromium	25U			
Copper	150			
Lead	88	460	130	
Mercury	0.44			
Nickel	25U			
Selenium	2.5U			
Silver	12U			
Thallium	120U			
Zinc	750	100	310	350
Miscellaneous Parameters				
Cyanide	12U			

Summary of Data for Excavated Areas
Data in ppm

Sample ID:	26A
Sample Depth (in.):	12-36
Metals	
Antimony	2.9U
Arsenic	8.1
Barium	140U
Beryllium	14U
Chromium	1580
Copper	170
Lead	230
Mercury	0.81
Nickel	126
Selenium	2.9U
Silver	14U
Thallium	140U
Zinc	1370
Miscellaneous Parameters	
Cyanide	12U

Sample Depth (in.):	12-36
Metals	
Antimony	2.9U
Arsenic	8.1
Barium	140U
Beryllium	14U
Chromium	1580
Copper	170
Lead	230
Mercury	0.81
Nickel	126
Selenium	2.9U
Silver	14U
Thallium	140U
Zinc	1370
Miscellaneous Parameters	
Cyanide	12U

Summary of Data for Excavated Areas
Data in ppm

Sample ID:	33A	33Z	33-1-B	33-2-B	33-3-B	33-4-B
Sample Depth (in.):	12-36	36	0	0	0	0
Metals						
Antimony	6.2U					
Arsenic	16	16	30	42	40	51
Barium	120U					
Beryllium	12U					
Cadmium			1	1.5	1.6	2
Chromium	110	150	5300	11000	8500	9900
Copper	65	140	490	730	620	740
Lead	98	240	880	1400	1100	1000
Mercury	0.58					
Nickel	48	56				
Selenium	2.5U		1.4U	1.4U	1.3U	11
Silver	12U					
Thallium	120U					
Zinc	100	200				
Miscellaneous Parameters						
Cyanide		U	160			

Sample ID:	33-5-B	33-6-B	33-7-B	33-8-B	33-9-Z	33-10-Z
Sample Depth (in.):	0	0	0	0	36	36
Metals						
Arsenic	26	35	54	40	15	6.1
Cadmium	2.8	1.6	1.2	1.8		
Chromium	19000	4800	8600	11000	74	1200
Copper	1200	430	620	750	210	120
Lead	1900	900	1100	1400	300	110
Nickel					51	280
Selenium	14	3.1	1.5	1.5U		
Zinc					220	520
Miscellaneous Parameters						
Cyanide					0.79	12

Summary of Data for Excavated Areas
Data in ppm

Sample ID:	34A	34-1-Z	34-2-Z	34-3-Z	34-4-Z	34-5-Z
Sample Depth (in.):	12-36	36	36	36	36	36
Metals						
Antimony	2.7U					
Arsenic	6	36	15	12	25	8.3
Barium	140U					
Beryllium	14U					
Chromium	27	280	180	180	5000	5800
Copper	36	1800	290	82	610	430
Lead	27U	1200	420	460	270	440
Mercury	0.13					
Nickel	19	220	82	32	1500	1400
Selenium	2.7U					
Silver	14U					
Thallium	140U					
Zinc	60	8600	690	140	4100	3500
Miscellaneous Parameters						
Cyanide		2.7	U	23	57	61

Sample ID:	34-6-Z	34-7-Z
Sample Depth (in.):	36	36
Metals		
Arsenic	4.4	5.2
Chromium	650	U
Copper	210	24
Lead	420	U
Nickel	240	20
Zinc	1300	150
Miscellaneous Parameters		
Cyanide	7.7	21

MEMORANDUM

TO: Lance Richman

FROM: Maxus Energy Corporation, Responding on Behalf of Occidental Chemical Corporation

DATE: July 23, 1996

RE: AT&T Technologies, Inc. (formerly Western Electric)

Purpose and Scope:

This memorandum summarizes open issues relating to property located at 100 Central Avenue in Kearny, New Jersey. AT&T Technologies, Inc. is believed to be the party primarily responsible for this property; however, this property has been owned or operated by various parties over time, including Western Electric Company, Incorporated, AT&T Technologies, Inc., AT&T Corporation and Lucent Technologies. References to "AT&T" include all of these parties to the extent these entities have owned, operated or controlled the property located at 100 Central Avenue and the associated activities. This property is at the southern end of the Passaic River Study Area ("Study Area") and discharges directly to the Study Area. This memorandum recommends specific 104(e) requests (along with EPA's standard requests) to submit to AT&T Technologies, Inc. to elicit information needed to address these issues. This memorandum supplements the report titled *Summary of Evidence Pertaining to AT&T Technologies* enclosed herewith.

Background:

Information presented in the *Summary of Evidence Pertaining to AT&T Technologies* indicates that:

1. Hazardous substances, including PCBs, lead, cyanide, mercury, copper, nickel, silver and zinc were used or generated at the facility. These substances were used or generated from 1925 to 1984 during manufacturing processes at the facility which included plating of metal parts, cable and wire insulating, metal fabrication, spray

painting and electrical testing. AT&T manufactured transformers, insulated wire and cable, screws and bolts, and other telecommunications equipment (including connectors, test sets and relays). AT&T performed military work from 1942 to 1945 and worked on Nike antiaircraft missles in the 1950's. It has also been reported that shell casings, Nike missile parts, torpedo parts, and wiring boards and other electrical equipment may have been manufactured at this facility.

2. The AT&T facility is located next to the Passaic River within the boundaries of the Study Area and various discharge pathways exist at the AT&T facility for hazardous substances to be discharged to the Passaic River. These pathways include direct outfalls to the river, a floor drain and sewer system, the storm sewer system, soil contamination and flooding of the site.

3. Passaic River sediment samples adjacent to the AT&T site indicate the presence of PCBs, lead, cyanide, mercury, copper, nickel, silver and zinc. These hazardous substances are either known to have been present at the AT&T facility or known to have been used in the processes employed at the facility.

Additional Information is required regarding the following issues:

Manufacturing of electrical components and other materials was conducted at the facility from 1925-1984. Although some public information is available to document activities and discharges at the site, AT&T should be required to supply complete information regarding the environmental condition of the facility. With this goal in mind, the following suggestions for 104(e) requests are presented. The suggestions are designed to supplement the EPA's 104(e) requests.

A. EPA should obtain a complete description of the history of ownership and operation of the facility. Western Electric Company, Incorporated owned the property for a period of time, but AT&T Technologies, Inc. has submitted studies to the NJDEP on behalf of Western Electric Company, Incorporated. EPA should request this information to be sure all liable entities are notified by the agency of their PRP status.

104(e) Request No. 1

Identify all corporate entities associated with operations at 100 Central Ave.

104(e) Request No. 2

Provide a corporate structure diagram addressing all of the entities listed in Response No. 1 above to the extent those entities are related to AT&T.

104(e) Request No. 3

Explain the corporate relationship of the entities depicted in your responses to Questions 1 and 2, included but not limited to: Western Electric Company, Inc., AT&T Technologies, Inc., AT&T Corporation and Lucent Technology Services Company. State whether these entities are still in existence. Provide supporting documentation, including but not limited to certificates of incorporation, merger agreements, purchase and sale agreements, indemnity agreements or other agreements regarding the transfer of liabilities, and any investigations performed by any of these entities in connection with the transaction. If such documents are not available, state in whose possession such documents can be located.

B. EPA should obtain complete information regarding the current owners and operators of the site. It appears that portions of the property have been sold to various entities including a metals exporter named Union Minerals and Alloys Corp. and the River Terminal Development Corporation. These parties may also have liability as PRPs.

104(e) Request No. 4

Identify the current owners of the 100 Central Avenue facility in Kearny, New Jersey. Include copies of all deeds transferring land to the River Development Corporation, Union Minerals and Alloys Corp. and other current or former owners. Include copies of any leases or other occupancy agreements. Identify any corporate or contractual relationships with the entities identified in this question.

104(e) Request No. 5

Identify all other AT&T affiliated entities that currently own or lease, or have owned or leased in the past, any portion of the facility located at 100 Central Avenue, and provide the dates of ownership or lessee status.

C. EPA should elicit a complete description of all materials produced at the facility and all production processes used at the facility.

104(e) Request No. 6

List all products manufactured, stored, or used or otherwise handled at the Kearny facility from 1925-1984. For each product, specify the years during which it was manufactured, stored, used or otherwise handled at the facility. Your answer should include, <u>but not be limited to</u>, a discussion of the production of transformers, mercury

relays, lead cables, "dry red relays", and pulp and paper insulation at the facility. Describe the manufacture of pulp and paper insulation for cables at the facility, including information regarding the washing or bleaching of such materials.

104(e) Request No. 7

For each product listed in Request No. 6 above, describe the raw materials used to develop each product and the waste streams or by-products generated during production of the product. Provide any material balance developed for each product.

D. EPA should elicit information regarding AT&T's production of materials for the United States Government related to World War II, including, but not limited the production of the Nike missiles, torpedoes, telecommunications equipment.

104(e) Request No. 8

Describe activities and projects undertaken for the Department of Defense or other governmental agencies during World War II, the Korean War or the Vietnam conflict. Include in your discussion a description of the production of Nike missiles, torpedoes, and telecommunications equipment.

E. EPA should elicit information regarding the disposal of wastewater prior to the construction of the wastewater treatment plant in 1973 and prior to the NPDES permit in 1978.

104(e) Request No. 9

Describe in detail, by periods of operation, the management and disposal of process wastewater and stormwater at the facility from 1925-1984. Include in your answer a flowchart detailing the generation and disposition of process wastewater at the facility. Include in your discussion a description of the following:

a. The date the wastewater pre-treatment program was initiated;
b. The management of process wastewater and stormwater prior to initiation of the pre-treatment program;
c. The characterization or composition of process wastewater from operations at the facility, indicating whether such information is based on process knowledge or laboratory analyses;
d. The storage of process wastewater and stormwater at the facility;
e. The disposal of process wastewater and stormwater, including the disposal of process wastewater from the painting operations at the facility;

f. The disposal of stormwater through permitted outfalls;
g. The disposal and storage of contaminated groundwater; and
h. The incineration of any waste water or stormwater.

104(e) Request No. 10

Describe in detail any and all pretreatment of wastewater, process wastewater, sanitary water or stormwater that may have occurred at the facility prior to 1973.

F. Public information and employee testimony establishes that the 100 Central Avenue facility had a floor drain system in several buildings connected to sewer pipes leading to the Passaic River. Process waste from these buildings may have been discharged through the floor drains and sewer pipes into the Passaic River. EPA should request information regarding the facility's floor drain system and sewer pipe network.

104(e) Request No. 11

Describe in detail the location of the floor drains, sumps or conduits in or surrounding each building, including but not limited to Building 170 and Building 32. Include in your response a description of the connection to the sewer system or other discharge system, and all maps, diagrams or building plans or specifications, pictures of the location of floor drains and sewer pipes.

104(e) Request No. 12

Describe in detail AT&T's utilization of floor drains, sumps or conduits from 1925-1984, including any discharge of process waste or wastewater to the floor drains.

G. Numerous direct outfalls are known to exist and are still visible today from the 100 Central Avenue facility to the Passaic River. EPA should elicit information regarding the location of each outfall and AT&T's use of each outfall.

104(e) Request No. 13

Describe the location, installation, and use of each outfall and, if applicable, the removal of each outfall from the 100 Central Avenue facility. Include in your discussion the six (6) outfalls currently subject to an NPDES permit, along with any unpermitted outfall used at the facility at any time. Provide copies of any diagrams, maps, drawings, building plans or specifications that indicate the outfall locations.

104(e) Request No. 14

Describe in detail AT&T's utilization of the outfalls described in No. 13 above, including the discharge of stormwater, process wastewater, wastewater, sanitary water or contaminated stormwater to the outfall.

H. Recent sampling performed at the former AT&T site indicates extensive soil and groundwater contamination. EPA should elicit information regarding investigations performed at the facility by AT&T or any other entities.

104(e) Request No. 15

Provide all documents relating to any investigations (whether mandated by federal, state, or local agencies or conducted voluntarily) conducted at the 100 Central Avenue property by or on behalf of AT&T or investigations conducted by another party which are in AT&T's possession including, but not limited to, environmental audits, analytical results of groundwater, surface water, ambient air, and soil or sediment sampling, sampling plans, and a description of any remedial actions performed by or on behalf of AT&T or remedial actions that were performed by another party for which AT&T has documentation.

104(e) Request No. 16

To the extent this information was not provided in response to Request No. 15 above, provide information regarding the status of the ECRA/ISRA review of the facility, including but not limited to, analytical results of any sampling, sampling plans, and any remedial actions taken.

104(e) Request No. 17

Describe in detail all environmental testing, site assessments, and environmental audits that have occurred at the facility. Include information regarding tests that were conducted for xylene in the sewer system in the early 1970s, pH sampling conducted on the sewer system, and any dye testing conducted at the facility.

104(e) Request No. 18

Describe in detail the hydrogeologic condition of the site, including the flow of groundwater toward the Passaic River and related geochemistry. Include in your description a discussion of any proposed or currently operating "pump and treat" system or groundwater recovery system at the 100 Central Avenue site.

I. Public information demonstrates that AT&T employed an Emergency Response Team to address discharges, releases and emergency situations at the facility. The records of this team may contain evidence of discharges to the air, water or soil in the area.

104(e) Request No. 19

Describe the activities of the Emergency Response Team at the facility from 1925-1984, including the team's response to any fires, explosions, spills, discharges, releases, or emergencies. Provide copies of all reports or summaries relating to activities of the Emergency Response Team.

J. AT&T operated a dock that was used for receipt of shipments of raw materials, including paints, carbon tetrachloride, perchloroethylene, from suppliers. Discharges to the Passaic River may have occurred from this transportation operation. EPA should request information regarding the dock and its utilization by AT&T.

104(e) Request No. 20

Describe the use of the dock at the 100 Central Avenue facility, including but not limited to, the construction of the dock, the materials delivered or exported at the dock, the method of raw material transfer, and any spills or discharges that may have occurred at or near the dock. Include in your answer a full description of the packages or containers that were used to transport these materials. Describe any repackaging of materials at the 100 Central Avenue facility upon arrival.

L. Numerous aboveground and underground storage tanks were utilized by AT&T at the facility. Spills or leaks may have occurred from these tanks. EPA should request information regarding the use of these tanks and the materials stored in these tanks.

104(e) Request No. 21

Describe the materials stored in the above ground and underground storage tanks currently or previously located at the 100 Central Avenue facility. Provide information regarding the number of tanks located on the property, the contents and

capacity of each tank, the dates of installation and removal, and a description of any known or suspected leaks or spills from the tanks and associated piping.

Recommended Actions

1. EPA should send a 104(e) request to AT&T which, in addition to the questions EPA has drafted for investigating the presence of hazardous substances in the Passaic River, includes the questions enumerated above. Based on information from NJDEP files regarding the site, the following entity has assumed responsibility for implementing the cleanup and should receive the 104(e) request:

Mr. Nicholas W. Capuano
AT&T Technologies, Inc.
131 Morristown Road
Basking Ridge, New Jersey 07920

It may be necessary to send additional 104(e) requests to associated entities. If necessary, we will provide additional addresses.

Attached to this memorandum is a list of draft 104(e) questions to submit to AT&T along with the questions EPA has drafted for investigating the presence of hazardous substances in the Passaic River.

104(e) Requests for AT&T Technologies, Inc.

104(e) Request No. 1

Identify all corporate entities associated with operations at 100 Central Ave.

104(e) Request No. 2

Provide a corporate structure diagram addressing all of the entities listed in Response No. 1 above to the extent those entities are related to AT&T.

104(e) Request No. 3

Explain the corporate relationship of the entities depicted in your responses to Questions 1 and 2. included but not limited to: Western Electric Company, Inc., AT&T Technologies, Inc., AT&T Corporation and Lucent Technology Services Company. State whether these entities are still in existence. Provide supporting documentation, including but not limited to certificates of incorporation, merger agreements, purchase and sale agreements, indemnity agreements or other agreements regarding the transfer of liabilities, and any investigations performed by any of these entities in connection with the transaction. If such documents are not available, state in whose possession such documents can be located.

104(e) Request No. 4

Identify the current owners of the 100 Central Avenue facility in Kearny, New Jersey. Include copies of all deeds transferring land to the River Development Corporation, Union Minerals and Alloys Corp. and other current or former owners. Include copies of any leases or other occupancy agreements. Identify any corporate or contractual relationships with the entities identified in this question.

104(e) Request No. 5

Identify all other AT&T affiliated entities that currently own or lease, or have owned or leased in the past, any portion of the facility located at 100 Central Avenue, and provide the dates of ownership or lessee status.

104(e) Request No. 6

List all products manufactured, stored, or used or otherwise handled at the Kearny facility from 1925-1984. For each product, specify the years during which it was manufactured, stored, used or otherwise handled at the facility. Your answer should include, <u>but not be limited to</u>, a discussion of the production of transformers, mercury relays, lead cables, "dry red relays", and pulp and paper

insulation at the facility. Describe the manufacture of pulp and paper insulation for cables at the facility, including information regarding the washing or bleaching of such materials.

104(e) Request No. 7

For each product listed in Request No. 5 above, describe the raw materials used to develop each product and the waste streams or by-products generated during production of the product. Provide any material balance developed for each product.

104(e) Request No. 8

Describe activities and projects undertaken for the Department of Defense or other governmental agencies during World War II, the Korean War or the Vietnam conflict. Include in your discussion a description of the production of Nike missiles, torpedoes, and telecommunications equipment.

104(e) Request No. 9

Describe in detail, by periods of operation, the management and disposal of process wastewater and stormwater at the facility from 1925-1984. Include in your answer a flowchart detailing the generation and disposition of process wastewater at the facility. Include in your discussion a description of the following:

a. The date the wastewater pre-treatment program was initiated;
b. The management of process wastewater and stormwater prior to initiation of the pre-treatment program;
c. The characterization or composition of process wastewater from operations at the facility, indicating whether such information is based on process knowledge or laboratory analyses;
d. The storage of process wastewater and stormwater at the facility;
e. The disposal of process wastewater and stormwater, including the disposal of process wastewater from the painting operations at the facility;
f. The disposal of stormwater through permitted outfalls;
g. The disposal and storage of contaminated groundwater; and
h. The incineration of any waster water or stormwater.

104(e) Request No. 10

Describe in detail any and all pretreatment of wastewater, process wastewater, sanitary water or stormwater that may have occurred at the facility prior to 1973.

104(e) Request No. 11

Describe in detail the location of the floor drains, sumps or conduits in or surrounding each building, including but not limited to Building 170 and Building 32. Include in your response a description of the connection to the sewer system or other discharge system, and all maps, diagrams or building plans or specifications, pictures of the location of floor drains and sewer pipes.

104(e) Request No. 12

Describe in detail AT&T's utilization of floor drains, sumps or conduits from 1925-1984, including any discharge of process waste or process wastewater to the floor drains.

104(e) Request No. 13

Describe the location, installation, and use of each outfall and, if applicable, the removal of each outfall from the 100 Central Avenue facility. Include in your discussion the six (6) outfalls currently subject to an NPDES permit, along with any unpermitted outfall used at the facility at any time. Provide copies of any diagrams, maps, drawings, building plans or specifications that indicate the outfall locations.

104(e) Request No. 14

Describe in detail AT&T's utilization of the outfalls described in No. 13 above, including the discharge of stormwater, process wastewater, wastewater, sanitary water or contaminated stormwater to the outfall.

104(e) Request No. 15

Provide all documents relating to any investigations (whether mandated by federal, state, or local agencies or conducted voluntarily) conducted at the 100 Central Avenue property by or on behalf of AT&T or investigations conducted by another party which are in AT&T's possession including, but not limited to, environmental audits, analytical results of groundwater, surface water, ambient air, and soil or sediment sampling, sampling plans, and a description of any remedial actions performed by or on behalf of AT&T or remedial actions that were performed by another party for which AT&T has documentation.

104(e) Request No. 16

To the extent this information was not provided in response to Request No. 15 above, provide information regarding the status of the ECRA/ISRA review of the facility, including but not limited to, analytical results of any sampling, sampling plans, and any remedial actions taken.

104(e) Request No. 17

Describe in detail all environmental testing, site assessments, and environmental audits that have occurred at the facility. Include information regarding tests that were conducted for xylene in the sewer system in the early 1970s, pH sampling conducted on the sewer system, and any dye testing conducted at the facility.

104(e) Request No. 18

Describe in detail the hydrogeologic condition of the site, including the flow of groundwater toward the Passaic River and related geochemistry. Include in your description a discussion of any proposed or currently operating "pump and treat" system or groundwater recovery system at the 100 Central Avenue site.

104(e) Request No. 19

Describe the activities of the Emergency Response Team at the facility from 1925-1984, including the team's response to any fires, explosions, spills, discharges, releases, or emergencies. Provide copies of all reports or summaries relating to activities of the Emergency Response Team.

104(e) Request No. 20

Describe the use of the dock at the 100 Central Avenue facility, including but not limited to, the construction of the dock, the materials delivered or exported at the dock, the method of raw material transfer, and any spills or discharges that may have occurred at or near the dock. Include in your answer a full description of the packages or containers that were used to transport these materials. Describe any repackaging of materials at the 100 Central Avenue facility upon arrival.

104(e) Request No. 21

Describe the materials stored in the above ground and underground storage tanks currently or previously located at the 100 Central Avenue facility. Provide information regarding the number of tanks located on the property, the contents and capacity of each tank, the dates of installation and removal, and a description of any known or suspected leaks or spills from the tanks and associated piping.

Witco Corp. - Humko
Chemical Div.

FACILITY REPORT (BRS DATA)

search used- Facility : WITCO*
City : NEWARK
State : NJ
EPA ID : ALL
Year : ALL
Level of Detail: HIGH

Results:

This search was taken from RTK NET's (the Right-To-Know Network)'s copy of EPA's BRS database. RTK NET is run by OMB Watch at 1742 Connecticut Ave. NW, Washington DC 20009 Phone: 202-234-8494
The search was done on 09/26/2002.
This copy of the database was last updated on 05/29/2002.

Note: "Federal" waste is waste with at least one Federal EPA waste code. Non-Federal waste is regulated by the state only. "RCRA" waste is Federal waste that is managed (treated, disposed, or recycled) in a RCRA-permitted TSD unit. The waste is classified according to assumptions made about where it ends up.

If you don't see the words *END OF REPORT* at the end of this search, then this Web search didn't complete -- back up and try it again.

Reporting Year: 1989

Facility Name: WITCO CORP-HUMKO CHEMICAL DI Reporting Year: 1989
Street : 652 DOREMUS AVENUE
City : NEWARK State: NJ Zip: 071054898
County : ESSEX EPA ID: NJD094951258
Mailing Address: 652 DOREMUS AVENUE
Mailing City : NEWARK State: NJ Zip: 071054898

Year: 1989	Total Waste	Federal Wst.	RCRA Waste
Tons Generated :	15.68	15.68	15.68
Tons Shipped :	15.68	15.68	15.68

SIC Code(s):
Contact: LEON BONAN Phone: 2013443212-254
Generator Status : Large Quantity Generator (LQG)
Storage Status : No RCRA-permitted or interim status storage
RCRA TDR Status : No on-site TDR; site has no plans to develop system
Exempt TDR Status: No on-site TDR; site has no plans to develop system

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List of wastes generated by this facility:

Waste Desc.:
EPA Waste Code(s) for this generated waste-
D009 Mercury
Tons Generated: 2.65
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
TRADE WASTE INCINERATION INC
SAUGET, IL
System type: M999
Tons sent: 2.65 EPA ID: ILD098642424

Waste Desc.:
EPA Waste Code(s) for this generated waste-

D001 Ignitable waste
Tons Generated: 1.10
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
CRANFORD CLEANERS
CRANFORD, NJ
System type: M999
Tons sent: 1.10 EPA ID: NJD000768093

Waste Desc.:
EPA Waste Code(s) for this generated waste-
D001 Ignitable waste
Tons Generated: 9.77
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
SAFETY KLEEN CORP
LINDEN, NJ
System type: M999
Tons sent: 9.77 EPA ID: NJD002182897

Waste Desc.:
EPA Waste Code(s) for this generated waste-
D009 Mercury
Tons Generated: 1.08
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
SAFETY KLEEN CORP
LINDEN, NJ
System type: M999
Tons sent: 1.08 EPA ID: NJD002182897

Waste Desc.:
EPA Waste Code(s) for this generated waste-
F001 Spent halogenated solvents used in degreasing (see 1991 Form)
Tons Generated: 1.08
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
SAFETY KLEEN CORP
LINDEN, NJ
System type: M999
Tons sent: 1.08 EPA ID: NJD002182897

Reporting Year: 1993

Facility Name: WITCO CORP Reporting Year: 1993
Street : 652 DOREMUS AVE
City : NEWARK State: NJ Zip: 071050000
County : ESSEX EPA ID: NJD094951258
Mailing Address: 652 DOREMUS AVE
Mailing City : NEWARK State: NJ Zip: 071050000

Year: 1993	Total Waste	Federal Wst.	RCRA Waste
Tons Generated :	48.14	1.78	1.77
Tons Shipped :	48.14	1.78	1.77

SIC Code(s):
Contact: JESUS A MATIAS Phone: 2013443216-3223

Generator Status : Large Quantity Generator (LQG)
Storage Status : No RCRA-permitted or interim status storage
RCRA TDR Status : No on-site TDR; site has no plans to develop system
Exempt TDR Status: No on-site TDR; site has no plans to develop system
---

List of wastes generated by this facility:

Waste Desc.: TOXIC WASTES FROM QUALITY CONTROL ANAYSIS, MIXTURE OF HALOGE
NATED SOLVENTS, ALCOHOLS
EPA Waste Code(s) for this generated waste-
D008 Lead
D019 Carbon tetrachloride
D022 Chloroform
D038 Pyridine
F001 Spent halogenated solvents used in degreasing (see 1991 Form)
Tons Generated: 1.23
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
TRADE WASTE INCINERATION INC
SAUGET, IL
System type: M041
Tons sent: 0.73 EPA ID: ILD098642424

CHEMICAL WASTE MANAGEMENT OF NJ, INC.
NEWARD, NJ
System type: M141
Tons sent: 0.50 EPA ID: NJD089216790

Waste Desc.: WASTE COMBUSTIBLE LIQUID, MINERAL SPIRIT
EPA Waste Code(s) for this generated waste-
D001 Ignitable waste
D018 Benzene
D039 Tetrachloroethylene
Tons Generated: 0.30
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
SAFTY-KLEEN CORP.
NEWARK, NJ
System type: M021
Tons sent: 0.30 EPA ID: NJD000768093

Waste Desc.: SOLID WASTES PETROLEUM MIXTURES
This is state-only waste (no Federal waste codes).
State waste code(s): X725
Tons Generated: 46.36
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
REPUBLIC ENVIRONMENTAL SYSTEMS, INC.
HATFIELD, PA
System type: M141
Tons sent: 5.18 EPA ID: PAD085690592

GEOLOGICAL RECLAMATION OPERATIONS & WAST
MORRISVILLE, PA
System type: M132
Tons sent: 41.18 EPA ID: PAD000429589

Waste Desc.: SOLID WASTE FROM HEAT TRANSFER FLUID, THERMINOL 66
EPA Waste Code(s) for this generated waste-
D018 Benzene
Tons Generated: 0.25
Tons Generated & Managed On-site: 0.00
This waste was sent off-site to-
REPUBLIC ENVIRONMENTAL SYSTEMS, INC.
HATFIELD, PA
System type: M141
Tons sent: 0.25 EPA ID: PAD085690592

END OF REPORT

PRELIMINARY SITE ASSESSMENT REPORT

Witco Corporation
Oleochemicals and Surfactants Group
652 Doremus Avenue
Newark, New Jersey 07105

Prepared for:

Witco Corporation
One American Lane
Greenwich, Connecticut 06831-2559

Prepared by:

Langan Engineering and Environmental Services, Inc.
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4 March 1996

1312801

Langan
Engineering and Environmental Services, Inc.

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WITCO Corporation

Material Name	Typical Annual Usage x 1,000(lb/yr)
Guardian Acclaim Sodium metasilicate Sodium dichloroisocyanurate Hazorb Pillows (Ca/Na Borosilicate)	0
Helium Gas	100 - 200
Heneicosanoic Acid, Methyl Ester	0.0001
Heptadecanoic Acid (HCl) HCi Water	0.0001
Hydrogen Gas	10 - 15
Hydrogen Sulfide Gas	1 - 5
Hydroxyl Ammonium Chloride	1
2,2 Iminodiethanol (DEA)	1 - 5
Iodine	1
Iodine Monochloride (WIJS SOL) Iodine Acetic acid	400 - 500
Iron Standard AA Iron Hydrogen Chloride Water	0.0001
Isooctane	0.05
Isopropanol (Isopropyl Alcohol)	500 - 650
Karl Fischer Reagent Iodine Methanol 2 Methoxy ethanol Pyridine Sulfur dioxide	2 -5
Kerosene	88 Discontinued
Lead Acetate Trihydrate	3
Lead Metals	0.5
Lead Nitrate	0.5
Lead Oxide	1
Magnesium Sulfate Heptahydrate	1
Manganese Standard Manganese Nitric acid Water	0.0001
Manganses Sulfate Monhydrate	1
Mercuric Sulfate	1
Mercury	10

TABLE 4 (CONTINUED)
Laboratory Chemicals
WITCO Corporation

Material Name	Typical Annual Usage x 1,000(lb/yr)
Mercury Indicator Cuprous iodide Sulfur Silicon dioxide	1
Mercury Sponge Citric acid Zinc	1
Mercury Vapor Absorbent Iodine Activated carbon	1
Methane Sulphonic Acid	2 Discontinued
Methanol	70 - 110
Methoxyethanol (Cellosolve)	1
Methyl Orange	0.05
Methyl Red	0.05
Methylene Blue Chloride	0.05
Methylene Chloride (Dichloromethan)	0.05
Morpholine	0.05
Myristic Acid	0.0001
Myristic Acid, Methyl Ester	0.0001
Myristoleic Acid, Methyl Ester	0.0001
p-Napthol Benzene	0.05
Needle Cleaning Kit (H20)	0.05
Neutracit Caustic Neutralizer Silica gel Citric acid Bromothymol Blue, Sodium Salt	1
Nickel AA Standard Nickel nitrate Nitric acid Water	0.0001
Nickelous Chloride	1
Nitric Acid	22
Nitrogen Gas	1
Nonadecanoic Acid, Methyl Ester	0.0001
Nonanoic Acid, Methyl Ester	0.0001
Oleic Acid	0.0001
Oleic Acid, Methyl Ester	0.0001
Perchloric Acid 0.1 N in HAC Acetic acid	0.05
Plamitic Acid	0.0001
Palmitic Acid, Methyl Esters	0.0001
Palmitoelic Acid, Methyl Ester	0.0001

ENVIRONMENTAL

STRATEGIES CORPORATION

PHASE I ENVIRONMENTAL ASSESSMENT
AND
PHASE II ENVIRONMENTAL INVESTIGATION

WITCO CORPORATION
NEWARK, NEW JERSEY

FINAL REPORT

ESC

PHASE I ENVIRONMENTAL ASSESSMENT
AND
PHASE II ENVIRONMENTAL INVESTIGATION

WITCO CORPORATION
NEWARK, NEW JERSEY

FINAL REPORT

PREPARED

BY

ENVIRONMENTAL STRATEGIES CORPORATION

SEPTEMBER 6, 1996

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using a batch process. Following production, some of the fatty acid and ester products are sprayed with a chilled liquid to form dry products (fatty acid beads or powder).

The primary raw materials used during manufacturing are sulfuric acid, linseed oil, alcohol, ammonia, butanol, isobutanol, isopropyl alcohol, and methanol. In addition, no. 6 fuel oil is used to heat the boilers. The raw materials are stored in 10,000-gallon or greater aboveground storage tanks throughout the facility. The largest tank is a 200,000-gallon aboveground tank used to store no. 6 fuel oil. The majority of the tanks were installed before Witco acquired the property in 1983. The tanks are insulated and constructed of welded metal. The tanks are frequently inspected for leaks.

The primary chemicals used in the laboratory are acetic acid, acetone, acetylene gas, ammonium molybdate, iodine, isopropanol, mercury, methanol, sodium hydroxide, and various types of buffer solutions, strong acids, and solvents. These chemicals are stored in 55-gallon drums in the warehouse or in small containers inside the laboratory. Other hazardous chemicals (i.e., product ingredients, cleaners, pH adjusters, mineral spirits, etc.) are also stored in small containers throughout the facility where they are used.

Finished products include fatty acids, glycerine, and fatty acid derivatives or esters. The finished products are also stored in aboveground tanks throughout the facility.

Hazardous wastes generated at the facility include small quantities of laboratory wastes and cleaning solvents. The wastes are placed in 55-gallon drums and stored outside on a concrete pad next to the laboratory. At the time of the site visit, all of the drums appeared to be in good condition and were not leaking. No stains were observed on the concrete pad.

In the past, larger quantities of hazardous wastes were generated due to the use of additional chemicals, such as chlorinated solvents, and increased manufacturing operations. Hazardous wastes have been sent offsite for disposal since Witco purchased the facility in 1983; however, according to Ms. Fule, laboratory wastes (i.e., solvents and metal compounds) were allegedly placed onsite next to the guardhouse for a short period of time. Ms. Fule was unable to provide details on the alleged disposal since she did not observe it herself. ESC investigated these areas as part of the Phase II investigation. The results of the investigation are discussed later in this report.

A memorandum obtained from Witco's files, dated August 9, 1983, indicated 9,300 tons of waste were disposed of onsite. The memorandum does not mention who disposed of the waste or where the

RESPONSE OF WITCO CORPORATION TO THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY'S REQUEST FOR INFORMATION CONCERNING THE DIAMOND ALKALI SUPERFUND SITE - PASSAIC RIVER STUDY AREA

The Witco Corporation ("Witco") hereby responds to the US Environmental Protection Agency's ("EPA") Request for Information ("Request"), concerning Witco's Newark plant located at 652 Doremus Avenue, Newark, New Jersey ("Newark Plant") under cover of letter dated August 20, 1996. Ms. Amelia Wagner, EPA Assistant Regional Counsel, has granted Witco an extension until October 11, 1996 to submit this response.

General Objections

Witco objects to the Request on the grounds that it is indefinite, burdensome and exceeds the authority granted to the EPA by 42 U.S.C. §9604(e)(2) insofar as the Request seeks information concerning operations and facilities unrelated to the Newark Plant. Unless otherwise stated, Witco's responses are limited to its operations at its Newark Plant.

Witco objects to the Request on the grounds that it is indefinite, burdensome and exceeds the authority granted to the EPA by 42 U.S.C. §9604(e)(2) insofar as the Request is unrelated to any release or threat of release of hazardous substances by the Newark plant.

Witco objects to the Request on the grounds that it is indefinite, burdensome and exceeds the authority granted to the EPA by 42 U.S.C. §9604(e)(2) insofar as the Newark plant is not located on the Passaic River and, therefore, is outside the scope of the EPA's current investigation.

Objections to the Request's Instructions

Witco objects to instructions number 3, 5, 6, 9, 11 and 13 on the grounds that these instructions ask for information beyond that authorized by 42 U.S.C. §9604(e)(2).

Response to Question No. 1:

Witco began operations at the Newark Plant in 1983.

Response to Question No. 2:

Witco objects to Question 2 to the extent that it relates to facilities other than the Newark Plant. Notwithstanding this objection Witco responds as follows:

a. Yes. The Newark Plant's EPA Identification Number is

NJD 094 951 258. The Newark Plant has held this permit since 1983.

b. Yes. The Newark Plant currently holds NJPDES permit number NJD002241. The plant has held this permit since 1983.

Response to Question No. 3:

Witco objects to Question 3 to the extent that it relates to facilities other than the Newark Plant. Witco further objects to Question 3 on the grounds that it is indefinite, burdensome, unrelated to any release or threat of release of hazardous substances, and exceeds the authority granted to the EPA by 42 U.S.C. §9604(e)(2). Notwithstanding these objections, Witco responds as follows:

In 1983, Witco excavated soil from the Newark Plant that contained low concentrations of PCBs. Contractors collected the soil in six drums, which were shipped to American Electric Corporation in Jacksonville, Florida for disposal.

Witco utilizes trace amounts of arsenic, lead and mercury in connection with quality control analyses in the Newark Plant's quality control laboratory.

Witco utilized Nickel at the Newark Plant as a catalyst in its former hydrogenation process. Witco ended its hydrogenation operations at the Newark Plant in 1989.

Witco has not received, utilized, manufactured, discharged, released, stored or disposed of any other materials listed in Question (3).

Response to Question No. 4:

Witco objects to Question 4 to the extent that it relates to facilities other than the Newark Plant. Witco further objects to Question 4 on the grounds that it is indefinite, burdensome, unrelated to any release or threat of release of hazardous substances, and exceeds the authority granted to the EPA by 42 U.S.C. §9604(e)(2). Notwithstanding these objections Witco responds as follows:

a. Witco has conducted three manufacturing operations at the Newark Plant that utilized hazardous substances: hydrogenation of fatty acids, linseed oil splitting process, and esterification of fatty acids.

1. Hydrogenation of Fatty Acids

The hydrogenation of fatty acid process involved the saturation of fatty acids with hydrogen. Witco used nickel as a

AMD000027