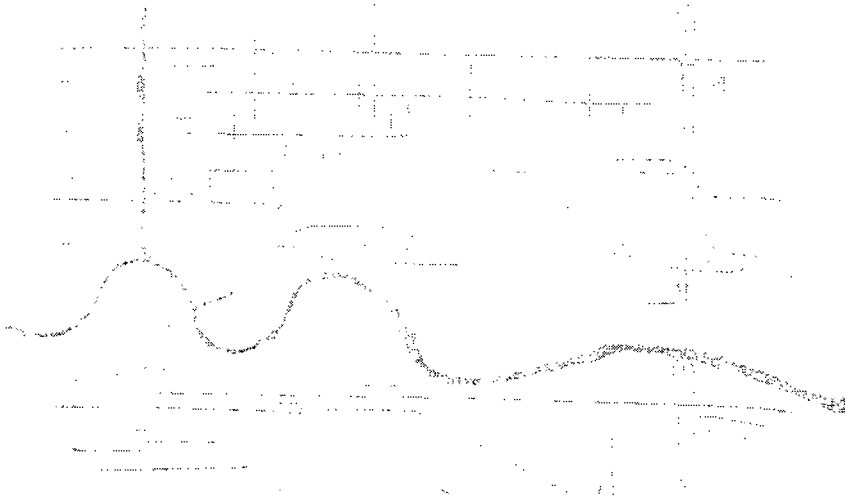
2 of 2, Book 2

Current Conditions Report for the DuPont East Chicago Facility

Volume 2: Book 2



Prepared for

DUPONT

E.I. du Pont de Nemours and Company
Barley Mill Plaza, Building 27
Routes 141 and 48
Wilmington, Delaware 19805

Prepared by

CH2MHILL

CH2M HILL
8501 West Higgins Road
Suite 300
Chicago, Illinois 60631-2801

October 1997

US EPA RECORDS CENTER REGION 5
1003359

2 of 2 - Book 2

Phase III Unsaturated Soil and Groundwater Quality Data

(DERS 1992)

- Contract lab data
- Mobile lab VOC data
- Mobile lab metals data

Contract Lab Data

Received From DuPont 9/26/92

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	14-JAN-92	C135607
	Complete 18-FEB-92	PO Number .....
	Printed 19-FEB-92	Sampled 11-JAN-92 10:25

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: DU PONT, EAST CHICAGO
SAMPLE I.D.: G13WA (GROUNDWATER)

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: L. DIAZ Analysis Date: 17-JAN-92 Instrument: GC/MS VOA Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
[redacted]ZENE	BDL	5	ug/L
[redacted]MOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	18	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
[redacted]CHLOROFLUOROMETHANE	BDL	5	ug/L
[redacted]YL CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	ug/L

DEO 001008

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135607

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	109		% Rec
TOLUENE-D8	98		% Rec
BROMOFLUOROBENZENE	102		% Rec

There were no other detectable compounds to report.

FAA OR ICP ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 15-JAN-92 Test: P129.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

GFAA ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 16-JAN-92 Test: P130.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M401.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ALUMINUM	5.3	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M402.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

ARSENIC GFAA EPA 206.2
Analyst: J. SCHOTT Analysis Date: 22-JAN-92 Instrument: GFAA Test: M403.2. 0
Prep: GFAA ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M404.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
BARIUM	0.059	0.020	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M408.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135607

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M410.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.073	0.040	mg/L

LEAD (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M416.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
LEAD	0.75	0.10	mg/L

NICKEL (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M422.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
NICKEL	BDL	0.070	mg/L

VANADIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M438.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	0.20	mg/L

ZINC (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M439.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ZINC	2.0	0.040	mg/L

Sample Comments

BDL Below Detection Limit

Quality Assurance Officer: Christine Sa

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	14-JAN-92	C135607
	Complete 18-FEB-92	PO Number .....
	Printed 20-MAR-92	Sampled 11-JAN-92 10:25

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVICE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: DU PONT, EAST CHICAGO
SAMPLE I.D.: G13WA (GROUNDWATER)

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: L. DIAZ Analysis Date: 17-JAN-92 Instrument: GC/MS VOA Test: 0502.3.0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	18	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
VINYL CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	ug/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135607

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	109		% Rec
TOLUENE-D8	98		% Rec
BROMOFLUOROBENZENE	102		% Rec

There were no other detectable compounds to report.

FAA OR ICP ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 15-JAN-92 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

GFAA ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 16-JAN-92 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M401.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	5.3	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

ARSENIC GFAA EPA 206.2
Analyst: J. SCHOTT Analysis Date: 22-JAN-92 Instrument: GFAA Test: M403.2.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	0.059	0.020	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.073	0.040	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135607

LEAD (ICP-SEQ) EPA 200.7

Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LEAD	0.75	0.10	mg/L

NICKEL (ICP-SEQ) EPA 200.7

Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M422.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
NICKEL	BDL	0.070	mg/L

VANADIUM (ICP-SEQ) EPA 200.7

Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M438.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	0.20	mg/L

ZINC (ICP-SEQ) EPA 200.7

Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	2.0	0.040	mg/L

Sample Comments

BDL Below Detection Limit

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	14-JAN-92	C135609
	Complete 11-FEB-92	PO Number .....
	Printed 12-FEB-92	Sampled 11-JAN-92 13:20

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: DU PONT, EAST CHICAGO
SAMPLE I.D.: G14SA (PROCESS FILL MATERIAL)

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: S. SHARP Analysis Date: 20-JAN-92 Instrument: GC/MS VOA Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
B[illegible]FORM	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
2-CHLOROETHYLVINYLETHER	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
ETHYLBENZENE	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
METHYLENE CHLORIDE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLORETHENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	EST 4	5	ug/kg
V[illegible] CHLORIDE	BDL	10	ug/kg
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/kg
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/kg
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/kg
HEXANE	BDL	5	ug/kg

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135609

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	92		% Rec
TOLUENE-D8	105		% Rec
BROMOFLUOROBENZENE	99		% Rec

There were no other detectable compounds to report.

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050
Analyst: K. HACK Analysis Date: 28-JAN-92 Test: P129.7. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL WEIGHT OR VOLUME	100		mL

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050
Analyst: A. DATTILO Analysis Date: 07-FEB-92 Test: P129.7. 1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL WEIGHT OR VOLUME	100		mL

GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050
Analyst: K. HACK Analysis Date: 17-JAN-92 Test: P130.7. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL WEIGHT OR VOLUME	100		mL

ALUMINUM ICP SW846-6010
Analyst: M. JAO Analysis Date: 30-JAN-92 Instrument: ICP Test: M101.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
ALUMINUM	6.4	5.0	mg/kg

ANTIMONY ICP SW846-6010
Analyst: M. JAO Analysis Date: 30-JAN-92 Instrument: ICP Test: M102.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	3.0	mg/kg

ARSENIC GFAA SW846-7060
Analyst: M. BAUER Analysis Date: 22-JAN-92 Instrument: GFAA Test: M103.2. 0
Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
ARSENIC	22	5.0	mg/kg

1:10 DILUTION

BARIUM ICP SW846-6010
Analyst: M. JAO Analysis Date: 30-JAN-92 Instrument: ICP Test: M104.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
BARIUM	BDL	1.0	mg/kg

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135609

CADMIUM ICP SW846-6010
Analyst: M. JAO Analysis Date: 30-JAN-92 Instrument: ICP Test: M108.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.50	mg/kg

CHROMIUM ICP SW846-6010
Analyst: M. JAO Analysis Date: 10-FEB-92 Instrument: ICP Test: M110.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
CHROMIUM	9.5	1.0	mg/kg

LEAD ICP SW846-6010
Analyst: M. JAO Analysis Date: 30-JAN-92 Instrument: ICP Test: M116.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
LEAD	BDL	5.0	mg/kg

NICKEL ICP SW846-6010
Analyst: M. JAO Analysis Date: 30-JAN-92 Instrument: ICP Test: M122.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
NICKEL	BDL	1.0	mg/kg

VANADIUM ICP SW846-6010
Analyst: M. JAO Analysis Date: 30-JAN-92 Instrument: ICP Test: M138.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	1.0	mg/kg

ZINC ICP SW846-6010
Analyst: M. JAO Analysis Date: 30-JAN-92 Instrument: ICP Test: M139.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
ZINC	40.	2.0	mg/kg

prep blank was 0.048 mg/l

Sample Comments

BDL Below Detection Limit
EST Estimated Value

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	23-MAR-92	C137091
	Complete 10-APR-92	PO Number .....
	Printed 11-APR-92	Sampled 18-MAR-92 13:00

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATER A9WB
SAMPLE I.D.: A9 WB

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: A. JAGIELSKI Analysis Date: 28-MAR-92 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

GFAA ACID DIGESTION EPA 200.0

Analyst: A. JAGIELSKI Analysis Date: 30-MAR-92 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 07-APR-92 Instrument: ICP Test: M401.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	1.1	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 07-APR-92 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

ARSENIC GFAA EPA 206.2

Analyst: J. SCHOTT Analysis Date: 03-APR-92 Instrument: GFAA Test: M403.2.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	3.3	1.3	mg/L

BARIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 07-APR-92 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	0.041	0.020	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C137091

CADMIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 30-MAR-92 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 30-MAR-92 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.068	0.040	mg/L

LEAD (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 30-MAR-92 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

NICKEL (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 31-MAR-92 Instrument: ICP Test: M422.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
NICKEL	BDL	0.070	mg/L

VANADIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 09-APR-92 Instrument: ICP Test: M438.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	0.20	mg/L

ZINC (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 30-MAR-92 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	0.13	0.040	mg/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1998.

002

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	23-MAR-92	C137092
	Complete 10-APR-92	PO Number .....
	Printed 11-APR-92	Sampled 18-MAR-92 13:33

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATER A10WA
SAMPLE I.D.: A10WA

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: A. JAGIELSKI Analysis Date: 28-MAR-92 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

GFAA ACID DIGESTION EPA 200.0

Analyst: A. JAGIELSKI Analysis Date: 30-MAR-92 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 07-APR-92 Instrument: ICP Test: M401.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	0.79	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 07-APR-92 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

ARSENIC GFAA EPA 206.2

Analyst: J. SCHOTT Analysis Date: 03-APR-92 Instrument: GFAA Test: M403.2.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.010	mg/L

BARIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 07-APR-92 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	0.043	0.020	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C137092

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 30-MAR-92 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 30-MAR-92 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.050	0.040	mg/L

LEAD (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 30-MAR-92 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

NICKEL (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 31-MAR-92 Instrument: ICP Test: M422.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
NICKEL	BDL	0.070	mg/L

VANADIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 09-APR-92 Instrument: ICP Test: M438.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	0.20	mg/L

ZINC (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 30-MAR-92 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	21.	0.040	mg/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1998.

Quality Assurance Officer: _____

DEC 001008

002

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	07-FEB-92	C136024
	Complete 24-FEB-92	PO Number .....
	Printed 25-FEB-92	Sampled 04-FEB-92 15:40

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATER H14WA
SAMPLE I.D.: H14WA

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: L. DIAZ Analysis Date: 07-FEB-92 Instrument: GC/MS VOA Test: 0502.3, 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
VINYL CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L

DEC 001009

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136024

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	90		% Rec
TOLUENE-D8	98		% Rec
BROMOFLUOROBENZENE	100		% Rec

No other compounds were detected.

FAA OR ICP ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 10-FEB-92 Test: P129.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

GFAA ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 12-FEB-92 Test: P130.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2
Analyst: J. SCHOTT Analysis Date: 21-FEB-92 Instrument: GFAA Test: M403.2. 0
Prep: GFAA ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.010	mg/L

ALUMINUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 21-FEB-92 Instrument: ICP Test: M401.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ALUMINUM	58.	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 20-FEB-92 Instrument: ICP Test: M402.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 21-FEB-92 Instrument: ICP Test: M404.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
BARIUM	0.060	0.021	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 21-FEB-92 Instrument: ICP Test: M408.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CADMIUM	0.090	0.020	mg/L

EMS HERITAGE LABORATORIES, INC.

Lab Sample ID: C13602

CHROMIUM (ICP-SEQ) EPA 200.7

Analyst: J. SCHOTT | Analysis Date: 21-FEB-92 | Instrument: ICP | Test: M410.9. 0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.064	0.040	mg/L

LEAD (ICP-SEQ) EPA 200.7

Analyst: J. SCHOTT | Analysis Date: 21-FEB-92 | Instrument: ICP | Test: M416.9. 0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

NICKEL (ICP-SEQ) EPA 200.7

Analyst: J. SCHOTT | Analysis Date: 21-FEB-92 | Instrument: ICP | Test: M422.9. 0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
NICKEL	0.099	0.070	mg/L

VANADIUM (ICP-SEQ) EPA 200.7

Analyst: J. SCHOTT | Analysis Date: 21-FEB-92 | Instrument: ICP | Test: M438.9. 0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	0.20	mg/L

ZINC (ICP-SEQ) EPA 200.7

Analyst: J. SCHOTT | Analysis Date: 21-FEB-92 | Instrument: ICP | Test: M439.9. 0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ZINC	7.6	0.040	mg/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1200.

Quality Assurance Officer:

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	07-FEB-92	C136025
	Complete 25-FEB-92	PO Number .....
	Printed 26-FEB-92	Sampled 04-FEB-92 16:30

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATER H14WB
SAMPLE I.D.: H14WB

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: L. DIAZ Analysis Date: 11-FEB-92 Instrument: GC/MS VOA Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
[redacted]OFORM	BDL	5	ug/L
[redacted]ON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
[redacted]YL CHLORIDE	BDL	10	ug/L
[redacted]-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L

DEC 001010

001

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	113		% Rec
TOLUENE-D8	91		% Rec
BROMOFLUOROBENZENE	105		% Rec

** No other compounds were detected.*

FAA OR ICP ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 10-FEB-92 Test: P129.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

GFAA ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 12-FEB-92 Test: P130.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2
Analyst: J. SCHOTT Analysis Date: 22-FEB-92 Instrument: GFAA Test: M403.2. 0
Prep: GFAA ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.10	mg/L

ALUMINUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 21-FEB-92 Instrument: ICP Test: M401.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ALUMINUM	0.42	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 20-FEB-92 Instrument: ICP Test: M402.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 21-FEB-92 Instrument: ICP Test: M404.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
BARIUM	0.023	0.021	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 21-FEB-92 Instrument: ICP Test: M408.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136025

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 21-FEB-92 Instrument: ICP Test: M410.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

LEAD (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 21-FEB-92 Instrument: ICP Test: M416.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

NICKEL (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 21-FEB-92 Instrument: ICP Test: M422.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
NICKEL	BDL	0.070	mg/L

VANADIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 21-FEB-92 Instrument: ICP Test: M438.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	0.20	mg/L

ZINC (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 21-FEB-92 Instrument: ICP Test: M439.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ZINC	BDL	0.040	mg/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1200.

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	14-JAN-92	C135605
	Complete 18-FEB-92	PO Number .....
	Printed 20-MAR-92	Sampled 08-JAN-92 10:40

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVICE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: DU PONT, EAST CHICAGO
SAMPLE I.D.: J15WA (GROUNDWATER)

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: L. DIAZ Analysis Date: 17-JAN-92 Instrument: GC/MS VOA Test: 0502.3.0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	EST 4	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	EST 4	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	13	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
VINYL CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	ug/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135605

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	113		% Rec
TOLUENE-D8	99		% Rec
BROMOFLUOROBENZENE	101		% Rec
ALSO DETECTED	*		

Dichlorofluoromethane - (9) EST - 4.30 RT.

FAA OR ICP ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 15-JAN-92 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

GFAA ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 16-JAN-92 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M401.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 31-JAN-92 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

ARSENIC GFAA EPA 206.2
Analyst: J. SCHOTT Analysis Date: 21-JAN-92 Instrument: GFAA Test: M403.2.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.010	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	0.048	0.020	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 31-JAN-92 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135605

CHROMIUM (ICP-SEQ) EPA 200.7

Analyst: M. CARROLL Analysis Date: 31-JAN-92 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

LEAD (ICP-SEQ) EPA 200.7

Analyst: M. CARROLL Analysis Date: 31-JAN-92 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

NICKEL (ICP-SEQ) EPA 200.7

Analyst: M. CARROLL Analysis Date: 31-JAN-92 Instrument: ICP Test: M422.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
NICKEL	BDL	0.070	mg/L

VANADIUM (ICP-SEQ) EPA 200.7

Analyst: M. CARROLL Analysis Date: 31-JAN-92 Instrument: ICP Test: M438.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	0.20	mg/L

ZINC (ICP-SEQ) EPA 200.7

Analyst: M. CARROLL Analysis Date: 31-JAN-92 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	0.70	0.040	mg/L

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Quality Assurance Officer: Christine Sa

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	14-JAN-92	C135605
	Complete 18-FEB-92	PO Number .....
	Printed 19-FEB-92	Sampled 08-JAN-92 10:40

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: DU PONT, EAST CHICAGO
SAMPLE I.D.: J15WA (GROUNDWATER)

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: L. DIAZ Analysis Date: 17-JAN-92 Instrument: GC/MS VOA Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
[illegible]ENE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	EST 4	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	EST 4	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	13	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
[illegible]HLOROFLUOROMETHANE	BDL	5	ug/L
VINYL CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	ug/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135605

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	113		% Rec
TOLUENE-D8	99		% Rec
BROMOFLUOROBENZENE	101		% Rec
...			
ALSO DETECTED	*		

Dichlorofluoromethane - (9) EST - 4.30 RT.

FAA OR ICP ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 15-JAN-92 Test: P129.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

GFAA ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 16-JAN-92 Test: P130.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M401.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 31-JAN-92 Instrument: ICP Test: M402.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

ARSENIC GFAA EPA 206.2
Analyst: J. SCHOTT Analysis Date: 21-JAN-92 Instrument: GFAA Test: M403.2. 0
Prep: GFAA ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.010	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M404.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
BARIUM	0.048	0.020	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 31-JAN-92 Instrument: ICP Test: M408.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135605

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 31-JAN-92 Instrument: ICP Test: M410.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

LEAD (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 31-JAN-92 Instrument: ICP Test: M416.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

NICKEL (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 31-JAN-92 Instrument: ICP Test: M422.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
NICKEL	BDL	0.070	mg/L

VANADIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 31-JAN-92 Instrument: ICP Test: M438.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	0.20	mg/L

ZINC (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 31-JAN-92 Instrument: ICP Test: M439.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ZINC	0.70	0.040	mg/L

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	19-FEB-92	C136290
	Complete 13-MAR-92	PO Number .....
	Printed 14-MAR-92	Sampled 11-FEB-92 13:20

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVICE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATER J17WB
SAMPLE I.D.: J17WB

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: S. SHARP Analysis Date: 22-FEB-92 Instrument: GC/MS VOA Test: 0502.3.0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	EST 3	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	10	5	ug/L
VINYL CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	ug/L

DEC 0011013

001

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136290

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	94		% Rec
TOLUENE-D8	105		% Rec
BROMOFLUOROBENZENE	109		% Rec

There were no other compounds detected.

FAA OR ICP ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 20-FEB-92 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

GFAA ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 21-FEB-92 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2
Analyst: J. SCHOTT Analysis Date: 10-MAR-92 Instrument: GFAA Test: M403.2.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	1.1	1.0	mg/L

ALUMINUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 10-MAR-92 Instrument: ICP Test: M401.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	0.91	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 12-MAR-92 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 10-MAR-92 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	0.032	0.020	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 24-FEB-92 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136290

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 24-FEB-92 Instrument: ICP Test: M410.9.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.14	0.040	mg/L

LEAD (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 27-FEB-92 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

NICKEL (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 24-FEB-92 Instrument: ICP Test: M422.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
NICKEL	0.25	0.070	mg/L

VANADIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 10-MAR-92 Instrument: ICP Test: M438.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
VANADIUM	0.85	0.20	mg/L

ZINC (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 24-FEB-92 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	0.26	0.040	mg/L

Sample Comments

BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number 1201.

Quality Assurance Officer: Christine S. Q

DEC 011013

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	19-FEB-92	C136291
	Complete 28-FEB-92	PO Number .....
	Printed 29-FEB-92	Sampled 12-FEB-92 08:30

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATERN B17WB
SAMPLE I.D.: B17WB

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: S. SHARP Analysis Date: 21-FEB-92 Instrument: GC/MS VOA Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
[illegible]ZENE	BDL	5	ug/L
[illegible]OFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
[illegible]CHLOROFLUOROMETHANE	BDL	5	ug/L
[illegible]L CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	ug/L

EMS HERITAGE LABORATORIES, INC.

Lab Sample ID: C13629[illegible]

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	111		% Rec
TOLUENE-D8	103		% Rec
BROMOFLUOROBENZENE	105		% Rec

There were no other detected compounds.

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1201.

002

Quality Assurance Officer: Christine Sa

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	28-JAN-92	C135852
	Complete 05-FEB-92	PO Number LBIO 2552
	Printed 06-FEB-92	Sampled 27-JAN-92 09:50

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATER C9 WB
SAMPLE I.D.: C9 WB

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: S. SHARP Analysis Date: 04-FEB-92 Instrument: GC/MS VOA Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
[illegible]OFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
[illegible]L CHLORIDE	BDL	10	ug/L
[illegible]-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L

DEC 0011015

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135852

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	104		% Rec
TOLUENE-D8	96		% Rec
BROMOFLUOROBENZENE	90		% Rec

Sample Comments

BDL Below Detection Limit

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	07-FEB-92	C136023
	Complete 18-FEB-92	PO Number .....
	Printed 20-MAR-92	Sampled 28-JAN-92 14:40

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVICE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATER B6WB
SAMPLE I.D.: B6WB

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: L. DIAZ Analysis Date: 07-FEB-92 Instrument: GC/MS VOA Test: 0502.3.0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
[illegible]ZENE	BDL	5	ug/L
[illegible]OFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
[illegible]CHLOROFLUOROMETHANE	BDL	5	ug/L
[illegible]L CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	mg/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136023

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	112		% Rec
TOLUENE-D8	98		% Rec
BROMOFLUOROBENZENE	94		% Rec

No other compounds were detected.

-Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1200.

Quality Assurance Officer: Kristie Sa

DEC 0011016

002

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	07-FEB-92	C136023
	Complete 18-FEB-92	PO Number .....
	Printed 19-FEB-92	Sampled 28-JAN-92 14:40

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATER B6WB
SAMPLE I.D.: B6WB

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: L. DIAZ Analysis Date: 07-FEB-92 Instrument: GC/MS VOA Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
[redacted]OFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
[redacted]L CHLORIDE	BDL	10	ug/L
[redacted]-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	mg/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L

DEC 011017

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136023

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	112		% Rec
TOLUENE-D8	98		% Rec
BROMOFLUOROBENZENE	94		% Rec

**No other compounds were detected.*

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1200.

002

Quality Assurance Officer: [signature]

DEC 0011017

Last Page 2

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	09-MAR-92	C136770
	Complete 23-MAR-92	PO Number .....
	Printed 24-MAR-92	Sampled 03-MAR-92 17:15

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVICE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

SAMPLE I.D.: B13WA
DESCRIPTION: GROUNDWATER B13WA

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: S. SHARP Analysis Date: 11-MAR-92 Instrument: GC/MS VOA Test: 0502.3.0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	11	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	9	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
VINYL CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	ug/L

DEC 001018

001

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136770

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	114		% Rec
TOLUENE-D8	102		% Rec
BROMOFLUOROBENZENE	108		% Rec
ALSO DETECTED			
UNKNOWN	EST 6 RT=7.43		

FAA OR ICP ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 10-MAR-92 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

GFAA ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 10-MAR-92 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 16-MAR-92 Instrument: ICP Test: M401.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	0.36	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 19-MAR-92 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.2	mg/L

ARSENIC GFAA EPA 206.2
Analyst: J. SCHOTT Analysis Date: 16-MAR-92 Instrument: GFAA Test: M403.2.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.01	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 19-MAR-92 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	BDL	0.020	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 13-MAR-92 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	0.066	0.020	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136770

CHROMIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 13-MAR-92 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

LEAD (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 13-MAR-92 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

NICKEL (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-MAR-92 Instrument: ICP Test: M422.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
NICKEL	BDL	0.070	mg/L

VANADIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 19-MAR-92 Instrument: ICP Test: M438.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	0.2	mg/L

ZINC (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 13-MAR-92 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	6.0	0.040	mg/L

Sample Comments

BDL Below Detection Limit
EST Estimated Value
RT Retention Time

Sample chain of custody number 1997.

Quality Assurance Officer: [signature]

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	23-MAR-92	C137093
	Complete 15-APR-92	PO Number .....
	Printed 16-APR-92	Sampled 18-MAR-92 14:14

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATER A10WB
SAMPLE I.D.: A10WB

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: A. JAGIELSKI Analysis Date: 28-MAR-92 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

GFAA ACID DIGESTION EPA 200.0

Analyst: A. JAGIELSKI Analysis Date: 30-MAR-92 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 07-APR-92 Instrument: ICP Test: M401.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	0.91	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 07-APR-92 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

ARSENIC GFAA EPA 206.2

Analyst: J. SCHOTT Analysis Date: 03-APR-92 Instrument: GFAA Test: M403.2.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.20	0.05	mg/L

BARIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 07-APR-92 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	0.081	0.020	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C137093

IIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 30-MAR-92 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 30-MAR-92 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

LEAD (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 30-MAR-92 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

NICKEL (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 31-MAR-92 Instrument: ICP Test: M422.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
NICKEL	BDL	0.070	mg/L

VANADIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 10-APR-92 Instrument: ICP Test: M438.9.0
p: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	0.2	mg/L

ZINC (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 30-MAR-92 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	0.040	0.040	mg/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1998.

002

Quality Assurance Officer: Christine Sail

DEC 0011010

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	14-JAN-92	C135606
	Complete 03-FEB-92	PO Number .....
	Printed 04-FEB-92	Sampled 08-JAN-92 14:10

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: DU PONT, EAST CHICAGO
SAMPLE I.D.: J15WB (GROUNDWATER)

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: L. DIAZ Analysis Date: 17-JAN-92 Instrument: GC/MS VOA Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
VINYL CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	ug/L

DEC 011020

001

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	112		% Rec
TOLUENE-D8	94		% Rec
BROMOFLUOROBENZENE	105		% Rec

There were no other detectable compounds to report.

FAA OR ICP ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 15-JAN-92 Test: P129.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

GFAA ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 16-JAN-92 Test: P130.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M401.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M402.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

ARSENIC GFAA EPA 206.2
Analyst: J. SCHOTT Analysis Date: 22-JAN-92 Instrument: GFAA Test: M403.2. 0
Prep: GFAA ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.050	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M404.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
BARIUM	0.045	0.020	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M408.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135606

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M410.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

LEAD (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 31-JAN-92 Instrument: ICP Test: M416.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

NICKEL (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M422.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
NICKEL	BDL	0.070	mg/L

VANADIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M438.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	0.20	mg/L

ZINC (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M439.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ZINC	0.16	0.040	mg/L

Sample Comments

BDL Below Detection Limit

Quality Assurance Officer: [signature]

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	14-JAN-92	C135606
	Complete 03-FEB-92	PO Number .....
	Printed 20-MAR-92	Sampled 08-JAN-92 14:10

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVICE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: DU PONT, EAST CHICAGO
SAMPLE I.D.: J15WB (GROUNDWATER)

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: L. DIAZ Analysis Date: 17-JAN-92 Instrument: GC/MS VOA Test: 0502.3.0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
[illegible]NZENE	BDL	5	ug/L
[illegible]MOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
[illegible]RICHLOROFLUOROMETHANE	BDL	5	ug/L
[illegible]YL CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	ug/L

DEC 0011021

001

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	112		% Rec
TOLUENE-D8	94		% Rec
BROMOFLUOROBENZENE	105		% Rec

There were no other detectable compounds to report.

FAA OR ICP ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 15-JAN-92 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

GFAA ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 16-JAN-92 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M401.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

ARSENIC GFAA EPA 206.2
Analyst: J. SCHOTT Analysis Date: 22-JAN-92 Instrument: GFAA Test: M403.2.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.050	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	0.045	0.020	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

DEC 0011021

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135606

[illegible]D (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 31-JAN-92 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

NICKEL (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M422.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
NICKEL	BDL	0.070	mg/L

VANADIUM (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M438.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	0.20	mg/L

ZINC (ICP-SEQ) EPA 200.7
Analyst: M. CARROLL Analysis Date: 29-JAN-92 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	0.16	0.040	mg/L

Sample Comments

BDL Below Detection Limit

[illegible]ple chain of custody number 1200.

003

Quality Assurance Officer: [signature]

Last Page 3

DEC 0011001

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	19-FEB-92	C136289
	Complete 28-FEB-92	PO Number .....
	Printed 29-FEB-92	Sampled 11-FEB-92 11:40

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATER J17WA
SAMPLE I.D.: J17WA

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: S. SHARP Analysis Date: 21-FEB-92 Instrument: GC/MS VOA Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	EST 4	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	*	5	ug/L
VINYL CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	ug/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136289

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	109		% Rec
TOLUENE-D8	103		% Rec
BROMOFLUOROBENZENE	98		% Rec
...			
ALSO DETECTED	**		

**This value is outside of the linear calibration range. The sample will be reanalyzed at a 1:2 dilution of the sample.*
***Dichlorofluoromethane - (23) EST - 4.37 RT.*

VOLATILE PRIORITY POLLUTANTS EPA 624
Analyst: S. SHARP Analysis Date: 22-FEB-92 Instrument: GC/MS VOA Test: 0502.3. 1

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	100	ug/L
ACRYLONITRILE	BDL	140	ug/L
BENZENE	BDL	10	ug/L
BROMOFORM	BDL	10	ug/L
CARBON TETRACHLORIDE	BDL	10	ug/L
CHLOROBENZENE	BDL	10	ug/L
CHLOROETHANE	BDL	20	ug/L
2-CHLOROETHYLVINYLETHER	BDL	20	ug/L
CHLOROFORM	BDL	10	ug/L
DIBROMOCHLOROMETHANE	BDL	10	ug/L
[illegible]ODICHLOROMETHANE	BDL	10	ug/L
[illegible]-DICHLOROETHANE	BDL	10	ug/L
1,2-DICHLOROETHANE	BDL	10	ug/L
1,1-DICHLOROETHENE	BDL	10	ug/L
1,2-DICHLOROPROPANE	BDL	10	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	10	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	10	ug/L
ETHYLBENZENE	BDL	10	ug/L
BROMOMETHANE	BDL	20	ug/L
CHLOROMETHANE	BDL	20	ug/L
METHYLENE CHLORIDE	BDL	10	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	10	ug/L
TETRACHLORETHENE	BDL	10	ug/L
TOLUENE	BDL	10	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	10	ug/L
1,1,1-TRICHLOROETHANE	BDL	10	ug/L
1,1,2-TRICHLOROETHANE	BDL	10	ug/L
TRICHLOROETHENE	BDL	10	ug/L
TRICHLOROFLUOROMETHANE	310	10	ug/L
VINYL CHLORIDE	BDL	20	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	10	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	10	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	10	ug/L
SURROGATE RECOVERY			
[illegible]LOROETHANE-D4	101		% Rec
[illegible]ENE-D8	100		% Rec
BROMOFLUOROBENZENE	99		% Rec

Sample Comments

* *See Note for Parameter*
** *See Note for Parameter*
BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number 1201.

Quality Assurance Officer: Christine Sc

DEC 0011022

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	28-JAN-92	C135851
	Complete 21-FEB-92	PO Number LBIO 2552
	Printed 22-FEB-92	Sampled 28-JAN-92 14:00

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATER B6 W1
SAMPLE I.D.: B6 WA

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: L. DIAZ Analysis Date: 29-JAN-92 Instrument: GC/MS VOA Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
[illegible]ZENE	BDL	5	ug/L
[illegible]MOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
[illegible]CHLOROFLUOROMETHANE	BDL	5	ug/L
[illegible]YL CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	103		% Rec
TOLUENE-D8	100		% Rec
BROMOFLUOROBENZENE	98		% Rec

FAA OR ICP ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 29-JAN-92 Test: P129.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

GFAA ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 29-JAN-92 Test: P130.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2
Analyst: R. KOBZA, JR. Analysis Date: 11-FEB-92 Instrument: GFAA Test: M403.2. 0
Prep: GFAA ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.0050	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 20-FEB-92 Instrument: ICP Test: M402.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

ALUMINUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M401.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.30	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 19-FEB-92 Instrument: ICP Test: M404.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
BARIUM	0.027	0.020	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 19-FEB-92 Instrument: ICP Test: M408.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CADMIUM	0.14	0.020	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M410.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135851

LEAD (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 19-FEB-92 Instrument: ICP Test: M416.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
LEAD	0.18	0.10	mg/L

NICKEL (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M422.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
NICKEL	BDL	0.070	mg/L

VANADIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M438.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	0.20	mg/L

ZINC (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 19-FEB-92 Instrument: ICP Test: M439.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ZINC	21.	0.040	mg/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1203.

003

Quality Assurance Officer: _____

DEC 0011022

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	28-JAN-92	C135850
	Complete 21-FEB-92	PO Number LBIO 2552
	Printed 22-FEB-92	Sampled 25-JAN-92 14:00

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATER A11WB
SAMPLE I.D.: A11WB

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: L. DIAZ Analysis Date: 29-JAN-92 Instrument: GC/MS VOA Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
VINYL CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135850

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	108		% Rec
TOLUENE-D8	103		% Rec
BROMOFLUOROBENZENE	98		% Rec

FAA OR ICP ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 29-JAN-92 Test: P129.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

GFAA ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 29-JAN-92 Test: P130.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2
Analyst: R. KOBZA, JR. Analysis Date: 11-FEB-92 Instrument: GFAA Test: M403.2. 0
Prep: GFAA ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ARSENIC	28	10	mg/L
1:2000 DILUTION			

ANTIMONY (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 20-FEB-92 Instrument: ICP Test: M402.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

ALUMINUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 17-FEB-92 Instrument: ICP Test: M401.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	3.0	mg/L
Sample diluted 10:1 due to negative interference when run straight.			

BARIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 19-FEB-92 Instrument: ICP Test: M404.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
BARIUM	0.058	0.020	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M408.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135850

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 19-FEB-92 Instrument: ICP Test: M410.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CHROMIUM	0.054	0.040	mg/L

LEAD (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M416.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

NICKEL (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M422.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
NICKEL	BDL	0.070	mg/L

VANADIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M438.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	0.20	mg/L

ZINC (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 19-FEB-92 Instrument: ICP Test: M439.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ZINC	0.27	0.040	mg/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1203.

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Quality Assurance Officer: _____ Last Page 3

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	28-JAN-92	C135849
	Complete 21-FEB-92	PO Number LBIO 2552
	Printed 22-FEB-92	Sampled 25-JAN-92 13:10

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATER A11WA
SAMPLE I.D.: A11WA

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: L. DIAZ Analysis Date: 29-JAN-92 Instrument: GC/MS VOA Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
VINYL CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L

DFC 0011025

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EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135849

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	103		% Rec
TOLUENE-D8	98		% Rec
BROMOFLUOROBENZENE	99		% Rec

FAA OR ICP ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 29-JAN-92 Test: P129.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

GFAA ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 29-JAN-92 Test: P130.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2
Analyst: R. KOBZA, JR. Analysis Date: 11-FEB-92 Instrument: GFAA Test: M403.2. 0
Prep: GFAA ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.0050	0.0050	mg/L

ALUMINUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 17-FEB-92 Instrument: ICP Test: M401.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ALUMINUM	1.9	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 20-FEB-92 Instrument: ICP Test: M402.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 19-FEB-92 Instrument: ICP Test: M404.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
BARIUM	0.072	0.020	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M408.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M410.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135849

[redacted]D (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M416.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

NICKEL (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M422.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
NICKEL	BDL	0.070	mg/L

VANADIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M438.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	0.20	mg/L

ZINC (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 19-FEB-92 Instrument: ICP Test: M439.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ZINC	9.0	0.040	mg/L

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1203.

Quality Assurance Officer: [redacted]

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	28-JAN-92	C135847
	Complete 21-FEB-92	PO Number LBIO 2552
	Printed 22-FEB-92	Sampled 23-JAN-92 14:10

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATER I 11WA
SAMPLE I.D.: I11WA

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: L. DIAZ Analysis Date: 29-JAN-92 Instrument: GC/MS VOA Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	EST 4	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	EST 4	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	7	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
VINYL CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	109		% Rec
TOLUENE-D8	98		% Rec
BROMOFLUOROBENZENE	95		% Rec

FAA OR ICP ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 29-JAN-92 Test: P129.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

GFAA ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 29-JAN-92 Test: P130.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2
Analyst: R. KOBZA, JR. Analysis Date: 11-FEB-92 Instrument: GFAA Test: M403.2. 0
Prep: GFAA ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.13	0.10	mg/L
1:20 DILUTION			

ALUMINUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 17-FEB-92 Instrument: ICP Test: M401.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ALUMINUM	1.9	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 20-FEB-92 Instrument: ICP Test: M402.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 19-FEB-92 Instrument: ICP Test: M404.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
BARIUM	0.12	0.020	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M408.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M410.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

EMS HERITAGE LABORATORIES, INC.

Lab Sample ID: C135847

LEAD (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT | Analysis Date: 19-FEB-92 | Instrument: ICP | Test: M416.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
LEAD	0.29	0.10	mg/L

NICKEL (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT | Analysis Date: 11-FEB-92 | Instrument: ICP | Test: M422.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
NICKEL	BDL	0.070	mg/L

VANADIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT | Analysis Date: 11-FEB-92 | Instrument: ICP | Test: M438.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	0.20	mg/L

ZINC (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT | Analysis Date: 19-FEB-92 | Instrument: ICP | Test: M439.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ZINC	1.4	0.040	mg/L

Sample Comments

BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number 1203.

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	28-JAN-92	C135848
	Complete 21-FEB-92	PO Number LBIO 2552
	Printed 22-FEB-92	Sampled 23-JAN-92 15:00

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATER I 11WB
SAMPLE I.D.: I11WB

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: L. DIAZ Analysis Date: 29-JAN-92 Instrument: GC/MS VOA Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
[illegible]ZENE	BDL	5	ug/L
[illegible]MOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
[illegible]CHLOROFLUOROMETHANE	BDL	5	ug/L
[illegible]L CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135848

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	107		% Rec
TOLUENE-D8	98		% Rec
BROMOFLUOROBENZENE	97		% Rec

FAA OR ICP ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 29-JAN-92 Test: P129.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

GFAA ACID DIGESTION EPA 200.0
Analyst: A. JAGIELSKI Analysis Date: 29-JAN-92 Test: P130.2. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2
Analyst: R. KOBZA, JR. Analysis Date: 11-FEB-92 Instrument: GFAA Test: M403.2. 0
Prep: GFAA ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.055	0.050	mg/L

1:10 DILUTION

ALUMINUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M401.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 20-FEB-92 Instrument: ICP Test: M402.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 19-FEB-92 Instrument: ICP Test: M404.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
BARIUM	0.077	0.020	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M408.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M410.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135848

LEAD (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M416.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

NICKEL (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M422.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
NICKEL	BDL	0.070	mg/L

VANADIUM (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 11-FEB-92 Instrument: ICP Test: M438.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	0.20	mg/L

ZINC (ICP-SEQ) EPA 200.7
Analyst: J. SCHOTT Analysis Date: 19-FEB-92 Instrument: ICP Test: M439.9. 0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

Parameter	Result	Det. Limit	Units
ZINC	0.095	0.040	mg/L

Sample Comments

Below Detection Limit

Sample chain of custody number 1203.

Quality Assurance Officer: _____

DEC 001107

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	25-FEB-92	C136489
	Complete 06-MAR-92	PO Number .....
	Printed 07-MAR-92	Sampled 25-FEB-92

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: DERS
SAMPLE I.D.: I 13WA

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: S. SHARP | Analysis Date: 02-MAR-92 | Instrument: GC/MS VOA | Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	6	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	7	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	6	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
VINYL CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	ug/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136489

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			

DICHLOROETHANE-D4	90		% Rec
TOLUENE-D8	90		% Rec
BROMOFLUOROBENZENE	108		% Rec
...			
ALSO DETECTED	*		

DICHLORODIFLUOROMETHANE	EST 9 RT=4.36		
UNKNOWN	EST 6 RT=21.97		
UNKNOWN	EST 16 RT=25.7		

**2-Propanol - (10) EST - 7.93 RT*
**1,1,2-Trichloro-1,2,2-Trifluoroethane - (5) EST - 11.22 RT*

Sample Comments

*	*See Note for Parameter*
BDL	*Below Detection Limit*
EST	*Estimated Value*
RT	*Retention Time*

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Quality Assurance Officer: [signature]

Last Page 2

DEC 0011028

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	25-FEB-92	C136490
	Complete 06-MAR-92	PO Number .....
	Printed 09-MAR-92	Sampled 25-FEB-92

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: DERS
SAMPLE I.D.: I 13WB

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: S. SHARP Analysis Date: 02-MAR-92 Instrument: GC/MS VOA Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	EST 3	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
VINYL CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	ug/L

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136490

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			

DICHLOROETHANE-D4	99		% Rec
TOLUENE-D8	95		% Rec
BROMOFLUOROBENZENE	111		% Rec

**There were no other compounds detected using the library search.*

Sample Comments

BDL Below Detection Limit
EST Estimated Value

002

Quality Assurance Officer: _____ Last Page 2

DEC 011029

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	07-FEB-92	C136026
	Complete 18-FEB-92	PO Number .....
	Printed 20-MAR-92	Sampled 05-FEB-92 08:30

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVICE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATER K17WB
SAMPLE I.D.: K17WB

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: S. SHARP Analysis Date: 07-FEB-92 Instrument: GC/MS VOA Test: 0502.3.0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	5	5	ug/L
VINYL CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L

DEC 0011030

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136026

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	* 122		% Rec
TOLUENE-D8	100		% Rec
BROMOFLUOROBENZENE	110		% Rec

** = Sample was reanalyzed on 2/7/92 but surrogate recovery did not improve due to matrix effect.*

ALSO DETECTED:
Dichlorofluoromethane 440 (EST) Retention Time: 4.33

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 1200.

Quality Assurance Officer: _____

DEA 0011021

002

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136294

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	95		% Rec
TOLUENE-D8	92		% Rec
BROMOFLUOROBENZENE	109		% Rec

There were no other compounds detected.

Sample Comments

BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number 1201.

002

Quality Assurance Officer: [signature]

Last Page 2

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136026

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	* 122		% Rec
TOLUENE-D8	100		% Rec
BROMOFLUOROBENZENE	110		% Rec

** = Sample was reanalyzed on 2/7/92 but surrogate recovery did not improve due to matrix effect.*

ALSO DETECTED:
Dichlorofluoromethane 440 (EST) Retention Time: 4.33

Sample Comments

* *See Note for Parameter*
BDL Below Detection Limit

Sample chain of custody number 1200.

Quality Assurance Officer: Christine Sa

DEC 001020

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	07-FEB-92	C136026
	Complete 18-FEB-92	PO Number .....
	Printed 19-FEB-92	Sampled 05-FEB-92 08:30

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATER K17WB
SAMPLE I.D.: K17WB

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: S. SHARP Analysis Date: 07-FEB-92 Instrument: GC/MS VOA Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
BROMOFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	5	5	ug/L
VINYL CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L

DEC 001103?

001

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	19-FEB-92	C136295
	Complete 28-FEB-92	PO Number .....
	Printed 29-FEB-92	Sampled 19-FEB-92 10:15

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: GROUNDWATER L15WB
SAMPLE I.D.: L15WB

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: S. SHARP Analysis Date: 24-FEB-92 Instrument: GC/MS VOA Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/L
ACRYLONITRILE	BDL	70	ug/L
BENZENE	BDL	5	ug/L
[illegible]OFORM	BDL	5	ug/L
CARBON TETRACHLORIDE	BDL	5	ug/L
CHLOROBENZENE	BDL	5	ug/L
CHLOROETHANE	BDL	10	ug/L
2-CHLOROETHYLVINYLETHER	BDL	10	ug/L
CHLOROFORM	BDL	5	ug/L
DIBROMOCHLOROMETHANE	BDL	5	ug/L
BROMODICHLOROMETHANE	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1-DICHLOROETHENE	BDL	5	ug/L
1,2-DICHLOROPROPANE	BDL	5	ug/L
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/L
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/L
ETHYLBENZENE	BDL	5	ug/L
BROMOMETHANE	BDL	10	ug/L
CHLOROMETHANE	BDL	10	ug/L
METHYLENE CHLORIDE	BDL	5	ug/L
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/L
TETRACHLORETHENE	BDL	5	ug/L
TOLUENE	BDL	5	ug/L
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
1,1,2-TRICHLOROETHANE	BDL	5	ug/L
TRICHLOROETHENE	BDL	5	ug/L
TRICHLOROFLUOROMETHANE	BDL	5	ug/L
[illegible] CHLORIDE	BDL	10	ug/L
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/L
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/L
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/L
HEXANE	BDL	5	ug/L

DEC 0011038

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136295

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	95		% Rec
TOLUENE-D8	94		% Rec
BROMOFLUOROBENZENE	104		% Rec

**There were no other detected compounds.*

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1201.

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	09-MAR-92	C136771
	Complete 26-MAR-92	PO Number .....
	Printed 27-MAR-92	Sampled 08-MAR-92 16:10

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

SAMPLE I.D.: G5 SA
DESCRIPTION: SOIL G5 SA

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: B. HAHN Analysis Date: 16-MAR-92 Test: P129.7.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL WEIGHT OR VOLUME	100		mL

GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: B. HAHN Analysis Date: 24-MAR-92 Test: P130.7.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	4		Grams
FINAL WEIGHT OR VOLUME	100		mL

ALUMINUM ICP SW846-6010

Analyst: M. JAO Analysis Date: 17-MAR-92 Instrument: ICP Test: M101.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
ALUMINUM	530	5.0	mg/kg

ANTIMONY ICP SW846-6010

Analyst: M. JAO Analysis Date: 17-MAR-92 Instrument: ICP Test: M102.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	3.0	mg/kg

ARSENIC GFAA SW846-7060

Analyst: M. BAUER Analysis Date: 25-MAR-92 Instrument: GFAA Test: M103.2.0 INDI

Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
ARSENIC	1.2	0.25	mg/kg

1:2 DILUTION

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136771

BARIUM ICP SW846-6010

Analyst: M. JAO Analysis Date: 17-MAR-92 Instrument: ICP Test: M104.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
BARIUM	89.	1.0	mg/kg

CADMIUM ICP SW846-6010

Analyst: M. JAO Analysis Date: 17-MAR-92 Instrument: ICP Test: M108.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.50	mg/kg

CHROMIUM ICP SW846-6010

Analyst: M. JAO Analysis Date: 17-MAR-92 Instrument: ICP Test: M110.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
CHROMIUM	2.4	1.0	mg/kg

prep blank was 0.019 mg/l

LEAD ICP SW846-6010

Analyst: M. JAO Analysis Date: 17-MAR-92 Instrument: ICP Test: M116.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
LEAD	120	5.0	mg/kg

NICKEL ICP SW846-6010

Analyst: M. JAO Analysis Date: 17-MAR-92 Instrument: ICP Test: M122.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
NICKEL	1.3	1.0	mg/kg

VANADIUM ICP SW846-6010

Analyst: M. JAO Analysis Date: 17-MAR-92 Instrument: ICP Test: M138.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
VANADIUM	2.8	1.0	mg/kg

ZINC ICP SW846-6010

Analyst: M. JAO Analysis Date: 17-MAR-92 Instrument: ICP Test: M139.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
ZINC	160	2.0	mg/kg

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1997.

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	23-MAR-92	C137094
	Complete 16-APR-92	PO Number .....
	Printed 17-APR-92	Sampled 20-MAR-92 15:20

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: SOIL(FILL) G13.5
SAMPLE I.D.: G13.5

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: B. HAHN Analysis Date: 02-APR-92 Test: P129.7.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL WEIGHT OR VOLUME	100		mL

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: B. HAHN Analysis Date: 07-APR-92 Test: P129.7.1 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL WEIGHT OR VOLUME	100		mL

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: B. HAHN Analysis Date: 14-APR-92 Test: P129.7.2 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL WEIGHT OR VOLUME	100		mL

GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: B. HAHN Analysis Date: 03-APR-92 Test: P130.7.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL WEIGHT OR VOLUME	100		mL

ALUMINUM ICP SW846-6010

Analyst: N. JAO Analysis Date: 07-APR-92 Instrument: ICP Test: M101.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.1

Parameter	Result	Det. Limit	Units
ALUMINUM	1300	5.0	mg/kg

Sample C137094 was not homogeneous for Al, as demonstrated by poor replicability on two sets of digestions.

EMS-HERITAGE LABORATORIES, INC. Lab Sample ID: C137094

ANTIMONY ICP SW846-6010

Analyst: S. STRUEWING Analysis Date: 05-APR-92 Instrument: ICP Test: M102.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	30.	mg/kg

DILUTION 1:10

ARSENIC GFAA SW846-7060

Analyst: P. SIMS Analysis Date: 03-APR-92 Instrument: GFAA Test: M103.2.0 INDI

Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
ARSENIC	180	75	mg/kg

1:150 DILUTION

BARIUM ICP SW846-6010

Analyst: A. HILSCHER Analysis Date: 02-APR-92 Instrument: ICP Test: M104.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
BARIUM	120	1.0	mg/kg

CADMIUM ICP SW846-6010

Analyst: A. HILSCHER Analysis Date: 02-APR-92 Instrument: ICP Test: M108.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.50	mg/kg

CHROMIUM ICP SW846-6010

Analyst: M. JAO Analysis Date: 07-APR-92 Instrument: ICP Test: M110.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.1

Parameter	Result	Det. Limit	Units
CHROMIUM	5.4	1.0	mg/kg

DILUTION 1:100

LEAD ICP SW846-6010

Analyst: A. HILSCHER Analysis Date: 02-APR-92 Instrument: ICP Test: M116.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
LEAD	950	5.0	mg/kg

NICKEL ICP SW846-6010

Analyst: M. JAO Analysis Date: 07-APR-92 Instrument: ICP Test: M122.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.1

Parameter	Result	Det. Limit	Units
NICKEL	3.5	1.0	mg/kg

prep blank was 0.0146 mg/l

VANADIUM ICP SW846-6010

Analyst: A. HILSCHER Analysis Date: 02-APR-92 Instrument: ICP Test: M138.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
VANADIUM	7.0	1.0	mg/kg

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C137094

C ICP SW846-6010
Analyst: M. JAO Analysis Date: 15-APR-92 Instrument: ICP Test: M139.3.0 INDI
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.2

Parameter	Result	Det. Limit	Units
ZINC	2500	200	mg/kg
DILUTION 1:100			

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1998.

Quality Assurance Officer: [signature]

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	14-JAN-92	C135609
	Complete 11-FEB-92	PO Number .....
	Printed 20-MAR-92	Sampled 11-JAN-92 13:20

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVICE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: DU PONT, EAST CHICAGO
SAMPLE I.D.: G14SA (PROCESS FILL MATERIAL)

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: S. SHARP Analysis Date: 20-JAN-92 Instrument: GC/MS VOA Test: 0502.3.0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
BENZENE	BDL	5	ug/kg
BROMOFORM	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
2-CHLOROETHYLVINYLETHER	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
ETHYLBENZENE	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
METHYLENE CHLORIDE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLORETHENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
TRICHLOROFLUOROMETHANE	EST 4	5	ug/kg
VINYL CHLORIDE	BDL	10	ug/kg
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/kg
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/kg
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/kg
HEXANE	BDL	5	ug/kg

EMS HERITAGE LABORATORIES, INC.

Lab Sample ID: C135609

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	92		% Rec
TOLUENE-D8	105		% Rec
BROMOFLUOROBENZENE	99		% Rec

There were no other detectable compounds to report.

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: K. HACK Analysis Date: 28-JAN-92 Test: P129.7.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL WEIGHT OR VOLUME	100		mL

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: A. DATTILO Analysis Date: 07-FEB-92 Test: P129.7.1 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL WEIGHT OR VOLUME	100		mL

GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: K. HACK Analysis Date: 17-JAN-92 Test: P130.7.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL WEIGHT OR VOLUME	100		mL

ALUMINUM ICP SW846-6010

Analyst: M. JAO Analysis Date: 30-JAN-92 Instrument: ICP Test: M101.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
ALUMINUM	6.4	5.0	mg/kg

ANTIMONY ICP SW846-6010

Analyst: M. JAO Analysis Date: 30-JAN-92 Instrument: ICP Test: M102.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	3.0	mg/kg

ARSENIC GFAA SW846-7060

Analyst: M. BAUER Analysis Date: 22-JAN-92 Instrument: GFAA Test: M103.2.0 INDI

Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
ARSENIC	22	5.0	mg/kg

1:10 DILUTION

BARIUM ICP SW846-6010

Analyst: M. JAO Analysis Date: 30-JAN-92 Instrument: ICP Test: M104.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
BARIUM	BDL	1.0	mg/kg

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C135609

CADMIUM ICP SW846-6010
Analyst: M. JAO Analysis Date: 30-JAN-92 Instrument: ICP Test: M108.3.0 INDI
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.50	mg/kg

CHROMIUM ICP SW846-6010
Analyst: M. JAO Analysis Date: 10-FEB-92 Instrument: ICP Test: M110.3.0 INDI
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.1

Parameter	Result	Det. Limit	Units
CHROMIUM	9.5	1.0	mg/kg

LEAD ICP SW846-6010
Analyst: M. JAO Analysis Date: 30-JAN-92 Instrument: ICP Test: M116.3.0 INDI
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	5.0	mg/kg

NICKEL ICP SW846-6010
Analyst: M. JAO Analysis Date: 30-JAN-92 Instrument: ICP Test: M122.3.0 INDI
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
NICKEL	BDL	1.0	mg/kg

VANADIUM ICP SW846-6010
Analyst: M. JAO Analysis Date: 30-JAN-92 Instrument: ICP Test: M138.3.0 INDI
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
VANADIUM	BDL	1.0	mg/kg

ZINC ICP SW846-6010
Analyst: M. JAO Analysis Date: 30-JAN-92 Instrument: ICP Test: M139.3.0 INDI
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
ZINC	40.	2.0	mg/kg

prep blank was 0.048 mg/l

Sample Comments

BDL Below Detection Limit
EST Estimated Value

Sample chain of custody number 1200.

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	10-MAR-92	C136772
	Complete 26-MAR-92	PO Number .....
	Printed 27-MAR-92	Sampled 09-MAR-92 09:55

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

SAMPLE I.D.: C2 SA
DESCRIPTION: SOIL C2 SA

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: B. HAHN Analysis Date: 16-MAR-92 Test: P129.7.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL WEIGHT OR VOLUME	100		mL

GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Analyst: B. HAHN Analysis Date: 24-MAR-92 Test: P130.7.0 INDI

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	4		Grams
FINAL WEIGHT OR VOLUME	100		mL

ALUMINUM ICP SW846-6010

Analyst: M. JAO Analysis Date: 17-MAR-92 Instrument: ICP Test: M101.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
ALUMINUM	1300	5.0	mg/kg

ANTIMONY ICP SW846-6010

Analyst: M. JAO Analysis Date: 17-MAR-92 Instrument: ICP Test: M102.3.0 INDI

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
ANTIMONY	16.	3.0	mg/kg

ARSENIC GFAA SW846-7060

Analyst: M. BAUER Analysis Date: 25-MAR-92 Instrument: GFAA Test: M103.2.0 INDI

Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P130.7.0

Parameter	Result	Det. Limit	Units
ARSENIC	24	13	mg/kg

1:100 DILUTION

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136772

BARIUM ICP SW846-6010
Analyst: M. JAO Analysis Date: 17-MAR-92 Instrument: ICP Test: M104.3.0 INDI
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
BARIUM	1600	1.0	mg/kg

CADMIUM ICP SW846-6010
Analyst: M. JAO Analysis Date: 17-MAR-92 Instrument: ICP Test: M108.3.0 INDI
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
CADMIUM	120	0.50	mg/kg

CHROMIUM ICP SW846-6010
Analyst: M. JAO Analysis Date: 17-MAR-92 Instrument: ICP Test: M110.3.0 INDI
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
CHROMIUM	3.3	1.0	mg/kg

prep blank was 0.019 mg/l

LEAD ICP SW846-6010
Analyst: M. JAO Analysis Date: 17-MAR-92 Instrument: ICP Test: M116.3.0 INDI
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
LEAD	7600	5.0	mg/kg

NICKEL ICP SW846-6010
Analyst: M. JAO Analysis Date: 17-MAR-92 Instrument: ICP Test: M122.3.0 INDI
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
NICKEL	9.1	1.0	mg/kg

VANADIUM ICP SW846-6010
Analyst: M. JAO Analysis Date: 17-MAR-92 Instrument: ICP Test: M138.3.0 INDI
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
VANADIUM	6.3	1.0	mg/kg

ZINC ICP SW846-6010
Analyst: M. JAO Analysis Date: 17-MAR-92 Instrument: ICP Test: M139.3.0 INDI
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050 P129.7.0

Parameter	Result	Det. Limit	Units
ZINC	14000	2.0	mg/kg

Sample Comments

Sample chain of custody number 1997.

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
EMS HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	25-FEB-92	C136488
	Complete 06-MAR-92	PO Number .....
	Printed 07-MAR-92	Sampled 21-FEB-92 13:40

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: DERS
SAMPLE I.D.: L18 SA (SOIL)

VOLATILE PRIORITY POLLUTANTS EPA 624

Analyst: S. SHARP Analysis Date: 05-MAR-92 Instrument: GC/MS VOA Test: 0502.3. 0

Parameter	Result	Det. Limit	Units
ACROLEIN	BDL	50	ug/kg
ACRYLONITRILE	BDL	70	ug/kg
[illegible]ENE	BDL	5	ug/kg
[illegible]OFORM	BDL	5	ug/kg
CARBON TETRACHLORIDE	BDL	5	ug/kg
CHLOROBENZENE	BDL	5	ug/kg
CHLOROETHANE	BDL	10	ug/kg
2-CHLOROETHYLVINYLETHER	BDL	10	ug/kg
CHLOROFORM	BDL	5	ug/kg
DIBROMOCHLOROMETHANE	BDL	5	ug/kg
BROMODICHLOROMETHANE	BDL	5	ug/kg
1,1-DICHLOROETHANE	BDL	5	ug/kg
1,2-DICHLOROETHANE	BDL	5	ug/kg
1,1-DICHLOROETHENE	BDL	5	ug/kg
1,2-DICHLOROPROPANE	BDL	5	ug/kg
CIS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
TRANS-1,3-DICHLOROPROPENE	BDL	5	ug/kg
ETHYLBENZENE	BDL	5	ug/kg
BROMOMETHANE	BDL	10	ug/kg
CHLOROMETHANE	BDL	10	ug/kg
METHYLENE CHLORIDE	BDL	5	ug/kg
1,1,2,2-TETRACHLOROETHANE	BDL	5	ug/kg
TETRACHLORETHENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
1,2-DICHLOROETHENE (TOTAL)	BDL	5	ug/kg
1,1,1-TRICHLOROETHANE	BDL	5	ug/kg
1,1,2-TRICHLOROETHANE	BDL	5	ug/kg
TRICHLOROETHENE	BDL	5	ug/kg
T[illegible]HLOROFLUOROMETHANE	BDL	5	ug/kg
V[illegible]L CHLORIDE	BDL	10	ug/kg
1,2-DICHLOROBENZENE (O-DICHLOROBENZENE)	BDL	5	ug/kg
1,3-DICHLOROBENZENE (M-DICHLOROBENZENE)	BDL	5	ug/kg
1,4-DICHLOROBENZENE (P-DICHLOROBENZENE)	BDL	5	ug/kg
HEXANE	BDL	5	ug/kg

DEC 001100E

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136488

Parameter	Result	Det. Limit	Units
SURROGATE RECOVERY			
DICHLOROETHANE-D4	91		% Rec
TOLUENE-D8	101		% Rec
BROMOFLUOROBENZENE	108		% Rec
ALSO DETECTED	*		

*Unknown C5 Compound - (6) EST - 12.72 RT

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050
Analyst: A. DATTILO Analysis Date: 28-FEB-92 Test: P129.7. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL WEIGHT OR VOLUME	100		mL

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050
Analyst: B. HAHN Analysis Date: 03-MAR-92 Test: P129.7. 1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL WEIGHT OR VOLUME	100		mL

GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050
Analyst: A. DATTILO Analysis Date: 28-FEB-92 Test: P130.7. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL WEIGHT OR VOLUME	100		mL

MERCURY CVAA ACID DIGESTION OF S/S/S SAMPLES SW846-7471 MOD
Analyst: K. HACK Analysis Date: 03-MAR-92 Test: P131.7. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	0.4		Grams
FINAL VOLUME	100		mL

ALUMINUM ICP SW846-6010
Analyst: A. HILSCHER Analysis Date: 28-FEB-92 Instrument: ICP Test: M101.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
ALUMINUM	310	5.0	mg/kg

DILUTION 1:100

ANTIMONY ICP SW846-6010
Analyst: A. HILSCHER Analysis Date: 28-FEB-92 Instrument: ICP Test: M102.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	3.0	mg/kg

DILUTION 1:100

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136488

[redacted]SENIC GFAA SW846-7060
Analyst: M. BAUER Analysis Date: 02-MAR-92 Instrument: GFAA Test: M103.2. 0
Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
ARSENIC	2.3	0.50	mg/kg

BARIUM ICP SW846-6010
Analyst: A. HILSCHER Analysis Date: 28-FEB-92 Instrument: ICP Test: M104.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
BARIUM	4.2	1.0	mg/kg
DILUTION 1:100			

CADMIUM ICP SW846-6010
Analyst: A. HILSCHER Analysis Date: 28-FEB-92 Instrument: ICP Test: M108.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.50	mg/kg
DILUTION 1:100			

CHROMIUM ICP SW846-6010
Analyst: A. HILSCHER Analysis Date: 03-MAR-92 Instrument: ICP Test: M110.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
[redacted]OMIUM	2.4	1.0	mg/kg
[redacted]UTION 1:100			

LEAD ICP SW846-6010
Analyst: A. HILSCHER Analysis Date: 28-FEB-92 Instrument: ICP Test: M116.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
LEAD	5.7	5.0	mg/kg
DILUTION 1:100			

NICKEL ICP SW846-6010
Analyst: A. HILSCHER Analysis Date: 28-FEB-92 Instrument: ICP Test: M122.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
NICKEL	1.4	1.0	mg/kg
DILUTION 1:100			

VANADIUM ICP SW846-6010
Analyst: A. HILSCHER Analysis Date: 28-FEB-92 Instrument: ICP Test: M138.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
VANADIUM	9.8	1.0	mg/kg
DILUTION 1:100			

EMS HERITAGE LABORATORIES, INC.

Lab Sample ID: C136488

ZINC ICP SW846-6010

Analyst: A. HILSCHER Analysis Date: 28-FEB-92 Instrument: ICP Test: M139.3, 0

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
ZINC	24.	2.0	mg/kg

prep blank was 0.074 mg/l

MERCURY CVAA SW846-7471 MOD

Analyst: K. HACK Analysis Date: 04-MAR-92 Instrument: CVAA Test: M120.2, 0

Prep: MERCURY CVAA ACID DIGESTION OF S/S/S SAMPLES SW846-7471 MOD

Parameter	Result	Det. Limit	Units
MERCURY	BDL	0.13	mg/kg

Sample Comments

* *See Note for Parameter*

BDL Below Detection Limit

004

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Lab ID
[redacted]S HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	19-FEB-92	C136292
	Complete 09-MAR-92	PO Number .....
	Printed 10-MAR-92	Sampled 18-FEB-92 10:40

Report To	Bill To
DU PONT ENVIRONMENTAL REMEDIATION SERVICE DAVID EPPS 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	DU PONT ENVIRONMENTAL REMEDIATION SERVIC ACCOUNTS PAYABLE 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: SOIL L13SB
SAMPLE I.D.: L13SB

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050
Analyst: B. HAHN Analysis Date: 27-FEB-92 Test: P129.7. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL WEIGHT OR VOLUME	100		mL

[redacted]A OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050
[redacted]lyst: B. HAHN Analysis Date: 04-MAR-92 Test: P129.7. 1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL WEIGHT OR VOLUME	100		mL

GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050
Analyst: B. HAHN Analysis Date: 27-FEB-92 Test: P130.7. 0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL WEIGHT OR VOLUME	100		mL

ARSENIC GFAA SW846-7060
Analyst: M. BAUER Analysis Date: 27-FEB-92 Instrument: GFAA Test: M103.2. 0
Prep: GFAA ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
ARSENIC	3.4	0.50	mg/kg

ALUMINUM ICP SW846-6010
Analyst: M. JAO Analysis Date: 02-MAR-92 Instrument: ICP Test: M101.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
ALUMINUM	250	5.0	mg/kg

ANTIMONY ICP SW846-6010
Analyst: A. HILSCHER Analysis Date: 04-MAR-92 Instrument: ICP Test: M102.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	6.0	mg/kg

DEC 0011006

EMS HERITAGE LABORATORIES, INC. Lab Sample ID: C136292

1:2 DILUTION

BARIUM ICP SW846-6010
Analyst: A. HILSCHER Analysis Date: 04-MAR-92 Instrument: ICP Test: M104.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
BARIUM	9.8	1.0	mg/kg

DILUTION 1:100

CADMIUM ICP SW846-6010
Analyst: M. JAO Analysis Date: 02-MAR-92 Instrument: ICP Test: M108.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	1.0	mg/kg

CHROMIUM ICP SW846-6010
Analyst: M. JAO Analysis Date: 28-FEB-92 Instrument: ICP Test: M110.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
CHROMIUM	5.8	1.0	mg/kg

LEAD ICP SW846-6010
Analyst: M. JAO Analysis Date: 02-MAR-92 Instrument: ICP Test: M116.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
LEAD	BDL	5.0	mg/kg

NICKEL ICP SW846-6010
Analyst: M. JAO Analysis Date: 02-MAR-92 Instrument: ICP Test: M122.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
NICKEL	1.9	1.0	mg/kg

VANADIUM ICP SW846-6010
Analyst: M. JAO Analysis Date: 02-MAR-92 Instrument: ICP Test: M138.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
VANADIUM	12.	1.0	mg/kg

ZINC ICP SW846-6010
Analyst: M. JAO Analysis Date: 02-MAR-92 Instrument: ICP Test: M139.3. 0
Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050

Parameter	Result	Det. Limit	Units
ZINC	9.7	2.0	mg/kg

prep blank was 0.026 mg/l

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1201.

Quality Assurance Officer: [signature]

Last Page 2

Mobile Lab VOC Data

1101.1103

Mobil Lab Received from
VOC DuPont 9/26/94

Date	Sample Identification	Analysis Results		
1-9-92	J11 WA		N/D	O
1-10-92	J11 WB		N/D	O
1-9-92	J12 WA		N/D	O
1-9-92	J12 WB		N/D	O
1-10-92	J13 WA		N/D	O
1-10-92	J13 WB		N/D	O
1-10-92	✓ J11 SA		N/D	O
1-11-92	D33 WC		N/D	Duplicate of F10 WC BLANK
1-11-92	F9 WA		N/D	O
1-11-92	F9 WB		N/D	O
1-11-92	F10 WA		N/D	O
1-11-92	F10 WB		N/D	O
1-11-92	✓ F10 SA	Carbontetrachloride	< 25 ppb	BDL (25)
1-12-92	F13 WB		N/D	O
1-12-92	F13 WA		N/D	O
1-12-92	G13 WA		N/D	O
1-12-92	G13 WB		N/D	O
1-12-92	G14 WA		N/D	O
1-12-92	G15 WA ?	trichlfluormethane	< 25 ppb	O BDL (25)
1-12-92	G15 WB		N/D	← O
1-13-92	I19 WA	trichlfluormethane	150 ppb	O
		trichloroethene	35 ppb	O
1-13-92	I19 WB		N/D	O
1-13-92	J19 WA		N/D	O
1-13-92	J19 WB	trichlfluormethane	< 25 ppb	O
1-13-92	J20 WA	trichlorfluormethane	50 ppb	O
		1,2-Dichloroethane	< 25 ppb	O BDL (25)
1-14-92	J20 WB	trichlfluormethane	250 ppb	O
1-14-92	K20 WA	trichlfluormethane	< 25 ppb	BDL (25)
1-14-92	K20 WB	trichlfluormethane	< 25 ppb	
1-14-92	✓ J19 SA	Ethylbenzene	< 25 ppb	
		P,M - XYlene	< 25 ppb	
		O - XYlene	< 25 ppb	

Date	Sample Identification	Analysis Results	
1-14-92	J 19 SA	Trichlorfluormethane	< 25 ppb BDL (25
		Carbontet	< 25 ppb
		Trichloroethene	< 25 ppb
		Tetrachloroethene	< 25 ppb
1-14-92	J 20 SA	Ethylbenzene	< 25 ppb
		o-XYlene	< 25 ppb
	Total xylenes	P,M-XYlene	< 25 ppb
		Trichlorfluormethane	< 25 ppb
		Carbontet	< 25 ppb
		Trichloroethene	< 25 ppb
		Tetrachloroethene	< 25 ppb
1-20-92	I 7 WA		N/D
1-20-92	I 7 WB	Trichlorfluormethane	< 25 ppb
1-20-92	H 9 WA	Total xylenes o-XYlene	< 25 ppb
1-20-92	H 9 WB		N/D
1-21-92	H 9 SA	Carbontet	< 25 ppb
1-21-92	" "	1,2-Dichloroethane	< 25 ppb
		Tetrachloroethene	< 25 ppb
1-21-92	I 7 SA	N/D	
1-23-92	J 8 SA	N/D	
1-22-92	I 7 WB	Trichlorfuromethane	< 25 ppb
1-23-92	I 9 WB	N/D	
1-22-92	I 9 WA	Trichlorfluromethane	< 25 ppb
1-22-92	I 5 WB	N/D	
1-24-92	I 10 WA	N/D	
1-24-92	I 10 WB	N/D	
1-24-92	I 11 WA	N/D	
1-24-92	I 11 WB	N/D	
1-24-92	J 8 WA	N/D	
1-24-92	J 8 WB	N/D	
1-24-92	A 6	N/D	
1-24-92	A 7	N/D	
1-24-92	D 35	N/D	

Johnson ...
Concentration Sheet

DATE	Sample Identification	Analysis Results
1-25-92	A5WA	N/D
1-25-92	A5WB	N/D
1-25-92	A6WA	N/D
1-25-92	A6WB	N/D
1-25-92	B7WA	N/D
1-25-92	B7WB	N/D
1-12-92 ✓	G.145A	N/D
1-28-92 } 1/25/92	A10WA=	N/D
1-28-92 }	A10WB=	N/D
1-28-92 } 1/5/92	A11WA=	N/D
1-28-92 }	A11WB=	N/D
1-28-92	A15WA=	N/D
1-28-92	A15WB=	N/D
1-29-92	A4WB	N/D
1-29-92	A7WA	N/D
2-4-92	A7WB	N/D
2-4-92	A8WB	N/D
2-4-92	A12WA	N/D
2-4-92	A12WB	N/D
2-4-92	D9WA	N/D
2-4-92	D9WB	N/D
2-4-92	C9WA	N/D
2-4-92	C9WB	N/D
2-4-92	B9WA	N/D
2-4-92	B9WB	N/D
2-4-92	A13WA	N/D
2-4-92	A13WB	N/D
2-4-92	C3WB	<25 PPB CARBONTET
2-4-92	C4WA	N/D
2-4-92	C5WB ←	BDL (25) <25 PPB 1,2-Dichloroeth
2-4-92	B6WA ←	BDL (25) <25 PPB " "
2-4-92	B6WB	N/D
2-4-92	D3WA	N/D
2-4-92	D4WA	N/D

DATE ANA	Sample	X		Results
2-4-92	D4WB	98R		<25 ppb CARBONTET
2-6-92	H10WA	06R	Trichloroethene	<25 ppb Trichloroethylene
	H10WB	07R		N/D
	H11WA	08R		N/D
	H11WB	09R		N/D
	H12WA	10R		N/D
2-8-92	A4WB	14R		N/D
	A7WA	15R		N/D
	H12WB	16R		N/D
	H13WA	17R		N/D
	H13WB	18R		N/D
	H14WA	19R		N/D
	H14WB	20R		<25 ppb CARBONTET
	K18WC	22R		253 ppb Trichlorofluoromethan
	K17WB	23R		<25 ppb "
	K18WA	24R		202 ppb "
	"	"		127 ppb 1,2-Dichloroeth
	"	"	BDL(25)	<25 ppb Trichloroethylene
	"	"	BDL(25)	<25 ppb 1,2-Trichloroethane
	K18WB	25R		255 ppb Trichlorofluoroethane
	K19WA	26R		243 ppb "
	C17WA	27R	BDL(25) Trichloroethene	<25 ppb Trichloroethylene
	"	"	Tetrachloroethene	<25 ppb Tetrachloroethylene
	C17WB	28R		N/D
	D17WB	29R		<25 ppb Trichlorofluoromethan
8-11-92	B20WB	32R		N/D
	E17WA	33R		N/D
	C13WB	35R		N/D
	H15WA	36R		N/D
	H15WB	38R		N/D
	H15WC	39R		N/D
	I15WA	40R		25.5 ppb Trichlorofluoromethan
	"	"	BDL(25)	<25 ppb CARBONTET
	I15WB	41R		N/D

Conoco Inc.
Circulation Sheet

Date Analyzed	Sample Identification		Analysis Results		
2-18-92	✓ K18SA		Ethylbenzene	< 25 ppb	BDL (25
			O-Xylene	< 25 ppb	"
			Trichlorofluoromethane	< 25 ppb	"
			Carbon tetrachloride	< 25 ppb	"
		Tetrachloroethene	Tetrachloroethylene	< 25 ppb	"
2-18-92	✓ K19SA		Toluene	105 ppb	
			P,M-Xylene	< 25 ppb	
			O-Xylene	< 25 ppb	
			Trichlorofluoromethane	88 ppb	
			Carbon tetrachloride	< 25 ppb	
2-18-92	✓ I18SA		Toluene	37 ppb	
		Total Xylenes →	P,M-Xylene	< 25 ppb	
			O-Xylene	< 25 ppb	
			Trichlorofluoromethane	394 ppb	
			Carbon tetrachloride	483 ppb	
		Trichloroethene	Trichloroethylene	416 ppb	
			1,1,2-Trichloroethane	< 25 ppb	
		Tetrachloroethene	Tetrachloroethylene	< 25 ppb	
2-18-92	✓ J17SA		Toluene	57 ppb	
			Trichlorofluoromethane	277 ppb	
2-19-92	✓ L12SB		Toluene	< 25 ppb	BDL (25
2-19-92	✓ L14SA		Toluene	< 25 ppb	BDL (25)
2-19-92	I17WA		Trichlorofluoromethane	374 ppb	
			Trichloroethylene	< 25 ppb	
2-19-92	I17WB		Trichlorofluoromethane	373 ppb	
2-19-92	I16WA		Trichlorofluoromethane	169 ppb	
			Carbon tetrachloride	792 ppb	
2-19-92	I16WB		Trichlorofluoromethane	236 ppb	
2-19-92	J17WA		Trichlorofluoromethane	481 ppb	←
2-19-92	J17WB		Trichlorofluoromethane	< 25 ppb	BDL (25)
2-19-92	I18WA		Trichlorofluoromethane	644 ppb	
			Carbon tetrachloride	168 ppb	
		Trichloroethene	Trichloroethylene	1952 ppb	

Date Analyzed	Sample Identification			Analysis Results
2-19-92	I18WB		Trichlorofluoromethane	793 ppb
			1,1,2-Trichloroethane	<25 ppb
2-20-92	L12WB	BDL(25)	Trichlorofluoromethane	<25 ppb
2-20-92	L12WA			N/D
2-20-92	L13WA			N/D
2-21-92	L13WB			N/D
2-21-92	L14WA			N/D
2-21-92	L14WB			N/D
2-22-92	D37			N/D
2-22-92	M17WB			N/D
2-22-92	L15WB			N/D
2-22-92	L16WA			N/D
2-23-92	M16WB			N/D
2-23-92	N17WA			N/D
2-23-92	N17WB			N/D
2-23-92	L17WA			N/D
2-23-92	L17WB		BDL (25)	<25 ppb
2-24-92	L18WA			ND
2-25-92	L18WB			ND
2-25-92	L19WA			ND
2-25-92	B17WB			ND
3-3-92	✓ L18SA			ND
3-3-92	✓ L15SA			ND
3-3-92	L19WB	BDL(25)	Trichlorofluoromethane	<25 ppb
3-3-92	J18WA		Trichlorofluoromethane	59.8 ppb
		BDL(25)	Carbon tetrachloride	<25 ppb
3-3-92	J18WB			ND
3-3-92	I13WA			ND
3-3-92	I13WB			ND
3-3-92	I12WA			ND
3-5-92	I12WB			ND
3-5-92	I14WA			ND
3-5-92	I14WB			ND
3-5-92 ~~B13WA~~	B13WA			ND
3-5-92	C10WB			ND
3-5-92	D6WA			ND

Calculation Sheet

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: CALVIN SELLS

From: BILL PAMETICKY , Environmental Services, Ponca City, OK 74603

Date: 3/13/1992

Subject (Sample Description) EAST CHICAGO SITE SAMPLES

Test Codes	Sample Numbers	Workorder-Frac Numbers
Charge Number 6030-27-T14		
Approved		
Telephone Number		

DATE ANAL. 3/11/92

K21WA- NONE DETECTED

J21WA-TRICHLOROFLUOROMETHANE-58 PPB

TETRACHLOROETHENE-20 PPB

BENZENE-62 PPB

TOLUENE-65 PPB

J21WB-NONE DETECTED

J22WA-N.D.

J22WB-N.D.

K19WB-N.D.

L20WA-TRICHLOROFLUOROMETHANE-100 PPB

TRICHLOROETHENE-20 PPB

L20WB-TRICHLOROFLUOROMETHANE-46 PPB

L21WA-TRICHLOROFLUOROMETHANE-100 PPB

M19WA-BROKEN IN SHIPMENT

drd 10/90

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: CALVIN SELLS

From: BILL PAMETICKY , Environmental Services, Ponca City, OK 74603

Date: 3/13/1992

Subject (Sample Description) EAST CHICAGO SITE SAMPLES

Test Codes	Sample Numbers	Workorder-Frac Numbers
Charge Number 6030-27-T14		
Approved		
Telephone Number		

DATE ANAL. 3/12/92

L21WB-TRICHLOROFLUOROMETHANE-110 PPB

M20WA-TRICHLOROFLUOROMETHANE-84 PPB

K23WA-TRICHLOROFLUOROMETHANE-100 PPB

K23 WB = 90 ppb TCFM

A16WA-NONE DETECTED

A16WB-N.D.

B2WA-N.D.

C1WA-N.D.

C1WB-N.D.

D1WB-N.D.

drd 10/90

DU PONT ENVIRONMENTAL REMEDIATION SERVICES

Project E CHICAGO CONOCO By

Subject ~~EMS~~ ~~[illegible]~~ LAB Results Chkd by

VOA WATER

	Sample ID			Analysis Result
	F 12 WB	?	BDL(25)	PM Xyles
	M 13 WA		11.13	Ethylbe
Det Limit	J 10 WA	?	4.64	1,2 Dic
	K 17 WA	?	BDL(25)	Trichloro
		? Det Limit →	8.9	1,2 Dic
	G 8 WA		4.64	1,2 D
	G8 WB		26.38	? 1,1,2,-
	G11 WA		7.37	1,2 Di
? ?	G12 WA		17.05	? 1,1,2
	D 7 WB		11.74	1,2
	K16WB		BDL(25)	Trichl
	K 16 WA		~~[illegible]~~ 1357	1,2,
			BDL	Trichlo

DUPONT DU PONT ENVIRONI

Project E Chicago

Subject EMS Chicago

VOA

	SAMPLE ID
	F 12 WB
	M 13 WA
Det Limit	J 10 WA
	K 17 WA
	G 8 WA
	G8 WB
	G11 WA
? ?	G12 WA
	D 7 WB
	K16 WB
	K 16 WA

TING FORMAT **********

TIME.....15:08:16

120691.02R

WA

.MET

DW.CAL

OPERATOR.... WLP

COM PORT.... 1

DIL Factor.. 1

Int Std Amt . 1

****

HIS ROMATOGRAM **********

gl 4/10/92

*001

11039

FORMAT **********
*
IE.....15:09:54 *
'1.02R *
*
*
*
AL *
OPERATOR.... WLP *

****

HROMATOGRAM **********

__ Date 12/6/91

GE 6/10/92

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-06-1991 TIME.....16:08:54

* RAW DATA FILE NAME..c:\cp\data1\W120691.03R

* SAMPLE NAME.....F12[illegible]/120691

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... WLP

****

********** PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l
~~P,M-XYLENE~~	~~33.4764~~

CHECKED BY WLP DATE 12/6/91

001

********** REPORT WRITE PLUS STARTING FORMAT **********

TODAY'S DATE....12-06-1991 TIME.....16:10:29

RAW DATA FILE NAME..c:\cp\data1\X120691.03R

SAMPLE NAME.....F12WA/120691

DATE TAKEN..DEC 6, 1991 15:26:48

METHOD FILE.....c:\cp\data1\HDSP.MET

CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

INSTRUMENT..... HP5890 ELCD OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM *********

Peak #	Peak Name	Amount ug/l

hecked by WLP Date 12/6/91

001

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-06-1991 TIME.....17:10:55

* RAW DATA FILE NAME..c:\cp\data1\W120691.04R

* SAMPLE NAME.....F12WB/120691

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l
~~P,M-XYLENE~~	~~=23.7847~~

< 25

CHECKED BY _____ DATE 12/20/3

DEC 0011043

U 001

********** REPORT WRITE PLUS STARTING FORMAT **********

TODAY'S DATE....12-06-1991 TIME.....17:12:30

RAW DATA FILE NAME..c:\cp\data1\X120691.04R

SAMPLE NAME.....F12WB/120691

DATE TAKEN..DEC 6, 1991 16:28:51

METHOD FILE.....c:\cp\data1\HDSP.MET

CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

INSTRUMENT..... HP5890 ELCD OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM *********

Peak #	Peak Name	Amount ug/l

hecked by _____ Date 12/20/91

001

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-07-1991 TIME.....13:58:09

* RAW DATA FILE NAME..c:\cp\data1\W120791.07R

* SAMPLE NAME.....N13WA/120791

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/7/91

********** REPORT WRITE PLUS STARTING FORMAT **********

TODAY'S DATE....12-07-1991 TIME.....14:00:38
RAW DATA FILE NAME..c:\cp\data1\X120791.07R
SAMPLE NAME.....N13WA/120791
DATE TAKEN..DEC 7, 1991 13:16:18
METHOD FILE.....c:\cp\data1\HDSP.MET
CALIBRATION FILE...c:\cp\data1\ELCDW.CAL
INSTRUMENT..... HP5890 ELCD OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak #	Peak Name	Amount ug/l

hecked by _____ Date 12/24/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-07-1991 TIME.....17:08:27

* RAW DATA FILE NAME..c:\cp\data1\W120791.08R

* SAMPLE NAME.....M13WA/120791

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l
ETHYLBENZENE	11.1300

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

TODAY'S DATE....12-07-1991 TIME.....17:11:00
RAW DATA FILE NAME..c:\cp\data1\X120791.08R
SAMPLE NAME.....M13WA/120791
DATE TAKEN..DEC 7, 1991 16:26:37
METHOD FILE.....c:\cp\data1\HDSP.MET
CALIBRATION FILE...c:\cp\data1\ELCDW.CAL
INSTRUMENT..... HP5890 ELCD OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak #	Peak Name	Amount ug/l

Checked by _____ Date 12/20/91

DEC 0011048

001

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-07-1991 TIME.....18:09:06

* RAW DATA FILE NAME..c:\cp\data1\W120791.09R

* SAMPLE NAME.....M13WB/120791

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

TODAY'S DATE....12-07-1991 TIME.....18:11:36
RAW DATA FILE NAME..c:\cp\data1\X120791.09R
SAMPLE NAME.....M13WB/120791
DATE TAKEN..DEC 7, 1991 17:27:16
METHOD FILE.....c:\cp\data1\HDSP.MET
CALIBRATION FILE...c:\cp\data1\ELCDW.CAL
INSTRUMENT..... HP5890 ELCD OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak #	Peak Name	Amount ug/l

Checked by _____ Date 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-08-1991 TIME.....10:46:52

* RAW DATA FILE NAME..c:\cp\data1\W120891.12R

* SAMPLE NAME.....M14WA/120891

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

TODAY'S DATE....12-08-1991 TIME.....10:49:22
RAW DATA FILE NAME..c:\cp\data1\X120891.12R
SAMPLE NAME.....M14WA/120891
DATE TAKEN..DEC 8, 1991 10:05:11
METHOD FILE.....c:\cp\data1\HDSP.MET
CALIBRATION FILE...c:\cp\data1\ELCDW.CAL
INSTRUMENT..... HP5890 ELCD OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak #	Peak Name	Amount ug/l

Checked by _____ Date 12/2/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-08-1991 TIME.....11:47:32

* RAW DATA FILE NAME..c:\cp\data1\W120891.13R

* SAMPLE NAME.....M14WB/120891

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

TODAY'S DATE....12-08-1991 TIME.....11:50:02
RAW DATA FILE NAME..c:\cp\data1\X120891.13R
SAMPLE NAME.....M14WB/120891
DATE TAKEN..DEC 8, 1991 11:05:49
METHOD FILE.....c:\cp\data1\HDSP.MET
CALIBRATION FILE...c:\cp\data1\ELCDW.CAL
INSTRUMENT..... HP5890 ELCD OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak #	Peak Name	Amount ug/l

hecked by _____ Date 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-08-1991 TIME.....12:48:07

* RAW DATA FILE NAME..c:\cp\data1\W120891.14R

* SAMPLE NAME.....M15WA/120891

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

TODAY'S DATE....12-08-1991 TIME.....12:50:37
RAW DATA FILE NAME..c:\cp\data1\X120891.14R
SAMPLE NAME.....M15WA/120891
DATE TAKEN..DEC 8, 1991 12:06:27
METHOD FILE.....c:\cp\data1\HDSP.MET
CALIBRATION FILE...c:\cp\data1\ELCDW.CAL
INSTRUMENT..... HP5890 ELCD OPERATOR.... WLP

****

********** PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak #	Peak Name	Amount ug/l

hecked by _____ Date 12/10/92

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-08-1991 TIME.....14:51:06

* RAW DATA FILE NAME..c:\cp\data1\PIDS.01R

* SAMPLE NAME.....F12SA/120691

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDS.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l
P,M-XYLENE	-180.4864

(< 25)

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

TODAY'S DATE....12-08-1991 TIME.....14:53:36
RAW DATA FILE NAME..c:\cp\data1\ELCDS.01R
SAMPLE NAME.....F12SA/120691
DATE TAKEN..DEC 8, 1991 14:09:58
METHOD FILE.....c:\cp\data1\HDSP.MET
CALIBRATION FILE...c:\cp\data1\ELCDS.CAL
INSTRUMENT..... HP5890 ELCD OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak #	Peak Name	Amount ug/l

hecked by _____ Date 12/24/92

* TODAY'S DATE....12-09-1991 TIME.....11:41:46

* RAW DATA FILE NAME..c:\cp\data1\W120991.18R

* SAMPLE NAME.....K10WA/120991

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

TODAY'S DATE....12-09-1991 TIME.....11:44:11
RAW DATA FILE NAME..c:\cp\data1\X120991.18R
SAMPLE NAME.....K10WA/120991
DATE TAKEN..DEC 9, 1991 10:35:13
METHOD FILE.....c:\cp\data1\HDSP.MET
CALIBRATION FILE...c:\cp\data1\ELCDW.CAL
INSTRUMENT..... HP5890 ELCD OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak #	Peak Name	Amount ug/l

Checked by _____ Date 12/20/91

DEC 0011060

001 ★

*

* TODAY'S DATE....12-09-1991 TIME.....12:16:48

* RAW DATA FILE NAME..c:\cp\data1\W120991.19R

* SAMPLE NAME.....K10WB/120991

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY Dave Rutter DATE 12/20/91

TODAY'S DATE....12-09-1991 TIME.....12:19:13
RAW DATA FILE NAME..c:\cp\data1\X120991.19R
SAMPLE NAME.....K10WB/120991
DATE TAKEN..DEC 9, 1991 11:35:49
METHOD FILE.....c:\cp\data1\HDSP.MET
CALIBRATION FILE...c:\cp\data1\ELCDW.CAL
INSTRUMENT..... HP5890 ELCD OPERATOR.... WLP

****

********** PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak #	Peak Name	Amount ug/l

hecked by _____ Date 12/20/91

*

* TODAY'S DATE....12-09-1991 TIME.....14:21:42

* RAW DATA FILE NAME..c:\cp\data1\W120991.20R

* SAMPLE NAME.....J10WA/120991

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY [signature] DATE 12/20/91

*

* TODAY'S DATE....12-09-1991 TIME.....17:24:01

* RAW DATA FILE NAME..c:\cp\data1\W120991.21R

* SAMPLE NAME.....J09WA/120991

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... WLP

****

********** PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/24/91

DEC 0011064

001 ★

TODAY'S DATE....12-09-1991 TIME.....17:26:23 *
RAW DATA FILE NAME..c:\cp\data1\X120991.21R *
SAMPLE NAME.....J09WA/120991 *
DATE TAKEN..DEC 9, 1991 16:43:06 *
METHOD FILE.....c:\cp\data1\HDSP.MET *
CALIBRATION FILE...c:\cp\data1\ELCDW.CAL *
INSTRUMENT..... HP5890 ELCD OPERATOR.... WLP *

****

********** PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak #	Peak Name	Amount ug/l

Checked by _____ Date 12/10/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-10-1991 TIME.....11:44:34

* RAW DATA FILE NAME..c:\cp\data1\W121091.24R

* SAMPLE NAME.....K11WA/121091

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/2/92

********** REPORT WRITE PLUS STARTING FORMAT **********

TODAY'S DATE....12-10-1991 TIME.....11:46:09
RAW DATA FILE NAME..c:\cp\data1\X121091.24R
SAMPLE NAME.....K11WA/121091
DATE TAKEN..DEC 10, 1991 11:03:51
METHOD FILE.....c:\cp\data1\HDSP.MET
CALIBRATION FILE...c:\cp\data1\ELCDW.CAL
INSTRUMENT..... HP5890 ELCD OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM *********

Peak #	Peak Name	Amount ug/l

Checked by _____ Date 12/20/91

DEC 0011067 001

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-10-1991 TIME.....14:02:16

* RAW DATA FILE NAME..c:\cp\data1\W121091.25R

* SAMPLE NAME.....K11WB/121091

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

TODAY'S DATE....12-10-1991 TIME.....14:03:49
RAW DATA FILE NAME..c:\cp\data1\X121091.25R
SAMPLE NAME.....K11WB/121091
DATE TAKEN..DEC 10, 1991 12:04:23
METHOD FILE.....c:\cp\data1\HDSP.MET
CALIBRATION FILE...c:\cp\data1\ELCDW.CAL
INSTRUMENT..... HP5890 ELCD OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak #	Peak Name	Amount ug/l

hecked by [signature] Date 12/20/91

DEC 0011069

001 *

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-10-1991 TIME.....14:59:46

* RAW DATA FILE NAME..c:\cp\data1\W121091.26R

* SAMPLE NAME.....K12WA/121091

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY [signature] DATE 12/20/91

DEC 0011070

001

********** REPORT WRITE PLUS STARTING FORMAT **********

TODAY'S DATE....12-10-1991 TIME.....15:02:10
RAW DATA FILE NAME..c:\cp\data1\X121091.26R
SAMPLE NAME.....K12WA/121091
DATE TAKEN..DEC 10, 1991 14:19:04
METHOD FILE.....c:\cp\data1\HDSP.MET
CALIBRATION FILE...c:\cp\data1\ELCDW.CAL
INSTRUMENT..... HP5890 ELCD OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM *********

Peak #	Peak Name	Amount ug/l

hecked by _____ Date 12/20/91

DEC 011071

001

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-10-1991 TIME.....17:22:33

* RAW DATA FILE NAME..c:\cp\data1\W121091.27R

* SAMPLE NAME.....K13WA/121091

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/31/91

********** REPORT WRITE PLUS STARTING FORMAT **********

TODAY'S DATE....12-10-1991 TIME.....17:24:56
RAW DATA FILE NAME..c:\cp\data1\X121091.27R
SAMPLE NAME.....K13WA/121091
DATE TAKEN..DEC 10, 1991 16:41:52
METHOD FILE.....c:\cp\data1\HDSP.MET
CALIBRATION FILE...c:\cp\data1\ELCDW.CAL
INSTRUMENT..... HP5890 ELCD OPERATOR.... WLP

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak #	Peak Name	Amount ug/l

Checked by _____ Date 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-18-1991 TIME.....09:51:42

* RAW DATA FILE NAME..c:\cp\data1\W121891.34R

* SAMPLE NAME.....EIWB/121891

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l
O-XYLENE	27.2778 - std. marker

xylene <25
D.G.Z 4/7/92

CHECKED BY [signature] DATE 12/20/91

OR ND ?

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-18-1991 TIME.....09:53:17

* RAW DATA FILE NAME..c:\cp\data1\X121891.34R

* SAMPLE NAME.....E1WB/121891

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY David C. Rankin DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-18-1991 TIME.....10:52:19

* RAW DATA FILE NAME..c:\cp\data1\W121891.35R

* SAMPLE NAME.....K15WA/121891

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l
O-XYLENE	20.8240

std. marker (<25)

CHECKED BY [signature] DATE 12/20/91

DEC 0011076

001 *

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-18-1991 TIME.....10:53:59

* RAW DATA FILE NAME..c:\cp\data1\X121891.35R

* SAMPLE NAME.....K15WA/121891

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

*

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY David T. Roberts DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-18-1991 TIME.....11:52:56

* RAW DATA FILE NAME..c:\cp\data1\W121891.36R

* SAMPLE NAME.....K15WB/121891

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l	
O-XYLENE	8.6402	std. mix

CHECKED BY David T. Roberts DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-18-1991 TIME.....11:54:34

* RAW DATA FILE NAME..c:\cp\data1\X121891.36R

* SAMPLE NAME.....K15WB/121891

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY David T. Burkett DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-18-1991 TIME.....13:54:10

* RAW DATA FILE NAME..c:\cp\data1\W121891.38R

* SAMPLE NAME.....G6WBA/121891

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY David T. Buckley DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-18-1991 TIME.....13:55:47

* RAW DATA FILE NAME..c:\cp\data1\X121891.38R

* SAMPLE NAME.....G6WBA/121891

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY David A. Richter DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-18-1991 TIME.....14:54:47

* RAW DATA FILE NAME..c:\cp\data1\W121891.39R

* SAMPLE NAME.....K14WB/121891

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY [signature] DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-18-1991 TIME.....14:56:24

* RAW DATA FILE NAME..c:\cp\data1\X121891.39R

* SAMPLE NAME.....K14WB/121891

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY David M. Richter DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-19-1991 TIME.....21:44:14

* RAW DATA FILE NAME..c:\cp\data1\W121991.50R

* SAMPLE NAME.....G6WA/121991

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-19-1991 TIME.....21:45:52

* RAW DATA FILE NAME..c:\cp\data1\X121991.50R

* SAMPLE NAME.....G6WA/121991

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-19-1991 TIME.....22:44:53

* RAW DATA FILE NAME..c:\cp\data1\W121991.51R

* SAMPLE NAME.....G7WA/121991

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-19-1991 TIME.....22:46:28

* RAW DATA FILE NAME..c:\cp\data1\X121991.51R

* SAMPLE NAME.....G7WA/121991

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY [signature] DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-19-1991 TIME.....23:45:30

* RAW DATA FILE NAME..c:\cp\data1\W121991.52R

* SAMPLE NAME.....G7WB/121991

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY David C. Brickter DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-19-1991 TIME.....23:47:06

* RAW DATA FILE NAME..c:\cp\data1\X121991.52R

* SAMPLE NAME.....G7WB/121991

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-20-1991 TIME.....02:47:19

* RAW DATA FILE NAME..c:\cp\data1\W121991.55R

* SAMPLE NAME.....G9WA/121991

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM *********

Peak Name	Amount ug/l

CHECKED BY David T. Rankin DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-20-1991 TIME.....02:48:55

* RAW DATA FILE NAME..c:\cp\data1\X121991.55R

* SAMPLE NAME.....G9WA/121991

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/20/91

001

DEC0011091

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-20-1991 TIME.....03:47:56

* RAW DATA FILE NAME..c:\cp\data1\W121991.56R

* SAMPLE NAME.....G9WB/121991

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY [signature] DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-20-1991 TIME.....03:49:30

* RAW DATA FILE NAME..c:\cp\data1\X121991.56R

* SAMPLE NAME.....G9WB/121991

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY Daniel J. Richter DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-20-1991 TIME.....04:48:35

* RAW DATA FILE NAME..c:\cp\data1\W121991.57R

* SAMPLE NAME.....G10WA/121991

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY David C. Richards DATE 12/21/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-20-1991 TIME.....04:50:13

* RAW DATA FILE NAME..c:\cp\data1\X121991.57R

* SAMPLE NAME.....G10WA/121991

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY [signature] DATE 12/20/91

DEC 0011095

001 *

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-20-1991 TIME.....05:49:10

* RAW DATA FILE NAME..c:\cp\data1\W121991.58R

* SAMPLE NAME.....G10WB/121991

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-20-1991 TIME.....05:50:46

* RAW DATA FILE NAME..c:\cp\data1\X121991.58R

* SAMPLE NAME.....G10WB/121991

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY Dennis T. Richter DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-20-1991 TIME.....07:52:01

* RAW DATA FILE NAME..c:\cp\data1\W121991.60R

* SAMPLE NAME.....G11WB/121991

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

*

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM *********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/21/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-20-1991 TIME.....07:53:38

* RAW DATA FILE NAME..c:\cp\data1\X121991.60R

* SAMPLE NAME.....G11WB/121991

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY David Rutter DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-19-1991 TIME.....02:07:24

* RAW DATA FILE NAME..c;\cp\data1\X121891.47R

* SAMPLE NAME.....G12WB/121891

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

*

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY Dan Rutter DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-19-1991 TIME.....02:05:48

* RAW DATA FILE NAME..c:\cp\data1\W121891.47R

* SAMPLE NAME.....G12WB/121891

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-19-1991 TIME.....00:06:08

* RAW DATA FILE NAME..c:\cp\data1\X121891.45R

* SAMPLE NAME.....R1/121891

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY David T. Rastetter DATE 12/24/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-19-1991 TIME.....00:04:33

* RAW DATA FILE NAME..c:\cp\data1\W121891.45R

* SAMPLE NAME.....R1/121891

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY [signature] DATE 12/20/91

001

DEC 0011103

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-18-1991 TIME.....22:04:59

* RAW DATA FILE NAME..c:\cp\data1\X121891.43R

* SAMPLE NAME.....D7WA/121891

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM *********

Peak Name	Amount ug/l

CHECKED BY_____ DATE 12/23/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-18-1991 TIME.....22:03:22

* RAW DATA FILE NAME..c:\cp\data1\W121891.43R

* SAMPLE NAME.....D7WA/121891

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-18-1991 TIME.....19:03:09

* RAW DATA FILE NAME..c:\cp\data1\X121891.40R

* SAMPLE NAME.....K14WA/121891

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY [signature] DATE 12/20/91

DEC0011106

001 *

********** REPORT WRITE PLUS STARTING FORMAT **********

* TODAY'S DATE....12-18-1991 TIME.....19:01:32

* RAW DATA FILE NAME..c:\cp\data1\W121891.40R

* SAMPLE NAME.....K14WA/121891

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY David T. Buttle DATE 12/20/91

TODAY'S DATE....12-09-1991 TIME.....14:24:08
RAW DATA FILE NAME..c:\cp\data1\X120991.20R
SAMPLE NAME.....J10WA/120991
DATE TAKEN..DEC 9, 1991 13:40:47
METHOD FILE.....c:\cp\data1\HDSP.MET
CALIBRATION FILE...c:\cp\data1\ELCDW.CAL
INSTRUMENT..... HP5890 ELCD OPERATOR.... WLP

****

********** PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak #	Peak Name	Amount ug/l
5	1,2-DICHLORETHANE	4.6413

Checked by _____ Date 12/12/91

********** REPORT WRITE PLUS STARTING FORMAT **********

* TODAY'S DATE....12-18-1991 TIME.....12:55:11

* RAW DATA FILE NAME..c:\cp\data1\X121891.37R

* SAMPLE NAME.....K17WA/121891

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l
TRICHLFLUORMETHANE	-3.8131
1,2-DICHLORETHANE	8.9150

CHECKED BY David T. Rabbitt DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

***

*

* TODAY'S DATE....12-18-1991 TIME.....12:53:34

* RAW DATA FILE NAME..c:\cp\data1\W121891.37R

* SAMPLE NAME.....K17WA/121891

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\PIDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

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********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY David C. Rutter DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-20-1991 TIME.....00:47:42

* RAW DATA FILE NAME..c:\cp\data1\X121991.53R

* SAMPLE NAME.....G8WA/121991

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM *********

Peak Name	Amount ug/l
1,2-DICHLORETHANE	4.6431

< 25

Dup. 1
4/7/92

CHECKED BY [signature] DATE 12/24/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-20-1991 TIME.....00:46:05

* RAW DATA FILE NAME..c:\cp\data1\W121991.53R

* SAMPLE NAME.....G8WA/121991

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM *********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-20-1991 TIME.....01:48:18

* RAW DATA FILE NAME..c:\cp\data1\X121991.54R

* SAMPLE NAME.....G8WB/121991

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM *********

Peak Name	Amount ug/l
1,1,2-TRICHLORETHE	26.3823

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-20-1991 TIME.....01:46:42

* RAW DATA FILE NAME..c:\cp\data1\W121991.54R

* SAMPLE NAME.....GBWB/121991

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

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********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-20-1991 TIME.....06:51:24

* RAW DATA FILE NAME..c:\cp\data1\X121991.59R

* SAMPLE NAME.....G11WA/121991

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l
1,2-DICHLORETHANE	7.3697

CHECKED BY [signature] DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-20-1991 TIME.....06:49:48

* RAW DATA FILE NAME..c:\cp\data1\W121991.59R

* SAMPLE NAME.....G11WA/121991

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 FID OPERATOR.... DLR

*

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM *********

Peak Name	Amount ug/l

CHECKED BY David Buttle DATE 12/24/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-19-1991 TIME.....01:05:12

* RAW DATA FILE NAME..c:\cp\data1\W121891.46R

* SAMPLE NAME.....G12WA/121891

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l
1,1,2-TRICHLORETHE	17.0464

CHECKED BY [signature] DATE 12/20/91

- 10 750 ?

DEC 0011117

001*

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-19-1991 TIME.....01:06:47

* RAW DATA FILE NAME..c:\cp\data1\X121891.46R

* SAMPLE NAME.....G12WA/121891

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY [signature] DATE 12/20/91

DEC 0011118

001

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-18-1991 TIME.....23:05:33

* RAW DATA FILE NAME..c:\cp\data1\X121891.44R

* SAMPLE NAME.....D7WB/121891

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l
1,2-DICHLORETHANE	11.7381

CHECKED BY _____ DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-18-1991 TIME.....21:04:20

* RAW DATA FILE NAME..c:\cp\data1\X121891.42R

* SAMPLE NAME.....K16WB/121891

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l
TRICHLFLUORMETHANE	~~56.7722~~ < 25 ppb

CHECKED BY David Michte DATE 12/20/91

DEC 0011121

001 *

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-18-1991 TIME.....23:03:59

* RAW DATA FILE NAME..c:\cp\data1\W121891.44R

* SAMPLE NAME.....D7WB/121891

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l

CHECKED BY David C. Richter DATE 12/20/91

DEC 0011120

001

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-18-1991 TIME.....21:02:43

* RAW DATA FILE NAME..c:\cp\data1\W121891.42R

* SAMPLE NAME.....K16WB/121891

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM *********

Peak Name	Amount ug/l

CHECKED BY Owen Roberts DATE 12/20/91

********** REPORT WRITE PLUS STARTING FORMAT **********

*

* TODAY'S DATE....12-18-1991 TIME.....20:03:44

* RAW DATA FILE NAME..c:\cp\data1\X121891.41R

* SAMPLE NAME.....K16WA/121891

* METHOD FILE.....c:\cp\data1\HDSP.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP5890 ELCD OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM **********

Peak Name	Amount ug/l	
TRICHLFLUORMETHANE	~~5.2193~~	< 25 ppb
1,2-DICHLORETHANE	1356.9452	

CHECKED BY [signature] DATE 12/20/91

DEC 0011123

001*

********** REPORT WRITE PLUS STARTING FORMAT **********

* TODAY'S DATE....12-18-1991 TIME.....20:02:07

* RAW DATA FILE NAME..c:\cp\data1\W121891.41R

* SAMPLE NAME.....K16WA/121891

* METHOD FILE.....c:\cp\data1\HDSPB.MET

* CALIBRATION FILE...c:\cp\data1\ELCDW.CAL

* INSTRUMENT..... HP 5890 PID OPERATOR.... DLR

****

********* PEAKS DETECTED IN THIS CHROMATOGRAM *********

Peak Name	Amount ug/l

CHECKED BY _____ DATE 12/20/91

Mobile Lab Metals Data

Received from DuPont 9/26/97

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: February 6, 1992

Subject (Sample Description) Results from SEAL sampling of the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: H4, H21, H17, H18
Approved D. DiFeo	SAMPLE ID'S: H4WA, H4WB, H4SA, H21WB, H17WA, H17WB, H18WA, H18WB
Telephone Number DUCOM 442-5706	

SAMPLE ID'S

ELEMENTS	H4WA	H4WB	H4SA	H21WB	H17WA	H17WB	H18WA	H18WB
Cadmium	0.243	ND	ND	ND	ND	ND	ND	ND
Lead	0.163	ND	ND	ND	ND	ND	ND	ND
Nickel	0.520	1.314	ND	0.256	ND	ND	ND	ND
Aluminum	20.78	ND	976.0	ND	29.04	ND	28.66	ND
Arsenic	ND	ND	ND	ND	ND	ND	ND	2.188
Barium	0.143	0.967	ND	ND	ND	ND	ND	ND
Chromium	0.122	ND	ND	ND	ND	0.361	ND	ND
Antimony	ND	0.983	ND	0.575	ND	ND	ND	ND
Zinc	53.80	29.48	2219	8.368	3.177	0.202	9.228	0.352
Iron	18.82	114.0	2574	91.48	8.781	ND	7.138	9.838
Calcium	391.6	3122	6500	643.6	438.8	61.94	601.2	47.52
Magnesium	174.2	1530	3811	127.8	14.89	30.26	23.32	22.46

drd 10/90

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: December 15, 1991

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: K15, K16, K17, N13 Samples: K15WA, K15WB, K15SA, K16WA, K16WB, K17WA, N13WA, N13WB
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	K15WA	K15WB	K15SA	K16WA	K16WB	K17WA	N13WA	N13WB
Cadmium	ND	ND	ND	ND	ND	0.263	ND	ND
Lead	ND	ND	19.82	ND	ND	1.406	ND	ND
Nickel	0.300	0.746	ND	ND	0.579	0.451	0.578	1.259
Aluminum	ND	ND	310.8	ND	ND	67.66	15.34	17.98
Arsenic	ND	ND	ND	ND	ND	ND	0.398	0.246
Barium	ND	ND	8.150	ND	0.208	ND	ND	ND
Chromium	ND	ND	ND	ND	ND	0.200	0.066	0.141
Antimony	ND	ND	ND	ND	ND	ND	0.785	0.343
Zinc	ND	3.394	11.05	8.958	0.372	64.56	25.92	19.43
Iron	3.436	126.4	3249	3.680	118.8	53.44	76.52	197.9
Calcium	211.4	572.2	122.0	331.0	934.6	564.2	682.1	582.2
Magnesium	29.02	272.2	83.26	11.43	306.0	39.32	149.4	219.6

drd 10/90

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: December 15, 1991

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: F01, F2, F3, F4, F5, G6
Approved D. DiFeo	Samples: F01WB, F2WB, F3WA, F3WB, F4WA, F4WB, F5WA F5WB, G6WB
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	F01WB	F2WB	F3WA	F3WB	F4WA	F4WB	F5WA	F5WB	G6WB
Cadmium	ND	ND	0.596	0.534	0.381	0.226	0.696	0.299	0.767
Lead	ND	ND	0.196	ND	ND	0.129	0.656	ND	10.70
Nickel	ND	0.205	0.110	0.593	0.113	0.693	0.112	0.158	0.864
Aluminum	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	ND	2.096	0.874	ND	ND	ND	ND	ND	ND
Barium	0.167	0.192	0.103	ND	ND	0.227	ND	0.128	0.226
Chromium	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	1.871	ND	ND	ND
Zinc	0.700	54.20	44.33	672.3	61.33	83.48	28.89	29.46	1739
Iron	141.1	45.98	11.18	66.00	3.613	53.28	5.643	66.84	393.7
Calcium	1209	1796	53.87	1270	90.85	3192	119.7	1228	3016
Magnesium	122.3	281.8	6.492	287.2	4.921	653.6	10.12	120.9	576.4

drd 10/90

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: December 15, 1991

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: M13, M14, M15, N13 Samples: M13WA, M13WB, M14WA, M14WB, M14SA, M15WA, M15WB, N13SA, N13SB **THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******
Approved D. DiFeo	
Telephone Number Ducom 442-5706	

SAMPLE ID'S

ELEMENTS	M13WA	M13WB	M14WA	M14WB	M14SA	M15WA	M15WB	N13SA	N13SB
Cadmium	ND	ND	0.131	0.326	ND	0.9303	ND	ND	ND
Lead	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	0.484	0.593	0.578	1.154	23.24	0.257	ND	43.96	ND
Aluminum	16.30	20.26	23.53	34.55	9662	18.32	37.54	6980	819.5
Arsenic	0.586	0.626	0.659	1.614	ND	0.433	ND	10.78	ND
Barium	ND	ND	ND	ND	76.17	ND	ND	72.77	ND
Chromium	0.121	0.032	0.053	0.078	17.65	0.073	ND	37.97	3.280
Antimony	0.785	0.861	1.172	2.044	20.46	1.422	ND	ND	ND
Zinc	26.31	1.263	40.32	113.8	83.67	228.2	1.360	530.4	137.2
Iron	203.8	90.74	347.9	41.72	9941	96.94	116.2	35,186	1360
Calcium	620.9	606.8	611.9	622.3	4381	500.3	1213	12,754	379.8
Magnesium	234.2	308.1	172.9	631.5	2860	80.71	304.6	586.8	386.9

drd 10/90

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: JANUARY 28, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: E5, E6, E7, D7
Approved D. DiFeo	Samples: E5WA, E5WB, E6WA, E6WB, E7WA, E7WB, D7WA, D7WB
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	E5WA	E5WB	E6WA	E6WB	E7WA	E7WB	D7WA	D7WB
Cadmium	0.148	0.314	0.388	ND	0.104	ND	ND	ND
Lead	0.786	ND	ND	ND	0.222	1.466	0.315	0.219
Nickel	0.104	0.306	ND	0.133	0.119	0.462	ND	ND
Aluminum	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND
Barium	0.228	0.195	0.153	0.235	0.156	0.222	ND	ND
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	0.259	ND	ND
Zinc	13.57	9.934	30.89	6.430	9.780	26.40	8.107	0.257
Iron	7.550	37.66	3.255	50.90	2.395	12.72	5.540	77.50
Calcium	77.51	1108	165.8	1251	215.9	157.8	259.4	759.6
Magnesium	29.47	125.1	11.74	37.46	13.46	70.50	13.35	575.8

drd 10/90

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: JANUARY 28, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: E8, E10, E11, E12
Approved D. DiFeo	Samples: E8WA, E8WB, E10WA, E10WB, E11WA, E11WB, E12WA, E12WB
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	E8WA	E8WB	E10WA	E10WB	E11WA	E11WB	E12WA	E12WB
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND
Lead	0.942	ND	3.092	1.029	ND	ND	ND	ND
Nickel	ND	0.1402	0.247	1.161	ND	0.286	0.790	ND
Aluminum	6.632	ND	26.22	66.38	ND	ND	ND	ND
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND
Barium	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	ND	ND	ND	0.249	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	0.943	ND	ND	ND
Zinc	7.714	6.774	20.12	35.76	9.882	0.492	21.22	0.513
Iron	45.38	30.78	61.42	166.2	1.691	20.06	6.172	108.6
Calcium	701.2	508.8	582.4	998.6	644.4	681.8	553.6	692.4
Magnesium	29.47	125.1	11.74	37.46	13.46	70.50	13.35	575.8

drd 10/90

DEC 0011130 U 001

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: JANUARY 28, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: G9, G10, G11, J11 Samples: G9WA, G9WB, G10WA, G10WB, G11WA, G11WB, J11WA, J11WB
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	G9WA	G9WB	G10WA	G10WB	G11WA	G11WB	J11WA	J11WB
Cadmium	ND	0.117	0.156	0.973	ND	0.782	ND	0.298
Lead	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	0.244	0.460	ND	4.521	ND	4.723	0.153	0.199
Aluminum	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	ND	ND	1.600	10.95	ND	ND	ND	8.872
Barium	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	1.604	ND	0.965	ND	ND
Zinc	17.37	0.619	54.92	1.784	38.02	13.52	0.797	0.337
Iron	2.659	66.40	7.220	169.7	63.06	1911	4.614	31.24
Calcium	182.6	851.4	524.2	525.4	481.2	383.4	124.2	403.6
Magnesium	13.82	438.0	38.70	6076	43.40	3414	31.90	113.08

drd 10/90

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: JANUARY 28, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: F6, F7, F8, F9
Approved D. DiFeo	Samples: F6WA, F6WB, F7WA, F7WB, F8WA, F8WB, F9WA, F9WB
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	F6WA	F6WB	F7WA	F7WB	F8WA	F8WB	F9WA	F9WB
Cadmium	2.892	ND	0.210	ND	ND	ND	ND	ND
Lead	1.174	ND	1.479	ND	0.580	2.932	ND	ND
Nickel	0.178	ND	ND	ND	ND	0.615	ND	ND
Aluminum	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	ND	ND	ND	ND	ND	2.798	ND	ND
Barium	ND	0.177	0.130	0.221	0.096	0.204	0.098	0.228
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc		14.69	5.590	3.964	2.296	0.743	7.494	0.412
Iron	28.69	66.54	1.148	103.1	3.528	29.60	36.09	61.52
Calcium	277.6	1260	82.17	1141	237.0	415.6	455.2	872.4
Magnesium	12.09	130.7	4.588	427.0	18.99	635.4	20.79	228.8

drd 10/90

DEC 0011132

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: FEBRUARY 3, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: E9, J11, J12 Samples: E9WA, E9WB, RINSE4, RINSE5, RINSE6, BLANK, J11SA, J12SA **THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******
Approved D. DiFeo	
Telephone Number Ducom 442-5706	

SAMPLE ID'S

ELEMENTS	E9WA	E9WB	RINSE4	RINSE5	RINSE6	BLANK	J11SA	J12SA
Cadmium	ND	ND	ND	ND	ND	ND	2.615	ND
Lead	1.097	ND	ND	ND	ND	ND	45.93	35.38
Nickel	ND	0.277	ND	ND	ND	ND	8.452	ND
Aluminum	ND	ND	ND	ND	ND	ND	1056	ND
Arsenic	1.207	0.894	ND	ND	ND	ND	95.39	ND
Barium	0.198	0.212	ND	ND	ND	ND	25.48	9.821
Chromium	ND	ND	ND	ND	ND	ND	3.298	4.132
Antimony	ND	ND	ND	ND	ND	ND	16.76	ND
Zinc	1.087	0.432	0.203	ND	ND	ND	624.2	19.90
Iron	7.408	34.68	ND	ND	ND	ND	3295	3035
Calcium	479.2	453.2	ND	ND	ND	ND	995.2	92.08
Magnesium	40.88	532.6	ND	ND	ND	ND	888.7	ND

drd 10/90

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: FEBRUARY 3, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: G15, G16, G17
Approved D. DiFeo	Samples: D33, G15WA, G15WB, G16WA, G16WB, G17WA, G17WB
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	D33	G15WA	G15WB	G16WA	G16WB	G17WA	G17WB
Cadmium	ND	ND	ND	0.306	ND	ND	ND
Lead	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	ND	ND	ND	ND	0.529
Aluminum	89.03	27.88	ND	ND	ND	ND	ND
Arsenic	ND	ND	ND	ND	ND	ND	ND
Barium	ND	ND	ND	ND	ND	ND	ND
Chromium	ND	ND	0.093	ND	0.122	0.125	0.119
Antimony	ND	ND	ND	ND	0.284	0.263	ND
Zinc	1.269	16.80	ND	55.32	0.186	1.637	1.289
Iron	ND	5.900	3.858	3.560	19.16	77.38	54.38
Calcium	589.0	541.2	13.58	421.8	60.96	402.4	28.04
Magnesium	4217	27.48	4.002	34.84	25.72	27.32	10.88

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: FEBRUARY 3, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: J15, F6, G14, J19, J20, H5, F10 Samples: J15SA, F6SA, G14SA, J19SA, J20SA, H5SA, F10SA
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	J15SA	F6SA	G14SA	J19SA	J20SA	H5SA	F10SA
Cadmium	ND	4.643	1.480	1.935	ND	ND	28.57
Lead	ND	94.44	500.4	126.7	ND	232.9	4443
Nickel	ND	5.969	11.08	ND	ND	ND	100.7
Aluminum	ND	1465	1126	939.8	ND	432.0	2900
Arsenic	ND	60.68	ND	ND	ND	ND	176.0
Barium	20.40	7.673	177.8	5.398	6.689	105.0	453.7
Chromium	ND	1.133	8.265	ND	6.453	ND	2.078
Antimony	ND	ND	ND	ND	ND	ND	20.90
Zinc	35.23	245.7	31.84	125.8	34.74	287.7	4398
Iron	144.5	2778	16,245	3023	575.3	7413	84,765
Calcium	119.4	221.6	26,622	396.7	170.8	57.06	4120
Magnesium	ND	416.2	67.26	198.2	ND	273.6	1434

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: FEBRUARY 3, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: F10, F13, G13, G14 Samples: F10WA, F10WB, F13WA, F13WB, G13WA, G13WB G14WA, G14WB
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	F10WA	F10WB	F13WA	F13WB	G13WA	G13WB	G14WA	G14WB
Cadmium	ND	ND	ND	ND	ND	0.271	ND	ND
Lead	0.867	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	ND	ND	ND	1.085	0.349	ND
Aluminum	ND	78.00	32.40	ND	32.94	55.10	123.7	ND
Arsenic	ND	ND	ND	ND	ND	ND	ND	1.516
Barium	ND	ND	ND	0.073	ND	ND	ND	0.079
Chromium	0.052	ND	ND	0.072	ND	ND	ND	0.132
Antimony	ND	ND	ND	ND	1.168	ND	ND	ND
Zinc	35.62	1.125	1.871	0.199	2.934	33.44	14.77	0.528
Iron	706.7	ND	ND	25.64	60.80	347.0	48.40	11.06
Calcium	597.4	586.9	567.0	444.4	498.4	505.0	511.4	60.52
Magnesium	7.228	4094	6.488	111.5	196.1	352.8	103.7	274.6

drd 10/90

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: JANUARY 28, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: G12, G6, G7, G8
Approved D. DiFeo	Samples: G12WA, G12WB, G6WA, G7WA, G7WB, G8WA G8WB
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	G12WA	G12WB	G6WA	G7WA	G7WB	G8WA	G8WB
Cadmium	ND	1.018	ND	ND	ND	ND	ND
Lead	3.074	ND	1.697	ND	ND	ND	ND
Nickel	0.331	3.276	ND	ND	ND	ND	ND
Aluminum	ND	93.85	ND	ND	ND	ND	ND
Arsenic	ND	ND	ND	ND	ND	ND	1.837
Barium	ND	ND	ND	ND	0.169	ND	ND
Chromium	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	7.500	ND	ND	ND	ND	ND
Zinc	ND	609.2	4.015	0.696	44.00	10.51	0.260
Iron	76.30	3246	7.137	29.52	67.70	13.62	13.23
Calcium	596.8	438.7	32.64	58.02	1785	153.6	675.4
Magnesium	59.28	1255	9.931	21.07	506.0	20.98	46.38

drd 10/90

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: JANUARY 28, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: G9, G10, G11, J11 Samples: G9WA, G9WB, G10WA, G10WB, G11WA, G11WB, J11WA, J11WB
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	G9WA	G9WB	G10WA	G10WB	G11WA	G11WB	J11WA	J11WB
Cadmium	ND	0.117	0.156	0.973	ND	0.782	ND	0.298
Lead	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	0.244	0.460	ND	4.521	ND	4.723	0.153	0.199
Aluminum	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	ND	ND	1.600	10.95	ND	ND	ND	8.872
Barium	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	1.604	ND	0.965	ND	ND
Zinc	17.37	0.619	54.92	1.784	38.02	13.52	0.797	0.337
Iron	2.659	66.40	7.220	169.7	63.06	1911	4.614	31.24
Calcium	182.6	851.4	524.2	525.4	481.2	383.4	124.2	403.6
Magnesium	13.82	438.0	38.70	6076	43.40	3414	31.90	113.08

drd 10/90

DEC 0011138

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: JANUARY 28, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: J12, J13, J14, J15
Approved D. DiFeo	Samples: J12WA, J12WB, J13WA, J13WB, J14WA, J14WB, J15WA, J15WB
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	J12WA	J12WB	J13WA	J13WB	J14WA	J14WB	J15WA	J15WB
Cadmium	ND	0.532	ND	ND	ND	ND	ND	ND
Lead	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	0.417	ND	0.127	ND	0.688	ND	1.654
Aluminum	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	ND	14.87	ND	ND	ND	0.926	ND	ND
Barium	ND	ND	ND	ND	ND	ND	ND	0.108
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	1.338	0.368	0.902	0.327	0.309	0.183	3.412	0.740
Iron	8.425	10.86	1.346	1.732	2.768	7.157	1.053	35.72
Calcium	121.9	250.4	176.5	665.4	194.5	30.68	97.27	370.6
Magnesium	32.93	247.0	19.78	63.62	23.55	14.10	11.63	1358

drd 10/90

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: JANUARY 28, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: E5, E6, E7, D7 Samples: E5WA, E5WB, E6WA, E6WB, E7WA, E7WB, D7WA, D7WB **THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******
Approved D. DiFeo	
Telephone Number Ducom 442-5706	

SAMPLE ID'S

ELEMENTS	E5WA	E5WB	E6WA	E6WB	E7WA	E7WB	D7WA	D7WB
Cadmium	0.148	0.314	0.388	ND	0.104	ND	ND	ND
Lead	0.786	ND	ND	ND	0.222	1.466	0.315	0.219
Nickel	0.104	0.306	ND	0.133	0.119	0.462	ND	ND
Aluminum	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND
Barium	0.228	0.195	0.153	0.235	0.156	0.222	ND	ND
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	0.259	ND	ND
Zinc	13.57	9.934	30.89	6.430	9.780	26.40	8.107	0.257
Iron	7.550	37.66	3.255	50.90	2.395	12.72	5.540	77.50
Calcium	77.51	1108	165.8	1251	215.9	157.8	259.4	759.6
Magnesium	29.47	125.1	11.74	37.46	13.46	70.50	13.35	575.8

drd 10/90

DEC 0011140

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: JANUARY 28, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: E8, E10, E11, E12 Samples: E8WA, E8WB, E10WA, E10WB, E11WA, E11WB, E12WA, E12WB
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	E8WA	E8WB	E10WA	E10WB	E11WA	E11WB	E12WA	E12WB
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND
Lead	0.942	ND	3.092	1.029	ND	ND	ND	ND
Nickel	ND	0.1402	0.247	1.161	ND	0.286	0.790	ND
Aluminum	6.632	ND	26.22	66.38	ND	ND	ND	ND
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND
Barium	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	ND	ND	ND	0.249	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	0.943	ND	ND	ND
Zinc	7.714	6.774	20.12	35.76	9.882	0.492	21.22	0.513
Iron	45.38	30.78	61.42	166.2	1.691	20.06	6.172	108.6
Calcium	701.2	508.8	582.4	998.6	644.4	681.8	553.6	692.4
Magnesium	29.47	125.1	11.74	37.46	13.46	70.50	13.35	575.8

drd 10/90

DEC 0011111

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: December 16, 1991

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: E1, E2, E3, E4, Samples: E1WA, E1WB, E2WA, E2WB, E3WA, E3WB, E4WA, E4WB
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	E1WA	E1WB	E2WA	E2WB	E3WA	E3WB	E4WA	E4WB
Cadmium	ND	ND	ND	ND	0.776	ND	0.453	ND
Lead	ND	ND	1.735	ND	ND	ND	ND	ND
Nickel	ND	ND	0.147	ND	0.175	0.390	0.230	ND
Aluminum	5.722	ND	19.48	ND	ND	ND	ND	ND
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND
Barium	ND	0.138	0.221	0.125	ND	0.130	ND	ND
Chromium	ND	ND	0.209	ND	ND	ND	0.156	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	6.596	0.221	79.61	5.266	80.77	20.36	48.77	8.928
Iron	4.505	49.44	57.26	37.86	3.094	202.9	14.18	50.68
Calcium	101.3	979.2	213.0	1089	244.0	2920	156.4	1032
Magnesium	12.21	101.7	12.64	111.7	46.16	565.6	57.38	61.02

drd 10/90

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: December 15, 1991

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: K15, K16, K17, N13
Approved D. DiFeo	Samples: K15WA, K15WB, K15SA, K16WA, K16WB, K17WA, N13WA, N13WB
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	K15WA	K15WB	K15SA	K16WA	K16WB	K17WA	N13WA	N13WB
Cadmium	ND	ND	ND	ND	ND	0.263	ND	ND
Lead	ND	ND	19.82	ND	ND	1.406	ND	ND
Nickel	0.300	0.746	ND	ND	0.579	0.451	0.578	1.259
Aluminum	ND	ND	310.8	ND	ND	67.66	15.34	17.98
Arsenic	ND	ND	ND	ND	ND	ND	0.398	0.246
Barium	ND	ND	8.150	ND	0.208	ND	ND	ND
Chromium	ND	ND	ND	ND	ND	0.200	0.066	0.141
Antimony	ND	ND	ND	ND	ND	ND	0.785	0.343
Zinc	ND	3.394	11.05	8.958	0.372	64.56	25.92	19.43
Iron	3.436	126.4	3249	3.680	118.8	53.44	76.52	197.9
Calcium	211.4	572.2	122.0	331.0	934.6	564.2	682.1	582.2
Magnesium	29.02	272.2	83.26	11.43	306.0	39.32	149.4	219.6

drd 10/90

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: December 15, 1991

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: F01, F2, F3, F4, F5, G6
Approved D. Difeo	Samples: F01WB, F2WB, F3WA, F3WB, F4WA, F4WB, F5WA F5WB, G6WB
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	F01WB	F2WB	F3WA	F3WB	F4WA	F4WB	F5WA	F5WB	G6WB
Cadmium	ND	ND	0.596	0.534	0.381	0.226	0.696	0.299	0.767
Lead	ND	ND	0.196	ND	ND	0.129	0.656	ND	10.70
Nickel	ND	0.205	0.110	0.593	0.113	0.693	0.112	0.158	0.864
Aluminum	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	ND	2.096	0.874	ND	ND	ND	ND	ND	ND
Barium	0.167	0.192	0.103	ND	ND	0.227	ND	0.128	0.226
Chromium	ND	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	1.871	ND	ND	ND
Zinc	0.700	54.20	44.33	672.3	61.33	83.48	28.89	29.46	1739
Iron	141.1	45.98	11.18	66.00	3.613	53.28	5.643	66.84	393.7
Calcium	1209	1796	53.87	1270	90.85	3192	119.7	1228	3016
Magnesium	122.3	281.8	6.492	287.2	4.921	653.6	10.12	120.9	576.4

drd 10/90

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: December 15, 1991

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: M13, M14, M15, N13 Samples: M13WA, M13WB, M14WA, M14WB, M14SA, M15WA, M15WB, N13SA, N13SB
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	M13WA	M13WB	M14WA	M14WB	M14SA	M15WA	M15WB	N13SA	N13SB
Cadmium	ND	ND	0.131	0.326	ND	0.9303	ND	ND	ND
Lead	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	0.484	0.593	0.578	1.154	23.24	0.257	ND	43.96	ND
Aluminum	16.30	20.26	23.53	34.55	9662	18.32	37.54	6980	819.5
Arsenic	0.586	0.626	0.659	1.614	ND	0.433	ND	10.78	ND
Barium	ND	ND	ND	ND	76.17	ND	ND	72.77	ND
Chromium	0.121	0.032	0.053	0.078	17.65	0.073	ND	37.97	3.280
Antimony	0.785	0.861	1.172	2.044	20.46	1.422	ND	ND	ND
Zinc	26.31	1.263	40.32	113.8	83.67	228.2	1.360	530.4	137.2
Iron	203.8	90.74	347.9	41.72	9941	96.94	116.2	35,186	1360
Calcium	620.9	606.8	611.9	622.3	4381	500.3	1213	12,754	379.8
Magnesium	234.2	308.1	172.9	631.5	2860	80.71	304.6	586.8	386.9

drd 10/90

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, OERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: December 14, 1991

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: F1, F2, F11, F12 Samples: F1WA, F1S1-3, F2WA, F2S1.5-3.5, F11WA, F11WB, F12WA, F12WB, F12SA **THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******
Approved D. DiFeo	
Telephone Number Ducom 442-5706	

SAMPLE ID'S

ELEMENTS	F1WA	F1S1-3	F2WA	F2S1.5-3.5	F11WA	F11WB	F12WA	F12WB	F12SA
Cadmium	ND	ND	0.848	11.40	ND	0.844	ND	ND	66.96
Lead	ND	ND	14.04	1780	1.358	ND	1.571	ND	2768
Nickel	0.968	18.00	0.559	32.30	0.162	5.104	0.361	0.383	86.96
Aluminum	61.24	17,490	111.2	3875	31.58	148.6	70.33	14.64	4387
Arsenic	0.128	53.0	2.390	32.70	ND	ND	0.733	0.592	219.5
Barium	1.186	ND	1.096	169.4	ND	ND	ND	ND	488.8
Chromium	0.416	11.22	0.050	23.20	0.093	ND	0.110	0.048	30.49
Antimony	ND	36.06	2.488	ND	0.496	ND	1.082	0.570	87.84
Zinc	2.729	35.48	357.8	2363	32.88	1.480	48.22	0.619	19,843
Iron	136.4	13,612	9.952	43,617	37.15	202.9	115.6	73.16	56,078
Calcium	154.9	79,255	1748	3603	781.6	565.8	640.2	416.4	18,235
Magnesium	23.17	10,000	235.8	660.5	22.84	9479	84.82	293.9	6104

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: December 14, 1991

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: J9, J10, K10, K11
Approved D. DiFeo	Samples: J9WA, J9SA, J10WA, K10WA, K10WB, K11WA, K11WB, K11SA
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	J9WA	J9SA	J10WA	K10WA	K10WB	K11WA	K11WB	K11SA
Cadmium	ND	3.180	ND	ND	0.653	ND	ND	ND
Lead	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	0.102	0.164	0.436	ND	0.354	ND
Aluminum	21.91	652.1	11.93	6.643	19.41	10.48	24.12	2908
Arsenic	ND	ND	ND	ND	16.18	ND	1.562	ND
Barium	ND	10.58	ND	ND	ND	ND	ND	6.38
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	0.931	ND	ND	9.96
Zinc	0.304	207.6	3.766	0.484	0.258	11.95	0.869	172.6
Iron	2.197	4438	9.980	1.921	43.30	2.966	18.47	2318
Calcium	68.62	225.3	273.4	107.3	564.4	212.6	727.2	361.8
Magnesium	9.578	383.4	25.22	9.936	309.1	20.34	233.2	97.80

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: December 14, 1991

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: K12, K13, K14 Samples: K12WA, K12WB, K13WA, K13WB, K13SA, K14WA, K14WB, K14SA
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	K12WA	K12WB	K13WA	K13WB	K13SA	K14WA	K14WB	K14SA
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND
Lead	1.779	ND	ND	ND	14.15	0.330	ND	ND
Nickel	0.289	0.528	ND	ND	12.65	ND	0.515	ND
Aluminum	19.38	47.94	17.54	17.75	296.8	7.779	23.40	324.8
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND
Barium	ND	ND	ND	ND	9.81	0.153	ND	5.509
Chromium	ND	ND	ND	ND	6.91	ND	ND	ND
Antimony	ND	0.878	ND	ND	ND	ND	ND	ND
Zinc	6.45	1.078	1.719	0.369	41.85	0.160	0.476	15.98
Iron	26.58	57.82	3.970	8.852	4007	2.829	46.68	528.2
Calcium	218.8	2380	412.0	664.2	497.9	117.8	610.6	164.7
Magnesium	54.84	892.8	11.04	91.62	ND	16.90	151.3	246.6

drd 10/90

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: FEBRUARY 3, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: J15, F6, G14, J19, J20, H5, F10 Samples: J15SA, F6SA, G14SA, J19SA, J20SA, H5SA, F10SA
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	J15SA	F6SA	G14SA	J19SA	J20SA	H5SA	F10SA
Cadmium	ND	4.643	1.480	1.935	ND	ND	28.57
Lead	ND	94.44	500.4	126.7	ND	232.9	4443
Nickel	ND	5.969	11.08	ND	ND	ND	100.7
Aluminum	ND	1465	1126	939.8	ND	432.0	2900
Arsenic	ND	60.68	ND	ND	ND	ND	176.0
Barium	20.40	7.673	177.8	5.398	6.689	105.0	453.7
Chromium	ND	1.133	8.265	ND	6.453	ND	2.078
Antimony	ND	ND	ND	ND	ND	ND	20.90
Zinc	35.23	245.7	31.84	125.8	34.74	287.7	4398
Iron	144.5	2778	16,245	3023	575.3	7413	84,765
Calcium	119.4	221.6	26,622	396.7	170.8	57.06	4120
Magnesium	ND	416.2	67.26	198.2	ND	273.6	1434

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: MARCH 6, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: J18,I13,I12,L12 Samples: J18WA,J18WB,I13WA,I13WB,I12WA,I12WB, L12WA,L12WB
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	J18WA	J18WB	I13WA	I13WB	I12WA	I12WB	L12WA	L12WB
Cadmium	ND	0.866	ND	ND	ND	0.540	ND	ND
Lead	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	ND	0.315	ND	0.107	ND	0.246
Aluminum	1.410	1.496	ND	0.610	1.357	0.834	3.513	2.982
Arsenic	ND	ND	0.162	ND	1.160	31.94	ND	0.237
Barium	ND	0.152	ND	ND	0.072	0.065	ND	0.076
Chromium	ND	0.199	ND	0.105	ND	0.138	ND	0.146
Antimony	2.177	1.895	0.953	0.677	0.807	1.115	ND	ND
Zinc	0.391	0.111	ND	0.110	0.818	0.676	ND	0.236
Iron	2.146	43.02	9.677	6.086	4.100	11.79	1.499	20.70
Calcium	71.94	374.6	192.3	25.80	202.0	56.00	ND	310.0
Magnesium	7.961	255.4	39.58	8.644	22.90	24.38	3.994	311.7
Vanadium	ND	ND	ND	ND	ND	0.555	ND	ND

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, OERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: MARCH 6, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: A5, A6, D9, B9, Samples: A5WA, A5WB, A6WA, A6WB, D9WA, D9WB, B9WA, B9WB
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	A5WA	A5WB	A6WA	A6WB	D9WA	D9WB	B9WA	B9WB
Cadmium	ND	ND	ND	ND	ND	ND	0.480	ND
Lead	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	ND	ND	ND	ND	ND	ND
Aluminum	ND	ND	ND	ND	ND	ND	2.420	ND
Arsenic	ND	ND	ND	ND	ND	ND	0.101	0.345
Barium	ND	ND	ND	ND	0.074	ND	0.143	ND
Chromium	ND	ND	ND	ND	ND	0.258	ND	0.251
Antimony	ND	ND	ND	ND	5.351	6.860	11.01	8.764
Zinc	11.15	0.200	5.327	0.189	14.52	0.281	34.16	0.486
Iron	ND	30.90	2.633	45.51	1.383	51.76	8.502	76.66
Calcium	610.2	639.4	487.1	566.7	415.9	598.4	879.2	816.6
Magnesium	22.50	56.24	26.91	112.8	32.89	1477	102.0	1417
Vanadium	ND	ND	ND	ND	ND	ND	ND	ND

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: MARCH 6, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: C8,C13,C18,B7,A9,D35 Samples: C8WB, C13WA, C13WB, C18WA, B7WA, B7WB, A9WA, D35 **THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******
Approved D. DiFeo	
Telephone Number Ducom 442-5706	

SAMPLE ID'S

ELEMENTS	C8WB	C13WA	C13WB	C18WA	B7WA	B7WB	A9WA	D35
Cadmium	0.169	ND	ND	ND	0.123	0.164	0.197	ND
Lead	3.110	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	ND	ND	ND	0.500	ND	0.441
Aluminum	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	ND	ND	ND	ND	ND	3.508	ND	ND
Barium	0.127	ND	0.107	ND	ND	ND	ND	ND
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	0.278	ND	ND	ND	19.07	0.417	58.54	0.422
Iron	88.92	16.91	73.48	19.34	8.694	161.7	2.412	45.76
Calcium	623.2	407.2	737.8	623.7	541.6	698.4	567.2	675.6
Magnesium	786.2	30.00	ND	9.241	26.00	380.6	23.72	554.0
Vanadium	4.516	ND	ND	ND	ND	ND	ND	ND

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E N V I R O N M E N T A L A N A L Y S I S R E P O R T

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: MARCH 6, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: D3, D4, H10, H11, Samples: D3WA, D3WB, D4WA, D4WB, H10WA, H10WB, H11WA, H11WB
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	D3WA	D3WB	D4WA	D4WB	H10WA	H10WB	H11WA	H11WB
Cadmium	1.020	ND	0.224	ND	ND	ND	ND	ND
Lead	2.526	0.186	0.223	0.201	ND	ND	4.140	ND
Nickel	ND	ND	ND	ND	ND	ND	ND	ND
Aluminum	2.626	0.553	ND	ND	0.977	ND	ND	0.217
Arsenic	ND	0.211	ND	0.331	ND	ND	0.715	ND
Barium	0.078	0.209	0.058	0.236	ND	ND	0.065	ND
Chromium	ND	ND	ND	ND	ND	0.336	ND	0.518
Antimony	10.13	15.95	5.119	15.27	ND	5.070	7.825	3.564
Zinc	94.86	14.12	30.69	2.754	0.340	ND	0.353	0.722
Iron	13.06	141.7	3.039	222.0	29.91	131.0	5.303	103.7
Calcium	745.4	2316	363.3	3050	76.07	680.5	733.9	678.0
Magnesium	17.40	260.4	8.139	219.6	12.86	6770	17.99	4748
Vanadium	ND	ND	ND	ND	ND	ND	ND	ND

drd 10/90

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: MARCH 6, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: L13,L14,L15,K17,K19
Approved D. DiFeo	Samples: L13WA,L13WB,L14WA,L14WB,L15WA,L15WB, K17WB,K19WA
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	L13WA	L13WB	L14WA	L14WB	L15WA	L15WB	K17WB	K19WA
Cadmium	ND	ND	ND	ND	0.150	ND	ND	ND
Lead	ND	ND	ND	ND	0.217	ND	0.802	ND
Nickel	0.196	0.134	ND	0.252	ND	0.258	ND	ND
Aluminum	15.64	1.893	1.709	0.898	2.482	1.196	17.94	0.324
Arsenic	0.150	0.141	ND	0.462	ND	0.657	0.266	0.324
Barium	ND	0.094	0.174	0.068	0.075	0.126	0.111	0.094
Chromium	0.233	0.127	ND	ND	ND	0.263	0.242	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	4.896	0.264	0.986	10.07	22.26	0.431	2.422	ND
Iron	35.28	29.48	2.748	84.02	11.24	58.84	251.4	49.87
Calcium	236.4	513.2	340.0	255.6	583.0	527.0	1144	863.9
Magnesium	71.14	129.4	139.0	417.8	55.41	258.2	21.16	434.0
Vanadium	ND	ND	ND	ND	ND	ND	ND	ND

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: MARCH 6, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: L16,M17,J16,J17,L19,L18, Samples: L16WB,M17WB,J16WA,J16WB,J17WA,L19WB,L18WA, L18WB
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	L16WB	M17WB	J16WA	J16WB	J17WA	L19WB	L18WA	L18WB
Cadmium	ND	0.866	ND	ND	ND	ND	ND	ND
Lead	ND	ND	ND	ND	0.408	ND	ND	ND
Nickel	0.192	0.238	ND	0.248	ND	0.404	ND	0.397
Aluminum	0.676	0.226	5.473	0.548	3.212	ND	3.634	ND
Arsenic	0.106	0.150	0.110	0.602	0.423	ND	ND	ND
Barium	0.146	0.110	0.083	0.104	0.147	0.461	0.076	0.488
Chromium	0.122	0.252	ND	ND	ND	ND	0.142	0.435
Antimony	ND	ND	ND	ND	ND	12.46	ND	ND
Zinc	0.994	2.914	2.664	ND	3.148	3.056	3.399	5.870
Iron	38.24	4.972	12.10	23.08	10.04	290.3	17.38	280.2
Calcium	607.4	916.0	173.2	198.9	215.1	470.4	787.1	3168
Magnesium	221.0	85.74	13.84	972.2	30.40	6760	15.50	829.0
Vanadium	ND	ND	ND	ND	ND	1.146	ND	0.232

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: MARCH 6, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: L16,M16,N16,K18,C16,C15
Approved D. Difeo	Samples: L16WA,M16WB,N16WA,N16WB,K18WB,C16WA, C16WB,C15WA
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	L16WA	M16WB	N16WA	N16WB	K18WB	C16WA	C16WB	C15WA
Cadmium	1.162	ND	0.810	ND	ND	ND	ND	ND
Lead	0.298	ND	0.132	ND	ND	0.133	ND	ND
Nickel	1.199	0.151	0.524	0.219	0.148	ND	0.189	ND
Aluminum	5.672	0.661	103.5	0.454	1.830	4.338	7.150	1.094
Arsenic	ND	ND	0.154	0.171	2.926	ND	0.211	ND
Barium	0.114	0.154	0.051	0.102	2.838	0.083	0.096	ND
Chromium	ND	ND	0.293	ND	0.198	0.123	0.157	ND
Antimony	7.074	ND	9.254	ND	0.237	ND	ND	ND
Zinc	261.4	0.233	397.8	0.574	ND	0.248	0.256	ND
Iron	3.896	34.38	173.4	45.63	78.63	1.306	70.02	0.865
Calcium	521.2	732.0	335.2	672.2	1400	1135	1291	738.6
Magnesium	49.08	290.0	114.5	520.1	116.3	2.534	186.6	3.152
Vanadium	ND	ND	ND	ND	ND	ND	ND	ND

drd 10/90

DEC 0011156

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: MARCH 15, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: K17, K18, I15, J17, I16, I15,I17 Samples: BLANK, K17SA, K18SA, I15SA, J17SA, I16WB, I15WB, I17WB
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	BLANK	K17SA	K18SA	I15SA	J17SA	I16WB	I15WB	I17WB
Cadmium	ND	22.64	6.683	ND	9.646	ND	ND	ND
Lead	ND	64.93	141.5	ND	123.0	ND	ND	ND
Nickel	ND	ND	0.962	ND	2.927	0.673	1.189	0.580
Aluminum	ND	683.4	1349	707.7	1211	ND	ND	ND
Arsenic	ND	ND	ND	ND	ND	2.069	3.093	2.335
Barium	ND	22.05	28.55	2.837	18.28	ND	ND	ND
Chromium	ND	ND	ND	ND	ND	ND	0.091	0.195
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	ND	222.5	1535	276.7	1122	ND	ND	ND
Iron	ND	550.7	4786	2164	7560	ND	1.361	1.496
Calcium	ND	2418	2313	950.0	930.1	11.08	19.20	7.948
Magnesium	ND	ND	1024	969.4	621.4	5.652	2.474	4.654
Vanadium	ND	ND	ND	ND	ND	0.673	0.597	0.940

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: December 16, 1991

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: E1, E2, E3, E4, Samples: E1WA, E1WB, E2WA, E2WB, E3WA, E3WB, E4WA, E4WB
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	E1WA	E1WB	E2WA	E2WB	E3WA	E3WB	E4WA	E4WB
Cadmium	ND	ND	ND	ND	0.776	ND	0.453	ND
Lead	ND	ND	1.735	ND	ND	ND	ND	ND
Nickel	ND	ND	0.147	ND	0.175	0.390	0.230	ND
Aluminum	5.722	ND	19.48	ND	ND	ND	ND	ND
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND
Barium	ND	0.138	0.221	0.125	ND	0.130	ND	ND
Chromium	ND	ND	0.209	ND	ND	ND	0.156	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	6.596	0.221	79.61	5.266	80.77	20.36	48.77	8.928
Iron	4.505	49.44	57.26	37.86	3.094	202.9	14.18	50.68
Calcium	101.3	979.2	213.0	1089	244.0	2920	156.4	1032
Magnesium	12.21	101.7	12.64	111.7	46.16	565.6	57.38	61.02

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: December 14, 1991

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: F1, F2, F11, F12 Samples: F1WA, F1S1-3, F2WA, F2S1.5-3.5, F11WA, F11WB, F12WA, F12WB, F12SA **THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******
Approved D. DiFeo	
Telephone Number Ducom 442-5706	

SAMPLE ID'S

ELEMENTS	F1WA	F1S1-3	F2WA	F2S1.5-3.5	F11WA	F11WB	F12WA	F12WB	F12SA
Cadmium	ND	ND	0.848	11.40	ND	0.844	ND	ND	66.96
Lead	ND	ND	14.04	1780	1.358	ND	1.571	ND	2768
Nickel	0.968	18.00	0.559	32.30	0.162	5.104	0.361	0.383	86.96
Aluminum	61.24	17,490	111.2	3875	31.58	148.6	70.33	14.64	4387
Arsenic	0.128	53.0	2.390	32.70	ND	ND	0.733	0.592	219.5
Barium	1.186	ND	1.096	169.4	ND	ND	ND	ND	488.8
Chromium	0.416	11.22	0.050	23.20	0.093	ND	0.110	0.048	30.49
Antimony	ND	36.06	2.488	ND	0.496	ND	1.082	0.570	87.84
Zinc	2.729	35.48	357.8	2363	32.88	1.480	48.22	0.619	19,843
Iron	136.4	13,612	9.952	43,617	37.15	202.9	115.6	73.16	56,078
Calcium	154.9	79,255	1748	3603	781.6	565.8	640.2	416.4	18,235
Magnesium	23.17	10,000	235.8	660.5	22.84	9479	84.82	293.9	6104

drd 10/90

DEC 0011159

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: December 14, 1991

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: J9, J10, K10, K11
Approved D. DiFeo	Samples: J9WA, J9SA, J10WA, K10WA, K10WB, K11WA, K11WB, K11SA
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	J9WA	J9SA	J10WA	K10WA	K10WB	K11WA	K11WB	K11SA
Cadmium	ND	3.180	ND	ND	0.653	ND	ND	ND
Lead	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	0.102	0.164	0.436	ND	0.354	ND
Aluminum	21.91	652.1	11.93	6.643	19.41	10.48	24.12	2908
Arsenic	ND	ND	ND	ND	16.18	ND	1.562	ND
Barium	ND	10.58	ND	ND	ND	ND	ND	6.38
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	0.931	ND	ND	9.96
Zinc	0.304	207.6	3.766	0.484	0.258	11.95	0.869	172.6
Iron	2.197	4438	9.980	1.921	43.30	2.966	18.47	2318
Calcium	68.62	225.3	273.4	107.3	564.4	212.6	727.2	361.8
Magnesium	9.578	383.4	25.22	9.936	309.1	20.34	233.2	97.80

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: December 14, 1991

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: K12, K13, K14
Approved D. DiFeo	Samples: K12WA, K12WB, K13WA, K13WB, K13SA, K14WA, K14WB, K14SA
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	K12WA	K12WB	K13WA	K13WB	K13SA	K14WA	K14WB	K14SA
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND
Lead	1.779	ND	ND	ND	14.15	0.330	ND	ND
Nickel	0.289	0.528	ND	ND	12.65	ND	0.515	ND
Aluminum	19.38	47.94	17.54	17.75	296.8	7.779	23.40	324.8
Arsenic	ND	ND	ND	ND	ND	ND	ND	ND
Barium	ND	ND	ND	ND	9.81	0.153	ND	5.509
Chromium	ND	ND	ND	ND	6.91	ND	ND	ND
Antimony	ND	0.878	ND	ND	ND	ND	ND	ND
Zinc	6.45	1.078	1.719	0.369	41.85	0.160	0.476	15.98
Iron	26.58	57.82	3.970	8.852	4007	2.829	46.68	528.2
Calcium	218.8	2380	412.0	664.2	497.9	117.8	610.6	164.7
Magnesium	54.84	892.8	11.04	91.62	ND	16.90	151.3	246.6

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: JANUARY 28, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: G12, G6, G7, G8 Samples: G12WA, G12WB, G6WA, G7WA, G7WB, G8WA G8WB **THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******
Approved D. DiFeo	
Telephone Number Ducom 442-5706	

SAMPLE ID'S

ELEMENTS	G12WA	G12WB	G6WA	G7WA	G7WB	G8WA	G8WB
Cadmium	ND	1.018	ND	ND	ND	ND	ND
Lead	3.074	ND	1.697	ND	ND	ND	ND
Nickel	0.331	3.276	ND	ND	ND	ND	ND
Aluminum	ND	93.85	ND	ND	ND	ND	ND
Arsenic	ND	ND	ND	ND	ND	ND	1.837
Barium	ND	ND	ND	ND	0.169	ND	ND
Chromium	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	7.500	ND	ND	ND	ND	ND
Zinc	ND	609.2	4.015	0.696	44.00	10.51	0.260
Iron	76.30	3246	7.137	29.52	67.70	13.62	13.23
Calcium	596.8	438.7	32.64	58.02	1785	153.6	675.4
Magnesium	59.28	1255	9.931	21.07	506.0	20.98	46.38

drd 10/90

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: JANUARY 28, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: J12, J13, J14, J15
Approved D. DiFeo	Samples: J12WA, J12WB, J13WA, J13WB, J14WA, J14WB, J15WA, J15WB
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	J12WA	J12WB	J13WA	J13WB	J14WA	J14WB	J15WA	J15WB
Cadmium	ND	0.532	ND	ND	ND	ND	ND	ND
Lead	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	0.417	ND	0.127	ND	0.688	ND	1.654
Aluminum	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	ND	14.87	ND	ND	ND	0.926	ND	ND
Barium	ND	ND	ND	ND	ND	ND	ND	0.108
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	1.338	0.368	0.902	0.327	0.309	0.183	3.412	0.740
Iron	8.425	10.86	1.346	1.732	2.768	7.157	1.053	35.72
Calcium	121.9	250.4	176.5	665.4	194.5	30.68	97.27	370.6
Magnesium	32.93	247.0	19.78	63.62	23.55	14.10	11.63	1358

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: JANUARY 28, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: F6, F7, F8, F9
Approved D. DiFeo	Samples: F6WA, F6WB, F7WA, F7WB, F8WA, F8WB, F9WA, F9WB
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	F6WA	F6WB	F7WA	F7WB	F8WA	F8WB	F9WA	F9WB
Cadmium	2.892	ND	0.210	ND	ND	ND	ND	ND
Lead	1.174	ND	1.479	ND	0.580	2.932	ND	ND
Nickel	0.178	ND	ND	ND	ND	0.615	ND	ND
Aluminum	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	ND	ND	ND	ND	ND	2.798	ND	ND
Barium	ND	0.177	0.130	0.221	0.096	0.204	0.098	0.228
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc		14.69	5.590	3.964	2.296	0.743	7.494	0.412
Iron	28.69	66.54	1.148	103.1	3.528	29.60	36.09	61.52
Calcium	277.6	1260	82.17	1141	237.0	415.6	455.2	872.4
Magnesium	12.09	130.7	4.588	427.0	18.99	635.4	20.79	228.8

drd 10/90

DEC 0011164

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: FEBRUARY 3, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: G15, G16, G17 Samples: D33, G15WA, G15WB, G16WA, G16WB, G17WA, G17WB **THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******
Approved D. DiFeo	
Telephone Number Ducom 442-5706	

SAMPLE ID'S

ELEMENTS	D33	G15WA	G15WB	G16WA	G16WB	G17WA	G17WB
Cadmium	ND	ND	ND	0.306	ND	ND	ND
Lead	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	ND	ND	ND	ND	0.529
Aluminum	89.03	27.88	ND	ND	ND	ND	ND
Arsenic	ND	ND	ND	ND	ND	ND	ND
Barium	ND	ND	ND	ND	ND	ND	ND
Chromium	ND	ND	0.093	ND	0.122	0.125	0.119
Antimony	ND	ND	ND	ND	0.284	0.263	ND
Zinc	1.269	16.80	ND	55.32	0.186	1.637	1.289
Iron	ND	5.900	3.858	3.560	19.16	77.38	54.38
Calcium	589.0	541.2	13.58	421.8	60.96	402.4	28.04
Magnesium	4217	27.48	4.002	34.84	25.72	27.32	10.88

drd 10/90

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: FEBRUARY 3, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: F10, F13, G13, G14 Samples: F10WA, F10WB, F13WA, F13WB, G13WA, G13WB G14WA, G14WB
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	F10WA	F10WB	F13WA	F13WB	G13WA	G13WB	G14WA	G14WB
Cadmium	ND	ND	ND	ND	ND	0.271	ND	ND
Lead	0.867	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	ND	ND	ND	1.085	0.349	ND
Aluminum	ND	78.00	32.40	ND	32.94	55.10	123.7	ND
Arsenic	ND	ND	ND	ND	ND	ND	ND	1.516
Barium	ND	ND	ND	0.073	ND	ND	ND	0.079
Chromium	0.052	ND	ND	0.072	ND	ND	ND	0.132
Antimony	ND	ND	ND	ND	1.168	ND	ND	ND
Zinc	35.62	1.125	1.871	0.199	2.934	33.44	14.77	0.528
Iron	706.7	ND	ND	25.64	60.80	347.0	48.40	11.06
Calcium	597.4	586.9	567.0	444.4	498.4	505.0	511.4	60.52
Magnesium	7.228	4094	6.488	111.5	196.1	352.8	103.7	274.6

drd 10/90

DEC 0011166

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: FEBRUARY 3, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: E9, J11, J12 Samples: E9WA, E9WB, RINSE4, RINSE5, RINSE6, BLANK, J11SA, J12SA
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	E9WA	E9WB	RINSE4	RINSE5	RINSE6	BLANK	J11SA	J12SA
Cadmium	ND	ND	ND	ND	ND	ND	2.615	ND
Lead	1.097	ND	ND	ND	ND	ND	45.93	35.38
Nickel	ND	0.277	ND	ND	ND	ND	8.452	ND
Aluminum	ND	ND	ND	ND	ND	ND	1056	ND
Arsenic	1.207	0.894	ND	ND	ND	ND	95.39	ND
Barium	0.198	0.212	ND	ND	ND	ND	25.48	9.821
Chromium	ND	ND	ND	ND	ND	ND	3.298	4.132
Antimony	ND	ND	ND	ND	ND	ND	16.76	ND
Zinc	1.087	0.432	0.203	ND	ND	ND	624.2	19.90
Iron	7.408	34.68	ND	ND	ND	ND	3295	3035
Calcium	479.2	453.2	ND	ND	ND	ND	995.2	92.08
Magnesium	40.88	532.6	ND	ND	ND	ND	888.7	ND

drd 10/90

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: February 6, 1992

Subject (Sample Description) Results from SEAL sampling of the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: H4, H21, H17, H18 SAMPLE ID'S: H4WA, H4WB, H4SA, H21WB, H17WA, H17WB, H18WA, H18WB
Approved D. DiFeo	
Telephone Number DUCOM 442-5706	

SAMPLE ID'S

ELEMENTS	H4WA	H4WB	H4SA	H21WB	H17WA	H17WB	H18WA	H18WB
Cadmium	0.243	ND	ND	ND	ND	ND	ND	ND
Lead	0.163	ND	ND	ND	ND	ND	ND	ND
Nickel	0.520	1.314	ND	0.256	ND	ND	ND	ND
Aluminum	20.78	ND	976.0	ND	29.04	ND	28.66	ND
Arsenic	ND	ND	ND	ND	ND	ND	ND	2.188
Barium	0.143	0.967	ND	ND	ND	ND	ND	ND
Chromium	0.122	ND	ND	ND	ND	0.361	ND	ND
Antimony	ND	0.983	ND	0.575	ND	ND	ND	ND
Zinc	53.80	29.48	2219	8.368	3.177	0.202	9.228	0.352
Iron	18.82	114.0	2574	91.48	8.781	ND	7.138	9.838
Calcium	391.6	3122	6500	643.6	438.8	61.94	601.2	47.52
Magnesium	174.2	1530	3811	127.8	14.89	30.26	23.32	22.46

drd 10/90

DEC 0011168

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: February 17, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: H18, H19, I19, J19
Approved D. DiFeo	Samples: H18WA, H18WB, H19WA, H19WB, I19WA, I19WB, J19WA, J19WB
Telephone Number Ducom 442-5706	**THE WATER SAMPLES RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	H18WA	H18WB	H19WA	H19WB	I19WA	I19WB	J19WA	J19WB
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND
Lead	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	ND	ND	ND	ND	ND	ND
Aluminum	28.66	ND	ND	ND	ND	ND	ND	ND
Arsenic	ND	2.188	ND	1.093	1.181	2.008	ND	ND
Barium	ND	ND	ND	ND	ND	ND	ND	0.299
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	1.440	0.479	ND
Zinc	9.228	0.352	17.07	0.299	1.629	0.424	1.420	0.596
Iron	7.138	9.838	29.48	14.77	1.518	23.24	3.946	202.4
Calcium	601.2	47.52	507.4	98.02	155.4	384.0	69.63	4546
Magnesium	23.32	22.46	16.77	72.54	6.833	329.4	10.58	341.2

drd 10/90

DEC 0011169

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: FEBRUARY 29, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: H9, I8, I5, I6, I7
Approved D. DiFeo	Samples: H9WB, I8WA, I8WB, I5WB, I6WA, I6WB, I7WA, I7WB
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	H9WB	I8WA	I8WB	I5WB	I6WA	I6WB	I7WA	I7WB
Cadmium	ND	ND	ND	ND	0.269	1.722	ND	ND
Lead	ND	ND	ND	ND	ND	ND	0.679	ND
Nickel	ND	ND	ND	ND	ND	ND	ND	ND
Aluminum	ND	5.238	ND	ND	9.833	ND	ND	ND
Arsenic	ND	ND	2.534	ND	ND	ND	ND	ND
Barium	0.594	ND	0.102	0.315	0.110	ND	ND	0.105
Chromium	ND	ND	ND	ND	0.269	ND	ND	ND
Antimony	ND	0.117	0.295	ND	ND	ND	ND	ND
Zinc	0.810	3.671	0.580	374.8	6.278	337.6	4.551	0.680
Iron	70.90	11.50	107.3	310.4	54.79	299.2	5.658	39.38
Calcium	429.4	83.63	524.8	8238	67.97	11,014	535.9	580.2
Magnesium	1716	28.61	1328	2139	6.995	2470	7.468	240.0

drd 10/90

DEC 0011170

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: FEBRUARY 29, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: B5, I5, H7, H8, H9
Approved D. DiFeo	Samples: B5WA, B5WB, I5WA, H7WA, H7WB, H8WA, H8WB, H9WA
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	B5WA	B5WB	I5WA	H7WA	H7WB	H8WA	H8WB	H9WA
Cadmium	0.177	ND	ND	ND	0.265	ND	0.169	ND
Lead	ND	ND	4.947	ND	ND	ND	ND	0.735
Nickel	ND	ND	0.289	ND	ND	ND	ND	ND
Aluminum	13.52	ND	13.36	ND	ND	ND	ND	ND
Arsenic	ND	ND	ND	1.177	13.38	ND	4.168	ND
Barium	0.130	0.347	0.383	0.128	1.671	0.113	ND	ND
Chromium	ND	ND	0.296	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	20.43	0.494	0.508	2.393	127.2	2.467	0.443	2.422
Iron	5.288	178.9	11.94	20.64	165.0	10.52	28.16	6.119
Calcium	608.8	1107	100.0	538.6	6319	103.3	523.8	152.0
Magnesium	12.99	349.0	4.740	9.956	1210	13.94	1067	21.66

drd 10/90

DEC 0011171

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: FEBRUARY 29, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: H6, A3, B3, B4
Approved D. DiFeo	Samples: H6WC, D34, A3WA, A3WB, B3WA, B3WB, B4WA B4WB
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	H6WC	D34	A3WA	A3WB	B3WA	B3WB	B4WA	B4WB
Cadmium	0.381	3.155	0.496	ND	0.218	ND	0.341	ND
Lead	ND	ND	ND	ND	3.725	ND	ND	ND
Nickel	ND	ND	ND	ND	0.272	ND	ND	ND
Aluminum	ND	ND	14.27	ND	80.11	ND	ND	ND
Arsenic	10.42	12.50	0.868	ND	ND	ND	1.646	ND
Barium	1.559	0.392	ND	ND	ND	0.129	ND	0.276
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	110.3	330.0	40.72	0.218	61.00	0.295	29.78	0.422
Iron	146.5	160.0	2.189	50.86	13.68	84.14	4.382	87.24
Calcium	7718	9127	588.3	556.8	611.8	982.4	606.0	962.8
Magnesium	1162	2170	9.356	89.40	15.13	102.2	14.65	83.32

drd 10/90

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: FEBRUARY 29, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: J20, K20, H5, H6 Samples: J20WA, J20WB, K20WA, K20WB, H5WA, H5WB, H6WA, H6WB
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	J20WA	J20WB	K20WA	K20WB	H5WA	H5WB	H6WA	H6WB
Cadmium	ND	ND	ND	ND	ND	3.272	ND	ND
Lead	ND	ND	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	ND	ND	ND	ND	ND	ND
Aluminum	13.59	ND	ND	ND	ND	ND	ND	22.88
Arsenic	0.939	ND	ND	17.98	ND	11.40	ND	ND
Barium	0.102	0.276	ND	2.256	ND	0.278	ND	ND
Chromium	0.067	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	0.575	1.923	21.92	1.974	1.165	325.0	1.200	19.13
Iron	17.34	170.3	6.664	291.4	32.06	180.4	1.764	16.89
Calcium	179.6	4220	601.4	11,209	78.55	9908	267.3	617.6
Magnesium	6.849	236.4	6.302	386.7	12.15	2246	15.81	69.38

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Note: Cadmium value for I11WB is estimated. MDL was 1.5. (see attached phone log) This lab oversight in preparing summary rpt was not corrected in GIS database submitted to CH2M Hill.

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: MARCH 6, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: H9, I8, I6, I7, I10, J8, I11
Approved D. DiFeo	Samples: H9SA, 3LANK, I8SA, I6SA, I7SA, I10SA, J8SA, I11WB
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	H9SA	BLANK	I8SA	I6SA	I7SA	I10SA	J8SA	I11WB
Cadmium	6.122	ND	2.990	ND	9.875	11.36	10.67	1.109 (J)
Lead	ND	ND	83.81	ND	6741	2319	ND	ND
Nickel	ND	ND	ND	ND	ND	ND	ND	ND
Aluminum	1387	ND	2284	1308	1962	3926	ND	ND
Arsenic	ND	ND	ND	ND	ND	ND	96.34	27.58
Barium	80.61	ND	15.67	7.962	294.9	197.2	6.286	ND
Chromium	ND	ND	ND	20.60	9.221	2.567	ND	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	398.6	ND	1308	40.15	675.1	1051	17.01	0.566
Iron	3095	ND	4946	ND	24,654	10,462	20,439	75.08
Calcium	1622	0.10	4967	ND	2347	627.7	ND	592.2
Magnesium	842.1	ND	2771	68.89	259.3	67.78	ND	820.6

drd 10/90

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: MARCH 6, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: C9, C15, D16, B14, B15
Approved D. DiFeo	Samples: C9WB, C15WB, D16WA, D16WB, B14WA, B14WB, B15WA, B15WB
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	C9WB	C15WB	D16WA	D16WB	B14WA	B14WB	B15WA	B15WB
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND
Lead	5.058	1.038	ND	ND	ND	1.952	ND	ND
Nickel	ND	ND	ND	ND	ND	ND	ND	ND
Aluminum	ND	ND	18.25	40.60	15.19	ND	ND	ND
Arsenic	ND	3.398	ND	ND	ND	ND	ND	ND
Barium	ND	0.112	ND	ND	ND	0.106	ND	0.114
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	0.945	ND	ND	ND	ND	ND	ND
Zinc	0.538	0.236	ND	0.143	ND	0.222	0.127	ND
Iron	54.90	241.4	3.557	84.14	11.86	232.8	15.02	88.90
Calcium	477.2	711.2	585.0	608.6	554.0	719.6	637.8	782.0
Magnesium	1373	174.5	6.827	71.80	4.863	177.9	13.91	58.18
Vanadium	7.226	1.483	ND	ND	ND	ND	ND	ND

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ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: MARCH 6, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: B16, C17, D17, C18, C19 Samples: B16WA, B16WB, C17WA, C17WB, D17WA D17WB, C18WB, C19WA **THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******
Approved D. DiFeo	
Telephone Number Ducom 442-5706	

SAMPLE ID'S

ELEMENTS	B16WA	B16WB	C17WA	C17WB	D17WA	D17WB	C18WB	C19WA
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND
Lead	5.058	1.038	ND	1.061	ND	ND	3.258	ND
Nickel	ND	ND	ND	ND	ND	ND	ND	ND
Aluminum	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	ND	ND	ND	3.552	ND	ND	ND	ND
Barium	ND	ND	ND	ND	ND	0.103	ND	ND
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	ND	ND	ND	ND	ND	ND	ND	ND
Iron	15.28	51.50	ND	ND	2.034	12.31	ND	29.76
Calcium	658.6	573.6	283.1	48.40	723.8	146.5	184.0	533.5
Magnesium	19.77	55.30	2.974	21.94	3.428	47.52	142.4	8.927
Vanadium	ND	ND	ND	ND	ND	0.904	ND	ND

drd 10/90

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: MARCH 6, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: C19, C20, B20, D18, E17 Samples: C19WB, C20WA, C20WB, B20WA, B20WB, D18WA, D18WB, E17WA **THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******
Approved D. DiFeo	
Telephone Number Ducom 442-5706	

SAMPLE ID'S

ELEMENTS	C19WB	C20WA	C20WA	B20WA	B20WB	D18WA	D18WB	E17WA
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND
Lead	ND	0.231	ND	ND	ND	ND	ND	ND
Nickel	ND	ND	ND	ND	ND	ND	ND	ND
Aluminum	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	ND	ND	ND	1.715	ND	ND	ND	ND
Barium	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	ND	ND	ND	ND	ND	0.114	0.108	25.28
Iron	40.50	16.44	56.90	17.84	40.44	ND	50.83	99.88
Calcium	429.8	603.2	662.6	427.1	516.0	523.2	206.1	534.2
Magnesium	42.24	2.960	42.38	11.24	58.20	2.740	37.98	23.48
Vanadium	ND	ND	ND	ND	ND	ND	ND	ND

drd 10/90

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: MARCH 6, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: E17,D5,D8,C8
Approved D. DiFeo	Samples: E17WB, R8, R9, D5WA, D5WB, D8WA, D8WB, C8WA
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	E17WB	R8	R9	D5WA	D5WB	D8WA	D8WB	C8WA
Cadmium	ND	ND	ND	ND	ND	0.152	0.197	ND
Lead	ND	ND	ND	ND	ND	ND	2.432	ND
Nickel	ND	ND	ND	ND	ND	ND	ND	ND
Aluminum	ND	ND	ND	ND	ND	16.99	ND	ND
Arsenic	ND	ND	ND	ND	ND	2.931	4.884	ND
Barium	ND	ND	ND	0.225	0.190	0.131	ND	ND
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	ND	ND	ND	15.10	46.33	ND	0.31	21.04
Iron	55.56	ND	ND	1.494	105.2	3.102	114.6	0.812
Calcium	467.4	ND	ND	319.4	2476	569.8	527.2	340.5
Magnesium	38.02	ND	ND	10.55	137.2	27.18	803.4	18.06
Vanadium	ND	ND	ND	ND	1.707	ND	4.668	ND

drd 10/90

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: MARCH 6, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: I9, I10, K11, H6, H7, H8
Approved D. DiFeo	Samples: I9WA, I9WB, I10WA, I10WB, I11WA, H6SA, H7SA, H8SA
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	I9WA	I9WB	I10WA	I10WB	I11WA	H6SA	H7SA	H8SA
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND
Lead	ND	ND	ND	ND	ND	132.0	ND	71.71
Nickel	ND	ND	ND	ND	ND	ND	ND	ND
Aluminum	5.437	ND	ND	ND	ND	409.6	ND	ND
Arsenic	ND	ND	0.527	ND	ND	106.0	ND	ND
Barium	0.114	ND	ND	ND	ND	7.050	47.53	8.490
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	0.793	0.348	8.647	1.132	1.575	11.32	13.16	15.75
Iron	19.77	82.70	1.286	45.58	ND	2120	ND	1473
Calcium	199.2	545.0	216.0	593.4	346.8	115.1	ND	ND
Magnesium	17.88	1805	17.72	1039	28.81	105.8	ND	ND

drd 10/90

DEC 001179

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: MARCH 6, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: A8, A12, A13, A14, C9 Samples: A8WB, A12WA, A12WB, A13WA, A13WB, A14WA, A14WB, C9WA
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	A8WB	A12WA	A12WB	A13WA	A13WB	A14WA	A14WB	C9WA
Cadmium	0.342	0.194	ND	ND	ND	ND	ND	ND
Lead	ND	ND	ND	ND	0.837	ND	ND	ND
Nickel	ND	ND	ND	ND	ND	ND	ND	ND
Aluminum	17.57	ND	ND	ND	ND	ND	ND	ND
Arsenic	5.738	2.712	ND	2.246	ND	ND	ND	3.106
Barium	0.109	ND	ND	ND	ND	ND	ND	ND
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	0.527	43.26	ND	17.77	0.343	16.30	0.361	18.05
Iron	92.76	ND	271.1	ND	68.90	ND	64.08	ND
Calcium	630.0	546.6	712.2	666.0	661.6	624.2	743.6	608.8
Magnesium	736.2	18.21	121.2	39.72	85.58	21.56	79.18	17.35
Vanadium	4.462	ND	ND	ND	1.096	ND	ND	ND

drd 10/90

DEC 0011130

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: MARCH 6, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: C3, C4, C5, B6, Samples: C3WA, C3WB, C4WA, C4WB, C5WA, C5WB, B6WA, B6WB
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	C3WA	C3WB	C4WA	C4WB	C5WA	C5WB	B6WA	B6WB
Cadmium	0.191	ND	0.129	ND	0.643	ND	0.199	ND
Lead	ND	ND	ND	ND	ND	ND	0.223	ND
Nickel	ND	ND	ND	ND	ND	ND	ND	ND
Aluminum	ND	ND	ND	ND	13.58	ND	ND	ND
Arsenic	ND	0.147	ND	0.206	2.170	0.155	ND	ND
Barium	0.110	0.201	0.093	0.226	0.113	0.228	0.068	0.191
Chromium	ND	ND	ND	ND	ND	ND	ND	0.112
Antimony	11.31	13.83	9.616	12.23	11.44	11.66	5.603	10.70
Zinc	83.58	0.638	30.74	0.510	40.40	0.317	27.88	0.379
Iron	26.10	64.96	3.726	109.1	4.922	160.1	0.669	209.0
Calcium	934.0	1460	710.4	1459	889.4	1369	410.3	1336
Magnesium	29.96	80.52	17.61	86.86	19.83	177.1	15.48	462.6
Vanadium	ND	ND	ND	ND	ND	ND	ND	ND

drd 10/90

DEC 0011131

Please Note:
Arsenic Results for AllWA & AllWB (next page) were inadvertantly Switched, According to Sheri Blaylock of CONOCO (5/29/92 phone conversation w/Tobin Lounsbury of DERS) - see attached phone log.

Note: this lab error has not been corrected in GIS database sent to CH2M Hill.

L. Leitzinger
9-25-97

Note:
Cadmium at ANWA is an estimated value. The MDL was 1.5.
(see attached phone log)
Note: This lab oversight in preparaing summary report has not been corrected in GIS database submitted to CH2M Hill

L. Leitzinger
9/25/97

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: MARCH 6, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: H9, I8, I6, I7, I10, J8, I11
Approved D. DiFeo	Samples: J8WA, J8WB, R6, R7, A9WB, A10WA, A10WB, A11WA
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	J8WA	J8WB	R6	R7	A9WB	A10WA	A10WB	A11WA
Cadmium	6.122	ND	2.990	ND	9.875	11.36	10.67	1.109 (J)
Lead	ND	ND	83.81	ND	6741	2319	~~25~~ ND	ND
Nickel	ND	ND	ND	ND	ND	ND	ND	ND
Aluminum	1387	ND	2284	1308	1962	3926	ND	ND
Arsenic	ND	ND	ND	ND	ND	ND	96.34	~~28.58~~ ND
Barium	80.61	ND	15.67	7.962	294.9	197.2	6.286	ND
Chromium	ND	ND	ND	20.60	9.221	2.567	ND	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	398.6	ND	1308	40.15	675.1	1051	17.01	0.566
Iron	3095	ND	4946	ND	24,654	10,462	20,439	75.08
Calcium	1622	0.10	4967	ND	2347	627.7	ND	592.2
Magnesium	842.1	ND	2771	68.89	259.3	67.78	ND	820.6

drd 10/90

conoco

ENVIRONMENTAL ANALYSIS REPORT

To: Tobin Lounsbury, Dave Epps, DERS

From: Sheri L. Blaylock , Environmental Services, Ponca City, OK 74603

Date: MARCH 6, 1992

Subject (Sample Description) Results of SEAL sampling at the E. Chicago Du Pont plant.

Test Codes	Sample Numbers / Workorder-Frac Numbers
Charge Number 6030-27-T11	Locations: A11, A15, A4, A7, A8 Samples: A11WB, A15WA, A15WB, A4WA, A4WB, A7WA, A7WB, A8WA.
Approved D. DiFeo	
Telephone Number Ducom 442-5706	**THE WATER SAMPLE RESULTS ARE IN MILLIGRAMS PER LITER, AND THE SOIL SAMPLE RESULTS ARE MICROGRAMS PER GRAM*******

SAMPLE ID'S

ELEMENTS	A11WB	A15WA	A15WB	A4WA	A4WB	A7WA	A7WB	A8WA
Cadmium	ND	ND	ND	0.181	ND	ND	0.284	ND
Lead	ND	ND	ND	ND	ND	ND	2.162	ND
Nickel	ND	ND	ND	ND	ND	ND	ND	ND
Aluminum	17.87	ND	ND	ND	ND	17.81	ND	ND
Arsenic	~~ND~~ 27.58	ND	ND	2.546	ND	ND	4.570	ND
Barium	ND	ND	0.083	ND	0.143	ND	ND	ND
Chromium	ND	ND	ND	ND	ND	ND	ND	ND
Antimony	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	0.115	21.67	0.270	32.68	0.478	35.73	0.413	13.90
Iron	66.14	1.180	56.02	ND	117.0	ND	149.3	ND
Calcium	645.4	736.7	707.4	637.0	975.4	628.0	793.6	659.0
Magnesium	148.2	14.41	77.66	15.14	214.6	19.68	385.8	37.84
Vanadium				1.471	2.100	ND	ND	1.344

drd 10/90

Mobil Lab
detection Limits
for Groundwater
& Soil Samples

Ezinger 1101.507
Tobin Received from DuPont 9/26/97

SUMMARY OF PHONE CONVERSATION

East CHICAGO

CALL TO: Sheri Blaylock conoco (Field Services) JOB NO. 1101

CALL FROM: _____ DATE 5/29/92

SUMMARY OF CONVERSATION

Called Sheri to gain some additional information for interpretation of CONOCO Field Analysis on Metals in GW

points ① Arsenic data A11WA A11WB switch data (reported wrong) A11WA = ND A11WB = 27.58 *

Also As H14WA MDL = 2.0 ~~[illegible]~~ .246 is BDL
Also BDL (BCC reported)
~~[illegible]~~ CAdmium (1.5) A11WA = 1.109
I11WB = 1.109
K20WB = CAN't see
B13WA = CANT see

LEAD (1.0 pQL) G13WA can't see
H14WA = .107 (bDL) Nickel J15WA NEAR DL.
I11WA can't see

ORGANICS Note: Headspace injection is for analysis is considered suitable for screening (TEXAS)

DU PONT ENVIRONMENTAL REMEDIATION SERVICES

1101.507

Received from DuPont 9/26/92 Tobin

SUMMARY OF PHONE CONVERSATION

CALL TO: _____

JOB NO. East Chicago 1101

CALL FROM: Sheri Blaylock. CONOCO LABS

DATE 8/24/92

SUMMARY OF CONVERSATION

Sheri calculated minimum detection limits for the gw & soil samples by ICP for the E. Chicago site in vertical em

gw samples were diluted 4X to run the analyses and reduce interferances with this the detection limits for the target inorganics ARE: — IN parts per billion

Magnesium = 100 ppb ✓		CADMium = 20	
BArium = 10 ppb ✓		LEAD = ~~10~~ 10 ✓	1000
VANadium = 10		ANTIMONY = 1000	
Chromium = 50		Arsenic = ~~0~~75 ✓	2000
Fe IRON = 100		ALUMINUM = 50 ✓	0
Nickel = 50		CALcium = 1000	
ZINC = 100			

just 2 water samples were ID to have been diluted to 2X this would make detection limit be the above limits samples not identified - but can get INFO

Soil sample analysis of 1 gram w/ 50 ml acid digestion microwave digestion course a 1 to 50 MDL / PQL the ~~est~~ minimum detection limits for the soil IS 12.5 times the values reported Above (gw min det. limits

see OVER for metals detection limits

DU PONT ENVIRONMENTAL REMEDIATION SERVICES

Phase III Supplemental Groundwater Quality Data (Pumping Test Data)

(DERS 1992)

E. Chicago Pumping Test

GROUNDWATER ANALYTICAL RESULTS

17:45 17:45 17:15 17:15

Sample ID Lab Preparation Date Sampled Time Sampled		MW-17A Filtered 9/17/92 9:20	MW-17A Unfiltered 9/17/92 9:20	MW-17B Filtered 9/17/92 5:45	MW-17B Unfiltered 9/17/92 5:45	MW-10A Filtered 9/18/92 11:30	MW-10A Unfiltered 9/18/92 11:30	MW-10B Filtered 9/18/92 5:15	MW-10B Unfiltered 9/18/92 5:15	MW-20A Filtered 9/19/92 11:00	MW-20A Unfiltered 9/19/92 11:00	MDL
Inorganics	**Units**											
Silica	mg/l		16		16		48		50		48	1.3
Hardness	mg/l		2,000		1,700		1,700		1,700		1,200	0.1
TSS	mg/l		55		30		110		99		200	5
TDS	mg/l		3,000		2,700		13,000		3,600		4,800	5
TKN	mg/l		22		18		11		7		BDL	6
Alkalinity	mg/l		BDL		BDL		BDL		BDL		BDL	4
Chloride	mg/l		1,700		1,200		100		130		260	500
Fluoride	mg/l		0.63		0.6		0.4		0.4		1.1	0.3
Sulfate	mg/l		260		260		2,100		1,600		2,600	130
Metals												
Aluminum	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.4
Antimony	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.005
Barium	mg/l	0.46	0.75	0.58	0.32	0.13	0.13	0.12	0.12	BDL	BDL	0.02
Boron	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.5
Cadmium	mg/l	0.15	0.16	0.11	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.001
Calcium	mg/l	470	480	420	400	600	590	620	620	360	370	0.5
Chromium	mg/l	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.4
Copper	mg/l	BDL	BDL	BDL	0.043	BDL	0.15	BDL	BDL	BDL	BDL	0.04
Iron	mg/l	73	75	55	60	68	63	59	59	0.053	8.7	0.04
Lead	mg/l	0.1	0.11	0.08	0.083	BDL	0.044	BDL	BDL	BDL	BDL	0.01
Magnesium	mg/l	180	180	160	150	22	23	24	24	83	84	1
Manganese	mg/l	1.4	1.5	1.2	1.3	0.96	0.91	0.84	0.86	0.69	0.7	0.02
Potassium	mg/l	6.6	6.6	5.9	5.9	20	20	19	19	17	17	0.5
Sodium	mg/l	65	82	77	85	230	220	210	210	960	950	2
Zinc	mg/l	130	150	100	110	0.077	0.13	BDL	0.047	BDL	0.13	0.2
Arsenic	mg/l	BDL	BDL	BDL	BDL	0.39	0.53	0.47	0.55	0.5	0.79	0.25
Organics												
Phenols	mg/l		BDL		BDL		BDL		BDL		BDL	0.005
Carbon Disulfide	ug/l		BDL		BDL		BDL		BDL		BDL	5
Chloroform	ug/l		BDL		BDL		BDL		BDL		BDL	5
1,1-Dichloroethane	ug/l		BDL		BDL		BDL		BDL		5	5
1,2-Dichloroethane	ug/l		BDL		BDL		BDL		BDL		BDL	5
1,1,1-Trichloroethane	ug/l		BDL		5		BDL		BDL		EST 3	5

BDL = Below Laboratory Method Detection Limit

Table 2
(Continued)

Sample ID Lab Preparation Date Sampled Time Sampled		MW-17A Filtered 9/17/92 8:20		MW-17A Unfiltered 9/17/92 8:20		MW-17B Filtered 9/17/92 5:45		MW-17B Unfiltered 9/17/92 5:45		MW-10A Filtered 9/18/92 11:30		MW-10A Unfiltered *9/18/92 11:30		MW-10B Filtered 9/18/92 5:15		MW-10B Unfiltered 9/18/92 5:15		MW-20A Filtered 9/19/92 11:00		MW-20A Unfiltered 9/19/92 11:00		MDL
Field Parameters																						
pH	SU			5.96				6.1				6.6				6.53				8.79		
Temperature	°F			62.2				65.1				55.3				54.2				57.4		
Conductivity	umhos			4,980				4,400				3,550				3,480				5,500		

BDL = Below Laboratory Method Detection Limit

1101.1103

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. [illegible]9 MARQUETTE DRIVE [illegible]EOVILLE, IL 60441 (708)378-1600	05-NOV-92		C142054
	Complete 18-MAR-93	PO Number RE-LOG C140684	
	Printed 23-MAR-93	Sampled 17-SEP-92 08:20	

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
RELOG OF SAMPLE: C140684 (FILTERED) - GRAB
SAMPLE I.D.: MW17A

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 10-NOV-92 00:00 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

FAA OR ICP ACID DIGESTION EPA 200.0

[illegible]yst: J. ULASZEK Analysis Date: 13-NOV-92 00:00 Test: P129.2.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM FAA EPA 202.1

Analyst: L. TRZUPEK Analysis Date: 27-NOV-92 00:00 Instrument: FAA Test: M401.1.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.40	mg/L

ANTIMONY GFAA EPA 204.2

Analyst: M. BAUER Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M402.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.0050	mg/L

NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	0.46	0.020	mg/L

BORON (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M407.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BORON	BDL	0.50	mg/L

CADMIUM GFAA EPA 213.2
Analyst: J. VANSKYOCK Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M408.2.0 IND1
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	0.20	0.10	mg/L

1:100 DILUTION

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	0.15	0.020	mg/L

CALCIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M409.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
CALCIUM	470	0.5	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

COPPER (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 12-NOV-92 15:55 Instrument: ICP Test: M412.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.040	mg/L

IRON (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M415.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
IRON	73.	0.040	mg/L

LEAD GFAA EPA 239.2
Analyst: W. WATNESS Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M416.2.0 IND1
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
LEAD	0.10	0.035	mg/L

1:7 DILUTION

HERITAGE LABORATORIES, INC. **Lab Sample ID: C142054**

NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON-REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

LEAD (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LEAD	0.12	0.10	mg/L

MAGNESIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M418.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
MAGNESIUM	180	1.0	mg/L

MANGANESE (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M419.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MANGANESE	1.4	0.020	mg/L

POTASSIUM FAA EPA 258.1
Analyst: L. TRZUPEK Analysis Date: 01-DEC-92 00:00 Instrument: FAA Test: M426.1.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
POTASSIUM	6.6	0.5	mg/L

SODIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M431.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
SODIUM	65	2.0	mg/L

ZINC (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	130.	0.040	mg/L

GFAA ACID DIGESTION EPA 200.0
Analyst: J. ULASZEK Analysis Date: 11-NOV-92 00:00 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2
Analyst: D. WARNER Analysis Date: 23-NOV-92 00:00 Instrument: GFAA Test: M403.2.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.010	mg/L

Sample Comments

BDL Below Detection Limit

Sample Comments

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3-23-93
REVISED

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. [illegible]9 MARQUETTE DRIVE [illegible]EOVILLE, IL 60441 (708)378-1600	05-NOV-92		C142055
	Complete	PO Number	
	18-MAR-93	RE-LOG C140684	
	Printed	Sampled	
	23-MAR-93	17-SEP-92 08:20	

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
RELOG OF SAMPLE: C140684 (UNFILTERED) - GRAB
SAMPLE I.D.: MW17A

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 10-NOV-92 00:00 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 13-NOV-92 00:00 Test: P129.2.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM FAA EPA 202.1

Analyst: L. TRZUPEK Analysis Date: 27-NOV-92 00:00 Instrument: FAA Test: M401.1.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.40	mg/L

ANTIMONY GFAA EPA 204.2

Analyst: M. BAUER Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M402.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.0050	mg/L

NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	0.75	0.020	mg/L

BORON (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M407.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BORON	BDL	0.50	mg/L

CADMIUM GFAA EPA 213.2
Analyst: J. VANSKYOCK Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M408.2.0 IND1
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	0.19	0.10	mg/L

1:100 DILUTION

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	0.16	0.020	mg/L

CALCIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M409.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
CALCIUM	480.	0.5	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

COPPER (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 12-NOV-92 15:55 Instrument: ICP Test: M412.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.040	mg/L

IRON (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M415.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
IRON	75.	0.040	mg/L

LEAD GFAA EPA 239.2
Analyst: W. WATNESS Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M416.2.0 IND1
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
LEAD	0.11	0.030	mg/L

1:6 DILUTION

NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON-REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

LEAD (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LEAD	0.10	0.10	mg/L

MAGNESIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M418.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
MAGNESIUM	180	1.0	mg/L

MANGANESE (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M419.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MANGANESE	1.5	0.020	mg/L

POTASSIUM FAA EPA 258.1
Analyst: L. TRZUPEK Analysis Date: 01-DEC-92 00:00 Instrument: FAA Test: M426.1.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
POTASSIUM	6.6	0.5	mg/L

SODIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M431.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
SODIUM	82	2.0	mg/L

ZINC (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 18-NOV-92 10:32 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	150	0.20	mg/L

GFAA ACID DIGESTION EPA 200.0
Analyst: J. ULASZEK Analysis Date: 11-NOV-92 00:00 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2
Analyst: D. WARNER Analysis Date: 23-NOV-92 00:00 Instrument: GFAA Test: M403.2.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.010	mg/L

Sample Comments

BDL Below Detection Limit

Sample Comments

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3-23-93
REVISED

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	05-NOV-92		C142056
	Complete: 18-MAR-93	PO Number: RE-LOG C140685	
	Printed: 23-MAR-93	Sampled: 17-SEP-92 17:45	

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
RELOG OF SAMPLE: C140685 (FILTERED) - GRAB
SAMPLE I.D.: MW17B

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 10-NOV-92 00:00 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 13-NOV-92 00:00 Test: P129.2.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM FAA EPA 202.1

Analyst: L. TRZUPEK Analysis Date: 27-NOV-92 00:00 Instrument: FAA Test: M401.1.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.40	mg/L

ANTIMONY GFAA EPA 204.2

Analyst: M. BAUER Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M402.2.0 IND1
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.0050	mg/L

NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	0.58	0.020	mg/L

BORON (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M407.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BORON	BDL	0.50	mg/L

CADMIUM GFAA EPA 213.2
Analyst: J. VANSKYOCK Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M408.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	0.13	0.10	mg/L

1:100 DILUTION

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	0.11	0.020	mg/L

CALCIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M409.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
CALCIUM	420.	0.5	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

COPPER (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 12-NOV-92 15:55 Instrument: ICP Test: M412.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.040	mg/L

IRON (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M415.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
IRON	55.	0.040	mg/L

LEAD GFAA EPA 239.2
Analyst: W. WATNESS Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M416.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
LEAD	0.080	0.030	mg/L

1:6 DILUTION

NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON-REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

LEAD (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LEAD	0.10	0.10	mg/L

MAGNESIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M418.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
MAGNESIUM	160.	1.0	mg/L

MANGANESE (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M419.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MANGANESE	1.2	0.020	mg/L

POTASSIUM FAA EPA 258.1

Analyst: L. TRZUPEK Analysis Date: 01-DEC-92 00:00 Instrument: FAA Test: M426.1.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
POTASSIUM	5.9	0.5	mg/L

SODIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M431.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
SODIUM	77	2.0	mg/L

ZINC (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 18-NOV-92 10:32 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	100	0.20	mg/L

GFAA ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 11-NOV-92 00:00 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2

Analyst: D. WARNER Analysis Date: 23-NOV-92 00:00 Instrument: GFAA Test: M403.2.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.010	mg/L

Sample Comments

BDL *Below Detection Limit*

Sample Comments

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3-23-93
REVISED

Quality Assurance Officer: _____

11/01.1103

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
[redacted]TAGE LABORATORIES, INC. [redacted] MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	05-NOV-92		C142057
	Complete: 18-MAR-93	PO Number: RE-LOG C140685	
	Printed: 23-MAR-93	Sampled: 17-SEP-92 17:45	

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
RELOG OF SAMPLE: C140685 (MW17B UNFILTERED) - GRAB
SAMPLE I.D.: MW17B

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 10-NOV-92 00:00 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

F[redacted]R ICP ACID DIGESTION EPA 200.0

[redacted]yst: J. ULASZEK Analysis Date: 16-NOV-92 00:00 Test: P129.2.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM FAA EPA 202.1

Analyst: L. TRZUPEK Analysis Date: 27-NOV-92 00:00 Instrument: FAA Test: M401.1.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.40	mg/L

ANTIMONY GFAA EPA 204.2

Analyst: M. BAUER Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M402.2.0 IND1
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.0050	mg/L

NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	0.32	0.020	mg/L

BORON (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M407.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BORON	BDL	0.50	mg/L

CADMIUM GFAA EPA 213.2
Analyst: J. VANSCYOCK Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M408.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	0.15	0.10	mg/L

1:100 DILUTION

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	0.11	0.020	mg/L

CALCIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M409.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
CALCIUM	400.	0.5	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

COPPER (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 12-NOV-92 15:55 Instrument: ICP Test: M412.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
COPPER	0.043	0.040	mg/L

IRON (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M415.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
IRON	60.	0.040	mg/L

LEAD GFAA EPA 239.2
Analyst: W. WATNESS Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M416.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
LEAD	0.083	0.030	mg/L

1:6 DILUTION

NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON-REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

LEAD (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

MAGNESIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M418.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
MAGNESIUM	150.	1.0	mg/L

MANGANESE (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M419.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MANGANESE	1.3	0.020	mg/L

POTASSIUM FAA EPA 258.1

Analyst: L. TRZUPEK Analysis Date: 01-DEC-92 00:00 Instrument: FAA Test: M426.1.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
POTASSIUM	5.9	0.5	mg/L

S[illegible]M (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M431.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
SODIUM	85	2.0	mg/L

ZINC (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 18-NOV-92 10:32 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	110	0.20	mg/L

GFAA ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 11-NOV-92 00:00 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2

Analyst: D. WARNER Analysis Date: 23-NOV-92 00:00 Instrument: GFAA Test: M403.2.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.010	mg/L

Sample Comments

B[illegible] *Below Detection Limit*

Sample Comments

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3-23-93
REVISED

Quality Assurance Officer: _____

1101.1103

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
[redacted]ITAGE LABORATORIES, INC. [redacted]9 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	05-NOV-92		C142058
	Complete: 18-MAR-93	PO Number: RE-LOG C140686	
	Printed: 23-MAR-93	Sampled: 18-SEP-92 11:30	

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
RELOG OF SAMPLE: C140686 (MW10A FILTERED) - GRAB
SAMPLE I.D.: MW10A

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 10-NOV-92 00:00 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

[redacted]OR ICP ACID DIGESTION EPA 200.0

[redacted]yst: J. ULASZEK Analysis Date: 13-NOV-92 00:00 Test: P129.2.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM FAA EPA 202.1

Analyst: L. TRZUPEK Analysis Date: 27-NOV-92 00:00 Instrument: FAA Test: M401.1.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.40	mg/L

ANTIMONY GFAA EPA 204.2

Analyst: M. BAUER Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M402.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.0050	mg/L

NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
A[redacted]MONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	0.13	0.020	mg/L

BORON (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M407.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BORON	BDL	0.50	mg/L

CADMIUM GFAA EPA 213.2
Analyst: J. VANSKYOCK Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M408.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.0010	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

CALCIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M409.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
CALCIUM	600	0.50	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

COPPER (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 12-NOV-92 15:55 Instrument: ICP Test: M412.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.040	mg/L

IRON (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M415.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
IRON	68.	0.040	mg/L

LEAD GFAA EPA 239.2
Analyst: W. WATNESS Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M416.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.010	mg/L

1:2 DILUTION
NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON-REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

LEAD DILUTED DUE TO MATRIX INTERFERENCE.

L (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

MAGNESIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M418.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
MAGNESIUM	22.	1.0	mg/L

MANGANESE (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M419.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MANGANESE	0.96	0.020	mg/L

POTASSIUM FAA EPA 258.1
Analyst: L. TRZUPEK Analysis Date: 01-DEC-92 00:00 Instrument: FAA Test: M426.1.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
POTASSIUM	20	0.5	mg/L

SODIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M431.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
SODIUM	230.	2.0	mg/L

ZINC (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 11-NOV-92 12:25 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	0.077	0.040	mg/L

GFAA ACID DIGESTION EPA 200.0
Analyst: J. ULASZEK Analysis Date: 11-NOV-92 00:00 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2
Analyst: D. WARNER Analysis Date: 23-NOV-92 00:00 Instrument: GFAA Test: M403.2.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.39	0.25	mg/L

Sample Comments

BDL Below Detection Limit

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Sample Comments

without the written approval of the lab.

3-23-93
REVISED

Quality Assurance Officer: _____

1101.1103

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. [redacted] MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	05-NOV-92		C142059
	Complete	PO Number	
	18-MAR-93	RE-LOG C140686	
	Printed	Sampled	
	23-MAR-93	18-SEP-92 11:30	

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
RELOG OF SAMPLE: C140686 (MW10A UNFILTERED) - GRAB
SAMPLE I.D.: MW10A

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 11-NOV-92 00:00 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

F[redacted]R ICP ACID DIGESTION EPA 200.0

[redacted]st: J. ULASZEK Analysis Date: 13-NOV-92 00:00 Test: P129.2.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M401.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.30	mg/L

ANTIMONY GFAA EPA 204.2

Analyst: M. BAUER Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M402.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.0050	mg/L

NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
AN[redacted]IMONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	0.13	0.020	mg/L

BORON (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M407.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BORON	BDL	0.50	mg/L

CADMIUM GFAA EPA 213.2
Analyst: J. VANSCYOCK Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M408.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.0010	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

CALCIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M409.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
CALCIUM	590.	0.5	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

COPPER (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M412.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
COPPER	0.15	0.040	mg/L

IRON (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M415.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
IRON	63.	0.040	mg/L

LEAD GFAA EPA 239.2
Analyst: W. WATNESS Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M416.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
LEAD	0.044	0.020	mg/L

1:4 DILUTION
NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON-REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

HERITAGE LABORATORIES, INC. **Lab Sample ID: C142059**

LE[redacted] (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LE[redacted]	BDL	0.10	mg/L

MAGNESIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M418.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
MAGNESIUM	23	1.0	mg/L

MANGANESE (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M419.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MANGANESE	0.91	0.020	mg/L

POTASSIUM FAA EPA 258.1

Analyst: L. IRZUPEK Analysis Date: 01-DEC-92 00:00 Instrument: FAA Test: M426.1.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
POTASSIUM	20	0.5	mg/L

SODIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M431.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
SODIUM	220	2.0	mg/L

ZINC (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	0.13	0.040	mg/L

GFAA ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 11-NOV-92 00:00 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2

Analyst: D. WARNER Analysis Date: 23-NOV-92 00:00 Instrument: GFAA Test: M403.2.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.53	0.25	mg/L

Sample Comments

BDL Below Detection Limit

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3-23-93 REVISED

Quality Assurance Officer: [signature]

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. [redacted]9 MARQUETTE DRIVE [redacted]MEOVILLE, IL 60441 (708)378-1600	05-NOV-92		C142060
	Complete	PO Number	
	18-MAR-93	RE-LOG C140687	
	Printed	Sampled	
	23-MAR-93	18-SEP-92 17:15	

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
RELOG OF SAMPLE: C140687 (MW10B FILTERED) - GRAB
SAMPLE I.D.: MW10B

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 11-NOV-92 00:00 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

[redacted] OR ICP ACID DIGESTION EPA 200.0

[redacted]lyst: J. ULASZEK Analysis Date: 13-NOV-92 00:00 Test: P129.2.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M401.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.30	mg/L

ANTIMONY GFAA EPA 204.2

Analyst: M. BAUER Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M402.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.0050	mg/L

NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	0.12	0.020	mg/L

BORON (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M407.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BORON	BDL	0.50	mg/L

CADMIUM GFAA EPA 213.2
Analyst: J. VANSKYOCK Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M408.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.0010	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

CALCIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M409.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
CALCIUM	620	0.5	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

COPPER (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M412.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.040	mg/L

IRON (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M415.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
IRON	59.	0.040	mg/L

LEAD GFAA EPA 239.2
Analyst: M. WATNESS Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M416.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.0050	mg/L

NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON-REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

LEAD (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
[illegible]D	BDL	0.10	mg/L

MAGNESIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M418.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
MAGNESIUM	24.	1.0	mg/L

MANGANESE (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M419.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MANGANESE	0.84	0.020	mg/L

POTASSIUM FAA EPA 258.1

Analyst: L. TRZUPEK Analysis Date: 01-DEC-92 00:00 Instrument: FAA Test: M426.1.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
POTASSIUM	19	0.5	mg/L

SODIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 19-NOV-92 15:54 Instrument: ICP Test: M431.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
SODIUM	210	2.0	mg/L

[illegible]INC (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	BDL	0.040	mg/L

GFAA ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 11-NOV-92 00:00 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA (3 POINT MSA) EPA 206.2

Analyst: D. WARNER Analysis Date: 10-DEC-92 00:00 Instrument: GFAA Test: M403.4.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.47	0.25	mg/L
ADDITION 1	0.010		mg/L
ADDITION 2	0.020		mg/L
ADDITION 3	0.030		mg/L
SAMPLE	0.103		Conc
SAMPLE + ADD 1	0.157		Conc
SAMPLE + ADD 2	0.209		Conc
SAMPLE + ADD 3	0.267		Conc
[illegible]LUTION	25		

Sample Comments

BDL Below Detection Limit

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3-23-93
REVISED

Quality Assurance Officer: _____

1101.1103

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. [redacted]19 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	05-NOV-92		C142061
	Complete: 18-MAR-93	PO Number: RE-LOG C140687	
	Printed: 23-MAR-93	Sampled: 18-SEP-92 17:15	

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
RELOG OF SAMPLE: C140687 (MW10B UNFILTERED) - GRAB
SAMPLE I.D.: MW10B

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 11-NOV-92 00:00 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

[redacted]A OR ICP ACID DIGESTION EPA 200.0

[redacted]alyst: J. ULASZEK Analysis Date: 13-NOV-92 00:00 Test: P129.2.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M401.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.30	mg/L

ANTIMONY GFAA EPA 204.2

Analyst: M. BAUER Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M402.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.0050	mg/L

NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	0.12	0.020	mg/L

BORON (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M407.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BORON	BDL	0.50	mg/L

CADMIUM GFAA EPA 213.2

Analyst: J. VANSKYOCK Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M408.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.0010	mg/L

CADMIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

CALCIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M409.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
CALCIUM	620	0.5	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

COPPER (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M412.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.040	mg/L

IRON (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M415.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
IRON	59.	0.040	mg/L

LEAD GFAA EPA 239.2

Analyst: W. WATNESS Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M416.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.010	mg/L

1:2 DILUTION
LEAD DILUTED DUE TO MATRIX INTERFERENCE.
NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON-REGULATORY

PURPOSES WAIVED COM QAP REQUIREMENTS.

(ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

MAGNESIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M418.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
MAGNESIUM	24.	1.0	mg/L

MANGANESE (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M419.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MANGANESE	0.86	0.020	mg/L

POTASSIUM FAA EPA 258.1

Analyst: L. TRZUPEK Analysis Date: 01-DEC-92 00:00 Instrument: FAA Test: M426.1.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
POTASSIUM	19	0.5	mg/L

SODIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 19-NOV-92 15:54 Instrument: ICP Test: M431.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
SODIUM	210	2.0	mg/L

ZINC (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	0.047	0.040	mg/L

GFAA ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 11-NOV-92 00:00 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA (3 POINT MSA) EPA 206.2

Analyst: D. WARNER Analysis Date: 10-DEC-92 00:00 Instrument: GFAA Test: M403.4.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.55	0.25	mg/L
ADDITION 1	0.010		mg/L
ADDITION 2	0.020		mg/L
ADDITION 3	0.030		mg/L
SAMPLE	0.113		Conc
SAMPLE + ADD 1	0.172		Conc
SAMPLE + ADD 2	0.222		Conc
SAMPLE + ADD 3	0.271		Conc
DILUTION	25		

Sample Comments

BDL Below Detection Limit

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3-23-93
REVISED

Quality Assurance Officer: _____

1101.1103

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. [illegible]9 MARQUETTE DRIVE [illegible]OMEOVILLE, IL 60441 (708)378-1600	05-NOV-92		C142062
	Complete: 18-MAR-93	PO Number: RE-LOG C140688	
	Printed: 23-MAR-93	Sampled: 19-SEP-92 11:00	

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
RELOG OF SAMPLE: C140688 (MW20A FILTERED) - GRAB
SAMPLE I.D.: MW20A

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 11-NOV-92 00:00 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

[illegible]A OR ICP ACID DIGESTION EPA 200.0

[illegible]alyst: J. ULASZEK Analysis Date: 13-NOV-92 00:00 Test: P129.2.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M4D1.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.30	mg/L

ANTIMONY GFAA EPA 204.2

Analyst: M. BAUER Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M402.2.0 IND1
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.0050	mg/L

NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	BDL	0.020	mg/L

BORON (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M407.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BORON	0.91	0.50	mg/L

CADMIUM GFAA EPA 213.2
Analyst: J. VANSKYOCK Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M408.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.0010	mg/L

CADMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

CALCIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M409.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CALCIUM	360.	0.5	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

COPPER (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M412.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.040	mg/L

IRON (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M415.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
IRON	0.053	0.040	mg/L

LEAD GFAA EPA 239.2
Analyst: W. WATNESS Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M416.2.0 INDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.010	mg/L

1:2 DILUTION
NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON-REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

LEAD DILUTED DUE TO MATRIX INTERFERENCE.

[illegible] (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

MAGNESIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M418.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MAGNESIUM	83.	1.0	mg/L

MANGANESE (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M419.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MANGANESE	0.69	0.020	mg/L

POTASSIUM FAA EPA 258.1
Analyst: L. TRZUPEK Analysis Date: 01-DEC-92 00:00 Instrument: FAA Test: M426.1.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
POTASSIUM	17	0.5	mg/L

SODIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 30-NOV-92 17:10 Instrument: ICP Test: M431.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
SODIUM	960	2.0	mg/L

ZINC (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	BDL	0.040	mg/L

GFAA ACID DIGESTION EPA 200.0
Analyst: J. ULASZEK Analysis Date: 11-NOV-92 00:00 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA (3 POINT MSA) EPA 206.2
Analyst: D. WARNER Analysis Date: 10-DEC-92 00:00 Instrument: GFAA Test: M403.4.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.50	0.25	mg/L
ADDITION 1	0.010		mg/L
ADDITION 2	0.020		mg/L
ADDITION 3	0.030		mg/L
SAMPLE	0.103		Conc
[illegible]MPLE + ADD 1	0.165		Conc
[illegible]PLE + ADD 2	0.219		Conc
SAMPLE + ADD 3	0.263		Conc
DILUTION	25		

Sample Comments

BDL Below Detection Limit

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3-23-93
REVISED

Quality Assurance Officer: _____

1101.1103

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. [illegible]9 MARQUETTE DRIVE [illegible]MEOVILLE, IL 60441 (708)378-1600	05-NOV-92		C142063
	Complete 18-MAR-93	PO Number RE-LOG C140688	
	Printed 23-MAR-93	Sampled 19-SEP-92 11:00	

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
RELOG OF SAMPLE: C140688 (MW20A UNFILTERED) - GRAB
SAMPLE I.D.: MW20A

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 11-NOV-92 00:00 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

FAA OR ICP ACID DIGESTION EPA 200.0

[illegible]lyst: J. ULASZEK Analysis Date: 13-NOV-92 00:00 Test: P129.2.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M401.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.30	mg/L

ANTIMONY GFAA EPA 204.2

Analyst: M. BAUER Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M402.2.0 1NDI
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.0050	mg/L

NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	BDL	0.020	mg/L

BORON (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M407.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BORON	0.89	0.50	mg/L

CADMIUM GFAA EPA 213.2

Analyst: J. VANSKYOCK Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M408.2.0 IND1
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.0010	mg/L

CADMIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

CALCIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M409.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
CALCIUM	370	0.5	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

COPPER (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M412.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.040	mg/L

IRON (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 16-NOV-92 15:42 Instrument: ICP Test: M415.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
IRON	8.7	0.040	mg/L

LEAD GFAA EPA 239.2

Analyst: W. MATNESS Analysis Date: 16-MAR-93 00:00 Instrument: GFAA Test: M416.2.0 IND1
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.010	mg/L

1:2 DILUTION
NOTE: SAMPLES ANALYZED PER CLIENT DATA QUALITY OBJECTIVES. NON-REGULATORY PURPOSES WAIVED COM QAP REQUIREMENTS.

LEAD DILUTED DUE TO MATRIX INTERFERENCE.

[redacted]D (ICP-SEQ) EPA 200.7
[redacted]alyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

MAGNESIUM (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 17-NOV-92 14:42 Instrument: ICP Test: M418.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
MAGNESIUM	84.	1.0	mg/L

MANGANESE (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M419.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MANGANESE	0.70	0.020	mg/L

POTASSIUM FAA EPA 258.1
Analyst: L. TRZUPEK Analysis Date: 01-DEC-92 00:00 Instrument: FAA Test: M426.1.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
POTASSIUM	17	0.5	mg/L

SODIUM (ICP-SEQ) EPA 200.7
[redacted]alyst: D. WARNER Analysis Date: 30-NOV-92 17:10 Instrument: ICP Test: M431.9.0
[redacted]ep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
SODIUM	950	2.0	mg/L

ZINC (ICP-SEQ) EPA 200.7
Analyst: D. WARNER Analysis Date: 14-NOV-92 22:05 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	0.13	0.040	mg/L

GFAA ACID DIGESTION EPA 200.0
Analyst: J. ULASZEK Analysis Date: 11-NOV-92 00:00 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2
Analyst: D. WARNER Analysis Date: 23-NOV-92 00:00 Instrument: GFAA Test: M403.2.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.79	0.50	mg/L

Sample Comments

BDL Below Detection Limit

[redacted]s Certificate shall not be reproduced, except in full,

Sample Comments

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3-23-93
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Quality Assurance Officer: _____

1101.1103

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	21-SEP-92		C140686
	Complete 27-OCT-92	PO Number	
	Printed 28-OCT-92	Sampled 18-SEP-92 11:30	

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
WATER 8 CONTAINERS - GRAB
SAMPLE I.D.: MW 10A

SILICA (TOTAL) EPA 370.1

Analyst: G. BAXTER Analysis Date: 30-SEP-92 Test: G618.0.0 CHAR

Parameter	Result	Det. Limit	Units
SILICA	48	2.5	mg/L

HARDNESS APHA 314A

Analyst: D. WARNER Analysis Date: 22-OCT-92 Test: G608.0.0

Parameter	Result	Det. Limit	Units
HARDNESS	1700	1.0	mg CaCO3/L

TOTAL SUSPENDED SOLIDS EPA 160.2

Analyst: J. MATTEI Analysis Date: 22-SEP-92 Test: G403.7.0

Parameter	Result	Det. Limit	Units
SUSPENDED SOLIDS	110	5	mg/L

DISSOLVED SOLIDS EPA 160.1

Analyst: J. MATTEI Analysis Date: 24-SEP-92 Test: G402.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	13000	5	mg/L

NITROGEN, TOTAL KJELDAHL (TKN) EPA 351.3

Analyst: M. VAZIRNEZAMI Analysis Date: 09-OCT-92 Test: G202.4.0

Parameter	Result	Det. Limit	Units
NITROGEN, KJELDAHL	11	6	mg/L

ALKALINITY (CARBONATE) EPA 310.1

Analyst: M. VAZIRNEZAMI Analysis Date: 01-OCT-92 Test: G611.2.0

Parameter	Result	Det. Limit	Units
ALKALINITY	BDL	4	mg/L

CHLORIDE (ION SELECTIVE ELECTRODE) SM 408 14TH ED

Analyst: T. MOHA Analysis Date: 23-SEP-92 Test: G102.3.0

Parameter	Result	Det. Limit	Units
CHLORIDE	100	20	mg/L

FLUORIDE (ION SELECTIVE ELECTRODE) EPA 340.2

Analyst: T. MOHA Analysis Date: 29-SEP-92 Test: G104.4.0

Parameter	Result	Det. Limit	Units
FLUORIDE	0.4	0.2	mg/L

SULFATE (TURBIDIMETRIC) EPA 375.4

Analyst: T. MOHA Analysis Date: 25-SEP-92 Test: G108.5.0

Parameter	Result	Det. Limit	Units
SULFATE	2100	630	mg/L

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 02-OCT-92 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 08-OCT-92 Test: P129.2.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M401.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	0.098	0.020	mg/L

BORON (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M407.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BORON	BDL	0.50	mg/L

CADMIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

CALCIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 22-OCT-92 Instrument: ICP Test: M409.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CALCIUM	630	0.5	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

COPPER (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M412.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.040	mg/L

IRON (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M415.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
IRON	67.	0.040	mg/L

LEAD (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.10	mg/L

MAGNESIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 22-OCT-92 Instrument: ICP Test: M418.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MAGNESIUM	23.	1.0	mg/L

MANGANESE (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M419.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MANGANESE	0.94	0.020	mg/L

POTASSIUM FAA EPA 258.1

Analyst: J. SCHOTT Analysis Date: 27-OCT-92 Instrument: FAA Test: M426.1.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
POTASSIUM	22	0.50	mg/L

SODIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 22-OCT-92 Instrument: ICP Test: M431.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
SODIUM	240.	2.0	mg/L

ZINC (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	0.26	0.070	mg/L

GFAA ACID DIGESTION EPA 200.0

Analyst: J. OLASZEK Analysis Date: 03-OCT-92 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2

Analyst: D. ROBERTS Analysis Date: 12-OCT-92 Instrument: GFAA Test: M403.2.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.43	0.10	mg/L

PHENOLS DISTILLATION EPA 420.1

Analyst: T. NOMA Analysis Date: 01-OCT-92 Test: P405.9.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

PHENOLS 4AAP (MANUAL) EPA 420.1

Analyst: T. NOMA Analysis Date: 02-OCT-92 Test: O413.0.0
Prep: PHENOLS DISTILLATION EPA 420.1 P405.9.0

Parameter	Result	Det. Limit	Units
PHENOLS	BDL	0.005	mg/L

VOLATILE ORGANICS SW846-8240

Analyst: L. DIAZ Analysis Date: 22-SEP-92 Instrument: GC/MS VOA Test: O510.3.0

Parameter	Result	Det. Limit	Units
CARBON DISULFIDE	BDL	5	ug/L
CHLOROFORM	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	93		% Rec
TOLUENE-D8	97		% Rec
BROMOFLUOROBENZENE	110		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1969.

Quality Assurance Officer: Christine Sarkar

1101.1103

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. [redacted] MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	21-SEP-92		C140685
	Complete	PO Number	
	27-OCT-92	.....	
	Printed	Sampled	
	30-OCT-92	17-SEP-92 17:45	

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
WATER 7 CONTAINERS - GRAB
SAMPLE I.D.: MW 17B

SILICA (TOTAL) EPA 370.1

Analyst: G. BAXTER Analysis Date: 30-SEP-92 Test: G618.0.0 CHAR

Parameter	Result	Det. Limit	Units
SILICA	16	1.3	mg/L

HARDNESS APHA 314A

Analyst: D. WARNER Analysis Date: 22-OCT-92 Test: G608.0.0

Parameter	Result	Det. Limit	Units
HARDNESS	1700	1.0	mg CaCO3/L

TOTAL SUSPENDED SOLIDS EPA 160.2

Analyst: J. MATTEI Analysis Date: 22-SEP-92 Test: G403.7.0

Parameter	Result	Det. Limit	Units
SUSPENDED SOLIDS	30	5	mg/L

DISSOLVED SOLIDS EPA 160.1

Analyst: J. MATTEI Analysis Date: 24-SEP-92 Test: G402.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	2700	5	mg/L

NITROGEN, TOTAL KJELDAHL (TKN) EPA 351.3

Analyst: M. VAZIRNEZAMI Analysis Date: 09-OCT-92 Test: G202.4.0

Parameter	Result	Det. Limit	Units
NITROGEN, KJELDAHL	18	6	mg/L

ALKALINITY (CARBONATE) EPA 310.1

Analyst: M. VAZIRNEZAMI Analysis Date: 01-OCT-92 Test: G611.2.0

Parameter	Result	Det. Limit	Units
ALKALINITY	BDL	4	mg/L

CHLORIDE (ION SELECTIVE ELECTRODE) SM 408 14TH ED

Analyst: T. NOHA Analysis Date: 23-SEP-92 Test: G102.3.0

Parameter	Result	Det. Limit	Units
CHLORIDE	1200	330	mg/L

FLUORIDE (ION SELECTIVE ELECTRODE) EPA 340.2

Analyst: T. NOHA Analysis Date: 29-SEP-92 Test: G104.4.0

Parameter	Result	Det. Limit	Units
FLUORIDE	0.6	0.2	mg/L

SULFATE (TURBIDIMETRIC) EPA 375.4

Analyst: T. NOHA Analysis Date: 25-SEP-92 Test: G108.5.0

Parameter	Result	Det. Limit	Units
SULFATE	260	130	mg/L

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 02-OCT-92 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 08-OCT-92 Test: P129.2.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M401.9.0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M402.9.0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M404.9.0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	1.7	0.020	mg/L

BORON (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M407.9.0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BORON	BDL	0.50	mg/L

CADMIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M408.9.0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	0.098	0.020	mg/L

CALCIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 22-OCT-92 Instrument: ICP Test: M409.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CALCIUM	410.	0.5	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

COPPER (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M412.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.040	mg/L

IRON (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M415.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
IRON	56.	0.040	mg/L

LEAD (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
[illegible]D	0.11	0.10	mg/L

MAGNESIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 22-OCT-92 Instrument: ICP Test: M418.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MAGNESIUM	150.	1.0	mg/L

MANGANESE (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M419.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MANGANESE	1.1	0.020	mg/L

POTASSIUM FAA EPA 258.1

Analyst: J. SCHOTT Analysis Date: 27-OCT-92 Instrument: FAA Test: M426.1.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
POTASSIUM	6.4	0.50	mg/L

SODIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 22-OCT-92 Instrument: ICP Test: M431.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
SODIUM	120.	2.0	mg/L

HERITAGE LABORATORIES, INC. Lab Sample ID: C140685

ZINC (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	93.	0.070	mg/L

GFAA ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 03-OCT-92 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2

Analyst: D. ROBERTS Analysis Date: 12-OCT-92 Instrument: GFAA Test: M403.2.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.050	mg/L

PHENOLS DISTILLATION EPA 420.1

Analyst: T. NOHA Analysis Date: 23-SEP-92 Test: P405.9.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

PHENOLS 4AAP (MANUAL) EPA 420.1

Analyst: T. NOHA Analysis Date: 24-SEP-92 Test: 0413.0.0
Prep: PHENOLS DISTILLATION EPA 420.1 P405.9.0

Parameter	Result	Det. Limit	Units
PHENOLS	BDL	0.005	mg/L

VOLATILE ORGANICS SW846-8240

Analyst: L. DIAZ Analysis Date: 22-SEP-92 Instrument: GC/MS VOA Test: 0510.3.0

Parameter	Result	Det. Limit	Units
CARBON DISULFIDE	BDL	5	ug/L
CHLOROFORM	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	5	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	93		% Rec
TOLUENE-D8	94		% Rec
BROMOFLUOROBENZENE	109		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1969.

Quality Assurance Officer: H. Busch

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 819 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	21-SEP-92		C140687
	Complete 27-OCT-92	PO Number	
	Printed 30-OCT-92	Sampled 18-SEP-92 17:15	

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
WATER 8 CONTAINERS - GRAB
SAMPLE I.D.: MW 10B

SILICA (TOTAL) EPA 370.1

Analyst: G. BAXTER Analysis Date: 30-SEP-92 Test: G618.0.0 CHAR

Parameter	Result	Det. Limit	Units
SILICA	50	2.5	mg/L

HARDNESS APHA 314A

Analyst: D. WARNER Analysis Date: 22-OCT-92 Test: G608.0.0

Parameter	Result	Det. Limit	Units
HARDNESS	1700	1.0	mg CaCO3/L

TOTAL SUSPENDED SOLIDS EPA 160.2

Analyst: J. MATTEI Analysis Date: 22-SEP-92 Test: G403.7.0

Parameter	Result	Det. Limit	Units
SUSPENDED SOLIDS	99	5	mg/L

DISSOLVED SOLIDS EPA 160.1

Analyst: J. MATTEI Analysis Date: 24-SEP-92 Test: G402.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	3600	5	mg/L

NITROGEN, TOTAL KJELDAHL (TKN) EPA 351.3

Analyst: M. VAZIRNEZAMI Analysis Date: 09-OCT-92 Test: G202.4.0

Parameter	Result	Det. Limit	Units
NITROGEN, KJELDAHL	7	6	mg/L

ALKALINITY (CARBONATE) EPA 310.1

Analyst: M. VAZIRNEZAMI Analysis Date: 01-OCT-92 Test: G611.2.0

Parameter	Result	Det. Limit	Units
ALKALINITY	BDL	4	mg/L

CHLORIDE (ION SELECTIVE ELECTRODE) SM 408 14TH ED

Analyst: T. NOHA Analysis Date: 23-SEP-92 Test: G102.3.0

Parameter	Result	Det. Limit	Units
CHLORIDE	130	25	mg/L

FLUORIDE (ION SELECTIVE ELECTRODE) EPA 340.2

Analyst: T. NOHA Analysis Date: 29-SEP-92 Test: G104.4.0

Parameter	Result	Det. Limit	Units
FLUORIDE	0.4	0.1	mg/L

SULFATE (TURBIDIMETRIC) EPA 375.4

Analyst: T. NOHA Analysis Date: 25-SEP-92 Test: G108.5.0

Parameter	Result	Det. Limit	Units
SULFATE	1600	630	mg/L

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 02-OCT-92 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 08-OCT-92 Test: P129.2.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M401.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.30	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.20	mg/L

BARIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	0.092	0.020	mg/L

BORON (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M407.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BORON	BDL	0.50	mg/L

CADMIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	BDL	0.020	mg/L

CALCIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 22-OCT-92 Instrument: ICP Test: M409.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CALCIUM	640	0.5	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M410.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

COPPER (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M412.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.040	mg/L

IRON (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M415.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
IRON	64.	0.040	mg/L

LEAD (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M416.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
	BDL	0.10	mg/L

MAGNESIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 22-OCT-92 Instrument: ICP Test: M418.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MAGNESIUM	24.	1.0	mg/L

MANGANESE (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M419.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MANGANESE	0.85	0.020	mg/L

POTASSIUM FAA EPA 258.1

Analyst: J. SCHOTT Analysis Date: 27-OCT-92 Instrument: FAA Test: M426.1.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
POTASSIUM	21	0.50	mg/L

SODIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 22-OCT-92 Instrument: ICP Test: M431.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
SODIUM	220.	2.0	mg/L

HERITAGE LABORATORIES, INC. Lab Sample ID: C140687

ZINC (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 06-OCT-92 Instrument: ICP Test: M439.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	BDL	0.070	mg/L

GFAA ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 03-OCT-92 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2

Analyst: D. ROBERTS Analysis Date: 12-OCT-92 Instrument: GFAA Test: M403.2.0
Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	0.43	0.20	mg/L

PHENOLS DISTILLATION EPA 420.1

Analyst: T. NOMA Analysis Date: 01-OCT-92 Test: P405.9.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

PHENOLS 4AAP (MANUAL) EPA 420.1

Analyst: T. NOMA Analysis Date: 02-OCT-92 Test: 0413.0.0
Prep: PHENOLS DISTILLATION EPA 420.1 P405.9.0

Parameter	Result	Det. Limit	Units
PHENOLS	BDL	0.005	mg/L

VOLATILE ORGANICS SW846-8240

Analyst: L. DIAZ Analysis Date: 25-SEP-92 Instrument: GC/MS VOA Test: 0510.3.0

Parameter	Result	Det. Limit	Units
CARBON DISULFIDE	BDL	5	ug/L
CHLOROFORM	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	110		% Rec
TOLUENE-D8	106		% Rec
BROMOFLUOROBENZENE	108		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1969.

Quality Assurance Officer: _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC. 319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	21-SEP-92		C140684
	Complete: 27-OCT-92	PO Number:	
	Printed: 28-OCT-92	Sampled: 17-SEP-92 08:20	

Report To	Bill To
DAVID EPPS DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809	ACCOUNTS PAYABLE DU PONT ENVIRONMENTAL REMEDIATION SERVIC 300 BELLEVUE PARKWAY WILMINGTON, DE 19809

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
WATER 8 CONTAINERS - GRAB
SAMPLE I.D.: MW 17A

SILICA (TOTAL) EPA 370.1

Analyst: G. BAXTER Analysis Date: 30-SEP-92 Test: G618.0.0 CHAR

Parameter	Result	Det. Limit	Units
SILICA	16	1.3	mg/L

HARDNESS APHA 314A

Analyst: D. WARNER Analysis Date: 22-OCT-92 Test: G608.0.0

Parameter	Result	Det. Limit	Units
HARDNESS	2000	0.1	mg CaCO3/L

TOTAL SUSPENDED SOLIDS EPA 160.2

Analyst: J. MATTEI Analysis Date: 22-SEP-92 Test: G403.7.0

Parameter	Result	Det. Limit	Units
SUSPENDED SOLIDS	55	5	mg/L

DISSOLVED SOLIDS EPA 160.1

Analyst: J. MATTEI Analysis Date: 24-SEP-92 Test: G402.7.0

Parameter	Result	Det. Limit	Units
SOLIDS	3000	5	mg/L

NITROGEN, TOTAL KJELDAHL (TKN) EPA 351.3

Analyst: M. VAZIRNEZAMI Analysis Date: 09-OCT-92 Test: G202.4.0

Parameter	Result	Det. Limit	Units
NITROGEN, KJELDAHL	22	6	mg/L

ALKALINITY (CARBONATE) EPA 310.1

Analyst: M. VAZIRNEZAMI Analysis Date: 01-OCT-92 Test: G611.2.0

Parameter	Result	Det. Limit	Units
ALKALINITY	BDL	4	mg/L

CHLORIDE (ION SELECTIVE ELECTRODE) SM 408 14TH ED

Analyst: T. NOHA Analysis Date: 23-SEP-92 Test: G102.3.0

Parameter	Result	Det. Limit	Units
CHLORIDE	1700	500	mg/L

FLUORIDE (ION SELECTIVE ELECTRODE) EPA 340.2

Analyst: T. NOHA Analysis Date: 29-SEP-92 Test: G104.4.0

Parameter	Result	Det. Limit	Units
FLUORIDE	0.63	0.3	mg/L

SULFATE (TURBIDIMETRIC) EPA 375.4

Analyst: T. NOHA Analysis Date: 25-SEP-92 Test: G108.5.0

Parameter	Result	Det. Limit	Units
SULFATE	260	130	mg/L

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 02-OCT-92 Test: P129.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

FAA OR ICP ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 08-OCT-92 Test: P129.2.1

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ALUMINUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 07-OCT-92 Instrument: ICP Test: M401.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ALUMINUM	BDL	0.3	mg/L

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 07-OCT-92 Instrument: ICP Test: M402.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ANTIMONY	BDL	0.2	mg/L

BARIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 07-OCT-92 Instrument: ICP Test: M404.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BARIUM	1.0	0.020	mg/L

BORON (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 14-OCT-92 Instrument: ICP Test: M407.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
BORON	BDL	0.50	mg/L

CADMIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 07-OCT-92 Instrument: ICP Test: M408.9.0
Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CADMIUM	0.15	0.02	mg/L

CALCIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER | Analysis Date: 22-OCT-92 | Instrument: ICP | Test: M409.9.0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CALCIUM	480.	0.5	mg/L

CHROMIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER | Analysis Date: 07-OCT-92 | Instrument: ICP | Test: M410.9.0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
CHROMIUM	BDL	0.040	mg/L

COPPER (ICP-SEQ) EPA 200.7

Analyst: D. WARNER | Analysis Date: 08-OCT-92 | Instrument: ICP | Test: M412.9.0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
COPPER	BDL	0.040	mg/L

IRON (ICP-SEQ) EPA 200.7

Analyst: D. WARNER | Analysis Date: 07-OCT-92 | Instrument: ICP | Test: M415.9.0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
IRON	68.	0.040	mg/L

LEAD (ICP-SEQ) EPA 200.7

Analyst: D. WARNER | Analysis Date: 07-OCT-92 | Instrument: ICP | Test: M416.9.0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
LEAD	0.12	0.1	mg/L

MAGNESIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER | Analysis Date: 22-OCT-92 | Instrument: ICP | Test: M418.9.0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MAGNESIUM	180.	1.0	mg/L

MANGANESE (ICP-SEQ) EPA 200.7

Analyst: D. WARNER | Analysis Date: 07-OCT-92 | Instrument: ICP | Test: M419.9.0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
MANGANESE	1.3	0.02	mg/L

POTASSIUM FAA EPA 258.1

Analyst: J. SCHOTT | Analysis Date: 27-OCT-92 | Instrument: FAA | Test: M426.1.0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.1

Parameter	Result	Det. Limit	Units
POTASSIUM	6.9	0.50	mg/L

SODIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER | Analysis Date: 22-OCT-92 | Instrument: ICP | Test: M431.9.0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
SODIUM	140	2.0	mg/L

HERITAGE LABORATORIES, INC.

Lab Sample ID: C140684

ZINC (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 14-OCT-92 Instrument: ICP Test: M439.9.0

Prep: FAA OR ICP ACID DIGESTION EPA 200.0 P129.2.0

Parameter	Result	Det. Limit	Units
ZINC	130	0.40	mg/L

GFAA ACID DIGESTION EPA 200.0

Analyst: J. ULASZEK Analysis Date: 03-OCT-92 Test: P130.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	50		mL
FINAL WEIGHT OR VOLUME	50		mL

ARSENIC GFAA EPA 206.2

Analyst: D. ROBERTS Analysis Date: 12-OCT-92 Instrument: GFAA Test: M403.2.0

Prep: GFAA ACID DIGESTION EPA 200.0 P130.2.0

Parameter	Result	Det. Limit	Units
ARSENIC	BDL	0.010	mg/L

PHENOLS DISTILLATION EPA 420.1

Analyst: T. NOHA Analysis Date: 23-SEP-92 Test: P405.9.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	500		mL
FINAL VOLUME	500		mL

PHENOLS 4AAP (MANUAL) EPA 420.1

Analyst: T. NOHA Analysis Date: 24-SEP-92 Test: 0413.0.0

Prep: PHENOLS DISTILLATION EPA 420.1 P405.9.0

Parameter	Result	Det. Limit	Units
PHENOLS	BDL	0.005	mg/L

VOLATILE ORGANICS SW846-8240

Analyst: L. DIAZ Analysis Date: 25-SEP-92 Instrument: GC/MS VOA Test: 0510.3.0

Parameter	Result	Det. Limit	Units
CARBON DISULFIDE	BDL	5	ug/L
CHLOROFORM	BDL	5	ug/L
1,1-DICHLOROETHANE	BDL	5	ug/L
1,2-DICHLOROETHANE	BDL	5	ug/L
1,1,1-TRICHLOROETHANE	BDL	5	ug/L
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	112		% Rec
TOLUENE-D8	107		% Rec
BROMOFLUOROBENZENE	98		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 1969.

Quality Assurance Officer: _____

Q-185

DUPONT ENVIRONMENTAL
QA LEVEL A
C145054 - C145063

Prepared by
Heritage Laboratories, Inc.

HERITAGE

HERITAGE LABORATORIES, INC.

1319 Marquette Dr.
Romeoville, IL 60441
Phone: 708/378-1600
FAX: 708/378-2200

REPORT PACKAGE

HERITAGE LABORATORIES, INC.
ROMEOVILLE, ILLINOIS

Sample Number(s): C142054-C142063

Analytes of Interest: VARIOUS

Instrument(s) Used: VARIOUS

DESCRIPTION	*PAGE NO.*	*COMMENTS*
CHAIN OF CUSTODY	1	ORIGINAL
CHAIN OF CUSTODY	2	LAB MADE
QUALITY ASSURANCE REPORT	3-11	C145054,C145058 INCLUDES BOTH
QUALITY ASSURANCE REPORT	12-20	C145055-57 INCLUDES ALL
QUALITY ASSURANCE REPORT	21-28	C142059
QUALITY ASSURANCE REPORT	29-36	C145060,C145061 INCLUDES BOTH
QUALITY ASSURANCE REPORT	37-44	C145062
QUALITY ASSURANCE REPORT	45-52	C145063
QUALITY CONTROL TYPES	53	DEFINITIONS

Recycled Paper

EMS HERITAGE LABORATORIES, INC.

131 Marquette Drive
Romeoville, Illinois 60441 708-378-1600

Co. Name: DUPONT ENVIRONMENTAL
Project Name: DUPONT EAST CHICAGO
Quote No.: Z111332 PO No.:

ENVIRONMENTAL PROGRAM:
CWA NPDES_____ IWP _____ SLUDGE_____
RCRA MW_____ SW _____ DISPOSAL_____
SDWA_____ CERCLA/SUPERFUND_____ (OTHER)_____

Sampled by:

Analyses Requested (Note special detection limits or methods)

Report To:
Co: DUPONT ENVIRONMENTAL REMEDIATION
Add: 300 BELLEVUE PARKWAY
SUITE 396
WILMINGTON DE 19809
Attn: TOBIN LOUNSBURY
Phone: 302 792 8996

Accelerated Turnaround Requested _____
(Subject to Additional Charge)

Result Request by: ___/___/___ (Mo Day Yr)
(Date must be Accepted and Approved by Lab.)

Sample ID:	Date:	Time:	Comp	Grab	Sample Description:	No. of Containers	KJELDAHL Nitrogen (TKN)	METALS - UN Filtered	METALS - Field Filtered	GEN CHEM - flouride, sulfate, chloride, AKK		VOLATILE ORGANICS (8240)		Phenol		Remarks:	EMS Sample No.
MW17A	9/17/92	8:20		✓	WATER 8 CONTAINERS		1	1	1	1		3		1		EACH SAMPLE:	140684
MW17B	9/17/92	17:45		✓	WATER 7 CONTAINERS		1	1	1	1		2		1		TKN - 500 ml plastic	140685
																Phenol 1000 ml Amber glass	
MW10A	9/18/92	11:30		✓	WATER 8 CONTAINERS		1	1	1	1		3		1		VOA - 40 ml vial (3)	140686
MW10B	9/18/92	17:15		✓	" "		1	1	1	1		3		1		Metals 500 ml plastic (2)	140687
																CHEM - 1000 ml plastic cube	
MW20A	9/19/92	11:00		✓	WATER 8 CONTAINERS		1	1	1	1		3		1		DARK COLOR	140688

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
Tobin Lounsbury	/			/	
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
	/			/	
Relinquished by: (Signature)	Date /Time	Received for Lab by: (Signature)	Remarks:		
	9/21/92	Kathy Lyons	PLEASE SEE QUOTE Z111332 FOR ANALYTICAL LIST - DAWN SIEKERMAN		

Distribution: Original and yellow copies accompany sample shipment to laboratory; Original copy to returned to client.

EMS HERITAGE LABORATORIES, INC.

1319 MARQUETTE DRIVE • ROMEOVILLE, IL 60441
(708) 378-1600

RELOG 02

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Co. Name: DuPont Environmental
Project Name: DuPont East Chicago
Quote No.: Z111332 PO No.:

ENVIRONMENTAL PROGRAM:
(CWA) NPDES_____ IWP _____ SLUDGE_____
RCRA MW_____ SW _____ DISPOSAL_____
SDWA_____ CERCLA/SUPERFUND_____ OTHER _____

Sampled by:

Analyses Requested: (Note special detection limits or methods)

Report To:
Co:
Add:
Attn:
Phone:

Accelerated Turnaround Requested _____ (Subject to Additional Charge)

Result Request by: ___/___/___ (Mo / Day / Yr) (Date must be Accepted and Approved by Lab.)

Sample ID:	Date:	Time:	Comp	Grab	Sample Description:	Sample Type (Matrix): DW, GW, WW, Soil, Oil, Sludge, Other	No. of Containers	Metals	Remarks:	EMS Sample No.
MW17A	9/17/92	8:20		X	C140684 (filtered)	W	1	X	no charge (100% Disc)	C142055
MW17A	9/17/92	9:20		X	C140684 (unfiltered)	W	1	X		C142055
MW17B	9/17/92	17:45		X	C140685 (filtered)	W	1	X	no charge	C142056
MW17B	9/17/92	17:45		X	C140685 (MW17B unfiltered)	W	1	X		C142057
MW10A	9/18/92	11:30		X	C140686 (MW10A filtered)	W	1	X	no charge	C142058
MW10A	9/18/92	11:30		X	C140686 (MW10A unfiltered)	W	1	X		C142059
MW10B	9/18/92	17:15		X	C140687 (MW10B filtered)	W	1	X	no charge	C142060
MW10B	9/18/92	17:15		X	C140687 (MW10B unfiltered)	W	1	X		C142061
MW20A	9/19/92	11:00		X	C140688 (MW20A filtered)	W	1	X	no charge	C142062
MW20A	9/19/92	11:00		X	C140688 (MW20A unfiltered)	W	1	X		C142063

Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
	/			/	
Relinquished by: (Signature)	Date /Time	Received by: (Signature)	Relinquished by: (Signature)	Date /Time	Received by: (Signature)
	/			/	
Relinquished by: (Signature)	Date /Time	Received for Lab by: (Signature)	Remarks:		
	11/5/92				

Distribution: Original and Yellow copy accompany sample shipment to laboratory. Pink copy retained by client.

QUALITY ASSURANCE REPORT

Service Location	Received	Lab ID
HERITAGE LABORATORIES, INC. [redacted]19 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	05-NOV-92	C142054
	Complete 18-MAR-93	PO Number RE-LOG C140684
	Printed 23-MAR-93	Sampled 17-SEP-92 08:20

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
RELOG OF SAMPLE: C140684 (FILTERED) - GRAB
SAMPLE I.D.: MW17A

ALUMINUM FAA EPA 202.1

Analyst : L. TRZUPEK | Analysis Date: 27-NOV-92 | Instrument: FAA | Test: M401.1.0
Reviewer: D. WARNER | Review Date: 30-NOV-92 | File ID: 8734 | Run: R172638

Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q603529		ALUMINUM	5.0		5.12		102	
SPI02	Q579508	C142054	ALUMINUM		1.0	BDL 1.12	mg/L	112	
DUP02	Q579507	C142054	ALUMINUM	0		BDL	mg/L		
DUP02	Q579507	C142054	ALUMINUM			BDL 0	mg/L		0
BLA01	Q603530		ALUMINUM			BDL			
CDL01	Q603531		ALUMINUM	1.0		0.91		91	
LCS	Q579505	SPEX	ALUMINUM	1.0		0.978	mg/L	98	
LCS	Q579505	SPEX	ALUMINUM	1.0		0.91	mg/L	91	
BLA02	Q579506	DI WATER	ALUMINUM			< 0.12	mg/L		
[redacted]2	Q579506	DI WATER	ALUMINUM			< 0.2	mg/L		
[redacted]LE	C142054		See Certificate of Analysis						
CCV	Q603532		ALUMINUM	10		10.8		108	
BLA01	Q603533		ALUMINUM			BDL			
CDL01	Q603536		ALUMINUM	1.0		1.12		112	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

ANTIMONY GFAA EPA 204.2

Analyst : M. BAUER | Analysis Date: 16-MAR-93 | Instrument: GFAA | Test: M402.2.0
Reviewer: S. O'NEAL | Review Date: 18-MAR-93 | File ID: 001587 | Run: R181196

Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q664355		ANTIMONY	.01		.0097	mg/L	97	
SPI02	Q579520	C142061	ANTIMONY	0	0	BDL	mg/L	0	
DUP02	Q579519	C142061	ANTIMONY	0		BDL	mg/L		0
CDL01	Q664360		ANTIMONY	.01		.0101	mg/L	101	
CCV	Q664361		ANTIMONY	.02		.0187	mg/L	93.5	
BLA01	Q664362		ANTIMONY			< .002	mg/L		
LCS	Q579517		ANTIMONY	0		BDL	mg/L	0	
BLA02	Q579518		ANTIMONY			< .002	mg/L		
SAMPLE	C142054		See Certificate of Analysis						
CDL01	Q664363		ANTIMONY	.01		.0096	mg/L	96	
[redacted]	Q664364		ANTIMONY	.02		.0181	mg/L	90.5	
[redacted]01	Q664365		ANTIMONY			< .002	mg/L		

03

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike
Q579519 Arsenic NA at less than five times d.l. +/- d.l.

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 11-NOV-92 Instrument: ICP Test: M402.9.0
Reviewer: J. SCHOTT Review Date: 12-NOV-92 File ID: Run: R171177
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q592812	SPEX	ANTIMONY	4		4.04	mg/L	101	
SPI02	Q579508	C142054	ANTIMONY	0	1.0	BDL 0.931	mg/L	93	
DUP02	Q579507	C142054	ANTIMONY	0		BDL	mg/L		
CDL01	Q592816	SPEX	ANTIMONY	0.20		0.209	mg/L	105	
BLA01	Q592810	DI	ANTIMONY			< 0.08	mg/L		
LCS	Q579505	SPEX	ANTIMONY	1.0		0.959	mg/L	96	
BLA02	Q579506	DI WATER	ANTIMONY			< 0.08	mg/L		
SAMPLE	C142054		See Certificate of Analysis						
CCV	Q592799	QC-19,STOC	ANTIMONY	4.0		4.00	mg/L	100	
BLA01	Q592800	DI	ANTIMONY			< 0.08	mg/L		
CDL01	Q592798	SPEX	ANTIMONY	0.20		0.196	mg/L	98	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike
Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

BARIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 11-NOV-92 Instrument: ICP Test: M404.9.0
Reviewer: J. SCHOTT Review Date: 12-NOV-92 File ID: Run: R171177
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q592819	PE 40 STAN	BARIUM	1.0		0.985	mg/L	99	
SPI02	Q579508	C142054	BARIUM	0.46	1.0	1.34	mg/L	88	
DUP02	Q579507	C142054	BARIUM	0.46		0.436	mg/L		5
BLA01	Q592810	DI	BARIUM			< 0.008	mg/L		
LCS	Q579505	SPEX	BARIUM	1.0		0.961	mg/L	96	
BLA02	Q579506	DI WATER	BARIUM			< 0.008	mg/L		
SAMPLE	C142054		See Certificate of Analysis						
BLA01	Q592800	DI	BARIUM			< 0.008	mg/L		

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike
Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

BORON (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 11-NOV-92 Instrument: ICP Test: M407.9.0
Reviewer: J. SCHOTT Review Date: 12-NOV-92 File ID: Run: R171177
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q592819	PE 40 STAN	BORON	1.0		1.01	mg/L	101	
ICV01	Q592812	SPEX	BORON	4.0		3.944	mg/L	99	
SPI02	Q579508	C142054	BORON	0	1.0	BDL 1.195	mg/L	120	
DUP02	Q579507	C142054	BORON	0		BDL	mg/L		
CDL01	Q592816	SPEX	BORON	0.2		0.189	mg/L	94	
BLA01	Q592810	DI	BORON			BDL	mg/L		
LCS	Q579505	SPEX	BORON	1.0		0.980	mg/L	98	
BLA02	Q579506	DI WATER	BORON			< 0.2	mg/L		

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
BLA02	Q579506	DI WATER	BORON			BDL	mg/L		
SAMPLE	C142054		See Certificate of Analysis						
CCV	Q592799	QC-19,STOC	BORON	4.0		4.014	mg/L	100	
BLA01	Q592800	DI	BORON			BDL	mg/L		
CDL01	Q592798	SPEX	BORON	0.20		0.203	mg/L	102	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

CADMIUM GFAA EPA 213.2

Analyst : J. VANSKYOCK Analysis Date: 16-MAR-93 Instrument: GFAA Test: M408.2.0
Reviewer: S. O'NEAL Review Date: 18-MAR-93 File ID: D01315 Run: R181199
Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q664382		CADMIUM	.001		.000945	mg/L	94.5	
SPI02	Q579520	C142061	CADMIUM	0	.05	.0575	mg/L	115	
DUP02	Q579519	C142061	CADMIUM	0		BDL	mg/L		0
CDL01	Q664387		CADMIUM	.002		.00222	mg/L	111	
CCV	Q664388		CADMIUM	.002		.00197	mg/L	98.5	
BLA01	Q664389		CADMIUM			< .0004	mg/L		
LCS	Q579517		CADMIUM	.05		.05	mg/L	100	
BLA02	Q579518		CADMIUM			< .0004	mg/L		
SAMPLE	C142054		See Certificate of Analysis						
CDL01	Q664390		CADMIUM	.002		.0022	mg/L	110	
CCV	Q664391		CADMIUM	.002		.00211	mg/L	105.5	
BLA01	Q664392		CADMIUM			< .0004	mg/L		

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike
Q579519 Arsenic NA at less than five times d.l. +/- d.l.

CADMIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 11-NOV-92 Instrument: ICP Test: M408.9.0
Reviewer: J. SCHOTT Review Date: 12-NOV-92 File ID: Run: R171177
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q592819	PE 40 STAN	CADMIUM	0.50		0.518	mg/L	104	
ICV01	Q592812	SPEX	CADMIUM	4.0		4.04	mg/L	101	
SPI02	Q579508	C142054	CADMIUM	0.15	1.0	1.04	mg/L	89	
DUP02	Q579507	C142054	CADMIUM	0.15		0.153	mg/L		2
CDL01	Q592816	SPEX	CADMIUM	0.20		0.207	mg/L	104	
BLA01	Q592810	DI	CADMIUM			< 0.008	mg/L		
LCS	Q579505	SPEX	CADMIUM	1.0		0.949	mg/L	95	
BLA02	Q579506	DI WATER	CADMIUM			< 0.008	mg/L		
SAMPLE	C142054		See Certificate of Analysis						
CCV	Q592799	QC-19,STOC	CADMIUM	4.0		4.11	mg/L	103	
BLA01	Q592800	DI	CADMIUM			< 0.008	mg/L		
CDL01	Q592798	SPEX	CADMIUM	0.20		0.219	mg/L	110	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

05

CALCIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 17-NOV-92 Instrument: ICP Test: M409.9.0
Reviewer: . Review Date: File ID: Run: R171799
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q597439	PE 40 STAN	CALCIUM	5.0		5.09	mg/L	102	
ICV01	Q597437	SPEX-XEMS8	CALCIUM	100		100.	mg/L	100	
SPI02	Q579524	C142057	CALCIUM	410	5.0	*	mg/L		
DUP02	Q579523	C142057	CALCIUM	400		410	mg/L		1
CDL01	Q597441	SPEX	CALCIUM	5.20			mg/L	0	
ICS-A	Q597435		CALCIUM	125.		129.01	mg/L	103	
ICS-B	Q597436		CALCIUM	125.		129.87	mg/L	104	
BLA01	Q597438	DI	CALCIUM			< 2.0	mg/L		
LCS	Q579521		CALCIUM	5.0		4.43	mg/L	89	
BLA02	Q579522		CALCIUM			< 2.0	mg/L		
SAMPLE	C142054		See Certificate of Analysis						
CCV	Q597433	SPEX-XEMS8	CALCIUM	100		102.	mg/L	102	
BLA01	Q597434	DI	CALCIUM			< 2.0	mg/L		
CDL01	Q597429	SPEX	CALCIUM	5.2		5.9	mg/L	113	
ICS-A	Q597430		CALCIUM	125		137	mg/L	110	
ICS-B	Q597431		CALCIUM	125		137	mg/L	110	

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

CHROMIUM (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 11-NOV-92 Instrument: ICP Test: M410.9.0
Reviewer: J. SCHOTT Review Date: 12-NOV-92 File ID: Run: R171177
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q592819	PE 40 STAN	CHROMIUM	2.0		2.06	mg/L	103	
ICV01	Q592812	SPEX	CHROMIUM	4.0		4.05	mg/L	101	
SPI02	Q579508	C142054	CHROMIUM	0	1.0	BDL 0.907	mg/L	91	
DUP02	Q579507	C142054	CHROMIUM	0		BDL	mg/L		
CDL01	Q592816	SPEX	CHROMIUM	0.20		0.201	mg/L	101	
BLA01	Q592810	DI	CHROMIUM			< 0.016	mg/L		
LCS	Q579505	SPEX	CHROMIUM	1.0		0.962	mg/L	96	
BLA02	Q579506	DI WATER	CHROMIUM			< 0.016	mg/L		
SAMPLE	C142054		See Certificate of Analysis						
CCV	Q592799	QC-19,STOC	CHROMIUM	4.0		4.07	mg/L	102	
BLA01	Q592800	DI	CHROMIUM			< 0.016	mg/L		
CDL01	Q592798	SPEX	CHROMIUM	0.20		0.214	mg/L	107	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

COPPER (ICP-SEQ) EPA 200.7

Analyst: D. WARNER Analysis Date: 12-NOV-92 Instrument: ICP Test: M412.9.0
Reviewer: . Review Date: File ID: Run: R171281
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q593760	PE 40 STAN	COPPER	2.0		2.17	mg/L	109	
ICV01	Q593765	SPEX-XEMS8	COPPER	5		4.94	mg/L	99	
SPI02	Q579508	C142054	COPPER	0	1.0	0.933	mg/L	93	
DUP02	Q579507	C142054	COPPER	0		BDL	mg/L		
CDL01	Q593762	SPEX	COPPER	0.20		0.211	mg/L	106	

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
BLA01	Q593766	DI	COPPER			< 0.016	mg/L		
LCS	Q579505	SPEX	COPPER	1.0		0.966	mg/L	97	
BL	Q579506	DI WATER	COPPER			< 0.016	mg/L		
SAMPLE	C142054		See Certificate of Analysis						
CCV	Q593767	SPEX-XEMS8	COPPER	5.0		4.92	mg/L	98	
BLA01	Q593768	DI	COPPER			< 0.016	mg/L		
CDL01	Q593769	SPEX	COPPER	0.20		0.215	mg/L	108	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

IRON (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 11-NOV-92 Instrument: ICP Test: M415.9.0
Reviewer: J. SCHOTT Review Date: 12-NOV-92 File ID: Run: R171177

Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q592819	PE 40 STAN	IRON	2.0		2.01	mg/L	101	
ICV01	Q592812	SPEX	IRON	4.0		4.00	mg/L	100	
SP102	Q579508	C142054	IRON	73.	1.0	74.2	mg/L	120	
DUP02	Q579507	C142054	IRON	73.		73.5	mg/L		1
CDL01	Q592816	SPEX	IRON	0.20		0.208	mg/L	104	
BLA01	Q592810	DI	IRON			< 0.016	mg/L		
LCS	Q579505	SPEX	IRON	1.0		0.986	mg/L	99	
BLA02	Q579506	DI WATER	IRON			< 0.016	mg/L		
SAMPLE	C142054		See Certificate of Analysis						
CCV	Q592799	QC-19,STOC	IRON	4.0		4.05	mg/L	101	
BLA	Q592800	DI	IRON			< 0.016	mg/L		
CDL01	Q592798	SPEX	IRON	0.20		0.217	mg/L	109	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

LEAD GFAA EPA 239.2

Analyst : W. WATNESS Analysis Date: 16-MAR-93 Instrument: GFAA Test: M416.2.0
Reviewer: S. O'NEAL Review Date: 18-MAR-93 File ID: D01615 Run: R181201

Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q664396		LEAD	.01		.0107	mg/L	107	
SP102	Q579520	C142061	LEAD	0	.05	.06	mg/L	120	
DUP02	Q579519	C142061	LEAD	0		BDL	mg/L		0
CDL01	Q664400		LEAD	.01		.0109	mg/L	109	
CCV	Q664401		LEAD	.02		.0209	mg/L	104.5	
BLA01	Q664402		LEAD			< .002	mg/L		
LCS	Q579517		LEAD	.05		.0665	mg/L	133	
BLA02	Q579518		LEAD			< .002	mg/L		
SAMPLE	C142054		See Certificate of Analysis						
CCV	Q664403		LEAD	.02		.0207	mg/L	103.5	
BLA01	Q664404		LEAD			< .002	mg/L		
CDL01	Q664407		LEAD	.01		.0109	mg/L	109	

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike

Comments

Q579519 Arsenic NA at less than five times d.l. +/- d.l.

LEAD (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 11-NOV-92 Instrument: ICP Test: M416.9.0
Reviewer: J. SCHOTT Review Date: 12-NOV-92 File ID: Run: R171177
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q592819	PE 40 STAN	LEAD	2.0		2.04	mg/L	102	
ICV01	Q592812	SPEX	LEAD	4.0		4.10	mg/L	103	
SPI02	Q579508	C142054	LEAD	0.12	1.0	1.05	mg/L	93	
DUP02	Q579507	C142054	LEAD	0.12		0.116	mg/L		3
CDL01	Q592816	SPEX	LEAD	0.20		0.212	mg/L	106	
BLA01	Q592810	DI	LEAD			< 0.04	mg/L		
LCS	Q579505	SPEX	LEAD	1.0		0.940	mg/L	94	
BLA02	Q579506	DI WATER	LEAD			< 0.04	mg/L		
SAMPLE	C142054		See Certificate of Analysis						
CCV	Q592799	QC-19,STOC	LEAD	4.0		4.14	mg/L	104	
BLA01	Q592800	DI	LEAD			< 0.04	mg/L		
CDL01	Q592798	SPEX	LEAD	0.20		0.211	mg/L	106	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

MAGNESIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 17-NOV-92 Instrument: ICP Test: M418.9.0
Reviewer: Review Date: File ID: Run: R171799
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q597439	PE 40 STAN	MAGNESIUM	5.0		5.06	mg/L	101	
ICV01	Q597437	SPEX-XEMS8	MAGNESIUM	100		101.	mg/L	101	
SPI02	Q579524	C142057	MAGNESIUM	160	5.0	*	mg/L		
DUP02	Q579523	C142057	MAGNESIUM	160		160	mg/L		2
CDL01	Q597441	SPEX	MAGNESIUM	5.20			mg/L	0	
ICS-A	Q597435		MAGNESIUM	125.		127.93	mg/L	102	
ICS-B	Q597436		MAGNESIUM	125.		126.45	mg/L	101	
BLA01	Q597438	DI	MAGNESIUM			< 2.0	mg/L		
LCS	Q579521		MAGNESIUM	5.0		4.38	mg/L	88	
BLA02	Q579522		MAGNESIUM			< 2.0	mg/L		
SAMPLE	C142054		See Certificate of Analysis						
CCV	Q597433	SPEX-XEMS8	MAGNESIUM	100		97.7	mg/L	98	
BLA01	Q597434	DI	MAGNESIUM			< 2.0	mg/L		
CDL01	Q597429	SPEX	MAGNESIUM	5.2		5.7	mg/L	110	
ICS-A	Q597430		MAGNESIUM	125		138	mg/L	110	
ICS-B	Q597431		MAGNESIUM	125		138	mg/L	110	

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

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MANGANESE (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 11-NOV-92 Instrument: ICP Test: M419.9.0
Reviewer: J. SCHOTT Review Date: 12-NOV-92 File ID: Run: R171177
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q592819	PE 40 STAN	MANGANESE	2.0		2.09	mg/L	105	
ICV01	Q592812	SPEX	MANGANESE	4		4.08	mg/L	102	
SPI02	Q579508	C142054	MANGANESE	1.4	1.0	2.34	mg/L	94	
DUP02	Q579507	C142054	MANGANESE	1.4		1.45	mg/L		4
CDL01	Q592816	SPEX	MANGANESE	0.20		0.210	mg/L	105	
BLA01	Q592810	DI	MANGANESE			< 0.008	mg/L		
LCS	Q579505	SPEX	MANGANESE	1.0		0.991	mg/L	99	
BLA02	Q579506	DI WATER	MANGANESE			< 0.008	mg/L		
SAMPLE	C142054		See Certificate of Analysis						
CCV	Q592799	QC-19,STOC	MANGANESE	4.0		4.15	mg/L	104	
BLA01	Q592800	DI	MANGANESE			< 0.008	mg/L		
CDL01	Q592798	SPEX	MANGANESE	0.20		0.214	mg/L	107	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

POTASSIUM FAA EPA 258.1

Analyst : L. TRZUPEK Analysis Date: 01-DEC-92 Instrument: FAA Test: M426.1.0
Reviewer: D. WARNER Review Date: 04-DEC-92 File ID: 8752 Run: R173072
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV	Q606477		POTASSIUM	10		9.3		93	
ICV01	Q606494		POTASSIUM	10		9.8		98	
SPI02	Q579524	C142057	POTASSIUM	5.9	5.0	9.77	mg/L	78	
DUP02	Q579523	C142057	POTASSIUM	5.9		5.9	mg/L		0
CCV	Q606482		POTASSIUM	25		23.5		94	
BLA01	Q606495		POTASSIUM			BDL			
CDL01	Q606496		POTASSIUM	1.0		1.0		100	
LCS	Q579521		POTASSIUM	5.0		4.18	mg/L	84	
BLA02	Q579522		POTASSIUM			< 0.2	mg/L		
SAMPLE	C142054		See Certificate of Analysis						
CCV	Q606497		POTASSIUM	25		25		100	
BLA01	Q606498		POTASSIUM			BDL			
CDL01	Q606501		POTASSIUM	1.0		0.98		98	

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

SODIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 17-NOV-92 Instrument: ICP Test: M431.9.0
Reviewer: . Review Date: File ID: Run: R171799
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q597439	PE 40 STAN	SODIUM	5.0		4.74	mg/L	95	
ICV01	Q597437	SPEX-XEMS8	SODIUM	100		104.	mg/L	104	
SPI02	Q579524	C142057	SODIUM	65	5.0	*	mg/L		
DUP	Q579523	C142057	SODIUM	85		90	mg/L		6
CDL	Q597441	SPEX	SODIUM	5.20			mg/L	0	
ICS-A	Q597435		SODIUM				mg/L		
ICS-B	Q597436		SODIUM	0		0	mg/L		
BLA01	Q597438	DI	SODIUM			< 2.0	mg/L		

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
LCS	Q579521		SODIUM	5.0		4.77	mg/L	95	
BLA02	Q579522		SODIUM			< 2.0	mg/L		
SAMPLE	C142054		See Certificate of Analysis						
CCV	Q597433	SPEX-XEMS8	SODIUM	100		101	mg/L	101	
BLA01	Q597434	DI	SODIUM			< 2.0	mg/L		
CDL01	Q597429	SPEX	SODIUM	5.2		5.8	mg/L	115	
ICS-A	Q597430		SODIUM	0		0	mg/L	0	
ICS-B	Q597431		SODIUM	0		0	mg/L	0	

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

ZINC (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 11-NOV-92 Instrument: ICP Test: M439.9.0
Reviewer: J. SCHOTT Review Date: 12-NOV-92 File ID: Run: R171177

Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q592819	PE 40 STAN	ZINC	2.0		2.07	mg/L	104	
ICV01	Q592812	SPEX	ZINC	4.0		4.06	mg/L	102	
SPI02	Q579508	C142054	ZINC	130.	1.0	*	mg/L		
DUP02	Q579507	C142054	ZINC	130.		145	mg/L		10
CDL01	Q592816	SPEX	ZINC	0.20		0.208	mg/L	104	
BLA01	Q592810	DI	ZINC			< 0.016	mg/L		
LCS	Q579505	SPEX	ZINC	1.0		0.962	mg/L	96	
BLA02	Q579506	DI WATER	ZINC			< 0.016	mg/L		
SAMPLE	C142054		See Certificate of Analysis						
CCV	Q592799	QC-19,STOC	ZINC	4.0		4.06	mg/L	102	
BLA01	Q592800	DI	ZINC			< 0.016	mg/L		
CDL01	Q592798	SPEX	ZINC	0.20		0.216	mg/L	108	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

ARSENIC GFAA EPA 206.2

Analyst : D. WARNER Analysis Date: 23-NOV-92 Instrument: GFAA Test: M403.2.0
Reviewer: J. SCHOTT Review Date: 25-NOV-92 File ID: 8727 Run: R172375

Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q601937		ARSENIC	0.0200		0.0201		100	
SPI02	Q579520	C142061	ARSENIC			NA	mg/L		
DUP02	Q579519	C142061	ARSENIC			NA	mg/L		
CDL01	Q601939		ARSENIC	0.0200		0.0211		106	
CCV	Q601944		ARSENIC	0.0200		0.0186		93	
BLA01	Q601945		ARSENIC			BDL			
LCS	Q579517		ARSENIC	0.10		0.081	mg/L	81	
BLA02	Q579518		ARSENIC			< 0.004	mg/L		
SAMPLE	C142054		See Certificate of Analysis						
CCV	Q601946		ARSENIC	0.0200		0.0190		95	
BLA01	Q601951		ARSENIC			BDL			

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike
Q579519 Arsenic NA at less than five times d.l. +/- d.l.

Notes

BDL	*Below Detection Limit*
	Less Than Lower Detection Limit
	See Note for Parameter
NA	*Not Applicable*

Quality Assurance Officer: _____

QUALITY ASSURANCE REPORT

Service Location	Received	Lab ID
HERITAGE LABORATORIES, INC. [redacted]9 MARQUETTE DRIVE [redacted]MEOVILLE, IL 60441 (708)378-1600	05-NOV-92	C142055
	Complete 18-MAR-93	PO Number RE-LOG C140684
	Printed 23-MAR-93	Sampled 17-SEP-92 08:20

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
RELOG OF SAMPLE: C140684 (UNFILTERED) - GRAB
SAMPLE I.D.: MW17A

ALUMINUM FAA EPA 202.1

Analyst : L. TRZUPEK — Analysis Date: 27-NOV-92 — Instrument: FAA — Test: M401.1.0
Reviewer: D. WARNER — Review Date: 30-NOV-92 — File ID: 8734 — Run: R172638
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q603529		ALUMINUM	5.0		5.12		102	
DUP02	Q579507	C142054	ALUMINUM	0		BDL	mg/L		
DUP02	Q579507	C142054	ALUMINUM			BDL 0	mg/L		0
SPI02	Q579508	C142054	ALUMINUM		1.0	BDL 1.12	mg/L	112	
CDL01	Q603531		ALUMINUM	1.0		0.91		91	
CCV	Q603532		ALUMINUM	10		10.8		108	
BLA01	Q603533		ALUMINUM			BDL			
LCS	Q579505	SPEX	ALUMINUM	1.0		0.978	mg/L	98	
LCS	Q579505	SPEX	ALUMINUM	1.0		0.91	mg/L	91	
[redacted]	Q579506	DI WATER	ALUMINUM			< 0.12	mg/L		
[redacted]	Q579506	DI WATER	ALUMINUM			< 0.2	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
CCV	Q603534		ALUMINUM	10		11.0		110	
BLA01	Q603535		ALUMINUM			BDL			
CDL01	Q603536		ALUMINUM	1.0		1.12		112	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

ANTIMONY GFAA EPA 204.2

Analyst : M. BAUER — Analysis Date: 16-MAR-93 — Instrument: GFAA — Test: M402.2.0
Reviewer: S. O'NEAL — Review Date: 18-MAR-93 — File ID: 001587 — Run: R181196
Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q664355		ANTIMONY	.01		.0097	mg/L	97	
SPI02	Q579520	C142061	ANTIMONY	0	0	BDL	mg/L	0	
DUP02	Q579519	C142061	ANTIMONY	0		BDL	mg/L		0
CDL01	Q664360		ANTIMONY	.01		.0101	mg/L	101	
CCV	Q664361		ANTIMONY	.02		.0187	mg/L	93.5	
BLA01	Q664362		ANTIMONY			< .002	mg/L		
LCS	Q579517		ANTIMONY	0		BDL	mg/L	0	
BLA02	Q579518		ANTIMONY			< .002	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
[redacted]	Q664363		ANTIMONY	.01		.0096	mg/L	96	
[redacted]	Q664364		ANTIMONY	.02		.0181	mg/L	90.5	
BLA01	Q664365		ANTIMONY			< .002	mg/L		

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike
Q579519 Arsenic NA at less than five times d.l. +/- d.l.

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 11-NOV-92 Instrument: ICP Test: M402.9.0
Reviewer: J. SCHOTT Review Date: 12-NOV-92 File ID: Run: R171177
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q592812	SPEX	ANTIMONY	4		4.04	mg/L	101	
SPI02	Q579508	C142054	ANTIMONY	0	1.0	BDL 0.931	mg/L	93	
DUP02	Q579507	C142054	ANTIMONY	0		BDL	mg/L		
CDL01	Q592816	SPEX	ANTIMONY	0.20		0.209	mg/L	105	
BLA01	Q592810	DI	ANTIMONY			< 0.08	mg/L		
LCS	Q579505	SPEX	ANTIMONY	1.0		0.959	mg/L	96	
BLA02	Q579506	DI WATER	ANTIMONY			< 0.08	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
CCV	Q592799	QC-19,STOC	ANTIMONY	4.0		4.00	mg/L	100	
BLA01	Q592800	DI	ANTIMONY			< 0.08	mg/L		
CDL01	Q592798	SPEX	ANTIMONY	0.20		0.196	mg/L	98	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike
Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

BARIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 11-NOV-92 Instrument: ICP Test: M404.9.0
Reviewer: J. SCHOTT Review Date: 12-NOV-92 File ID: Run: R171177
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q592819	PE 40 STAN	BARIUM	1.0		0.985	mg/L	99	
SPI02	Q579508	C142054	BARIUM	0.46	1.0	1.34	mg/L	88	
DUP02	Q579507	C142054	BARIUM	0.46		0.436	mg/L		5
BLA01	Q592810	DI	BARIUM			< 0.008	mg/L		
LCS	Q579505	SPEX	BARIUM	1.0		0.961	mg/L	96	
BLA02	Q579506	DI WATER	BARIUM			< 0.008	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
BLA01	Q592800	DI	BARIUM			< 0.008	mg/L		

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike
Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

BORON (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 11-NOV-92 Instrument: ICP Test: M407.9.0
Reviewer: J. SCHOTT Review Date: 12-NOV-92 File ID: Run: R171177
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q592819	PE 40 STAN	BORON	1.0		1.01	mg/L	101	
ICV01	Q592812	SPEX	BORON	4.0		3.944	mg/L	99	
SPI02	Q579508	C142054	BORON	0	1.0	BDL 1.195	mg/L	120	
DUP02	Q579507	C142054	BORON	0		BDL	mg/L		
CDL01	Q592816	SPEX	BORON	0.2		0.189	mg/L	94	
BLA01	Q592810	DI	BORON			BDL	mg/L		
LCS	Q579505	SPEX	BORON	1.0		0.980	mg/L	98	
BLA02	Q579506	DI WATER	BORON			< 0.2	mg/L		

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
BLA02	Q579506	DI WATER	BORON			BDL	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
	Q592799	QC-19,STOC	BORON	4.0		4.014	mg/L	100	
BLA01	Q592800	DI	BORON			BDL	mg/L		
CDL01	Q592798	SPEX	BORON	0.20		0.203	mg/L	102	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

CADMIUM GFAA EPA 213.2

Analyst : J. VANSKYOCK Analysis Date: 16-MAR-93 Instrument: GFAA Test: M408.2.0
Reviewer: S. D'NEAL Review Date: 18-MAR-93 File ID: 001315 Run: R181199
Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q664382		CADMIUM	.001		.000945	mg/L	94.5	
SPI02	Q579520	C142061	CADMIUM	0	.05	.0575	mg/L	115	
DUP02	Q579519	C142061	CADMIUM	0		BDL	mg/L		0
CDL01	Q664387		CADMIUM	.002		.00222	mg/L	111	
CCV	Q664388		CADMIUM	.002		.00197	mg/L	98.5	
BLA01	Q664389		CADMIUM			< .0004	mg/L		
LCS	Q579517		CADMIUM	.05		.05	mg/L	100	
BLA02	Q579518		CADMIUM			< .0004	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
CDL01	Q664390		CADMIUM	.002		.0022	mg/L	110	
CCV	Q664391		CADMIUM	.002		.00211	mg/L	105.5	
[illegible]01	Q664392		CADMIUM			< .0004	mg/L		

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike
Q579519 Arsenic NA at less than five times d.l. +/- d.l.

CADMIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 11-NOV-92 Instrument: ICP Test: M408.9.0
Reviewer: J. SCHOTT Review Date: 12-NOV-92 File ID: Run: R171177
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q592819	PE 40 STAN	CADMIUM	0.50		0.518	mg/L	104	
ICV01	Q592812	SPEX	CADMIUM	4.0		4.04	mg/L	101	
SPI02	Q579508	C142054	CADMIUM	0.15	1.0	1.04	mg/L	89	
DUP02	Q579507	C142054	CADMIUM	0.15		0.153	mg/L		2
CDL01	Q592816	SPEX	CADMIUM	0.20		0.207	mg/L	104	
BLA01	Q592810	DI	CADMIUM			< 0.008	mg/L		
LCS	Q579505	SPEX	CADMIUM	1.0		0.949	mg/L	95	
BLA02	Q579506	DI WATER	CADMIUM			< 0.008	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
CCV	Q592799	QC-19,STOC	CADMIUM	4.0		4.11	mg/L	103	
BLA01	Q592800	DI	CADMIUM			< 0.008	mg/L		
CDL01	Q592798	SPEX	CADMIUM	0.20		0.219	mg/L	110	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

CALCIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 17-NOV-92 Instrument: ICP Test: M409.9.0
Reviewer: . Review Date: File ID: Run: R171799
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q597439	PE 40 STAN	CALCIUM	5.0		5.09	mg/L	102	
ICV01	Q597437	SPEX-XEMS8	CALCIUM	100		100.	mg/L	100	
SPI02	Q579524	C142057	CALCIUM	410	5.0	*	mg/L		
DUP02	Q579523	C142057	CALCIUM	400		410	mg/L		1
CDL01	Q597441	SPEX	CALCIUM	5.20			mg/L	0	
ICS-A	Q597435		CALCIUM	125.		129.01	mg/L	103	
ICS-B	Q597436		CALCIUM	125.		129.87	mg/L	104	
BLA01	Q597438	DI	CALCIUM			< 2.0	mg/L		
LCS	Q579521		CALCIUM	5.0		4.43	mg/L	89	
BLA02	Q579522		CALCIUM			< 2.0	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
CCV	Q597433	SPEX-XEMS8	CALCIUM	100		102.	mg/L	102	
BLA01	Q597434	DI	CALCIUM			< 2.0	mg/L		
CDL01	Q597429	SPEX	CALCIUM	5.2		5.9	mg/L	113	
ICS-A	Q597430		CALCIUM	125		137	mg/L	110	
ICS-B	Q597431		CALCIUM	125		137	mg/L	110	

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

CHROMIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 11-NOV-92 Instrument: ICP Test: M410.9.0
Reviewer: J. SCHOTT Review Date: 12-NOV-92 File ID: Run: R171177
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RP
ICV01	Q592819	PE 40 STAN	CHROMIUM	2.0		2.06	mg/L	103	
ICV01	Q592812	SPEX	CHROMIUM	4.0		4.05	mg/L	101	
SPI02	Q579508	C142054	CHROMIUM	0	1.0	BDL 0.907	mg/L	91	
DUP02	Q579507	C142054	CHROMIUM	0		BDL	mg/L		
CDL01	Q592816	SPEX	CHROMIUM	0.20		0.201	mg/L	101	
BLA01	Q592810	DI	CHROMIUM			< 0.016	mg/L		
LCS	Q579505	SPEX	CHROMIUM	1.0		0.962	mg/L	96	
BLA02	Q579506	DI WATER	CHROMIUM			< 0.016	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
CCV	Q592799	QC-19,STOC	CHROMIUM	4.0		4.07	mg/L	102	
BLA01	Q592800	DI	CHROMIUM			< 0.016	mg/L		
CDL01	Q592798	SPEX	CHROMIUM	0.20		0.214	mg/L	107	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

COPPER (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 12-NOV-92 Instrument: ICP Test: M412.9.0
Reviewer: . Review Date: File ID: Run: R171281
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q593760	PE 40 STAN	COPPER	2.0		2.17	mg/L	109	
ICV01	Q593765	SPEX-XEMS8	COPPER	5		4.94	mg/L	99	
SPI02	Q579508	C142054	COPPER	0	1.0	0.933	mg/L	93	
DUP02	Q579507	C142054	COPPER	0		BDL	mg/L		
CDL01	Q593762	SPEX	COPPER	0.20		0.211	mg/L	106	

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
BLA01	Q593766	DI	COPPER			< 0.016	mg/L		
[redacted]	Q579505	SPEX	COPPER	1.0		0.966	mg/L	97	
[redacted]	Q579506	DI WATER	COPPER			< 0.016	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
CCV	Q593767	SPEX-XEMS8	COPPER	5.0		4.92	mg/L	98	
BLA01	Q593768	DI	COPPER			< 0.016	mg/L		
CDL01	Q593769	SPEX	COPPER	0.20		0.215	mg/L	108	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

IRON (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 11-NOV-92 Instrument: ICP Test: M415.9.0
Reviewer: J. SCHOTT Review Date: 12-NOV-92 File ID: Run: R171177
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q592819	PE 40 STAN	IRON	2.0		2.01	mg/L	101	
ICV01	Q592812	SPEX	IRON	4.0		4.00	mg/L	100	
SPI02	Q579508	C142054	IRON	73.	1.0	74.2	mg/L	120	
DUP02	Q579507	C142054	IRON	73.		73.5	mg/L		1
CDL01	Q592816	SPEX	IRON	0.20		0.208	mg/L	104	
BLA01	Q592810	DI	IRON			< 0.016	mg/L		
LCS	Q579505	SPEX	IRON	1.0		0.986	mg/L	99	
BLA02	Q579506	DI WATER	IRON			< 0.016	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
[redacted]	Q592799	QC-19,STOC	IRON	4.0		4.05	mg/L	101	
BLA01	Q592800	DI	IRON			< 0.016	mg/L		
CDL01	Q592798	SPEX	IRON	0.20		0.217	mg/L	109	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

LEAD GFAA EPA 239.2

Analyst : W. WATNESS Analysis Date: 16-MAR-93 Instrument: GFAA Test: M416.2.0
Reviewer: S. O'NEAL Review Date: 18-MAR-93 File ID: D01615 Run: R181201
Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q664396		LEAD	.01		.0107	mg/L	107	
SPI02	Q579520	C142061	LEAD	0	.05	.06	mg/L	120	
DUP02	Q579519	C142061	LEAD	0		BDL	mg/L		0
CDL01	Q664400		LEAD	.01		.0109	mg/L	109	
CCV	Q664403		LEAD	.02		.0207	mg/L	103.5	
BLA01	Q664404		LEAD			< .002	mg/L		
LCS	Q579517		LEAD	.05		.0665	mg/L	133	
BLA02	Q579518		LEAD			< .002	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
CCV	Q664405		LEAD	.02		.0214	mg/L	107	
BLA01	Q664406		LEAD			< .002	mg/L		
[redacted]	Q664407		LEAD	.01		.0109	mg/L	109	

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike

Comments

Q579519 Arsenic NA at less than five times d.l. +/- d.l.

LEAD (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 11-NOV-92 Instrument: ICP Test: M416.9.0
Reviewer: J. SCHOTT Review Date: 12-NOV-92 File ID: Run: R171177
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q592819	PE 40 STAN	LEAD	2.0		2.04	mg/L	102	
ICV01	Q592812	SPEX	LEAD	4.0		4.10	mg/L	103	
SPI02	Q579508	C142054	LEAD	0.12	1.0	1.05	mg/L	93	
DUP02	Q579507	C142054	LEAD	0.12		0.116	mg/L		3
CDL01	Q592816	SPEX	LEAD	0.20		0.212	mg/L	106	
BLA01	Q592810	DI	LEAD			< 0.04	mg/L		
LCS	Q579505	SPEX	LEAD	1.0		0.940	mg/L	94	
BLA02	Q579506	DI WATER	LEAD			< 0.04	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
CCV	Q592799	QC-19,STOC	LEAD	4.0		4.14	mg/L	104	
BLA01	Q592800	DI	LEAD			< 0.04	mg/L		
CDL01	Q592798	SPEX	LEAD	0.20		0.211	mg/L	106	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

MAGNESIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 17-NOV-92 Instrument: ICP Test: M418.9.0
Reviewer: Review Date: File ID: Run: R171799
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q597439	PE 40 STAN	MAGNESIUM	5.0		5.06	mg/L	101	
ICV01	Q597437	SPEX-XEMS8	MAGNESIUM	100		101.	mg/L	101	
SPI02	Q579524	C142057	MAGNESIUM	160	5.0	*	mg/L		
DUP02	Q579523	C142057	MAGNESIUM	160		160	mg/L		2
CDL01	Q597441	SPEX	MAGNESIUM	5.20			mg/L	0	
ICS-A	Q597435		MAGNESIUM	125.		127.93	mg/L	102	
ICS-B	Q597436		MAGNESIUM	125.		126.45	mg/L	101	
BLA01	Q597438	DI	MAGNESIUM			< 2.0	mg/L		
LCS	Q579521		MAGNESIUM	5.0		4.38	mg/L	88	
BLA02	Q579522		MAGNESIUM			< 2.0	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
CCV	Q597433	SPEX-XEMS8	MAGNESIUM	100		97.7	mg/L	98	
BLA01	Q597434	DI	MAGNESIUM			< 2.0	mg/L		
CDL01	Q597429	SPEX	MAGNESIUM	5.2		5.7	mg/L	110	
ICS-A	Q597430		MAGNESIUM	125		138	mg/L	110	
ICS-B	Q597431		MAGNESIUM	125		138	mg/L	110	

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

MANGANESE (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 11-NOV-92 Instrument: ICP Test: M419.9.0
Reviewer: J. SCHOTT Review Date: 12-NOV-92 File ID: Run: R171177
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q592819	PE 40 STAN	MANGANESE	2.0		2.09	mg/L	105	
ICV01	Q592812	SPEX	MANGANESE	4		4.08	mg/L	102	
SPI02	Q579508	C142054	MANGANESE	1.4	1.0	2.34	mg/L	94	
DUP02	Q579507	C142054	MANGANESE	1.4		1.45	mg/L		4
CDL01	Q592816	SPEX	MANGANESE	0.20		0.210	mg/L	105	
BLA01	Q592810	DI	MANGANESE			< 0.008	mg/L		
LCS	Q579505	SPEX	MANGANESE	1.0		0.991	mg/L	99	
BLA02	Q579506	DI WATER	MANGANESE			< 0.008	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
CCV	Q592799	QC-19,STOC	MANGANESE	4.0		4.15	mg/L	104	
BLA01	Q592800	DI	MANGANESE			< 0.008	mg/L		
CDL01	Q592798	SPEX	MANGANESE	0.20		0.214	mg/L	107	

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

POTASSIUM FAA EPA 258.1

Analyst : L. TRZUPEK Analysis Date: 01-DEC-92 Instrument: FAA Test: M426.1.0
Reviewer: D. WARNER Review Date: 04-DEC-92 File ID: 8752 Run: R173072
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
[illegible]	Q606477		POTASSIUM	10		9.3		93	
[illegible]	Q606494		POTASSIUM	10		9.8		98	
SPI02	Q579524	C142057	POTASSIUM	5.9	5.0	9.77	mg/L	78	
DUP02	Q579523	C142057	POTASSIUM	5.9		5.9	mg/L		0
CCV	Q606482		POTASSIUM	25		23.5		94	
BLA01	Q606495		POTASSIUM			BDL			
CDL01	Q606496		POTASSIUM	1.0		1.0		100	
LCS	Q579521		POTASSIUM	5.0		4.18	mg/L	84	
BLA02	Q579522		POTASSIUM			< 0.2	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
CCV	Q606497		POTASSIUM	25		25		100	
BLA01	Q606498		POTASSIUM			BDL			
CDL01	Q606501		POTASSIUM	1.0		0.98		98	

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

SODIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 17-NOV-92 Instrument: ICP Test: M431.9.0
Reviewer: , Review Date: File ID: Run: R171799
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q597439	PE 40 STAN	SODIUM	5.0		4.74	mg/L	95	
ICV01	Q597437	SPEX-XEMS8	SODIUM	100		104.	mg/L	104	
SPI02	Q579524	C142057	SODIUM	65	5.0	*	mg/L		
DUP02	Q579523	C142057	SODIUM	85		90	mg/L		6
[illegible]	Q597441	SPEX	SODIUM	5.20			mg/L	0	
ICS-A	Q597435		SODIUM				mg/L		
ICS-B	Q597436		SODIUM	0		0	mg/L		
BLA01	Q597438	DI	SODIUM			< 2.0	mg/L		

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
LCS	Q579521		SODIUM	5.0		4.77	mg/L	95	
BLA02	Q579522		SODIUM			< 2.0	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
CCV	Q597433	SPEX-XEMS8	SODIUM	100		101	mg/L	101	
BLA01	Q597434	DI	SODIUM			< 2.0	mg/L		
CDL01	Q597429	SPEX	SODIUM	5.2		5.8	mg/L	115	
ICS-A	Q597430		SODIUM	0		0	mg/L	0	
ICS-B	Q597431		SODIUM	0		0	mg/L	0	

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

ZINC (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 18-NOV-92 Instrument: ICP Test: M439.9.0
Reviewer: . Review Date: File ID: Run: R171797

Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q597414	PE 40 STAN	ZINC	2.0		2.18	mg/L	109	
ICV01	Q597407	SPEX	ZINC	4.0		4.19	mg/L	105	
SPI02	Q579508	C142054	ZINC	130.	1.0	*	mg/L		
DUP02	Q579507	C142054	ZINC	130.		145	mg/L		10
BLA01	Q597408	DI	ZINC			< 0.016	mg/L		
LCS	Q579505	SPEX	ZINC	1.0		0.962	mg/L	96	
BLA02	Q579506	DI WATER	ZINC			< 0.016	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
CDL01	Q597409	SPEX	ZINC	0.20		0.225	mg/L	113	
CCV	Q597412	QC-19,STOC	ZINC	4.0		4.16	mg/L	104	
BLA01	Q597413	DI	ZINC			< 0.016	mg/L		

Comments

Q579508 Spike is NA, Sample concentration is greater than four times the spike Q579508 concentration.
Q579505 Gadolinium LCS Q579505 = 4.493/5.00 (obs Val/Tru) = 90% Rec
Q579506 Gadolinium BLA02 (q579506) = -0.010 (below detection limit of 1.00ppm)

ARSENIC GFAA EPA 206.2

Analyst : D. WARNER Analysis Date: 23-NOV-92 Instrument: GFAA Test: M403.2.0
Reviewer: J. SCHOTT Review Date: 25-NOV-92 File ID: 8727 Run: R172375

Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q601937		ARSENIC	0.0200		0.0201		100	
SPI02	Q579520	C142061	ARSENIC			NA	mg/L		
DUP02	Q579519	C142061	ARSENIC			NA	mg/L		
CDL01	Q601939		ARSENIC	0.0200		0.0211		106	
CCV	Q601944		ARSENIC	0.0200		0.0186		93	
BLA01	Q601945		ARSENIC			BDL			
LCS	Q579517		ARSENIC	0.10		0.081	mg/L	81	
BLA02	Q579518		ARSENIC			< 0.004	mg/L		
SAMPLE	C142055		See Certificate of Analysis						
CCV	Q601946		ARSENIC	0.0200		0.0190		95	
BLA01	Q601951		ARSENIC			BDL			

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike
Q579519 Arsenic NA at less than five times d.l. +/- d.l.

Notes

BDL Below Detection Limit

Notes

< *Less Than Lower Detection Limit*
See Note for Parameter
Not Applicable

Quality Assurance Officer: _____

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
SAMPLE	C142060		See Certificate of Analysis						
	Q597429	SPEX	CALCIUM	5.2		5.9	mg/L	113	
	Q597430		CALCIUM	125		137	mg/L	110	
ICS-B	Q597431		CALCIUM	125		137	mg/L	110	
CCV	Q597432	SPEX-XEMS8	CALCIUM	100		110.	mg/L	110	

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

CHROMIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M410.9.0
Reviewer: . Review Date: File ID: Run: R171441
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q594855	PE 40 STAN	CHROMIUM	2.0		2.09	mg/L	105	
ICV01	Q594850	SPEX	CHROMIUM	4.0		4.03	mg/L	101	
SPI02	Q593811	C142009	CHROMIUM	0	1.0	0.957	mg/L	96	
DUP02	Q593810	C142009	CHROMIUM	0		BDL	mg/L		
CCV	Q594843	QC-19,STOC	CHROMIUM	4.0		4.12	mg/L	103	
CDL01	Q594854	SPEX	CHROMIUM	0.20		0.198	mg/L	99	
BLA01	Q594851	DI	CHROMIUM			< 0.016	mg/L		
LCS	Q579513	SPEX	CHROMIUM	1.0		0.908	mg/L	91	
BLA02	Q579514	DI WATER	CHROMIUM			< 0.016	mg/L		
SAMPLE	C142060		See Certificate of Analysis						
CCV	Q594848	QC-19,STOC	CHROMIUM	4.0		4.08	mg/L	102	
BLA01	Q594849	DI	CHROMIUM			< 0.016	mg/L		
CDL01	Q594847	SPEX	CHROMIUM	0.20		0.212	mg/L	106	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

COPPER (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M412.9.0
Reviewer: . Review Date: File ID: Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596411	PE 40 STAN	COPPER	2.0		2.09	mg/L	105	
SPI02	Q593811	C142009	COPPER	0	1.0	0.991	mg/L	99	
DUP02	Q593810	C142009	COPPER	0		BDL	mg/L		
CDL01	Q596413	SPEX	COPPER	0.20		0.204	mg/L	102	
BLA01	Q596405	DI	COPPER			< 0.016	mg/L		
LCS	Q579513	SPEX	COPPER	1.0		0.966	mg/L	97	
BLA02	Q579514	DI WATER	COPPER			< 0.016	mg/L		
SAMPLE	C142060		See Certificate of Analysis						
CCV	Q596419	QC-19,STOC	COPPER	4.0		4.06	mg/L	102	
BLA01	Q596420	DI	COPPER			< 0.016	mg/L		
CDL01	Q596418	SPEX	COPPER	0.20		0.204	mg/L	102	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

IRON (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M415.9.0
Reviewer: . Review Date: File ID: Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596411	PE 40 STAN	IRON	2.0		2.02	mg/L	101	
ICV01	Q596404	SPEX	IRON	4.0		3.97	mg/L	99	
SPI02	Q593811	C142009	IRON	0	1.0	0.989	mg/L	99	
DUP02	Q593810	C142009	IRON	0		* 0.0470	mg/L		200
CDL01	Q596413	SPEX	IRON	0.20		0.194	mg/L	97	
BLA01	Q596405	DI	IRON			< 0.016	mg/L		
LCS	Q579513	SPEX	IRON	1.0		0.922	mg/L	92	
BLA02	Q579514	DI WATER	IRON			< 0.016	mg/L		
SAMPLE	C142060		See Certificate of Analysis						
CCV	Q596419	QC-19,STOC	IRON	4.0		4.06	mg/L	102	
BLA01	Q596420	DI	IRON			< 0.016	mg/L		
CDL01	Q596418	SPEX	IRON	0.20		0.205	mg/L	103	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

LEAD GFAA EPA 239.2

Analyst : W. WATNESS Analysis Date: 16-MAR-93 Instrument: GFAA Test: M416.2.0
Reviewer: S. O'NEAL Review Date: 18-MAR-93 File ID: D01615 Run: R181201
Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q664396		LEAD	.01		.0107	mg/L	107	
SPI02	Q579520	C142061	LEAD	0	.05	.06	mg/L	120	
DUP02	Q579519	C142061	LEAD	0		BDL	mg/L		0
CDL01	Q664400		LEAD	.01		.0109	mg/L	109	
CCV	Q664403		LEAD	.02		.0207	mg/L	103.5	
BLA01	Q664404		LEAD			< .002	mg/L		
LCS	Q579517		LEAD	.05		.0665	mg/L	133	
BLA02	Q579518		LEAD			< .002	mg/L		
SAMPLE	C142060		See Certificate of Analysis						
CCV	Q664405		LEAD	.02		.0214	mg/L	107	
BLA01	Q664406		LEAD			< .002	mg/L		
CDL01	Q664407		LEAD	.01		.0109	mg/L	109	

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike Q579519 Arsenic NA at less than five times d.l. +/- d.l.

LEAD (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M416.9.0
Reviewer: . Review Date: File ID: Run: R171441
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q594855	PE 40 STAN	LEAD	2.0		2.04	mg/L	102	
ICV01	Q594850	SPEX	LEAD	4.0		4.02	mg/L	101	
SPI02	Q593811	C142009	LEAD	0	1.0	0.955	mg/L	96	
DUP02	Q593810	C142009	LEAD	0		BDL	mg/L		
CCV	Q594843	QC-19,STOC	LEAD	4.0		4.18	mg/L	105	
CDL01	Q594854	SPEX	LEAD	0.20		0.194	mg/L	97	
BLA01	Q594851	DI	LEAD			< 0.04	mg/L		
LCS	Q579513	SPEX	LEAD	1.0		0.947	mg/L	95	
BLA02	Q579514	DI WATER	LEAD			< 0.04	mg/L		
SAMPLE	C142060		See Certificate of Analysis						
CCV	Q594848	QC-19,STOC	LEAD	4.0		4.10	mg/L	103	

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
BLANK	S94849	DI	LEAD			< 0.04	mg/L		
[illegible]	S94847	SPEX	LEAD	0.20		0.194	mg/L	97	

Comments

[illegible] Duplicate is acceptable. At concentrations less than five times the
[illegible] detection limit +/-the detection limit.

[illegible] (ICP-SEQ) EPA 200.7

Analyst = B. WARNER Analysis Date: 17-NOV-92 Instrument: ICP Test: M418.9.0
Reviewer = _ Review Date: File ID: Run: R171799
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICAL	S97439	PE 40 STAN	MAGNESIUM	5.0		5.06	mg/L	101	
[illegible]	S97437	SPEX-XEMS8	MAGNESIUM	100		101.	mg/L	101	
SPIKE	S79524	C142057	MAGNESIUM	160	5.0	*	mg/L		
[illegible]	S79523	C142057	MAGNESIUM	160		160	mg/L		2
CALB	S97441	SPEX	MAGNESIUM	5.20			mg/L	0	
[illegible]	S97435		MAGNESIUM	125.		127.93	mg/L	102	
ICS-1	S97436		MAGNESIUM	125.		126.45	mg/L	101	
[illegible]	S97433	SPEX-XEMS8	MAGNESIUM	100		97.7	mg/L	98	
BLANK	S97434	DI	MAGNESIUM			< 2.0	mg/L		
[illegible]	S79521		MAGNESIUM	5.0		4.38	mg/L	88	
BLANK	S79522		MAGNESIUM			< 2.0	mg/L		
SAMPLE	C142060		See Certificate of Analysis						
CALB	S97429	SPEX	MAGNESIUM	5.2		5.7	mg/L	110	
[illegible]	S97430		MAGNESIUM	125		138	mg/L	110	
ICS-1	S97431		MAGNESIUM	125		138	mg/L	110	
[illegible]	S97432	SPEX-XEMS8	MAGNESIUM	100		107.	mg/L	107	

Comments

[illegible] Spike is NA, Sample concentration is greater than four times the spike
[illegible] concentration.

[illegible]ESE (ICP-SEQ) EPA 200.7

Analyst = B. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M419.9.0
Reviewer = _ Review Date: File ID: Run: R171441
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICAL	S94855	PE 40 STAN	MANGANESE	2.0		2.09	mg/L	105	
[illegible]	S94850	SPEX	MANGANESE	4		4.08	mg/L	102	
SPIKE	S93811	C142009	MANGANESE	0	1.0	0.976	mg/L	98	
[illegible]	S93810	C142009	MANGANESE	0		BDL	mg/L		
[illegible]	S94843	QC-19,STOC	MANGANESE	4.0		4.17	mg/L	104	
[illegible]	S94854	SPEX	MANGANESE	0.20		0.208	mg/L	104	
BLANK	S94851	DI	MANGANESE			< 0.008	mg/L		
[illegible]	S79513	SPEX	MANGANESE	1.0		0.946	mg/L	95	
BLANK	S79514	DI WATER	MANGANESE			< 0.008	mg/L		
SAMPLE	C142060		See Certificate of Analysis						
[illegible]	S94848	QC-19,STOC	MANGANESE	4.0		4.12	mg/L	103	
[illegible]	S94849	DI	MANGANESE			< 0.008	mg/L		
CALB	S94847	SPEX	MANGANESE	0.20		0.213	mg/L	107	

Comments

[illegible] Duplicate is acceptable. At concentrations less than five times the
[illegible] detection limit +/-the detection limit.

POTASSIUM FAA EPA 258.1

Analyst : L. IRZUPEK Analysis Date: 01-DEC-92 Instrument: FAA Test: M426.1.0
Reviewer: D. WARNER Review Date: 04-DEC-92 File ID: 8752 Run: R173072
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q606477		POTASSIUM	10		9.3		93	
ICV01	Q606496		POTASSIUM	10		9.8		98	
SPI02	Q579524	C142057	POTASSIUM	5.9	5.0	9.77	mg/L	78	
DUP02	Q579523	C142057	POTASSIUM	5.9		5.9	mg/L		0
CDL01	Q606496		POTASSIUM	1.0		1.0		100	
CCV	Q606497		POTASSIUM	25		25		100	
BLA01	Q606498		POTASSIUM			BDL			
LCS	Q579521		POTASSIUM	5.0		4.18	mg/L	84	
BLA02	Q579522		POTASSIUM			< 0.2	mg/L		
SAMPLE	C142060		See Certificate of Analysis						
CCV	Q606499		POTASSIUM	25		24.5		98	
BLA01	Q606500		POTASSIUM			BDL			
CDL01	Q606501		POTASSIUM	1.0		0.98		98	

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

SODIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 19-NOV-92 Instrument: ICP Test: M431.9.0
Reviewer: . Review Date: 19-NOV-92 File ID: Run: R171915
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q598319		SODIUM	5.0		4.82		96	
SPI02	Q579524	C142057	SODIUM	65	5.0	*	mg/L		
DUP02	Q579523	C142057	SODIUM	85		90	mg/L		6
CDL01	Q598321		SODIUM	5.20		5.18		100	
ICS-A	Q598322		SODIUM	0		BDL 0			
ICS-B	Q598323		SODIUM	0		BDL 0			
STD	Q598324		SODIUM	100.		99.46		99	
BLA01	Q598325		SODIUM			< 2.00			
LCS	Q579521		SODIUM	5.0		4.77	mg/L	95	
BLA02	Q579522		SODIUM			< 2.0	mg/L		
SAMPLE	C142060		See Certificate of Analysis						
CCV	Q598326		SODIUM	100		100		100	
BLA01	Q598327		SODIUM			BDL 0			
CDL01	Q598328		SODIUM	5.2		* 2.22		43	
ICS-A	Q598329		SODIUM	0		BDL 0			
ICS-B	Q598330		SODIUM	0		BDL 0			

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.
*Q598328 *All samples where well above the detection limit.*

ZINC (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M439.9.0
Reviewer: . Review Date: File ID: Run: R171441
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q594855	PE 40 STAN	ZINC	2.0		2.12	mg/L	106	
ICV01	Q594850	SPEX	ZINC	4.0		4.02	mg/L	101	
SPI02	Q593811	C142009	ZINC	0.0400	1.0	0.969	mg/L	93	
DUP02	Q593810	C142009	ZINC	0.0400		*	mg/L		200
CCV	Q594843	QC-19,STOC	ZINC	4.0		4.19	mg/L	105	

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
CDL01	Q594854	SPEX	ZINC	0.20		0.209	mg/L	105	
[redacted]	Q594851	DI	ZINC			< 0.016	mg/L		
	Q579513	SPEX	ZINC	1.0		0.917	mg/L	92	
BLA02	Q579514	DI WATER	ZINC			< 0.016	mg/L		
SAMPLE	C142060		See Certificate of Analysis						
CCV	Q594848	QC-19,STOC	ZINC	4.0		4.12	mg/L	103	
BLA01	Q594849	DI	ZINC			< 0.016	mg/L		
CDL01	Q594847	SPEX	ZINC	0.20		0.215	mg/L	108	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

ARSENIC GFAA (3 POINT MSA) EPA 206.2

Analyst : D. WARNER Analysis Date: 10-DEC-92 Instrument: GFAA Test: M403.4.0
Reviewer: J. SCHOTT Review Date: 11-DEC-92 File ID: 8763 Run: R173920

Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q612151		ARSENIC	0.0200		0.0221		110	
SPI02	Q579520	C142061	ARSENIC			NA	mg/L		
DUP02	Q579519	C142061	ARSENIC			NA	mg/L		
BLA01	Q612152		ARSENIC			BDL			
CDL01	Q612153		ARSENIC	0.0200		0.0205		102	
LCS	Q579517		ARSENIC	0.10		0.081	mg/L	81	
BLA02	Q579518		ARSENIC			< 0.004	mg/L		
SAMPLE	C142060		See Certificate of Analysis						
CCV	Q612154		ARSENIC	0.0200		0.0212		106	
BLA01	Q612155		ARSENIC			BDL			
[redacted]1	Q612175		ARSENIC	0.0200		0.0208		104	

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike
Q579519 Arsenic NA at less than five times d.l. +/- d.l.

Notes

BDL	*Below Detection Limit*
<	*Less Than Lower Detection Limit*
***	*See Note for Parameter*
NA	*Not Applicable*

Quality Assurance Officer: [signature]

QUALITY ASSURANCE REPORT

Service Location	Received	Lab ID
HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	05-NOV-92	C142062
	Complete 18-MAR-93	PO Number RE-LOG C140688
	Printed 23-MAR-93	Sampled 19-SEP-92 11:00

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
RELOG OF SAMPLE: C140688 (MW20A FILTERED) - GRAB
SAMPLE I.D.: MW20A

ALUMINUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M401.9.0
Reviewer: . Review Date: File ID: Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596411	PE 40 STAN	ALUMINUM	11		10.9	mg/L	99	
ICVu1	Q596404	SPEX	ALUMINUM	10		9.67	mg/L	97	
SPI02	Q593811	C142009	ALUMINUM	0	1.0	0.920	mg/L	92	
DUP02	Q593810	C142009	ALUMINUM	0		BDL	mg/L		
BLA01	Q596405	DI	ALUMINUM			< 0.12	mg/L		
LCS	Q579513	SPEX	ALUMINUM	1.0		0.893	mg/L	89	
BLA02	Q579514	DI WATER	ALUMINUM			< 0.12	mg/L		
SAMPLE	C142062		See Certificate of Analysis						
BLA01	Q596420	DI	ALUMINUM			< 0.12	mg/L		

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

ANTIMONY GFAA EPA 204.2

Analyst : M. BAUER Analysis Date: 16-MAR-93 Instrument: GFAA Test: M402.2.0
Reviewer: S. O'NEAL Review Date: 18-MAR-93 File ID: 001587 Run: R181196
Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q664355		ANTIMONY	.01		.0097	mg/L	97	
SPI02	Q579520	C142061	ANTIMONY	0	0	BDL	mg/L	0	
DUP02	Q579519	C142061	ANTIMONY	0		BDL	mg/L		0
CDL01	Q664360		ANTIMONY	.01		.0101	mg/L	101	
CCV	Q664361		ANTIMONY	.02		.0187	mg/L	93.5	
BLA01	Q664362		ANTIMONY			< .002	mg/L		
LCS	Q579517		ANTIMONY	0		BDL	mg/L	0	
BLA02	Q579518		ANTIMONY			< .002	mg/L		
SAMPLE	C142062		See Certificate of Analysis						
CDL01	Q664363		ANTIMONY	.01		.0096	mg/L	96	
CCV	Q664364		ANTIMONY	.02		.0181	mg/L	90.5	
BLA01	Q664365		ANTIMONY			< .002	mg/L		

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike
Q579519 Arsenic NA at less than five times d.l. +/- d.l.

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M402.9.0
Reviewer: . Review Date: File ID: Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596404	SPEX	ANTIMONY	4		3.92	mg/L	98	
SPI02	Q593811	C142009	ANTIMONY	0	1.0	0.902	mg/L	90	
DUP02	Q593810	C142009	ANTIMONY	0		BDL	mg/L		
CDL01	Q596413	SPEX	ANTIMONY	0.20		0.210	mg/L	105	
BLA01	Q596405	DI	ANTIMONY			< 0.08	mg/L		
LCS	Q579513	SPEX	ANTIMONY	1.0		0.919	mg/L	92	
BLA02	Q579514	DI WATER	ANTIMONY			< 0.08	mg/L		
SAMPLE	C142062		See Certificate of Analysis						
CCV	Q596419	QC-19,STOC	ANTIMONY	4.0		3.94	mg/L	99	
BLA01	Q596420	DI	ANTIMONY			< 0.08	mg/L		
CDL01	Q596418	SPEX	ANTIMONY	0.20		0.204	mg/L	102	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

BARIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M404.9.0
Reviewer: . Review Date: File ID: Run: R171441
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q594855	PE 40 STAN	BARIUM	1.0		0.988	mg/L	99	
SPI02	Q593811	C142009	BARIUM	0	1.0	0.954	mg/L	95	
DUP02	Q593810	C142009	BARIUM	0		BDL	mg/L		
[illegible]01	Q594851	DI	BARIUM			< 0.008	mg/L		
	Q579513	SPEX	BARIUM	1.0		0.929	mg/L	93	
BLA02	Q579514	DI WATER	BARIUM			< 0.008	mg/L		
SAMPLE	C142062		See Certificate of Analysis						
BLA01	Q594849	DI	BARIUM			< 0.008	mg/L		

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

BORON (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M407.9.0
Reviewer: . Review Date: File ID: Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596411	PE 40 STAN	BORON	1.0		0.994	mg/L	99	
SPI02	Q593811	C142009	BORON	0	1.0	0.992	mg/L	99	
DUP02	Q593810	C142009	BORON	0		BDL	mg/L		
CDL01	Q596413	SPEX	BORON	0.2		0.182	mg/L	91	
BLA01	Q596405	DI	BORON			BDL	mg/L		
LCS	Q579513	SPEX	BORON	1.0		0.945	mg/L	94	
BLA02	Q579514	DI WATER	BORON			< 0.2	mg/L		
BLA02	Q579514	DI WATER	BORON			BDL	mg/L		
SAMPLE	C142062		See Certificate of Analysis						
CCV	Q596419	QC-19,STOC	BORON	4.0		3.991	mg/L	100	
BLA01	Q596420	DI	BORON			BDL	mg/L		

Comments

[illegible]93810 Duplicate is acceptable. At concentrations less than five times the [illegible]93810 detection limit +/-the detection limit.

CADMIUM GFAA EPA 213.2

Analyst : J. VANSKYOCK Analysis Date: 16-MAR-93 Instrument: GFAA Test: M408.2.0
Reviewer: S. O'NEAL Review Date: 18-MAR-93 File ID: 001315 Run: R181199

Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q664382		CADMIUM	.001		.000945	mg/L	94.5	
SPI02	Q579520	C142061	CADMIUM	0	.05	.0575	mg/L	115	
DUP02	Q579519	C142061	CADMIUM	0		BDL	mg/L		0
ICDL01	Q664390		CADMIUM	.002		.0022	mg/L	110	
ICCV	Q664391		CADMIUM	.002		.00211	mg/L	105.5	
BLA01	Q664392		CADMIUM			< .0004	mg/L		
LCS	Q579517		CADMIUM	.05		.05	mg/L	100	
BLA02	Q579518		CADMIUM			< .0004	mg/L		
SAMPLE	C142062		See Certificate of Analysis						
CCDL01	Q664393		CADMIUM	.002		.00229	mg/L	114.5	
CCCV	Q664394		CADMIUM	.002		.00209	mg/L	104.5	
BLA01	Q664395		CADMIUM			< .0004	mg/L		

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike
Q579519 Arsenic NA at less than five times d.l. +/- d.l.

CADMIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M408.9.0
Reviewer: . Review Date: File ID: Run: R171641

Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596411	PE 40 STAN	CADMIUM	0.50		0.522	mg/L	104	
ICV01	Q596404	SPEX	CADMIUM	4.0		4.04	mg/L	101	
SPI02	Q593811	C142009	CADMIUM	0	1.0	0.924	mg/L	92	
DUP02	Q593810	C142009	CADMIUM	0		BDL	mg/L		
CCDL01	Q596413	SPEX	CADMIUM	0.20		0.205	mg/L	103	
BLA01	Q596405	DI	CADMIUM			< 0.008	mg/L		
LCS	Q579513	SPEX	CADMIUM	1.0		0.916	mg/L	92	
BLA02	Q579514	DI WATER	CADMIUM			< 0.008	mg/L		
SAMPLE	C142062		See Certificate of Analysis						
CCCV	Q596419	QC-19,STOC	CADMIUM	4.0		4.10	mg/L	103	
BLA01	Q596420	DI	CADMIUM			< 0.008	mg/L		
CCDL01	Q596418	SPEX	CADMIUM	0.20		0.210	mg/L	105	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the
Q593810 detection limit +/-the detection limit.

CALCIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 17-NOV-92 Instrument: ICP Test: M409.9.0
Reviewer: . Review Date: File ID: Run: R171799

Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q597439	PE 40 STAN	CALCIUM	5.0		5.09	mg/L	102	
ICV01	Q597437	SPEX-XEMS8	CALCIUM	100		100.	mg/L	100	
CCDL01	Q597441	SPEX	CALCIUM	5.20			mg/L	0	
ICS-A	Q597435		CALCIUM	125.		129.01	mg/L	103	
ICS-B	Q597436		CALCIUM	125.		129.87	mg/L	104	
CCCV	Q597433	SPEX-XEMS8	CALCIUM	100		102.	mg/L	102	
BLA01	Q597434	DI	CALCIUM			< 2.0	mg/L		
SAMPLE	C142062		See Certificate of Analysis						
CCDL01	Q597429	SPEX	CALCIUM	5.2		5.9	mg/L	113	
ICS-A	Q597430		CALCIUM	125		137	mg/L	110	
ICS-B	Q597431		CALCIUM	125		137	mg/L	110	

Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
	597432	SPEX-XEMS8	CALCIUM	100		110.	mg/L	110	

(ICP-SEQ) EPA 200.7

D. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M410.9.0
Review Date: File ID: Run: R171641
FAA OR ICP ACID DIGESTION EPA 200.0

Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
	594855	PE 40 STAN	CHROMIUM	2.0		2.09	mg/L	105	
	594850	SPEX	CHROMIUM	4.0		4.03	mg/L	101	
	593811	C142009	CHROMIUM	0	1.0	0.957	mg/L	96	
	593810	C142009	CHROMIUM	0		BDL	mg/L		
	594843	QC-19,STOC	CHROMIUM	4.0		4.12	mg/L	103	
	594854	SPEX	CHROMIUM	0.20		0.198	mg/L	99	
	594851	DI	CHROMIUM			< 0.016	mg/L		
	579513	SPEX	CHROMIUM	1.0		0.908	mg/L	91	
	579514	DI WATER	CHROMIUM			< 0.016	mg/L		
	142062		See Certificate of Analysis						
	594848	QC-19,STOC	CHROMIUM	4.0		4.08	mg/L	102	
	594849	DI	CHROMIUM			< 0.016	mg/L		
	594847	SPEX	CHROMIUM	0.20		0.212	mg/L	106	

Comments

Duplicate is acceptable. At concentrations less than five times the detection limit +/-the detection limit.

(ICP-SEQ) EPA 200.7

D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M412.9.0
Review Date: File ID: Run: R171641
FAA OR ICP ACID DIGESTION EPA 200.0

Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
	596411	PE 40 STAN	COPPER	2.0		2.09	mg/L	105	
	593811	C142009	COPPER	0	1.0	0.991	mg/L	99	
	593810	C142009	COPPER	0		BDL	mg/L		
	596413	SPEX	COPPER	0.20		0.204	mg/L	102	
	596405	DI	COPPER			< 0.016	mg/L		
	579513	SPEX	COPPER	1.0		0.966	mg/L	97	
	579514	DI WATER	COPPER			< 0.016	mg/L		
	142062		See Certificate of Analysis						
	596419	QC-19,STOC	COPPER	4.0		4.06	mg/L	102	
	596420	DI	COPPER			< 0.016	mg/L		
	596418	SPEX	COPPER	0.20		0.204	mg/L	102	

Comments

Duplicate is acceptable. At concentrations less than five times the. detection limit +/-the detection limit.

(ICP-SEQ) EPA 200.7

D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M415.9.0
Review Date: File ID: Run: R171641
FAA OR ICP ACID DIGESTION EPA 200.0

Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
	596411	PE 40 STAN	IRON	2.0		2.02	mg/L	101	
	596404	SPEX	IRON	4.0		3.97	mg/L	99	
	593811	C142009	IRON	0	1.0	0.989	mg/L	99	
	593810	C142009	IRON	0		* 0.0470	mg/L		200
	596413	SPEX	IRON	0.20		0.194	mg/L	97	
	596405	DI	IRON			< 0.016	mg/L		
	579513	SPEX	IRON	1.0		0.922	mg/L	92	
	579514	DI WATER	IRON			< 0.016	mg/L		

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
SAMPLE	C142062		See Certificate of Analysis						
CCV	Q596419	QC-19,STOC	IRON	4.0		4.06	mg/L	102	
BLA01	Q596420	DI	IRON			< 0.016	mg/L		
CDL01	Q596418	SPEX	IRON	0.20		0.205	mg/L	103	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

LEAD GFAA EPA 239.2

Analyst : W. WATNESS Analysis Date: 16-MAR-93 Instrument: GFAA Test: M416.2.0
Reviewer: S. O'NEAL Review Date: 18-MAR-93 File ID: D01615 Run: R181201
Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q664396		LEAD	.01		.0107	mg/L	107	
SPI02	Q579520	C142061	LEAD	0	.05	.06	mg/L	120	
DUP02	Q579519	C142061	LEAD	0		BDL	mg/L		0
CDL01	Q664400		LEAD	.01		.0109	mg/L	109	
CCV	Q664405		LEAD	.02		.0214	mg/L	107	
BLA01	Q664406		LEAD			< .002	mg/L		
LCS	Q579517		LEAD	.05		.0665	mg/L	133	
BLA02	Q579518		LEAD			< .002	mg/L		
SAMPLE	C142062		See Certificate of Analysis						
CDL01	Q664407		LEAD	.01		.0109	mg/L	109	
CCV	Q664408		LEAD	.02		.0217	mg/L	108.5	
BLA01	Q664409		LEAD			< .002	mg/L		

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike Q579519 Arsenic NA at less than five times d.l. +/- d.l.

LEAD (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M416.9.0
Reviewer: . Review Date: File ID: Run: R171441
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q594855	PE 40 STAN	LEAD	2.0		2.04	mg/L	102	
ICV01	Q594850	SPEX	LEAD	4.0		4.02	mg/L	101	
SPI02	Q593811	C142009	LEAD	0	1.0	0.955	mg/L	96	
DUP02	Q593810	C142009	LEAD	0		BDL	mg/L		
CCV	Q594843	QC-19,STOC	LEAD	4.0		4.18	mg/L	105	
CDL01	Q594854	SPEX	LEAD	0.20		0.194	mg/L	97	
BLA01	Q594851	DI	LEAD			< 0.04	mg/L		
LCS	Q579513	SPEX	LEAD	1.0		0.947	mg/L	95	
BLA02	Q579514	DI WATER	LEAD			< 0.04	mg/L		
SAMPLE	C142062		See Certificate of Analysis						
CCV	Q594848	QC-19,STOC	LEAD	4.0		4.10	mg/L	103	
BLA01	Q594849	DI	LEAD			< 0.04	mg/L		
CDL01	Q594847	SPEX	LEAD	0.20		0.194	mg/L	97	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

MAGNESIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 17-NOV-92 Instrument: ICP Test: M418.9.0
Reviewer: . Review Date: File ID: Run: R171799
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q597439	PE 40 STAN	MAGNESIUM	5.0		5.06	mg/L	101	
ICV01	Q597437	SPEX-XEMS8	MAGNESIUM	100		101.	mg/L	101	
CDL01	Q597441	SPEX	MAGNESIUM	5.20			mg/L	0	
ICS-A	Q597435		MAGNESIUM	125.		127.93	mg/L	102	
ICS-B	Q597436		MAGNESIUM	125.		126.45	mg/L	101	
CCV	Q597433	SPEX-XEMS8	MAGNESIUM	100		97.7	mg/L	98	
BLA01	Q597434	DI	MAGNESIUM			< 2.0	mg/L		
SAMPLE	C142062		See Certificate of Analysis						
CDL01	Q597429	SPEX	MAGNESIUM	5.2		5.7	mg/L	110	
ICS-A	Q597430		MAGNESIUM	125		138	mg/L	110	
ICS-B	Q597431		MAGNESIUM	125		138	mg/L	110	
CCV	Q597432	SPEX-XEMS8	MAGNESIUM	100		107.	mg/L	107	

MANGANESE (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M419.9.0
Reviewer: . Review Date: File ID: Run: R171441
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q594855	PE 40 STAN	MANGANESE	2.0		2.09	mg/L	105	
ICV01	Q594850	SPEX	MANGANESE	4		4.08	mg/L	102	
SPI02	Q593811	C142009	MANGANESE	0	1.0	0.976	mg/L	98	
DUP02	Q593810	C142009	MANGANESE	0		BDL	mg/L		
CCV	Q594843	QC-19,STOC	MANGANESE	4.0		4.17	mg/L	104	
[illegible]1	Q594854	SPEX	MANGANESE	0.20		0.208	mg/L	104	
[illegible]01	Q594851	DI	MANGANESE			< 0.008	mg/L		
LCS	Q579513	SPEX	MANGANESE	1.0		0.946	mg/L	95	
BLA02	Q579514	DI WATER	MANGANESE			< 0.008	mg/L		
SAMPLE	C142062		See Certificate of Analysis						
CCV	Q594848	QC-19,STOC	MANGANESE	4.0		4.12	mg/L	103	
BLA01	Q594849	DI	MANGANESE			< 0.008	mg/L		
CDL01	Q594847	SPEX	MANGANESE	0.20		0.213	mg/L	107	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

POTASSIUM FAA EPA 258.1

Analyst : L. TRZUPEK Analysis Date: 01-DEC-92 Instrument: FAA Test: M426.1.0
Reviewer: D. WARNER Review Date: 04-DEC-92 File ID: B752 Run: R173072
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q606477		POTASSIUM	10		9.3		93	
ICV01	Q606494		POTASSIUM	10		9.8		98	
SPI02	Q579524	C142057	POTASSIUM	5.9	5.0	9.77	mg/L	78	
DUP02	Q579523	C142057	POTASSIUM	5.9		5.9	mg/L		0
CDL01	Q606496		POTASSIUM	1.0		1.0		100	
CCV	Q606497		POTASSIUM	25		25		100	
BLA01	Q606498		POTASSIUM			BDL			
LCS	Q579521		POTASSIUM	5.0		4.18	mg/L	84	
BLA02	Q579522		POTASSIUM			< 0.2	mg/L		
[illegible]LE	C142062		See Certificate of Analysis						
[illegible]	Q606499		POTASSIUM	25		24.5		98	
BLA01	Q606500		POTASSIUM			BDL			
CDL01	Q606501		POTASSIUM	1.0		0.98		98	

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

SODIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 30-NOV-92 Instrument: ICP Test: M431.9.0
Reviewer: . Review Date: 30-NOV-92 File ID: Run: R172665
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q603724		SODIUM	5.0		4.85		97	
CDL01	Q603726		SODIUM	5.2		4.92		95	
STD	Q603729		SODIUM	100		97.6		98	
BLA01	Q603730		SODIUM			BDL			
SAMPLE	C142062		See Certificate of Analysis						
CDL01	Q603731		SODIUM	5.2		4.77		92	
CCV	Q603734		SODIUM	100		98.6		99	
BLA01	Q603735		SODIUM			BDL			

ZINC (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M439.9.0
Reviewer: . Review Date: File ID: Run: R171441
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q594855	PE 40 STAN	ZINC	2.0		2.12	mg/L	106	
ICV01	Q594850	SPEX	ZINC	4.0		4.02	mg/L	101	
SP102	Q593811	C142009	ZINC	0.0400	1.0	0.969	mg/L	93	
DUP02	Q593810	C142009	ZINC	0.0400		*	mg/L		200
CCV	Q594843	QC-19,STOC	ZINC	4.0		4.19	mg/L	105	
CDL01	Q594854	SPEX	ZINC	0.20		0.209	mg/L	105	
BLA01	Q594851	DI	ZINC			< 0.016	mg/L		
LCS	Q579513	SPEX	ZINC	1.0		0.917	mg/L	92	
BLA02	Q579514	DI WATER	ZINC			< 0.016	mg/L		
SAMPLE	C142062		See Certificate of Analysis						
CCV	Q594848	QC-19,STOC	ZINC	4.0		4.12	mg/L	103	
BLA01	Q594849	DI	ZINC			< 0.016	mg/L		
CDL01	Q594847	SPEX	ZINC	0.20		0.215	mg/L	108	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

ARSENIC GFAA (3 POINT MSA) EPA 206.2

Analyst : D. WARNER Analysis Date: 10-DEC-92 Instrument: GFAA Test: M403.4.0
Reviewer: J. SCHOTT Review Date: 11-DEC-92 File ID: 8763 Run: R173920
Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q612151		ARSENIC	0.0200		0.0221		110	
SP1Q2	Q579520	C142061	ARSENIC			NA	mg/L		
DUP02	Q579519	C142061	ARSENIC			NA	mg/L		
CDL01	Q612153		ARSENIC	0.0200		0.0205		102	
CCV	Q612154		ARSENIC	0.0200		0.0212		106	
BLA01	Q612155		ARSENIC			BDL			
LCS	Q579517		ARSENIC	0.10		0.081	mg/L	81	
BLA02	Q579518		ARSENIC			< 0.004	mg/L		
SAMPLE	C142062		See Certificate of Analysis						
CCV	Q612165		ARSENIC	0.0200		0.0211		106	
BLA01	Q612166		ARSENIC			BDL			
CDL01	Q612175		ARSENIC	0.0200		0.0208		104	

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike
Q579519 Arsenic NA at less than five times d.l. +/- d.l.

Notes

BDL	*Below Detection Limit*
<	*Less Than Lower Detection Limit*
***	*See Note for Parameter*
NA	*Not Applicable*

Quality Assurance Officer: Christine Sell

QUALITY ASSURANCE REPORT

Service Location	Received	Lab ID
HERITAGE LABORATORIES, INC. 1[illegible] MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	05-NOV-92	C142063
	Complete 18-MAR-93	PO Number RE-LOG C140688
	Printed 23-MAR-93	Sampled 19-SEP-92 11:00

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
RELOG OF SAMPLE: C140688 (MW20A UNFILTERED) - GRAB
SAMPLE I.D.: MW20A

ALUMINUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER | Analysis Date: 16-NOV-92 | Instrument: ICP | Test: M401.9.0
Reviewer: - | Review Date: | File ID: | Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596411	PE 40 STAN	ALUMINUM	11		10.9	mg/L	99	
ICV01	Q596404	SPEX	ALUMINUM	10		9.67	mg/L	97	
SPI02	Q593811	C142009	ALUMINUM	0	1.0	0.920	mg/L	92	
DUP02	Q593810	C142009	ALUMINUM	0		BDL	mg/L		
BLA01	Q596405	DI	ALUMINUM			< 0.12	mg/L		
LCS	Q579513	SPEX	ALUMINUM	1.0		0.893	mg/L	89	
BLA02	Q579514	DI WATER	ALUMINUM			< 0.12	mg/L		
SAMPLE	C142063		See Certificate of Analysis						
BLA[illegible]	Q596420	DI	ALUMINUM			< 0.12	mg/L		

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

ANTIMONY GFAA EPA 204.2

Analyst : M. BAUER | Analysis Date: 16-MAR-93 | Instrument: GFAA | Test: M402.2.0
Reviewer: S. D'NEAL | Review Date: 18-MAR-93 | File ID: 001587 | Run: R181196
Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q664355		ANTIMONY	.01		.0097	mg/L	97	
SPI02	Q579520	C142061	ANTIMONY	0	0	BDL	mg/L	0	
DUP02	Q579519	C142061	ANTIMONY	0		BDL	mg/L		0
CDL01	Q664360		ANTIMONY	.01		.0101	mg/L	101	
CCV	Q664361		ANTIMONY	.02		.0187	mg/L	93.5	
BLA01	Q664362		ANTIMONY			< .002	mg/L		
LCS	Q579517		ANTIMONY	0		BDL	mg/L	0	
BLA02	Q579518		ANTIMONY			< .002	mg/L		
SAMPLE	C142063		See Certificate of Analysis						
CDL01	Q664363		ANTIMONY	.01		.0096	mg/L	96	
CCV	Q664364		ANTIMONY	.02		.0181	mg/L	90.5	
BLA01	Q664365		ANTIMONY			< .002	mg/L		

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike Q579519 Arsenic NA at less than five times d.l. +/- d.l.

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M402.9.0
Reviewer: . Review Date: File ID: Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596404	SPEX	ANTIMONY	4		3.92	mg/L	98	
SPI02	Q593811	C142009	ANTIMONY	0	1.0	0.902	mg/L	90	
DUP02	Q593810	C142009	ANTIMONY	0		BDL	mg/L		
CDL01	Q596413	SPEX	ANTIMONY	0.20		0.210	mg/L	105	
BLA01	Q596405	DI	ANTIMONY			< 0.08	mg/L		
LCS	Q579513	SPEX	ANTIMONY	1.0		0.919	mg/L	92	
BLA02	Q579514	DI WATER	ANTIMONY			< 0.08	mg/L		
SAMPLE	C142063		See Certificate of Analysis						
CCV	Q596419	QC-19,STOC	ANTIMONY	4.0		3.94	mg/L	99	
BLA01	Q596420	DI	ANTIMONY			< 0.08	mg/L		
CDL01	Q596418	SPEX	ANTIMONY	0.20		0.204	mg/L	102	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

BARIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M404.9.0
Reviewer: . Review Date: File ID: Run: R171441
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q594855	PE 40 STAN	BARIUM	1.0		0.988	mg/L	99	
SPI02	Q593811	C142009	BARIUM	0	1.0	0.954	mg/L	95	
DUP02	Q593810	C142009	BARIUM	0		BDL	mg/L		
BLA01	Q594851	DI	BARIUM			< 0.008	mg/L		
LCS	Q579513	SPEX	BARIUM	1.0		0.929	mg/L	93	
BLA02	Q579514	DI WATER	BARIUM			< 0.008	mg/L		
SAMPLE	C142063		See Certificate of Analysis						
BLA01	Q594849	DI	BARIUM			< 0.008	mg/L		

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

BORON (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M407.9.0
Reviewer: . Review Date: File ID: Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596411	PE 40 STAN	BORON	1.0		0.994	mg/L	99	
SPI02	Q593811	C142009	BORON	0	1.0	0.992	mg/L	99	
DUP02	Q593810	C142009	BORON	0		BDL	mg/L		
CDL01	Q596413	SPEX	BORON	0.2		0.182	mg/L	91	
BLA01	Q596405	DI	BORON			BDL	mg/L		
LCS	Q579513	SPEX	BORON	1.0		0.945	mg/L	94	
BLA02	Q579514	DI WATER	BORON			< 0.2	mg/L		
BLA02	Q579514	DI WATER	BORON			BDL	mg/L		
SAMPLE	C142063		See Certificate of Analysis						
CCV	Q596419	QC-19,STOC	BORON	4.0		3.991	mg/L	100	
BLA01	Q596420	DI	BORON			BDL	mg/L		

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

CADMIUM GFAA EPA 213.2

Analyst : J. VANSKYOCK Analysis Date: 16-MAR-93 Instrument: GFAA Test: M408.2.0
Reviewer: S. O'NEAL Review Date: 18-MAR-93 File ID: 001315 Run: R181199
Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q664382		CADMIUM	.001		.000945	mg/L	94.5	
SPI02	Q579520	C142061	CADMIUM	0	.05	.0575	mg/L	115	
DUP02	Q579519	C142061	CADMIUM	0		BDL	mg/L		0
CDL01	Q664390		CADMIUM	.002		.0022	mg/L	110	
CCV	Q664391		CADMIUM	.002		.00211	mg/L	105.5	
BLA01	Q664392		CADMIUM			< .0004	mg/L		
LCS	Q579517		CADMIUM	.05		.05	mg/L	100	
BLA02	Q579518		CADMIUM			< .0004	mg/L		
SAMPLE	C142063		See Certificate of Analysis						
CDL01	Q664393		CADMIUM	.002		.00229	mg/L	114.5	
CCV	Q664394		CADMIUM	.002		.00209	mg/L	104.5	
BLA01	Q664395		CADMIUM			< .0004	mg/L		

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike
Q579519 Arsenic NA at less than five times d.l. +/- d.l.

CADMIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M408.9.0
Reviewer: . Review Date: File ID: Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596411	PE 40 STAN	CADMIUM	0.50		0.522	mg/L	104	
[illegible]	Q596404	SPEX	CADMIUM	4.0		4.04	mg/L	101	
[illegible]	Q593811	C142009	CADMIUM	0	1.0	0.924	mg/L	92	
DUP02	Q593810	C142009	CADMIUM	0		BDL	mg/L		
CDL01	Q596413	SPEX	CADMIUM	0.20		0.205	mg/L	103	
BLA01	Q596405	DI	CADMIUM			< 0.008	mg/L		
LCS	Q579513	SPEX	CADMIUM	1.0		0.916	mg/L	92	
BLA02	Q579514	DI WATER	CADMIUM			< 0.008	mg/L		
SAMPLE	C142063		See Certificate of Analysis						
CCV	Q596419	QC-19,STOC	CADMIUM	4.0		4.10	mg/L	103	
BLA01	Q596420	DI	CADMIUM			< 0.008	mg/L		
CDL01	Q596418	SPEX	CADMIUM	0.20		0.210	mg/L	105	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the
Q593810 detection limit +/-the detection limit.

CALCIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 17-NOV-92 Instrument: ICP Test: M409.9.0
Reviewer: . Review Date: File ID: Run: R171799
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q597439	PE 40 STAN	CALCIUM	5.0		5.09	mg/L	102	
ICV01	Q597437	SPEX-XEMS8	CALCIUM	100		100.	mg/L	100	
SPI02	Q579524	C142057	CALCIUM	410	5.0	*	mg/L		
DUP02	Q579523	C142057	CALCIUM	400		410	mg/L		1
CDL01	Q597441	SPEX	CALCIUM	5.20			mg/L	0	
ICS-A	Q597435		CALCIUM	125.		129.01	mg/L	103	
[illegible]	Q597436		CALCIUM	125.		129.87	mg/L	104	
[illegible]	Q597433	SPEX-XEMS8	CALCIUM	100		102.	mg/L	102	
BLA01	Q597434	DI	CALCIUM			< 2.0	mg/L		
LCS	Q579521		CALCIUM	5.0		4.43	mg/L	89	
BLA02	Q579522		CALCIUM			< 2.0	mg/L		

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
SAMPLE	C142063		See Certificate of Analysis						
CDL01	Q597429	SPEX	CALCIUM	5.2		5.9	mg/L	113	
ICS-A	Q597430		CALCIUM	125		137	mg/L	110	
ICS-B	Q597431		CALCIUM	125		137	mg/L	110	
CCV	Q597432	SPEX-XEMS8	CALCIUM	100		110.	mg/L	110	

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

CHROMIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M410.9.D

Reviewer: _ Review Date: File ID: Run: R171441

Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q594855	PE 40 STAN	CHROMIUM	2.0		2.09	mg/L	105	
ICV01	Q594850	SPEX	CHROMIUM	4.0		4.03	mg/L	101	
SPI02	Q593811	C142009	CHROMIUM	0	1.0	0.957	mg/L	96	
DUP02	Q593810	C142009	CHROMIUM	0		BDL	mg/L		
CCV	Q594843	QC-19,STOC	CHROMIUM	4.0		4.12	mg/L	103	
CDL01	Q594854	SPEX	CHROMIUM	0.20		0.198	mg/L	99	
BLA01	Q594851	DI	CHROMIUM			< 0.016	mg/L		
LCS	Q579513	SPEX	CHROMIUM	1.0		0.908	mg/L	91	
BLA02	Q579514	DI WATER	CHROMIUM			< 0.016	mg/L		
SAMPLE	C142063		See Certificate of Analysis						
CCV	Q594848	QC-19,STOC	CHROMIUM	4.0		4.08	mg/L	102	
BLA01	Q594849	DI	CHROMIUM			< 0.016	mg/L		
CDL01	Q594847	SPEX	CHROMIUM	0.20		0.212	mg/L	106	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

COPPER (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M412.9.D

Reviewer: _ Review Date: File ID: Run: R171641

Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596411	PE 40 STAN	COPPER	2.0		2.09	mg/L	105	
SPI02	Q593811	C142009	COPPER	0	1.0	0.991	mg/L	99	
DUP02	Q593810	C142009	COPPER	0		BDL	mg/L		
CDL01	Q596413	SPEX	COPPER	0.20		0.204	mg/L	102	
BLA01	Q596405	DI	COPPER			< 0.016	mg/L		
LCS	Q579513	SPEX	COPPER	1.0		0.966	mg/L	97	
BLA02	Q579514	DI WATER	COPPER			< 0.016	mg/L		
SAMPLE	C142063		See Certificate of Analysis						
CCV	Q596419	QC-19,STOC	COPPER	4.0		4.06	mg/L	102	
BLA01	Q596420	DI	COPPER			< 0.016	mg/L		
CDL01	Q596418	SPEX	COPPER	0.20		0.204	mg/L	102	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

IRON (ICP-SEQ) EPA 200.7

Analyst : D. WARNER | Analysis Date: 16-NOV-92 | Instrument: ICP | Test: M415.9.0
Reviewer: _ | Review Date: | File ID: | Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596411	PE 40 STAN	IRON	2.0		2.02	mg/L	101	
ICV01	Q596404	SPEX	IRON	4.0		3.97	mg/L	99	
SPI02	Q593811	C142009	IRON	0	1.0	0.989	mg/L	99	
DUP02	Q593810	C142009	IRON	0		* 0.0470	mg/L		200
CDL01	Q596413	SPEX	IRON	0.20		0.194	mg/L	97	
BLA01	Q596405	DI	IRON			< 0.016	mg/L		
LCS	Q579513	SPEX	IRON	1.0		0.922	mg/L	92	
BLA02	Q579514	DI WATER	IRON			< 0.016	mg/L		
SAMPLE	C142063		See Certificate of Analysis						
CCV	Q596419	QC-19,STOC	IRON	4.0		4.06	mg/L	102	
BLA01	Q596420	DI	IRON			< 0.016	mg/L		
CDL01	Q596418	SPEX	IRON	0.20		0.205	mg/L	103	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

LEAD GFAA EPA 239.2

Analyst : W. WATNESS | Analysis Date: 16-MAR-93 | Instrument: GFAA | Test: M416.2.0
Reviewer: S. O'NEAL | Review Date: 18-MAR-93 | File ID: D01615 | Run: R181201
Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q664396		LEAD	.01		.0107	mg/L	107	
SPI02	Q579520	C142061	LEAD	0	.05	.06	mg/L	120	
[illegible]2	Q579519	C142061	LEAD	0		BDL	mg/L		0
[illegible]01	Q664400		LEAD	.01		.0109	mg/L	109	
CCV	Q664405		LEAD	.02		.0214	mg/L	107	
BLA01	Q664406		LEAD			< .002	mg/L		
LCS	Q579517		LEAD	.05		.0665	mg/L	133	
BLA02	Q579518		LEAD			< .002	mg/L		
SAMPLE	C142063		See Certificate of Analysis						
CDL01	Q664407		LEAD	.01		.0109	mg/L	109	
CCV	Q664408		LEAD	.02		.0217	mg/L	108.5	
BLA01	Q664409		LEAD			< .002	mg/L		

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike Q579519 Arsenic NA at less than five times d.l. +/- d.l.

LEAD (ICP-SEQ) EPA 200.7

Analyst : D. WARNER | Analysis Date: 14-NOV-92 | Instrument: ICP | Test: M416.9.0
Reviewer: _ | Review Date: | File ID: | Run: R171441
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q594855	PE 40 STAN	LEAD	2.0		2.04	mg/L	102	
ICV01	Q594850	SPEX	LEAD	4.0		4.02	mg/L	101	
SPI02	Q593811	C142009	LEAD	0	1.0	0.955	mg/L	96	
DUP02	Q593810	C142009	LEAD	0		BDL	mg/L		
CCV	Q594843	QC-19,STOC	LEAD	4.0		4.18	mg/L	105	
CDL01	Q594854	SPEX	LEAD	0.20		0.194	mg/L	97	
BLA01	Q594851	DI	LEAD			< 0.04	mg/L		
[illegible]	Q579513	SPEX	LEAD	1.0		0.947	mg/L	95	
[illegible]02	Q579514	DI WATER	LEAD			< 0.04	mg/L		
SAMPLE	C142063		See Certificate of Analysis						
CCV	Q594848	QC-19,STOC	LEAD	4.0		4.10	mg/L	103	

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
BLA01	Q594849	DI	LEAD			< 0.04	mg/L		
CDL01	Q594847	SPEX	LEAD	0.20		0.194	mg/L	97	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

MAGNESIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 17-NOV-92 Instrument: ICP Test: M418.9.0
Reviewer: . Review Date: File ID: Run: R171799
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q597439	PE 40 STAN	MAGNESIUM	5.0		5.06	mg/L	101	
ICV01	Q597437	SPEX-XEMS8	MAGNESIUM	100		101.	mg/L	101	
SPI02	Q579524	C142057	MAGNESIUM	160	5.0	*	mg/L		
DUP02	Q579523	C142057	MAGNESIUM	160		160	mg/L		2
CDL01	Q597441	SPEX	MAGNESIUM	5.20			mg/L	0	
ICS-A	Q597435		MAGNESIUM	125.		127.93	mg/L	102	
ICS-B	Q597436		MAGNESIUM	125.		126.45	mg/L	101	
CCV	Q597433	SPEX-XEMS8	MAGNESIUM	100		97.7	mg/L	98	
BLA01	Q597434	DI	MAGNESIUM			< 2.0	mg/L		
LCS	Q579521		MAGNESIUM	5.0		4.38	mg/L	88	
BLA02	Q579522		MAGNESIUM			< 2.0	mg/L		
SAMPLE	C142063		See Certificate of Analysis						
CDL01	Q597429	SPEX	MAGNESIUM	5.2		5.7	mg/L	110	
ICS-A	Q597430		MAGNESIUM	125		138	mg/L	110	
ICS-B	Q597431		MAGNESIUM	125		138	mg/L	110	
CCV	Q597432	SPEX-XEMS8	MAGNESIUM	100		107.	mg/L	107	

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

MANGANESE (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M419.9.0
Reviewer: . Review Date: File ID: Run: R171461
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q594855	PE 40 STAN	MANGANESE	2.0		2.09	mg/L	105	
ICV01	Q594850	SPEX	MANGANESE	4		4.08	mg/L	102	
SPI02	Q593811	C142009	MANGANESE	0	1.0	0.976	mg/L	98	
DUP02	Q593810	C142009	MANGANESE	0		BDL	mg/L		
CCV	Q594843	QC-19,STOC	MANGANESE	4.0		4.17	mg/L	104	
CDL01	Q594854	SPEX	MANGANESE	0.20		0.208	mg/L	104	
BLA01	Q594851	DI	MANGANESE			< 0.008	mg/L		
LCS	Q579513	SPEX	MANGANESE	1.0		0.946	mg/L	95	
BLA02	Q579514	DI WATER	MANGANESE			< 0.008	mg/L		
SAMPLE	C142063		See Certificate of Analysis						
CCV	Q594848	QC-19,STOC	MANGANESE	4.0		4.12	mg/L	103	
BLA01	Q594849	DI	MANGANESE			< 0.008	mg/L		
CDL01	Q594847	SPEX	MANGANESE	0.20		0.213	mg/L	107	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

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POTASSIUM FAA EPA 258.1

Analyst : L. TRZUPEK Analysis Date: 01-DEC-92 Instrument: FAA Test: M426.1.0
Reviewer: D. WARNER Review Date: 04-DEC-92 File ID: B752 Run: R173072
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q606477		POTASSIUM	10		9.3		93	
ICV01	Q606494		POTASSIUM	10		9.8		98	
SPI02	Q579524	C142057	POTASSIUM	5.9	5.0	9.77	mg/L	78	
DUP02	Q579523	C142057	POTASSIUM	5.9		5.9	mg/L		0
CDL01	Q606496		POTASSIUM	1.0		1.0		100	
CCV	Q606497		POTASSIUM	25		25		100	
BLA01	Q606498		POTASSIUM			BDL			
LCS	Q579521		POTASSIUM	5.0		4.18	mg/L	84	
BLA02	Q579522		POTASSIUM			< 0.2	mg/L		
SAMPLE	C142063		See Certificate of Analysis						
CCV	Q606499		POTASSIUM	25		24.5		98	
BLA01	Q606500		POTASSIUM			BDL			
CDL01	Q606501		POTASSIUM	1.0		0.98		98	

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

SODIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 30-NOV-92 Instrument: ICP Test: M431.9.0
Reviewer: . Review Date: 30-NOV-92 File ID: Run: R172665
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q603724		SODIUM	5.0		4.85		97	
SPI02	Q579524	C142057	SODIUM	65	5.0	*	mg/L		
DUP02	Q579523	C142057	SODIUM	85		90	mg/L		6
CDL01	Q603726		SODIUM	5.2		4.92		95	
STD	Q603729		SODIUM	100		97.6		98	
BLA01	Q603730		SODIUM			BDL			
LCS	Q579521		SODIUM	5.0		4.77	mg/L	95	
BLA02	Q579522		SODIUM			< 2.0	mg/L		
SAMPLE	C142063		See Certificate of Analysis						
CDL01	Q603731		SODIUM	5.2		4.77		92	
CCV	Q603734		SODIUM	100		98.6		99	
BLA01	Q603735		SODIUM			BDL			

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

ZINC (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M439.9.0
Reviewer: . Review Date: File ID: Run: R171441
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q594855	PE 40 STAN	ZINC	2.0		2.12	mg/L	106	
ICV01	Q594850	SPEX	ZINC	4.0		4.02	mg/L	101	
SPI02	Q593811	C142009	ZINC	0.0400	1.0	0.969	mg/L	93	
DUP02	Q593810	C142009	ZINC	0.0400		*	mg/L		200
CCV	Q594843	QC-19,STOC	ZINC	4.0		4.19	mg/L	105	
CDL01	Q594854	SPEX	ZINC	0.20		0.209	mg/L	105	
BLA01	Q594851	DI	ZINC			< 0.016	mg/L		
LCS	Q579513	SPEX	ZINC	1.0		0.917	mg/L	92	
BLA02	Q579514	DI WATER	ZINC			< 0.016	mg/L		
SAMPLE	C142063		See Certificate of Analysis						

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
CCV	Q594848	QC-19,STOC	ZINC	4.0		4.12	mg/L	103	
BLA01	Q594849	DI	ZINC			< 0.016	mg/L		
CDL01	Q594847	SPEX	ZINC	0.20		0.215	mg/L	108	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

ARSENIC GFAA EPA 206.2

Analyst: D. WARNER Analysis Date: 23-NOV-92 Instrument: GFAA Test: M403.2.0
Reviewer: J. SCHOTT Review Date: 25-NOV-92 File ID: 8727 Run: R172375
Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q601937		ARSENIC	0.0200		0.0201		100	
SPI02	Q579520	C142061	ARSENIC			NA	mg/L		
DUP02	Q579519	C142061	ARSENIC			NA	mg/L		
CDL01	Q601939		ARSENIC	0.0200		0.0211		106	
CCV	Q601956		ARSENIC	0.0200		0.0196		98	
BLA01	Q601957		ARSENIC			BDL			
LCS	Q579517		ARSENIC	0.10		0.081	mg/L	81	
BLA02	Q579518		ARSENIC			< 0.004	mg/L		
SAMPLE	C142063		See Certificate of Analysis						
CCV	Q601960		ARSENIC	0.0200		0.0187		94	
BLA01	Q601961		ARSENIC			BDL			

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike
Q579519 Arsenic NA at less than five times d.l. +/- d.l.

Notes

BDL	Below Detection Limit
<	Less Than Lower Detection Limit
*	See Note for Parameter
NA	Not Applicable

Quality Assurance Officer: _____

QUALITY CONTROL TYPES

Accuracy is determinined by the following:

ICV01 — Initial Calibration Verification. A reference material independent of the calibration source must be within 10% recovery of the true value. Frequency is one per run.

BLA02 — Prepared Reagent Blank. Must be below detection limit to verify absence of contamination. Frequency is one per set of ten samples. If high levels of analyte are present, the BLA02 must be less than 10 X the sample concentration.

LCS — Laboratory Control Sample. A reference material is prepared using the same procedure for samples to validate the accuracy of the method. The observed value must be within 20% of the true value.

BLA01 — Reagent Blank. Must be below detection limit. Frequency is one per ten samples to verify stability of baseline and accuracy of detection limit.

CCV — Continuing Calibration Verification. Must be within 10% of true value verifies accuracy of calibration curve and detects any shift during a run. Frequency is one per ten samples.

SPI02 — Prep Spike Sample. Sample is spiked with known concentration of analyte. Recovery must be within 25%. Frequency is one per set of ten samples of the same matrix.

Precision is determined by the following:

DUP02 — Prep Sample Duplicate. Must be within 20% relative percent difference. Frequency is one per ten samples, of the same matrix.

QUALITY ASSURANCE REPORT

Service Location	Received	Lab ID
HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	05-NOV-92	C142059
	Complete 18-MAR-93	PO Number RE-LOG C140686
	Printed 23-MAR-93	Sampled 18-SEP-92 11:30

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
RELOG OF SAMPLE: C140686 (MW10A UNFILTERED) - GRAB
SAMPLE I.D.: MW10A

ALUMINUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M401.9.0
Reviewer: _ Review Date: File ID: Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596411	PE 40 STAN	ALUMINUM	11		10.9	mg/L	99	
ICV01	Q596404	SPEX	ALUMINUM	10		9.67	mg/L	97	
SPI02	Q593811	C142009	ALUMINUM	0	1.0	0.920	mg/L	92	
DUP02	Q593810	C142009	ALUMINUM	0		BDL	mg/L		
BLA01	Q596405	DI	ALUMINUM			< 0.12	mg/L		
LCS	Q579513	SPEX	ALUMINUM	1.0		0.893	mg/L	89	
BLA02	Q579514	DI WATER	ALUMINUM			< 0.12	mg/L		
SAMPLE	C142059		See Certificate of Analysis						
BLA01	Q596420	DI	ALUMINUM			< 0.12	mg/L		

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

ANTIMONY GFAA EPA 204.2

Analyst : M. BAUER Analysis Date: 16-MAR-93 Instrument: GFAA Test: M402.2.0
Reviewer: S. O'NEAL Review Date: 18-MAR-93 File ID: 001587 Run: R181196
Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q664355		ANTIMONY	.01		.0097	mg/L	97	
SPI02	Q579520	C142061	ANTIMONY	0	0	BDL	mg/L	0	
DUP02	Q579519	C142061	ANTIMONY	0		BDL	mg/L		0
CDL01	Q664360		ANTIMONY	.01		.0101	mg/L	101	
CCV	Q664361		ANTIMONY	.02		.0187	mg/L	93.5	
BLA01	Q664362		ANTIMONY			< .002	mg/L		
LCS	Q579517		ANTIMONY	0		BDL	mg/L	0	
BLA02	Q579518		ANTIMONY			< .002	mg/L		
SAMPLE	C142059		See Certificate of Analysis						
CDL01	Q664363		ANTIMONY	.01		.0096	mg/L	96	
CCV	Q664364		ANTIMONY	.02		.0181	mg/L	90.5	
BLA01	Q664365		ANTIMONY			< .002	mg/L		

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike Q579519 Arsenic NA at less than five times d.l. +/- d.l.

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M402.9.0
Reviewer: . Review Date: File ID: Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596404	SPEX	ANTIMONY	4		3.92	mg/L	98	
SPI02	Q593811	C142009	ANTIMONY	0	1.0	0.902	mg/L	90	
DUP02	Q593810	C142009	ANTIMONY	0		BDL	mg/L		
CDL01	Q596413	SPEX	ANTIMONY	0.20		0.210	mg/L	105	
BLA01	Q596405	DI	ANTIMONY			< 0.08	mg/L		
LCS	Q579513	SPEX	ANTIMONY	1.0		0.919	mg/L	92	
BLA02	Q579514	DI WATER	ANTIMONY			< 0.08	mg/L		
SAMPLE	C142059		See Certificate of Analysis						
CCV	Q596419	QC-19,STOC	ANTIMONY	4.0		3.94	mg/L	99	
BLA01	Q596420	DI	ANTIMONY			< 0.08	mg/L		
CDL01	Q596418	SPEX	ANTIMONY	0.20		0.204	mg/L	102	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

BARIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M404.9.0
Reviewer: . Review Date: File ID: Run: R171441
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q594855	PE 40 STAN	BARIUM	1.0		0.988	mg/L	99	
SPI02	Q593811	C142009	BARIUM	0	1.0	0.954	mg/L	95	
DUP02	Q593810	C142009	BARIUM	0		BDL	mg/L		
[redacted]	Q594851	DI	BARIUM			< 0.008	mg/L		
LCS	Q579513	SPEX	BARIUM	1.0		0.929	mg/L	93	
BLA02	Q579514	DI WATER	BARIUM			< 0.008	mg/L		
SAMPLE	C142059		See Certificate of Analysis						
BLA01	Q594849	DI	BARIUM			< 0.008	mg/L		

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

BORON (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M407.9.0
Reviewer: . Review Date: File ID: Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596411	PE 40 STAN	BORON	1.0		0.994	mg/L	99	
SPI02	Q593811	C142009	BORON	0	1.0	0.992	mg/L	99	
DUP02	Q593810	C142009	BORON	0		BDL	mg/L		
CDL01	Q596413	SPEX	BORON	0.2		0.182	mg/L	91	
BLA01	Q596405	DI	BORON			BDL	mg/L		
LCS	Q579513	SPEX	BORON	1.0		0.945	mg/L	94	
BLA02	Q579514	DI WATER	BORON			< 0.2	mg/L		
BLA02	Q579514	DI WATER	BORON			BDL	mg/L		
SAMPLE	C142059		See Certificate of Analysis						
CCV	Q596419	QC-19,STOC	BORON	4.0		3.991	mg/L	100	
BLA01	Q596420	DI	BORON			BDL	mg/L		

Comments

[redacted]3810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

CADMIUM GFAA EPA 213.2

Analyst : J. VANSCYOCK Analysis Date: 16-MAR-93 Instrument: GFAA Test: M408.2.0
Reviewer: S. O'NEAL Review Date: 18-MAR-93 File ID: D01315 Run: R181199

Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q664382		CADMIUM	.001		.000945	mg/L	94.5	
SPI02	Q579520	C142061	CADMIUM	0	.05	.0575	mg/L	115	
DUP02	Q579519	C142061	CADMIUM	0		BDL	mg/L		0
CDL01	Q664390		CADMIUM	.002		.0022	mg/L	110	
CCV	Q664391		CADMIUM	.002		.00211	mg/L	105.5	
BLA01	Q664392		CADMIUM			< .0004	mg/L		
LCS	Q579517		CADMIUM	.05		.05	mg/L	100	
BLA02	Q579518		CADMIUM			< .0004	mg/L		
SAMPLE	C142059		See Certificate of Analysis						
CDL01	Q664393		CADMIUM	.002		.00229	mg/L	114.5	
CCV	Q664394		CADMIUM	.002		.00209	mg/L	104.5	
BLA01	Q664395		CADMIUM			< .0004	mg/L		

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike
Q579519 Arsenic NA at less than five times d.l. +/- d.l.

CADMIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M408.9.0
Reviewer: . Review Date: File ID: Run: R171641

Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596411	PE 40 STAN	CADMIUM	0.50		0.522	mg/L	104	
ICV01	Q596404	SPEX	CADMIUM	4.0		4.04	mg/L	101	
SPI02	Q593811	C142009	CADMIUM	0	1.0	0.924	mg/L	92	
DUP02	Q593810	C142009	CADMIUM	0		BDL	mg/L		
CDL01	Q596413	SPEX	CADMIUM	0.20		0.205	mg/L	103	
BLA01	Q596405	DI	CADMIUM			< 0.008	mg/L		
LCS	Q579513	SPEX	CADMIUM	1.0		0.916	mg/L	92	
BLA02	Q579514	DI WATER	CADMIUM			< 0.008	mg/L		
SAMPLE	C142059		See Certificate of Analysis						
CCV	Q596419	QC-19,STOC	CADMIUM	4.0		4.10	mg/L	103	
BLA01	Q596420	DI	CADMIUM			< 0.008	mg/L		
CDL01	Q596418	SPEX	CADMIUM	0.20		0.210	mg/L	105	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the
Q593810 detection limit +/-the detection limit.

CALCIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 17-NOV-92 Instrument: ICP Test: M409.9.0
Reviewer: . Review Date: File ID: Run: R171799

Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q597439	PE 40 STAN	CALCIUM	5.0		5.09	mg/L	102	
ICV01	Q597437	SPEX-XEMS8	CALCIUM	100		100.	mg/L	100	
SPI02	Q579524	C142057	CALCIUM	410	5.0	*	mg/L		
DUP02	Q579523	C142057	CALCIUM	400		410	mg/L		1
CDL01	Q597441	SPEX	CALCIUM	5.20			mg/L	0	
ICS-A	Q597435		CALCIUM	125.		129.01	mg/L	103	
ICS-B	Q597436		CALCIUM	125.		129.87	mg/L	104	
BLA01	Q597438	DI	CALCIUM			< 2.0	mg/L		
LCS	Q579521		CALCIUM	5.0		4.43	mg/L	89	
BLA02	Q579522		CALCIUM			< 2.0	mg/L		
SAMPLE	C142059		See Certificate of Analysis						

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
CCV	Q597433	SPEX-XEMS8	CALCIUM	100		102.	mg/L	102	
[redacted]	Q597434	DI	CALCIUM			< 2.0	mg/L		
[redacted]	Q597429	SPEX	CALCIUM	5.2		5.9	mg/L	113	
ICS-A	Q597430		CALCIUM	125		137	mg/L	110	
ICS-B	Q597431		CALCIUM	125		137	mg/L	110	

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

CHROMIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M410.9.0
Reviewer: . Review Date: File ID: Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q594855	PE 40 STAN	CHROMIUM	2.0		2.09	mg/L	105	
ICV01	Q594850	SPEX	CHROMIUM	4.0		4.03	mg/L	101	
SPI02	Q593811	C142009	CHROMIUM	0	1.0	0.957	mg/L	96	
DUP02	Q593810	C142009	CHROMIUM	0		BDL	mg/L		
CCV	Q594843	QC-19,STOC	CHROMIUM	4.0		4.12	mg/L	103	
CDL01	Q594854	SPEX	CHROMIUM	0.20		0.198	mg/L	99	
BLA01	Q594851	DI	CHROMIUM			< 0.016	mg/L		
LCS	Q579513	SPEX	CHROMIUM	1.0		0.908	mg/L	91	
BLA02	Q579514	DI WATER	CHROMIUM			< 0.016	mg/L		
SAMPLE	C142059		See Certificate of Analysis						
CCV	Q594848	QC-19,STOC	CHROMIUM	4.0		4.08	mg/L	102	
BLA01	Q594849	DI	CHROMIUM			< 0.016	mg/L		
CDL01	Q594847	SPEX	CHROMIUM	0.20		0.212	mg/L	106	

Comments

[redacted]3810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

COPPER (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M412.9.0
Reviewer: . Review Date: File ID: Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596411	PE 40 STAN	COPPER	2.0		2.09	mg/L	105	
SPI02	Q593811	C142009	COPPER	0	1.0	0.991	mg/L	99	
DUP02	Q593810	C142009	COPPER	0		BDL	mg/L		
CDL01	Q596413	SPEX	COPPER	0.20		0.204	mg/L	102	
BLA01	Q596405	DI	COPPER			< 0.016	mg/L		
LCS	Q579513	SPEX	COPPER	1.0		0.966	mg/L	97	
BLA02	Q579514	DI WATER	COPPER			< 0.016	mg/L		
SAMPLE	C142059		See Certificate of Analysis						
CCV	Q596419	QC-19,STOC	COPPER	4.0		4.06	mg/L	102	
BLA01	Q596420	DI	COPPER			< 0.016	mg/L		
CDL01	Q596418	SPEX	COPPER	0.20		0.204	mg/L	102	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

IRON (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M415.9.0
Reviewer: Review Date: File ID: Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596411	PE 40 STAN	IRON	2.0		2.02	mg/L	101	
ICV01	Q596404	SPEX	IRON	4.0		3.97	mg/L	99	
SPI02	Q593811	C142009	IRON	0	1.0	0.989	mg/L	99	
DUP02	Q593810	C142009	IRON	0		* 0.0470	mg/L		200
CDL01	Q596413	SPEX	IRON	0.20		0.194	mg/L	97	
BLA01	Q596405	DI	IRON			< 0.016	mg/L		
LCS	Q579513	SPEX	IRON	1.0		0.922	mg/L	92	
BLA02	Q579514	DI WATER	IRON			< 0.016	mg/L		
SAMPLE	C142059		See Certificate of Analysis						
CCV	Q596419	QC-19,STOC	IRON	4.0		4.06	mg/L	102	
BLA01	Q596420	DI	IRON			< 0.016	mg/L		
CDL01	Q596418	SPEX	IRON	0.20		0.205	mg/L	103	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

LEAD GFAA EPA 239.2

Analyst : M. WATNESS Analysis Date: 16-MAR-93 Instrument: GFAA Test: M416.2.0
Reviewer: S. O'NEAL Review Date: 18-MAR-93 File ID: D01615 Run: R181201
Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q664396		LEAD	.01		.0107	mg/L	107	
SPI02	Q579520	C142061	LEAD	0	.05	.06	mg/L	120	
DUP02	Q579519	C142061	LEAD	0		BDL	mg/L		0
CDL01	Q664400		LEAD	.01		.0109	mg/L	109	
CCV	Q664401		LEAD	.02		.0209	mg/L	104.5	
BLA01	Q664402		LEAD			< .002	mg/L		
LCS	Q579517		LEAD	.05		.0665	mg/L	133	
BLA02	Q579518		LEAD			< .002	mg/L		
SAMPLE	C142059		See Certificate of Analysis						
CCV	Q664403		LEAD	.02		.0207	mg/L	103.5	
BLA01	Q664404		LEAD			< .002	mg/L		
CDL01	Q664407		LEAD	.01		.0109	mg/L	109	

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike
Q579519 Arsenic NA at less than five times d.l. +/- d.l.

LEAD (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M416.9.0
Reviewer: Review Date: File ID: Run: R171441
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q594855	PE 40 STAN	LEAD	2.0		2.04	mg/L	102	
ICV01	Q594850	SPEX	LEAD	4.0		4.02	mg/L	101	
SPI02	Q593811	C142009	LEAD	0	1.0	0.955	mg/L	96	
DUP02	Q593810	C142009	LEAD	0		BDL	mg/L		
CCV	Q594843	QC-19,STOC	LEAD	4.0		4.18	mg/L	105	
CDL01	Q594854	SPEX	LEAD	0.20		0.194	mg/L	97	
BLA01	Q594851	DI	LEAD			< 0.04	mg/L		
LCS	Q579513	SPEX	LEAD	1.0		0.947	mg/L	95	
BLA02	Q579514	DI WATER	LEAD			< 0.04	mg/L		
SAMPLE	C142059		See Certificate of Analysis						
CCV	Q594848	QC-19,STOC	LEAD	4.0		4.10	mg/L	103	

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
BLA01	Q594849	DI	LEAD			< 0.04	mg/L		
[illegible]	Q594847	SPEX	LEAD	0.20		0.194	mg/L	97	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

MAGNESIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 17-NOV-92 Instrument: ICP Test: M418.9.0
Reviewer: . Review Date: File ID: Run: R171799
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q597439	PE 40 STAN	MAGNESIUM	5.0		5.06	mg/L	101	
ICV01	Q597437	SPEX-XEMS8	MAGNESIUM	100		101.	mg/L	101	
SPI02	Q579524	C142057	MAGNESIUM	160	5.0	*	mg/L		
DUP02	Q579523	C142057	MAGNESIUM	160		160	mg/L		2
CDL01	Q597441	SPEX	MAGNESIUM	5.20			mg/L	0	
ICS-A	Q597435		MAGNESIUM	125.		127.93	mg/L	102	
ICS-B	Q597436		MAGNESIUM	125.		126.45	mg/L	101	
BLA01	Q597438	DI	MAGNESIUM			< 2.0	mg/L		
LCS	Q579521		MAGNESIUM	5.0		4.38	mg/L	88	
BLA02	Q579522		MAGNESIUM			< 2.0	mg/L		
SAMPLE	C142059		See Certificate of Analysis						
CCV	Q597433	SPEX-XEMS8	MAGNESIUM	100		97.7	mg/L	98	
BLA01	Q597434	DI	MAGNESIUM			< 2.0	mg/L		
CDL01	Q597429	SPEX	MAGNESIUM	5.2		5.7	mg/L	110	
ICS-A	Q597430		MAGNESIUM	125		138	mg/L	110	
[illegible]	Q597431		MAGNESIUM	125		138	mg/L	110	

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

MANGANESE (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M419.9.0
Reviewer: . Review Date: File ID: Run: R171441
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q594855	PE 40 STAN	MANGANESE	2.0		2.09	mg/L	105	
ICV01	Q594850	SPEX	MANGANESE	4		4.08	mg/L	102	
SPI02	Q593811	C142009	MANGANESE	0	1.0	0.976	mg/L	98	
DUP02	Q593810	C142009	MANGANESE	0		BDL	mg/L		
CCV	Q594843	QC-19,STOC	MANGANESE	4.0		4.17	mg/L	104	
CDL01	Q594854	SPEX	MANGANESE	0.20		0.208	mg/L	104	
BLA01	Q594851	DI	MANGANESE			< 0.008	mg/L		
LCS	Q579513	SPEX	MANGANESE	1.0		0.946	mg/L	95	
BLA02	Q579514	DI WATER	MANGANESE			< 0.008	mg/L		
SAMPLE	C142059		See Certificate of Analysis						
CCV	Q594848	QC-19,STOC	MANGANESE	4.0		4.12	mg/L	103	
BLA01	Q594849	DI	MANGANESE			< 0.008	mg/L		
CDL01	Q594847	SPEX	MANGANESE	0.20		0.213	mg/L	107	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

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POTASSIUM FAA EPA 258.1

Analyst : L. TRZUPEK Analysis Date: 01-DEC-92 Instrument: FAA Test: M426.1.0
Reviewer: D. WARNER Review Date: 04-DEC-92 File ID: 8752 Run: R173072
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q606477		POTASSIUM	10		9.3		93	
ICV01	Q606494		POTASSIUM	10		9.8		98	
SPI02	Q579524	C142057	POTASSIUM	5.9	5.0	9.77	mg/L	78	
DUP02	Q579523	C142057	POTASSIUM	5.9		5.9	mg/L		0
CDL01	Q606496		POTASSIUM	1.0		1.0		100	
CCV	Q606497		POTASSIUM	25		25		100	
BLA01	Q606498		POTASSIUM			BDL			
LCS	Q579521		POTASSIUM	5.0		4.18	mg/L	84	
BLA02	Q579522		POTASSIUM			< 0.2	mg/L		
SAMPLE	C142059		See Certificate of Analysis						
CCV	Q606499		POTASSIUM	25		24.5		98	
BLA01	Q606500		POTASSIUM			BDL			
CDL01	Q606501		POTASSIUM	1.0		0.98		98	

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

SODIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 17-NOV-92 Instrument: ICP Test: M431.9.0
Reviewer: _ Review Date: File ID: Run: R171799
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q597439	PE 40 STAN	SODIUM	5.0		4.74	mg/L	95	
ICV01	Q597437	SPEX-XEMS8	SODIUM	100		104.	mg/L	104	
SPI02	Q579524	C142057	SODIUM	65	5.0	*	mg/L		
DUP02	Q579523	C142057	SODIUM	85		90	mg/L		6
CDL01	Q597441	SPEX	SODIUM	5.20			mg/L	0	
ICS-A	Q597435		SODIUM				mg/L		
ICS-B	Q597436		SODIUM	0		0	mg/L		
BLA01	Q597438	DI	SODIUM			< 2.0	mg/L		
LCS	Q579521		SODIUM	5.0		4.77	mg/L	95	
BLA02	Q579522		SODIUM			< 2.0	mg/L		
SAMPLE	C142059		See Certificate of Analysis						
CCV	Q597433	SPEX-XEMS8	SODIUM	100		101	mg/L	101	
BLA01	Q597434	DI	SODIUM			< 2.0	mg/L		
CDL01	Q597429	SPEX	SODIUM	5.2		5.8	mg/L	115	
ICS-A	Q597430		SODIUM	0		0	mg/L	0	
ICS-B	Q597431		SODIUM	0		0	mg/L	0	

Comments

Q579524 Spike is NA, Sample concentration is greater than four times the spike Q579524 concentration.

ZINC (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M439.9.0
Reviewer: _ Review Date: File ID: Run: R171441
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q594855	PE 40 STAN	ZINC	2.0		2.12	mg/L	106	
ICV01	Q594850	SPEX	ZINC	4.0		4.02	mg/L	101	
SPI02	Q593811	C142009	ZINC	0.0400	1.0	0.969	mg/L	93	
DUP02	Q593810	C142009	ZINC	0.0400		*	mg/L		200
CCV	Q594843	QC-19,STOC	ZINC	4.0		4.19	mg/L	105	
CDL01	Q594854	SPEX	ZINC	0.20		0.209	mg/L	105	

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
BLA01	Q594851	DI	ZINC			< 0.016	mg/L		
[redacted]	Q579513	SPEX	ZINC	1.0		0.917	mg/L	92	
[redacted]	Q579514	DI WATER	ZINC			< 0.016	mg/L		
SAMPLE	C142059		See Certificate of Analysis						
CCV	Q594848	QC-19,STOC	ZINC	4.0		4.12	mg/L	103	
BLA01	Q594849	DI	ZINC			< 0.016	mg/L		
CDL01	Q594847	SPEX	ZINC	0.20		0.215	mg/L	108	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

ARSENIC GFAA EPA 206.2

Analyst : D. WARNER Analysis Date: 23-NOV-92 Instrument: GFAA Test: M403.2.0

Reviewer: J. SCHOTT Review Date: 25-NOV-92 File ID: 8727 Run: R172375

Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q601937		ARSENIC	0.0200		0.0201		100	
SPI02	Q579520	C142061	ARSENIC			NA	mg/L		
DUP02	Q579519	C142061	ARSENIC			NA	mg/L		
CDL01	Q601939		ARSENIC	0.0200		0.0211		106	
CCV	Q601946		ARSENIC	0.0200		0.0190		95	
BLA01	Q601951		ARSENIC			BDL			
LCS	Q579517		ARSENIC	0.10		0.081	mg/L	81	
BLA02	Q579518		ARSENIC			< 0.004	mg/L		
SAMPLE	C142059		See Certificate of Analysis						
CCV	Q601956		ARSENIC	0.0200		0.0196		98	
BLA01	Q601957		ARSENIC			BDL			

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike
Q579519 Arsenic NA at less than five times d.l. +/- d.l.

Notes

BDL Below Detection Limit
< Less Than Lower Detection Limit
** See Note for Parameter*
NA Not Applicable

Quality Assurance Officer: [signature]

QUALITY ASSURANCE REPORT

Service Location	Received	Lab ID
HERITAGE LABORATORIES, INC. 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441 (708)378-1600	05-NOV-92	C142060
	Complete 18-MAR-93	PO Number RE-LOG C140687
	Printed 23-MAR-93	Sampled 18-SEP-92 17:15

Sample Description

DESCRIPTION: WATER TESTING-TABLE 1
RELOG OF SAMPLE: C140687 (MW10B FILTERED) - GRAB
SAMPLE I.D.: MW10B

ALUMINUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER | Analysis Date: 16-NOV-92 | Instrument: ICP | Test: M401.9.0
Reviewer: _ | Review Date: | File ID: | Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596411	PE 40 STAN	ALUMINUM	11		10.9	mg/L	99	
ICV01	Q596404	SPEX	ALUMINUM	10		9.67	mg/L	97	
SPI02	Q593811	C142009	ALUMINUM	0	1.0	0.920	mg/L	92	
DUP02	Q593810	C142009	ALUMINUM	0		BDL	mg/L		
BLA01	Q596405	DI	ALUMINUM			< 0.12	mg/L		
LCS	Q579513	SPEX	ALUMINUM	1.0		0.893	mg/L	89	
BLA02	Q579514	DI WATER	ALUMINUM			< 0.12	mg/L		
SAMPLE	C142060		See Certificate of Analysis						
BLA01	Q596420	DI	ALUMINUM			< 0.12	mg/L		

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

ANTIMONY GFAA EPA 204.2

Analyst : M. BAUER | Analysis Date: 16-MAR-93 | Instrument: GFAA | Test: M402.2.0
Reviewer: S. O'NEAL | Review Date: 18-MAR-93 | File ID: 001587 | Run: R181196
Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q664355		ANTIMONY	.01		.0097	mg/L	97	
SPI02	Q579520	C142061	ANTIMONY	0	0	BDL	mg/L	0	
DUP02	Q579519	C142061	ANTIMONY	0		BDL	mg/L		0
CDL01	Q664360		ANTIMONY	.01		.0101	mg/L	101	
CCV	Q664361		ANTIMONY	.02		.0187	mg/L	93.5	
BLA01	Q664362		ANTIMONY			< .002	mg/L		
LCS	Q579517		ANTIMONY	0		BDL	mg/L	0	
BLA02	Q579518		ANTIMONY			< .002	mg/L		
SAMPLE	C142060		See Certificate of Analysis						
CDL01	Q664363		ANTIMONY	.01		.0096	mg/L	96	
CCV	Q664364		ANTIMONY	.02		.0181	mg/L	90.5	
BLA01	Q664365		ANTIMONY			< .002	mg/L		

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike Q579519 Arsenic NA at less than five times d.l. +/- d.l.

ANTIMONY (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M402.9.0
Reviewer: . Review Date: File ID: Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596404	SPEX	ANTIMONY	4		3.92	mg/L	98	
SPI02	Q593811	C142009	ANTIMONY	0	1.0	0.902	mg/L	90	
DUP02	Q593810	C142009	ANTIMONY	0		BDL	mg/L		
CDL01	Q596413	SPEX	ANTIMONY	0.20		0.210	mg/L	105	
BLA01	Q596405	DI	ANTIMONY			< 0.08	mg/L		
LCS	Q579513	SPEX	ANTIMONY	1.0		0.919	mg/L	92	
BLA02	Q579514	DI WATER	ANTIMONY			< 0.08	mg/L		
SAMPLE	C142060		See Certificate of Analysis						
CCV	Q596419	QC-19,STOC	ANTIMONY	4.0		3.94	mg/L	99	
BLA01	Q596420	DI	ANTIMONY			< 0.08	mg/L		
CDL01	Q596418	SPEX	ANTIMONY	0.20		0.204	mg/L	102	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

BARIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 14-NOV-92 Instrument: ICP Test: M404.9.0
Reviewer: . Review Date: File ID: Run: R171441
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q594855	PE 40 STAN	BARIUM	1.0		0.988	mg/L	99	
SPI02	Q593811	C142009	BARIUM	0	1.0	0.954	mg/L	95	
DUP02	Q593810	C142009	BARIUM	0		BDL	mg/L		
[redacted]	Q594851	DI	BARIUM			< 0.008	mg/L		
	Q579513	SPEX	BARIUM	1.0		0.929	mg/L	93	
BLA02	Q579514	DI WATER	BARIUM			< 0.008	mg/L		
SAMPLE	C142060		See Certificate of Analysis						
BLA01	Q594849	DI	BARIUM			< 0.008	mg/L		

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

BORON (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M407.9.0
Reviewer: . Review Date: File ID: Run: R171641
Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596411	PE 40 STAN	BORON	1.0		0.994	mg/L	99	
SPI02	Q593811	C142009	BORON	0	1.0	0.992	mg/L	99	
DUP02	Q593810	C142009	BORON	0		BDL	mg/L		
CDL01	Q596413	SPEX	BORON	0.2		0.182	mg/L	91	
BLA01	Q596405	DI	BORON			BDL	mg/L		
LCS	Q579513	SPEX	BORON	1.0		0.945	mg/L	94	
BLA02	Q579514	DI WATER	BORON			< 0.2	mg/L		
BLA02	Q579514	DI WATER	BORON			BDL	mg/L		
SAMPLE	C142060		See Certificate of Analysis						
CCV	Q596419	QC-19,STOC	BORON	4.0		3.991	mg/L	100	
BLA01	Q596420	DI	BORON			BDL	mg/L		

Comments

[redacted]3810 Duplicate is acceptable. At concentrations less than five times the Q593810 detection limit +/-the detection limit.

CADMIUM GFAA EPA 213.2

Analyst : J. VANSICKOCK Analysis Date: 16-MAR-93 Instrument: GFAA Test: M408.2.0
Reviewer: S. O'NEAL Review Date: 18-MAR-93 File ID: 001315 Run: R181199

Prep: GFAA ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q664382		CADMIUM	.001		.000945	mg/L	94.5	
SPI02	Q579520	C142061	CADMIUM	0	.05	.0575	mg/L	115	
DUP02	Q579519	C142061	CADMIUM	0		BDL	mg/L		0
CDL01	Q664390		CADMIUM	.002		.0022	mg/L	110	
CCV	Q664391		CADMIUM	.002		.00211	mg/L	105.5	
BLA01	Q664392		CADMIUM			< .0004	mg/L		
LCS	Q579517		CADMIUM	.05		.05	mg/L	100	
BLA02	Q579518		CADMIUM			< .0004	mg/L		
SAMPLE	C142060		See Certificate of Analysis						
CDL01	Q664393		CADMIUM	.002		.00229	mg/L	114.5	
CCV	Q664394		CADMIUM	.002		.00209	mg/L	104.5	
BLA01	Q664395		CADMIUM			< .0004	mg/L		

Comments

Q579520 Arsenic NA sample conc. or dilution greater than four times spike
Q579519 Arsenic NA at less than five times d.l. +/- d.l.

CADMIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 16-NOV-92 Instrument: ICP Test: M408.9.0
Reviewer: . Review Date: File ID: Run: R171641

Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q596411	PE 40 STAN	CADMIUM	0.50		0.522	mg/L	104	
ICV01	Q596404	SPEX	CADMIUM	4.0		4.04	mg/L	101	
SPI02	Q593811	C142009	CADMIUM	0	1.0	0.924	mg/L	92	
DUP02	Q593810	C142009	CADMIUM	0		BDL	mg/L		
CDL01	Q596413	SPEX	CADMIUM	0.20		0.205	mg/L	103	
BLA01	Q596405	DI	CADMIUM			< 0.008	mg/L		
LCS	Q579513	SPEX	CADMIUM	1.0		0.916	mg/L	92	
BLA02	Q579514	DI WATER	CADMIUM			< 0.008	mg/L		
SAMPLE	C142060		See Certificate of Analysis						
CCV	Q596419	QC-19,STOC	CADMIUM	4.0		4.10	mg/L	103	
BLA01	Q596420	DI	CADMIUM			< 0.008	mg/L		
CDL01	Q596418	SPEX	CADMIUM	0.20		0.210	mg/L	105	

Comments

Q593810 Duplicate is acceptable. At concentrations less than five times the
Q593810 detection limit +/-the detection limit.

CALCIUM (ICP-SEQ) EPA 200.7

Analyst : D. WARNER Analysis Date: 17-NOV-92 Instrument: ICP Test: M409.9.0
Reviewer: . Review Date: File ID: Run: R171799

Prep: FAA OR ICP ACID DIGESTION EPA 200.0

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	Q597439	PE 40 STAN	CALCIUM	5.0		5.09	mg/L	102	
ICV01	Q597437	SPEX-XEMS8	CALCIUM	100		100.	mg/L	100	
SPI02	Q579524	C142057	CALCIUM	410	5.0	*	mg/L		
DUP02	Q579523	C142057	CALCIUM	400		410	mg/L		1
CDL01	Q597441	SPEX	CALCIUM	5.20			mg/L	0	
ICS-A	Q597435		CALCIUM	125.		129.01	mg/L	103	
ICS-B	Q597436		CALCIUM	125.		129.87	mg/L	104	
CCV	Q597433	SPEX-XEMS8	CALCIUM	100		102.	mg/L	102	
BLA01	Q597434	DI	CALCIUM			< 2.0	mg/L		
LCS	Q579521		CALCIUM	5.0		4.43	mg/L	89	
BLA02	Q579522		CALCIUM			< 2.0	mg/L		

U.S.G.S. Groundwater Quality Data

(excerpts from Fenelon and Watson 1993)

Geohydrology and Water Quality of the Calumet Aquifer, in the Vicinity of the Grand Calumet River/Indiana Harbor Canal, Northwestern Indiana

By JOSEPH M. FENELON and LEE R. WATSON

Prepared in cooperation with the
INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

U.S. GEOLOGICAL SURVEY
Water-Resources Investigations Report 92-4115

Indianapolis, Indiana
1993

Table 27. Physical characteristics and inorganic-constituent data, arranged by land use, from 35 wells sampled in July 1987

[µS/cm, microsiemen per centimeter at 25° Celsius; mg/L, milligram per liter; µg/L, microgram per liter; --, not determined; five-digit number in parentheses is WATSTORE (USGS) and STORET (USEPA) parameter code]

Well name	Land use	Date	Specific conductance (µS/cm) (00095)	pH, field (standard units) (00400)	Temperature (degree Celsius) (00010)	Oxygen, dissolved (mg/L) (00300)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Potassium, dissolved (mg/L as K) (00935))	Alkalinity, field (mg/L as $CaCO_3$ (00410)	Alkalinity, lab (mg/L as $CaCO_3$ (90410)
A20	Residential	07-06-87	1430	7.2	19.5	6.3	110	26	150	4.2	246	231
B10	Residential	07-13-87	940	7.7	12.5	8.0	57	19	9.3	1.5	150	146
C1	Residential	07-07-87	1750	7.3	19.5	0.4	220	16	130	34	232	207
E20	Residential	07-15-87	956	7.1	17.0	1.0	150	18	26	4.2	430	423
B3	Commercial	07-14-87	1870	7.9	12.5	.9	130	49	200	8.2	554	547
B7	Commercial	07-14-87	428	7.4	17.5	6.1	63	13	6.8	1.8	180	169
B8	Commercial	07-14-87	2050	7.0	14.0	1.0	150	29	230	4.2	344	311
C3	Commercial	07-09-87	1080	7.3	14.0	.4	130	27	54	5.7	291	197
C4	Commercial	07-09-87	1280	7.2	19.5	.4	150	18	99	7.6	288	228
C10	Commercial	07-21-87	567	6.9	19.0	1.2	87	15	4.3	1.4	--	187
C12	Commercial	07-21-87	1780	6.8	13.5	<.1	240	27	91	5.3	251	231
C18	Commercial	07-14-87	1580	7.1	15.5	.5	120	22	190	5.9	490	398
D66	Commercial	07-15-87	--	7.7	--	--	130	27	860	5.5	--	2100
D67	Commercial	07-16-87	241	6.7	19.5	2.5	36	6.0	1.9	1.0	71	81
D68	Commercial	07-16-87	600	7.6	13.5	.5	94	11	16	3.5	182	183
E2	Commercial	07-14-87	390	7.6	16.0	5.1	52	15	6.3	2.3	142	152
E6	Commercial	07-15-87	1520	7.3	14.5	1.9	200	51	63	6.3	320	300
E7	Commercial	07-15-87	1280	11.3	19.5	3.6	140	94	58	12	200	133
E10	Commercial	07-16-87	1260	7.0	18.0	.3	150	21	62	6.5	335	314
A2	Steel	07-08-87	760	7.3	16.5	.4	120	20	12	3.3	280	183
A3	Steel	07-09-87	580	7.8	19.5	.3	140	35	100	19	935	880
A4	Steel	07-15-87	437	7.2	12.0	1.1	66	18	3.1	1.7	168	170
B2	Steel	07-08-87	5460	11.8	17.5	3.0	610	<.10	84	220	512	424
C2	Steel	07-07-87	2580	11.7	18.0	.3	130	<.10	120	110	355	380
D30	Steel	07-16-87	2310	9.7	15.5	4.1	330	<.10	170	48	28	57
D31	Steel	07-16-87	2740	7.0	13.0	<.1	270	50	170	41	260	261
D10	Petrochemical	07-23-87	3490	7.2	19.0	<.1	180	68	360	27	478	488
D11	Petrochemical	07-23-87	1260	7.2	16.0	<.1	130	38	77	6.7	445	440
D20	Petrochemical	07-16-87	2480	6.7	20.0	.8	250	39	190	14	975	870
D21	Petrochemical	07-22-87	1330	7.4	19.0	<.1	160	43	54	15	390	385
D40	Petrochemical	07-16-87	550	7.1	18.0	.8	77	12	25	1.5	237	220
D60	Petrochemical	07-22-87	775	7.0	19.0	.6	120	23	8.4	4.3	348	352
A6	Park	07-14-87	1130	7.3	16.5	.3	92	48	58	48	321	348
C20	Park	07-16-87	449	6.9	13.0	.1	59	8.0	21	1.6	148	129
E3	Park	07-13-87	674	8.0	15.5	2.0	95	3.3	15	32	242	249

Table 27. Physical characteristics and inorganic-constituent data, arranged by land use, from 35 wells sampled in July 1987--Continued

Well name	Land use	Sulfate, dissolved (mg/L as SO_4) (00945)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Bromide, dissolved (mg/L as Br) (71870)	Silica, dissolved (mg/L as SiO_2) (00955)	Solids, sum of constituents, dissolved (mg/L) (70301)	Nitrogen, NO_2+NO_3, total (mg/L as N) (00630)	Nitrogen, ammonia, dissolved (mg/L as N) (00608))	Phosphorous ortho, dissolved (mg/L as P) (00671)	Aluminum, dissolved (µg/L as Al) (01106)	Arsenic, dissolved µg/L as As (01000)
A20	Residential	76	250	1.3	0.11	11	776	5.5	0.05	<0.01	<10	<1
B10	Residential	31	40	0.7	.02	8.3	257	--	--	--	<10	<1
C1	Residential	540	140	.5	.02	22	1240	1.2	.09	.01	<10	4
E20	Residential	13	56	1.3	.08	21	561	<0.01	4.5	<.01	<10	<1
B3	Commercial	42	170	.4	.07	31	975	<.01	5.0	.14	<10	5
B7	Commercial	34	11	1.1	.03	9.7	249	1.2	.02	.02	10	1
B8	Commercial	95	420	.1	.16	15	1170	<.01	2.0	<.01	20	14
C3	Commercial	120	110	.7	.08	24	654	<.01	.75	<.01	<10	23
C4	Commercial	170	150	.9	.05	35	804	1.6	.05	<.01	<10	<1
C10	Commercial	73	13	1.1	<.01	7.4	315	.32	.16	<.01	<10	<1
C12	Commercial	490	130	3.2	--	18	1160	--	--	--	10	1
C18	Commercial	93	240	.3	.13	19	986	<.01	.80	<.01	20	<1
D66	Commercial	1100	180	2.3	4.4	55	3650	--	--	--	1100	55
D67	Commercial	19	1.8	.9	<.01	9.6	119	2.0	.01	<.01	30	3
D68	Commercial	93	27	.8	.04	14	373	--	--	--	<10	4
E2	Commercial	35	9.8	.5	.03	12	218	1.7	.01	<.01	10	<1
E6	Commercial	420	95	.5	<.01	47	1090	<.01	6.8	<.01	<10	2
E7	Commercial	250	53	.9	<.01	23	756	1.4	2.6	<.01	1100	9
E10	Commercial	24	190	.8	<.01	20	688	<.01	1.7	.02	<10	1
A2	Steel	120	15	.8	.03	16	476	<.01	.34	.10	<10	6
A3	Steel	1200	500	10	3.3	39	3440	<.01	640	.15	<10	14
A4	Steel	52	4.6	.7	<.01	9.2	258	2.6	.18	<.01	<10	2
B2	Steel	370	1200	.9	<.01	12	2800	.07	5.9	.04	430	<1
C2	Steel	180	230	1.3	<.01	8.5	990	.08	2.3	.05	620	<1
D30	Steel	800	290	1.6	<.01	49	1700	<.01	3.6	<.01	20	17
D31	Steel	640	430	1.6	.17	23	1790	<.01	.82	--	20	12
D10	Petrochemical	7.2	840	2.7	--	34	1810	--	--	--	<10	3
D11	Petrochemical	24	150	.5	--	20	713	--	--	--	<10	3
D20	Petrochemical	16	300	.7	.06	37	1520	<.01	13	<.01	40	76
D21	Petrochemical	210	78	1.6	.03	38	847	<.01	8.5	.12	<10	11
D40	Petrochemical	49	11	1.0	<.01	24	348	<.01	.87	.26	10	3
D60	Petrochemical	35	15	2.3	--	19	436	--	--	--	<10	3
A6	Park	190	52	1.8	.10	13	696	<.01	.05	<.01	<10	1
C20	Park	71	11	.4	.08	17	279	.02	.20	.01	20	1
E3	Park	60	10	.8	<.01	26	389	<.01	--	--	<10	3

Table 27. Physical characteristics and inorganic-constituent data, arranged by land use, from 35 wells sampled in July 1987--Continued

Well name	Land use	Barium, dissolved (µg/L as Ba) (01005)	Boron, dissolved (µg/L as B) (01020)	Cadmium, dissolved (µg/L as Cd) (01025)	Chromium, dissolved (µg/L as Cr) (01030)	Copper, dissolved (µg/L as Cu) (01040)	Iron, dissolved (µg/L as Fe) (01046)	Lead, dissolved (µg/L as Pb) (01049)	Manganese, dissolved (µg/L as Mn) (01056)	Mercury, dissolved (µg/L as Hg) (71890)	Mercury, total recoverable (µg/L as Hg) (71900)	Zinc, dissolved (µg/L as Zn) (01090)
A20	Residential	46	90	<1	<10	3	11	6	26	0.4	--	<3
B10	Residential	8	90	<1	10	<1	<3	<5	<1	.3	--	15
C1	Residential	57	590	<1	<10	2	9	<5	98	.2	--	<3
E20	Residential	180	170	<1	<10	1	5700	<5	2100	--	0.4	6
B3	Commercial	240	550	<1	<10	1	3700	<5	360	.3	--	15
B7	Commercial	17	90	<1	<10	2	<3	<5	<1	.3	--	<3
B8	Commercial	300	270	<1	<10	<1	16000	<5	410	.3	--	<10
C3	Commercial	200	370	<1	<10	<1	6700	<5	110	<.1	--	5
C4	Commercial	100	360	<1	10	2	90	<5	60	.3	--	10
C10	Commercial	<100	100	<1	<10	1	430	<5	20	<.1	--	9
C12	Commercial	--	--	<1	20	<1	--	<5	--	<.1	--	4
C18	Commercial	99	320	<1	<10	<1	--	<5	430	--	.2	16
D66	Commercial	600	230	<10	40	70	24000	200	540	.5	--	130
D67	Commercial	7	50	<1	<10	6	78	<5	71	--	.2	11
D68	Commercial	100	1900	<1	<10	<1	2700	<5	160	--	.2	9
E2	Commercial	12	90	<1	<10	<1	5	<5	<1	.3	--	23
E6	Commercial	200	470	<1	<10	2	4600	<5	160	--	.2	9
E7	Commercial	44	300	<1	<10	<1	6	<5	<1	--	.2	4
E10	Commercial	61	200	<1	<10	<1	9100	5	910	.4	--	6
A2	Steel	110	340	<1	<10	<1	<3	<5	250	<.1	--	11
A3	Steel	100	430	1	100	2	3100	<5	1100	<.1	--	10
A4	Steel	19	90	<1	<10	64	1600	<5	380	.2	--	4
B2	Steel	1000	20	<1	<10	<1	50	<5	10	.1	--	20
C2	Steel	200	60	<1	100	<1	<10	<5	<10	.7	--	<10
D30	Steel	100	510	<1	10	1	50	<5	10	--	.2	10
D31	Steel	<100	470	<1	10	<1	9300	<5	1000	.2	--	10
D10	Petrochemical	--	--	<1	20	<1	--	<5	--	<.1	--	5
D11	Petrochemical	--	--	<1	20	<1	--	<5	--	3.9	--	10
D20	Petrochemical	100	590	<1	10	<1	66000	<5	1700	--	.2	20
D21	Petrochemical	<100	580	<4	<10	<1	1600	<5	250	.1	--	23
D40	Petrochemical	34	190	<1	<10	<1	2800	<5	690	.1	--	<3
D60	Petrochemical	--	--	<1	20	<1	--	6	--	.2	--	7
A6	Park	60	460	<1	<10	<1	81	<5	110	--	.2	5
C20	Park	38	190	2	<10	<1	8	<5	430	.2	--	9
E3	Park	100	1200	<1	<10	<1	420	<5	120	.2	--	11

Table 28. Acid-extractable and base/neutral-extractable (methylene chloride-extractable) compound data, arranged by land use, from 35 wells sampled in July 1987
[µg/L, microgram per liter; --, not determined; E, estimated value; five-digit number in parentheses is WATSTORE (USGS) and STORET (USEPA) parameter code]

Well name	Land use	Date	Parachloro-metacresol, total (µg/L) (34452)	2-Chloro-phenol, total (µg/L) (34586)	2,4-Dichloro-phenol, total (µg/L) (34601)	2,4-Dimethyl-phenol, total (µg/L) (34606)	Dinitro-phenol, total (µg/L) (34616)	Dinitro-orthocresol, total (µg/L) (34657)	2-Nitrophenol, total (µg/L) 34591)	4-Nitrophenol, total (µg/L) (34646)	Pentachloro-phenol, total µg/L (39032)
A20	Residential	07-06-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
B10	Residential	07-13-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
C1	Residential	07-07-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
E20	Residential	07-15-87	<30	<6	<5	<6	<20	<30	<6	<30	<30
B3	Commercial	07-14-87	<30	<6	<5	<6	<20	<30	<6	<30	<30
B7	Commercial	07-14-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
B8	Commercial	07-14-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
C3	Commercial	07-09-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
C4	Commercial	07-09-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
C10	Commercial	07-21-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
C12	Commercial	07-21-87	<30	<5	<5	<5	--	<30	<5	<30	<30
C18	Commercial	07-14-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
D66	Commercial	07-15-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
D67	Commercial	07-16-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
D68	Commercial	07-16-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
E2	Commercial	07-14-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
E6	Commercial	07-15-87	<30	<6	<5	<6	<20	<30	<6	<30	<30
E7	Commercial	07-15-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
E10	Commercial	07-16-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
A2	Steel	07-08-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
A3	Steel	07-09-87	<30	<5	<5	86	<20	<30	<5	<30	<30
A4	Steel	08-05-87	<30	<5	<5	<5	--	<30	<5	<30	<30
B2	Steel	07-08-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
C2	Steel	07-07-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
D30	Steel	07-16-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
D31	Steel	07-16-87	<30	<6	<5	<6	<20	<30	<6	<30	<30
D10	Petrochemical	07-23-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
D11	Petrochemical	07-23-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
D20	Petrochemical	07-16-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
D21	Petrochemical	07-22-87	<30	<5	<5	<5	--	<30	<5	<30	<30
D40	Petrochemical	07-16-87	<30	<6	<5	<6	<20	<30	<6	<30	<30
D60	Petrochemical	07-22-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
A6	Park	07-14-87	<30	<5	<5	<5	<20	<30	<5	<30	<30
C20	Park	07-16-87	<30	<6	<5	<6	<20	<30	<6	<30	<30
E3	Park	07-13-87	<30	<5	<5	<5	<20	<30	<5	<30	<30

Table 28. Acid-extractable and base/neutral-extractable (methylene chloride-extractable) compound data, arranged by land use, from 35 wells sampled in July 1987--*Continued*

Well name	Land use	Phenol, total (µg/L) (34694)	Phenols, total (µg/L as phenol) (32730)	2,4,6-Trichlorophenol, total (µg/L) (34621)	Acenaphthene, total (µg/L) (34205)	Acenaphthylene, total (µg/L) (34200)	Anthracene, total (µg/L) (34220)	Benzo(a)anthracene (1,2-benzanthracene), total (µg/L) (34526)	Benzo (b) fluoranthene, total (µg/L) (34230)	Benzo (k) fluoranthene, total (µg/L) (34242)	Benzo (g,h,i) perylene (1,12-benzoperylene), total (µg/L) (34521)	Benzo (a) pyrene, total (µg/L) (34247)	4-Bromophenyl phenyl ether, total (µg/L) (34636)
A20	Residential	<5	2	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
B10	Residential	<5	1	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
C1	Residential	<5	4	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
E20	Residential	<6	3	<20	<5	<5	<5	<10	<10	<10	<10	<10	<5
B3	Commercial	<6	3	<20	<5	<5	<5	<10	<10	<10	<10	<10	<5
B7	Commercial	<5	2	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
B8	Commercial	<5	3	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
C3	Commercial	<5	2	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
C4	Commercial	<5	5	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
C10	Commercial	<5	8	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
C12	Commercial	<5	4	--	<5	<5	<5	<5	<10	<10	<10	<10	<5
C18	Commercial	<5	2	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
D66	Commercial	<5	9	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
D67	Commercial	<5	1	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
D68	Commercial	<5	2	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
E2	Commercial	<5	2	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
E6	Commercial	<6	2	<20	<5	<5	<5	<10	<10	<10	<10	<10	<5
E7	Commercial	7	14	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
E10	Commercial	<5	3	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
A2	Steel	<5	4	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
A3	Steel	73	190	<20	33	<5	<5	<5	<10	<10	<10	<10	<5
A4	Steel	<5	3	--	<5	<5	<5	<5	<10	<10	<10	<10	<5
B2	Steel	<5	15	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
C2	Steel	<5	6	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
D30	Steel	<5	7	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
D31	Steel	<6	3	<20	<5	<5	<5	<10	<10	<10	<10	<10	<5
D10	Petrochemical	<5	66	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
D11	Petrochemical	<5	9	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
D20	Petrochemical	18	310	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
D21	Petrochemical	<5	9	--	<5	<5	<5	<5	<10	<10	<10	<10	<5
D40	Petrochemical	<6	4	<20	<5	<5	<5	<10	<10	<10	<10	<10	<5
D60	Petrochemical	<5	3	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
A6	Park	<5	3	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5
C20	Park	<6	2	<20	<5	<5	<5	<10	<10	<10	<10	<10	<5
E3	Park	<5	5	<20	<5	<5	<5	<5	<10	<10	<10	<10	<5

Table 28. Acid-extractable and base/neutral-extractable (methylene chloride-extractable) compound data, arranged by land use, from 35 wells sampled in July 1987--Continued

Well name	Land use	N-Butyl benzyl phthalate, total (µg/L) (34292)	Bis (2-chloro-ethoxy) methane, total (µg/L) (34278)	Bis (2-chloro-ethyl) ether, total (µg/L) (34273)	Bis (2-chloro-isopropyl) ether, total (µg/L) (34283)	2-Chloro-naphthalene, total (µg/L) (34581)	4-Chloro-phenyl-phenyl-ether, total (µg/L) (34641)	Chrysene, total (µg/L) (34320)	1,2,5,6-Dibenz-anthracene, total (µg/L) (34556)	Diethyl phthalate, total (µg/L) (34336)	Dimethyl phthalate, total (µg/L) (34341)	Di-n-butyl phthalate, total (µg/L) (39110)
A20	Residential	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
B10	Residential	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
C1	Residential	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
E20	Residential	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
B3	Commercial	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
B7	Commercial	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	5
B8	Commercial	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	7
C3	Commercial	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
C4	Commercial	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
C10	Commercial	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
C12	Commercial	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
C18	Commercial	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
D66	Commercial	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
D67	Commercial	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	220
D68	Commercial	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
E2	Commercial	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
E6	Commercial	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
E7	Commercial	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
E10	Commercial	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
A2	Steel	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
A3	Steel	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
A4	Steel	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
B2	Steel	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
C2	Steel	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
D30	Steel	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
D31	Steel	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
D10	Petrochemical	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
D11	Petrochemical	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
D20	Petrochemical	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
D21	Petrochemical	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
D40	Petrochemical	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
D60	Petrochemical	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
A6	Park	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
C20	Park	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5
E3	Park	<5	<5	<5	<5	<5	<5	<10	<10	<5	<5	<5

Table 28. Acid-extractable and base/neutral-extractable (methylene chloride-extractable) compound data, arranged by land use, from 35 wells sampled in July 1987--Continued

Well name	Land use	2,4-Dinitro-toluene, total (µg/L) (34611)	2,6-Dinitro-toluene, total (µg/L) (34626)	Di-n-octyl phthalate, total (µg/L) (34596)	Bis (2-ethylhexyl)-phthalate, total (µg/L) (39100)	Fluoranthene, total (µg/L) (34376)	Fluorene, total (µg/L) (34381)	Hexachloro-benzene, total (µg/L) (39700)	Hexachloro-butadiene, total (µg/L) (39702	Hexachloro-cyclo-pentadiene total (µg/L) (34386)	Hexachloro-ethane, total (µg/L) (34396)
A20	Residential	<5	<5	<10	9	<5	<5	<5	<5	<5	<5
B10	Residential	<5	<5	<10	12	<5	<5	<5	<5	<5	<5
C1	Residential	<5	<5	<10	8	<5	<5	<5	<5	<5	<5
E20	Residential	<5	<5	<10	25	<5	<5	<5	<5	<5	<5
B3	Commercial	<5	<5	<10	13	<5	<5	<5	<5	<5	<5
B7	Commercial	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5
B8	Commercial	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5
C3	Commercial	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5
C4	Commercial	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5
C10	Commercial	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5
C12	Commercial	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5
C18	Commercial	<5	<5	<10	11	<5	<5	<5	<5	<5	<5
D66	Commercial	<5	<5	<10	9	<5	<5	<5	<5	<5	<5
D67	Commercial	<5	<5	<10	100	<5	<5	<5	<5	<5	<5
D68	Commercial	<5	<5	<10	43	<5	<5	<5	<5	<5	<5
E2	Commercial	<5	<5	<10	7	<5	<5	<5	<5	<5	<5
E6	Commercial	<5	<5	<10	32	<5	<5	<5	<5	<5	<5
E7	Commercial	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5
E10	Commercial	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5
A2	Steel	<5	<5	<10	11	<5	<5	<5	<5	<5	<5
A3	Steel	<5	<5	<10	11	<5	<5	<5	<5	<5	<5
A4	Steel	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5
B2	Steel	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5
C2	Steel	<5	<5	<10	17	<5	<5	<5	<5	<5	<5
D30	Steel	<5	<5	<10	16	<5	<5	<5	<5	<5	<5
D31	Steel	<5	<5	<10	19	<5	<5	<5	<5	<5	<5
D10	Petrochemical	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5
D11	Petrochemical	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5
D20	Petrochemical	<5	<5	<10	11	<5	<5	<5	<5	<5	<5
D21	Petrochemical	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5
D40	Petrochemical	<5	<5	<10	7	<5	<5	<5	<5	<5	<5
D60	Petrochemical	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5
A6	Park	<5	<5	<10	14	<5	<5	<5	<5	<5	<5
C20	Park	<5	<5	<10	<5	<5	<5	<5	<5	<5	<5
E3	Park	<5	<5	<10	19	<5	<5	<5	<5	<5	<5

Table 28. Acid-extractable and base/neutral-extractable (methylene chloride-extractable) compound data, arranged by land use, from 35 wells sampled in July 1987--Continued

Well name	Land use	Indeno (1,2,3-cd) pyrene, total (µg/L) (34403)	Isophorone, total (µg/L) (34408)	Naphthalene, total (µg/L) (34696)	Nitro-benzene, total (µg/L) (34447)	N-nitrosodi-methylamine total (µg/L) (34438)	N-nitrosodi-n-propylamine, total (µg/L) (34428)	N-nitrosodi-phenylamine, total (µg/L) (34433)	Phenan-threne, total (µg/L) (34461)	Pyrene, total (µg/L) (34469)	1,2,4-Trichloro-benzene, total (µg/L) (34551)
A20	Residential	<10	<	<	<	<	<	<	<	<	<
B10	Residential	<10	<	<	<	<	<	<	<	<	<
C1	Residential	<10	<	<	<	<	<	<	<	<	<
E20	Residential	<10	<	<	<	<	<	<	<	<	<
B3	Commercial	<10	<	<	<	<	<	<	<	<	<
B7	Commercial	<10	<	<	<	<	<	<	<	<	<
B8	Commercial	<10	<	<	<	<	<	<	<	<	<
C3	Commercial	<10	<	<	<	<	<	<	<	<	<
C4	Commercial	<10	<	<	<	<	<	<	<	<	<
C10	Commercial	<10	<	<	<	<	<	<	<	<	<
C12	Commercial	<10	<	<	<	<	<	<	<	<	<
C18	Commercial	<10	<	<	<	<	<	<	<	<	<
D66	Commercial	<10	<	<	<	<	<	<	<	<	<
D67	Commercial	<10	<	<	<	<	<	<	<	<	<
D68	Commercial	<10	<	<	<	<	<	<	<	<	<
E2	Commercial	<10	<	<	<	<	<	<	<	<	<
E6	Commercial	<10	<	<	<	<	<	<	<	<	<
E7	Commercial	<10	<	<	<	<	<	<	<	<	<
E10	Commercial	<10	<	<	<	<	<	<	<	<	<
A2	Steel	<10	<	<	<	<	<	<	<	<	<
A3	Steel	<10	<	8	<	<	<	<	<	<	<
A4	Steel	<10	<	<	<	<	<	<	<	<	<
B2	Steel	<10	<	<	<	<	<	<	<	<	<
C2	Steel	<10	<	<	<	<	<	<	<	<	<
D30	Steel	<10	<	<	<	<	<	<	<	<	<
D31	Steel	<10	<	<	<	<	<	<	<	<	<
D10	Petrochemical	<10	<	<	<	<	<	<	<	<	<
D11	Petrochemical	<10	<	<	<	<	<	<	<	<	<
D20	Petrochemical	<10	<	16	<	<	<	<	<	<	<
D21	Petrochemical	1E	<	<	<	<	<	<	<	<	<
D40	Petrochemical	<10	<	<	<	<	<	<	<	<	<
D60	Petrochemical	<10	<	<	<	<	<	<	<	<	<
A6	Park	<10	<	<	<	<	<	<	<	<	<
C20	Park	<10	<	<	<	<	<	<	<	<	<
E3	Park	<10	<	<	<	<	<	<	<	<	<

Table 29. Volatile organic compound data, arranged by land use, from 35 wells sampled in July 1987
[µg/L, microgram per liter; --, not determined; five-digit number in parentheses is WATSTORE (USGS) and STORET (USEPA) parameter code]

Well name	Land use	Date	Benzene, total (µg/L) (34030)	Bromoform, total (µg/L) (32104)	Carbontetra-chloride, total (µg/L) (32102)	Chloro-benzene, total (µg/L) (34301)	Chloro-ethane, total (µg/L) (34311)	2-Chloroethyl-vinylether, total (µg/L) (34576)	Chloroform, total (µg/L) (32106)	Methyl-chloride, total (µg/L) (34418)
A20	Residential	07-06-87	1.7	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
B10	Residential	07-13-87	--	--	--	--	--	--	--	--
C1	Residential	07-07-87	<0.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E20	Residential	07-15-87	--	--	--	--	--	--	--	--
B3	Commercial	07-14-87	.4	<.2	<.2	<.2	<.2	<.2	<.2	<.2
B7	Commercial	07-14-87	.2	<.2	<.2	<.2	<.2	<.2	12	<.2
B8	Commercial	07-14-87	.3	<.2	<.2	<.2	<.2	<.2	.3	<.2
C3	Commercial	07-09-87	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C4	Commercial	07-09-87	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C10	Commercial	07-21-87	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C12	Commercial	07-21-87	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C18	Commercial	07-14-87	<.2	<.2	<.2	<.2	<.2	<.2	.8	<.2
D66	Commercial	07-15-87	--	--	--	--	--	--	--	--
D67	Commercial	07-16-87	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D68	Commercial	07-16-87	.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E2	Commercial	07-14-87	.4	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E6	Commercial	07-15-87	.2	<.2	<.2	<.2	<.2	<.2	.2	<.2
E7	Commercial	07-15-87	--	--	--	--	--	--	--	--
E10	Commercial	07-16-87	<.2	<.2	<.2	<.2	<.2	<.2	.4	<.2
A2	Steel	07-08-87	.5	<.2	<.2	<.2	<.2	<.2	<.2	<.2
A3	Steel	07-09-87	1000	<.2	<.2	<.2	<.2	<.2	<.2	<.2
A4	Steel	07-15-87	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
B2	Steel	07-08-87	.5	<.2	<.2	.2	<.2	<.2	<.2	<.2
C2	Steel	07-07-87	.3	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D30	Steel	07-16-87	.8	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D31	Steel	07-16-87	.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D10	Petrochemical	07-23-87	1.5	<.2	<.2	2.9	<.2	<.2	<.2	<.2
D11	Petrochemical	07-23-87	.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D20	Petrochemical	07-16-87	1900	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D21	Petrochemical	07-22-87	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D40	Petrochemical	07-16-87	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D60	Petrochemical	07-22-87	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
A6	Park	07-14-87	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C20	Park	07-16-87	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E3	Park	07-13-87	.3	<.2	<.2	<.2	<.2	<.2	<.2	<.2

Table 29. Volatile organic compound data, arranged by land use, from 35 wells sampled in July 1987--Continued

Well name	Land use	Chloro-dibromo-methane, total (µg/L) (32105)	Dichloro-bromo-methane total (µg/L) (32101)	1,2-Di-chloro-benzene, total (µg/L) (34536)	1,3-Di-chloro-benzene, total (µg/L) (34566)	1,4-Di-chloro-benzene, total (µg/L) (34571)	Dichloro-difluoro-methane, total (µg/L) (34668)	1,2-Dibromo-ethylene, total (µg/L) (39082)	1,1-Di-chloro-ethane, total (µg/L) (34496)	1,2-Di-chloro-ethane, total (µg/L) (32103)	1,1-Di-chloro-ethylene, total (µg/L) (34501)
A20	Residential	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
B10	Residential	--	--	<5	<5	<5	--	--	--	--	--
C1	Residential	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E20	Residential	--	--	<5	<5	<5	--	--	--	--	--
B3	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
B7	Commercial	2.2	7.1	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
B8	Commercial	<.2	<.2	<5	<5	<5	<.2	<.2	<.2	<.2	<.2
C3	Commercial	<.2	<.2	<5	<5	<5	<.2	<.2	<.2	<.2	<.2
C4	Commercial	<.2	.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C10	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C12	Commercial	<.2	<.2	<5	<5	<5	4.2	<.2	<.2	<.2	<.2
C18	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D66	Commercial	--	--	<.2	<.2	<.2	--	--	--	--	--
D67	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D68	Commercial	<.2	<.2	<5	<5	<5	<.2	<.2	<.2	<.2	<.2
E2	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E6	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E7	Commercial	--	--	<.2	<.2	<.2	--	--	--	--	--
E10	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
A2	Steel	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
A3	Steel	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
A4	Steel	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
B2	Steel	<.2	<.2	<.2	<.2	<.2	<.2	<.2	.2	<.2	<.2
C2	Steel	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D30	Steel	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D31	Steel	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D10	Petrochemical	<.2	<.2	<5	<5	<5	<.2	<.2	<.2	<.2	<.2
D11	Petrochemical	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D20	Petrochemical	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D21	Petrochemical	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D40	Petrochemical	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D60	Petrochemical	<.2	<.2	<5	<5	<5	<.2	<.2	<.2	<.2	.3
A6	Park	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C20	Park	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E3	Park	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2

Table 29. Volatile organic compound data, arranged by land use, from 35 wells sampled in July 1987--Continued

Well name	Land use	1,2-Transdi-chloro-ethylene, total (µg/L) (34546)	1,2-Di-chloro-propane, total (µg/L) (34541)	Cis-1,3-di-chloro-propene, total (µg/L) (34704)	Trans-1,3-di-chloro-propene, total (µg/L) (34699)	1,3-Di-chloro-propene, total (µg/L) (34561)	Ethyl-benzene, total (µg/L) (34371)	Methyl-bromide, total (µg/L) (34413)	Styrene, total (µg/L) (77128)	Methylene chloride, total (µg/L) (34423)
A20	Residential	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
B10	Residential	--	--	--	--	--	--	--	--	--
C1	Residential	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E20	Residential	--	--	--	--	--	--	--	--	--
B3	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
B7	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
B8	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C3	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C4	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C10	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C12	Commercial	<.2	<.2	<.2	<.2	<.2	.5	<.2	.2	<.2
C18	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D66	Commercial	--	--	--	--	--	--	--	--	--
D67	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D68	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E2	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E6	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E7	Commercial	--	--	--	--	--	--	--	--	--
E10	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
A2	Steel	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
A3	Steel	<.2	<.2	<.2	<.2	<.2	1.0	<.2	<.2	<.2
A4	Steel	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
B2	Steel	<.2	<.2	<.2	<.2	<.2	.2	<.2	<.2	<.2
C2	Steel	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D30	Steel	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D31	Steel	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D10	Petrochemical	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D11	Petrochemical	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D20	Petrochemical	<.2	<.2	<.2	<.2	<.2	19	<.2	<.2	<.2
D21	Petrochemical	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D40	Petrochemical	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D60	Petrochemical	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
A6	Park	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C20	Park	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E3	Park	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2

Table 29. Volatile organic compound data, arranged by land use, from 35 wells sampled in July 1987--Continued

Well name	Land use	1,1,2,2-Tetrachloroethane, total (µg/L) (34516)	Tetrachloroethylene, total (µg/L) (34475)	Toluene, total (µg/L) (34010)	1,1,1-Trichloroethane, total (µg/L) (34506)	1,1,2-Trichloroethane, total (µg/L) (34511)	Trichloroethylene, total (µg/L) (39180)	Trichlorofluoromethane, total (µg/L) (34488)	Vinyl chloride, total (µg/L) (39175)	Xylenes, total (µg/L) (81551)
A20	Residential	<0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
B10	Residential	--	--	--	--	--	--	--	--	--
C1	Residential	<.2	<.2	.3	<.2	<.2	<.2	<.2	<.2	<.2
E20	Residential	--	--	--	--	--	--	--	--	--
B3	Commercial	<.2	<.2	.2	<.2	<.2	<.2	.2	<.2	<.2
B7	Commercial	<.2	4.3	<.2	<.2	<.2	<.2	<.2	<.2	<.2
B8	Commercial	<.2	<.2	.2	<.2	<.2	<.2	<.2	<.2	<.2
C3	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C4	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C10	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C12	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	2.2
C18	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D66	Commercial	--	--	--	--	--	--	--	--	--
D67	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D68	Commercial	<.2	.2	.3	<.2	<.2	<.2	<.2	<.2	<.2
E2	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E6	Commercial	<.2	<.2	.2	<.2	<.2	<.2	<.2	<.2	<.2
E7	Commercial	--	--	--	--	--	--	--	--	--
E10	Commercial	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
A2	Steel	<.2	<.2	<.2	<.2	<.2	<.2	<.2	.2	<.2
A3	Steel	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	3.2
A4	Steel	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
B2	Steel	<.2	<.2	.7	<.2	<.2	<.2	<.2	<.2	1.5
C2	Steel	<.2	<.2	.9	<.2	<.2	<.2	<.2	<.2	<.2
D30	Steel	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D31	Steel	<.2	<.2	<.2	<.2	<.2	<.2	<.2	.2	<.2
D10	Petrochemical	<.2	<.2	.6	<.2	<.2	<.2	<.2	<.2	2.5
D11	Petrochemical	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D20	Petrochemical	<.2	<.2	1.5	<.2	<.2	<.2	<.2	<.2	19
D21	Petrochemical	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D40	Petrochemical	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D60	Petrochemical	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
A6	Park	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C20	Park	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E3	Park	<.2	<.2	.2	<.2	<.2	<.2	<.2	<.2	<.2

Table 30. Physical characteristics and cyanide data from 34 wells sampled in May 1988, arranged by land use, and from 5 sample blanks
[µs/cm, microsiemen per centimeter at 25° Celsius; mg/L, milligram per liter; n.a., not applicable; --, not determined; five-digit number in parentheses is WATSTORE (USGS) and STORET (USEPA) parameter code]

Well name	Land use	Date	Specific conductance (µs/cm) (00095)	pH, field (standard units) (00400)	Temperature water (degree Celsius) (00010)	Oxygen, dissolved (mg/L) (00300)	Cyanide, dissolved (mg/L as CN) (00723)
A20	Residential	05-05-88	994	7.3	16.0	0.4	<0.01
B10	Residential	05-04-88	470	7.8	10.5	7.1	<.01
C1	Residential	05-10-88	2760	7.4	10.0	1.2	<.01
C1 Duplicate	Residential	05-10-88	2760	7.4	10.0	1.2	<.01
E20	Residential	05-11-88	769	7.0	10.5	1.4	<.01
B3	Commercial	05-05-88	1510	7.8	12.5	.4	.02
B7	Commercial	05-05-88	758	6.9	10.5	3.4	<.01
B7 Duplicate	Commercial	05-05-88	758	6.9	10.5	3.4	<.01
B8	Commercial	05-05-88	1910	6.9	13.0	.4	<.01
C3	Commercial	05-02-88	1080	7.3	13.0	.7	<.01
C4	Commercial	05-02-88	1260	6.9	10.0	5.6	<.01
C10	Commercial	05-04-88	393	5.6	9.5	.7	<.01
C12	Commercial	05-04-88	1510	6.6	9.5	.6	<.01
C18	Commercial	05-04-88	1350	7.1	12.5	.5	<.01
D66	Commercial	05-04-88	--	8.0	--	--	--
D67	Commercial	05-05-88	275	6.5	10.5	.5	<.01
D68	Commercial	05-05-88	583	7.5	11.5	.5	<.01
E2	Commercial	05-03-88	612	7.4	10.0	4.2	<.01
E2 Duplicate	Commercial	05-03-88	612	7.4	10.0	4.2	<.01
E6	Commercial	05-03-88	1400	7.3	12.0	.5	8.2
E7	Commercial	05-03-88	2790	11.8	10.5	1.4	.19
E10	Commercial	05-09-88	941	6.3	11.0	.5	<.01
A2	Steel	05-11-88	843	7.3	15.0	.3	.02
A2 Duplicate	Steel	05-11-88	843	7.3	15.0	.3	.02
A3	Steel	05-10-88	4960	8.4	15.5	.3	8.3
A4	Steel	05-11-88	456	7.1	11.5	.5	<.01
B2	Steel	05-10-88	4490	11.7	15.0	3.9	.73
D30	Steel	05-02-88	2110	10.3	9.5	.5	.06
D31	Steel	05-02-88	2460	6.7	10.0	.5	.03

Table 30. Physical characteristics and cyanide data from 34 wells sampled in May 1988, arranged by land use, and from 5 sample blanks--Continued

Well name	Land use	Date	Specific conductance (µs/cm) (00095)	pH, field (standard units) (00400)	Temperature water (degree Celsius) (00010)	Oxygen, dissolved (mg/L) (00300)	Cyanide, dissolved (mg/L as CN) (00723)
D10	Petrochemical	05-03-88	1350	7.1	11.5	0.7	<0.01
D11	Petrochemical	05-03-88	1610	7.2	12.5	.4	.04
D20	Petrochemical	05-09-88	2520	6.9	11.5	.2	<.01
D21	Petrochemical	05-03-88	1200	7.7	12.5	.4	<.01
D40	Petrochemical	05-10-88	1720	7.3	8.5	.4	<.01
D60	Petrochemical	05-10-88	925	7.1	10.5	.8	<.01
A6	Park	05-12-88	758	7.2	11.5	2.6	.01
C20	Park	05-05-88	1120	6.8	11.0	.7	<.01
E3	Park	05-09-88	622	8.0	11.5	1.3	<.01
Blank	n.a.	05-02-88	--	--	--	--	<.01
Blank	n.a.	05-04-88	--	--	--	--	<.01
Blank	n.a.	05-05-88	--	--	--	--	<.01
Blank	n.a.	05-10-88	--	--	--	--	<.02
Blank	n.a.	05-10-88	--	--	--	--	<.10

Table 31. Physical characteristics and volatile organic compound data from 34 wells sampled in August 1988, arranged by land use, and from 3 sample blanks

[µs/cm, microsiemen per centimeter at 25° Celsius; n.a., not applicable; µg/L, microgram per liter; --, not determined; five-digit number in parentheses is WATSTORE (USGS) and STORET (USEPA) parameter code]

Well name	Land use	Date	Specific conductance (µs/cm) (00095)	pH (standard units) (00400)	Temperature water (degree Celsius) (00010)	Benzene, total (µg/L) (34030)	Bromoform, total (µg/L) (32104)	Carbon-tetrachloride, total (µg/L) (32102)	Chlorobenzene, total (µg/L) (34301)	Chloroethane, total (µg/L) (34311)	2-Chloroethylvinyl-ether, total (µg/L) (34576)
A20	Residential	08-04-88	1140	7.4	18.5	0.8	<0.2	<0.2	<0.2	<0.2	<0.2
B10	Residential	08-02-88	982	7.1	20.0	.4	<.2	<.2	<.2	<.2	<.2
B10 Duplicate	Residential	08-02-88	982	7.1	20.0	<.2	<.2	<.2	<.2	<.2	<.2
C1	Residential	08-03-88	2070	7.4	22.0	<.2	<.2	<.2	<.2	<.2	<.2
E20	Residential	08-02-88	801	7.1	19.0	<.2	<.2	<.2	<.2	<.2	<.2
B3	Commercial	08-03-88	1520	7.5	13.5	.6	<.2	<.2	<.2	<.2	<.2
B7	Commercial	08-02-88	906	6.9	18.5	1.3	<.2	<.2	<.2	<.2	<.2
B8	Commercial	08-02-88	1900	6.8	15.0	<.2	<.2	<.2	<.2	<.2	<.2
C3	Commercial	08-03-88	1040	7.3	13.5	2.7	<.2	<.2	<.2	<.2	<.2
C4	Commercial	08-03-88	850	7.0	17.0	.4	<.2	<.2	<.2	<.2	<.2
C10	Commercial	08-04-88	637	6.9	18.0	<.2	<.2	<.2	<.2	<.2	<.2
C12	Commercial	08-04-88	1650	6.7	13.0	<.2	<.2	<.2	<.2	<.2	<.2
C12 Duplicate	Commercial	08-04-88	1650	6.7	13.0	.6	<.2	<.2	<.2	<.2	<.2
C18	Commercial	08-03-88	1190	6.9	15.5	.3	<.2	<.2	<.2	<.2	<.2
D66	Commercial	08-04-88	3840	8.5	16.5	<.2	<.2	<.2	<.2	<.2	<.2
D67	Commercial	08-03-88	234	6.9	21.5	1.5	<.2	<.2	<.2	<.2	<.2
D68	Commercial	08-03-88	573	7.5	14.0	2.0	<.2	<.2	<.2	<.2	<.2
E2	Commercial	08-03-88	542	7.5	18.0	.7	<.2	<.2	<.2	<.2	<.2
E6	Commercial	08-02-88	1460	7.2	15.5	1.2	<.2	<.2	<.2	<.2	<.2
E6 Duplicate	Commercial	08-02-88	1460	7.2	15.5	1.0	<.2	<.2	<.2	<.2	<.2
E7	Commercial	08-02-88	--	--	--	2.3	<.2	<.2	<.2	<.2	<.2
E10	Commercial	08-02-88	982	7.1	20.0	.2	<.2	<.2	<.2	<.2	<.2
A2	Steel	08-16-88	1010	7.1	17.5	7.7	<.2	<.2	<.2	<.2	<.2
A3	Steel	08-16-88	--	--	--	1400	<10	<10	<10	<10	<10
A3 Duplicate	Steel	08-16-88	--	--	--	1600	<10	<10	<10	<10	<10
A4	Steel	08-17-88	492	6.9	15.0	<.2	<.2	<.2	<.2	<.2	<.2
B2	Steel	08-16-88	3930	11.9	18.0	.3	<.2	<.2	<.2	<.2	<.2
D30	Steel	08-03-88	2120	9.8	17.0	3.8	<.2	<.2	<.2	<.2	<.2
D31	Steel	08-03-88	2430	6.9	13.5	2.0	<.2	<.2	<.2	<.2	<.2

Table 31. Physical characteristics and volatile organic compound data from 34 wells sampled in August 1988, arranged by land use, and from 3 sample blanks--Continued

Well name	Land use	Date	Specific conductance (µs/cm) (00095)	pH (standard units) (00400)	Temperature water (degree Celsius) (00010)	Benzene, total (µg/L) (34030)	Bromoform, total (µg/L) (32104)	Carbon-tetrachloride, total (µg/L) (32102)	Chlorobenzene, total (µg/L) (34301)	Chloroethane, total (µg/L) (34311)	2-Chloroethylvinylether, total (µg/L) (34576)
D10	Petrochemical	08-04-88	3490	7.0	21.0	0.3	<0.2	<0.2	<0.2	<0.2	<0.2
D11	Petrochemical	08-03-88	4390	7.0	17.5	<.2	<.2	<.2	<.2	<.2	<.2
D20	Petrochemical	08-03-88	1800	6.5	21.5	48	<.2	<.2	<.2	<.2	<.2
D21	Petrochemical	08-04-88	1360	7.4	19.5	24	<.2	<.2	<.2	<.2	<.2
D21 Duplicate	Petrochemical	08-04-88	1360	7.4	19.5	0 <.2	<.2	<.2	<.2	<.2	<.2
D40	Petrochemical	08-02-88	2070	6.9	19.0	12	<.2	<.2	<.2	<.2	<.2
D60	Petrochemical	08-04-88	1000	7.1	19.5	0 .3	<.2	<.2	<.2	<.2	<.2
A6	Park	08-03-88	1330	7.4	16.5	<.2	<.2	<.2	<.2	<.2	<.2
C20	Park	08-02-88	654	7.0	17.0	<.2	<.2	<.2	<.2	<.2	<.2
E3	Park	08-02-88	628	7.7	16.0	.7	<.2	<.2	<.2	<.2	<.2
Blank	n.a.	08-03-88	--	--	--	<.2	<.2	<.2	<.2	<.2	<.2
Blank	n.a.	08-17-88	--	--	--	.2	<.2	<.2	<.2	<.2	<.2
Blank	n.a.	08-03-88	--	--	--	<.2	<.2	<.2	<.2	<.2	<.2

Table 31. Physical characteristics and volatile organic compound data from 34 wells sampled in August 1988, arranged by land use, and from 3 sample blanks--Continued

Well name	Chloroform, total (µg/L) (32106)	Methyl-chloride, total (µg/L) (34418)	Chloro-dibromo-methane, total (µg/L) (32105)	Dichloro-bromo-methane (µg/L) (32101)	1,2-Di-chloro-benzene, total (µg/L) (34536)	1,3-Di-chloro-benzene, total (µg/L) (34566)	1,4-Di-chloro-benzene, total (µg/L) (34571)	Dichloro-difluoro-methane, total (µg/L) (34668)	1,2-Dibromo-ethylene, total (µg/L) (39082)	1,2-Dibromo-ethane, total (µg/L) (77651)	1,1-Di-chloro-ethane, total (µg/L) (34496)
A20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	<0.2	<0.2
B10	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<0.2	--	<.2
B10 Duplicate	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2
C1	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2	<.2
E20	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2
B3	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2
B7	.4	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	300	<.2
B8	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2
C3	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2
C4	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2
C10	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2	<.2
C12	<.2	<.2	<.2	<.2	<.2	<.2	<.2	5.0	--	<.2	<.2
C12 Duplicate	<.2	<.2	<.2	<.2	<.2	<.2	<.2	7.1	--	<.2	<.2
C18	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2	<.2
D66	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2	<.2
D67	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2	<.2
D68	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2	<.2
E2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2	<.2
E6	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2	<.2
E6 Duplicate	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2	<.2
E7	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2
E10	<.2	<.2	<.2	<.2	<.2	<.2	<.2	.5	<.2	--	<.2
A2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	2.1	--	<.2	<.2
A3	<10	<10	<10	<10	<10	<10	<10	<10	--	<10	12
A3 Duplicate	<10	<10	<10	<10	<10	<10	<10	<10	--	<10	11
A4	<.2	<.2	<.2	<.2	<.2	<.2	<.2	2.1	--	<.2	<.2
B2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2	<.2
D30	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2	<.2
D31	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2	<.2

Table 31. Physical characteristics and volatile organic compound data from 34 wells sampled in August 1988, arranged by land use, and from 3 sample blanks--Continued

Well name	Chloroform, total (µg/L) (32106)	Methyl-chloride, total (µg/L) (34418)	Chloro-dibromo-methane, total (µg/L) (32105)	Dichloro-bromo-methane (µg/L) (32101)	1,2-Di-chloro-benzene, total (µg/L) (34536)	1,3-Di-chloro-benzene, total (µg/L) (34566)	1,4-Di-chloro-benzene, total (µg/L) (34571)	Dichloro-difluoro-methane, total (µg/L) (34668)	1,2-Dibromo ethylene, total (µg/L) (39082)	1,2-Dibromo-ethane, water whole total (µg/L) (77651)	1,1-Di-chloro-ethane, total (µg/L) (34496)
D10	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	<0.2
D11	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<0.2	<.2
D20	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2	<.2
D21	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	.8	<.2
D21 Duplicate	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2	<.2
D40	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2
D60	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2	1.4
A6	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2	<.2
C20	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2
E3	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2
Blank	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2	<.2
Blank	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	--	<.2	<.2
Blank	5.6	<.2	.2	1.0	<.2	<.2	<.2	<.2	<.2	--	<.2

Table 31. Physical characteristics and volatile organic compound data from 34 wells sampled in August 1988, arranged by land use, and from 3 sample blanks--Continued

Well name	1,2-Dichloroethane, total (µg/L) (32103)	1,1,-Dichloroethylene, total (µg/L) (34501)	1,2-Transdichloroethylene, total (µg/L) (34546)	1,2-Dichloropropane, total (µg/L) (34541)	Cis-1,3-dichloropropene, total (µg/L) (34704)	Trans-1,3-dichloropropene, total (µg/L) (34699)	1,3-Dichloropropene, total (µg/L) (34561)	Ethylbenzene, total (µg/L) (34371)	Methylbromide, total (µg/L) (34413)	Styrene, total (µg/L) (77128)
A20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<02	<0.2	<0.2
B10	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
B10 Duplicate	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C1	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E20	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
B3	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
B7	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
B8	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C3	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C4	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C10	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C12	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C12 Duplicate	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C18	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D66	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D67	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D68	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E6	<.2	<.2	<.2	<.2	<.2	<.2	<.2	.3	<.2	<.2
E6 Duplicate	<.2	<.2	<.2	<.2	<.2	<.2	<.2	.8	<.2	<.2
E7	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E10	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
A2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
A3	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
A3 Duplicate	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
A4	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
B2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D30	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D31	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2

Table 31. Physical characteristics and volatile organic compound data from 34 wells sampled in August 1988, arranged by land use, and from 3 sample blanks--Continued

Well name	1,2-Dichloroethane, total (µg/L) (32103)	1,1,-Dichloroethylene, total (µg/L) (34501)	1,2-Transdichloroethylene, total (µg/L) (34546)	1,2-Dichloropropane, total (µg/L) (34541)	Cis-1,3-dichloropropene, total (µg/L) (34704)	Trans-1,3-dichloropropene, total (µg/L) (34699)	1,3-Dichloropropene, total (µg/L) (34561)	Ethylbenzene, total (µg/L) (34371)	Methylbromide, total (µg/L) (34413)	Styrene, total (µg/L) (77128)
D10	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
D11	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D20	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D21	<.2	3.7	.3	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D21 Duplicate	<.2	2.6	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D40	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D60	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
A6	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C20	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E3	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
Blank	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
Blank	<.2	<.2	.3	<.2	<.2	<.2	<.2	<.2	<.2	<.2
Blank	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2

Table 31. Physical characteristics and volatile organic compound data from 34 wells sampled in August 1988, arranged by land use, and from 3 sample blanks--Continued

Well name	Methylene chloride, total (µg/L) (34423)	1,1,2,2-Tetrachloro-ethane, total (µg/L) (34516)	Tetra-chloro-ethylene, total (µg/L) (34475)	Toluene, total (µg/L) (34010)	1,1,1-Trichloro-ethane, total (µg/L) (34506)	1,1,2-Chloro-ethane, total (µg/L) (34511)	Tri-chloro-ethylene, total (µg/L) (39180)	Trichloro-fluoro-methane, total (µg/L) (34488)	Vinyl chloride, total (µg/L) (39175)	Xylenes, total (µg/L) (81551)
A20	<0.2	<0.2	0.4	<0.2	<0.2	<0.2	<0.2	22	<0.2	<0.2
B10	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<0.2	<.2	<.2
B10 Duplicate	<.4	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C1	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E20	<1.0	<.2	<.2	<.2	<.2	<.2	.4	.2	<.2	<.2
B3	<.4	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
B7	<.2	<.2	11	<.2	<.2	<.2	<.2	<.2	<.2	<.2
B8	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C3	<.3	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C4	<.3	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C10	<.2	<.2	.3	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C12	<.2	<.2	.3	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C12 Duplicate	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C18	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D66	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D67	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D68	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E2	<.3	<.2	<.2	<.2	<.2	<.2	.3	<.2	<.2	<.2
E6	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	1.9
E6 Duplicate	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	5.0
E7	<.4	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E10	<1.0	<.2	<.2	<.2	<.2	<.2	<.2	.3	<.2	<.2
A2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
A3	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
A3 Duplicate	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
A4	<.2	<.2	<.2	<.2	<.2	<.2	.4	<.2	<.2	<.2
B2	<.2	<.2	<.2	.3	<.2	<.2	<.2	<.2	<.2	.5
D30	<.2	<.2	<.2	<.2	<.2	<.2	<.2	3.3	<.2	<.2
D31	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2

U.S. GOVERNMENT PRINTING OFFICE: 1991—546-561

Table 31. Physical characteristics and volatile organic compound data from 34 wells sampled in August 1988, arranged by land use, and from 3 sample blanks--Continued

Well name	Methylene chloride, total (µg/L) (34423)	1,1,2,2-Tetrachloro-ethane, total (µg/L) (34516)	Tetra-chloro-ethylene, total (µg/L) (34475)	Toluene, total (µg/L) (34010)	1,1,1-Trichloro-ethane, total (µg/L) (34506)	1,1,2-Chloro-ethane, total (µg/L) (34511)	Tri-chloro-ethylene, total (µg/L) (39180)	Trichloro-fluoro-methane, total (µg/L) (34488)	Vinyl chloride, total (µg/L) (39175)	Xylenes, total (µg/L) (81551)
D10	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3
D11	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D20	<.2	<.2	<.2	.7	<.2	<.2	<.2	<.2	<.2	.9
D21	<.4	<.2	<.2	.5	<.2	<.2	.2	<.2	5.8	<.2
D21 Duplicate	<.2	<.2	.2	<.2	<.2	<.2	<.2	<.2	3.0	<.2
D40	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
D60	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
A6	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
C20	<.5	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2
E3	<.4	<.2	<.2	<.2	<.2	<.2	.3	<.2	<.2	.3
Blank	<.2	<.2	<.4	<.2	<.2	<.2	.4	<.2	<.2	<.2
Blank	.7	<.2	<.2	.2	<.2	<.2	<.2	<.2	<.2	<.2
Blank	<.6	<.2	<.2	<.2	<.2	<.2	<.2	.2	<.2	<.2

Property Transfer Study—Conoco Area

11/05/90 08:08 004

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☐ 6979 E. LA PALMA AVENUE SUITE 201/ANAHEIM, CA 92807/714-779-0052/FAX: 714-779-0068

TELEFAX INFORMATION

TO: Jeff Baker
Conoco Oil

FROM: Shelley Hildebrandt

THE FOLLOWING TRANSMISSION WILL CONSIST OF 5 PAGES
(TOTAL INCLUDES TELEFAX INFORMATION SHEET)

DATE/TIME: 10/9

GEA PROJECT NO./NAME AND LOCATION: G-900856
East Chicago, IL

THIS FAX MACHINE IS AUTOMATIC.
IF THERE ARE ANY PROBLEMS, PLEASE
CONTACT US AT (414) 544-0118.
THANK YOU.

MESSAGE: Test results as of 10-9-90 for
TPH, E.P Tox, Zinc, Arsenic, Chlorides, pH, Specific Conductance.
The following tests are not complete TPH on
W-3 14.5-16
W-4 17.0-18.5
B-7 9.5-11
B-16 2-3.5
B-16 9.5-11

CONOCO LUBE OIL OPERATIONS SPECIAL PROJECTS

Interoffice Communication

OCT 12 '90

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TO: Bill Hall, Lubricants Enterprises

FROM: Jeff Baker, S&T Environmental Affairs

DATE: October 9, 1990

SUBJECT: **EAST CHICAGO, IN DISTRIBUTION FACILITY SITE ASSESSMENT REPORT**

Attached are the analytical data obtained to date for the referenced facility. In summary, the data indicate the following:

- No contamination from petroleum hydrocarbons was found in any of the borings analyzed to date. (See site map for boring locations.)
- No ground water contamination was indicated by the data.
- The metals identified in the EP Toxicity analyses were at levels commonly found in soils in the U.S.
- The levels of Zinc and Chloride found in samples 5-1 through 5-4, while above detection limits, are not at any State or Federal action levels, and, in fact, are within the normal range of coastal environments. - N/A

I anticipate that the outstanding analyses, identified on the analytical results cover sheet, will reflect the results already in hand. i.e., no contamination.

Therefore, for all intents and purposes, the site is "clean" and available for lease or sale, whichever your group deems the most attractive.

Additional data will be forthcoming from the lab. Groundwater table elevations and flow pattern will be provided from our DuPont neighbors.

Please call if you have any questions concerning the site.

Jeffrey M. Baker

Jeffrey M. Baker, P.E.
Sr. Environmental Engineer

\sjr:JMB:echidata

Attachments

cc: L. G. Hubbard
A. K. Parsons

RESULTS OF CHEMICAL ANALYSIS OF COLLECTED GROUNDWATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS, ZINC, ARSENIC, CHLORIDE, PH, AND SPECIFIC CONDUCTANCE

Sample	TPH**(ppm)	Zinc(mg/l)	Arsenic(mg/l)	Chloride(mg/l)	pH	(UMNOS) Specific Conductance
05-1	*	0.19	0.038	15	7.5	500
05-2	*	0.13	0.013	25	7.1	710
05-3	*	34	0.17	47	6.2	2500
05-4	*	34	0.075	24	6.3	2400

Laboratory Detectable Limit for TPH 4.0 ppm

*Below Laboratory Detectable Limit

**Samples in invalid container for TPH

RESULTS OF CHEMICAL ANALYSIS OF COLLECTED SOIL SAMPLES FOR CONCENTRATION LEVELS OF EP TOXICITY METALS (MG/L)

Sample		Barium	Cadmium	Chromium	Lead	Silver	Arsenic	Selenium	Mercury
Boring	Depth								
9	2-3.5	0.21	0.75	*	*	*	*	0.025	*
18	2-3.5	*	0.17	0.02	*	*	0.011	0.027	*
W-3	14.5-16	0.11	*	0.02	*	0.02	0.042	*	*
W-4	17-18.5	0.28	*	*	*	*	*	0.022	*
EPA Limits		100	1.0	5.0	5.0	5.0	5.0	1.0	0.2
Laboratory Detectable Limits		0.02	0.02	0.02	0.20	0.02	0.010	0.02	0.004

*Below Laboratory Detectable Limits

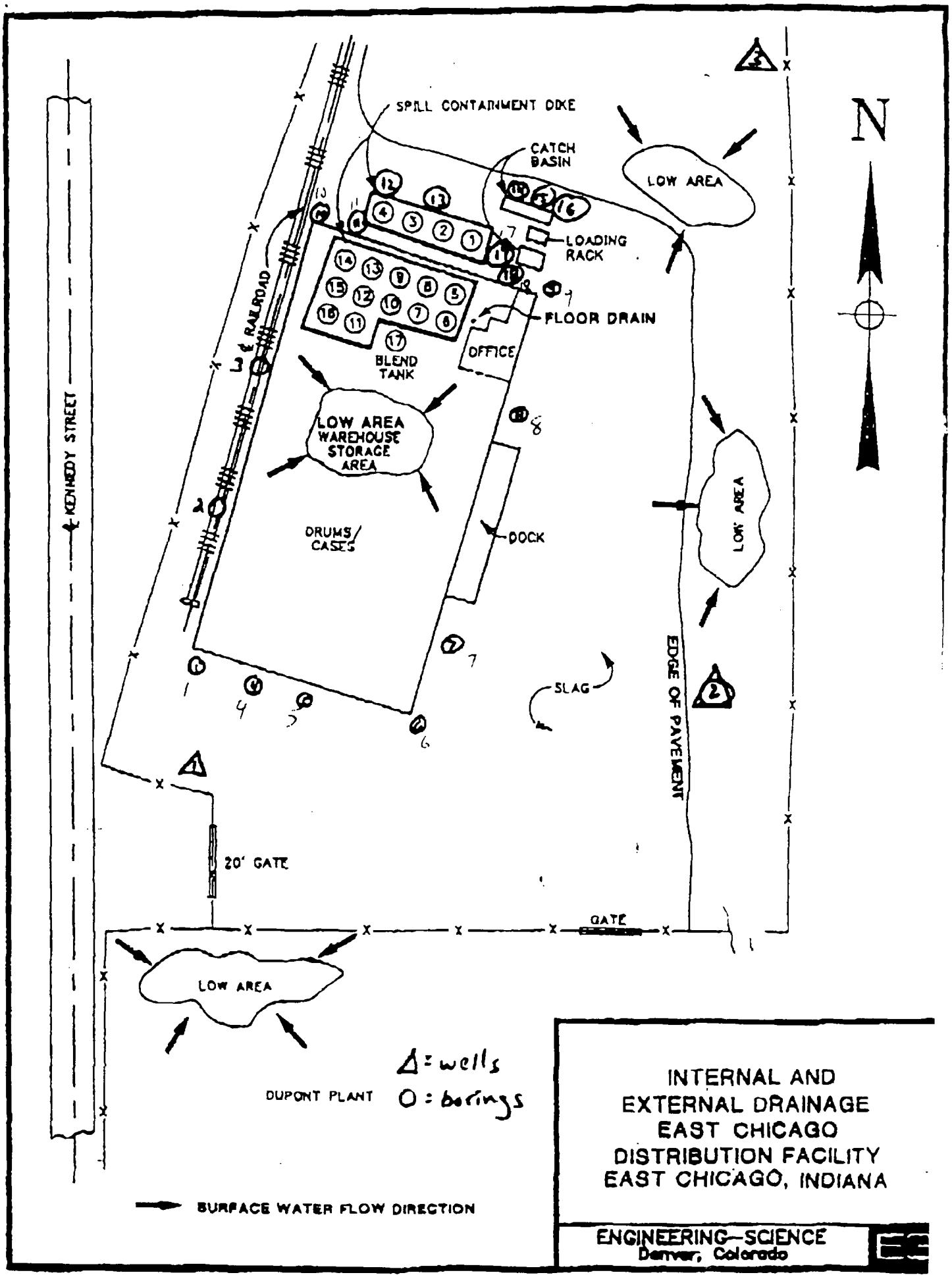
Sample Boring	Depth	Petroleum Characteristics	Total Petroleum Hydrocarbons
11	2 - 3.5		*
	9.5 - 11		*
12	2 - 3.5		*
	9.5 - 11		*
13	2 - 3.5		*
	9.5 - 11		*
14	2 - 3.5		*
	9.5 - 11		*
15	2 - 3.5		*
16	2 - 3.5		
	9.5 - 11		
17	2 - 3.5		*
	9.5 - 11		*
18	4.5 - 6		*
	7 - 8.5		*
	9.5 - 11		*

Laboratory Detectable Limit 4.0 ppm
*Less Than Laboratory Detectable Limit

RESULTS OF CHEMICAL ANALYSIS OF COLLECTED SOIL SAMPLES FOR CONCENTRATION LEVELS OF TOTAL PETROLEUM HYDROCARBONS (ppm)

Sample Boring	Depth	Petroleum Characteristics	Total Petroleum Hydrocarbons
W-1	4.5 - 6		*
	9.5 - 11		*
W-2	4.5 - 6		*
	9.5 - 11		*
W-3	4.5 - 6		*
	14.5 - 16		
W-4	4.5 - 6		*
	17.0 - 18.5		
1	2 - 3.5		*
	9.5 - 11		*
2	2 - 3.5		*
	9.5 - 11		*
3	2 - 3.5		*
	9.5 - 11		*
4	2 - 3.5		*
	9.5 - 11		*
5	2 - 3.5		*
	9.5 - 11		*
6	2 - 3.5		*
	9.5 - 11		*
7	2 - 3.5		*
	9.5 - 11		
8	2 - 3.5		*
	9.5 - 11		*
9	1.5		*
	7 - 8.5		*
	9.5 - 11		*
10	2 - 3.5		*
	9.8 - 11		*

Laboratory Detectable Limit 4.0 ppm
*Less Than Laboratory Detectable Limit

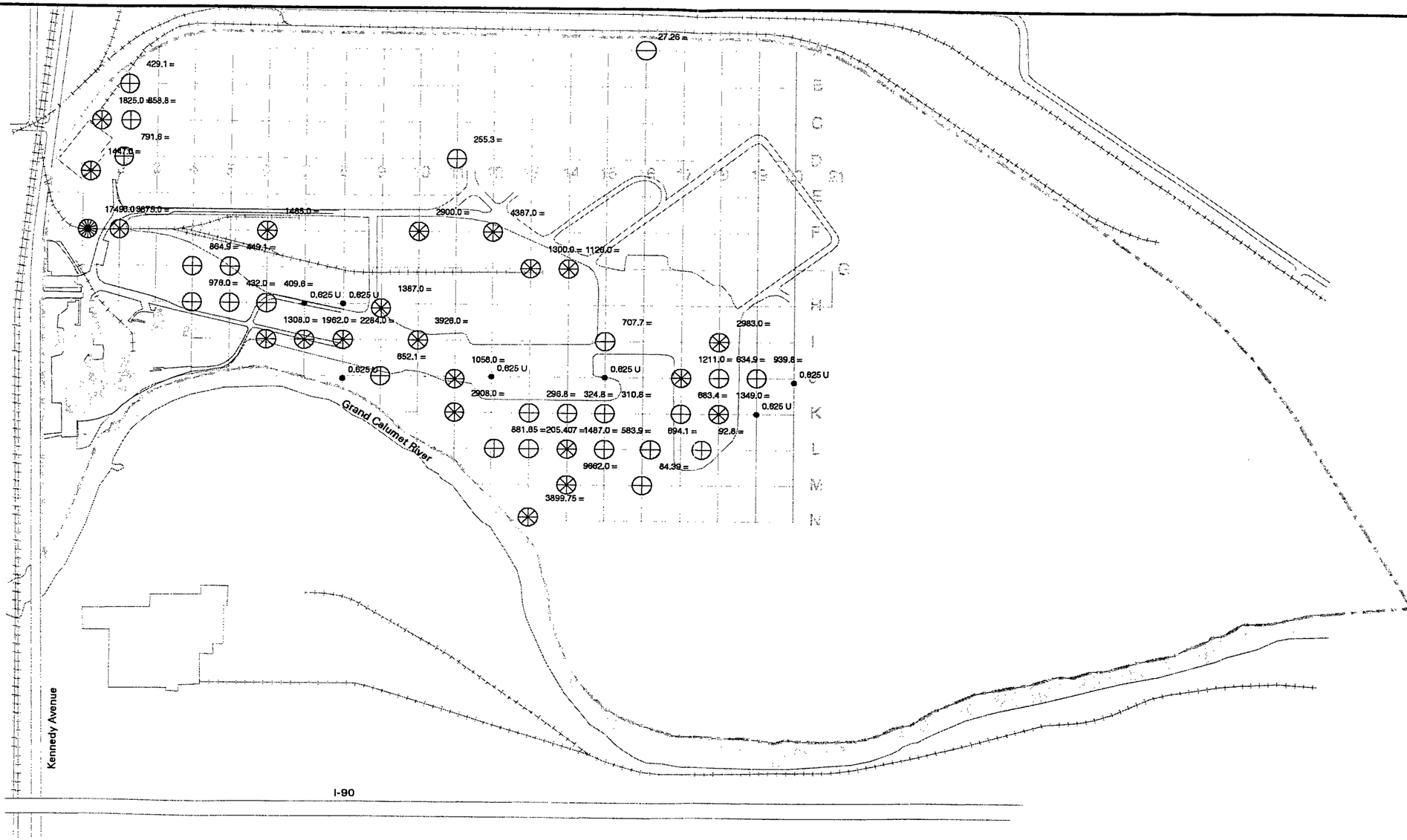


INTERNAL AND EXTERNAL DRAINAGE EAST CHICAGO DISTRIBUTION FACILITY EAST CHICAGO, INDIANA

ENGINEERING–SCIENCE
Denver, Colorado

Constituent Distribution Diagrams

(based on Phase II and III Data [CH2M HILL 1991 and DERS File Information])



Legend

DuPont Property Line

Concentration in mg/kg (U - Detection Limit, = - Detected Value)

Grab Sample Location • <0.625 U ⊖ >=0.625 U to <50 ⊕ 50 to <1,000 ✳ 1,000 to <10,000 ✳ >10,000

Scale 1:7200
1 inch = 600 feet

Sources:
DuPont and CH2M HILL

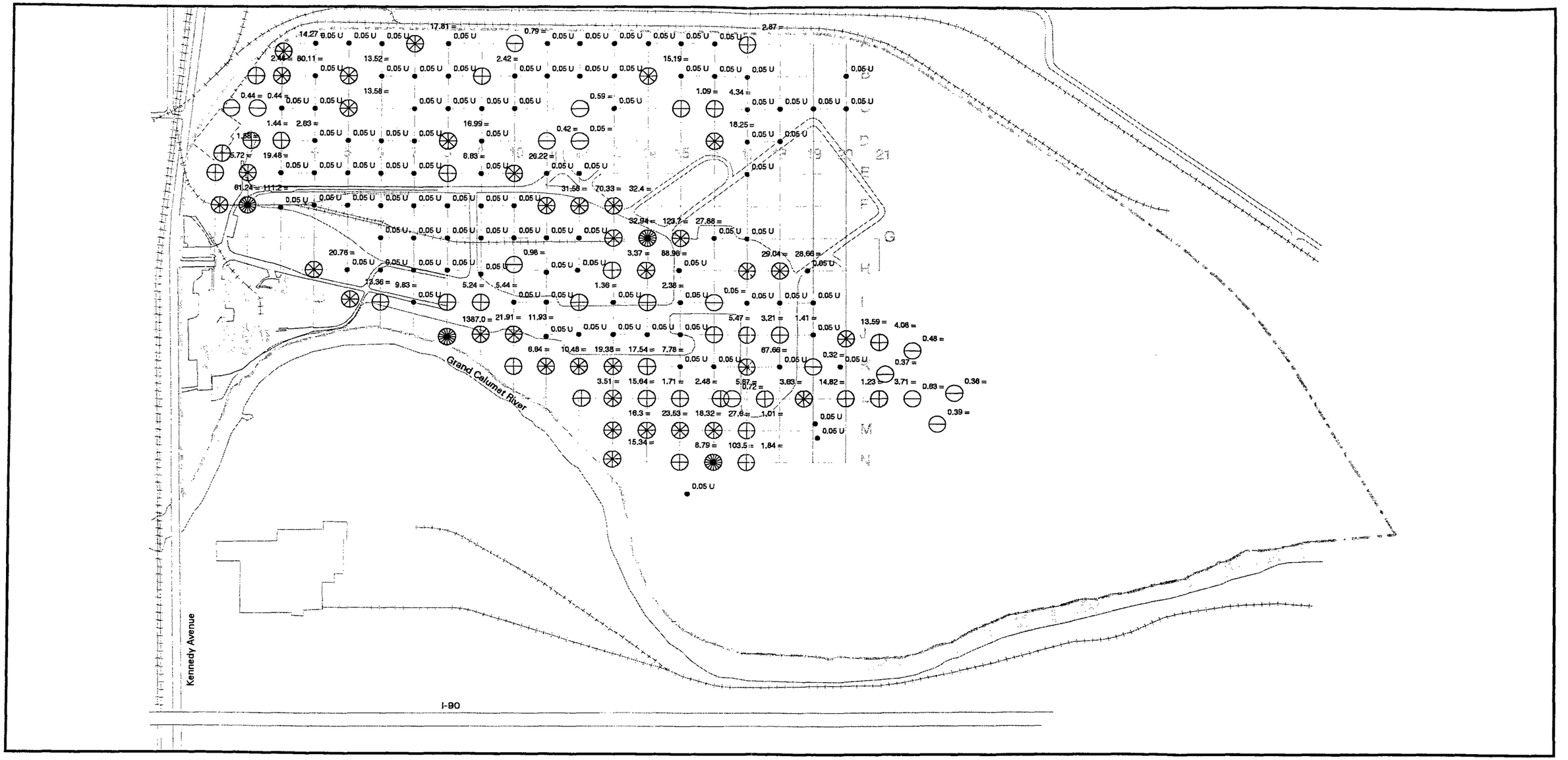
Notes:
Symbols centered over sample location.

Aluminum Concentrations in Soil

DuPont East Chicago Current Conditions Report

CH2MHILL

October 22, 1997



Legend

DuPont Property Line

Concentration in mg/L (U - Detection Limit, = - Detected Value)

Grab Sample Location • <0.05 U ⊖ >=0.05 U to <1 ⊕ 1 to <10 ✳ 10 to <100 ✺ >100

N

Scale 1:7200
1 inch = 600 feet

Sources:
DuPont and CH2M HILL

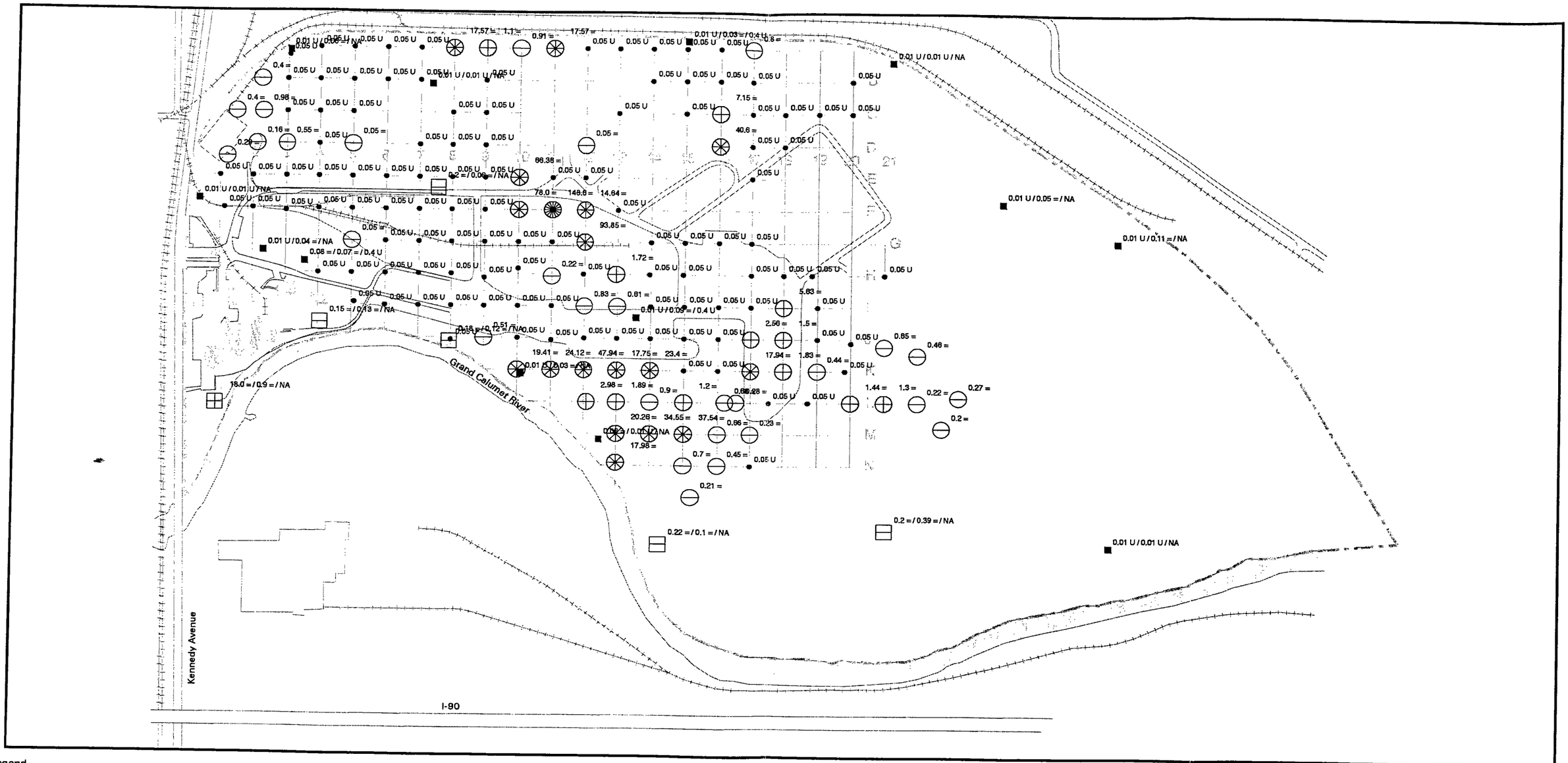
Notes:
Symbols centered over sample location.

Aluminum Concentrations in Groundwater - Top of Aquifer

DuPont East Chicago Current Conditions Report

CH2MHILL

October 22, 1997



Legend

DuPont Property Line

Concentration in mg/L (U - Detection Limit, = - Detected Value, NA - Not Analyzed)

Grab Sample Location	<0.01 U	>=0.01 U to <1	1 to <10	10 to <100	>100
Monitoring Well Location	<0.01 U	>=0.01 U to <1	1 to <10	10 to <100	>100

Scale 1:7200
1 inch = 600 feet

Sources:
DuPont and CH2M HILL

Notes:
Symbols centered over sample location.

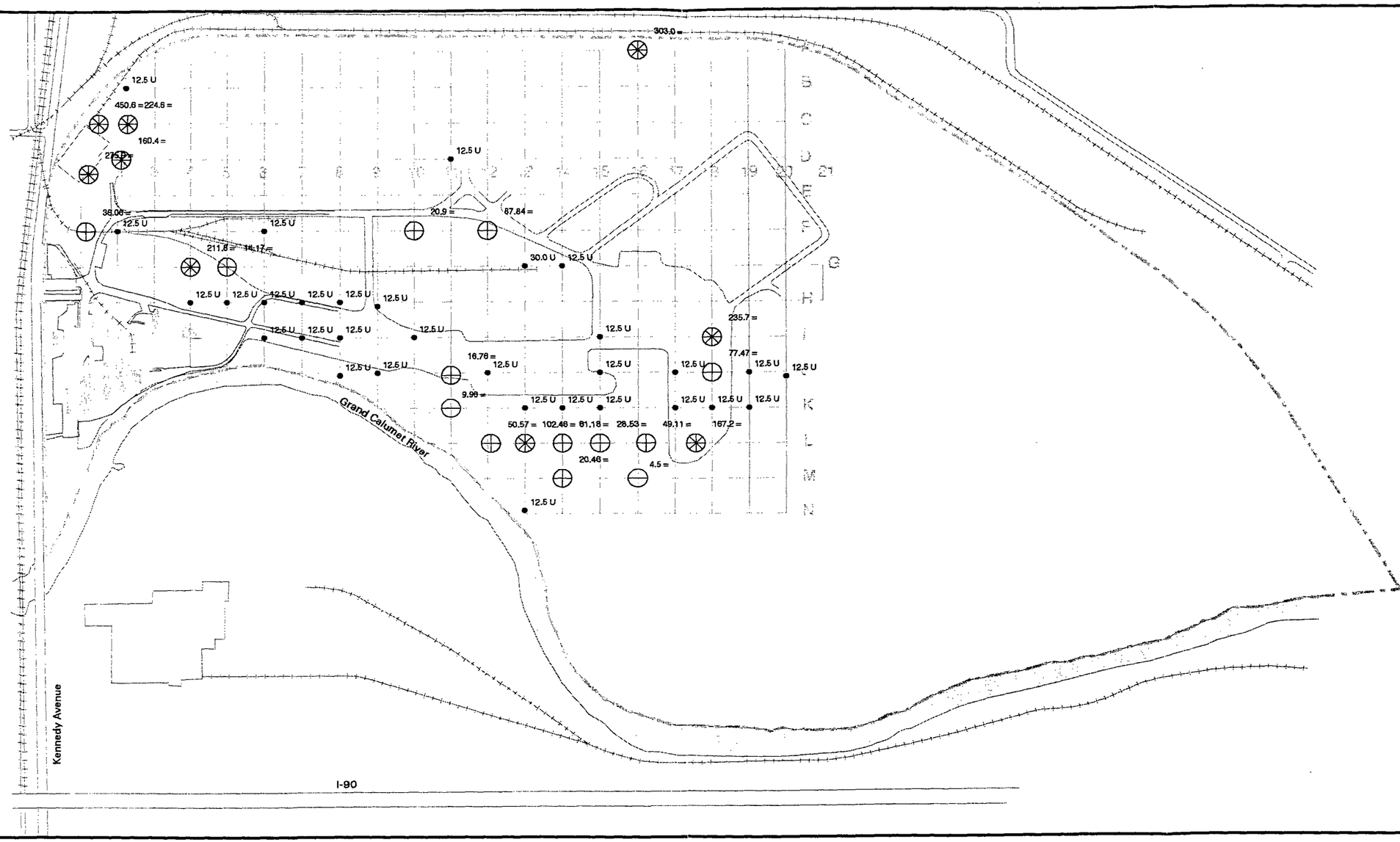
Multiple values at monitoring well locations reflect multiple rounds of sampling from Phase II - Round 1, Phase II - Round 2, and Phase III (e.g. 0.002/0.002/NA).

Aluminum Concentrations in Groundwater - Base of Aquifer

DuPont East Chicago Current Conditions Report

CH2MHILL

'October 22, 1997'



Legend

DuPont Property Line

Concentration in mg/kg (U - Detection Limit, = - Detected Value)

Grab Sample Location • <0.3 U ⊖ >=0.3 U to <10 ⊕ 10 to <100 ✳ 100 to <500

Scale 1:7200
1 inch = 600 feet

Antimony Concentrations in Soil

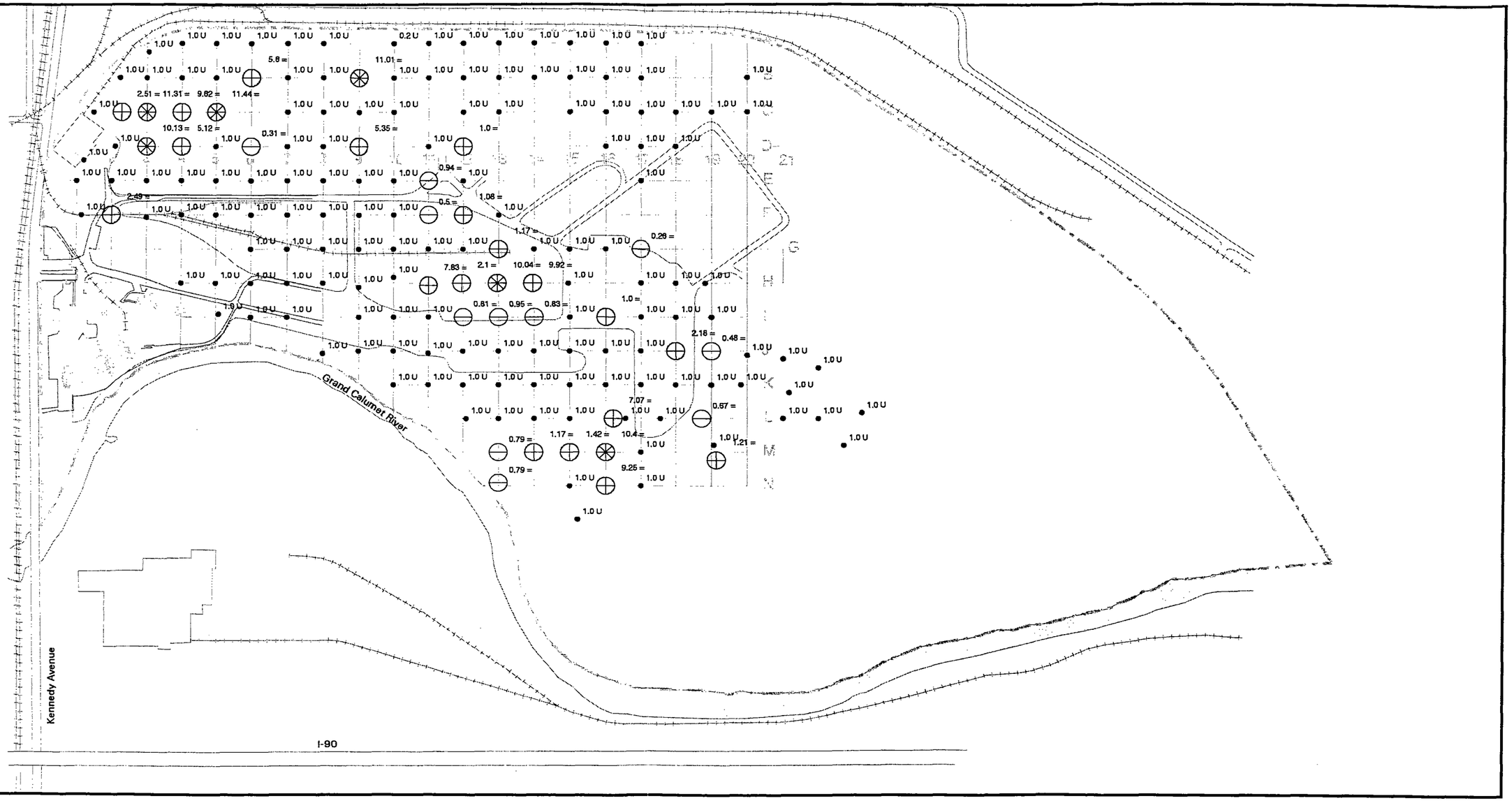
DuPont East Chicago Current Conditions Report

CH2MHILL

Sources:
DuPont and CH2M HILL

Notes:
Symbols centered over sample location.

October 22, 1997



Legend

DuPont Property Line

Concentration in mg/L (U - Detection Limit, = - Detected Value)

Grab Sample Location ● <0.2 U ⊖ >=0.2 U to <1 ⊕ 1 to <10 ⊛ >10

N

Scale 1:7200
1 inch = 600 feet

Antimony Concentrations in Groundwater - Top of Aquifer

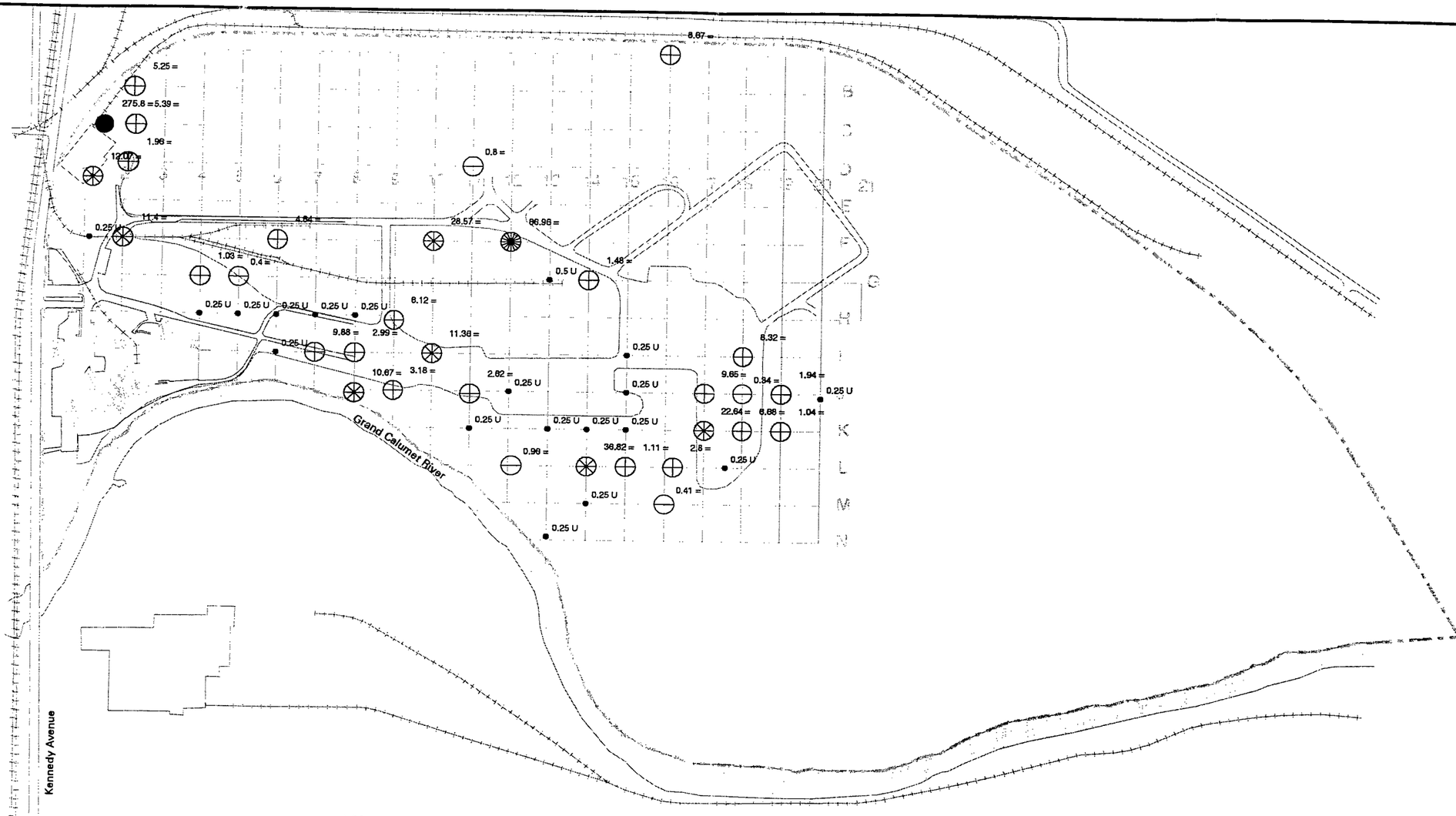
DuPont East Chicago Current Conditions Report

Sources:
DuPont and CH2M HILL

Notes:
Symbols centered over sample location.

CH2MHILL

October 22, 1997



Legend

DuPont Property Line

Concentration in mg/kg (U - Detection Limit, = - Detected Value)

Grab Sample Location

<0.25 U | >=0.25 U to <1 | 1 to <10 | 10 to <50 | 50 to <100 | 100 to <500

N

Scale 1:7200
1 inch = 600 feet

Sources:
DuPont and CH2M HILL

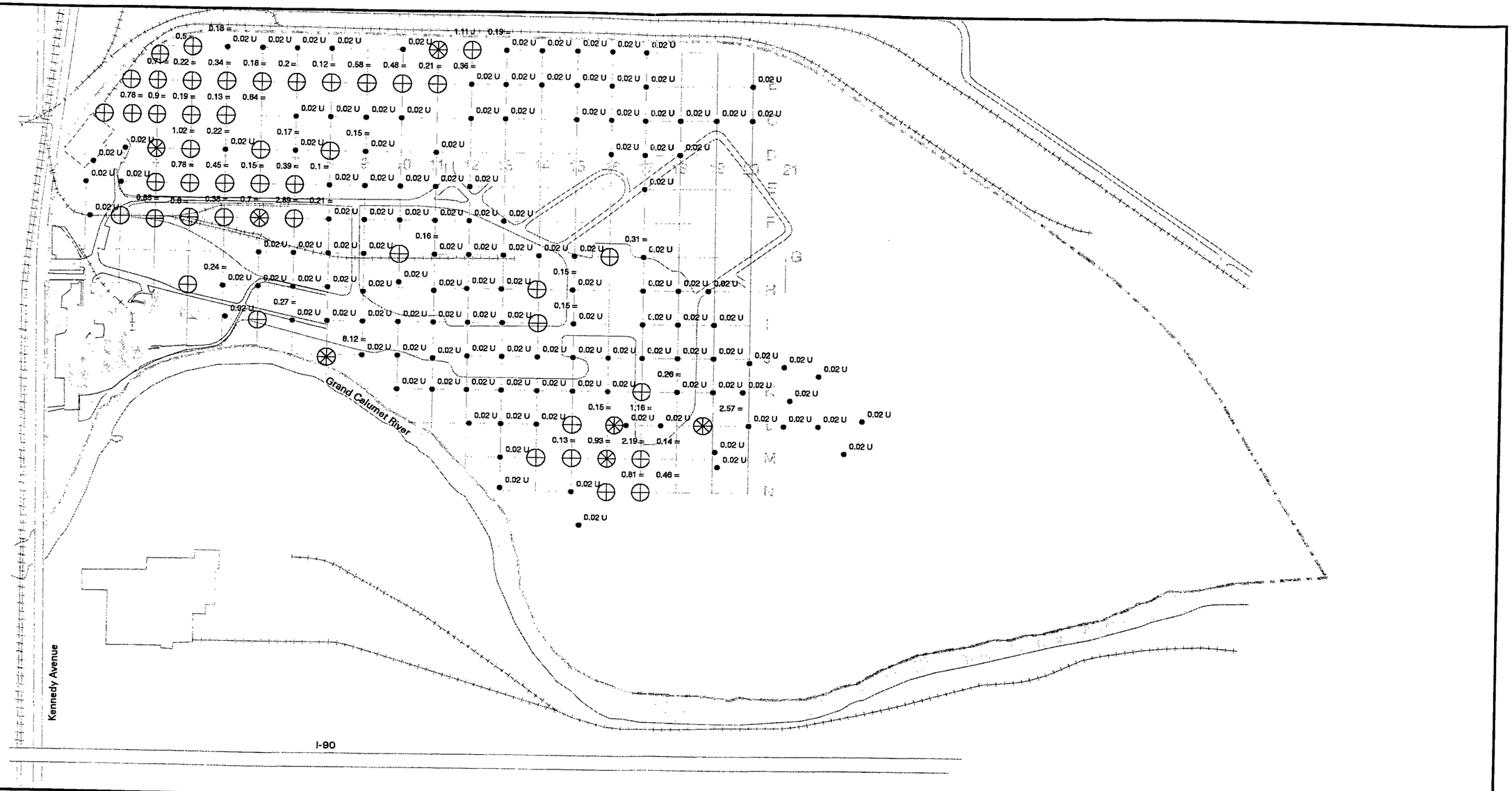
Notes:
Symbols centered over sample location.

Cadmium Concentrations in Soil

DuPont East Chicago Current Conditions Report

CH2MHILL

October 22, 1997 eps



Legend

DuPont Property Line

Concentration in mg/L (U - Detection Limit, = - Detected Value)

Grab Sample Location

<0.02 U

>=0.02 U to <0.1

0.1 to <1

1 to <10

Scale 1:7200
1 inch = 600 feet

Sources:
DuPont and CH2M HILL

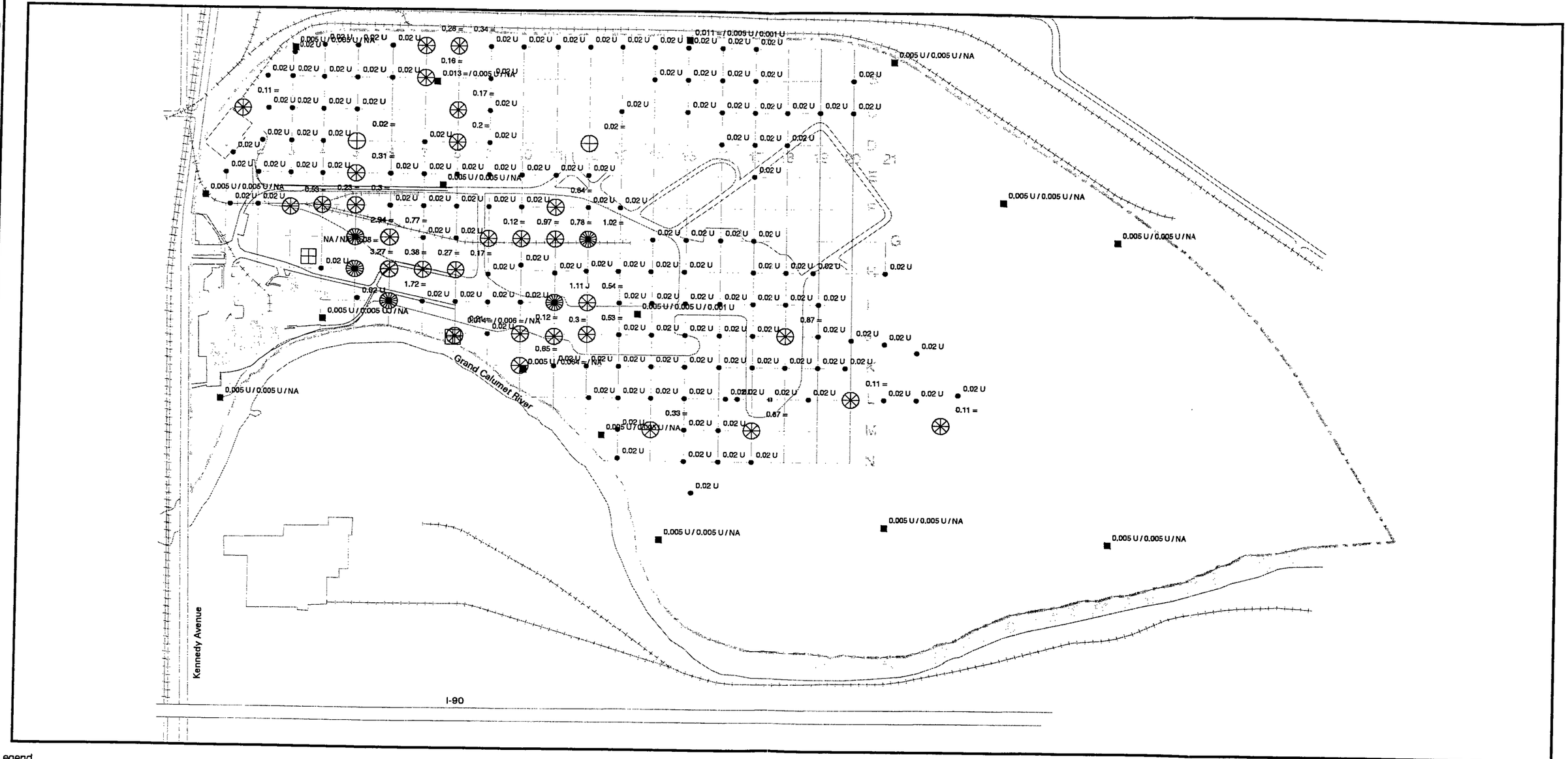
Notes:
Symbols centered over sample location.

Cadmium Concentrations in Groundwater - Top of Aquifer

DuPont East Chicago Current Conditions Report

CH2MHILL

October 22, 1997



Legend

DuPont Property Line

Concentration in mg/L (U - Detection Limit, = - Detected Value, NA - Not Analyzed)

Grab Sample Location	●	<0.001 U	⊖	>=0.001 U to <0.005	⊕	0.005 to <0.01	✳	0.01 to <0.1	✳	0.1 to <1
Monitoring Well Location	■	<0.001 U	⊟	>=0.001 U to <0.005	⊞	0.005 to <0.01	⊠	0.01 to <0.1	⊠	0.1 to <1

Sources:
DuPont and CH2M HILL

Notes:
Symbols centered over sample location.

Multiple values at monitoring well locations reflect multiple rounds of sampling from Phase II - Round 1, Phase II - Round 2, and Phase III (e.g. 0.002/0.002/NA).

N

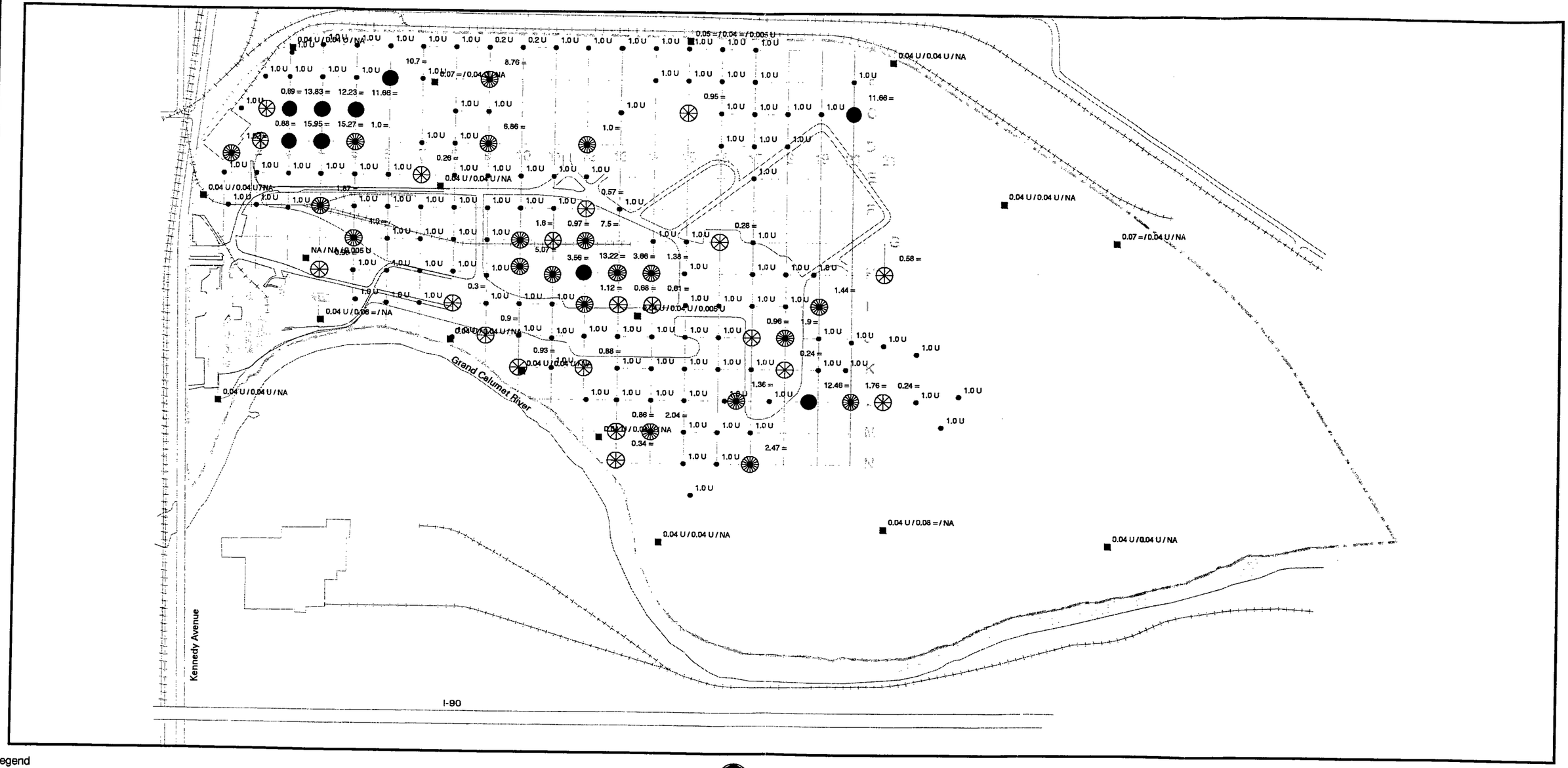
Scale 1:7200
1 inch = 600 feet

Cadmium Concentrations in Groundwater - Base of Aquifer

DuPont East Chicago Current Conditions Report

CH2MHILL

'October 22, 1997'



Legend

DuPont Property Line

Concentration in mg/L (U - Detection Limit, = - Detected Value, NA - Not Analyzed)

	<0.005 U	>=0.005 U to <0.01	0.01 to <0.1	0.1 to <1	1 to <10	>10
Grab Sample Location	•	⊖	⊕	✳	✳	●
Monitoring Well Location	■	⊟	⊞	✳	✳	■

Scale 1:7200
1 inch = 600 feet

Sources:
DuPont and CH2M HILL

Notes:
Symbols centered over sample location.

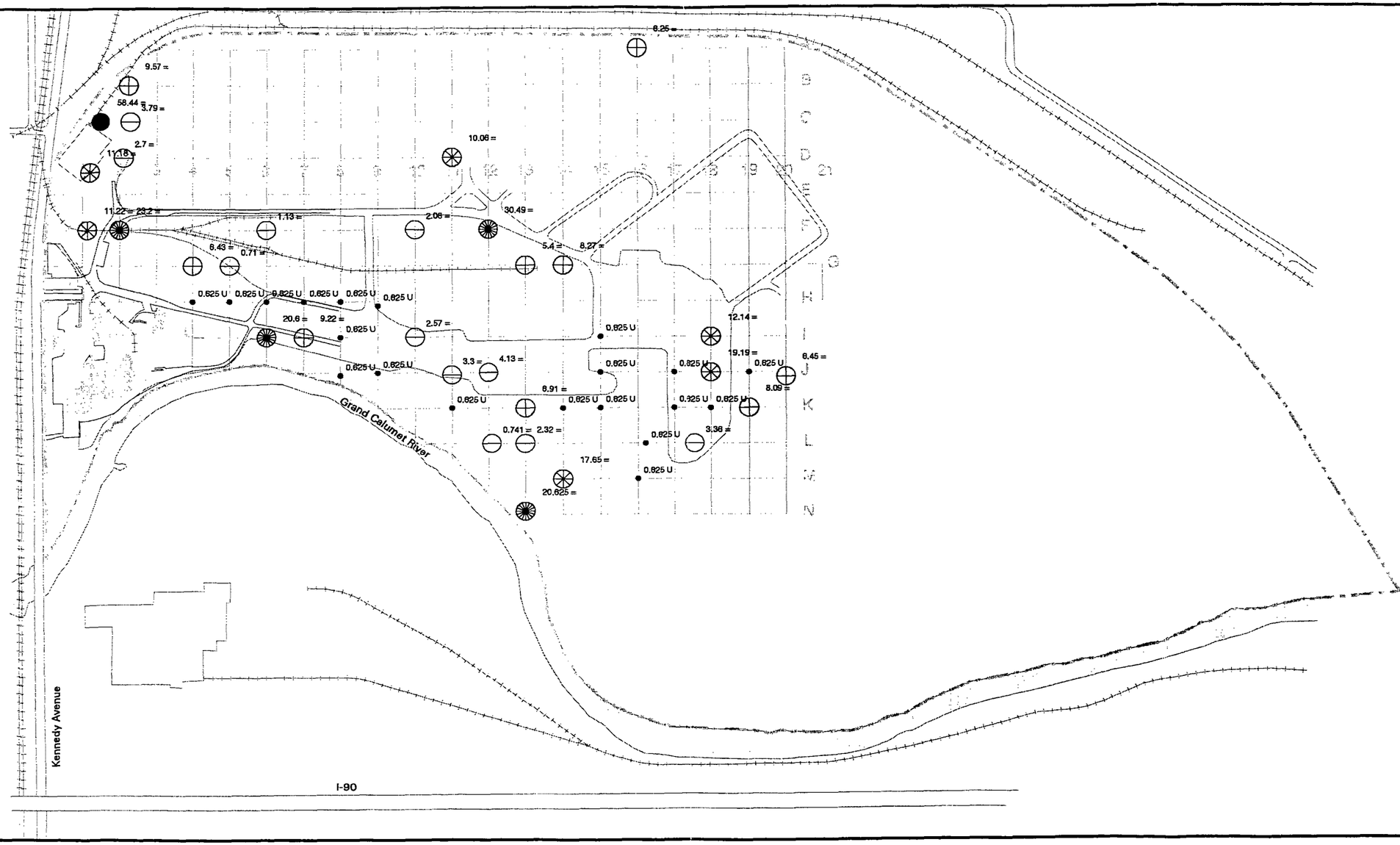
Multiple values at monitoring well locations reflect multiple rounds of sampling from Phase II - Round 1, Phase II - Round 2, and Phase III (e.g. 0.002/0.002/NA).

Antimony Concentrations in Groundwater - Base of Aquifer

DuPont East Chicago Current Conditions Report

CH2MHILL

October 22, 199[illegible] apx



Legend

DuPont Property Line

Concentration in mg/kg (U - Detection Limit, = - Detected Value)

Grab Sample Location

<0.625 U | >=0.625 U to <5 | 5 to <10 | 10 to <20 | 20 to <50 | >50

N

Scale 1:7200
1 inch = 600 feet

Chromium Concentrations in Soil

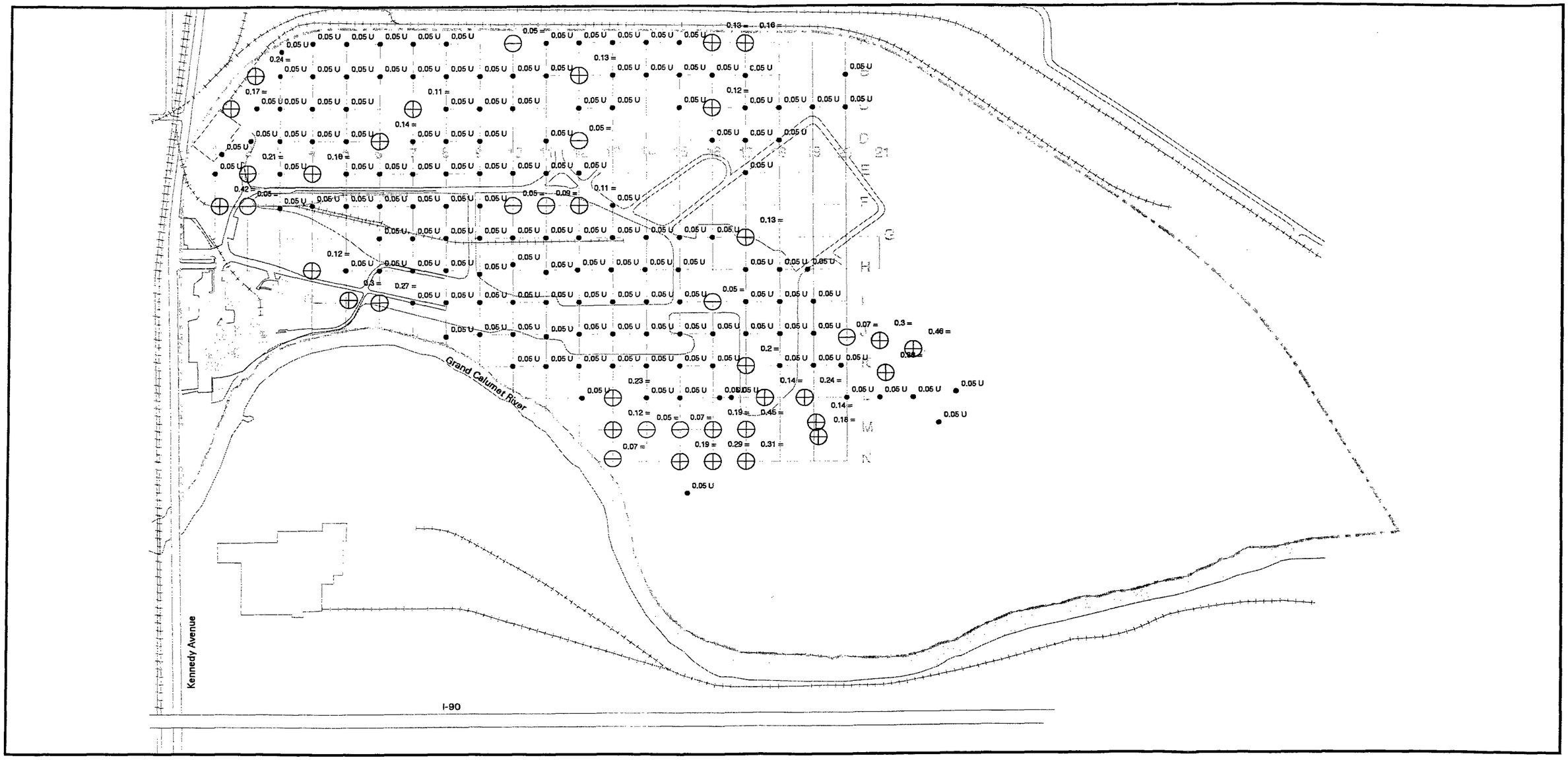
DuPont East Chicago Current Conditions Report

CH2MHILL

Sources:
DuPont and CH2M HILL

Notes:
Symbols centered over sample location.

'October 22, 1997'



Legend

DuPont Property Line

Concentration in mg/L (U - Detection Limit, = - Detected Value)

Grab Sample Location • <0.04 U ⊖ >=0.04 U to <0.1 ⊕ 0.1 to <1

Scale 1:7200
1 inch = 600 feet

Chromium Concentrations in Groundwater - Top of Aquifer

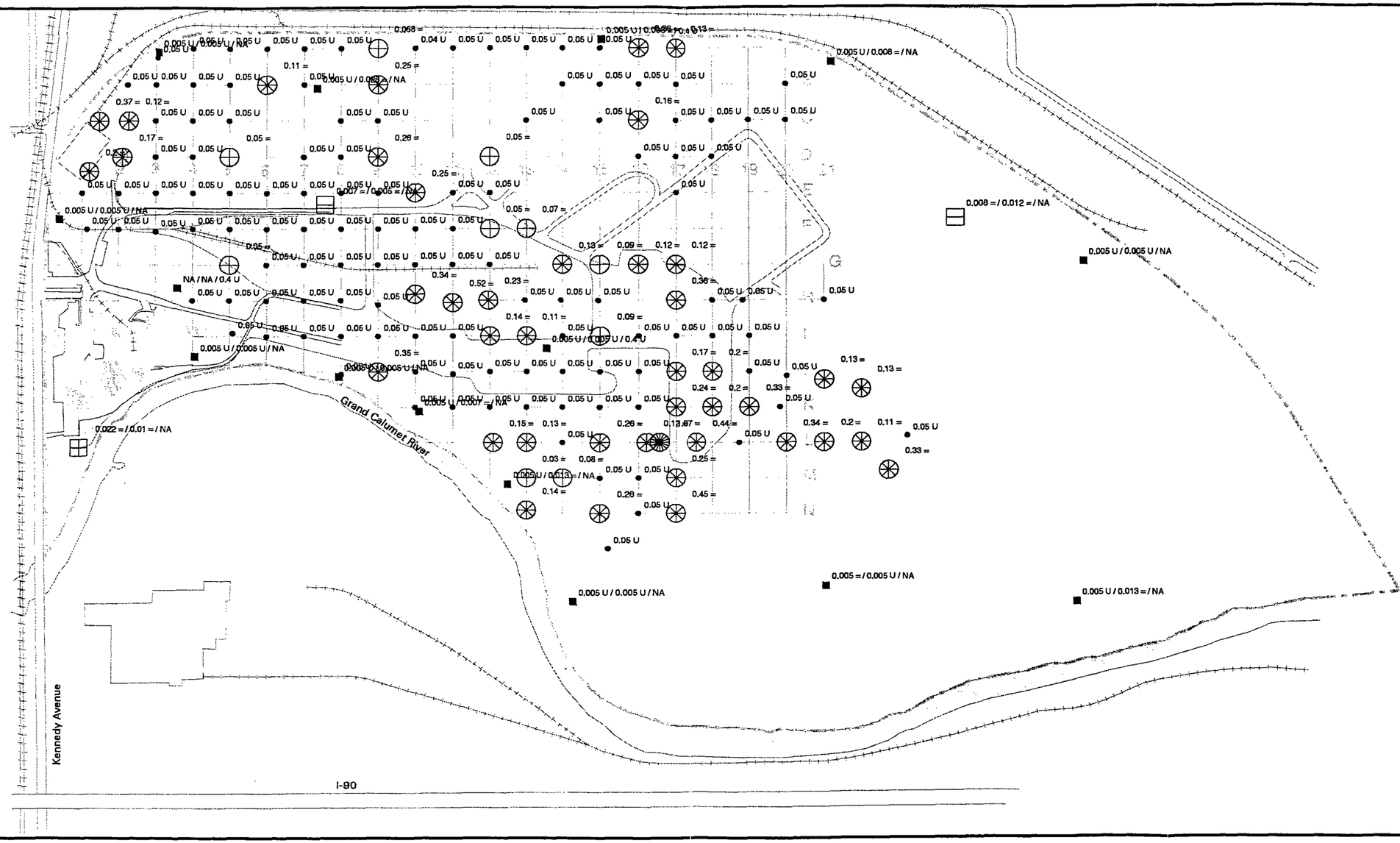
DuPont East Chicago Current Conditions Report

Sources:
DuPont and CH2M HILL

Notes:
Symbols centered over sample location.

CH2MHILL

October 22, 1997



Legend

DuPont Property Line

Concentration in mg/L (U - Detection Limit, = - Detected Value, NA - Not Analyzed)

Grab Sample Location	●	<0.005 U	⊖	>=0.005 U to <0.01	⊕	0.01 to <0.1	✳	0.1 to <1	✳	>1
Monitoring Well Location	■	<0.005 U	⊟	>=0.005 U to <0.01	⊞	0.01 to <0.1	⊠	0.1 to <1	⊠	>1

Sources:
DuPont and CH2M HILL

Notes:
Symbols centered over sample location.

Multiple values at monitoring well locations reflect multiple rounds of sampling from Phase II - Round 1, Phase II - Round 2, and Phase III (e.g. 0.002/0.002/NA).

N

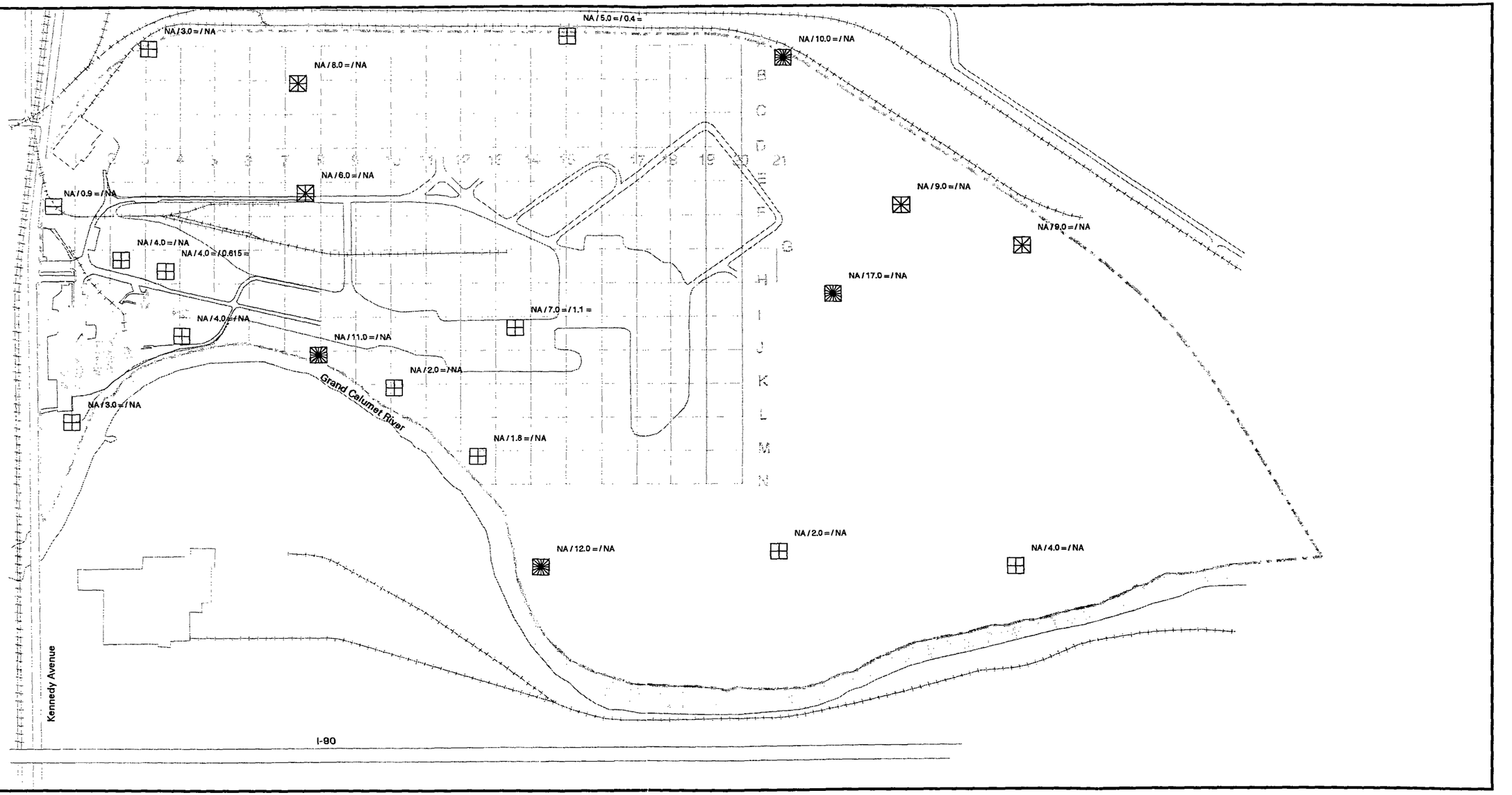
Scale 1:7200
1 inch = 600 feet

Chromium Concentrations in Groundwater - Base of Aquifer

DuPont East Chicago Current Conditions Report

CH2MHILL

October 22, 1997 eps



Legend

DuPont Property Line

Concentration in mg/L (U - Detection Limit, = - Detected Value, NA - Not Analyzed)

Grab Sample Location	●	<0.1 U	⊖	>=0.1 U to <1	⊕	1 to <5	✳	5 to <10	✳	>10
Monitoring Well Location	■	<0.1 U	⊟	>=0.1 U to <1	⊞	1 to <5	✳	5 to <10	✳	>10

Sources:
DuPont and CH2M HILL

Notes:
Symbols centered over sample location.

Multiple values at monitoring well locations reflect multiple rounds of sampling from Phase II - Round 1, Phase II - Round 2, and Phase III (e.g. 0.002/0.002/NA).

N

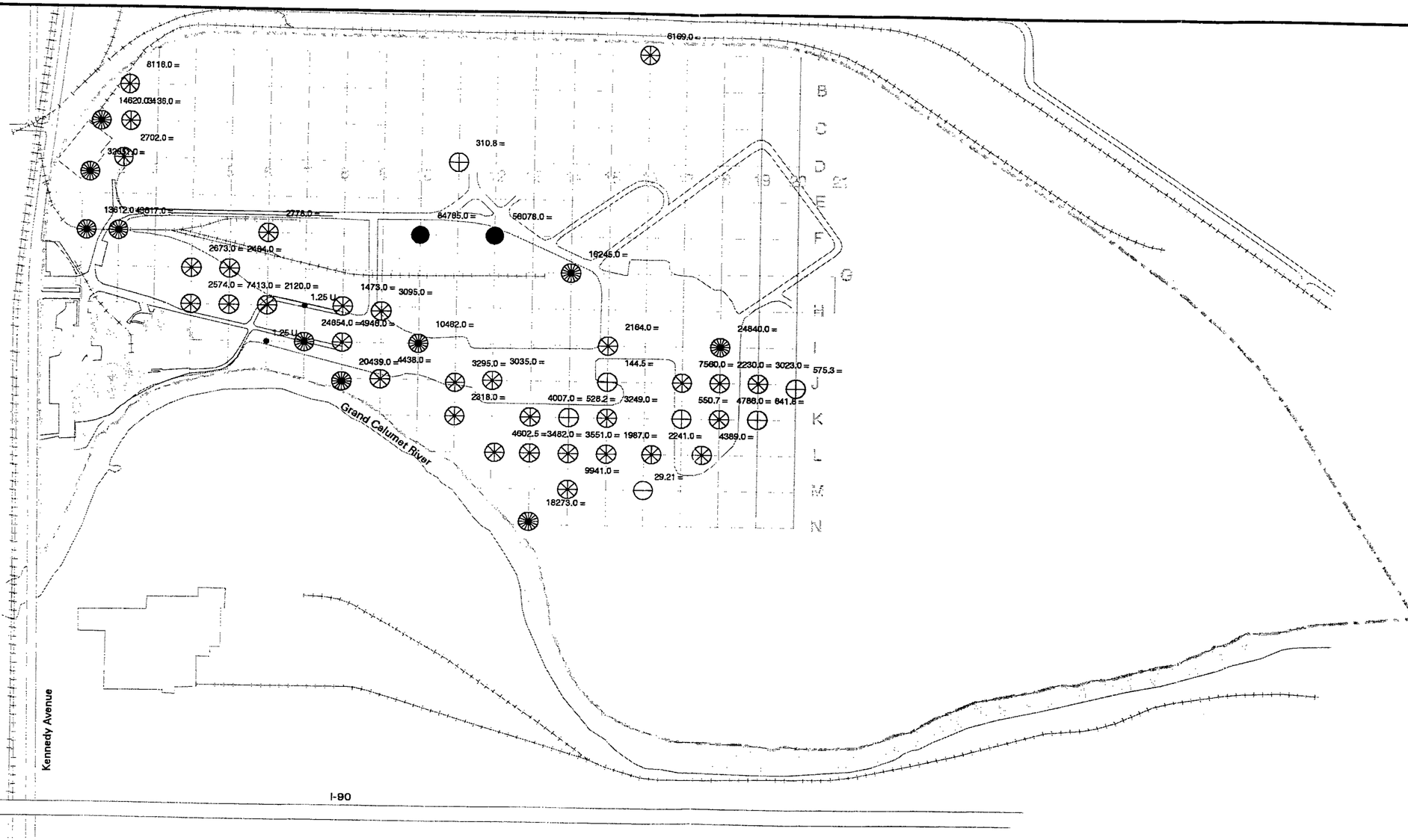
Scale 1:7200
1 inch = 600 feet

Fluoride Concentrations in Groundwater

DuPont East Chicago Current Conditions Report

CH2MHILL

'October 22, 1997' ...ps



Legend

DuPont Property Line

Concentration in mg/kg (U - Detection Limit, = - Detected Value)

Grab Sample Location

<1.25 U | >=1.25 U to <100 | 100 to <1,000 | 1,000 to <10,000 | 10,000 to <50,000 | >50,000

N

Scale 1:7200
1 inch = 600 feet

Sources:
DuPont and CH2M HILL

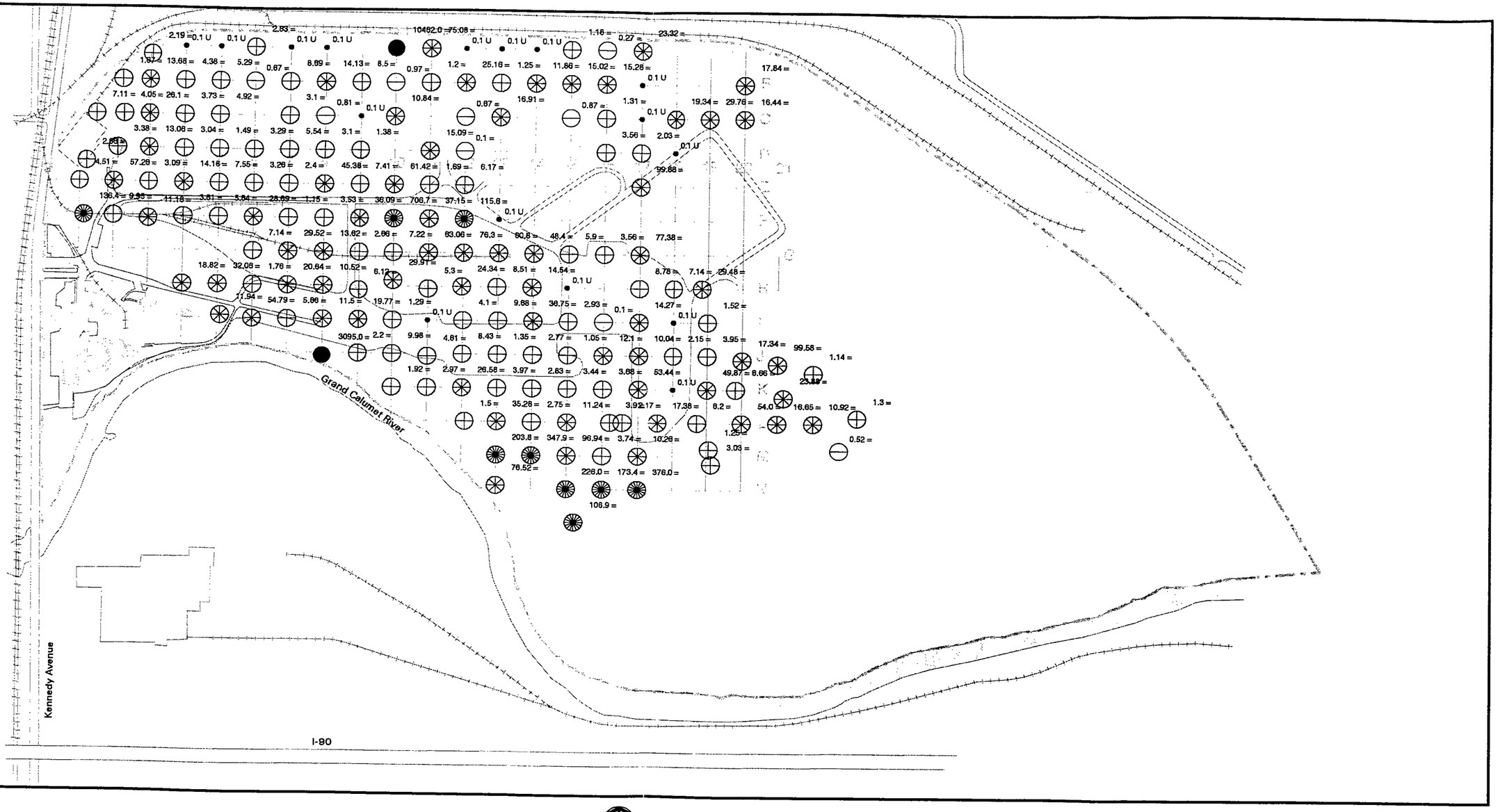
Notes:
Symbols centered over sample location.

Iron Concentrations in Soil

DuPont East Chicago Current Conditions Report

CH2MHILL

'October 22, 1997' 4.eps



Legend

DuPont Property Line

Concentration in mg/L (U - Detection Limit, = - Detected Value)

Grab Sample Location

<0.1 U | >=0.1 U to <1 | 1 to <10 | 10 to <100 | 100 to <1,000 | >1,000

N

Scale 1:7200
1 inch = 600 feet

Sources:
DuPont and CH2M HILL

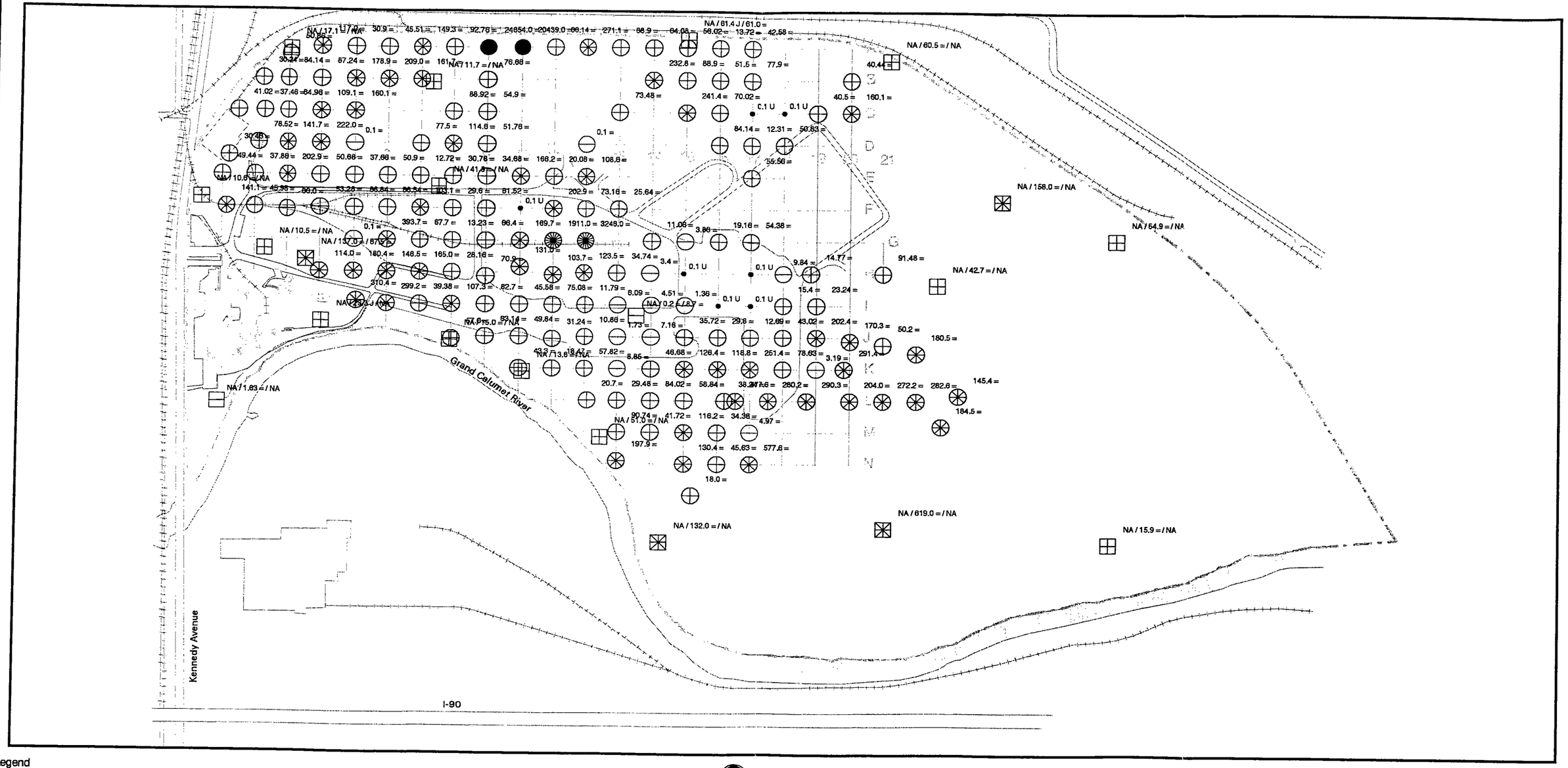
Notes:
Symbols centered over sample location.

Iron Concentrations in Groundwater - Top of Aquifer

DuPont East Chicago Current Conditions Report

CH2MHILL

'October 22, 1997' gps



Legend

DuPont Property Line

Concentration in mg/L (U - Detection Limit, = - Detected Value, NA - Not Analyzed)

	<0.1 U	>=0.1 U to <10	10 to <100	100 to <1,000	1,000 to <10,000	>10,000
Grab Sample Location	●	⊖	⊕	⊛	✺	●
Monitoring Well Location	■	⊟	⊞	⊠	▩	■

Sources:
DuPont and CH2M HILL

Notes:
Symbols centered over sample location.

Multiple values at monitoring well locations reflect multiple rounds of sampling from Phase II - Round 1, Phase II - Round 2, and Phase III (e.g. 0.002/0.002/NA).

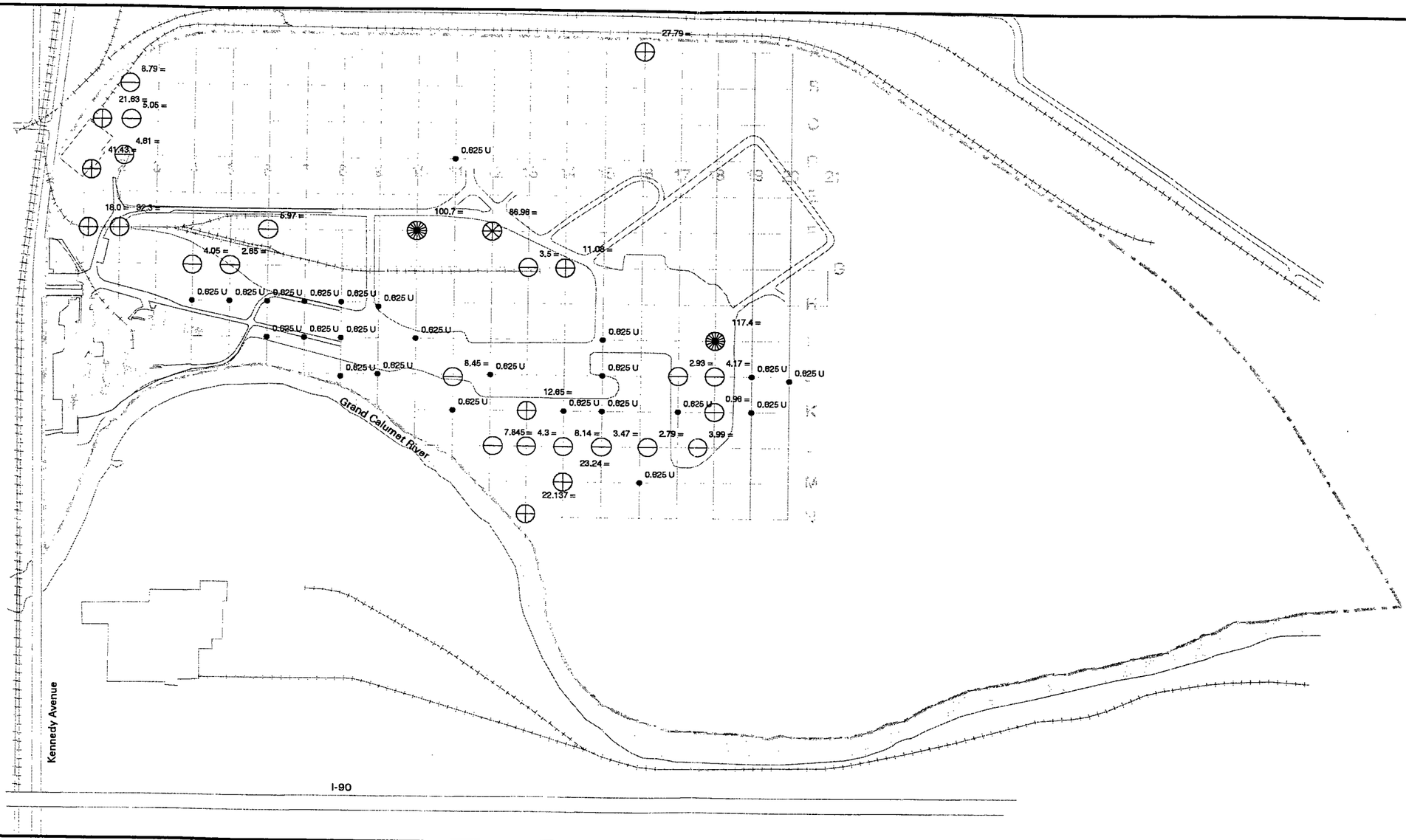
Scale 1:7200
1 inch = 600 feet

Iron Concentrations in Groundwater - Base of Aquifer

DuPont East Chicago Current Conditions Report

CH2MHILL

October 22, 1997



Legend

DuPont Property Line

Concentration in mg/kg (U - Detection Limit, = - Detected Value)

Grab Sample Location • <0.625 U ⊖ >=0.625 U to <10 ⊕ 10 to <50 ⊛ 50 to <100 ✺ >100

Scale 1:7200
1 inch = 600 feet

Sources:
DuPont and CH2M HILL

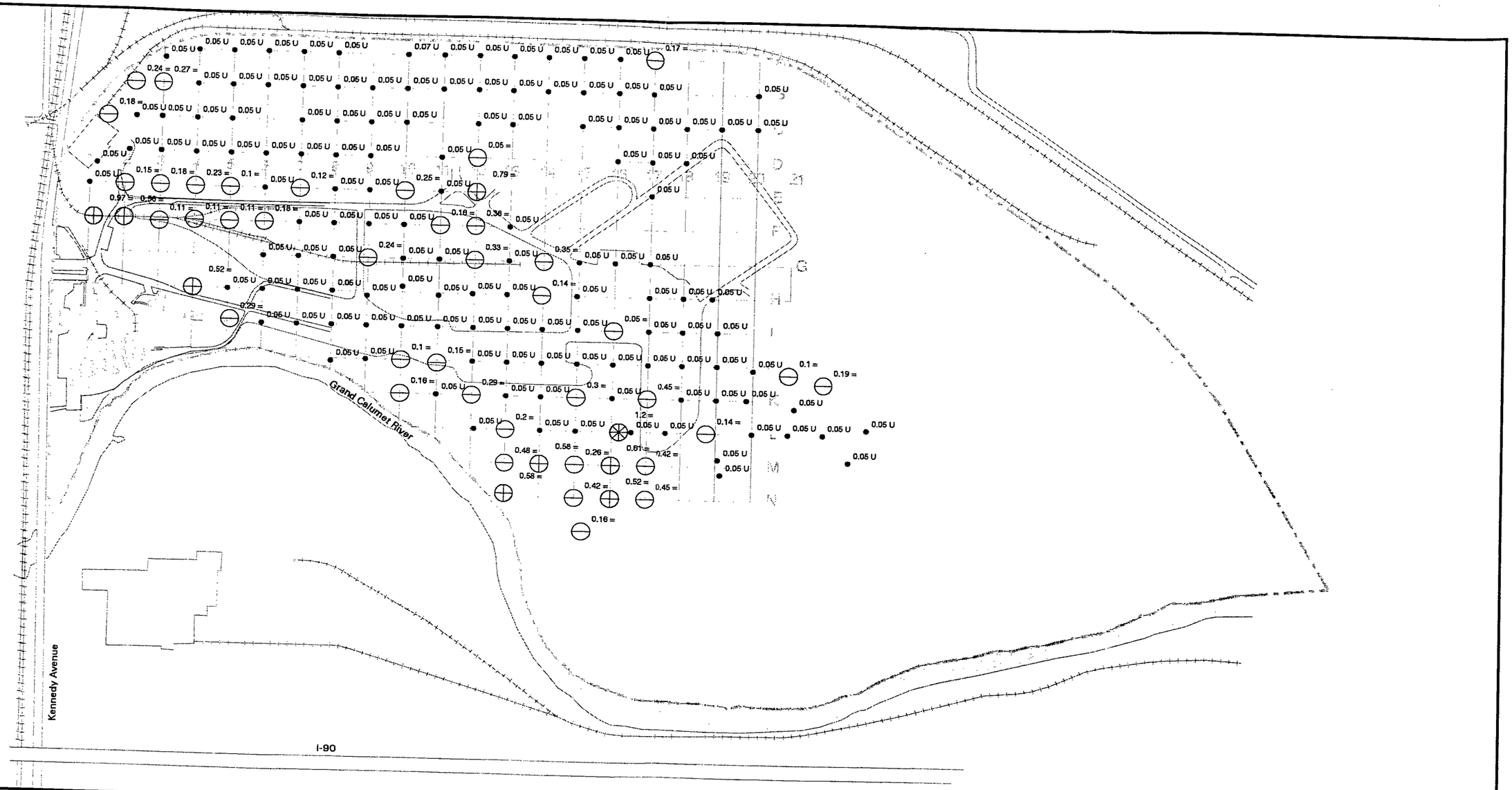
Notes:
Symbols centered over sample location.

Nickel Concentrations in Soil

DuPont East Chicago Current Conditions Report

CH2MHILL

"October 22, 1997"



Legend

DuPont Property Line

Concentration in mg/L (U - Detection Limit, = - Detected Value)

Grab Sample Location • <0.05 U ⊖ >=0.05 U to <0.5 ⊕ 0.5 to <1 ⊛ >1

N

Scale 1:7200
1 inch = 600 feet

Sources:
DuPont and CH2M HILL

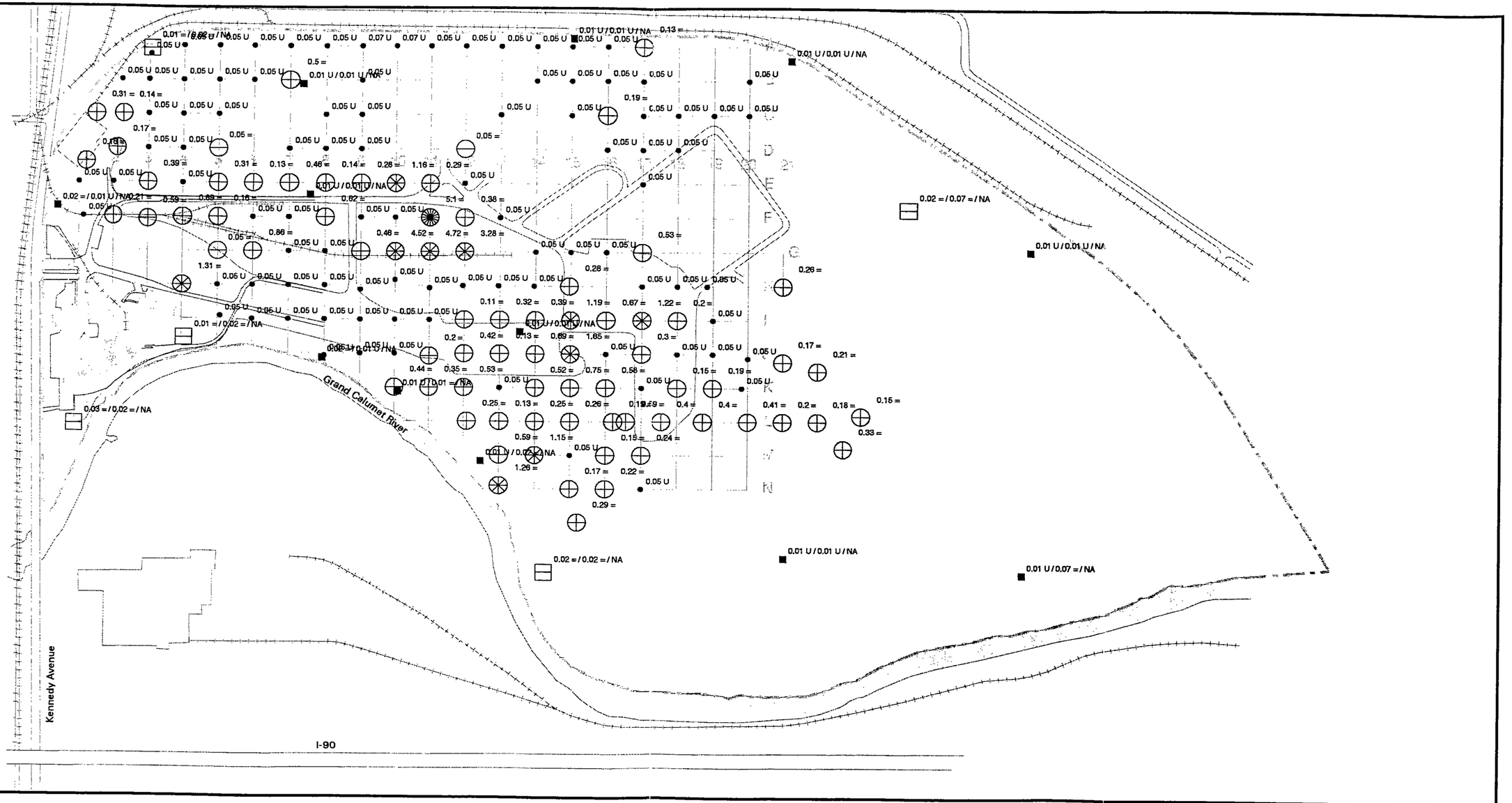
Notes:
Symbols centered over sample location.

Nickel Concentrations in Groundwater - Top of Aquifer

DuPont East Chicago Current Conditions Report

CH2MHILL

October 22, 1997 eps



Legend

DuPont Property Line

Concentration in mg/L (U - Detection Limit, = - Detected Value, NA - Not Analyzed)

Grab Sample Location	●	<0.01 U	⊖	>=0.01 U to <0.1	⊕	0.1 to <1	⊛	1 to <5	✺ 5 to <10
Monitoring Well Location	■	<0.01 U	⊟	>=0.01 U to <0.1	⊞	0.1 to <1	⊠	1 to <5	▩ 5 to <10

Sources:
DuPont and CH2M HILL

Notes:
Symbols centered over sample location.

Multiple values at monitoring well locations reflect multiple rounds of sampling from Phase II - Round 1, Phase II - Round 2, and Phase III (e.g. 0.002/0.002/NA).

N

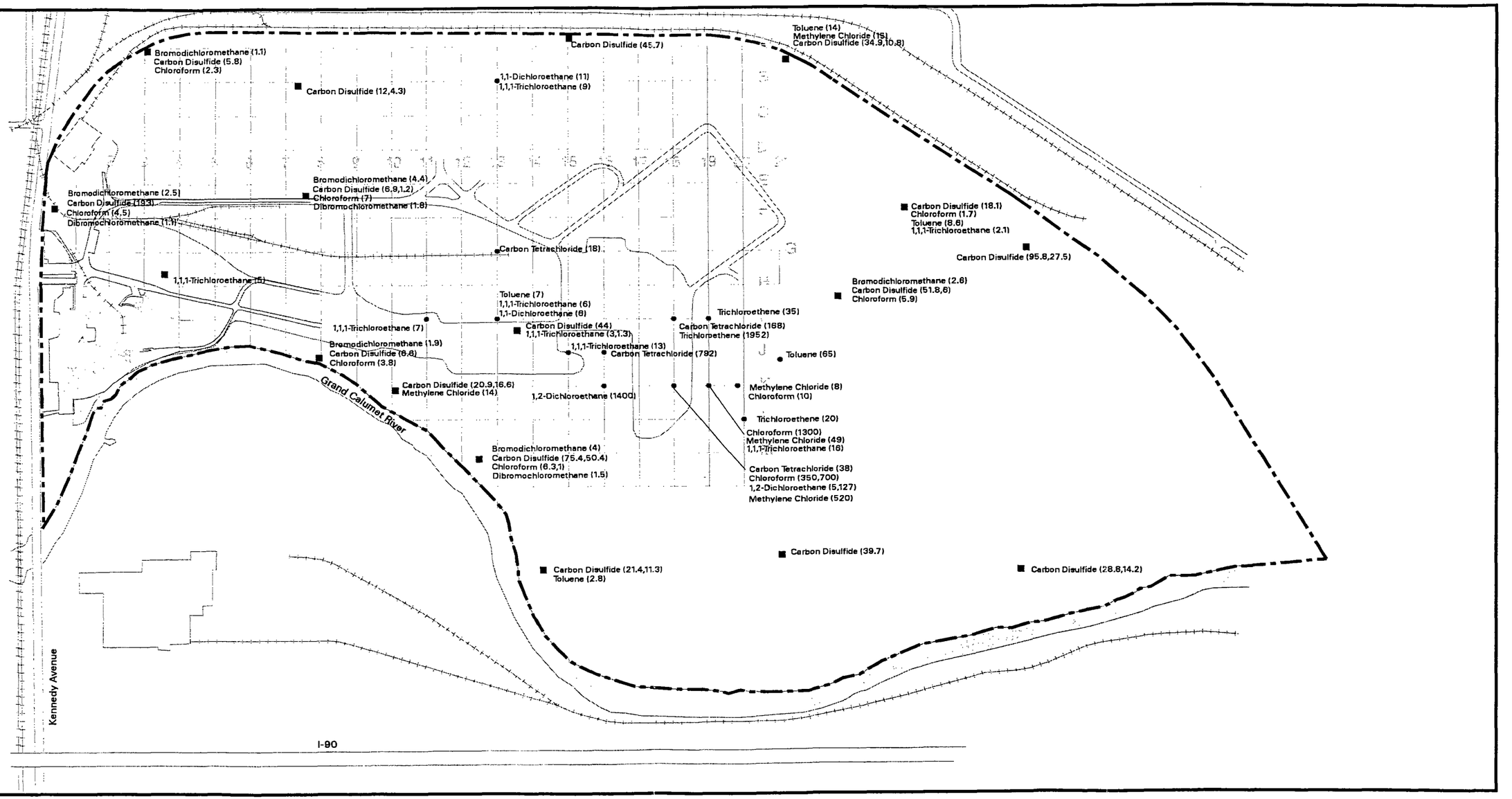
Scale 1:7200
1 inch = 600 feet

Nickel Concentrations in Groundwater - Base of Aquifer

DuPont East Chicago Current Conditions Report

CH2MHILL

'October 22, 1997'



Legend

DuPont Property Line

Concentration in ug/L

- Monitoring Well Location
- Grab Sample Location

Scale 1:7200
1 inch = 600 feet

Locations and Concentrations of Other VOCs Detected in Groundwater

DuPont East Chicago Current Conditions Report

Sources:
DuPont and CH2M HILL

Notes:
Symbols centered over sample location.

Other VOCs refers to VOCs other than Freon (Trichlorofluoromethane) which is shown on Figures 4-7a and 4-7b.

VOCs detected infrequently (i.e., at a single location) are not shown.

CH2MHILL

October 22, 1997

Summary of Raw Materials, Products, and Waste Streams by Manufacturing Process
(Page 1 of 4)

Manufacturing Process	Raw Material	Product	Waste Streams
Sulfuric Acid	Sulfur Water Air Reagent Grade Sulfuric Acid Rodine® (Additive) Dimethyl phthalate (Additive)	66° Baume Sulfuric Acid (H_2SO_4) (93%) 99% H_2SO_4 60° Baume H_2SO_4 Oleum I (20%, 30%, 40%) Sulfur	H_2SO_4 Tank Sludge Sulfur Dioxide (SO_2) gas Vanadium Oxide (V_2O_5) Dust (recycled) Zinc Roaster Wastewater
Reagent Nitric Acid	Technical Nitric Acid (HNO_3) Air Water	Nitric Acid	Wastewater
Reagent Sulfuric Acid	Sulfur Trioxide (SO_3) Water Air	Reagent Grade Sulfuric Acid Air	Wastewater
Sodium Silicate and Metasilicate	Soda Ash Sand Water 50% Sodium Hydroxide (NaOH)	Sodium Silicate Sodium Metasilicate	Silica Furnace Flue Dust (silica sand, soda ash, Cd, Cr(6), Ag, As, Ba, Cu, Hg, Ni, Pb, Se, Zn) Silica Wastewater
Reagent Hydrochloric Acid	Technical Hydrochloric Acid (HCl) Water	Hydrochloric Acid (HCl) Weak HCl (by-product—recycled)	Wastewater
Reagent Acetic Acid	Technical Acetic Acid Water	Acetic Acid	Wastewater
Zinc Chloride	Zinc Hydrogen Chloride (HCl) Barium Chloride ($BaCl_2$)	Zinc Chloride ($ZnCl_2$)	Zinc Chloride Mud Sludge Wastewater
Hydrochloric Acid/ Salt Cake/Manheim Furnace	Salt Water Sulfuric Acid (H_2SO_4)	Hydrochloric Acid (HCl) Salt Cake	Wastewater Cooling Water (non-contact) Salt Cake
Ammonium Chloride	Additives Hydrochloric Acid (HCl) Ammonium Hydroxide (NH_4OH)	Ammonium Chloride (NH_4Cl)	Filtrate Cake Mud Wastewater
Duclean #1	Sulfuric Acid (H_2SO_4) Rodine 92A® BCO Surfactant	Duclean #1 (H_2SO_4, Rodine 92A®, bicarbonate)	Wastewater
Duclean #2	Hydrochloric Acid (HCl) Rodine 50®	Duclean #2 (HCl, Rodine 50®)	Rodine®
Glauber's Salt	Salt Cake Water Lime Sodium Carbonate	Glauber's Salt ($Na_2SO_4 10H_2O$)	Filter Cake Wastewater Tank Sludge

Summary of Raw Materials, Products, and Waste Streams by Manufacturing Process
(Page 2 of 4)

Manufacturing Process	Raw Material	Product	Waste Streams
Lead Arsenate[a]	Acetic Acid Nitric Acid Arsenic Acid	Lead Arsenate Litharge® (PbO)	Arsenic Wastes Lead Arsenate Wastes Spent Acids Wastewater Floor Sweepings Filter Cake
Ludox®	Sodium Silicate Water Sodium Hydroxide (NaOH)	Ludox® Colloidal Silica	Calcium Sulfate ($CaSO_4$) Filter Cake Waste Acid (2% H_2SO_4) Storage Tank Cleanings Tank Sludge Filter Aids
Sodium Thiosulfate	Sulfur Sodium Sulfate (Na_2SO_3)	Sodium Thiosulfate ($Na_2S_2O_3$)	Wastewater
Lime Sulfur	Lime Sulfur	Lime Sulfur	Wastewater
Arsenic Acid	Nitric Acid (HNO_3) Arsenic	Arsenic Acid (H_3AsSO_4)	Wastewater
Mixed Acid	Sulfur Trioxide (SO_3) 30% Oleum 40% Nitric Acid (HNO_3)	Mixed Acid	
Bordeaux Mixture®	Copper Sulfate Lime Water	Bordeaux Mixture® ($CuSO_4$, $CaCO_3$)	Wastewater
Calcium Arsenate	Lime (Hydrated) Arsenic Acid	Calcium Arsenate ($Ca_3(AsO_4)_2$)	Wastewater
Chromated Zinc Chloride	Zinc Chloride Sodium Dichromate	Chromated Zinc Chloride	
Freon®—(TCFM) Trichlorofluorocarbon	Carbon Tetrachloride (CCl_4)	Freon® 11 Freon® 12 Anhydrous HCl (by-product) 18° Hydrochloric Acid (by-product)	Caustic Waste CaF_2 Still Bottoms Acid Waste Wastewater Ion Exchange Wash Cooling Tower Blowdown F-11, F-11 Reboiler Still Bottoms CaF_2 Sludge (water, $Ca(OH)_2$, CaF_2, Fe_2O_3, metals (Ba, Cd, Pb, Ni, Zn)) Chromium Boron Alumina Gel Hydrochloric Acid (HCl) Runoff Arsenic $SbCl_5$

Summary of Raw Materials, Products, and Waste Streams by Manufacturing Process

Manufacturing Process	Raw Material	Product	Waste Streams
Zinc Ammonium Chloride	Zinc Chloride ($ZnCl_2$) Ammonium Chloride (NH_4Cl) Quinone	Zinc Ammonium Chloride ($ZnCl_2 \cdot 2NH_4Cl$)	
Aluminum Chloride	Aluminum Hydroxide ($Al(OH)_3$) Hydrochloric Acid (HCl) Activated Carbon	Aluminum Chloride ($AlCl_3$)	Sludge Filter Cake Mud (Water, Al_2O_3, $AlCl_3 \cdot 6H_2O$, SiO_2, water and acid insoluble, trace components (heavy metals)) Wastewater
Reagent Ammonium Hydroxide	Ammonia Water	Ammonium Hydroxide (NH_4OH)	Sludge Wastewater
Phosphoric Acid Process	Phosphate Rock Sulfuric Acid (H_2SO_4)	Phosphoric Acid (H_3PO_4)	Wastewater
Litharge®	Melted Lead Air	Lead Oxide (PbO)	
Sulfamic Acid	Urea 30% Oleum Sulfur Trioxide (SO_3) Ammonia (NH_3)	Granular Sulfamic Products Ammate Products Crystal Sulfamic Acid	Ammate Solution Tank Car Sludge Pit Sludge Wastewater Ammate Dry Filter Cake (water, $CaSO_4 \cdot 2H_2O$, $NH_4SO_3NH_2$, trace components (heavy metals))
Trisodium Phosphate (TSP)	Phosphoric Acid (H_3PO_4) Na_2CO_3 Sodium Hydroxide (NaOH)	Trisodium Phosphate (TSP)	TSP Waste Calcium Sulfate Slurry Aluminum Phosphate Iron Phosphate Silicon Oxide (SiO_2) Sludge Wastewater
Fluorosulfonic Acid (FSA)	Anhydrous Hydrofluoric Acid (AHF) Sulfur Trioxide (SO_3)	Fluorosulfonic Acid (FSA)	Tank Truck Scrubber Waste Wastewater
Liquid Sulfur Trioxide (SO_3(L))	30% Oleum (H_2SO_4) Sulfur Trioxide (SO_3) Anhydrous Hydrochloric Acid (HCl)	Sulfur Trioxide (SO_3) Lower Strength Oleum	Wastewater
Chlorosulfonic Acid (CSA)	Anhydrous HCl Sulfur Trioxide (SO_3)	Chlorosulfonic Acid ($HClSO_3$)	Cooling Water (non-contact) Hydrochloric Acid (HCl) Sulfuric Acid Waste

Summary of Raw Materials, Products, and Waste Streams by Manufacturing Process
(Page 4 of 4)

Manufacturing Process	Raw Material	Product	Waste Streams
General AgChem Products:			
Benomyl/Benlate	Butyl Isocyanate Methyl 2-benzimidazole carbamate (MBC) Methylethyl Ketone (MEK) Additives	Benlate (Butyl Isocyanate, methyl 2-benzinidazole carbamate, MEK)	Distillation Heels Benomyl Process Sludge
Velpar® (Hexazinone)	Crude Hexazinone 40% Toluene Hexane	Technical Hexazinone (toluene, hexane)	Hexane Waste Toluene Waste
Linuron®	Dichlorophenyl Isocyanate (DCPI) Dimethylhexylamine (DMHA)	Linuron® (dichlorophenyl isocyanate, dimethyl hexylamine)	Linuron® Waste Slurry
Lorox®	Linuron® Clay Ari-Lite 98 Zeolex 23A Petro AGS Marasperse CB	Lorox® (dichlorophenyl isocyanate, dimethyl hexylamine, clay, Ari-Lite 98, Zeolex 23A, Petro AGS, Marasperse CB)	
Siduron®	2-Methyl Cyclohexylamine (MCHA) Phenyl Isocyanate (PI) Water	Siduron® (phenyl isocyanate, 2-methylcyclohexylamine, hexane)	Hexane/Siduron® Wastes

[a]Information is not fully available about this process because it was not used after the 1940s.

Summary of Raw Materials, Products, and Waste Streams by Manufacturing Process

Relevant Information from the Phase I Groundwater Assessment Report

(CH2M HILL 1990)

Phase I Waste Management Unit Information

Appendix A. Information Sources and Document Reference List

Appendix B. Detailed Production History

Appendix C. Process Flow Sheets for Chemicals with Productions for Longer Than 25 Years

Appendix D. Miscellaneous Process Flow Sheets

Appendix E. Waste Management Flow Charts

Phase I Waste Management Unit Information

LOCATION AND OPERATION OF WMUs

The areas or facilities referred to in this report as WMUs comprise locations on the plant property where wastes are known or thought to have been or to be buried or stored, or where raw materials, support material, or products (including coal and petroleum products) are known to have been or to be stored. Although the raw materials, support material, and products are not wastes, their presence constitutes a potential for groundwater contamination; they are called "wastes" for nomenclature consistency with other groundwater assessments performed for DuPont.

Thirty-six known or suspected WMUs were identified during this study. Their locations of these units are indicated in Figure 3-3 and Plate 1, although the boundaries and locations for some are uncertain. Also, it is uncertain if wastes not identified in the records search or interviews were disposed of in the WMUs. Of the 36 WMUs, 13 are active, 22 are closed, and 1 has both active and closed portions. Of the active sites, WMU 30 and WMU 36 are permitted by the U. S. Environmental Protection Agency (U.S. EPA) under NPDES discharge permit number IN0000329. WMU 30 consists of the EVC operation and Outfall 003; WMU 36 consists of Outfall 002. WMU 4 includes three closed interim storage areas for hazardous wastes stored in drums or tanks (AgChem and Reagents--closed). State of Indiana permits for the WMU 5 (silica/calcium sulfate area) and WMU 14 (new landfill) are pending. Of the remaining active WMUs, two are pits (colloidal silica and sulfamic acid), two are loading/unloading areas (railroad and nonrailroad), two contain tanks (above ground and underground), two are the plant process and sanitary sewers, and the last are chemical storage buildings. The remaining unit (WMU 7) with both active and closed status, is the general plant management unit for solvents, paints, oils, bulk chemicals, and temporary storage of hazardous wastes (asbestos and silica furnace flue dust) not associated with WMU 4.

The closed WMUs include eight landfills, incinerators, PCB storage areas, underground storage tanks, a zinc crude milling area, a zinc roaster (Trail Ore Roasters), an acid transfer line, various chemical storage buildings, spills not associated with other WMUs, and miscellaneous pits, piles, lagoons, and basins (sulfur piles and pit, chrome outfall, hydrochloric acid neutralization pit, antimony pentachloride settling pit, and other identified pits and piles).

Figure 3-4 summarizes the movement of wastes from the 30 primary waste sources to the onsite WMUs. The operational or physical features of each of WMU are described below. Table 3-1 summarizes the major features of each unit, as determined from the records search.

WMU 1--Ash Landfill/Stoker Chain Grate Ash (Closed)

Stoker chain grate ash was disposed of in WMU 1. The ash was deposited from 1892 to 1955 while the power plant used coal as its primary source of fuel and the WMU was active. The plant changed to burning natural gas in 1968, but no mention is made as to where the fly ash was disposed of between 1955 when the WMU was closed and 1968 when the conversion to natural gas occurred.

The boundaries of WMU 1 are depicted in Figure 3-3 as indicated in maps obtained during the records search.

WMU 2--Rubble Fill Area (Closed)

WMU 2 received the majority of the waste landfilled onsite. Past wastes disposed of here include demolition material, sulfur, metal, silica, dirt, contaminated dirt, waste chemicals, glass, waste drums, railroad ties, clothing, aluminum chloride filter cake mud, sodium silicate, sulfuric acid tank car heels (neutralized residue remaining after tank car emptied or cleaned), solid lab wastes, silica furnace flue dust and bricks, zinc chloride mud, paper wastes, and TCFM still bottoms (wastes from purification of TCFM streams). It is estimated that this landfill was operated between 1893 and 1985. No information is available for the quantity of material disposed of in the landfill.

Figure 3-3 indicates the approximate boundaries for the unit. As identified by records and personnel at the East Chicago facility during the records search.

WMU 3--Coal/Fly Ash Piles

During the operation of the coal-fired boilers, the coal required for and the fly ash produced from the operation were stored or disposed of at WMU 3. When the boilers were converted to natural gas in 1968, the area was no longer used. Coal usage rates or fly ash production rates were not documented in the records. Plant personnel indicate that there was no runoff control at any of the three pile sites. The area was used between 1893 and 1968.

The boundaries of WMU 3 are depicted in Figure 3-3 as indicated in maps obtained during the records search and plant interviews.

WMU 4--Hazardous Waste Storage Area--Permitted (Closed)

This WMU 4 consists of the onsite interim storage areas for hazardous wastes. The AgChem drum area contains wastes that were generated in the operation of the Agchem processes. Wastes include hexazinone/toluene wastes, toluene wastes, hexane wastes, dimethylformamide/methanol wastes, and AgChem floor sweepings. Since 1984, AgChem wastes have not been stored in drums but in rail cars, and the area is considered to be closed. The reagents area also contained a hazardous storage area for drums of reagent-grade chemicals (hydrochloric acid, nitric acid, sulfuric acid, and ammonium hydroxide). It closed when reagent production ceased in 1984. The waste solvent tank area near the AgChem building is also included in this unit. The waste solvent consists of spent hexane and other contaminants from the AgChem process.

WMU 5--Silica/Calcium Sulfate Area (Active)

WMU 5 receives the waste filter cake generated by the EVC and colloidal silica filter presses. The filter cake contains calcium sulfate, silica, filter aid, precoat, and chemicals from the waste treatment facility; and in the past, it contained zinc chloride mud, dry ammate, and Linuron® waste slurries. The landfill

receives approximately 8,000 tons of material each year from the mentioned processes. As of 1978, the only materials disposed of in WMU 5 are those associated with the colloidal silica process.

The boundaries of WMU 5 are depicted in Figure 3-3 as indicated in maps obtained during the records search.

WMU 6--Sulfur Areas (Closed)

Six separate sulfur storage areas were identified during the records search. The general locations and periods of use are outlined below. Chambers processes No. 1, No. 2, and No. 3 (1893-1947) and Chambers processes No. 4 and No. 5 (1913-1955) each had a sulfur pile located near the burner buildings. Contact No. 1 (1923-1955) and Contact No. 3 (1955-1984) had sulfur piles near the burners, while Contact No. 3 also had a sulfur pit (1955-1958) located near the burner. The pit received sulfur for melting and filtration prior to use in the process. The pit contained two sections, one to hold the sulfur and melt it with internal heating coils, the other to receive the filtered molten sulfur. Contact No. 2 did not use a sulfur pile because it received sulfur from the roasting of zinc sulfide ore. Alkyl acid returned from the Cities Services Refinery (see WMU 25) was burned in the spent acid burner associated with Contact No. 3.

The boundaries of WMU 6 are depicted in Figure 3-3 as indicated in maps obtained during the records search and from information provided by plant personnel. Exact locations of five of the six areas are unknown. Only the sulfur pit for Contact No. 3 can be located on maps found during the records search.

WMU 7--General Plant (Active and Closed)

WMU 7 consists of areas of the plant where wastes were stored, but for which the exact locations may be unknown or too numerous to specifically identify individually. Materials used onsite include Safety Kleen® solvent, Chlorothene NU® (1,1,1-trichloroethane), paints and paint solvents, lubricating oils and waste lubricating oils, asbestos, silica furnace flue dust, dichlorophenylisocyanate, bulk chemicals, hospital x-ray developing solution, and Vythene (methyl chloroform).

The Safety Kleen® solvents are used for equipment cleaning and are supplied to the plant on a use only basis. The East Chicago facility is not required to dispose of the material since the responsibility of possession and disposal remain with the supplier. Chlorothene NU® was used as a cleaning solvent prior to its classification as a hazardous waste. After the change in the classification, the plant changed to the Safety Kleen® solvents. Paints and paint solvents are used in the maintenance of the plant facilities, and the exact disposal location of the spent paint solvents is unknown. Waste lubricating oils are generated in the maintenance of the equipment and support vehicles of the plant. During the demolition, asbestos was found in the building insulation. This material is collected and disposed of offsite. Whenever the silica furnace is retrofitted, furnace flue dust (containing a high concentration of hexavalent chromium) is collected. This dust is considered hazardous, and is also disposed of offsite. Dichlorophenylisocyanate was used in the AgChem process, and was reported to

have been stored in a heated portion of the AgChem building. Bulk chemicals are used throughout the plant and are stored in blowcases or transportable tanks. Records indicate that x-ray developing solution and methyl chloroform were disposed of.

No specific locations were identified for the storage of the wastes during the records search, except for the dichlorophenylisocyanate.

WMU 8--Hydrochloric Acid Neutralization Pit (Closed)

WMU 8 received hydrochloric acid and acidic waste flows from the TCFM process. Boron, arsenic, and chromium were contained in these flows. Antimony pentachloride, a catalyst from the TCFM process, and sulfamic acid were also mentioned in plant records. Plant personnel said these wastes were mixed with sodium hydroxide before disposal in the pit. The pit was used between 1948 and 1977. Records indicate that a total of approximately 80 tons of antimony pentachlorides were disposed of in the pit in 1949, 1950, 1952, 1955, 1958, 1961, 1964, and 1967. The pit was filled with demolition material during the winter of 1986-87.

The boundaries of WMU 8 are depicted in Figure 3-3 as indicated in maps and aerial photos obtained during the records search. Plant personnel also provided information about the location of the pit. Aerial photographs of the site indicate the presence of two adjacent pits, but plant personnel could not verify the presence of the second pit.

WMU 9--Incinerators (Closed)

Two incinerators were identified during the records search. It is assumed that the incinerators burned the combustible paper wastes from the plant. The period of operation and quantity of material burned were not determined during the records search.

WMU 10--Calcium Fluoride Area (Closed)

WMU 10 is a bentonite clay-lined disposal area for the calcium fluoride sludge generated in the TCFM process. Arsenic and other trace metals have been found in analyses of the sludge. The lining was recommended by the Indiana Department of Environmental Management. The disposal area was used from 1974 to 1977.

The boundaries of WMU 10 are depicted in Figure 3-3 as indicated in maps obtained during the records search.

WMU 11--Calcium Sulfate/TSP Area (Closed)

Calcium sulfate and trisodium phosphate (TSP) were disposed of in WMU 11 during the operation of the TSP process. Trace contaminants from the TSP process may have included aluminum phosphate, iron phosphate, and silica dioxide. Plant personnel said that the calcium sulfate/TSP waste was piped to

the landfill and allowed to run onto the ground. Other constituents of the waste are not known, because plant personnel do not remember or know the process in which the TSP was manufactured. The site is assumed to have been in operation during the entire period that TSP was produced, from 1926 to 1951.

The boundaries of WMU 11 are depicted in Figure 3-3 as indicated in maps obtained during the records search.

WMU 12--Nonrailroad Loading/Unloading Areas (Active)

WMU 12 comprises areas on the site where raw materials, support materials, or products may have been loaded or unloaded from vehicles other than rail cars. The list of potential wastes include toluene/hexazinone wastes, hexane/Siduron® wastes, sulfuric acid, tank sludge, hexazinone/toluene feedstock, butylisocyanate, and sodium silicate. Operation of the areas would coincide with the operation of the specific processes using or producing the materials. Those locations most likely to have been loading or unloading sites are depicted in Figure 3-5. Refer to Table 3-2 for a listing of areas within WMU 12 and potential contaminants for these areas.

WMU 13--Chrome Outfall (Cooling Tower Blowdown) (Closed)

Blowdown from the TCFM plant cooling tower was discharged to an outfall that discharged to the Grand Calumet River. Between 1948 and 1977, chrome in the cooling tower blow down was discharged at a rate of 5 pounds per day. In 1977, the end of the outfall canal was closed off, resulting in the formation of a surface water impoundment or lagoon. The outfall canal or lagoon also collected runoff from the hydrochloric acid neutralizing pit, WMU 8. Acidic wastes and antimony pentachloride may have contaminated the canal area. Because sulfur was found on the banks of the outfall canal (November 1986), it is assumed that the sulfur is also in the lagoon. This WMU was backfilled during the winter of 1986-87.

WMU 14--New Landfill (Active)

This landfill is constructed with a bentonite clay berm. EVC and colloidal silica filter press sludge will be disposed of in the landfill. The landfill is being built over the rubble area (WMU 2). An estimated 8,000 tons per year (dry weight or 50,000 tons per year wet weight) of sludge will be disposed of in the landfill. The life expectancy of the new landfill is estimated at 5 years.

WMU 15--Miscellaneous/General Refuse Areas (Closed)

WMU 15 reportedly received a wide variety of plant wastes during its operation from 1955 to 1974. The wastes include sulfur, filter aid, tank sludge, demolition material, vanadium pentoxide dust (sulfuric acid process), plant paper wastes, and insecticides. Combustible plant wastes were reportedly burned there. From 1972 to 1973, approximately 1,000 55-gallon drums of methyl ethyl ketone and other organic wastes were burned in the area. The open burning was permitted by the East Chicago Department of Air Quality.

The boundaries of WMU 15 are depicted in Figure 3-3 as indicated in maps obtained during the records search and from plant interviews.

WMU 16--PCB Storage Areas (Closed)

Three areas were identified during the records search and interview process as potential PCB waste storage or disposal areas. One was a specially constructed area with a dike for the storage of PCB-contaminated wastes and equipment. The area was built in 1981 and was located in the South Warehouse. Another area which that may have contained PCB-contaminated wastes and equipment is the Electric Storage Yard near the location of Contact No. 1. Records indicate that at least 36 barrels, 6 transformers, and miscellaneous capacitors and ballasts contaminated with PCBs were stored at this location. The quantity and period of these disposal activities are not known.

WMU 17--Spill Areas Not Associated with Other WMUs (Closed)

Major spills have taken place in the past at three specific sites identified by plant personnel. A rail car containing FSA and sulfuric acid was intentionally off loaded into a prepared neutralizing bermed area near the hydrochloric acid neutralizing pit (WMU 8) and the chrome lagoon (WMU 13) in 1978. The second potential spill area is the ground beneath the location of the former Contact No. 1 process area. Although the building and tanks were removed (the tanks were removed in 1984 while the buildings were removed sometime earlier), vegetative cover has not been reestablished. The third potential spill area is located to the south of WMU 1. Site photos show a large dark spot on the ground, indicating spillage of dark colored materials in the area.

WMU 18--Railroad Loading/Unloading Areas (Active)

As with WMU 12, this unit consists of areas near buildings where raw materials, support materials, or products may have been loaded or unloaded from rail cars. Typical chemicals include sulfuric acid, FSA, CSA, butylisocyanate, phenylisocyanate, carbon tetrachloride, waste washwater, tank sludge, sulfur, and zinc. Operation of these areas again would coincide with the operation of the process using or producing these materials. The locations where loading and unloading may have occurred are indicated in Figure 3-6. Refer to Table 3-1, WMU 18, for a detailed listing of potential contaminants. Refer to Table 3-3 for a listing of areas within WMU 18 and potential contaminants for those areas.

WMU 19--Process Sewers (Active)

The process sewer system collects the spills and wastes generated by the plant processes. The system included french drains as well as sewer lines (see Figure 3-7). Throughout the plant's history, many types of spills and wastes have been directed to the process sewers and eventually discharged. Some of the wastes are sulfuric acid, ammate, sulfamic acid premix, lab wastes, reagent chemicals, and sodium silicate. Prior to 1973, the plant process sewers discharged to the Grand Calumet River without any pretreatment. After the Justice Department Consent Decree of 1973, all plant process sewers were

routed through Outfalls 002 or 003. As stated earlier, Outfall 002 has only pH adjustment, while the EVC system discharges to Outfall 003.

WMU 20--Above Ground Tanks (Active)

Raw materials, support materials, and products were stored in above ground tanks throughout the production history of the plant (see Table 3-1, WMU 20, for detailed chemical listing). Records do not indicate all the tank locations or contents. Table 3-4 lists those tanks and their descriptions, as determined through the records search and from interviews with plant personnel. Exact locations, tank volumes, and contents are known for some of the tanks, while only estimates are available for others; Figure 3-7 identifies the known general locations. Refer to Table 3-5 for a listing of areas within WMU 20 and potential contaminants for those areas.

WMU 21--Underground Storage Tank (Active)

One underground tank is known to remain in use at the plant. Underground storage tank (UST) No. 1, installed in 1984 or 1985, contains gasoline. It is a steel tank and has no groundwater protection system. Refer to Table 3-4 for additional information on UST No. 1. Refer to Table 3-6 for a listing of the potential contaminants for the WMU.

WMU 22--Insecticide Area (Closed)

During the operation of the insecticide processes (1910-1949), waste chemicals and floor sweepings were disposed of near the existing AgChem building. Suspected wastes include insecticide byproducts, lead arsenate, calcium arsenate, Deenate® insecticides, plant food, arsenate green, Bordeaux® mixture, and lime sulfur. The quantity of waste disposed of at this location is not known. The disposal area is estimated to be 80,000 square feet.

The boundaries of WMU 22 are depicted in Figure 3-3 as indicated in maps obtained during the records search.

WMU 23--Antimony Pentachloride Settling Basin (Closed)

An antimony pentachloride catalyst was used in the production of TCFM (1948-1977). After approximately 2 years of use in the process, the catalyst in the production system required removal and replacement. Plant records do not indicate the amount of wastes disposed of in the settling basin. Records also indicate that antimony pentachloride was disposed of in the hydrochloric acid neutralization pit (WMU 8).

WMU 24-- Zinc Crude Milling Area (Closed)

This WMU consists of the process area for the production of zinc chloride, aluminum chloride, ammonium chloride, and zinc ammonium chloride. Plant records and interviews indicate that there were many spills in this area throughout its operation (1909-1969). Wastes include the above-mentioned

products, along with filter cake mud. The zinc processing building had a dirt floor.

WMU 25--Acid Transfer Line (Closed)

Sulfuric acid and spent sulfuric acid were transferred through two parallel pipelines between the plant and the Cities Service Refinery located northeast of the plant. Sulfuric acid (99 weight percent) was pumped at a rate of approximately 3 gpm to the Cities Service facility. Spent 95 weight percent acid containing approximately 5 weight percent oils and gas was returned. The major portion of the pipeline was above ground next to a road, while railroad and fence crossings were below ground. The pipeline was operated from 1955 to 1972.

WMU 26--Sanitary Sewers (Active and Closed)

Plant records indicate that sanitary sewers have leaked. Portions of the sewer system have been replaced, relined with insituform®, or abandoned over time. Some of the sewer lines are located above the water table while others are located below. Existing lines discharge to the East Chicago Sanitary District (ECSD). Repeated incidents where plant discharges have included elevated levels of zinc, iron, and arsenic provided impetus for an investigation of the source of these chemicals. Records indicate that the source of these and possibly others (such as sulfates, boron, manganese, cyanide, and lead) was groundwater infiltration inflow to the sanitary sewer. Further infiltration was eliminated in 1988 when selected sewer lines were relined with insituform®.

The locations of existing and abandoned sanitary sewers are illustrated in Figure 3-9.

WMU 27--Colloidal Silica Settling Pits (Active)

Two settling pits are located outside the colloidal silica building. The pits receive wastewater from the colloidal silica process, allowing waste silica particles to settle. The effluent from the pits flows to the EVC system. Sludge generated in the pits is disposed of in WMU 5.

WMU 28--Chemical Storage Buildings (Active)

Four warehouses (Barrelhouse No. 1; AgChem Warehouse; Adhesives Warehouse; and Barrelhouse No. 2, or the TCFM Warehouse) are used to store bulk raw materials, support materials, and products. Barrelhouse No. 1 currently stores formaldehyde, Dowicil®, caustic, ethylene glycol, and bactericides. The Adhesives Warehouse is used as a plantwide storage area, and contains lithium hydroxide, flake caustic, ethylene glycol, ammonium bicarbonate, sodium aluminate, and resins. The AgChem Warehouse has stored hexazinone Siduron®, Lorox®, Tupersan®, Benlate®, and other AgChem products. Barrelhouse No. 2 has stored TCFM products, paints, and paint solvents.

WMU 29--Sulfamic Acid Pits (Active)

Two pits are located on the site of the former sulfamic acid building dismantled in 1984. During operation of the process, the pits collected process wastes and spilled sulfamic acid for slow, controlled addition to the EVC system (to prevent high ammonia and nitrogen discharges). The pits were used after the sulfamic process was shut down for neutralization of acidic wastes.

WMU 30--EVC System (Active)

The EVC system collects the wastes generated by the operations located on the west end of the site, including the sodium silicate operation, the colloidal silica process, and the lab waste drains. Wastewater is collected in two 300,000-gallon surge tanks. The EVC system consists of a clarifier, flocculation chamber, two rotary vacuum filters, and two sand filters. Filter cake is disposed of in WMU 5; it will be disposed of in WMU 14.

WMU 31--Underground Storage Tanks (Closed)

Seven USTs were removed from service at the plant. Three contained gasoline, one contained No. 6 fuel oil, and three contained No. 2 fuel oil. Records indicate that four have either been filled with gravel or removed from the ground, while the remaining three have remained in place. The locations of the tanks left in the place are not known. Refer to Table 3-5 for additional information about the tanks. Refer to Table 3-6 for a listing of USTs in the WMU and potential contaminants for these areas.

WMU 32--Abandoned Chemical Storage Buildings (Closed)

Chemicals were stored in five storage buildings that either no longer exist or are no longer in use. The salt cake warehouse stored sodium sulfate and Glauber's salt. The warehouse was also used for other chemical storage after salt cake production stopped, but its contents are not known. An insecticide warehouse was located near the TCFM manufacturing area, but no information about its usage is available. The Morgue was used to store old equipment (removed from the process) and AgChem products. The Rodine® storage area contained Rodine 50® and Rodine 92A®, which were used in the Duclean® products, and was used from 1929 to 1984. The fifth area was the commercial packing house. Reagent-grade chemicals (hydrochloric acid, nitric acid, sulfuric acid, and ammonium hydroxide) were filled into glass carboys. The area was also used to clean returned carboys. Plant interviews indicate that this area had a dirt floor and may have received many spills.

WMU 33--Miscellaneous Pits and Piles (Closed)

Very little information about these seven miscellaneous pits or piles was found during the records search and interviews. They include a pit constructed of railroad ties found during the foundation work for the new powerhouse, the Manheim furnace salt pile, an area located in WMU 1, a second area in WMU 1 with a red coloration in the soil, a sanitary sewer trench used for

holding sanitary sewage during offsite sewer construction work in the 1970s, an area located in WMU 13 containing wastes and sulfur from the chambers No. 4 and No. 5 processes, and the phosphate rock area near the phosphoric acid plant. Neither interviews with plant personnel nor information gathered during the records search produced any additional information.

WMU 34--Zinc Roasters (Trail Ore Roasters) (Closed)

This area contained wastes generated from the burning of zinc sulfur in the Trail Ore Roasters; the wastes consisted of zinc cinders, iron cinders, and zinc sulfides (referred to as sinters). The date of use is assumed to be from 1916 to 1937 and 1947 to 1967, coincident with the operation of the Trail Ore Roasters.

WMU 35--Zinc Mud Area (Closed)

Interviews with plant personnel indicate that zinc filter press sludge cake, or zinc mud, was disposed of at the general location indicated on Figure 3-3. Operation is estimated to have coincided with the zinc chloride operation from 1909 to 1969. No quantities or waste characteristics were determined during the records search.

WMU 36--Outfall 002 (Active)

This WMU consists of the primary and secondary pH adjustment tanks, the caustic storage tank, and the sulfuric acid storage tank; all are used to treat the process sewer wastes from the east end of the plant (FSA and AgChem). Discharge from the secondary pH adjustment tank is to Outfall 002.

WASTE CONTENT AND CHARACTERISTICS OF WMUs

Table 3-7 summarizes the possible chemical compositions of the contents of each WMU. The table distinguishes between the possible chemical composition of the contents and the chemical analyses typically performed upon materials of this kind.

With the exception of the liquid discharges from WMU 30 (EVC system) and WMU 36 (Outfall 002) to the Grand Calumet River, which are not discussed in this report, chemical analyses of select waste materials are available for WMUs 2, 5, 7, 10, 12, and 30. The compositions are detailed in Tables 3-8 to 3-15.

The mobility in the environment of the primary constituents of these wastes is strongly influenced by the variables whose values have not been defined for this report. In particular, the physical and chemical state of the wastes, as well as the chemistry of the environment into which the wastes are introduced, are important determinants of mobility. However, based on general considerations of physical state (liquid vs. solid) and typical chemical behavior, a qualitative assessment of the relative mobility of these constituents in the environment may be made (Table 3-16).

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WMU	Period	Possible Contents	Construction	Disposal Quantity	Status
12. Nonrailroad Loading/ Unloading Areas (Cont'd)		fenuron®, garden potato dust®, ethylene glycol, dimethylformamide, reagent chemicals, chromated zinc chloride, trisodium phosphate, dimethyl phthalate			
13. Chrome Outfall (Cooling Tower Blowdown)	1948 to 1977	Cooling tower blowdown, chromium, sulfur, HCl neutralization pit runoff, (arsenic, chromium and boron)	Drainage ditch with discharge into river Approximately 1,400' L x 20' W Filled in 1987.	20 to 40 gpm blowdown unknown quantity of hexavalent chromium	Closed
14. New Landfill	Unknown to Present	Calcium sulfate	Unlined; bermed	8,000 tons/yr dry weight 50,000 tons/yr wet weight	Active
15. Miscellaneous/General Refuse Area	1955 to 1974	Includes miscellaneous chemicals, sulfur, filter sludges, tank cleaning sludges, bricks, spent silica gel from HF process, alumina gel from TCFM process, vanadium oxide dust (prior to 1970), plant paper wastes, MEK and organic sludge from benomyl process, hexane wastes from siduron®, demolition material, silica, calcium sulfate	General area approximately 1,000 ft x 1,000 ft	Open trash burning from 1972 to 1973, 1,000 55-gal drums with MEK and organic sludge burned	Closed
16. PCB Storage Areas					
Possible Dump Area	Unknown	PCB-contaminated soil	General area approximately 100 ft x 100 ft	Unknown	Closed
TCFM Warehouse	1981 to 1984	PCB-contaminated oil and equipment	Concrete pit size 12' L x 6' W x 1'D	Unknown	Closed
Electric Storage Yard	Unknown to Present	PCB-contaminated oil and equipment	General area approximately 50 ft x 50 ft	Unknown	Closed
17. Spills (not associated with other WMUs)					
FSA Tank Car	1978	FSA, SO_3	General area approximately 50 ft x 50 ft	20,000 gal	Closed
Contact 1	1923 to 1984	H_2SO_4	General area approximately 300 ft x 300 ft	Unknown	Closed
Waste Oil Area	Unknown	Waste oils	General area approximately 50 ft x 50 ft	Unknown	Closed
Contact 3	Unknown: several spills reported	H_2SO_4	-	Unknown	Closed
18. Railroad Loading/ Unloading Areas	1892 to Present	Location dependent. Includes H_2SO_4, CSA, FSA, HF, toluene wastes, butylisocyanate, toluene, hexane, sulfamic acid, hexazinone, wash waters, tank sludges, colloidal silica, sodium silicate, sulfur, zinc, ammonim sulfamate, SO_3, soda ash, hydrogen peroxide, zinc ores, tetraethyl lead, phenylisocyanate, dichlorophenylisocyanate, zinc sulfide, HCl, NH_3, methyl ethyl ketone, phosphoric acid, phosphate of soda, lime, ammonium chloride, zinc chloride, zinc ammonium chloride, aluminum chloride, glauber's salt, salt cake, salt, caustic, duclean products,	Railroad loading/unloading areas for bulk chemicals. Near buildings	Unknown Sulfuric acid tank car heels--5,000 lb/yr Sulfamic crude--100,000 lb/yr AgChem wash waters--20,000 gal every 1 to 1.5 yrs	Active

WMU	Period	Possible Contents	Construction	Disposal Quantity	Status
18. Railroad Loading/ Unloading Areas (Cont'd)		sodium thiosulfate, agchem products, chromated zinc chloride, TCFM, trisodium phosphate, dimethylhexylamine			
19. Process Sewer	Unknown to Present	Operating and loading/unloading area spills. Past spills have included H_2SO_4, HCl, FSA, CSA, NaOH, lab waste drains, ammonium sulfamate, reagent chemicals, sodium silicate, sulfamic acid, zinc chloride, TCFM, tank sludges, phosphoric acid, salt cake, salt, ammonium chloride, glauber's salt, AgChem products, colloidal silica, sodium thiosulfate, chromated zinc chlorine, trisodium phosphate		Unknown	Active
20. Above Ground Tanks	1892 to Present	Includes H_2SO_4, CSA, FSA, TCFM, HCl, HF, CCL_4, colloidal silica, SO_3, ammate mother liquor, toluene wastes, HNO_3, NH_3, sulfamic acid, caustic, waste acids, ethylene glycol, waste solvent, sodium silicate, soda ash, sand, sulfur, butane, propane isopentane, hexane, soft water, gas, fuel oil, diesel fuel, lime, zinc chloride, zinc ammonium chloride, aluminum chloride, ammonium chloride, glauber's salt, ammonium hydroxide, calcine, alkyl acid, cinder slurry, hydrogen peroxide, hexazinone, tolune, phosphoric acid, phosphate of soda, reagent chemicals, sodium thiosulfate, salt, salt cake, AgChem products, trisodium phosphate	See tank listing for construction details	Unknown Colloidal silica--strong waste acid--193,000,000 lb/yr consumed Sulfamic pit--600,000 lb/yr discharge per NPDES permit Shipped offsite: AgChem solvent--700,000 lb/yr 2 percent sulfuric acid--370 m lb/yr consumed	Active
21. Underground Storage Tank--Existing	Unknown to Present	UST No. 1--Gasoline	2,000 gal	Unknown	Active
22. Insecticide Area	1910 to 1949	Insecticide by-products, lead arsenate, calcium arseante, 2,4-D sodium weed killer, barium fluoro-silicate, calcium arsenite, lead acetate, Deenate® insecticides, methoxychlor products, plant food, arsenate green®, garden potato dust, litharge, arsenic acid, bordeaux mixture®, lime sulfur	General area approximately 400 ft x 200 ft	Unknown	Closed
23. Antimony Pentachloride Settling Basin	1948 to 1977	Sodium hydroxide, antimony pentachloride, sulfamic acid	General area approximately 35 ft x 85 ft Approximately 6 ft deep	Unknown	Closed
24. Zinc Crude Milling Area	1909 to 1969	Processing area. Area wastes and spills include crude and processed zinc, wastes from manufacture of zinc, aluminum and ammonium chlorides. Muds from filtering process with zinc, iron and barium, chromated zinc chloride, zinc ammonium chloride	General area approximately 500 ft x 300 ft	Unknown	Closed

Table 3-1 (Page 5 of 6)

WMU	Period	Possible Contents	Construction	Disposal Quantity	Status
25. Cities Services Acid Transfer Line	1955 to 1972	99 weight percent sulfuric acid, spent sulfuric acid with 95 weight percent H_2SO_4 and 5 weight percent oil and gas	Above ground except for fence and railroad crossings, 1,700 ft long	Unknown	Closed
26. Sanitary Sewers	Unknown to Present			Unknown	Active
27. Colloidal Silica Settling Pits (2)	Unknown to Present	Filter aid, precoat, silica scale, gelled colloidal silica	General area approximately 100 ft x 50 ft Temporary lined pits. Flows to EVC.	160 tons/yr	Active
28. Chemical Storage Buildings--Existing					
Barrelhouse No. 1	1902 to Present	Formaldehyde, hexachlorophene,* dowicil®, ethylene glycol, bactericides, caustic	Building size approximately 250 ft x 100 ft	Unknown	Active
Adhesives Warehouse	1944 to Present	Lithium hydroxide, flake caustic, ethylene glycol, ammonium bicarbonate, sodium aluminate, resins	Building size approximately 150 ft x 50 ft	Unknown	Active
AgChem Warehouse	1926 to 1985	Hexazindone, siduron®, lorox®, tupersan® benomyl	Building size approximately 200 ft x 75 ft	Hexazinone-200,000 lb/yr storage	Active
TCFM Warehouse Barrelhouse No. 2	1948 to Closed to present	TCFM, paint, solvents, colloidal silica, silica gel	Building size approximately 400 ft x 250 ft	Unknown	Active
29. Sulfamic Acid Pits (2)	1973 to Present	Sulfamic acid wastes, waste acid, neutralized waste acid.	10,000 gal capacity, concrete, acid brick liner General area approximately 50 ft x 50 ft	Unknown	Active
30. Environmental Control System and Outfall 003	1973 to Present	Colloidal silica, sodium silicate, and lab drain wastes, calcium sulfate	Clarifier, flocculator, surge tanks--two at 300,000 gal each, rotary vacuum filters, sand filters	Unknown	Active
31. Underground Tanks--Abandoned	1954 to 1984	UST No. 2--No. 2 fuel oil	4,000 gal, filled	Unknown	Closed
	1965 to 1985	UST No. 3--Gasoline	1,000 gal, filled	Unknown	Closed
	1956 to 1981	UST No. 4--Gasoline	1,000 gal, filled	Unknown	Closed
	1947 to 1967	UST No. 5--No. 2 fuel oil	1,000 gal, filled	Unknown	Closed
	1942 to 1967	UST No. 6--No. 2 fuel oil	1,000 gal, location unknown	Unknown	Closed
	Unknown to 1968	UST No. 7--No. 6 fuel oil	Unknown, location unknown	Unknown	Closed
	1942 to 1967	UST No. 8--Gasoline	500 gal, location unknown	Unknown	Closed
32. Chemical Storage Buildings--Abandoned					
Salt Cake Warehouse	1897 to Unknown	Na_2SO_4, glauber's salt	Building size approximately 250 ft x 50 ft	Unknown	Closed
Insecticide Warehouse	Unknown	Insecticides	Building size approximately 100 ft x 50 ft	Unknown	Closed
The Morgue	Unknown to 1977	Old equipment, AgChem products	Building size approximately 250 ft x 50 ft	Unknown	Closed
Rodine® Storage	1929 to 1984	Rodine 50® and 92A®	Located near alkyl acid tank in contact No. 3 area	Unknown	Closed
Commercial Packing House	1920's to 1969	Reagent chemicals (HNO_3, HCl, H_2SO_4, NH_4OH)	Building size approximately 200 ft x 100 ft, dirt floor	Unknown	Closed

*No longer present

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WMU	Period	Possible Contents	Construction	Disposal Quantity	Status
33. Miscellaneous Pits/Piles					
New Powerhouse Pit	Unknown	Unknown	Railroad tie construction, size unknown	Unknown	Closed
Manheim Furnace Pile	1897 to 1959	Salt	Unknown	Unknown	Closed
Unknown Area 1, Near WMU 1	Unknown	Unknown	General area approximately 200 ft x 200 ft	Unknown	Closed
Near WMU 1, Unknown Area 2, Red Tainted Area	Unknown	Unknown	General area approximately 250 ft x 200 ft	Unknown	Closed
Open Sanitary Ditch	1970's	Sanitary sewage, used for approximately 1 month	General area approximately 100 ft x 10 ft	Unknown	Closed
Unknown Area 1 Near WMU 13	1913 to 1968	Fly ash, quartz, sulfur, chambers 4 and 5 wastes, sulfur filter process mud from Contact 3.	General area approximately 500 ft x 400 ft	Unknown	Closed
Phosphate Rock Area	1925 to 1951	Phosphate rock	General area approximately 150 ft x 75 ft	Unknown	Closed
34. Zinc Roasters (Trail Ore Roasters)	1916 to 1937 and 1947 to 1967	Zinc sinters, zinc sulfide, iron sinters	General area approximately 250 ft x 100 ft	Unknown	Closed
35. Zinc Mud Area	1909 to 1969	Zinc chloride mud	General area approximately 350 ft x 250 ft	Unknown	Closed
36. Outfall 002	Unknown to Present	Process wastes, pH adjusted process wastes	General area approximately 50 ft x 50 ft Includes primary and secondary pH adjustment tanks, caustic storage tank, H_2SO_4 storage tank	Unknown	Closed

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Table 3-2
NONRAILROAD LOADING/UNLOADING (WMU 12)
POTENTIAL CONTAMINANTS

Area	Map Identification Number	Potential Contaminants
002 Outfall	12-A	Caustic, H_2SO_4
Silica	12-B	Colloidal Silica*, Sodium Silicate*
Silica	12-C	Waste Acids, H_2SO_4
Silica	12-D	Sodium Silicate*, Soda Ash, Caustic, Sand
Phosphoric Acid	12-E	Phosphate Rock, Phosphoric Acid
Contact No. 1	12-F	H_2SO_4*
AgChem	12-G	Hexane, Toluene, Hexazinone, Butylisocyanate, Wastes, Siduron®, Misc. AgChem Products (insecticides)
Chamber Building	12-H	H_2SO_4
Zinc Chloride	12-I	Zinc Chloride, Ammonium Chloride, Aluminum Chloride, Zinc Ammonium Chloride
New Power House	12-J	H_2SO_4, Caustic
FSA/Reagents	12-K	FSA, SO_3*, HF*, H_2SO_4*, Nitric Acid*, HCl*, NH_4OH
Sulfamic Acid	12-L	HCl*, NH_3, H_2SO_4*, Sulfamic Acid
TCFM	12-M	TCFM, Propane, Butane, Isopentane
TCFM	12-N	HF, CCl_4, Caustic
TCFM	12-O	HCl*
Contact No. 3	12-P	CSA, H_2SO_4*, Fuel Oil, SO_3*
Fuels	12-Q	Diesel Fuel, Fuel Oil, Gasoline
Glauber's Salt	12-R	Glauber's Salt
Sulfur	12-S	Sulfur
Contact No. 3	12-T	H_2SO_4
Contact No. 3	12-U	CSA
Contact No. 3	12-V	SO_3
Manheim Furnace	12-W	
Salt Cake	12-X	

*Indicates documented spill of chemical

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Table 3-3
RAILROAD LOADING/UNLOADING (WMU 18)
POTENTIAL CONTAMINANTS

Area	Map Identification Number	Potential Contaminants
Contact No. 3	18-A	CSA*, H_2SO_4*, Tank Sludges
Contact No. 3	18-B	SO_3*, H_2O_2, H_2SO_4*, Zinc Ores, Zinc Sulfide, Tank Sludges
Sulfamic	18-C	HCl*, H_2SO_4*, NH_3, Sulfamic Acid, Ammate*, Tank Sludges
Reagents/FSA	18-D	FSA*, SO_3*, H_2SO_4*, AHF*
AgChem	18-E	Hexane
AgChem	18-F	Hexane, Toluene, Hexazinone, Phenylisocyanate*, Butylisocyanate, Methyl Ethyl Ketone, Wastewater, Wastes*
Phosphoric Acid/Contact No. 1	18-G	Phosphoric Acid, H_2SO_4, Phosphates of Soda, Rock, Tank Sludges
AHF	18-H	AHF
Zinc Chloride	18-I	Zinc, Lime, Ammonium Chloride, Zinc Chloride, Zinc Ammonium Chloride, Aluminum Chloride, HCl*
Salt Cake	18-J	Glauber's Salt, Salt Cake
Silica	18-K	Lime, Soda Ash, Caustic, Tank Sludges Sodium Silicate
Silica	18-L	Colloidal Silica, H_2SO_4, Tank Sludges, Sodium Silicate
Manheim Furnace	18-M	Salt
Sulfamic	18-N	Sulfamic Acid*
TCFM	18-O	TCFM (liquid product)
Sulfur	18-P	Sulfur
TCFM	18-Q	CCl_4, AHF
TCFM	18-R	HCl

*Indicates documented spill of chemical.

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Table 3-4 (Page 1 of 9)
STORAGE TANK LISTING, DUPONT EAST CHICAGO, INDIANA FACILITY

Area	Name	Map Identification Number	Contents	Capacity	Dimensions	Materials of Construction	Period of Use Terminated In	Miscellaneous
AgChem		T-1	Hexazinone Crude	2,000 gal		Stainless Steel	1986	
	South Weigh Tank		Hexane	5,000 lbs		Carbon Steel	1986	
		T-6	Hexane/Toluene	3,000 gal	3.5'Øx3.5'L	Carbon Steel	1986	
		T-2	Toluene	1,185 gal		Stainless Steel	1986	
	North Weigh Tank		Hexazinone Crude	5,000 lbs		Carbon Steel	1986	
		T-21	Hexane/Toluene	3,600 gal	8'Øx8'H	Stainless Steel	1986	
		T-31	Hexane	2,000 gal	6'Øx8.5'L	Stainless Steel	1986	
		T-5	Hexazinone/ Toluene/ Hexane	3,000 gal		Glass-lined Carbon Steel	1986	
	Waste Solvent Tank	T-36 T-30	Toluene and Waste Herbicide	4,000 gal	8'Øx12'H	Glass-lined Carbon Steel	1986	
		T-15	Hexazinone/ 3,086 gallons Toluene/Hexane			Stainless Steel	1986	
		T-16	Hexane/Toluene	250 gal		Carbon Steel	1986	
		T-32	Hexane	10,000 gal	12'Øx13'H	Stainless Steel	1986	
		T-17	Glycol		5'Øx5'H	Carbon Steel	1986	
Colloidal Silica/EVC	Strong Acid Storage		93% H_2SO_4	3,000 gal		Steel	NA	
	Dilute Caustic		8-10% NaOH	5,000 gal		Steel	NA	

Area	Name	Map Identification Number	Contents	Capacity	Dimensions	Materials of Construction	Period of Use Terminated In	Miscellaneous
Colloidal Silica/EVC (Cont'd)	No. 17 Settler		1-2% NaOH	5,000 gal		Steel	NA	
	Acid Head Tanks		93% H_2SO_4	150 gal		Steel	NA	
	Mixed Bed Acid Head Tank		93% H_2SO_4	15 gal		Steel	NA	
	Mixed Bed Caustic Head Tank		50% NaOH	5 gal		Steel	NA	
	Dilute Acid Tanks (2) East and West		8% H_2SO_4	3,800 gal		E-Fiberglass W-Carbon-lined Steel	NA	
	Dilute Caustic Tank	11 HT	6-8% NaOH	75 gal		Steel	NA	
	Mixed Bed Dilute Acid		10-12% H_2SO_4	350 gal		Rubber-lined Steel	NA	
	Mixed Bed Dilute Caustic		10-12% NaOH	100 gal		Steel	NA	
	Hot Water Horizontal		Water	7,500 gal	8'Øx20'L	Steel	NA	
	Hot Water Vertical		Water	2,900 gal	7'Øx10'H	Steel	NA	
	Surge Tanks East and West		Process Waste Water	300,000 gal	50'Øx20'H	Carbon Steel	NA	
	Clarifier		Process Waste Water	45,000 gal	30'Øx10'H		NA	
	Flocculator		Process Waste Water	7,800 gal	42'Lx6'Wx 5'H	Carbon Steel	NA	
	Lime Storage		Lime	4,000 cf	12'Øx50'H	Steel	NA	
	Strong Waste Acid (3)		<2% H_2SO_4	33,000 gal	12'Øx40'H	Atlec 382 Fiberglass	NA	

Area	Name	Map Identification Number	Contents	Capacity	Dimensions	Materials of Construction	Period of Use Terminated In	Miscellaneous
Colloidal Silica/EVC (Cont'd)	Weak Waste Acid		<0.1% H_2SO_4	19,500 gal	14.5'Øx16'H	Bonate Polyester Fiberglass	NA	
	Caustic Storage		50% NaOH	24,400 gal		Carbon Steel	NA	
	Sulfuric Acid		66°Be H_2SO_4	3,230 gal		Carbon Steel	NA	
	Slurry		Lime Slurry	700 gal		Steel	NA	
New Powerhouse	Acid		66°Be H_2SO_4	4,300 gal	7.5'Øx13'L		NA	
	Lake Water		Lake Water	12,550 gal	12'Øx15'H	Steel	NA	
	Regenerant Waste Tank		Regenerate Waste Water	9,000 gal	12'Øx10.5'H	Fiberglass Reinforced Plastic	NA	
	Soft Water		Soft Water at pH 10.5	80,000 gal	22'Øx20'H	Coal Tar Epoxy Lined	NA	
002 Outfall	Primary pH Adjustment		Process Waste Water	2,800 gal	8'Øx13.5'H	Fiberglass Reinforced Plastic	NA	
	Secondary pH Adjustment		Process Waste Water	4,450 gal	10'Øx13.5'	Fiberglass Reinforced Plastic	NA	
	Caustic		50% NaOH	24,400 gal	10'Øx40'L	Carbon Steel	NA	
	Acid		66° Be	3,230 gal	7'Øx10'L	Steel	NA	
Sodium Silicate	Soda Ash Hopper		Soda Ash	10,000 lbs			NA	
	Settler	S-11	Silicate	40,000 gal	20'Øx17'H		NA	
	Caustic		Caustic	29,000 gal	16'Øx22'H	Steel	NA	
	Settler	S-12	67% Sucrose	941 ft^3 // 7000 gal	6.8'Øx25'L		NA	

Area	Name	Map Identification Number	Contents	Capacity	Dimensions	Materials of Construction	Period of Use Terminated In	Miscellaneous
Sodium Silicate (Cont'd)			Sand	20,500 ft^3	25'Øx34'H		NA	
	Settler	S-2		24,700 gal	15.5'Øx17.5'L		NA	
	Settler	S-6		156,400 gal	32'Øx26'H		NA	
	Settler	S-7		26,000 gal	14'Øx22.5'H		NA	
	Settler	S-8		26,000 gal	14'Øx22.5'H		NA	
	Settler	S-9		26,000 gal	14'Øx22.5'H		NA	
	Settler	S-10		27,000 gal	14.5'Øx22.5'H		NA	
	Settler	S-13		159,000 gal	32'Øx26.5'H		NA	
	Settler	S-14		43,400 gal	20'Øx18'H		NA	
Reagents/FSA	Storage		HNO_3	3,500 gal		Stainless Steel	1984	
	Storage		NH_4OH	4,200 gal		Carbon Steel	1984	
	Storage		FSA	20,000 gal	8'Øx58'L	Carbon Steel	1989	
	Pump		FSA	630 gal		Carbon Steel	1989	
	Storage		HF	8,800 gal	7'Øx30'L	Carbon Steel	1989	
	Storage		H_2SO_4	70 gal	2.5'Øx2.5'H	Carbon Steel	1984	
	Storage		H_2SO_4	2,000 gal		Glass-Lined Carbon Steel	1984	
	Storage		H_2SO_4	2,000 gal		Glass-Lined Carbon Steel	1984	
	Storage		H_2SO_4	5,200 gal		Glass-Lined Carbon Steel	1984	
	Storage		HNO_3	2,000 gal		Glass-Lined Carbon Steel	1984	

Area	Name	Map Identification Number	Contents	Capacity	Dimensions	Materials of Construction	Period of Use Terminated In	Miscellaneous
Reagents/FSA (Cont'd)	Storage		HNO_3	2,000 gal		Glass-Lined Carbon Steel	1984	
	Storage		HNO_3	2,600 gal		Glass-Lined Carbon Steel	1984	
	Storage		HNO_3	8,600 gal		Stainless Steel	1984	
	Storage		SO_3	10,000 gal	9'Øx18.5'L		1989	
Sulfuric Acid/ Power	Storage	T-34	66° Sulfuric Acid Tech	1,400 tons		Steel	1984	
	Storage	T-43	66° Sulfuric Acid Tech	1,400 tons		Steel	1984	
	Storage	T-44	66° Sulfuric Acid Tech	1,400 tons		Steel	1984	
	North SO_3	C-11	SO_3	136,409 lbs		Steel	1984	
	South SO_3	C-9	SO_3	151,000 lbs		Steel	1984	
	West SO_3	C-12	SO_3	643,075 lbs		Steel	1984	
	Storage	T-1	Sulfuric Acid Wastewater	930 tons		Lined Steel	1984	
	Storage	T-2 C-2	99% H_2SO_4	560 tons		Steel	1984	
	Storage	T-3 C-3	106.8% H_2SO_4 (Oleum)	1,837 tons		Steel	1984	
	Storage	T-4 C-4	Sulfuric Acid Wastewater	1,244 tons		Steel	1984	
	Storage	T-45	107.9% H_2SO_4 (Oleum)	168 tons		Brick-Lined Steel	1984	
	Storage	T-7	104.8% H_2SO_4 (Oleum)	2,448 tons		Steel	1984	
	Storage	T-8	66° Be Tech	2,448 tons		Steel	1984	

Area	Name	Map Identification Number	Contents	Capacity	Dimensions	Materials of Construction	Period of Use Terminated In	Miscellaneous
Sulfuric Acid/ Power (Cont'd)	Storage	T-9	104.8% Oleum	2,448 tons		Steel	1984	
	Storage	C-45	66% Sulfuric Acid Tech				1984	
	Storage	C-47	66% Sulfuric Acid Tech				1984	
	West CSA	C-20	CSA	11,270 gal		Glass-Lined Steel	1984	
	Middle CSA	C-19	CSA	13,334 gal		Glass-Lined Steel	1984	
	East CSA	C-18	CSA	20,630 gal		Glass-Lined Steel	1984	
	South CSA		CSA	24,854 gal		Glass-Lined Steel	1984	
	Middle SO_3	C-10	SO_3				1984	
	Oleum Pump	C-13	Oleum				1984	
	60° Be Mix	C-14	60° Be H_2SO_4				1984	
	99% Pump	C-15	99% H_2SO_4				1984	
	66° Be Pump	C-16	66° Be H_2SO_4				1984	
	Storage	C-5	Spent	10-15,000 gal			1955-1972	
	Storage	C-6	Spent				1984	
	Storage	C-7	66° Be				1984	
	Storage	C-8	66° Be				1984	
Sulfamic Acid	47% Mix Storage		47% Oleum	5,200 gal		Carbon Steel	1984	
	99% Circulation		98% H_2SO_4	5,200 gal		Brick-Lined Carbon Steel	1984	

Area	Name	Map Identification Number	Contents	Capacity	Dimensions	Materials of Construction	Period of Use Terminated In	Miscellaneous
Sulfamic Acid (Cont'd)	Premix		Oleum and Premix	900 gal		Carbon Steel	1984	
	47% Oleum Head		47% Oleum	21,000 lbs		Carbon Steel	1984	
	Ammonia Storage		Anhydrous NH_3	16,970 gal		Carbon Steel	1984	
TCFM		TS-41	CCl_4	41,100 gal	20'Øx17.5'H		1975	
		TS-42	CCl_4	41,100 gal	20'Øx17.5'H		1975	
		TS-43	CCl_4	259,100 gal	35'Øx36'H		1975	
		TS-44	HF	11,260 gal	8'Øx30'L		1975	
		TS-45	HF	11,260 gal	8'Øx30'L		1975	
		TS-46	HF	11,260 gal	8'Øx30'L		1975	
		TS-47	HF	11,260 gal	8'Øx30'L		1975	
		TS-48	NaOH	11,260 gal	8'Øx30'L		1975	
		TS-49	F-11	11,260 gal	8'Øx30'L		1975	
		TS-410	HF	17,000 gal	12'Øx20'H		1975	
		TS-141	HCl	24,000 gal	12.5'Øx24.5'L		1975	
		TS-142	HCl	24,000 gal	12.5'Øx24.5'L	Rubber-Lined Steel	1975	
		TS-143	HCl	24,000 gal	12.5'Øx24.5'L	Rubber-Lined Steel	1975	
		TS-144	HCl	24,000 gal	12.5'Øx24.5'L	Rubber-Lined Steel	1975	
		TS-145	HCl	24,000 gal	12.5'Øx24.5'L	Rubber-Lined Steel	1975	
		TS-148	HCl	46,000 gal	12.5'Øx48.5'L	Rubber-Lined Steel	1975	

Table 3-4 (Page 8 of 9)
MISCELLANEOUS ABOVE GROUND STORAGE

Area	Name	Map Identification Number	Contents	Capacity	Dimensions	Materials of Construction	Period of Use Terminated In	Miscellaneous
TCFM (Cont'd)		TS-149	HCl	24,000 gal	12.5'Øx24.5'L	Rubber-Lined Steel	1975	
		TS-1410	HCl	60,300 gal	22'Øx21'H	Rubber-Lined Steel	1975	
		TS-1411	HCl	51,600 gal	20'Øx21'H	Rubber-Lined Steel	1975	
		TS-1412	HCl	30,000 gal	12'Øx36'H	Fiberglass	1975	
		TS-1413	HCl	30,000 gal	12'Øx36'H	Fiberglass	1975	
		TS-1414	HCl	30,000 gal	12'Øx36'H	Fiberglass	1975	
		TS-1415	HCl	30,000 gal	12'Øx36'H	Fiberglass	1975	
		TS-1416	HCl	30,000 gal	12'Øx36'H	Fiberglass	1975	
		TS-1417	HCl	30,000 gal	12'Øx36'H	Fiberglass	1975	
			Propane	~20,000 gal		Rubber-Lined Steel	1975	
			Butane	~20,000 gal		Rubber-Lined Steel	1975	
			Isopentane	~20,000 gal		Rubber-Lined Steel	1975	
Old Power House No. 2			Fuel Oil				1986	Empty
$ZnCl_2$			Diesel Fuel	10,000 gal			Present	
New Powerhouse			Fuel Oil	10,000 gal			Present	Empty
Front Gate		UST No. 1	Gas	2,000 gal		Steel	NA	
Contact No. 3		UST No. 2	No. 2 Fuel Oil	4,000 gal		Steel	(1954 to 1984)	Filled With Gravel

Table 3-4 (Page 9 of 9)
UNDERGROUND STORAGE TANKS

Area	Name	Map Identification Number	Contents	Capacity	Dimensions	Materials of Construction	Period of Use Terminated In	Miscellaneous
Central Shops		UST No. 3	Gas	1,000 gal		Steel	(1965 to 1985)	Filled With Gravel
AgChem		UST No. 4	Gas	1,000 gal		Steel	(1956 to 1981)	Filled With Gravel
Contact No. 2		UST No. 5	No. 2 Fuel Oil	1,000 gal			(1947 to 1967)	Filled With Gravel
Trail Ore		UST No. 6	No. 2 Fuel Oil	1,000 gal			(1942 to 1967)	Not Found
Roasters--Tank No. 1 Power Plant		UST No. 7	No. 6 Fuel Oil				1969	
Trail Ore Roasters--Tank No. 2		UST No. 8	Gas	500 gal (?)			(1947 to 1967)	

Note: This is not a complete listing of existing and abandoned tanks. The listing represents the compilation of existing information describing the tanks located onsite.

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Table 3-5
ABOVE GROUND TANKS (WMU 20)
POTENTIAL CONTAMINANTS

Area	Identification Number	Potential Contaminants
TCFM	20-A	HCl*
TCFM	20-B	Caustic, CCl_4, HF
TCFM	20-C	TCFM, Propane, Butane, Isopentane, H_2SO_4*
Sulfamic	20-D	H_2SO_4*, Sulfamic Premix*, NH_3, HCl
FSA/Reagents	20-E	SO_3, FSA, HF*, H_2SO_4*, NH_4OH*, HNO_3
Contact No. 3	20-F	CSA*, Alkyl Acid, Cinder Slurry, SO_3*, H_2SO_4*, H_2O_2, Acid Wastewater
Powerhouse	20-G	Oil, Molten Sulfur*, Soft Water
002 Outfall	20-H	Caustic, H_2SO_4
--	20-I	Fuel Oil
AgChem	20-J	Waste Solvent*, Hexane*, Hexazinone, Toluene*, Ethylene Glycol
Phosphoric Acid	20-K	Phosphate of Soda, Phosphate Rock
--	20-L	Fuel Oil
AHF	20-M	AHF*
HCl/Salt Cake	20-N	HCl, Fuel Oil
New Powerhouse	20-O	H_2SO_4, Wastewater
Sodium Silicate and Colloidal Silica/EVC	20-P	Waste Acid*, Sodium Silicate*, Soda Ash, Lime*, Caustic, Acid*, Fuel Oil, Wastewaters*
--	20-Q	Diesel Fuel
Contact No. 1	20-R	H_2SO_4*
Power Plant No. 2	20-S	Treating Tanks
Zinc Chloride	20-T	Zinc Chloride, Aluminum Chloride*, Zinc Ammonium Chloride, Ammonium Chloride, HCl*

*Indicates documented spill of chemical.

Table 3-6
UNDERGROUND TANKS (WMUs 21 AND 31)
POTENTIAL CONTAMINANTS

Area	Identification Number	Potential Contaminants
Front Gate	21-A	Gasoline
Contact No. 3	31-B	No. 2 Fuel Oil
Central Shops	31-C	Gasoline
AgChem	31-D	Gasoline
Contact No. 2	31-E	No. 2 Fuel Oil
Trail Ore Roasters--Tank No. 1	31-F	No. 2 Fuel Oil
Power Plant No. 2	31-G	No. 6 Fuel Oil
Train Ore Roasters--Tank No. 2	31-H	Gasoline

*Indicates documented spill of chemical.

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Table 3-7 (Page 1 of 11)
POSSIBLE COMPOSITION OF WASTES AT WMUs

WMU	Period	Contents	Analysis Performed (a) or Possible Chemical Composition (c)
1. Ash Landfill/Stoker	1892-1955	Stoker Chain Grate Ash	Iron, calcium, cadmium, chlorides, chromium, magnesium, sodium, sulfate, arsenic, barium, beryllium, boron, copper, fluoride, lead manganese, mercury, molybdenum, nickel, selenium, silver, tellurium, thallium, tin, vanadium zinc (c).
2. Rubble Fill Area	1892-1985	Demolition material, scrap metal, dirt, drums contaminated dirt, glass, clothing, paper wastes.	Bricks, concrete, steel, clothing (c).
		$AlCl_3$ filter cake mud	$AlCl_3$, sulfates (c)
		Sodium silicate	
		Sulfur	
		Silica	
		Waste chemicals	1,1,1-TCA, oils, chlorides, zinc, iron, sulfur (c)
		(1948-1974) TCFM still bottoms	Calcium hydroxide, calcium fluoride, iron oxide, barium, cadmium, lead, zinc, nickel, salt, silica, arsenic, aluminum oxide (a)
		Filter sludge	Calcium sulfate, silica oxide, calcium hydroxide, calcium fluoride, sodium sulfate, celluose, sulfamic acid, aluminum chloride, sodium, chloride, sodium oxide, heavy metals, acids (a and c)
		Silica furnace flue dust	Silica, chromium (+6), cyanide, silver, arsenic, barium, cadmium, copper, mercury, nickel, lead, selenium, zinc, sulfur, chlorides, fluorides, phosphates, iodides, soda ash (a)
		Railroad ties	Wood with chemical preservatives--pentachlorophenols (c)
		Ammate	Ammonium sulfamate, calcium fluoride, aluminum chloride, sodium chloride (c)
3. Coal/Fly Ash Piles--3 areas	1892-1968	Coal, fly ash	Iron, calcium, cadmium, chlorides, chromium, magnesium, sodium, sulfate, arsenic, barium, beryllium, boron, copper, fluoride, lead, manganese, mercury, molybdenum, nickel, selenium, silver, tellurium, thallium, tin, vanadium, zinc (c)

WMU	Period	Contents	Analysis Performed (a) or Possible Chemical Composition (c)
4. Hazardous Waste Storage Areas--Interim Status			
AgChem Drums	Unknown--1984	Hexane waste, toluene waste	Hexane, toluene (c)
		Hexazinone waste and feed	Toluene, 3-cyclohexyl-6-dimethylamino-1-methyl-1,3,5-triazone-2,4(1H,3H)-dione (c)
		Hexane/siduron® wastes	Hexane, 1-(2-methylchlorohexyl)-3-phenylurea (c)
		DMF/methanol	Dimethylformamide, methanol (c)
		Floor sweepings	Dry pesticides, dirt (c)
Reagent Drums	Unknown--1984	H_2SO_4, HNO_3, HCl, and NH_4OH	
AgChem--Tank	Unknown--present	Toluene/hexazinone wastes	Toluene, 3-cyclohexyl-6-dimethylamino-1-methyl-1,3,5-triazone-2,4(1H,3H)-dione (c)
Colloidal Silica Tanks	Unknown--present	Waste acids	2% H_2SO_4 (c)
5. Silica/Calcium Sulfate Area	1974-present	Calcium sulfate sludge	Calcium sulfate, silica oxide, calcium hydroxide, calcium floride, sodium sulfate, celluose, sulfamic acid, aluminum chloride, sodium chloride, sodium oxide, heavy metals, acids (a and c)
		Linuron® waste slurry	3-(3,4-dichlorophenyl)-1-methyl-1-methoxyurea (c)
		Waste treatment chemicals	
6. Sulfur Areas			
Sulfur Pile--Chambers No. 1	1893-1947	Sulfur	
Sulfur Pile--Chambers Nos. 2 & 3	1893-1947	Sulfur	
Sulfur Pile--Chambers Nos. 4 & 5	1913-1955	Sulfur, sulfur process filter aid, zinc sinter from roasters	
Sulfur Pile--Contact No. 1	1923-1955	Sulfur	
Sulfur Pit--Contact No. 3	1955-1984	Molten sulfur	
Sulfur Pile--Contact No. 3 near CSA	1955-1958	Sulfur	

WMU	Period	Contents	Analysis Performed (a) or Possible Chemical Composition (c)
7. General Plant	Unknown--1980	Chlorothene NU®	1,1,1-TCA (c)
	1980--present	Safety Kleen solvents 104® 105®	Petroleum hydrocarbons (c)
	Unknown--present	Waste oils and lubricating oils	Lubricating oils (c)
	1981--present	Asbestos	
	Unknown--present	Bulk chemicals--H_2SO_4, HCl, NH_4OH, NaOH	
	Unknown--present	Silica furnace flue dust	Silica, chromium (+6), cyanide, silver, arsenic barium, cadmium, copper, mercury, nickel, lead, selenium, zinc, sulfur, chlorides, fluorides, phosphates, iodides, soda ash (a)
	1964-1972	Dichlorophenylisocyanate	
	- present	Paint, solvents	
	Unknown	Vythene (methyl chloroform)	
	Unknown	Hospital x-ray developing solution	
8. HCl Neutralization Pit	1941-1974	TCFM wastes	Fluoride, arsenic, boron, chromium (a)
	1948-1977	Hydrochloride acid, neutralized wastes, calcium chloride	
9. Incinerators (2)	Unknown	Plant paper wastes and unknowns	
10. Calcium Fluoride Area	1974-1977	Calcium fluoride sludge	Calcium hydroxide, calcium floride, iron oxide, barium, cadmium, lead, zinc, nickel, salt, silica, arsenic, aluminum oxide (a)
11. Calcium Sulfate/TSP Area	1926-1951	Calcium sulfate sludge	Calcium, silica, florides, sodium, iron, aluminum, barium, cadmium, copper, lead, nickel, zinc, sulfates, chlorides, hydroxides, cellulose (c)
		Trisodium phosphate	Disodium and trisodium phosphates (c)

WMU	Period	Contents	Analysis Performed (a) or Possible Chemical Composition (c)
12. Non-railroad Loading/ Unloading Areas	1892-present	Includes toluene/hexazinone wastes, hexane/siduron® wastes, sulfuric acid tank sludges, hexazinone/toluene feed, toluene, SO_3, sodium silicate, sand, butylisocyanate, caustic, colloidal silica, waste acids, zinc chloride, aluminum chloride, zinc ammonium chloride, ammonium chloride, glauber's salt, salt cake, salt, soda ash, phosphate rock, phosphoric acid, hexane, hexazinone, siduron®, FSA HF, HCl, NH_3, sulfamic acid, TCFM, butane, propane, isopentane, CCL_4, fuel oil, diesel fuel, gasoline, sulfur, lead arsenate, lime sulfur, arsenic acid, bordeaux mixture®, calcium arsenate, litharge®, lorox®, barium fluorosilicate, linuron®, karmex®, calcium arsenite, lead acetate, EPN insecticides, valron®, Deenate® insecticides, methoxychlor products, plant food, 2,4-D sodium weed killer, arsenate green®, fenuron®, garden potato dust®, ethylene glycol, dimethylformamide, reagent chemicals, chromated zinc chloride, trisodium phosphate, dimethyl phthalate	
13. Chrome Outfall (Cooling Tower Blowdown)	1948-1977	Cooling tower blowdown	Chromium, phosphates (c)
		Sulfur	
		HCl neutralization pit runoff	$SbCl_5$, chlorides, flouride, boron, arsenic, chromium (c)
14. New Landfill	Unknown-present	Calcium sulfate	Calcium sulfate, silica oxide, calcium hydroxide, calcium fluoride, sodium sulfate, celluose, sulfamic acid, aluminum chloride, sodium chloride, sodium oxide, heavy metals, acids (a and c)

WMU	Period	Contents	Analysis Performed (a) or Possible Chemical Composition (c)
15. Misc/General Refuse Area	1955-1974	Filter sludge, calcium sulfate sludge	Calcium sulfate, silica oxide, calcium hydroxide, calcium fluoride, sodium sulfate, celluose, sulfamic acid, aluminum chloride, sodium chloride, sodium oxide, heavy metals, acids (a and c)
		Sulfur	
		Demolition material	Brick, concrete, steel (c)
		Spent silicia gel, silica	
		Alumina gel	
		Vanadium pentoxide dust	
		Plant paper wastes	
		Methyl ethyl ketone and organic sludges	Methyl ethyl ketone, butyl isocyanate, 1-butylcarbamoyl-2-benzimidazole carbamic acid methyl ester (c)
		Hexane/siduron® wastes	Hexane, 1-(2-methylcyclohexyl)-3-phenylurea (c)
		Tank and process cleanings	Calcium sulfate, sodium silicate, iron sulfates (c)
16. PCB Storage Areas			
Disposal Area	Unknown	PCB-contaminated oil	
TCFM Warehouse	1981-1984	PCB-contaminated oil and equipment	
Electric Storage Yard	Unkown	PCB-contaminated oil and equipment	
17. Spills (not assoc. with other WMUs)			
FSA Tank Car	1978	FSA, SO_3	
Contact No. 1	1923-1984	H_2SO_4	
Waste Oil Area	Unknown	Waste oils	

WMU	Period	Contents	Analysis Performed (a) or Possible Chemical Composition (c)
18. Railroad Loading/Unloading Areas	1892-present	Location dependent, includes H_2SO_4, CSA, FSA, HF, toluene waste, butylisocyanate, toluene, hexane, sulfamic acid, hexazinone, wash waters, tank sludges, colloidal silica, sodium silicate, sulfur, zinc, ammonium sulfamate, SO_3, soda ash, hydrogen peroxide, zinc ores, phenylisocyanate, dichlorophenyl-isocyanate, zinc sulfide, HCl, NH_3, methyl ethyl ketone, phosphoric acid, phosphate of soda, lime, ammonium chloride, zinc ammonium chloride, zinc chloride, aluminum chloride, glauber's salt, salt cake, salt, caustic, duclean products, sodium thiosulfate, AgChem products, chromated zinc chloride, TCFM, trisodium phosphate, dimethylhexylamine	
19. Process Sewers	Unknown-present	Operating and loading/unloading area spills. Past spills have included H_2SO_4, HCl, FSA, CSA, NaOH, lab waste drains, ammonium sulfamate, reagent chemicals, sodium silicate, sulfamic acid, zinc chloride, TCFM, tank sludges, phosphoric acid, salt cake, salt, ammonium chloride, glauber's salt, agchem products, colloidal silica, sodium thiosulfate, chromated zinc chloride, zinc ammonium chloride, aluminum chloride, trisodium phosphate.	
20. Aboveground Tanks	1892-present	Includes H_2SO_4, CSA, FSA, TCFM, HCl, HF, CCl_4, colloidal silica, SO_3, "ammate" mother liquor, toluene wastes, HNO_3, NH_3, sulfamic acid, caustic, waste acids, waste solvent, sodium silicate, soda ash, sand, sulfur, butane, propane, isopentane, hexane, soft water, gas, fuel oil, diesel fuel, lime, zinc chloride, zinc ammonium chloride, aluminum chloride, ammonium chloride, glauber's salt, ammonium hydroxide, alkyl acid,	

WMU	Period	Contents	Analysis Performed (a) or Possible Chemical Composition (c)
20. Aboveground Tanks (Cont'd)		hydrogen peroxide, hexazinone, toluene, phosphoric acid, phosphate of soda, reagent chemicals, sodium thiosulfate, salt, salt cake, AgChem products, trisodium phosphate	
21. Underground Storage Tanks--Existing	Unknown-present	UST No. 1 - Gasoline	Petroleum hydrocarbons, benzene, toluene, lead (c)
22. Insecticide Area	1910-1949	Insecticide by-products, lead arsenate, calcium arsenate, 2,4-D sodium weed killer, barium fluorosilicate, calcium arsenite, lead acetate, Deenate® insecticides, methoxychlor products, plant food, arsenate green®, garden potato dust, litharge®, arsenic acid, bordeaux mixture®, lime sulfur	
23. Antimony Pentachloride Settling Basin	1948-1977	Sodium hydroxide Antimony pentachloride	
24. Zinc Crude Milling Area	1909-1969	Crude and processed zinc, wastes and spills	
		Aluminum and ammonium chlorides, chromated zinc chlorides, zinc ammonium chloride, wastes and spills	
		Mud spills from filtering process	Zinc, iron, barium, filter cakes (c)
25. Cities Service Acid Transfer Line	1955-1968	99 weight percent sulfuric acid	
		Spent sulfuric acid	H_2SO_4 (95 weight percent), gas (5 weight percent) (c)
26. Sanitary Sewers	Unknown-present		
27. Colloidal Silica Settling Pits (2)	Unkown-present	Process filter slurry	Filter aid, precoat, silica scale, gelled colloidal silica

WMU	Period	Contents	Analysis Performed (a) or Possible Chemical Composition (c)
28. Chemical Storage Buildings - Existing			
Barrelhouse No. 1	1902-present	Formaldehyde	
		Hexachlorophene (past)	
		Dowicil®	
		Ethylene glycol	
		Batericides	
		Caustic	
Adhesives Warehouse	1944-present	Lithium hydroxide	
		Flake caustic	
		Ethylene glycol	
		Ammonium bicarbonate	
		Sodium aluminate	
		Resins	
AgChem Warehouse	1956-1985	Hexazinone	3-cyclohexyl-6-dimethylamino-1-methyl-1,3,5-triazine-2,4(1H,3H)-dione (c)
		Siduron®	1-(2-methylcyclohexyl)-3-phenylurea (c)
		Lorox®	3-(3,4-dichlorophenyl)-1-methyl-1-methoxyurea (c)
		Tupersan®	1-(2-methylcyclohexyl)-3-phenylurea(c)
		Benomyl®	1-butylcarbamoyl-2-benzimidazole carbamic acid methyl ester (c)
Barrelhouse No. 2 (TCFM Warehouse)	1948-present	TCFM	
		Paints and solvents	
		Colloidal silica	
		Sodium silicate	

WMU	Period	Contents	Analysis Performed (a) or Possible Chemical Composition (c)
29. Sulfamic Acid Pits (2)	1973-present	Sulfamic acid wastes	
		Wastes acids and neutralized waste acids	
30. Environmental Control System and Outfall 003	1973-present	Colloidal silica	
		Sodium silicate	
		Drain wastes	
		Calcium sulfate sludge	Calcium sulfate, silica oxide, calcium hydroxide, calcium floride, sodium sulfate, celluose, sulfamic acid, aluminum chloride, sodium chloride, sodium oxide, heavy metals, acids (a and c)
31. Underground Tanks--Abandoned	1954-1984	UST No. 2 - No. 2 fuel oil	Petroleum hydrocarbons, benzene, toluene, lead (c)
	1965-1985	UST No. 3 - Gasoline	
	1956-1981	UST No. 4 - Gasoline	
	1947-1967	UST No. 5 - No. 2 fuel oil	
	1942-1967	UST No. 6 - No. 2 fuel oil	Petroleum hydrocarbons, benzene, toluene, lead (c)
	Unknown-1968	UST No. 7 - No. 5 fuel oil	
	1942-1967	UST No. 8 - gasoline	Petroleum hydrocarbons, benzene, toluene, lead (c)
32. Chemical Storage Buildings--Abandoned			
Salt Cake Warehouse	1897-unknown	Na_2SO_4	
		Glauber's salt	
Insecticides Warehouse	Unknown	Insecticides	Calcium arsenate, 2-4-D sodium weed killer, barium fluorosilicate, calcium arsenite, lead acetate, Deenate® insecticides, methoxychlor products, plant food, arsenate green®, garden potato dust®, litharge®, arsenic acid, bordeaux mixture®, lime sulfur, lead arsenate

WMU	Period	Contents	Analysis Performed (a) or Possible Chemical Composition (c)
The Morgue	Unknown-1977	Old equipment	
		AgChem products	2-cyclohexyl-6-dimethylamino-1-methyl-1,3,5-triazine-2,4(1H,3H)-dione (c)
			1-(2-methylcyclohexyl)-3-phenylurea (c)
			3-(3,4-dichlorophenyl)-1-methyl-1-methoxyurea (c)
			1-Butylcarbamoyl-2-benzimidazole carbamic acid methyl ester (c)
Rodine® Storage	1929-1984	Rodine 50® and 92A®	
Commercial Packing House	1920's-1969	Reagent Chemicals (NHO_3, HCl, H_2SO_4, NH_4OH)	
33. Misc. Pits/Piles			
New Powerhouse Pit	Unknown	Unknown	
Manheim Furnace Pile	1897-1959	Salt	
WMU 1, Unknown Area No. 1	Unknown	Unknown	
WMU 1, Unknown Area No. 2 Red Tainted Area	Unknown	Unknown	
Open Sanitary Ditch	1970s	Sanitary sewage, used for approximately 1 month	
WMU 13, Unknown Area No. 1	1913-1968	Fly ash, quartz, sulfur, chambers Nos. 4 and 5 wastes, sulfur filter press mud from contact No. 3	
Phosphate Rock Area	1925-1951	Phosphate rock	
34. Zinc Roasters (Trail Ore Roasters)	1916-1937	Zinc sinters	
		Zinc sulfide	
		Iron sinters	

Table 3-7 (Page 11 of 11)

WMU	Period	Contents	Analysis Performed (a) or Possible Chemical Composition (c)
35. Zinc Mud Area	1909-1969	Zinc chloride mud	Zinc, iron, barium, filter cakes, chlorides (c)
36. Outfall 002	Unknown-present	Process wastes	NaOH, H_2SO_4
		pH-adjusted process waste waters	

GLT678/19

Table 3-8
ALUMINUM CHLORIDE FILTER CAKE ANALYSIS (WMU 2)

	December 14, 1972 Analysis (%)
Water	60.0
Al_2O_3	11.6
$AlCl_3*6H_2O$	17.6
SiO_2	6.0
Undetermined water and acid insoluble	4.8
Heavy metals	Trace

GLT848/1-1

Table 3-9
TRICHLOROFLUOROMETHANE SLUDGE ANALYSIS (WMU 2)

	December 14, 1972 Analysis (%)
Free H_2O	48
$Ca(OH)_2$	12
CaF_2	38
Fe_2O_3	0.4 (w/Al_2O_3)
Metals (Ba, Cd, Pb, Ni, Zn)	Trace
NaCl	0.7
SiO_2	0.5
Arsenic	0.07

Note: Testing of leachate performed in 1972 showed arsenic concentrations of <0.01 ppm and fluoride concentrations of 24 to 30 ppm.

GLT848/1-10

Table 3-10
AMMATE DRY FILTER CAKE ANALYSIS (WMU 5)

	December 14, 1972 Analysis (%)
Water	26.5
$CaSO_4*2H_2O$	69.5
$NH_4SO_3NH_2$	3.5
Heavy metals	Trace

GLT848/1-2

Table 3-11
LANDFILL CONTENTS ANALYSIS (WMU 5 or 10)

	October 15, 1975 Analysis (%)
Water	52.2
$Ca_2SO_4*2H_2O$	31.3
SiO_2	6.3
$Ca(OH)_2$	2.4
CaF_2	5.6
Na_2SO_4	1.0
$Al_2O_3 + Fe_2O_3$	0.2
Cellulose	0.3
$NH_4SO_3NH_2$	0.2
$AlCl_3*6H_2O$	<0.1
NaCl	0.1
Na, as Na_2O (except silicate)	0.4
Miscellaneous acids and water insolubles	<0.1
Heavy metals	<0.02

Note: Composite sample.

GLT848/1-3

Table 3-12
SILICA FURNACE FLUE DUST ANALYSIS (WMU 7)

	March 15, 1984 Analysis	March 15, 1984 EP Leachate
Silica sand	50-70%	NA
Soda ash	30-50%	NA
Cadmium	200 ppm	NA
Total Chromium	1,280 ppm	56 mg/l
Hexavalent Chromium	NA	55 mg/l
Cyanide	<5 ppm	NA
Silver	8 ppm	NA
Arsenic	20 ppm	NA
Barium	130 ppm	NA
Copper	25 ppm	NA
Mercury	0.055 ppm	NA
Nickel	60 ppm	NA
Lead	270 ppm	NA
Selenium	4.5 ppm	NA
Zinc	150 ppm	NA

NA--Not analyzed

GLT848/1-4

Table 3-14
TOLUENE/HEXAZINONE WASTE ANALYSIS (WMU 12)

	April 30, 1979 Analysis (%)	October 6, 1982 Analysis (%)
Toluene	49-90	47-55
Dimethylcyclohexylurea	0.7-7.2	5
Bis-cyclohexylurea	0.2-2.6	0.3-0.4
Hexazinone 3-cyclohexyl-1-methyl-6-dimethylamino-s-triazine-2,4-(1H, 3H)-dione	6.5-29	24-36
1-cyclohexyl-3,5-dimethyl-5-triazine-2,4,6(1H, 3H, 5H)-trione	0.35-4.7	4-6
3-cyclohexyl-1-ethyl-5-methyl-5-triazine-2,4,6(1H, 3H, 5H)-trione	1.7-8.2	5-6
1-cyclohexyl-3-methyl-5-triazine-2,4,6(1H, 3H, 5H)-trione		5-6
Ethyl carbamate	0-136 ppm	0-181
Other organics not identified		3-4

GLT848/1-7

Table 3-15
ENVIRONMENTAL CONTROL SYSTEM SLUDGE ANALYSIS (WMU 30)

	September 8, 1976 Analysis (% by wet weight)
Free H_2O	53
$Ca(OH)_2$	4
$3SiO_2*H_2O$	22
Na_2O	0.08
Fe_2O_3	0.02
$CaSO_4*2H_2O$	20
NH_3	0.04
$NH_4SO_3NH_2$	0.22
Trace Metals (Ba, Cd, Cr, Pb, Ni, Zn)	0
	% by dry weight
SiO_2	96
SO_4	2
Ca	0.2
Na	0.7
Al	0.085
Fe	0.08

GLT848/1-8

WASTE MANAGEMENT UNITS

1 ASH LANDFILL/STOKER GRATE ASH
2 RUBBLE FILL AREA
3 COAL/FLY ASH PILES
4 HAZARDOUS WASTE STORAGE AREAS-INTERIM STATUS
5 SILICA/CALCIUM SULFATE AREA
6 SULFUR AREAS
7 GENERAL PLANT
8 HCL NEUTRALIZATION PIT
9 INCINERATORS
10 CALCIUM FLUORIDE AREA
11 CALCIUM SULFATE/TSP AREA
12 NON-RAILROAD LOADING/UNLOADING AREAS
13 CHROME LAGOON (COOLING TOWER BLOWDOWN)
14 NEW LANDFILL
15 MISC./GENERAL REFUSE AREA
16 PCB STORAGE AREAS
17 SPILLS (NOT ASSOCIATED WITH OTHER WMUS)
18 RAILROAD LOADING/UNLOADING AREAS
19 PROCESS SEWERS
20 ABOVE GROUND TANKS
21 UNDERGROUND STORAGE TANKS-EXISTING
22 INSECTICIDE AREA
23 ANTIMONY PENTACHLORIDE SETTLING BASIN
24 ZINC CRUDE MILLING AREA
25 ACID TRANSFER LINE
26 SANITARY SEWERS
27 COLLOIDAL SILICA SETTLING PITS
28 CHEMICAL STORAGE BUILDINGS-EXISTING
29 SULFAMIC ACID PITS
30 ENVIRONMENTAL CONTROL SYSTEM
31 UNDERGROUND TANKS-ABANDONED
32 CHEMICAL STORAGE BUILDINGS-ABANDONED
33 MISC. PITS/PILES
34 ZINC ROASTERS (TRAIL ORE ROASTERS)
35 ZINC MUD AREA
36 OUTFALL 002

NOTE: WMUS NO. 7,12,18,19,20 & 26 NOT SHOWN ON THIS FIGURE

LEGEND

- PLANT BOUNDARY
- BUILDINGS & ROADS
- RAILROADS
- SURFACE WATER FEATURES
- WASTE MANAGEMENT UNITS

0 300 600 900
SCALE 1"= 600'

Figure 3-3
WMU LOCATION MAP

E.I. Du Pont de Nemours
East Chicago Plant
East Chicago, Indiana

CH2MHILL

LEGEND

- PLANT BOUNDARY
- BUILDINGS & ROADS
- RAILROADS
- SURFACE WATER FEATURES
- WASTE MANAGEMENT UNITS

0 150 300 450

SCALE 1"= 300'

Figure 3-4
NON-RAILROAD LOADING/
UNLOADING AREAS WMU12

E.I. Du Pont de Nemours
East Chicago Plant
East Chicago, Indiana

CH2M HILL

E800 E1200 E1600 E2000 E2400 E2800 E3200 E3600 E4000

N4000 N3600 N3200 N2800 N2400 N2000

N

18-I
18-J
18-K
18-L
18-M
18-H
18-E
18-G
18-F
18-D
18-N
18-O
18-Q
18-C
18-A
18-R
18-P
18-B

GRAND CALUMET RIVER

LEGEND

- PLANT BOUNDARY
- BUILDINGS & ROADS
- RAILROADS
- SURFACE WATER FEATURES
- WASTE MANAGEMENT UNITS

0 150 300 450

SCALE 1"= 300'

Figure 3-5

RAILROAD LOADING/ UNLOADING AREA WMU 18

E.I. Du Pont de Nemours
East Chicago Plant
East Chicago, Indiana

CH2MHILL

E800 E1200 E1600 E2000 E2400 E2800 E3200 E3600 E4000

N4000 N3600 N3200 N2800 N2400 N2000

N

8

GRAND CALUMET RIVER

LEGEND

- PLANT BOUNDARY
- BUILDINGS & ROADS
- RAILROADS
- SURFACE WATER FEATURES
- WASTE MANAGEMENT UNITS
- EXISTING PROCESS SEWERS
- ABANDONED PROCESS SEWERS

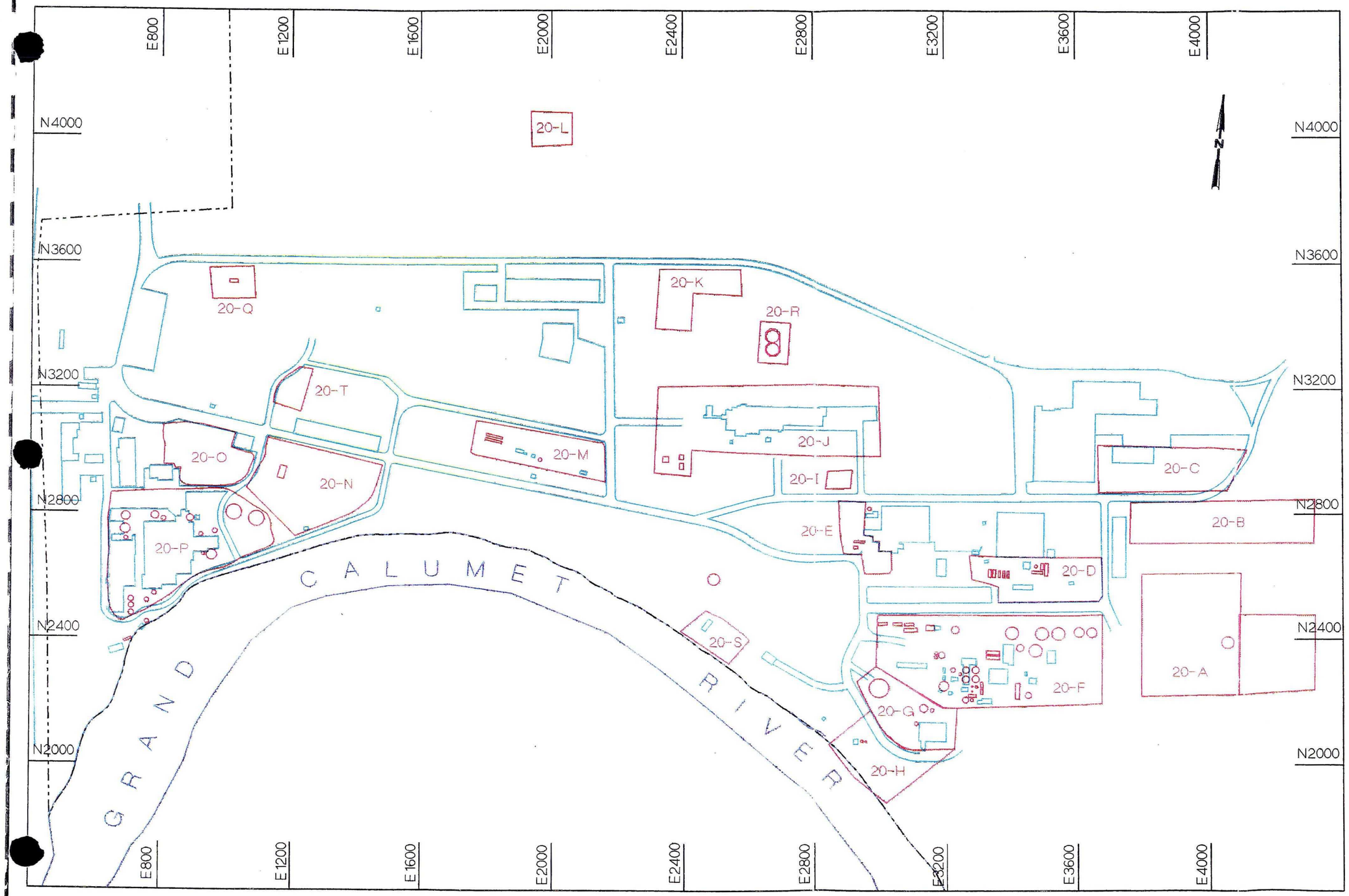
0 150 300 450

SCALE 1"= 300'

Figure 3-6
PROCESS SEWERS WMU 19

E.I. Du Pont de Nemours
East Chicago Plant
East Chicago, Indiana

CH2MHILL



LEGEND

- PLANT BOUNDARY
- BUILDINGS & ROADS
- RAILROADS
- SURFACE WATER FEATURES
- WASTE MANAGEMENT UNITS

0 150 300 450

SCALE 1" = 300'

Figure 3-7

ABOVE GROUND TANKS
WMU 20

E.I. Du Pont de Nemours
East Chicago Plant
East Chicago, Indiana

CH2MHILL

E800 E1200 E1600 E2000 E2400 E2800 E3200 E3600 E4000

N4000 N3600 N3200 N2800 N2400 N2000

GRAND CALUMET RIVER

8

N

LEGEND

- PLANT BOUNDARY
- BUILDINGS & ROADS
- RAILROADS
- SURFACE WATER FEATURES
- WASTE MANAGEMENT UNITS
- EXISTING SANITARY SEWERS
- ABANDONED SANITARY SEWERS

0 150 300 450

SCALE 1" = 300'

Figure 3-8
SANITARY SEWERS WMU 26

E.I. Du Pont de Nemours
East Chicago Plant
East Chicago, Indiana

CH2M HILL

Appendix A. Information Sources and Document Reference List

Appendix A
INFORMATION SOURCES AND DOCUMENT REFERENCE LIST

A records search and summary of existing data pertinent to the East Chicago Plant were conducted between November 1986 and December 1986. Available records include information at various levels of accuracy and completeness on plant history and operations, onsite waste management units (WMU's), content and waste characterization for each WMU, geologic setting, groundwater uses in the study area, onsite groundwater monitoring systems, and chemical analytical data from monitoring points onsite.

The sources of information from which written records were obtained include:

- DuPont East Chicago Plant, East Chicago, Indiana--Files in the offices of Jerry Meyer, Senior Supervisor--S.H.E.
- DuPont Louviers Building, Newark, Delaware--Files in the office of Alan Egler, Hydrogeologist and from Information Center 13.
- Indiana Department of Natural Resources, Geological Survey, Bloomington, Indiana--Formation and geophysical logs of boreholes, well logs, geologic maps, and report on Environmental Geology of Lake and Porter Counties (Special Report 11).
- Indiana Department of Natural Resources, Division of Water, Indianapolis, Indiana--Water well records for area within 3 miles of DuPont facility and references on regional groundwater resources.
- U.S. Geological Survey, Indianapolis, Indiana--Water level data and draft report on the shallow groundwater system in the Grand Calumet River/Indiana Harbor Canal drainage basin provided by Lee Watson.
- U.S. EPA, Region V, Chicago, Illinois--Water well records supporting Hazardous Ranking System (HRS) documentation, provided by Jean Griffen, CERCLA Program Support Group.
- Soil Conservation Service, USDA, Indianapolis, Indiana--Soil survey information for the county provided by Leon Russell.

A document tracking system was developed for the documents reviewed and obtained during the records search. A key to the tracking system and a document reference list are provided below.

KEY TO DOCUMENT CODE IDENTIFICATION SYSTEM
AT DUPONT'S EAST CHICAGO, INDIANA NYLON PLANT

CODE: AREA - CONTENTS - DOCUMENT TYPE - NUMBER/LETTER

CODE ABBREVIATIONS

AREA:

A	-	Ash Landfill/Stoker Grate Ash
B	-	Rubble Fill Area
C	-	Coal/Fly Ash Piles
D	-	Hazardous Waste Storage Areas--Interim Status
E	-	Silica/Calcium Sulfate Area
F	-	Sulfur Areas
G	-	General Plant
H	-	HCL Neutralization Pit
I	-	Incinerators
J	-	Calcium Fluoride Area
K	-	Calcium Sulfate/TSP Area
L	-	Non-Railroad Loading/Unloading Areas
M	-	Chrome Lagoon (Cooling Tower Blowdown)
N	-	New Landfill
O	-	Miscellaneous/General Refuse Area
P	-	PCB Storage Areas
Q	-	Spills (Not Associated with Other WMU's)
R	-	Railroad Loading/Unloading Areas
S	-	Process Sewers
T	-	Above Ground Tanks
U	-	Underground Storage Tank--Existing
V	-	Insecticide Area
Y	-	Antimony Pentachloride Settling Basin
Z	-	Zinc Crude Milling Area
AA	-	Acid Transfer Line
AB	-	Sanitary Sewers
AC	-	Colloidal Silica Settling Pits
AD	-	Chemical Storage Buildings--Existing
AF	-	Sulfamic Acid Pits
AG	-	Environmental Control System
AH	-	Underground Tanks--Abandoned
AI	-	Chemical Storage Buildings--Abandoned
AJ	-	Miscellaneous Pits/Piles
AK	-	Zinc Roasters (Trail Ore Roasters)
AL	-	Zinc Mud Area
AM	-	Outfall 002

CONTENTS:

A	-	Analytical Data
C	-	Chemical Inputs/Product Outputs
D	-	Design Specs--Not Dimensions
G	-	Water Resource Systems
L	-	Location and Dimensions

CONTENTS: (Continued)

M	-	Miscellaneous
P	-	Plant operations
R	-	Regulatory Status (Permits, Compliance, etc.)
S	-	Spills, Accidents, Episodes
W	-	Wastes--Non-product Outputs
X	-	Soil, Rock, Subsurface

TYPE:

L	-	Letters/Memos
M	-	Maps
O	-	Other
P	-	Permits
R	-	Report
V	-	Verbal

NUMBER: File number.

LETTER: Consecutive order as found in each file.

GLT678/12

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
1	EAST CHICAGO KASPER W.W. 0033464 01/20/84					
		85/01/04	C-P-1A	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR DEC. 1984.	DUPONT
		84/12/11	C-P-1B	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR NOV. 1984.	DUPONT
		84/10/09	C-P-1C	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR OCT. 1984.	DUPONT
		84/10/09	C-P-1D	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR AUG. 1984.	DUPONT
		84/08/07	C-P-1E	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR JULY 1984.	DUPONT
		84/07/13	C-P-1F	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR JUN. 1984.	DUPONT
		84/06/06	C-P-1G	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR MAY 1984.	DUPONT
		84/05/08	C-P-1H	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR APR. 1984.	DUPONT
		84/04/10	C-P-1I	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR MAR. 1984.	DUPONT
		84/03/08	C-P-1J	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR FEB. 1984.	DUPONT
		84/02/09	C-P-1K	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR JAN. 1984.	DUPONT
		84/09/14	C-P-1L	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR AUG. 1984.	DUPONT
2	EAST CHICAGO ORBAN JN 0055337 12/31/85					
		86/01/15	C-P-2A	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR DEC. 1985.	DUPONT
		85/12/20	C-P-2B	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR NOV. 1985.	DUPONT
		85/11/12	C-P-2C	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR OCT. 1985.	DUPONT
		85/10/11	C-P-2D	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR SEPT. 1985.	DUPONT
		85/09/17	C-P-2E	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR AUG. 1985.	DUPONT
		85/07/17	C-P-2F	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR JUN. 1985.	DUPONT
		85/06/20	C-P-2G	NOT REQ.	PROCESS DISCHARGE INFO. FOR E.	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13.
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
					CHICAGO FOR MAY 1985.	
		85/03/14	C-P-2H	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR APR. 1985.	DUPONT
		85/04/12	C-P-2I	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR MAR. 1985.	DUPONT
		85/03/11	C-P-2J	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR FEB. 1985.	DUPONT
		85/02/05	C-P-2K	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR JAN. 1985.	DUPONT
3	EAST CHICAGO ORBAN J.N. 0072686 08/05/85					
		86/08/05	C-P-3A	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR JULY 1985.	DUPONT
4	EAST CHICAGO KASPER W.W. 0084802 12/31/83					
		84/01/16	C-P-4A	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR DEC. 1983.	DUPONT
		83/12/12	C-P-4B	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR NOV. 1983.	DUPONT
		83/10/10	C-P-4C	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR SEPT. 1983.	DUPONT
5	EAST CHICAGO ORBAN J.N. 0094851 12/31/86					
		86/06/16	C-P-5A	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR JUNE 1986.	DUPONT
		86/06/10	C-P-5B	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR MAY 1986.	DUPONT
		86/05/16	C-P-5C	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR APR. 1986.	DUPONT
		86/04/18	C-P-5D	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR MAR. 1986.	DUPONT
		86/03/14	C-P-5E	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR FEB. 1986.	DUPONT
		86/02/06	C-P-5F	NOT REQ.	PROCESS DISCHARGE INFO. FOR E. CHICAGO FOR JAN. 1986.	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
6	EAST CHICAGO E.S.D. GEN. CONS WASTE-PERMITS-NPDES- CHEMICALS AND PIGMENTS-					
		79/04/25	C-P-6A	G-R-P-190	NPDES PERMIT NO. IN 0000329	DUPONT
		78/06/23	C-P-6B	G-R-P-191	NPDES PERMIT NO. IN 0000329 APPLICATION FOR REISSUANCE (CONFIDENTIAL PORTION)	DUPONT
		78/06/23	C-P-6C	G-R-P-192	NPDES PERMIT NO. IN 0000329 APPLICATION FOR REISSUANCE	DUPONT
		76/07/09	C-P-6D	G-R-P-193	EAST CHICAGO NPDES PERMIT PROPOSED AMENDMENT	DUPONT
		72/03/22	C-P-6E	G-R-P-194	APPLICATION FOR PERMIT TO DISCHARGE	DUPONT
		72/11/01	C-P-6F	G-R-P-195	PERMIT APPLICATION NO. IN 02720889	DUPONT
		73/01/31	C-P-6G	G-R-P-196	LETTER FROM STATE OF INDIANA TO DUPONT RE. DRAFT SPECIAL CONDITIONS. 1899 REFUSE ACT	DUPONT
		73/08/21	C-P-6H	G-R-P-197	LETTER FROM EPA TO THE INDIANA STREAM POLLUTION CONTROL BOARD CONCERNING PERMIT APPLICATION NO. 02720889	EPA
		74/10/31	C-P-6I	MISSING	PERMIT APPLOCATION NO. 02720889 WAS GRANTED - PERMIT NO. 0000329 WAS ISSUED.	DUPONT
		74/12/19	C-P-6J	G-R-P-198	LETTER FROM DUPONT TO EPA VISIT OF SULFURIC ACID AREA	DUPONT
		75/01/24	C-P-6K	G-R-P-199	PUBLIC NOTICE OF JUDICATORY HEARING FOR NPDES PERMIT	DUPONT
		75/01/09	C-P-6L	MISSING	EAST CHICAGO PLANT NPDES PERMIT	DUPONT
		75/05/05	C-P-6M	MISSING	NH3-N DISCHARGES FROM PLANT	DUPONT
		76/01/27	C-P-6N	G-R-P-200	NPDES PERMIT NO. IN0000329 PERMIT TO DISCHARGE	DUPONT
		76/03/22	C-P-6O	G-R-P-201	CERTIFICATION OF NPDES PERMIT NO. 0000329	DUPONT
7	EAST CHICAGO GEN. CONS. CHEMICALS AND PIGMENTS SOLID WASTE 1982					
		82/12/01	C-W-7A	W-G-L-202	GROUNDWATER MONITORING. ALSO CONTAINS INFO	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
					OR ANALYTICAL AND MONITORING DATA AND WASTE CONTENT.	
8	EAST CHICAGO I&B GEN. CONS. WASTE 1971					
		71/11/05	C-P-8A	G-W-L-203	EPA SUIT. INFORMATION REQUESTED BY EPA	DUPONT
		71/11/02	C-P-8B	MISSING	U.S. GOVT. VS DUPONT-E, CHICAGO MEETING ON TUES. OCT. 19, 1971	DUPONT
		71/09/13	C-P-8C	MISSING	LETTER FROM EPA TO THE U.S. DISTRICT-ATTORNEY-WASTE CONSTITUENTS FOR DUPONT'S DISCHARGES TO THE CALUMET RIVER.	DUPONT
		71/04/27	C-P-8D	G-L-L-204	DRAINAGE OUTFALL CONSOLIDATION FROM 9 TO 3.	DUPONT
		71/03/30	C-W-8E	G-W-L-205	WASTE POLLUTION PROGRAM-DEEPWELL	DUPONT
		71/03/24	C-P-8F	G-R-L-206	WASTE-ARSENIC	DUPONT
		71/03/05	C-P-8G	G-C-L-207 G-W-L-207	PLANT VISIT ON MAR. 2, 1971	DUPONT
		71/02/11	C-P-8H	G-W-L-208	LETTER FROM THE STATE OF INDIANA TO DUPONT RE: POLYCHLORINATED BIPHENYLS (PCB)	DUPONT
		00/0/00	C-P-8I	G-W-O-845	PLANT ENVIRONMENTAL HISTORY	DUPONT
		72/4/20	C-P-8J	G-W-O-846	1971 LAWSUIT CHRONOLOGY USA VS DUPONT	DUPONT
9	EAST CHICAGO I&B GEN. CONS. WASTE-WELLS 1971					
		58/00/00	C-W-9A	MISSING	COMBRIAN AND ORDOVICIAN STATIGRAPHY AND OIL AND GAS POSSIBILITIES IN INDIANA	USGS
		64/08/13	C-W-9B	MISSING	GEOPHYSICAL LOG-BETHLEHEM STEEL -MIDWEST STEEL PLANT #1	DUPONT
		68/03/22	C-W-9C	MISSING	GEOPHYSICAL LOG-BETHLEHEM STEEL W.A.L. #2	DUPONT
		71/04/23	C-W-9D	G-W-L-209	DEEP WELLS-INLAND STEEL VISIT	DUPONT
		00/00/00	C-W-9E	G-W-R-210	REPORT FOR INLAND STEEL CO.	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
					ON DESIGN, DRILLING AND OPERATION OF A DEEP WELL SUBSURFACE DISPOSAL SYSTEM FOR A WASTE PICKLE LIQUOR AND OTHER POLLUTANTS AT INDIANA HARBOR PLANT NO. 2, E. CHICAGO, INDIANA	
		00/00/00	C-W-9F	MISSING	USE OF DEEP WELL METHOD FOR WASTE DISPOSAL AT MIDWEST	DUPONT
		71/11/23	C-W-9G	G-W-L-211	DEEP WELLS - INDIANA	DUPONT
		71/08/06	C-W-9H	G-W-L-212	LETTER FROM ILLINOIS STATE WATER SURVEY TO EPA. RE: WATER LEVELS AND PUMPAGE RATES OF WELLS IN ST. SIMON	DUPONT
		72/03/00	C-W-9I	G-W-0-213	SCHEMATIC DRAWING-WASTE DISPOSAL WELL-E. CHICAGO	DUPONT
		71/06/00	C-W-9J	MISSING	APPLICATION FOR APPROVAL OF SUBSURFACE DISPOSAL WELL-SUBMITTED BY GENERAL ELECTRIC COMPANY. DESCRIBES STRATIGRAPHY IN PLANT AREA.	DUPONT
10	EAST CHICAGO I.C.D GEN. CONS. REPORTS-PROCESS WATER DISCHARGE					
		76/04/15	C-P-10A	MISSING	PROCESS WATER DISCHARGE INFO FOR MAR. 1976.	DUPONT
		76/01/15	C-P-10B	MISSING	PROCESS WATER DISCHARGE INFO FOR DEC. 1975.	DUPONT
11	EAST CHICAGO I.& D. GENS. CONS. WASTE 1976					
		77/11/22	C-P-11A	G-R-L-214	WATER POLLUTION-COMPLIANCE SURVEY CONTAINS SCHEMATICS OF PLANT OPERATIONS.	DUPONT
		77/06/13	C-P-11B	G-R-L-215	NPDES PERMIT NO. IN 0000329 NOTICE OF VIOLATION	DUPONT
		77/02/08	C-P-11C	G-C-L-216	LETTER TO MR. JANICK ON PRODUCTION RATES, TYPES OF PROCESSES.	DUPONT
12	EAST CHICAGO I.& D. GEN. CONS. WASTE, 1972					

EAST CHICAGO REFERENCE LIST - APPENDIX A
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EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		72/12/27	C-P-12A	G-D-L-250	DESIGN OF SUSPENDED SOLIDS REMOVAL FACILITIES.	DUPONT
		72/11/30	C-P-12B	G-L-P-251	APPLICATION TO CONSTRUCT 2 OUTFALLS.	DUPONT
		72/12/14	C-P-12C	O-W-L-252	SOLID WASTE DISPOSAL PROPOSAL	DUPONT
		72/10/23	C-P-12D	G-R-L-253	CONSENT DECREE FOR DISCHARGE	DUPONT
13	EAST CHICAGO I.& D. GEN. CONS. WELLS, 1972					
		72/03/00	C-W-13A	G-W-R-254	PRELIMINARY REPORT ON A PROPOSED WASTE INJECTION WELL AT THE E. CHICAGO PLANT	DUPONT
		00/00/00	C-W-13B	G-X-M-264	GEOLOGIC CROSS SECTION PLATE 4	INDIANA GEOL. SUR
14	EAST CHICAGO I.& D. GEN. CONS. DEEP WELL DISPOSAL, 1972					
		63/11/23	C-W-14A	NOT REQ.	BETHLEHEM STEEL #1, ELECTRICAL LOG	DUPONT
		64/08/13	C-W-14B	NOT REQ. NOT REQ.	MIDWEST STEEL PLANT #1 SONIC LOG WITH CALIPER	DUPONT
		67/05/04	C-W-14C	NOT REQ. NOT REQ.	INLAND STEEL CO. WAD #1 MICRO CONTACT LOG	DUPONT
		68/00/00	C-W-14D	NOT REQ.	DISPOSAL WAL #2, NUCLEAR LOG	DUPONT
		65/00/00	C-W-14E	NOT REQ.	GARY SHEET & TIN PLANT #1 GAMMA RAY-NEUTRON	DUPONT
		63/11/23	C-W-14F	NOT REQ.	BETHLEHEM STEEL #1, SONIC LOG WITH CALIPER	DUPONT
		63/11/23	C-W-14G	NOT REQ. NOT REQ.	BETHLEHEM STEEL #1, FORMATION DENSITY LOG, GAMMA GAMMA	DUPONT
		64/08/13	C-W-14H	NOT REQ. NOT REQ.	MIDWEST STEEL PLANT #1 GAMMA RAY-NEUTRON	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
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EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		67/05/04	C-W-14I	NOT REQ. NOT REQ.	INLAND STEEL CO. WAD #1 NUCLEAR LOG	DUPONT
		68/03/22	C-W-14J	NOT REQ.	WAL #2, DENSITY LOG	DUPONT
		63/11/23	C-W-14K	NOT REQ. NOT REQ. NOT REQ.	BETHLEHEM STEEL DISPOSAL WELL #1 SIMULTANEOUS LATEROLOG-GAMMA RAY NEUTRON	DUPONT
		65/01/08	C-W-14L	NOT REQ. NOT REQ.	GARY SHEET & TIN PLANT #1 MICROLOG WITH CALIPER	DUPONT
15	EAST CHICAGO SOILS					
		45/07/31	C-W-15A	MISSING	M 4116 SH 1. SOIL MAP & BORING LOG	DUPONT
		67/05/03	C-W-15B	MISSING	W 353829SBLP (SH 1)	DUPONT
		73/01/30	C-W-15C	MISSING	W 355482SBLP (SH 2)	DUPONT
		73/02/07	C-W-15D	MISSING	W 466051SBLP (SH 3)	DUPONT
		77/07/21	C-W-15E	MISSING	W 573765SBLP (SH 4)	DUPONT
16	EAST CHICAGO LAYOUT MAPS					
		73/10/03	C-W-16A	G-L-M-255	M4378 SH 1. LAYOUT 1 IN = 50 FT.	DUPONT
		73/10/03	C-W-16B	G-L-M-256	M4378 SH 2. LAYOUT 1 IN = 50 FT.	DUPONT
		73/05/21	C-W-16C	G-L-M-257	M3957 SH 1	DUPONT
		74/03/13	C-W-16D	G-L-M-258	M3957 SH 2	DUPONT
		73/05/21	C-W-16E	G-L-M-259	M3957 SH 3	DUPONT
		58/10/27	C-W-16F	G-L-M-260	M3957 SH 4	DUPONT
		68/05/18	C-W-16G	G-L-M-261	M3957 SH 6	DUPONT
		00/00/00	C-W-16H	G-L-M-262	M3957 SH 18	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
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EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		71/12/22	C-W-161	G-L-M-263	M3967 SH 19	DUPONT
		75/5/21	E-P-16J	G-L-M-800	M2558, OUTSIDE LINES-RIVER WATER 1" = 200'	DUPONT
		83/4/6	E-P-16K	G-L-M-801	M3166, OUTSIDE LINES-LAKE WATER 1" = 100'	DUPONT
		82/3/17	E-P-16L	G-L-M-802	M3045, SH 1, OUTSIDE LINES - SANITARY SEWERS 1" = 100'	DUPONT
		75/5/21	E-P-16M	G-L-M-803	M3886, SH 1, STORM SEWERS	DUPONT
		71/5/11	E-P-16N	G-L-M-804	M4311, SH 1, PROCESS SEWER MAP	DUPONT
		71/5/11	E-P-16O	G-L-M-805	M4311, SH 2, PROCESS SEWER MAP	DUPONT
		71/5/11	E-P-16P	G-L-M-806	M4311, SH 3, PROCESS SEWER MAP	DUPONT
		71/5/11	E-P-16Q'	G-L-M-807	M4311, SH 4, PROCESS SEWER MAP	DUPONT
		71/5/11	E-P-16R	G-L-M-808	M4311, SH 6, PROCESS SEWER MAP	DUPONT
		79/9/12	E-P-16S	G-L-M-809	041370, GENERAL PLANT - R.R. TRACKS	DUPONT
		83/2/16	E-P-16T	G-L-M-810	EC-021683A, GENERAL PLANT - BLDGS, RDWYS, AND TRACKAGE	DUPONT
		83/3/4	E-P-16U	G-L-M-811	EC-021683D, GENERAL PLANT - FIRE PROTECTION, SANITARY AND LAKE	DUPONT
		84/9/11	E-P-16V	G-L-M-812	EC-030284A, GENERAL PLANT - LANDFILL FACILITIES	DUPONT
		84/5/10	E-P-16W	G-L-M-813	REPROD. EC-051171, GENERAL PLANT, ASPHALT/ CONCRETE PAVEMENT	DUPONT
		27/4/4	E-P-16X	G-L-M-814	M3916 PROPERTY MAP	DUPONT
		74/12/16	E-P-16Y	G-L-M-815	M3916, SH 1, PROPERTY MAP	DUPONT
		00/0/00	E-P-16Z	G-L-M-816	EC-030179A, GENERAL PLANT, PLANT MAP	DUPONT
		79/9/13	E-P-16AA	G-L-M-817	EC-091379A, SH 1, TOPOGRAPHY - 1" = 50'	DUPONT
		79/9/13	E-P-16AB	G-L-M-818	EC-091379A, SH 2, TOPOGRAPHY	DUPONT
		79/9/13	E-P-16AC	G-L-M-819	EC-091379A, SH 3, TOPOGRAPHY	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		79/9/13	E-P-16AD	G-L-M-820	EC-091379A, SH 4, TOPOGRAPHY	DUPONT
		79/9/13	E-P-16AE	G-L-M-821	EC-091379A, SH 5, TOPOGRAPHY	DUPONT
		79/9/14	E-P-16AF	G-L-M-822	EC-091379A, SH 6, TOPOGRAPHY	DUPONT
		79/9/14	E-P-16AG	G-L-M-823	EC-091379A, SH 7, TOPOGRAPHY	DUPONT
17	EAST CHICAGO SPILLS AND INCIDENTS	80/8/18	E-P-17A	T-S-L-850	SULFURIC TANK OVERFLOW	DUPONT
		79/9/99	E-P-17B	G-S-R-851	UNUSUAL INCIDENTS TABULATION, 1979	DUPONT
		80/0/00	E-P-17C	G-S-R-852	UNUSUAL INCIDENTS TABULATION, 1980	DUPONT
		80/10/20	E-P-17D	L-S-R-853	SULFURIC TRUCK OVERLOADED	DUPONT
		80/12/5	E-P-17E	L-S-R-854	SULFURIC TRUCK OVERLOADED	DUPONT
		80/12/5	E-P-17F	L-S-R-855	SULFURIC TRUCK OVERLOADED	DUPONT
		80/11/4	E-P-17G	L-S-R-856 S-S-R-856	LUDOX SPILL INTO SEWER	DUPONT
		80/11/2	E-P-17H	R-S-R-857	HIGH CHLORIDES AT ENV.	DUPONT
		80/9/27	E-P-17I	L-S-R-858	SULFURIC TRUCK OVERLOADED	DUPONT
		80/10/20	E-P-17J	L-S-R-859	SULFURIC TRUCK OVERLOADED	DUPONT
		80/8/20	E-P-17K	S-S-R-860	PREMIX LANCING	DUPONT
		80/8/31	E-P-17L	S-S-R-861	CSA COOLER LEAK	DUPONT
		80/8/18	E-P-17M	R-S-R-862	OLEUM TANK OVERLOADED	DUPONT
		80/6/11	E-P-17N	G-S-R-863	HIGH SS TO OUTFALL	DUPONT
		80/7/30	E-P-17O	G-S-R-864	LOW pH AT 001 OUTFALL	DUPONT
		80/6/6	E-P-17P	T-S-R-865	SULFURIC TANK OVERLOADED	DUPONT
		80/5/28	E-P-17Q	L-S-R-866	NITRIC TRUCK SPILL	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13.
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		80/5/28	E-P-17R	L-S-R-867	HCL TRUCK OVERLOADED	DUPONT
		80/5/26	E-P-17S	S-S-R-868	LOST SULFAMIC PREMIX	DUPONT
		80/4/20	E-P-17T	R-S-R-869	FSA TANKCAR OVERLOADED	DUPONT
			E-P-17U		DO NOT EXIST	
			E-P-17V		DO NOT EXIST	
		80/4/2	E-P-17W	C-S-R-870	#2 FUEL OIL SPILL	DUPONT
		80/3/10	E-P-17X	L-S-R-871	SULFURIC SPILL AT LOADING DOCK	DUPONT
		80/3/6	E-P-17Y	C-S-R-872	HEXANE LEAK	DUPONT
		80/2/15	E-P-17Z'	C-S-R-873	pH AND CONDUCTIVITY EXCURSION	DUPONT
		80/1/15	E-P-17AA	C-S-R-874	TWO 60 DEG ACID COOLER LEAKS	DUPONT
		80/1/14	E-P-17AB	C-S-R-875	LOW pH IN ACID COOLER WATER	DUPONT
		80/1/14	E-P-17AC	T-S-R-876	TOLUENE WASTE SPILL	DUPONT
		80/1/5	E-P-17AD	T-S-R-877	99 ACID LEAK	DUPONT
		80/1/3	E-P-17AE	T-S-R-878	HCL LEAK	DUPONT
18	EAST CHICAGO GROUNDWATER	83/4/27	E-W-18A	C-W-L-879	DISPOSAL SITE UPGRADE	DUPONT
		83/8/16	E-W-18B	W-A-R-880	ANALYTICAL RESULTS OF TESTS	DUPONT
		82/12/1	E-W-18C	W-C-L-881	GROUNDWATER MONITORING MEETING NOTES	DUPONT
		83/3/2	E-W-18D	W-A-O-882	WELL EVALUATION DATA	DUPONT
		83/3/1	E-W-18E	W-C-O-883	WELL SAMPLES RECEIPT	DUPONT
		82/6/23	E-W-18F	W-C-L-884	REQUEST FOR MORE WELL DRILLING DETAILS	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		82/6/7	E-W-18C	W-G-L-885	REQUEST FOR PERMISSION TO DRILL WELLS	DUPONT
		82/7/13	E-W-18H	W-G-L-886	REQUEST FOR MORE WELL DRILLING DETAILS	DUPONT
		83/1/11	E-W-18I	MISSING	EPA GROUNDWATER MONITORING WELLS	DUPONT
		82/8/20	E-W-18J	W-G-L-887	DETAILS OF WELL DRILLING	DUPONT
		82/9/8	E-W-18K	W-G-L-888	MONITORING PROGRAM SCOPE	DUPONT
		82/9/27	E-W-18L	W-G-L-889	GROUNDWATER MONITORING - DUPONT STRATEGY	DUPONT
		82/9/27	E-W-18M	W-G-L-1006	LETTER TO ULREY FROM MODI - GROUNDWATER STUDY	DUPONT
		82/9/21	E-W-18N	W-G-L-890	GROUNDWATER MONITORING PLANS	DUPONT
		82/7/15	E-W-18O	W-G-L-891	MONITORING WELLS	DUPONT
		82/6/28	E-W-18P	G-G-O-892	DOCUMENTATION RECORDS FOR HAZARD RANKING SYSTEM	DUPONT
		82/7/29	E-W-18Q	G-W-R-893 G-G-R-893	HAZARD RANKING SYSTEM WORKSHEET	DUPONT
		82/11/30	E-W-18R	G-W-R-894 G-G-R-894	HAZARD RANKING COMMENTS	DUPONT
		83/3/24	E-W-18S	W-A-R-895	ANALYSIS RESULTS, WELL #1	DUPONT
		83/3/25	E-W-18T	W-A-R-896	ANALYSIS RESULTS, WELL #2	DUPONT
		83/3/24	E-W-18U	W-A-R-897	ANALYSIS RESULTS, WELL #3	DUPONT
		83/3/24	E-W-18V	W-A-R-898	ANALYSIS RESULTS, BLANK	DUPONT
		83/3/24	E-W-18W	W-A-R-899	ANALYSIS RESULTS, RIVER AT KENNEDY	DUPONT
		84/10/29	E-W-18X	G-X-R-990	EAST CHICAGO GROUNDWATER SUMMARY	DUPONT
		84/4/10	E-W-18Y	G-G-O-991	GROUNDWATER QUESTIONNAIRE	DUPONT
		--	E-W-18Z	W-A-R-992	GROUNDWATER SAMPLE RESULT COMPARISON	DUPONT
		--	E-W-18AA	W-A-R-993	GROUNDWATER SAMPLE RESULT COMPARISON	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13.
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		83/3/15	E-W-18AB	W-A-R-994	SAMPLE RESULTS - GROUNDWATER @ CONTACT	DUPONT
19	EAST CHICAGO PROCESS AND INSTRUMENTATION DIAGRAMS	75/8/5	E-P-19A	G-D-M-832	REAGENT HF P & ID	DUPONT
		73/9/6	E-P-19B	G-D-M-833	EAST END pH CONTROL P & ID	DUPONT
		73/9/6	E-P-19C	G-D-M-834	PANEL 800-1B GRAPHIC	DUPONT
		73/10/10	E-P-19D	G-D-M-835	PANEL 800-3B GRAPHIC	DUPONT
20	EAST CHICAGO SILICA PRODUCTS AREA	73/10/21	E-P-20A	G-D-M-836	SILICA PRODUCTS AREA, ACTION PLAN	DUPONT
		81/1/8	E-P-20B	G-R-L-1007	SODIUM SILICATE STATUS UNDER RCRA	DUPONT
		80/11/3	E-P-20C	G-R-P-840	HAZARDOUS WASTE PERMIT APPLICATION	DUPONT
		84/4/18	E-P-20D	G-W-L-841	SILICATE FURNACE FLUE DUST	DUPONT
		83/0/00	E-P-20E	G-W-P-842	HAZARDOUS WASTE MANIFEST INSTRUCTIONS	DUPONT
		81/3/27	E-P-20F	G-W-L-1009	COST TO DISPOSE OF FULL TANKS OF WASTES	DUPONT
		80/10/22	E-P-20G	G-W-L-1010	WASTE SUMMARY	DUPONT
21	EAST CHICAGO PLANT HISTORY	0/0/00	E-P-21A	G-C-R-837	PLANT LIFETIME PRODUCTION RECORD	DUPONT
		80/4/29	E-P-21B	G-C-L-995 G-W-L-995	PLANT HISTORY	DUPONT
22	EAST CHICAGO CHEMICAL USE	80/12/00	E-P-22A	G-C-L-838	CHLOROTHENE NU ALTERNATIVE	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
23	EAST CHICAGO PROCESS FLOWSHEETS	62/12/00	E-P-23A	G-D-M-824	EC043163 LOROX WEED KILLER-PROCESS FLOWSHEET	DUPONT
		63/10/00	E-P-23B	G-D-M-825	SK101563, SHT. 1, LINURON-INSTRUMENT DIAGRAM	DUPONT
		63/10/00	E-P-23C	G-D-M-826	SK101563, SHT. 2, LINURON-INSTRUMENT DIAGRAM	DUPONT
		64/8/00	E-P-23D	G-D-M-827	SK03164, TUPERSAN-FLOWSHEET	DUPONT
		69/1/00	E-P-23E	G-D-M-828	SK011369A, BENOMYL-IMPROVED FACILITIES FLOWSHEET	DUPONT
		00/0/00	E-P-23F	G-D-M-829	SK073169I BENLATE-FLOWSHEET	DUPONT
		00/0/00	E-P-23G	G-D-M-830	SK073169J BENLATE-MATERIAL BALANCE FLOWSHEET	DUPONT
		72/6/00	E-P-23H	G-D-M-831	SK060172 SIDURON PROCESS FLOWSHEET	DUPONT
24	EAST CHICAGO UNDER-GROUND STORAGE TANKS	85/11/8	E-P-24A	U-D-O-843	UNDERGROUND TANK DESCRIPTIONS	DUPONT
		83/2/16	E-P-24B	U-L-M-844	UNDERGROUND TANK LOCATIONS	DUPONT
25	EAST CHICAGO MISCELLANEOUS	57/3/00	E-P-25A	MISSING	3886, PROCESS & STORM SEWERS MAP	DUPONT
		71/5/28	E-P-25B	MISSING	EC012077A, WEST PROCESS WASTE OUTFALL	DUPONT
		63/1/29	E-P-25C	MISSING	012963, CONTACT AREA #3, PROCESS SEWERS	DUPONT
		00/0/00	E-P-25D	S-L-M-903	3886 TRACING, PROCESS & STORM SEWERS	DUPONT
		00/0/00	E-P-25E	G-L-M-904	PLANT OUTFALLS INTO GRAND CALUMET RIVER	DUPONT
		00/0/00	E-P-25F	S-L-M-905	PROCESS SEWER MAP, 1" = 200'	DUPONT
500	EAST CHICAGO CONTAINMENT BACK-					

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
	GROUND INFO	78/10/13	E-P-500A	T-D-L-300 L-D-L-300 R-D-L-300	STORAGE AND RR CONTAINMENT FACILITIES	DUPONT
		77/8/26	E-P-500B	T-D-L-301 L-D-L-301	FUEL OIL & TRUCK UNLOADING CONTAINMENT FACILITIES	DUPONT
501	EAST CHICAGO CHEMICAL INVENTORY	79/2/1	E-P-501A	G-C-R-305	DUPONT CHEMICAL SUBSTANCE UPDATING REPORT	DUPONT
		79/11/29	E-P-501B	G-C-O-303	TSCA INVENTORY	DUPONT
		79/9/10	E-P-501C	G-C-L-304	COMPANY CHEMICALS INVENTORY	DUPONT
		79/9/10	E-P-501D	G-C-L-305	TSCA - COMPANY CHEMICAL INVENTORY	DUPONT
		77/4/22	E-P-501E	G-C-O-306	SITE CHEMICAL INVENTORY	DUPONT
		77/0/0	E-P-501F	G-C-O-307	ORGANIC DEPT. CHEMICAL INVENTORY	DUPONT
		76/10/30	E-P-501G	G-C-L-308	ICD CHEMICALS SURVEY	DUPONT
		80/9/18	E-P-501H	G-C-L-309	ICD CHEMICALS SURVEY	DUPONT
		83/3/1	E-P-501I	G-C-L-310	ICD CHEMICALS SURVEY	DUPONT
		81/11/16	E-P-501J	G-C-L-311	ICD CHEMICALS SURVEY	DUPONT
		00/0/0	E-P-501K	G-W-O-312	EAST CHICAGO WASTES	DUPONT
		80/3/31	E-P-501L	G-W-L-313	INVENTORY OF ELECTRICAL WASTES FROM TRANSFORMERS	DUPONT
		00/0/0	E-P-501M	G-C-O-951	CHEMICAL INVENTORY FOR EAST & WEST END OF PLANT	DUPONT
		81/9/23	E-P-501N	G-C-O-314	FREON, NORTH BAY CHEMICAL INVENTORY	DUPONT
		00/0/0	E-P-501O	G-C-O-315	PLANT MSDS	DUPONT
		82/8/25	E-P-501P	G-C-L-316	CHEMICAL PURCHASE CONTROL	DUPONT
		00/0/00	E-P-501Q	G-A-O-952	24 HR. PLANT DISCHARGE	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		00/0/00	E-P-501R	G-A-O-953	24 HR. PLANT DISCHARGE	DUPONT
		85/9/16	E-P-501S	G-S-L-954	PRETREATMENT REQUIREMENT COMMENTS	DUPONT
502	EAST CHICAGO LUDOX COMPOSITIONS	78/1/18	E-P-502A	G-C-L-317	LUDOX COMPOSITIONS	DUPONT
503	EAST CHICAGO PESTICIDES	80/2/7	E-P-503A	G-2-L-318	OFF-SITE WASTE PESTICIDE DISPOSAL	DUPONT
		78/10/4	E-P-503B	G-C-L-319 G-W-L-319	PESITICIDE QUESTIONNAIRE	DUPONT
		00/0/0	E-P-503C	G-D-O-320	SIDURON PROCESS FLOW SHEET	DUPONT
		85/3/12	E-P-503D	G-C-R-321	1984 PRODUCTION	DUPONT
		84/1/23	E-P-503E	G-C-R-322	1983 PRODUCTION	DUPONT
		83/1/28	E-P-503F	G-C-R-323	1982 PRODUCTION	DUPONT
		82/1/29	E-P-503G	G-C-R-324	1981 PRODUCTION	DUPONT
		79/5/30	E-P-503H	G-C-R-325	TOXIC PROCESS EVALUATION	DUPONT
		81/1/22	E-P-503I	G-C-R-326	1980 PRODUCTION	DUPONT
		80/9/10	E-P-503J	G-C-R-327 G-W-R-327	NORMAL DAILY PRODUCTION RATES	DUPONT
		79/7/16	E-P-503K	G-W-L-328	REQUEST FOR ENGINEERING SERVICES, DISPOSAL FACILITY	DUPONT
		79/2/5	E-P-503L	G-C-R-329	1978 & 1979 PRODUCTION	DUPONT
		78/1/6	E-P-503M	G-C-R-330	1977 PRODUCTION	DUPONT
		77/7/21	E-P-503N	G-C-R-331	PESTICIDE MATERIAL SAFETY DATA SHEETS	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		77/1/20	E-P-5030	G-C-R-332	1976 PRODUCTION	DUPONT
504	EAST CHICAGO WASTE STORAGE	78/2/9	E-P-504A	G-W-L-333	SIDURON DRUM WASTES	DUPONT
		83/1/11	E-P-504B	G-W-L-334	HEXAZINONE WASTE	DUPONT
		80/1/15	E-P-504C	G-W-L-335	LUDOX (BY PRODUCT RESALE)	DUPONT
505	EAST CHICAGO SITE WASTE DISPOSAL	79/9/19	E-P-505A	G-W-L-336	INACTIVE WASTE DISPOSAL SITE REVIEW	DUPONT
506	EAST CHICAGO POTENTIAL SITE POLLUTANTS	77/5/18	E-P-506A	G-W-L-337	EFFLUENT GUIDELINES - PROBLEM POLLUTANTS	DUPONT
507	EAST CHICAGO PRODUCTION CAPACITIES & PRODUCTION RATES	76/0/00	E-P-507A	G-C-R-338	PLANT PRODUCTION 1975-76	DUPONT
		83/5/16	E-P-507B	G-C-L-339 G-W-L-339	CURRENT PLANT PRODUCTION STATUS	DUPONT
		76/2/11	E-P-507C	G-C-R-340	CAUSTIC CONSUMPTION FORECAST FOR 1976-1980	DUPONT
508	EAST CHICAGO DISCHARGE PERMITS	86/4/16	E-P-508A	G-R-P-341	INDUSTRIAL WASTEWATER DISCHARGE PERMIT	DUPONT
		86/7/18	E-P-508B	G-A-R-342	DISCHARGE ORDINANCE REPORT TO ECSD	DUPONT
		86/4/16	E-P-508C	G-R-P-950	INDUSTRIAL WASTEWATER DISCHARGE PERMIT	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
509	EAST CHICAGO WASTEWATER TREATMENT	73/9/19	E-P-509A	G-D-L-343 S-W-L-343	WASTEWATER TREATMENT SYSTEM APPROVAL	INDIANA STATE BD OF HEALTH
510	EAST CHICAGO SAFETY, HEALTH, AND ENVIRONMENTAL REPORTS	83/8/17	E-P-510A	G-P-R-344 G-S-R-344	2ND QUARTER, 1983	DUPONT
		83/3/1	E-P-510B	G-P-R-345 G-S-R-345	4TH QUARTER, 1982	DUPONT
511	EAST CHICAGO PRODUCTION CAPACITY REPORTS	80/9/1	E-P-511A	G-C-R-346	SULFAMIC GRANULAR TECH	DUPONT
		80/9/1	E-P-511B	G-C-R-347	FSA TECH	DUPONT
		80/9/1	E-P-511C	G-C-R-348	SODIUM SILICATE GLASS SODIUM SILICATE SOLUTION	DUPONT
		80/9/1	E-P-511D	G-C-R-349	LUDOX - CONSOL, LS, SM, TM, WP UPFLOW HS, CONSUL HS A AS-40, CL-X, LITHIUM POLY-SILICATE 48 (20% SIO2)	DUPONT
		80/9/1	E-P-511E	G-C-R-350	SULFURIC ACID	DUPONT
		80/9/1	E-P-511F	G-C-R-351	SULFUR TRIOXIDE-INTERMEDIATES	DUPONT
		80/9/1	E-P-511G	G-C-R-352	SULFUR TRIOXIDE STABILIZED	DUPONT
		80/9/1	E-P-511H	G-C-R-353	20% OLEUM	DUPONT
		80/9/1	E-P-511I	G-C-R-354	CSA - TECHNICAL	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		80/9/1	E-P-511J	G-C-R-355	SULFURIC ACID REAGENT	DUPONT
		80/9/1	E-P-511K	G-C-R-356	NITRIC ACID REAGENT	DUPONT
		80/9/1	E-P-511L	G-C-R-357	HCL REAGENT	DUPONT
		80/9/1	E-P-511M	G-C-R-358	AMMONIUM HYDROXIDE REAGENT	DUPONT
		80/9/1	E-P-511N	G-C-R-359	SIDURON	DUPONT
		80/9/1	E-P-511O	G-C-R-360	HEXAZINONE	DUPONT
		80/9/1	E-P-511P	G-C-R-361	KARMEX	DUPONT
		80/9/1	E-P-511Q	G-C-R-362	LOROX	DUPONT
		80/9/1	E-P-511R	G-C-R-363	TUPERSAN (70% SIDORON)	DUPONT
		80/9/1	E-P-511S	G-C-R-364	TUPERSAN (50% SIDORON)	DUPONT
		80/9/3	E-P-511T	G-C-R-365	STANDARD CAPACITY REPORTS-MEMO	DUPONT
512	UNUSUAL INCIDENT REPORTS 1981-1984	84/3/27	E-P-512A	G-S-R-366	FSA FUME RELEASE	DUPONT
		84/5/8	E-P-512B	G-S-R-367	SO3 FUME RELEASE	DUPONT
		82/10/17	E-P-512C	F-S-R-368	SULFUR FIRE	DUPONT
		82/7/30	E-P-512D	G-S-R-369	FSA LEAK	DUPONT
		82/7/29	E-P-512E	G-S-R-370	FSA FUME RELEASE	DUPONT
		82/7/26	E-P-512F	R-S-R-371	SO3 & STEAM FUME RELEASE	DUPONT
		82/3/12	E-P-512G	G-S-R-372	OIL SPILL @ PORTABLE COMPRESSORS @ POWER HOUSE	DUPONT
		82/3/13	E-P-512H	S-S-R-373	TUBE LEAK IN WEST COOLER	DUPONT
		82/1/1	E-P-512I	T-S-R-374	SULFUR STORAGE TANK OVERLOADED	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
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EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		81/11/25	E-P-512J	S-S-R-375	CSA FUME RELEASE	DUPONT
		81/11/25	E-P-512K	R-S-R-376	OVERLOADED 66 DEG ACID TANK CAR	DUPONT
		81/10/25	E-P-512M	G-S-R-377	FUME RELEASE-CONTACT	DUPONT
		81/10/8	E-P-512N	G-S-L-378	EMERGENCY RESPONSE #81-5	DUPONT
		81/5/24	E-P-512O	T-S-R-379	SO3 FUMES	DUPONT
		81/3/27	E-P-512P	R-S-R-380	FSA FUME RELEASE	DUPONT
		81/4/29	E-P-512Q	S-S-R-381	POSSIBLE CHLORIDE POLLUTION	DUPONT
		81/2/27	E-P-512R	G-S-R-382	EXPANSION JOINT FAILURE - SO3 LINE	DUPONT
		81/2/27	E-P-512S	S-S-R-383	SO3 LEAK @ VAPORIZER COLUMN	DUPONT
		81/2/18	E-P-512T	S-S-R-384	CONTROLLED RELEASE DISCHARGE PERMIT SULFAMIC	DUPONT
		81/2/13	E-P-512U	S-S-R-385	CONTROLLED RELEASE DISCHARGE PERMIT SULFAMIC	DUPONT
		81/1/31	E-P-512V	G-S-R-386	OLEUM LEAK	DUPONT
		81/1/29	E-P-512W	S-S-R-387	CSA EAST COOLER BANK LEAKS	DUPONT
		82/3/2	E-P-512X	G-S-R-388	FUME RELEASE-SULFAMIC	DUPONT
513	EAST CHICAGO INCIDENT REPORTS 1980					
		80/12/5	E-P-513A	L-S-R-189	OVERLOADED SULFURIC TRAILER T-90	DUPONT
		80/11/1	E-P-513B	R-S-R-188	HIGH CHLORIDES, DOORSTEP	DUPONT
		80/11/12	E-P-513C	T-S-R-187	FUME RELEASE 30% OLEUM	DUPONT
		80/11/4	E-P-513D	L-S-R-186	SPILL INTO SEWER	DUPONT
				S-S-R-186	LUDOX HS-30	DUPONT
		80/11/13	E-P-513E	G-S-R-185	FUME RELEASE, SULFAMIC	DUPONT
		80/10/31	E-P-513F	G-S-R-184	CSA FUME RELEASE	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
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EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		80/10/27	E-P-513G	S-S-R-183	CONTROLLED RELEASE, AMMONIA DISCHARGE PERMIT	DUPONT
		80/10/20	E-P-513H	L-S-R-182	OVERLOADED T/T, DT-17	DUPONT
		80/9/27	E-P-513I	L-S-R-181	OVERLOADING H2SO4, T/T 90	DUPONT
		80/9/17	E-P-513J	T-S-R-180 L-S-R-180	UNLOADING LINE BREAK, TANKS 43 AND 44	DUPONT
		80/8/31	E-P-513K	S-S-R-179	CSA COOLER LEAK	DUPONT
		80/8/20	E-P-513L	T-S-R-190	MINOR FUME RELEASE	DUPONT
		80/8/18	E-P-513M	T-S-R-178 S-S-R-178	SULFURIC STORAGE TANK OVERFLOW	DUPONT
		80/8/18	E-P-513N	R-S-R-177	OVERFLOW AT OLEUM TANK	DUPONT
		80/8/9	E-P-513O	T-S-R-176	TANK 1, 60 DEG. H2SO4 OVERFLOW	DUPONT
		80/7/29	E-P-513P	R-S-R-175	LEAK, SO3 TANKCAR #D13032	DUPONT
		80/7/25	E-P-513Q	G-S-R-174	CSA COOLER LEAK	DUPONT
		80/6/28	E-P-513R	R-S-R-173	FSA SPILL AND FUME RELEASE	DUPONT
		80/6/25	E-P-513S	G-S-R-172	SO3 FUME RELEASE AT CONTACT	DUPONT
		80/6/13	E-P-513T	G-S-R-1003	SO3 FUME RELEASE	DUPONT
		80/5/21	E-P-513U	S-S-R-171	LOST SULFAMIC PREMIX	DUPONT
		80/5/4	E-P-513V	T-S-R-170	TANK 44 OVERFLOW	DUPONT
		80/5/2	E-P-513W	S-S-R-169	OFF QUALITY DRUM DISPOSAL	DUPONT
		80/3/6	E-P-513X	T-S-R-168	HEXANE LEAK FROM BOTTOM OF C/F TO FIRST FLOOR	DUPONT
		80/3/10	E-P-513Y	S-S-R-1004	SULFURIC ACID SPILL @ REAGENTS	DUPONT
		80/4/1	E-P-513Z	G-S-R-167	CSA FUMES, CONTACT	DUPONT
		80/2/13	E-P-513AA	L-S-R-166	SERIOUS POTENTIAL INCIDENT #4-80, 70%	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
					HNO3 SPILL	
		80/2/5	E-P-513AB	S-S-R-165	SERIOUS POTENTIAL INCIDENT #2-80, SULFAMIC REACTOR ERUPTION	DUPONT
		80/2/15	E-P-513AC	S-S-R-164 T-S-R-164 L-S-R-164	LOW PH, HIGH CONDUCTIVITY AT DOOR STEP MONITOR	DUPONT
		80/2/13	E-P-513AD	L-S-R-163	NITRIC ACID ON ROADWAY	DUPONT
		80/2/5	E-P-513AE	S-S-R-162	PREMIX REACTION, NORTH REACTOR, SULFAMIC	DUPONT
		80/1/14	E-P-513AF	G-S-R-161	TWO (SEPARATE) 60 DEG ACID COOLER LEAKS	DUPONT
		80/1/15	E-P-513AG	L-S-R-160	ALLIED TRAILER #121 SO3 SPILL	DUPONT
		80/1/9	E-P-513AH	T-S-R-159	TOLUENE WASTE SPILL	DUPONT
		80/1/8	E-P-513AI	S-S-R-158	99 ACID LINE LEAK	DUPONT
		80/4/1	E-P-513AJ	G-S-R-157 S-S-R-157	MEMO DESCRIBING FSA INCIDENTS SINCE 1975	DUPONT
514	EAST CHICAGO INCIDENT REPORTS 1979					
		79/12/29	E-P-514A	R-S-R-156	OLEUM FUME RELEASE DUE TO OVERLOADED T/C DUPX 11903	DUPONT
		79/12/24	E-P-514B	S-S-R-155	LOST PREMIX CIRCUIT	DUPONT
		79/11/12	E-P-514C	T-S-R-154	LEAK IN 66 DEG. TRANSFER LINE TO AND FROM TANK 44	DUPONT
		79/9/4	E-P-514D	S-S-R-153	PREMIX DISCHARGE	DUPONT
		79/8/30	E-P-514E	G-S-R-152	CSA FUME RELEASE	DUPONT
		79/10/31	E-P-514F	G-S-R-151	CSA FUME RELEASE	DUPONT
		79/10/23	E-P-514G	G-S-R-150	2" 20% OLEUM LOADING LINE ELBOW LEAKING	DUPONT
		79/10/6	E-P-514H	G-S-R-149	PHENYLISOCYANATE(PI) SPILL DUE TO OVERFILLED WEIGH TANK	DUPONT
		79/9/30	E-P-514I	G-S-R-148	SO3 RELEASE, REAGENTS	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
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EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		79/9/13	E-P-514J	R-S-R-147	USE OF WRONG CHEMICAL ON PI TRANSFER PUMP	DUPONT
		79/9/3	E-P-514K	G-S-R-146	PREMIX, DUMP TO SULFAMIC PIT	DUPONT
		79/8/30	E-P-514L	G-S-R-145	CSA FUME RELEASE, CONTACT	DUPONT
		79/7/23	E-P-514M	T-S-R-144	OVERFLOWING WASTE STORAGE TANK NO. 30, ACCHEM	DUPONT
		79/8/11	E-P-514N	G-S-R-143	RENTAL AIR COMPRESSOR OIL LEAK, ACCHEM	DUPONT
		79/8/6	E-P-514O	G-S-R-142	47% OLEUM FUME RELEASE SULFAMIC	DUPONT
		79/7/19	E-P-514P	G-S-R-141	CSA COOLER LEAK AT BOTTOM, CONTACT	DUPONT
		79/7/15	E-P-514Q	L-S-R-140	LEAKING T/T 6716, SULFURIC	DUPONT
		79/7/2	E-P-514R	T-S-R-139	LEAK AT DISCHARGE CONN. ON H2SO4 TANK 43	DUPONT
		79/6/20	E-P-514S	L-S-R-138	CSA TRUCK LOADING, CONTACT	DUPONT
		79/6/18	E-P-514T	T-S-R-137	FUME RELEASE, 30% OLEUM CONTACT	DUPONT
		79/6/11	E-P-514U	R-S-R-136	OVERLOADED 20% OLEUM TANK CONTACT	DUPONT
		79/6/3	E-P-514V	T-S-R-135	HF SPILL FSA	DUPONT
		79/5/30	E-P-514W	T-S-R-134 S-S-R-134	SILICATE SOLUTION DISCHARGED TO ROOF AND GROUND	DUPONT
		79/5/17	E-P-514X	R-S-R-133	T/C DUPX 11909 OVERFLOW 20% OLEUM	DUPONT
		79/4/27	E-P-514Y	T-S-R-132	WASTE CRUDE SPILL, ACCHEM	DUPONT
		79/4/27	E-P-514Z	L-S-R-131	SERIOUS POTENTIAL INCIDENT #79-11, TOLUENE WASTE SPILL	DUPONT
		79/4/23	E-P-514AA	T-S-R-130 S-S-R-130	HCL TAILING TANK OVERFLOW	DUPONT
		79/4/23	E-P-514AB	L-S-R-129	96% H2SO4 SPILL, REAGENT	DUPONT
		79/4/10	E-P-514AC	G-S-R-128	60 DEG. PRODUCT COOLER LEAK	DUPONT
		79/4/12	E-P-514AD	T-S-R-127	ACID SPILL AT H2SO4 TANKS 43 AND 44, CONTACT	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		73/3/23	E-P-514AE	S-S-R-126	EAST AMD WEST PREMIX CIRCUIT DROP, SULFAMIC	DUPONT
		79/3/15	E-P-514AF	S-S-R-125	CONTACT AHCL CHLORIDES INTO SEWER	DUPONT
		79/2/22	E-P-514AG	S-S-R-124	SULFAMIC CRUDE RELEASE	DUPONT
		79/2/5	E-P-514AH	S-S-R-123	SULFAMIC CRUDE AND 99% ACID	DUPONT
		79/1/24	E-P-514AI	L-S-R-122	70% HF	DUPONT
		79/1/8	E-P-514AJ	R-S-R-121	CSA SPILL AT LOADING DOCK	DUPONT
		79/1/20	E-P-514AK	S-S-R-120	SULFAMIC PREMIX	DUPONT
515	EAST CHICAGO INCIDENT REPORTS 1978					
		78/12/29	E-P-515A	T-S-R-119	LIME SILO OVERFLOW	DUPONT
		78/11/30	E-P-515B	S-S-R-118	CONTROLLED RELEASE DISCHARGE PERMIT, FSA, REAGENT	DUPONT
		78/11/7	E-P-515C	S-S-R-117	CONTROLLED RELEASE DISCHARGE PERMIT, SULFAMIC PREMIX	DUPONT
		78/10/6	E-P-515D	T-S-R-116	66 DEG. BE H2SO4, LUDOX	DUPONT
		78/10/3	E-P-515E	S-S-R-115	SULFAMIC CRUDE FROM NORTH REACTOR	DUPONT
		78/8/20	E-P-515F	R-S-R-114	SERIOUS POTENTIAL INCIDENT #78-10, FSA FUME RELEASE	DUPONT
		78/8/18	E-P-515G	R-S-R-113	SERIOUS POTENTIAL INCIDENT #78-12, 70% HF SPILL	DUPONT
		78/7/18	E-P-515H	S-S-R-112	SULFAMIC PREMIX DUMP	DUPONT
		78/7/17	E-P-515I	T-S-R-111	CSA TANK OVERFLOW	DUPONT
		78/7/13	E-P-515J	S-S-R-110	SULFAMIC PREMIX DUMP	DUPONT
		78/6/30	E-P-515K	R-S-R-109	FSA LEAK, REAGENT	DUPONT
		78/6/27	E-P-515L	S-S-R-108	CONTROLLED RELEASE DISCHARGE PERMIT, SULFAMIC PREMIX	DUPONT
		78/6/26	E-P-515M	G-S-R-107	NORTH REACTOR CRUDE	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
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EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		78/6/6	E-P-515N	G-S-R-106	99% H2SO4 LEAK	DUPONT
		78/6/6	E-P-515O	G-S-R-105	ZONYL-A ETHYLENE OXIDE OCTYL PHOSPHATE TO PROCESS SEWER	DUPONT
		78/5/23	E-P-515P	S-S-R-104	SULFAMIC CRUDE	DUPONT
		78/5/20	E-P-515Q	T-S-R-103	SERIOUS POTENTIAL INCIDENT #78-5, HCL SPILL FROM TANK	DUPONT
		78/5/8	E-P-515R	S-S-R-102 G-S-R-102	DROP 2 CIRCUITS AND SULFAMIC PREMIX TANK	DUPONT
		78/4/24	E-P-515S	S-S-R-101	SULFAMIC PREMIX DUMPING	DUPONT
		78/4/18	E-P-515T	S-S-R-100	SULFAMIC PREMIX DUMPING	DUPONT
		78/4/19	E-P-515U	G-S-R-99	CSA RELEASE	DUPONT
		78/4/6	E-P-515V	T-S-R-98	SERIOUS POTENTIAL INCIDENT #78-4, CSA TANK OVERFLOW	DUPONT
		78/5/8	E-P-515W	G-S-R-97	CSA SPILL	DUPONT
		78/4/3	E-P-515X	G-S-R-1002	SODIUM SILICATE RELEASE ONTO GROUND	DUPONT
		78/3/21	E-P-515Y	T-S-R-96	OVERFLOWING SURGE TANK	DUPONT
		78/3/21	E-P-515Z	S-S-R-95	CONTROLLED RELEASE DISCHARGE PERMIT, SULFAMIC PREMIX	DUPONT
		78/3/5	E-P-515AA	S-S-R-94	SULFAMIC PREMIX DUMP	DUPONT
		78/2/27	E-P-515AB	S-S-R-93	SULFAMIC PREMIX DUMP	DUPONT
		78/2/22	E-P-515AC	S-S-R-92	SULFAMIC PREMIX DUMP	DUPONT
		78/2/7	E-P-515AD	T-S-R-90	30% OLEUM RELEASE, CONTACT	DUPONT
		78/1/25	E-P-515AE	S-S-R-89	SULFAMIC PREMIX DUMP	DUPONT
516	EAST CHICAGO INCIDENT REPORTS 1977					
		77/12/20	E-P-516A	S-S-R-48	WASH WATER FROM FINISH END	DUPONT
		77/12/12	E-P-516B	S-S-R-47	SULFAMIC DUMPING	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
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EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		77/12/6	E-P-516C	S-S-R-46 T-S-R-46	MOTHER LIQUOR RELEASE	DUPONT
		77/12/19	E-P-516D	S-S-4-45	AMMONIUM SULFAMATE LIQUOR	DUPONT
		77/12/1	E-P-516E	S-S-R-44	AMMONIUM SULFAMATE LIQUOR	DUPONT
		77/11/14	E-P-516F	S-S-R-43	SULFAMIC ACID LEAK	DUPONT
		77/11/2	E-P-516G	G-S-R-42	20% OLEUM LEAK	DUPONT
		77/10/28	E-P-516H	S-S-R-41	PREMIX DUMP	DUPONT
		77/10/27	E-P-516I	S-S-R-40	99% ACID LEAK	DUPONT
		77/10/26	E-P-516J	S-S-R-39	AMMONIUM SULFAMATE - SULFAMIC	DUPONT
		77/10/5	E-P-516K	S-S-R-38	SULFAMIC CRUDE	DUPONT
		77/9/28	E-P-516L	G-S-R-37	SULFAMIC CRUDE	DUPONT
		77/9/21	E-P-516M	S-S-R-36	SULFAMIC LIQUOR	DUPONT
		77/9/16	E-P-516N	S-S-R-35 G-S-R-35	AMMATE LIQUOR	DUPONT
		77/8/16	E-P-516O	S-S-R-34 G-S-R-34	TWO PREMIX CIRCUIT DUMPS	DUPONT
		77/8/9	E-P-516P	G-S-R-33	PREMIX DUMP	DUPONT
		77/8/2	E-P-516Q	T-S-R-32	AQUEOUS HCL TANK S-145	DUPONT
		77/7/1	E-P-516R	G-S-R-31	SULFAMIC PREMIX	DUPONT
		77/2/8	E-P-516S	S-S-R-30	SULFAMIC PREMIX AND PURGE LIQUOR	DUPONT
		77/7/7	E-P-516T	S-S-R-29 G-S-R-29	SULFAMIC CRUDE AND PREM X	DUPONT
		77/7/6	E-P-516U	S-S-R-28	SULFAMIC PREMIX	DUPONT
		77/7/1	E-P-516V	S-S-R-27 G-S-R-27	TWO PREMIX CIRCUIT DUMPINGS	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
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EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		77/6/24	E-P-516W	S-S-R-26	SULFAMIC OVERSIZE	DUPONT
		77/6/16	E-P-516X	T-S-R-25	20 DEG BE HCL SPILL TS-148	DUPONT
		77/6/16	E-P-516Y	T-S-R-24	20 DEG BE HCL SPILL TS-148	DUPONT
		77/6/15	E-P-516Z	S-S-R-23	SULFAMIC GRANULAR & CRUDE	DUPONT
		77/6/9	E-P-516AA	S-S-R-22	MOTHER LIQUOR - AMMONIATED	DUPONT
		77/5/26	E-P-516AB	G-S-R-21	SULFAMIC CRUDE	DUPONT
		77/5/26	E-P-516AC	S-S-R-20	AMMATED MOTHER LIQUOR	DUPONT
		77/5/10	E-P-516AD	S-S-R-19	AMMATED LIGHT LIQUOR	DUPONT
		77/5/3	E-P-516AE	L-S-R-18 S-S-R-18	HCL SPILL - TANK TRUCK LOADING	DUPONT
		77/5/6	E-P-516AF	S-S-R-17	37% REAGENT HCL - HCL CONDENSER	DUPONT
		77/4/29	E-P-516AG	G-S-R-16	SULFAMIC DEPT - POLLUTION INCIDENT	DUPONT
		77/4/23	E-P-516AH	S-S-R-15	SO3 FUMES & ACID LEAKS	DUPONT
		77/4/18	E-P-516AI	S-S-R-14	AMMATE MOTHER LIQUOR	DUPONT
		77/4/18	E-P-516AJ	T-S-R-13	HCL SPILL - TANK TS-1417	DUPONT
		77/4/25	E-P-516AK	T-S-R-12	HCL LEAK - FREON	DUPONT
		77/4/22	E-P-516AL	S-S-R-11	SULFAMIC CRUDE	DUPONT
		77/3/21	E-P-516AM	G-S-R-10	99% H2SO4 LEAK - 001 OUTFALL	DUPONT
		77/1/24	E-P-516AN	S-S-R-9	SULFAMIC PREMIX	DUPONT
		77/2/28	E-P-516AO	S-S-R-8	SULFAMIC PREMIX	DUPONT
		77/2/24	E-P-516AP	S-S-R-7	SULFAMIC AMMONIATED MOTHER LIQUOR	DUPONT
		77/2/25	E-P-516AQ	T-S-R-6	CSA FUME	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		77/2/11	E-P-516AR	G-S-R-5	47% OLEUM LEAK - FREON	DUPONT
		77/2/11	E-P-516AS	G-S-R-4	47% OLEUM LEAK - FREON	DUPONT
		77/2/10	E-P-516AT	S-S-R-3	SULFAMIC PREMIX	DUPONT
		77/1/20	E-P-516AU	S-S-R-2	99% ACID	DUPONT
		77/1/12	E-P-516AV	S-S-R-1	SULFAMIC PREMIX	DUPONT
		77/9/16	E-P-516AW	S-S-R-0	AMMATE SOLUTION	DUPONT
517	EAST CHICAGO INCIDENT REPORTS 1976	76/12/27	E-P-517A	G-S-R-88	PREMIX DUMP	DUPONT
		76/12/27	E-P-517B	L-S-R-87 S-S-R-87	HCL TO SEWER - T/T LOADING	DUPONT
		76/12/28	E-P-517C	T-S-R-86	DILUTE SULFURIC ACID - SWA TANKS - LUDOX R	DUPONT
		76/12/15	E-P-517D	S-S-R-85	SO3 FUMES FROM REACTOR PREMIX TANK	DUPONT
		76/12/3	E-P-517E	G-S-R-84	SO3 FLUSH LINE LEAK	DUPONT
		76/12/17	E-P-517F	S-S-R-83	SO3 FUMES - REACTORS & PREMIX TANK	DUPONT
		76/12/3	E-P-517G	G-S-R-82	SO3 FUMES - CIRCULATING LOOP	DUPONT
		76/12/6	E-P-517H	T-S-R-81	99% H2SO4 - TANK 45	DUPONT
		76/12/8	E-P-517I	L-S-R-80 S-S-R-80	20 DEG BE HCL - TRUCK LOADING	DUPONT
		76/11/8	E-P-517J	R-S-R-79	CSA - TANK OVERFLOW T/C 6961	DUPONT
		76/11/9	E-P-517K	G-S-R-78	CSA - CSA AREA - CSA COOLER	DUPONT
		76/10/18	E-P-517L	S-S-R-77 R-S-R-77	SULFAMIC PURGE LIQUOR - AMMATE CAR TANK	DUPONT
		76/10/10	E-P-517M	G-S-R-76	SULFAMIC CRUDE SOUTH REACTOR	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
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EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		76/9/21	E-P-517N	T-S-R-75	47% OLEUM TANK	DUPONT
		76/9/16	E-P-517O	G-S-R-74	PREMIX DUMP	DUPONT
		76/8/24	E-P-517P	S-S-R-73	20 DEG BE HCL - TRUCK LOADING	DUPONT
		76/8/24	E-P-517Q	S-S-R-72 G-S-R-72	SULFAMIC PREMIX AND CRUDE	DUPONT
		76/8/26	E-P-517R	S-S-R-71	CSA - VENT LINE RUPTURE - SEWER	DUPONT
		76/8/10	E-P-517S	S-S-R-70	SULFAMIC CRUDE TO SEWER	DUPONT
		76/8/23	E-P-517T	S-S-R-69	SULFAMIC PREMIX - TO PROCESS SEWER	DUPONT
		76/8/24	E-P-517U	S-S-R-68	CSA - TO SEWER SYSTEM	DUPONT
		76/8/12	E-P-517V	G-S-R-67	HCL BLOWCASE VALVE FAILURE - ROAD SPILL	DUPONT
		76/8/5	E-P-517W	G-S-R-66	17% WASTE HCL FROM BLOWERS	DUPONT
		76/8/2	E-P-517X	T-S-R-65 S-S-R-65	CSA TANK OVERFLOW	DUPONT
		76/7/22	E-P-517Y	G-S-R-64	CSA IN SULFAMIC/FREON	DUPONT
		76/6/19	E-P-517Z	S-S-R-63 G-S-R-63	PREMIX DUMP TO SEWER & PIT	DUPONT
		76/6/10	E-P-517AA	S-S-R-62 G-S-R-62	AMMATE MOTHER LIQUOR INTO PROCESS SEWER	DUPONT
		76/5/14	E-P-517AB	G-S-R-61	FREON, HCL, HF, COCL2	DUPONT
		76/5/14	E-P-517AC	G-S-R-60	FREON, HCL, HF, COCL2	DUPONT
		76/3/30	E-P-517AD	R-S-R-59	HCL SPILL @ ALUMINUM CHLORIDE OFFLOADING	DUPONT
		76/4/21	E-P-517AE	G-S-R-58 S-S-R-58	SULFAMIC PREMIX AND MOTHER LIQUOR TO SEWER	DUPONT
		76/4/7	E-P-517AF	T-S-R-57 O-S-R-57	H2SO4 SLUDGE FROM TANK 43	DUPONT
		76/2/23	E-P-517AG	G-S-R-56	60% H2SO4 - RADIATOR COOLER LEAK	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
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EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		76/1/8	E-P-517AH	L-S-R-55 S-S-R-55	HCL ACID - LOADING FAILURE	DUPONT
		76/1/22	E-P-517AI	R-S-R-54	SO3 LEAK - LOADING TANK CAR	DUPONT
		76/2/12	E-P-517AJ	G-S-R-53	SULFAMIC DUMP TO PIT	DUPONT
		76/2/12	E-P-517AK	S-S-R-52	SULFAMIC CRUDE TO PROCESS SEWER	DUPONT
		76/2/4	E-P-517AL	S-S-R-51	PURGE LIQUOR & MOTHER LIQUOR FROM AMMATE MIX TANK	DUPONT
		76/2/3	E-P-517AM	S-S-R-50	SULFAMIC CRYSTAL LIQUOR TO PROCESS SEWER	DUPONT
		76/1/26	E-P-517AN	T-S-R-49	CSA SPILL - OVERFILLED W. STG TANK	DUPONT
518	EAST CHICAGO INCIDENT REPORTS, 1975	76/1/6	E-P-518A	G-S-R-389	TABULATED 1975 INCIDENTS	DUPONT
		75/12/10	E-P-518B	S-S-R-390	SULFAMIC CRUDE TO PROCESS SEWER	DUPONT
		75/12/16	E-P-518C	S-S-R-391	WASHDOWN AND PUMPOUT FOR CHANGE OVER	DUPONT
		75/11/12	E-P-518D	G-S-L-392	SO3 FUME RELEASES - SULFAMIC PREMIX AND CONTACT	DUPONT
		75/11/12	E-P-518E	S-S-R-393	SO3 FUME RELEASE - SULFAMIC PREMIX	DUPONT
		75/11/17	E-P-518F	S-S-R-394	REAGENT H2SO4 - OFF QUALITY PRODUCT TO SEWER	DUPONT
		75/10/27	E-P-518G	S-S-R-395	SULFAMIC CRUDE TO PROCESS SEWER	DUPONT
		75/10/18	E-P-518H	G-S-R-396	SO3 FUMES - CONTACT	DUPONT
		75/9/2	E-P-518I	S-S-R-397	66% BE H2SO4 - W. STRONG ACID MEASURING TANK	DUPONT
		75/8/14	E-P-518J	L-S-R-398	SO3 FUMES - SULFAMIC TRUCK/TRAILER	DUPONT
		75/9/2	E-P-518K	G-S-R-399	H2SO4 LEAK - 99 PRODUCT COOLER	DUPONT
		75/9/2	E-P-518L	S-S-R-400	SULFAMIC CRUDE	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		75/8/14	E-P-518M	S-S-R-401	HCL SPILL TO SEWER	DUPONT
		75/8/1	E-P-518N	S-S-R-402	SULFAMIC CRUDE	DUPONT
		75/8/6	E-P-518O	R-S-R-403	CSA TANK CAR OVERFILL	DUPONT
		75/8/8	E-P-518P	S-S-L-404	AMMATE PURGE LIQUOR TO SEWER	DUPONT
		75/8/30	E-P-518Q	S-S-R-405	SULFAMIC LIQUOR TO SEWER	DUPONT
		75/7/29	E-P-518R	S-S-R-406	SULFAMIC LIQUOR TO SEWER	DUPONT
		75/7/22	E-P-518S	L-S-R-407	HCL SPILL - LOADING DOCK	DUPONT
		75/7/8	E-P-518T	G-S-R-408	SULFAMIC PREMIX	DUPONT
		75/6/14	E-P-518U	G-S-L-409	OLEUM FUME RELEASE	DUPONT
		75/5/19	E-P-518V	T-S-R-410	AQUEOUS HCL FROM TANK 1412	DUPONT
		75/5/16	E-P-518W	S-S-R-411	PREMIX AND MOTHER LIQUOR TO SEWER	DUPONT
		75/5/16	E-P-516X	S-S-R-412	PREMIX AND MOTHER LIQUOR TO SEWER	DUPONT
		75/5/14	E-P-518Y	T-S-R-413	20% OLEUM SPILL - TANK 7	DUPONT
		75/5/3	E-P-518Z	L-S-R-414	HCL SPILL - TANK TRUCK - FREON	DUPONT
		75/5/15	E-P-518AA	G-S-R-415	HCL SPILL - ALUMINUM CHLORIDE BATCH TANK	DUPONT
		75/4/29	E-P-518AB	S-S-R-416	SULFAMIC CRUDE TO PROCESS SEWER	DUPONT
		75/4/17	E-P-518AC	L-S-R-417 S-S-R-417	HCL SPILL @ TRUCK LOADING	DUPONT
		75/4/9	E-P-518AD	G-S-R-418	SULFURIC ACID SLUDGE - CHEMICAL DUMP PIT	DUPONT
		75/3/23	E-P-518AE	G-S-R-419 S-S-R-419	HCL SPILL - COOLER ABSORBER	DUPONT
		75/3/11	E-P-518AF	S-S-R-420	AMMATE SOLUTION TO PROCESS SEWER	DUPONT
		75/3/13	E-P-518AG	G-S-R-421	99% H2SO4 TO COOLER BASIN	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		75/2/3	E-P-518AH	T-S-R-422	AMMATE LIQUOR TO PROCESS SEWER	DUPONT
		75/2/3	E-P-518AI	S-S-R-423	AMMATE LIQUOR TO PROCESS SEWER	DUPONT
		75/2/3	E-P-518AJ	S-S-R-424	AMMATE LIQUOR TO PROCESS SEWER	DUPONT
		75/1/3	E-P-518AK	T-S-R-425	20 DEG HCL TO FREON SEWER	DUPONT
		75/1/29	E-P-518AL	C-S-R-426	99% H2SO4 TO COOLER BASIN	DUPONT
		75/1/16	E-P-518AM	S-S-R-427	PREMIX TO PROCESS SEWER	DUPONT
		75/1/17	E-P-518AN	C-S-R-428	PREMIX TO PROCESS SEWER	DUPONT
		75/1/23	E-P-518AO	C-S-R-429	PREMIX TO PROCESS SEWER	DUPONT
		75/1/7	E-P-518AP	S-S-R-430	47% OLEUM TO PROCESS SEWER	DUPONT
		75/9/29	E-P-518AQ	C-S-L-431	SO3 FUME RELEASE	DUPONT
		75/2/28	E-P-518AR	T-S-R-432	TANK RUPTURE, FREON RELEASE	DUPONT
		75/4/17	E-P-518AS	L-S-R-433	HCL SPILL AT TRUCK LOADING SAMPLE TAP	DUPONT
		75/4/14	E-P-518AT	T-S-R-434	20% OLEUM SPILL, OVERFLOWING TANK	DUPONT
		75/4/25	E-P-518AU	C-S-R-435	HCL SPILL, TANK BOILING OVER	DUPONT
519	EAST CHICAGO INCIDENT REPORTS, 1974	74/12/27	E-P-519A	C-S-R-436	FLOCCULATOR EFFLUENT LEAK	DUPONT
		74/12/31	E-P-519B	C-S-R-437	SULFAMIC CRUDE TO PIT	DUPONT
		74/11/11	E-P-519C	C-S-R-438	TSP TO PROCESS SEWER	DUPONT
		74/11/15	E-P-519D	S-S-R-439 T-S-R-439	ALCL3 TO PROCESS SEWER	DUPONT
		74/11/13	E-P-519E	R-S-R-440 S-S-R-440	DMF - METHANOL SOLUTION TO PROCESS SEWER	DUPONT
		74/11/26	E-P-519F	C-S-R-441	99% H2SO4 TO COOLER BASIN	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
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EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		74/10/17	E-P-519G	G-S-R-442	99% H2SO4 TO RIVER WATER BASIN	DUPONT
		74/10/24	E-P-519H	S-S-R-443	DILUTE UPFLOW LUDOX TO PROCESS SEWER	DUPONT
		74/9/30	E-P-519I	G-S-R-444	96% SULFURIC ACID TANK SPILL ON PARKING LOT	DUPONT
		74/9/25	E-P-519J	G-S-R-445	12% SULFURIC ACID TANK SPILL ON PARKING LOT	DUPONT
		74/9/23	E-P-519K	S-S-R-446	A/S LIQUOR TO PROCESS SEWER	DUPONT
		74/9/11	E-P-519L	S-S-R-447	SULFAMATES TO SEWER	DUPONT
		74/9/10	E-P-519M	S-S-R-448	SULFAMATES TO SEWER	DUPONT
		74/9/10	E-P-519N	G-S-R-449	SULFAMATES TO SEWER	DUPONT
		74/9/10	E-P-519O	S-S-R-450	NH3 + DISSOLVED SOLIDS + SUSP. SOLIDS TO PROCESS SEWER	DUPONT
		74/9/10	E-P-519P	S-S-R-451	SULFAMATES TO SEWER	DUPONT
		74/9/10	E-P-519Q	S-S-R-452	SULFAMATES TO SEWER	DUPONT
		74/9/10	E-P-519R	S-S-R-453	SULFAMATES TO SEWER	DUPONT
		74/9/10	E-P-519S	S-S-R-454 G-S-R-454	SULFAMATES TO SEWER	DUPONT
		74/9/5	E-P-519T	R-S-R-455	CSA SPILL @ TANK CAR	DUPONT
		74/9/11	E-P-519U	S-S-R-456 T-S-R-456	28% NH4OH TO PROCESS SEWER	DUPONT
		74/8/29	E-P-519V	R-S-R-457	66% H2SO4-TANK CAR OVERFILLED	DUPONT
		74/8/26	E-P-519W	S-S-R-458	MUD & PAINT TO SEWER	DUPONT
		74/8/2	E-P-519X	R-S-R-459	CSA FUMES FROM OVERFILLED TANK CAR	DUPONT
		74/8/23	E-P-519Y	T-S-R-460	CSA FUMES @ WEST STORAGE TANK	DUPONT
		75/7/1	E-P-519Z	S-S-R-461	DILUTE F. GRADE TO PROCESS SEWER - LUDOX	DUPONT
		74/7/25	E-P-519AA	G-S-R-462	99% H2SO4 TO GRAVEL AND 001 SEWER	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
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EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		74/7/18	E-P-519AB	G-S-R-463	NH3 TO HOT WELL	DUPONT
		74/7/15	E-P-519AC	T-S-R-464	HCL SPILL TO PROCESS SEWER FROM TS-148	DUPONT
		74/6/27	E-P-519AD	S-S-R-465	DILUTE ALUMINUM CHLORIDE AND ALUM. HYDROXIDE TO PROCESS SYSTEM	DUPONT
		74/6/3	E-P-519AE	G-S-R-466	99% H2SO4 TO RIVER WATER COOLER BASIN-99 COOLER SECTION	DUPONT
		74/6/11	E-P-519AF	S-S-R-467	99% H2SO4 TO RIVER WATER COOLER BASIN-30% OLEUM TANK	DUPONT
		74/6/25	E-P-519AG	S-S-R-468	DILUTE F. GRADE FROM SILICATE DILUTION TANK-LUDOX	DUPONT
		74/6/25	E-P-519AH	S-S-R-469	CONTROLLED RELEASE DISCHARGE PERMIT - SULFAMIC TO PROCESS SEWER	DUPONT
		74/6/25	E-P-519AI	S-S-R-470	SULFAMIC ACID TO PROCESS SEWER	DUPONT
		74/6/20	E-P-519AJ	S-S-R-471	SULFAMIC ACID TO PROCESS SEWER	DUPONT
		74/6/21	E-P-519AK	S-S-R-472	DILUTE F. GRADE TO SILICATE SEWER - LUDOX	DUPONT
		74/6/10	E-P-519AL	G-S-R-473	66 DEG BE H2SO4 TO GROUND	DUPONT
		74/5/21	E-P-519AM	S-S-R-474	SULFAMIC CRUDE TO PROCESS SEWER	DUPONT
		74/5/20	E-P-519AN	S-S-R-475	SULFAMIC CRUDE TO PROCESS SEWER	DUPONT
		74/5/7	E-P-519AO	S-S-R-476	SULFAMIC CRUDE TO PROCESS SEWER	DUPONT
		74/5/17	E-P-519AP	G-S-R-477	SULFAMIC CRUDE TO PROCESS SEWER	DUPONT
		74/5/15	E-P-519AQ	G-S-R-478	SAND FROM FREON SEWER	DUPONT
		74/5/10	E-P-519AR	G-S-R-479	CAF2 CA(OH)2 TO PROCESS SEWER	DUPONT
		74/5/2	E-P-519AS	G-S-R-480	CONTROLLED RELEASE DISCHARGE PERMIT - SULFAMIC CRUDE TO PIT	DUPONT
		74/5/2	E-P-519AT	R-S-R-481	OLEUM FUMES FROM OVERFILLED TANK CAR	DUPONT
		74/5/29	E-P-519AU	S-S-R-482	SULFAMIC PREMIX TO PROCESS SEWER	DUPONT
		74/4/23	E-P-519AV	T-S-R-483 S-S-R-483	HCL TO PROCESS SEWER FROM TS-145	DUPONT
		74/4/29	E-P-519AW	S-S-R-484	RINSE WATER AND SUSPENDED SOLIDS TO PROCESS SEWER	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		74/4/17	E-P-519AX	T-S-R-485 S-S-R-485	WEAK HCL FROM STILL BOTTOMS TANK TO GROUND AND SEWER	DUPONT
		74/4/17	E-P-519AY	S-S-R-486	SODIUM SILICATE F GRADE TO SEWER	DUPONT
		74/4/9	E-P-519AZ	S-S-R-487	SULFAMIC ACID TO PROCESS SEWER	DUPONT
		74/4/11	E-P-519BA	G-S-R-488	99% H2SO4 TO COOLER BASIN	DUPONT
		74/4/8	E-P-519BB	G-S-R-489	DILUTE SILICATE RELEASE TO PIT	DUPONT
		74/4/4	E-P-519BC	L-D-R-490 S-S-R-490	SODIUM SILICATE #16 GRADE TO SEWER	DUPONT
		74/4/23	E-P-519BD	S-S-R-491	HCL RELEASE FROM TS-145	DUPONT
		74/4/8	E-P-519BE	L-S-R-492 S-S-R-492	40% LUDOX TO PROCESS SEWER	DUPONT
		74/4/30	E-P-519BF	G-S-R-493	93% H2SO4 LEAK @ DRY TOWER	DUPONT
		74/3/8	E-P-519BG	G-S-R-494	HCL BLOWCASE OVERFLOW	DUPONT
		74/3/6	E-P-519BH	T-S-R-495	HCL LEAK FROM TS-144	DUPONT
		74/2/2	E-P-519BI	T-S-R-496 S-S-R-496	20 DEG BE HCL TO SEWER	DUPONT
		74/1/24	E-P-519BJ	S-S-R-497	PREMIX TO PROCESS SEWER	DUPONT
		74/1/5	E-P-519BK	T-S-R-498	SULFAMIC SOUTH PRODUCT TANK OVERFILLED - GROUND	DUPONT
		74/1/8	E-P-519BM	G-S-R-499 S-S-R-499	20 DEG BE HCL LEAK - FREON	DUPONT
		75/1/2	E-P-519BN	T-S-R-500	66 DEG BE H2SO4 LEAK FROM PRODUCT LINE	DUPONT
520	EAST CHICAGO WATER USAGE	80/2/19	E-P-520A	G-W-L-501	LAKE WATER CONSERVATION PROGRAM	DUPONT
521	EAST CHICAGO					

EAST CHICAGO REFERENCE LIST - APPENDIX A
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FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
	PROCESS EFFLUENT	80/11/7	E-P-521A	G-W-L-502	AQUATIC TOXICITY TESTS ON ACCHEM EFFLUENT	DUPONT
		81/9/2	E-P-521B	G-W-L-503	NPDES PERMIT - CHEMICAL CHANGE	DUPONT
		79/12/14	E-P-521C	G-W-L-1001	NPDES CONSENT DECREE EXCURSIONS	DUPONT
530	WEST CHICAGO WASTE GENERATION	80/11/3	E-P-530A	G-W-L-505	AG CHEM LIQUID WASTES	DUPONT
		80/9/26	E-P-530B	G-W-L-506	SIDURON & VELPAR WASTES	DUPONT
		80/9/26	E-P-530C	G-W-L-507	CHLOROTHENE USE	DUPONT
		80/12/17	E-P-530D	D-W-L-517	CHLOROTHENE WASTE STORAGE	DUPONT
		71/5/3	E-P-530E	G-W-O-508	HCL DITCHINGS	DUPONT
		65/0/0	E-P-530F	G-W-O-509	ANTIMONY PENTACHLORIDE	DUPONT
		80/4/18	E-P-530G	A-W-O-510 H-W-O-510 O-W-O-510 V-W-O-510	INACTIVE LAND DISPOSAL SITES	DUPONT
		78/8/23	E-P-530H	G-W-O-511	1977 WASTE STREAM INVENTORY	DUPONT
		78/5/10	E-P-530I	A-W-O-512 H-W-O-512 O-W-O-512 V-W-O-512	CHEMICAL DISPOSAL AREAS - 1978 UPDATE	DUPONT
		76/12/8	E-P-530J	G-W-L-513	WASTE GENERATION & DISPOSAL	DUPONT
		75/10/15	E-P-530K	G-W-L-514	WASTES DISPOSED	DUPONT
		73/3/14	E-P-530M	G-W-L-515	WASTE INVENTORY	DUPONT
		71/6/16	E-P-530N	A-W-O-516 H-W-O-516 O-W-O-516 V-W-O-516	WASTE DISPOSAL SITES	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
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FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		80/11/19	E-P-5300	G-W-L-996	WASTE ANALYSIS PLAN	DUPONT
550	EAST CHICAGO SLUDGE BUNKERS	84/5/11	E-W-550A	O-D-L-520	BUNKER REPAIR	DUPONT
		84/2/22	E-W-550B	O-L-L-521	BUNKER SIZE	DUPONT
		84/9/12	E-W-550C	O-D-L-522 B-D-L-522	SLUDGE BUNKERS FOR SILICATE AREA	DUPONT
		76/4/23	E-W-550D	G-W-L-980	SOLID WASTE DISPOSAL TO GARY LANDFILL	DUPONT
551	EAST CHICAGO SOIL DATA	78/12/00	E-W-551A	G-X-R-523	SOIL INVESTIGATION	DUPONT
		78/10/00	E-W-55AB	G-X-R-524 G-G-R-524	GEOLOGICAL FACTORS INFLUENCING GW CONTAMI-NATION POTENTIAL	DUPONT
		78/12/15	E-W-551C	G-X-L-525	INVESTIGATION OF SOIL CONDITIONS OR PORTIONS	DUPONT
552	EAST CHICAGO SANITARY SEWERS	82/6/7	E-W-552A	S-W-L-526	ZN & FLOW REDUCTION NOTES	DUPONT
		82/12/7	E-W-552B	S-D-L-527	PROGRAM UPDATE FOR SANITARY SEWERS	DUPONT
		82/6/7	E-W-552C	S-D-L-528	STATUS REPORT FOR SANITARY SEWER PROGRAM	DUPONT
		82/3/31	E-W-552D	S-D-L-529	SANITARY SEWER FLOWS & OBSERVATIONS	DUPONT
		82/3/23	E-W-552E	S-D-L-530	MEMO RE: INCREASE IN SANITARY SEWER FLOW	DUPONT
		82/4/23	E-W-552F	S-D-L-531 S-W-L-531	SANITARY SEWER MEETING NOTES	DUPONT
		80/9/25	E-W-552G	S-D-L-532	ARSENIC INFILTRATION IN THE SANITARY SEWERS	DUPONT
		80/8/20	E-W-552H	S-D-L-533	RESPONSE TO EAST CHICAGO SANITARY DISTRICT REQUEST FOR SITE DATA	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		86/4/1	E-W-552I	S-W-L-534	LETTER TO ECSD RE: ZN AND FE IN SANITARY SEWER DISCHARGE SKETCH OF SANITARY SEWER	DUPONT
		82/4/00	E-W-552J	S-L-M-535	LINES	DUPONT
		82/12/28	E-W-552K	S-D-L-536	MEMO RE: WEEKEND VS DAILY FLOW VARIATIONS	DUPONT
		82/11/19	E-W-552L	S-D-L-537	SANITARY SEWER FLOW FROM PLANT BUILDINGS	DUPONT
		81/11/11	E-W-552M	S-D-L-538	SANITARY SEWER FLOW FROM AIR CONDITIONERS	DUPONT
		82/10/7	E-W-552N	S-W-L-1010	SANITARY SEWER FLOWRATE REDUCTION	DUPONT
		82/10/22	E-W-552O	S-D-L-540 S-W-L-540	GROUNDWATER INFILTRATION TO SANITARY SEWER STATUS REPORT	DUPONT
		81/9/17	E-W-552P	S-D-L-541	GROUNDWATER INFILTRATION TO SANITARY SEWER STATUS REPORT	DUPONT
		81/9/10	E-W-552Q	S-D-L-542	SS FLOW @ ACCHEM DRY END	DUPONT
		81/8/24	E-W-552R	S-D-L-543	GW INFILTRATION SS STATUS REPORT	DUPONT
		79/12/18	E-W-552S	S-D-L-544	SANITARY SEWER STUDY - GROUND WATER CONTAMINATION REPORT	DUPONT
		80/9/25	E-W-552T	S-W-L-545	ZN INFILTRATION IN SS	DUPONT
		80/7/23	E-W-552U	S-W-L-546	REQUEST FOR NON-COMPLIANCE ON ZN IN SS ON ZN IN SS	DUPONT
		80/12/29	E-W-552V	S-W-L-547	REQUEST FOR NON-COMPLIANCE EXTENSION	DUPONT
		80/9/26	E-W-552W	S-W-L-548	ECSD LAB ANALYSIS	DUPONT
		80/9/19	E-W-552X	S-W-L-549	SS CROSS CHECK PROGRAM	DUPONT
		80/11/4	E-W-552Y	S-W-L-550	ZN INFILTRATION TO SS	DUPONT
		81/9/28	E-W-552Z	S-D-L-970	GROUND WATER INFILTRATION TO SANITARY SYSTEM	DUPONT
		81/8/31	E-W-552AA	S-D-L-971	PLANT DISCHARGES TO RIVER	DUPONT
		00/0/00	E-W-552AB	S-W-O-972	ZINC PROFILE	DUPONT
		81/2/17	E-W-552AC	S-W-L-973	EDTA DISCHARGES	DUPONT
		81/1/6	E-W-552AD	S-W-L-974	ZINC INFILTRATION INTO SANITARY SEWERS	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		82/5/11	E-W-552AE	S-W-L-975	REQUEST FOR PROCESS INFORMATION	DUPONT
		80/7/1	E-W-552AF	S-W-L-976	SEWER CHARGES	DUPONT
		82/10/22	E-W-552AG	S-W-P-977 S-R-P-977	INDUSTRIAL DISCHARGE PERMIT APPLICATION	DUPONT
553	EAST CHICAGO WELL DATA	78/8/23	E-W-553A	W-G-L-551	U.S. GEOLOGICAL SURVEY INFO & DUPONT DEEP WELL INFO	DUPONT
		79/5/9	E-W-553B	W-G-L-552	MEMO RE: USGS REQUEST FOR H2O SAMPLES FROM DUPONT DEEP WELL	DUPONT
		36/11/24	E-W-553C	W-G-O-553	DEEP WELL DRILLERS LOG	DUPONT
		71/11/23	E-W-553D	W-W-L-554	USES OF DEEP WELLS IN INDIANA	DUPONT
		--	E-W-553E	G-L-M-960	SITE MAP	DUPONT
554	EAST CHICAGO RCRA BACKGROUND INFO	82/3/17	E-W-554A	G-R-P-555	RCRA PERMIT APPLICATION	DUPONT
		81/12/31	E-W-554B	G-W-R-556 G-R-R-556	WASTE SUMMARY	DUPONT
		79/11/9	E-W-554C	G-R-R-557	CONGRESSIONAL WASTE DISPOSAL SITE SURVEY	DUPONT
		79/0/00	E-W-554D	G-W-R-558 G-R-R-558	WASTE DISPOSAL SUMMARY DATA SHEET	DUPONT
		71/6/16	E-W-554E	G-W-L-559	SITE DISPOSAL SURVEY	DUPONT
		72/4/25	E-W-554F	G-W-L-560	WASTE DISPOSAL ON LAND	DUPONT
555	EAST CHICAGO NPDES PERMIT EXCURSIONS	85/2/00	E-W-555A	G-R-L-561 G-S-L-561	NPDES PERMIT EXCURSION - pH	DUPONT
		84/10/29	E-W-555B	G-R-L-562 G-S-L-562	NPDES PERMIT EXCURSION - SUSPENDED SOLIDS	DUPONT
		84/3/21	E-W-555C	G-R-L-563	NPDES PERMIT EXCURSION - NH3	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
				G-S-L-563		
		84/1/24	E-W-555D	G-R-L-564 G-S-L-564	NPDES PERMIT EXCURSION - pH	DUPONT
		80/8/25	E-W-555E	G-R-L-565 G-S-L-565	NPDES PERMIT EXCURSION - NH3	DUPONT
		79/11/1	E-W-555F	G-R-L-566 G-S-L-566	NPDES PERMIT EXCURSION - NH3	DUPONT
		79/9/7	E-W-555G	G-R-L-567 G-S-L-567	NPDES PERMIT EXCURSION - NH3	DUPONT
		79/8/20	E-W-555H	G-R-L-568 G-S-L-568	NPDES PERMIT EXCURSION - NH3	DUPONT
		81/10/26	E-W-555I	G-R-L-569 G-S-L-569	NPDES PERMIT EXCURSION - pH	DUPONT
		80/8/3	E-W-555J	G-R-L-570 G-S-L-570	NPDES PERMIT EXCURSION - pH	DUPONT
		79/12/14	E-W-555K	G-R-L-571 G-S-L-571	NPDES PERMIT EXCURSION - pH	DUPONT
		79/12/3	E-W-555L	G-R-L-572 G-S-L-571	NPDES PERMIT EXCURSION - BOD	DUPONT
		79/8/9	E-W-555M	G-R-L-573 G-S-L-573	NPDES PERMIT EXCURSION - pH	DUPONT
		79/5/11	E-W-555N	G-R-L-574 G-S-L-574	NPDES PERMIT EXCURSION - pH	DUPONT
560	MISC. INFO.					
		86/5/1	E-P-560A	T-D-L-1028	SILICA PRODUCTS STORAGE TANKS	MEMO
		84/5/10	E-P-560B	G-C-O-1029	HEXAZINONE PROCESS FLOW SHEET	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
561	1986 HAZ WASTE MANIFESTS					
		86/11/14	E-P-561A	G-W-O-1030	UNIFORM HAZ WASTE MANIFEST NO. 003059	DUPONT
		86/11/3	E-P-561B	G-W-O-1031	UNIFORM HAZ WASTE MANIFEST NO. 003058	DUPONT
		86/9/23	E-P-561C	G-W-O-1032	UNIFORM HAZ WASTE MANIFEST NO. 003057	DUPONT
		86/10/21	E-P-561D	G-W-O-1033	UNIFORM HAZ WASTE MANIFEST NO. 003055	DUPONT
		86/9/4	E-P-561E	G-W-O-1034	UNIFORM HAZ WASTE MANIFEST NO. 003054	DUPONT
		86/8/12	E-P-561F	G-W-O-1035	UNIFORM HAZ WASTE MANIFEST NO. 003053	DUPONT
		86/6/24	E-P-561G	G-W-O-1036	UNIFORM HAZ WASTE MANIFEST NO. 003052	DUPONT
		86/6/4	E-P-561H	G-W-O-1037	UNIFORM HAZ WASTE MANIFEST NO. 003051	DUPONT
		86/5/6	E-P-561I	G-W-O-1038	UNIFORM HAZ WASTE MANIFEST NO. 003050	DUPONT
		86/4/17	E-P-561J	G-W-O-1039	UNIFORM HAZ WASTE MANIFEST NO. 003048	DUPONT
		86/4/3	E-P-561K	G-W-O-1040	UNIFORM HAZ WASTE MANIFEST NO. 003047	DUPONT
		86/2/26	E-P-561L	G-W-O-1041	UNIFORM HAZ WASTE MANIFEST NO. CJMM80116	DUPONT
		86/2/6	E-P-561M	G-W-O-1042	UNIFORM HAZ WASTE MANIFEST NO. CJMM80115	DUPONT
		86/3/13	E-P-561N	G-W-O-1043	UNIFORM HAZ WASTE MANIFEST NO. CJMM80117	DUPONT
		86/1/16	E-P-561O	G-W-O-1044	UNIFORM HAZ WASTE MANIFEST NO. CJMM80114	DUPONT
562	1985 AC CHEM WASTES		E-P-562A	G-W-O-1045	TRANSPORT SUMMARY	DUPONT
563	ANNUAL LIQUID WASTE GENERATOR REPORTS					
		83/12/31	E-P-563A	G-W-R-1046	1983	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
				G-R-R-1046		
		82/12/31	E-P-563B	G-W-R-1047 G-R-R-1047	1982	DUPONT
		81/12/31	E-P-563C	G-W-R-1048 G-R-R-1048	1981	DUPONT
		76/12/31	E-P-563D	G-W-R-1049 G-R-R-1049	1976	DUPONT
		77/12/31	E-P-563E	G-W-R-1050 G-R-R-1050	1977	DUPONT
		78/3/31	E-P-563F	G-W-R-1051 G-R-R-1051	1978	DUPONT
		79/3/31	E-P-563G	G-W-R-1052 G-R-R-1052	1979	DUPONT
		80/3/31	E-P-563H	G-W-R-1053 G-R-R-1053	1980	DUPONT
564	SAFETY-KLEEN CORP MANIFESTS					
		85/12/27	E-P-564A	G-W-O-1054	1986	DUPONT
		85/7/5	E-P-564B	G-W-O-1055	1985	DUPONT
565	PCB FILE					
		85/9/16	E-P-565A	G-W-O-1011	PCB TRANSFORMER MANIFEST	DUPONT
		83/2/10	E-P-565B	G-W-O-1012	TRANSFORMER MANIFEST 1983	DUPONT
		81/6/30	E-P-565C	G-W-O-1013	TRANSFORMER MANIFEST 1981	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
566	RCRA APPLICATION	82/11/4	E-P-566A	G-W-L-1014 G-R-L-1014	LETTER FROM EPA STATING HAZ. WASTE PERMIT NOT NEEDED	DUPONT
567	HAZ. WASTE SUB-STANCES	81/1/14	E-P-567A	G-W-L-1015 G-C-L-1015	1981 HAZ. WASTES @ SITE	DUPONT
			E-P-567B	G-W-L-1016	INDIANA QUARTERLY REPORTS	DUPONT
		81/6/1	E-P-567C	G-W-L-1017	LEAD CHAMBER WASTES	DUPONT
		82/2/24	E-P-567D	G-W-L-1018	1981 HAZ. WASTE SHIPMENTS	DUPONT
		80/4/24	E-P-567E	A-W-L-1019 O-W-L-1019 V-W-L-1019 Z-W-L-1019	MEMO TO E.L. CROW RE: EPA INFO REQUEST	DUPONT
		77/1/7	E-P-567F	G-W-L-1020	SLUDGE ANALYSIS	DUPONT
568	SOIL INVESTIGATION	78/12/15	E-P-568A	G-X-R-1060	SOIL INVESTIGATION	DUPONT
569	STORAGE TANKS		E-P-569A	T-D-L-1021 T-S-L-1021	HAZ. MATERIAL BULK STORAGE TANKS	DUPONT
			E-P-569B	T-D-R-1022 T-W-R-1022	CONTACT 3 STORAGE TANKS	DUPONT
			E-P-569C	T-D-R-1023	FREON STORAGE TANKS	DUPONT

EAST CHICAGO REFERENCE LIST - APPENDIX A
SOURCES: LOUVIERS BLDG., INFORMATION CENTER 13,
EAST CHICAGO FACILITY FILES

FILE NO.	FILENAME	DATE YR/MO/DA	DOCUMENT NUMBER	DOCUMENT CODE	DOCUMENT DESCRIPTION	ORIGIN
		72/4/28	E-P-569D	T-D-L-1024	HCL STORAGE TANKS	DUPONT
570	PITS - MISC. INFO.					
		72/5/15	E-P-570A	R-D-L-1025 R-W-L-1025 H-D-L-1025 H-W-L-1025	FREON DUMP PIT	DUPONT
		72/5/15	E-P-570B	R-D-L-1026 R-W-L-1026 H-D-L-1026 H-W-L-1026	FREON AREA POLLUTION ABATEMENT	DUPONT
		72/1/10	E-P-570C	G-W-L-1027	WATER POLLUTION ABATEMENT @ FREON	DUPONT
571	SECTION V - CONSENT DECREE					
		74/9/16	E-P-571A	G-R-R-1061	ROUGH DRAFT OF CONSENT DECREE REPORT	DUPONT

Phase I Report

DUPONT EAST CHICAGO, INDIANA PRODUCTION HISTORY

PRODUCTS	BEGAN OPERATION	DISCONTINUED OPERATION
2,4-D Sodium weed killer - 83 %	1946	1946
4-All Drain Solvent	1924	1926
Acetic Acid - Gray Lime acetate	1902	1930
Acetic Acid - Purchased and rehandled	1930	1982
Adhesive # 60 (Weather Proof)	1954	1963
Adhesive # 71 (Weather Proof)	1949	1951
Adhesive # 72 (Weather Proof)	1949	1951
Adhesive # 73 (Weather Proof)	1946	1952
Adhesive # 77 (Weather Proof)	1944	1963
Adhesive # 78 (Weather Proof)	1944	1963
Adhesive # 78X (Weather Proof)	1958	1963
Aluminum Chloride Solution	1947	1975
Aluminum Chloride - HCl	1954	1975
Ammate Solution	1959	1978
Ammate X	1959	1978
Ammonium Chloride	1909	1928
Ammonium Chloride from new leaded crystal	1928	1963
Ammonium Chloride - new facilities	1963	1969
Ammonium Hydroxide Reagent	1899	1906
Ammonium Hydroxide Reagent - new facilities	1958	1984
Anisole	1948	1949
Arsenate Green	1926	1926
Arsenic Acid	1914	1949
Barium Fluorosilicate (Insecticide)	1930	1943
Benlate	1968	1971
Benomyl	1968	1970
Bordeaux Mixture Insecticide	1910	1940
C & C Mixture (Zn Cl2 and Muriatic)	1944	1964
Calcium Arsenate	1919	1948
Calcium Arsenite	1927	1931
Chlorosulfonic Acid	1966	1984
Chromated Zinc Chloride Dry	1940	1969
Chromated Zinc Chloride Solution	1947	1969
Collodial Silica 1A	1955	1957
Collodial Silica # 17	1956	1956
Copperized Chromated Zinc Chloride Dry	1950	1964
Copperized Chromated Zinc Chloride Solution	1951	1951
Deenate 25W (Insecticide)	1945	1946
Deenate 50W (Insecticide)	1946	1947
Detergents	1932	1951
Disodium Phosphate Crystal	1926	1937
Duclean # 1 Inhibited Sulfuric Acid	1929	1984
Duclean # 2 Inhibited Hydrochloric Acid	1931	1977
EPN 300 Insecticide	1950	1952
EPN 45 % Emulsified	1952	1953
EPN Miticide	1950	1952
Fenuron	1964	1964
Ferric Sulfate (Copperous)	1909	1920
Fluorosulfonic Acid	1975	Present
Freon - Kinetics Operation	1948	1977
Garden and Potato Dust	1944	1944
Glattite	1909	1910
Glauber's Salt (Sodium Sulfate)	1898	1948
Hydrochloric Acid and Salt Cake - Mechanical furnace	1936	1959
Hydrochloric Acid and Salt Cake - # 1 & # 2	1897	1934
Hydrochloric Acid and Salt Cake - # 3	1897	1938
Hydrochloric Acid and Salt Cake - # 4	1897	1937
Hydrochloric Acid and Salt Cake - # 5 & # 6	1897	1934
Hydrochloric Acid and Salt Cake - # 7 & # 8	1897	1944
Hydrochloric Acid and Salt Cake - # 9 & # 10	1897	1935
Hydrochloric Acid Reagent	1899	1924
Hydrochloric Acid Reagent - Distillation - electrical	1924	1937
Hydrochloric Acid Reagent - Distillation - steam	1937	1958
Hydrochloric Acid Reagent - Modernized Process	1958	1982

DUPONT EAST CHICAGO, INDIANA PRODUCTION HISTORY

PRODUCTS	BEGAN OPERATION	DISCONTINUED OPERATION
Hydrochloric Acid Transloading	1979	1979
Hydrochloric Acid (Anhydrous) - for Vaporization System	1977	1984
Insecticide Department Ferguson Packers	1949	1949
Insecticide Department Triangle Packers	1936	1936
Iron Agglomerates (Pyrites Cinder)	1910	1911
Lead Acetate	1910	1914
Lead Arsenate Insecticide	1910	1949
Lead Arsenate Phenothiazine Mixtures	1946	1947
Lime Sulfur Solution	1910	1948
Linuron	1964	1972
Litharge	1924	1949
Lorox	1963	1981
Ludox AM - Aluminum Modified	1961	Present
Ludox AS - Ammonium Stabilized	1960	Present
Ludox Binder Vehicle	1967	Present
Ludox HS (Collodial Silica) - 12 millimicron	1948	1963
Ludox HS (Collodial Silica) - new process 12 millimicron	1963	Present
Ludox HS-FS - Free Stabilized (ethylene glycol)	1964	Present
Ludox LS	1957	Present
Ludox Lthium Polysilicate 48		Present
Ludox Redip Indicator	1968	Present
Ludox SM - 7 millimicron	1957	Present
Ludox TM - 22 millimicron	1966	Present
Ludox (Purchased Nalcoag C-1295)	1947	1948
Manganar	1928	1933
Manganese Sulfate	1933	1933
Marlate 50	1947	1949
Methoxychlor	1947	1949
Methoxychlor Concentrate 80 %	1949	1949
Mixed Acid	1897	1930
Nitric Acid Reagent	1899	1924
Nitric Acid Reagent - Distillation - electrical	1924	1937
Nitric Acid Reagent - Distillation - steam	1937	1958
Nitric Acid Reagent - Modernized Process	1958	1984
Nitric Acid - $NaNO_3$ Process	1896	1929
Nitric Acid - purchased in bulk and packaged	1929	1964
Oleum - 20 %	1973	1984
Oleum - 35 %	1981	1984
Oleum - 40 % (SO_3 Stills)	1941	1945
Oleum - 40 % (SO_3 Stills)	1967	1972
Oleum - 65 %	1958	1959
Phosphoric Acid	1925	1951
Plant Food	1928	1930
Siduron	1964	1981
Sodium Bisulfite Solution (For Sale)	1941	1955
Sodium Metasilicate	1931	1958
Sodium Metasilicate - produced by Continuous Cooler	1958	1973
Sodium Silicate	1902	1940
Sodium Silicate - Continuous Fuel Oil Furnace	1940	1957
Sodium Silicate - Gas Fired Continuous	1957	Present
Sodium Silicate - No. 1 Furnace Batch	1930	1957
Sodium Sulfate S. R. Ground	1925	1949
Sodium Sulfide	1915	1929
Sodium Sulfide - Depilatory Grade	1930	1932
Sodium Thiosulfate	1916	1955
Stabilized SO_3	1966	1984
Sulfamic Acid	1959	1984
Sulfuric Acid Chambers System No. 1	1893	1947
Sulfuric Acid Chambers System No. 2	1893	1947
Sulfuric Acid Chambers System No. 3	1905	1947
Sulfuric Acid Chambers System No. 4	1913	1955
Sulfuric Acid Chambers System No. 5	1916	1955
Sulfuric Acid Contact No. 1	1923	1955
Sulfuric Acid Contact No. 2	1947	1967

DUPONT EAST CHICAGO, INDIANA PRODUCTION HISTORY

PRODUCTS	BEGAN OPERATION	DISCONTINUED OPERATION
Sulfuric Acid Contact No. 3	1955	1982
Sulfuric Acid Contact Verein	1910	1925
Sulfuric Acid Reagent	1899	1922
Sulfuric Acid Reagent - from Oleum Production	1922	1943
Sulfuric Acid Reagent - New Vertical Absorber	1943	1958
Sulfuric Acid Reagent - Process Modernized	1958	1984
Trisodium Phosphate Crystal	1926	1951
Trisodium Phosphate Crystal - Flake	1933	
Trisodium Phosphate Crystal - Flake # 10	1939	1939
Trisodium Phosphate Crystal - High Grade Neutral Phosphate	1926	
Trisodium Phosphate Crystal - Lurgi Filter	1943	1951
Trisodium Phosphate Crystal - Monohydrate	1934	1948
Trisodium Phosphate Crystal - Monosodium Phosphate	1932	1948
Trisodium Phosphate Crystal - P Grade # 10	1939	1939
Trisodium Phosphate Crystal - P Grade (Granular)	1930	
Trisodium Phosphate Crystal - Sodium Siloco Fluoride	1927	
Tupersan	1964	1981
Valron - Estersil & Estersil GT	1954	1957
Velpar Intermediate - Hexazinone	1974	1986
Zinc Ammonium Chloride	1940	1963
Zinc Ammonium Chloride - New Facilities - Zaclon	1963	1969
Zinc Chloride Fluid Flux	1960	1963
Zinc Chloride Fused	1902	1969
Zinc Chloride Granular	1902	1969
Zinc Chloride Solution	1902	1969
Zinc Oxide	1916	1937
Zinc (Battery Anodes)	1909	1931

Appendix C. Process Flow Sheets for Chemicals with Productions for Longer Than 25 Years

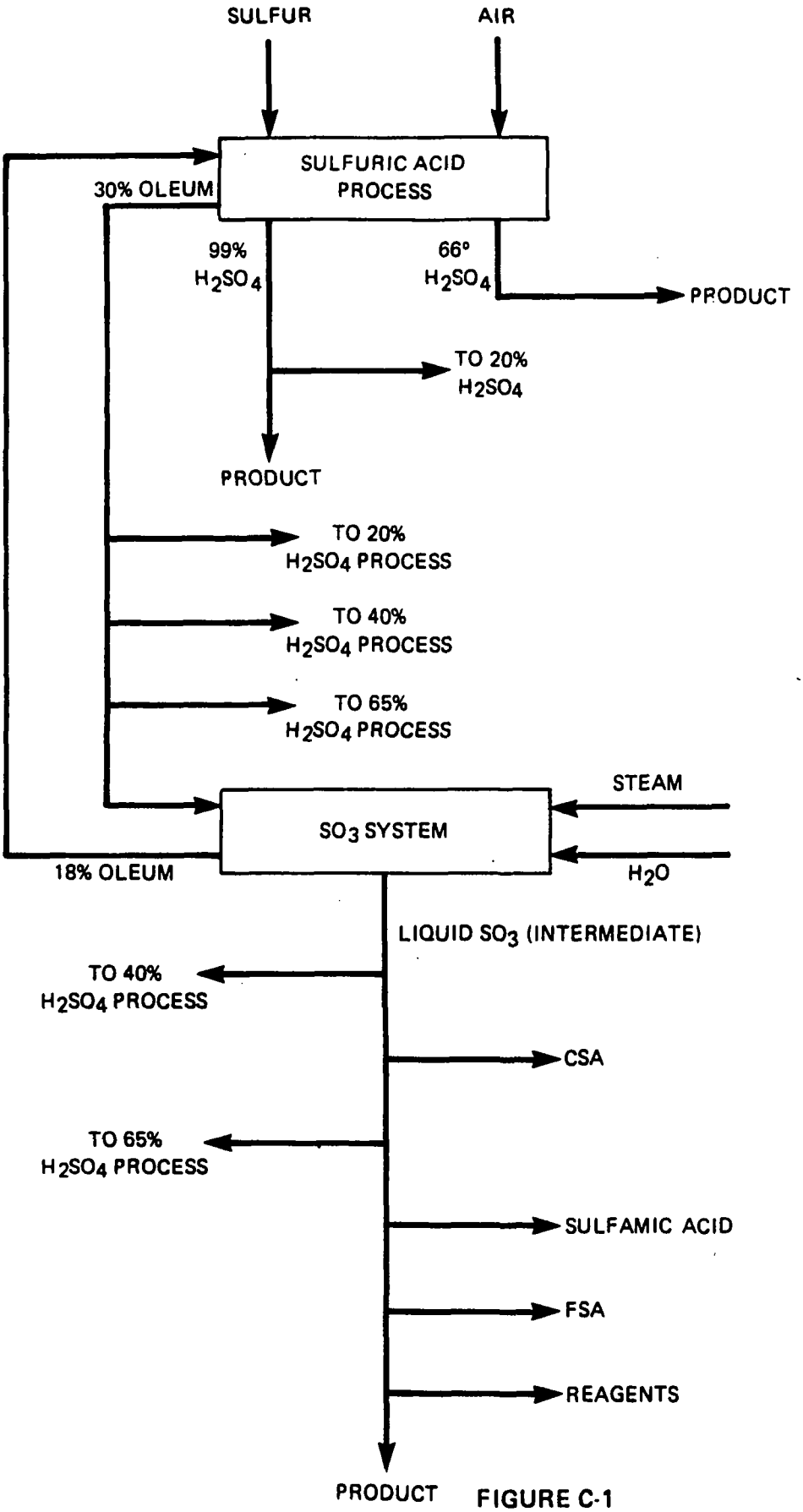


FIGURE C-1
SULFURIC ACID OVERVIEW PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

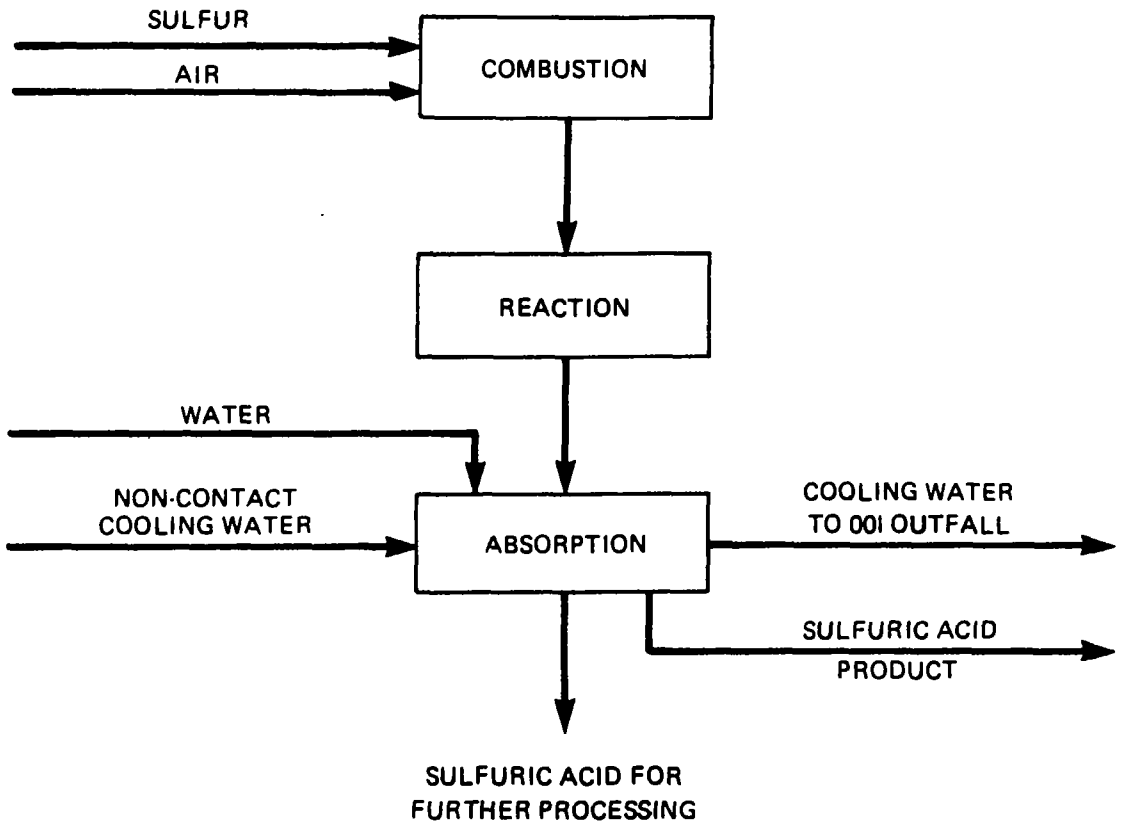


FIGURE C-2
SULFURIC ACID AREA
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

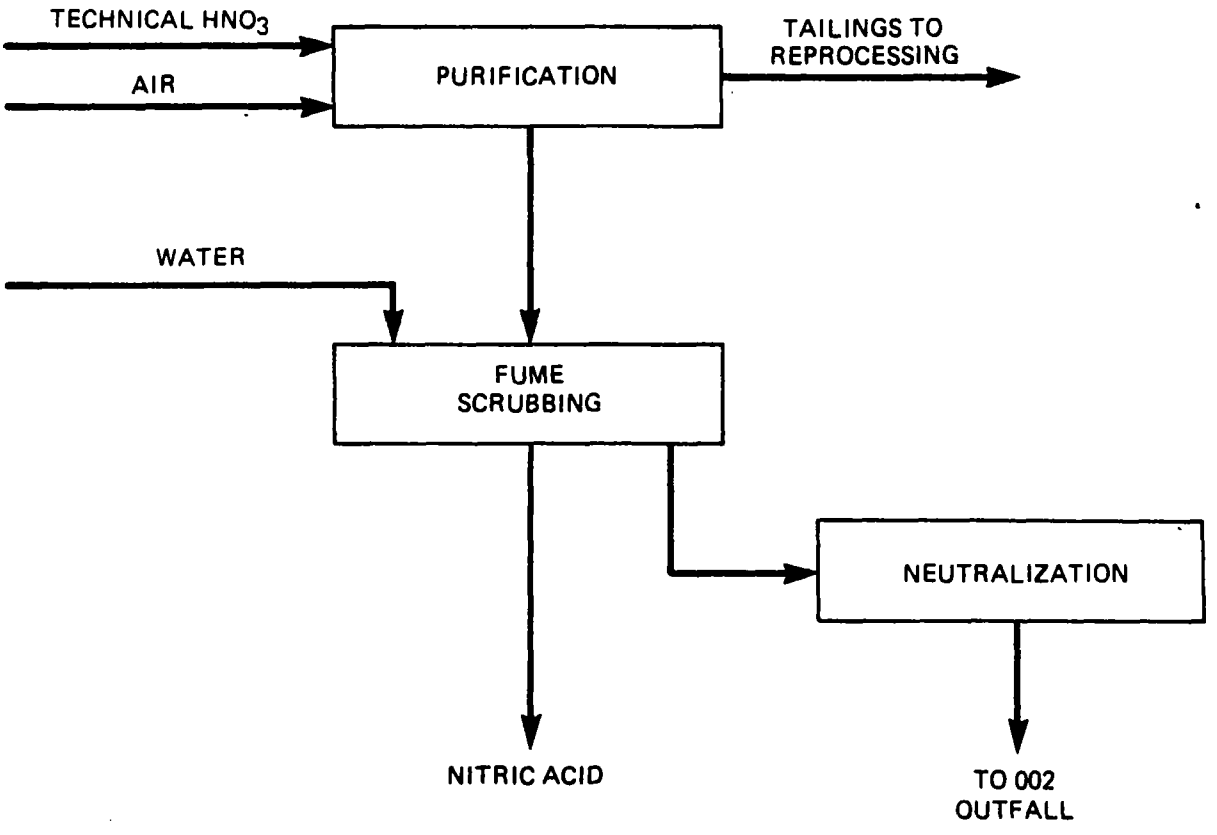


FIGURE C-3
REAGENT NITRIC ACID PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

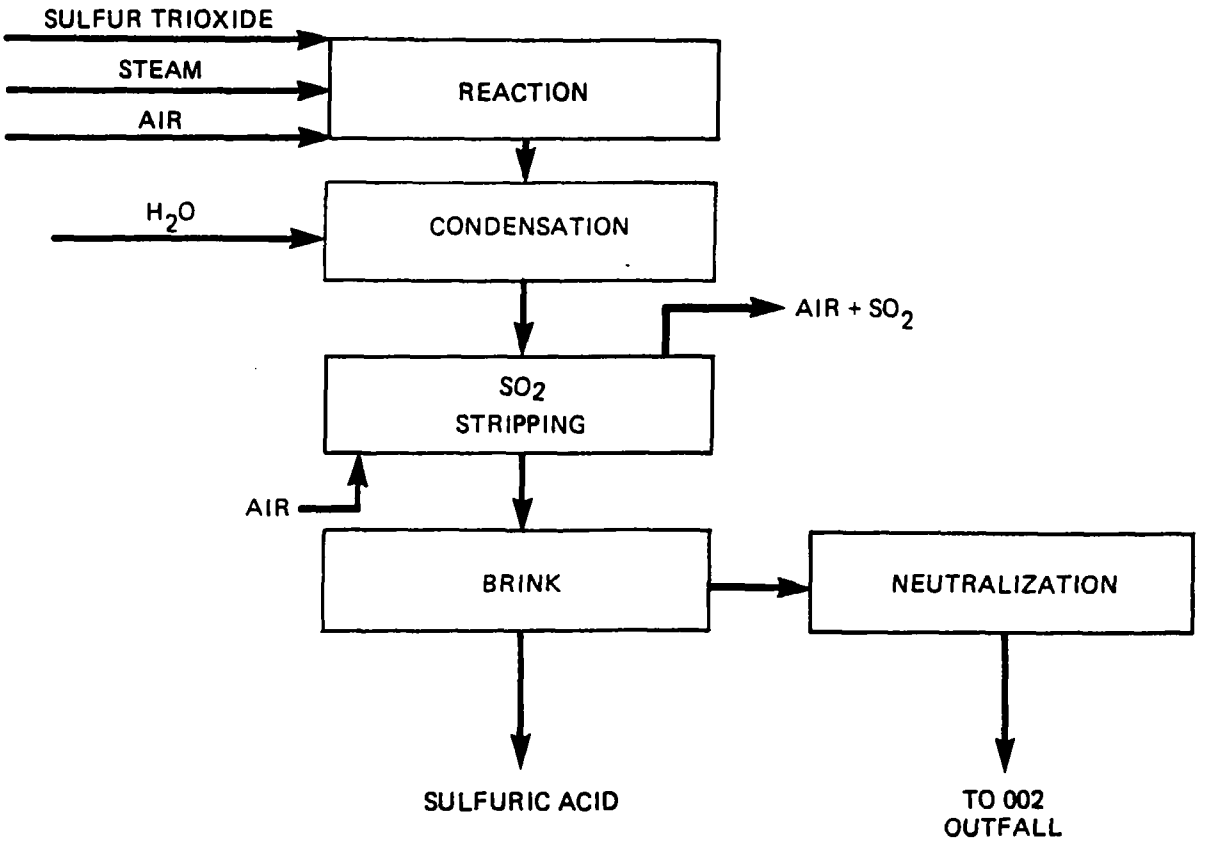


FIGURE C-4
REAGENT SULFURIC ACID
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

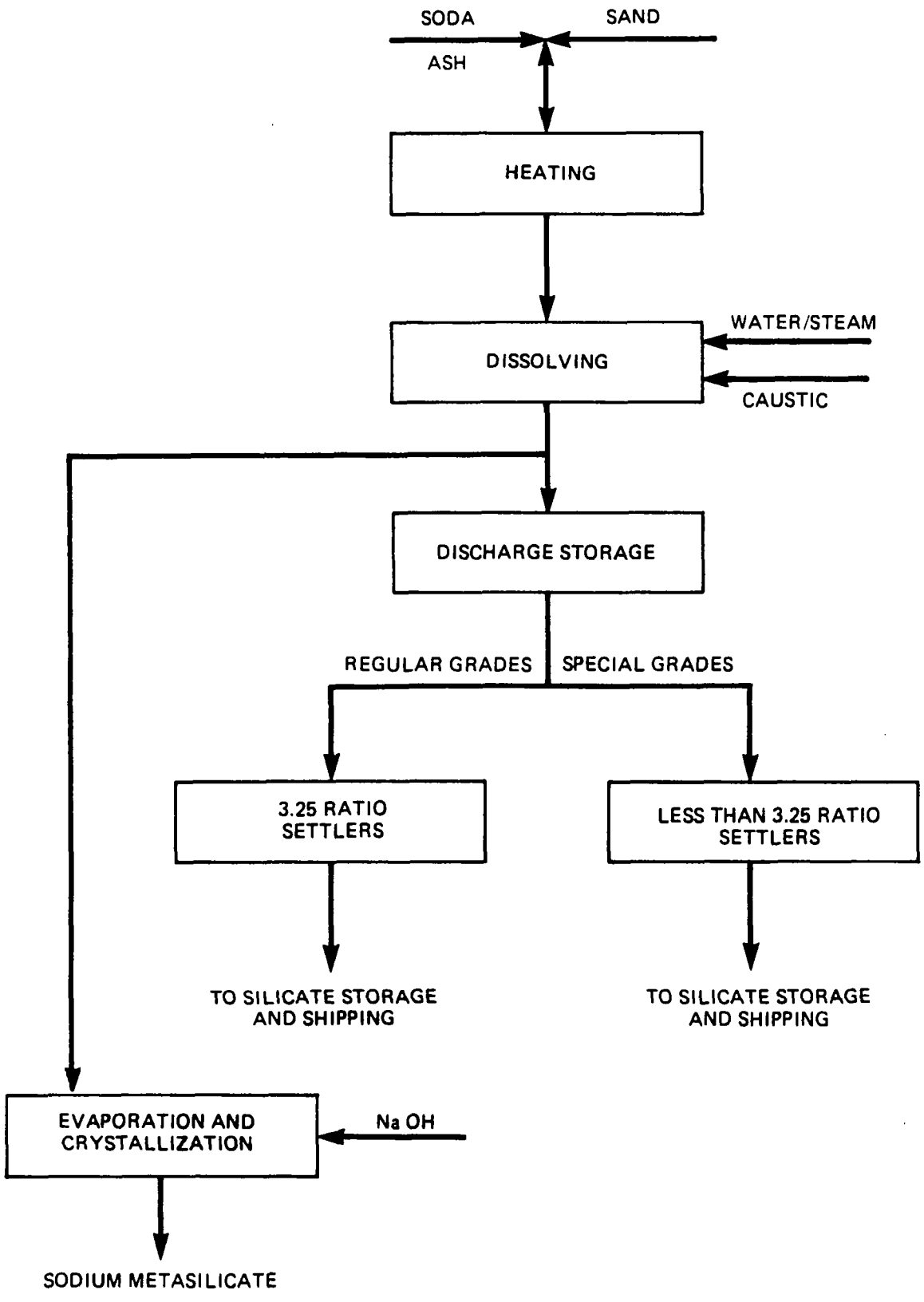


FIGURE C-5
SODIUM SILICATE AND METASILICATE PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

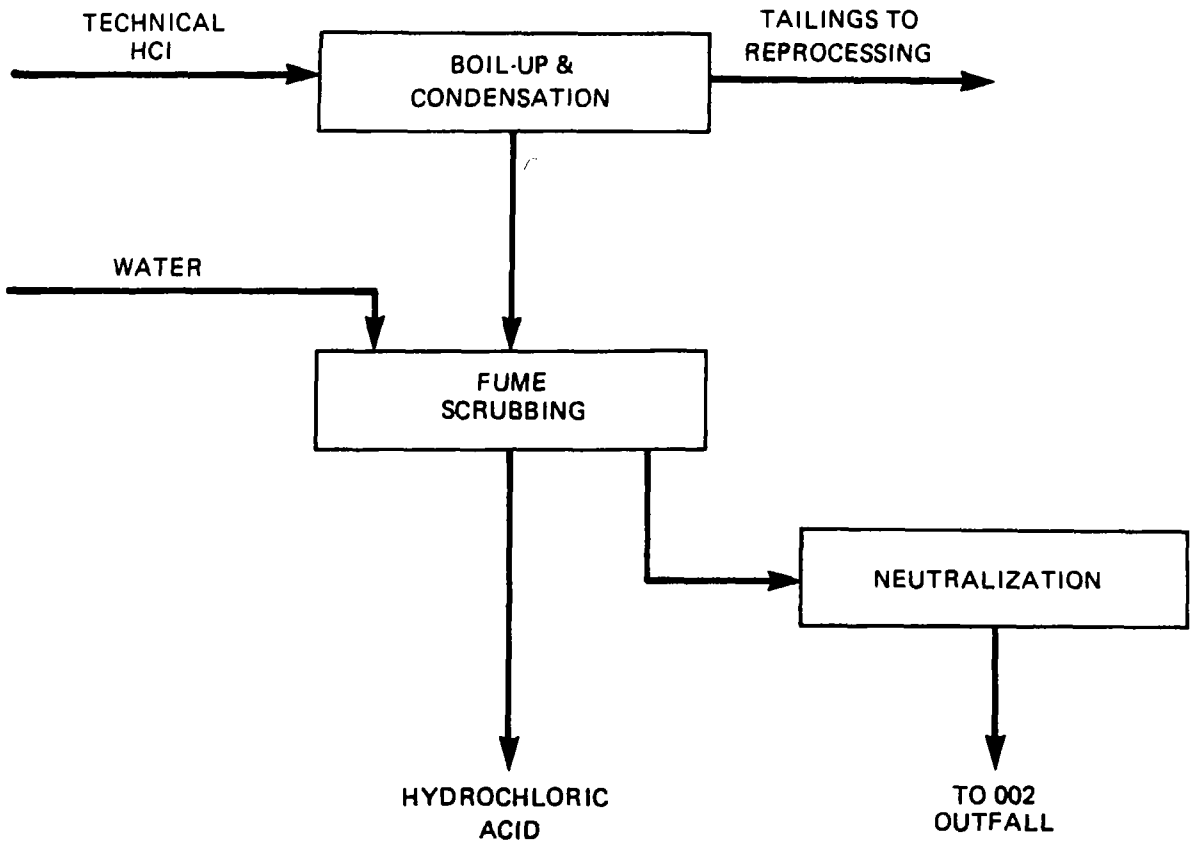


FIGURE C-6
REAGENT HYDROCHLORIC ACID
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

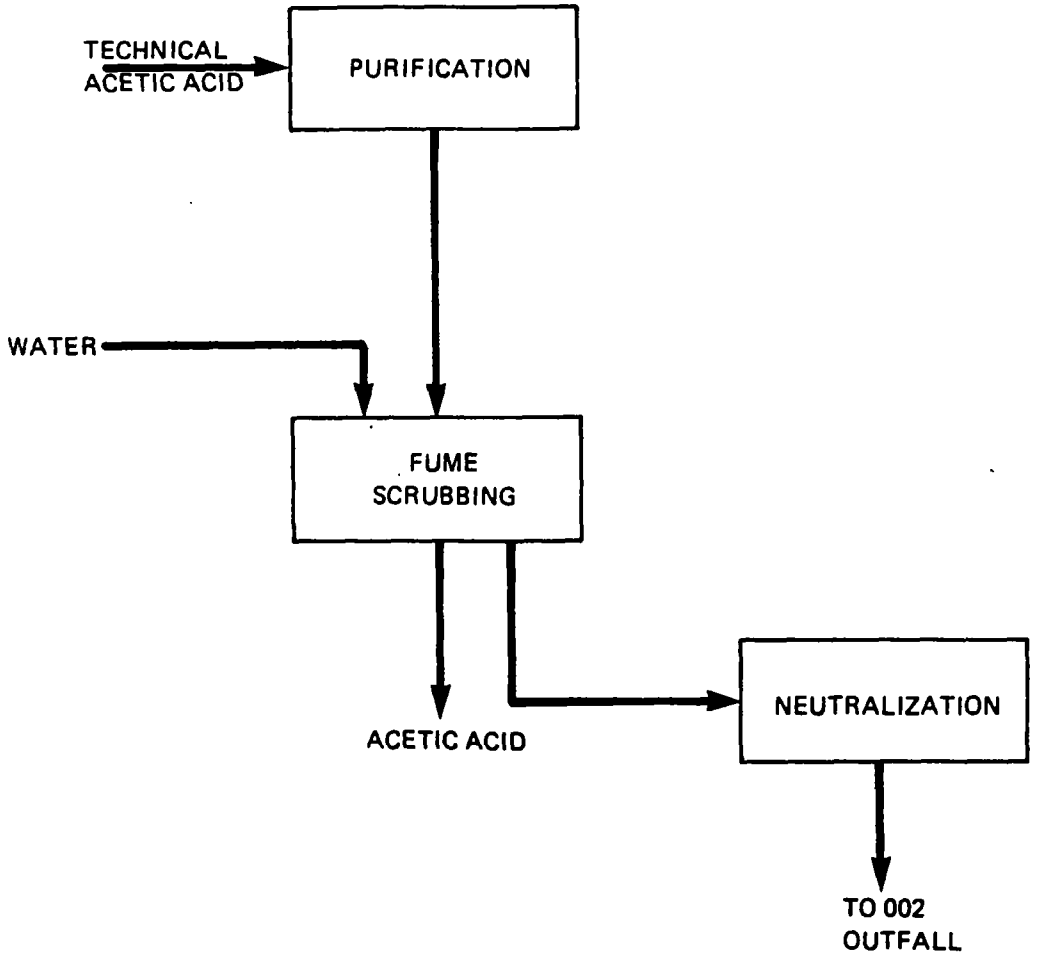


FIGURE C-7
ASSUMED REAGENT ACETIC ACID
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

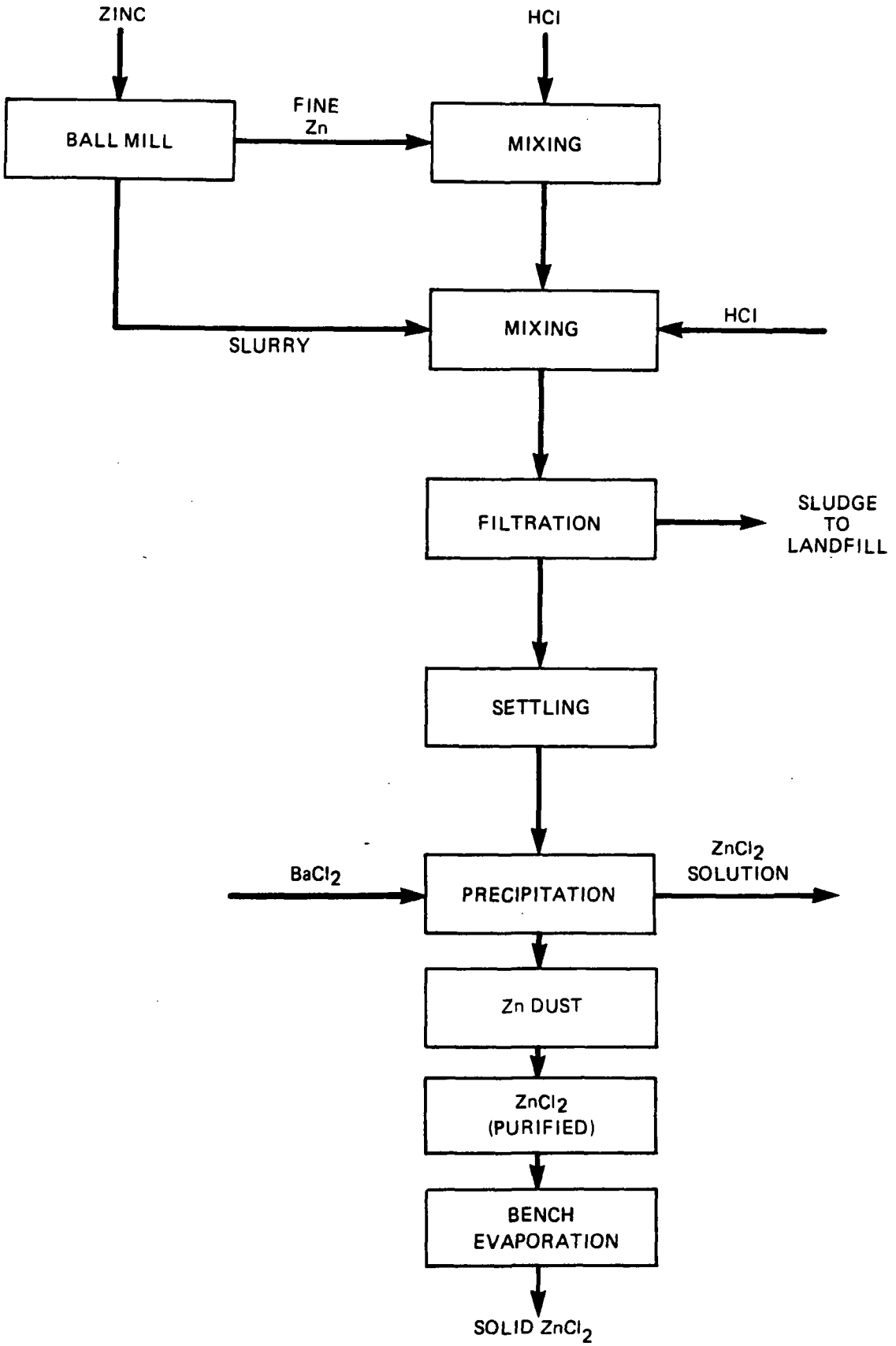
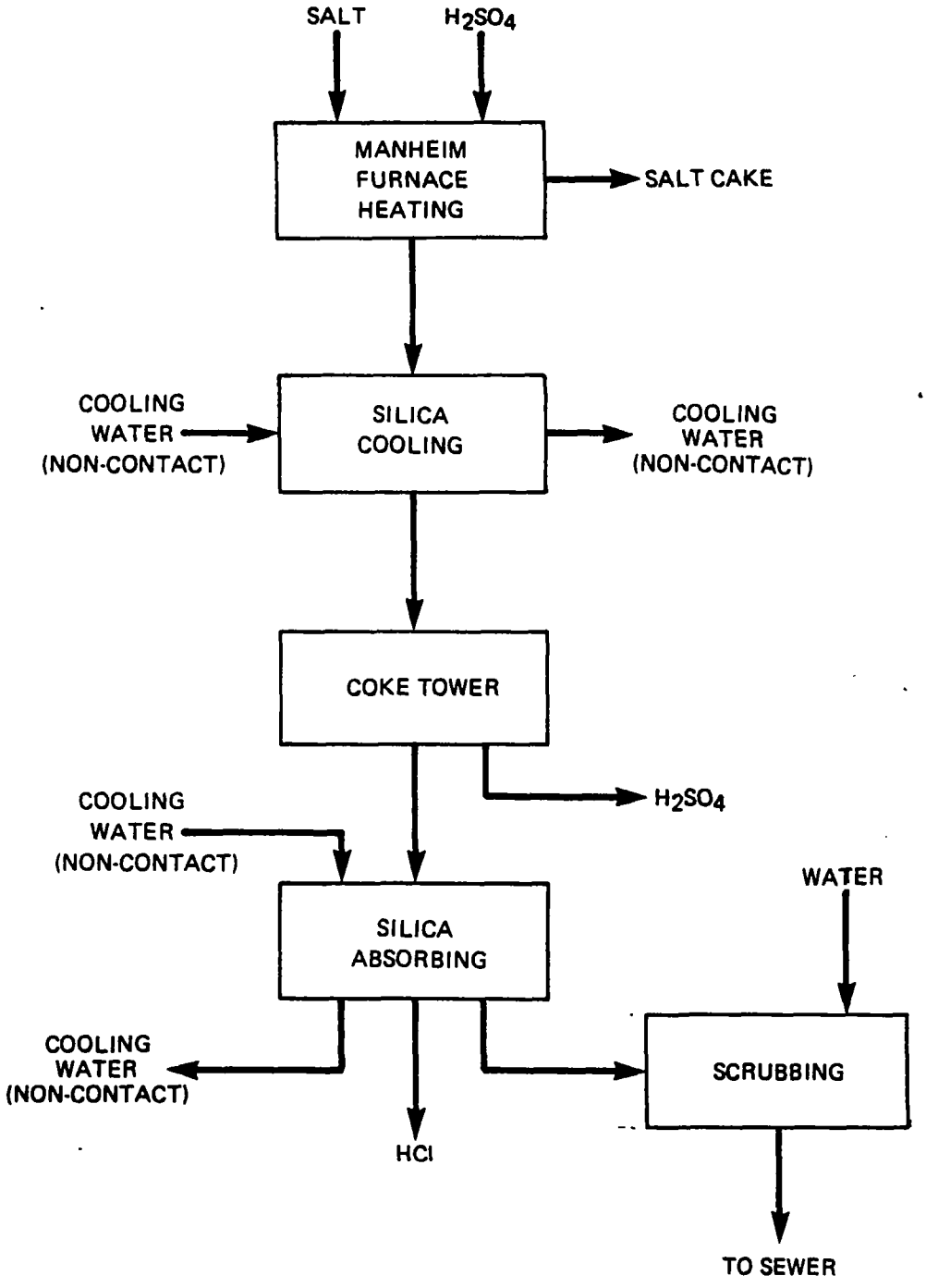


FIGURE C-8
ZINC CHLORIDE
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

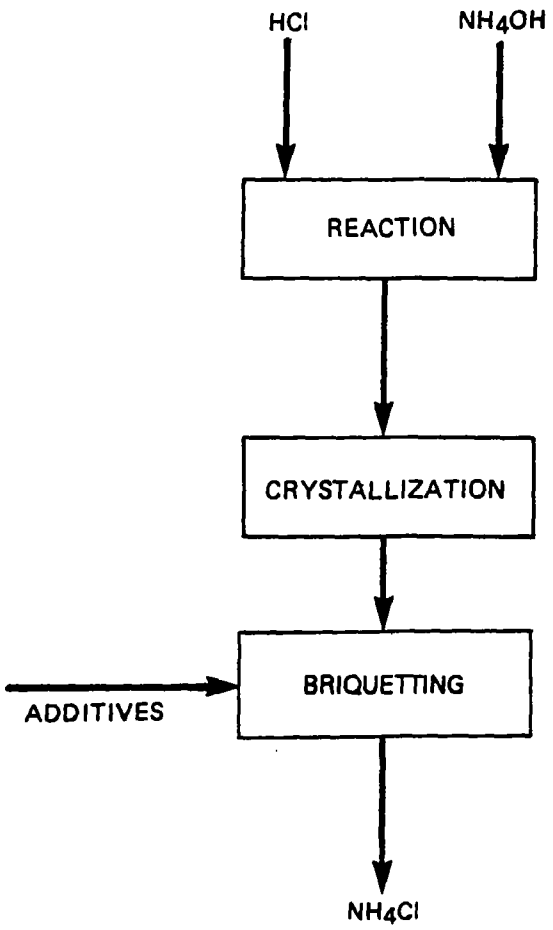
CH2M HILL



REFERENCE:
P415-418, SHREVE

FIGURE C-9
ASSUMED HYDROCHLORIC ACID/SALT CAKE-MANHEIM FURNACE PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

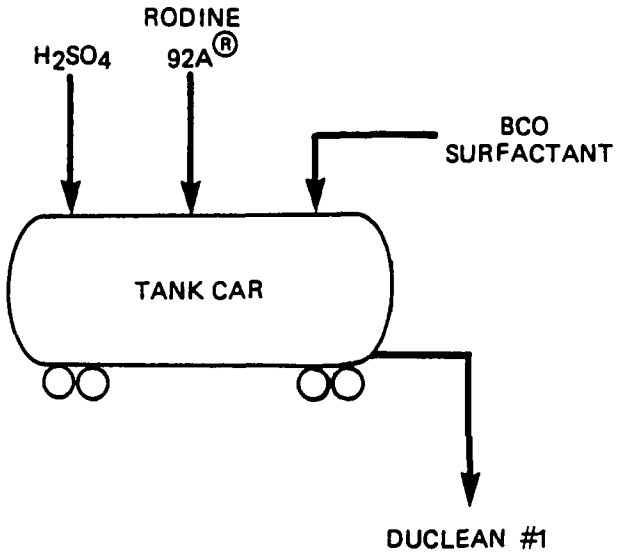
CH2M HILL



REFERENCE:
THE CONDENSED CHEMICAL DICTIONARY P. 43

FIGURE C-10
ASSUMED AMMONIUM CHLORIDE PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2MHILL



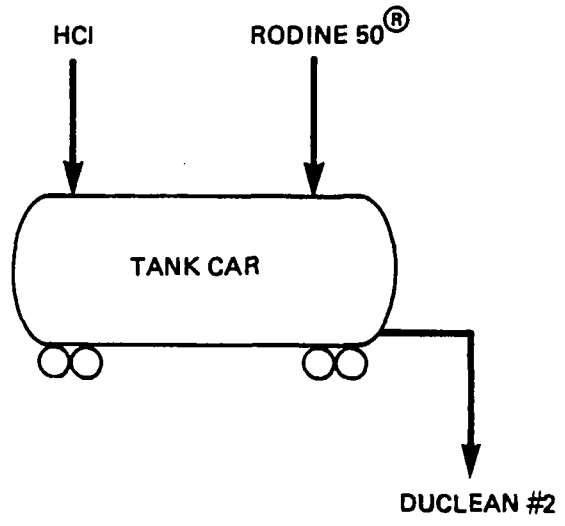
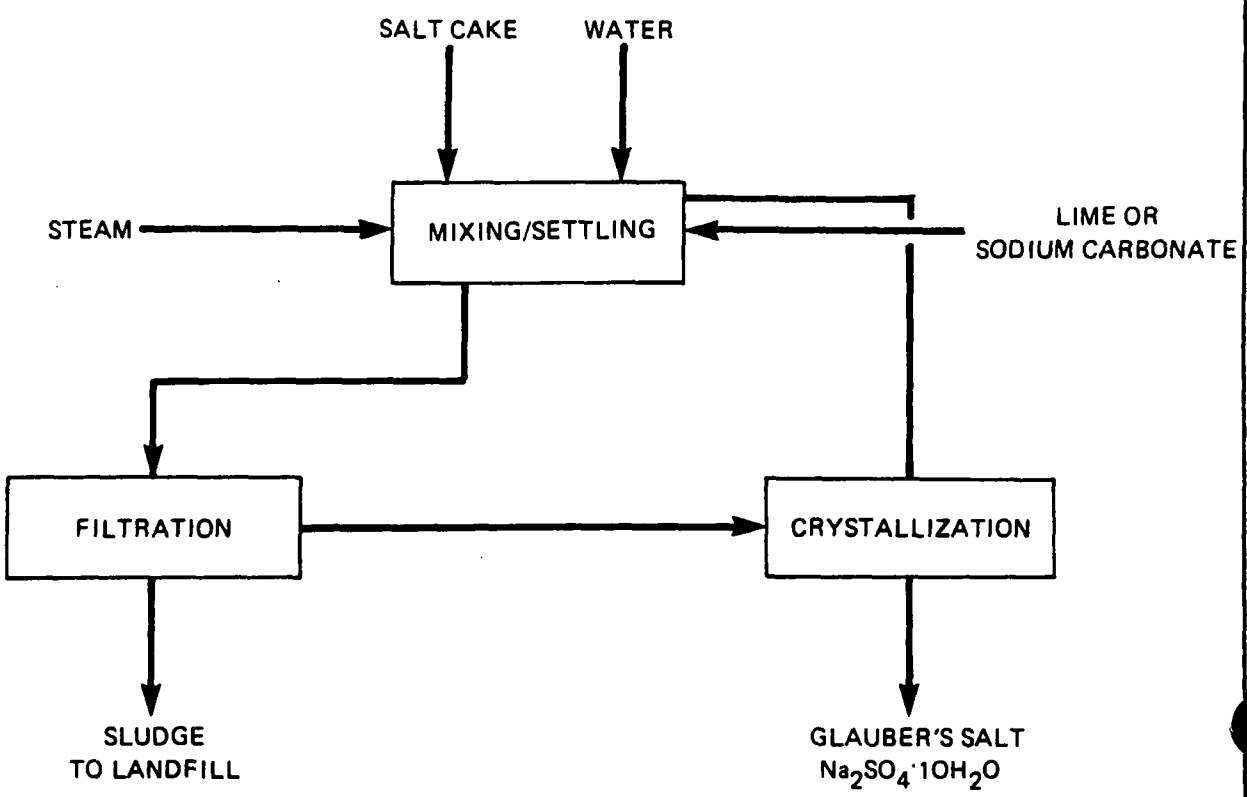


FIGURE C-11
DUCLEAN # 1 & # 2
PROCESS FLOW SHEETS
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

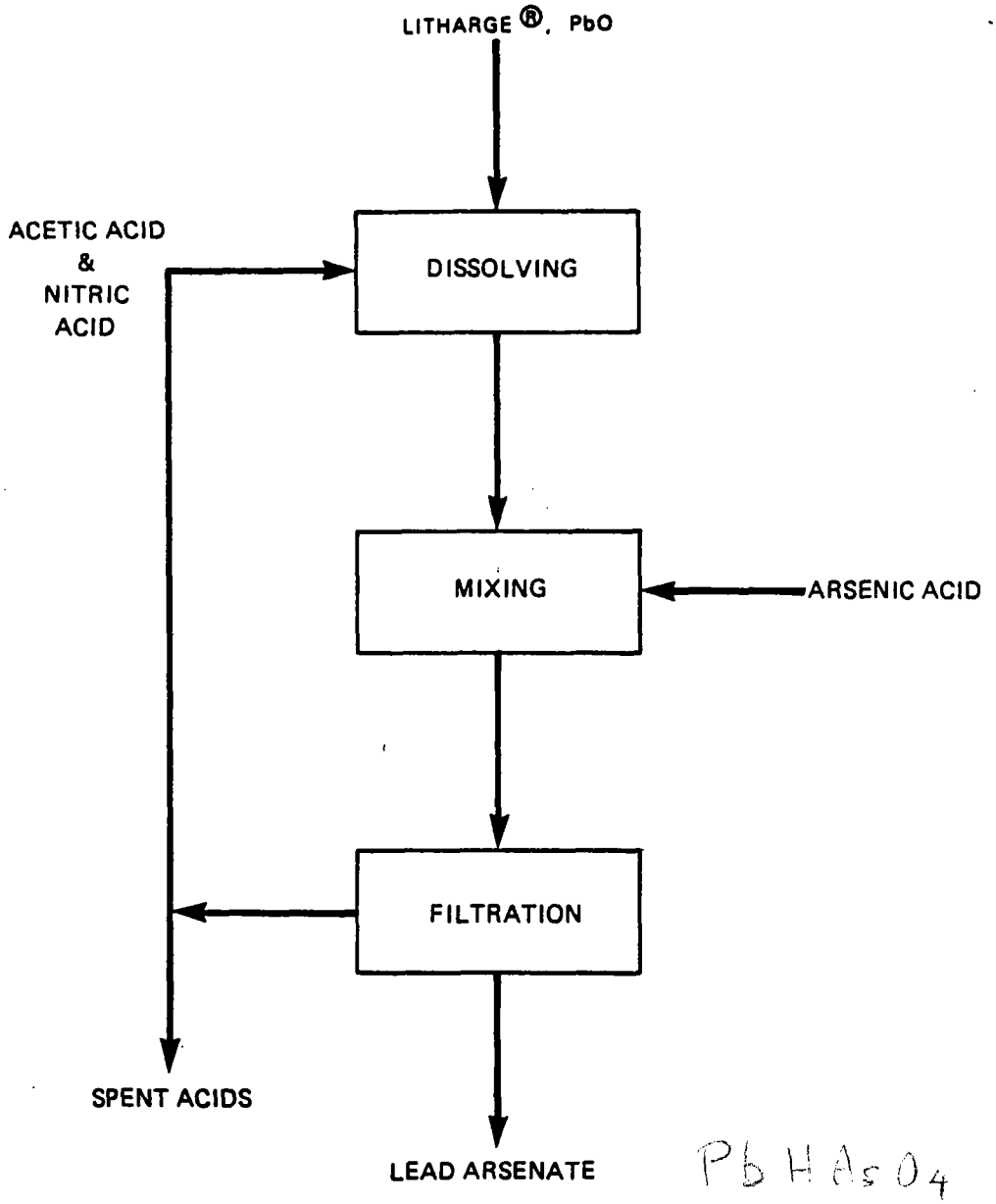
CH2M HILL



REFERENCE:
P 261-263, SHREVE

FIGURE C-12
ASSUMED GLAUBER'S SALT
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL



$PbHAsO_4$

$PbO + H_3AsO_4$

REFERENCE:
P 535, SHREVE

FIGURE C-13
ASSUMED LEAD ARSENATE PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

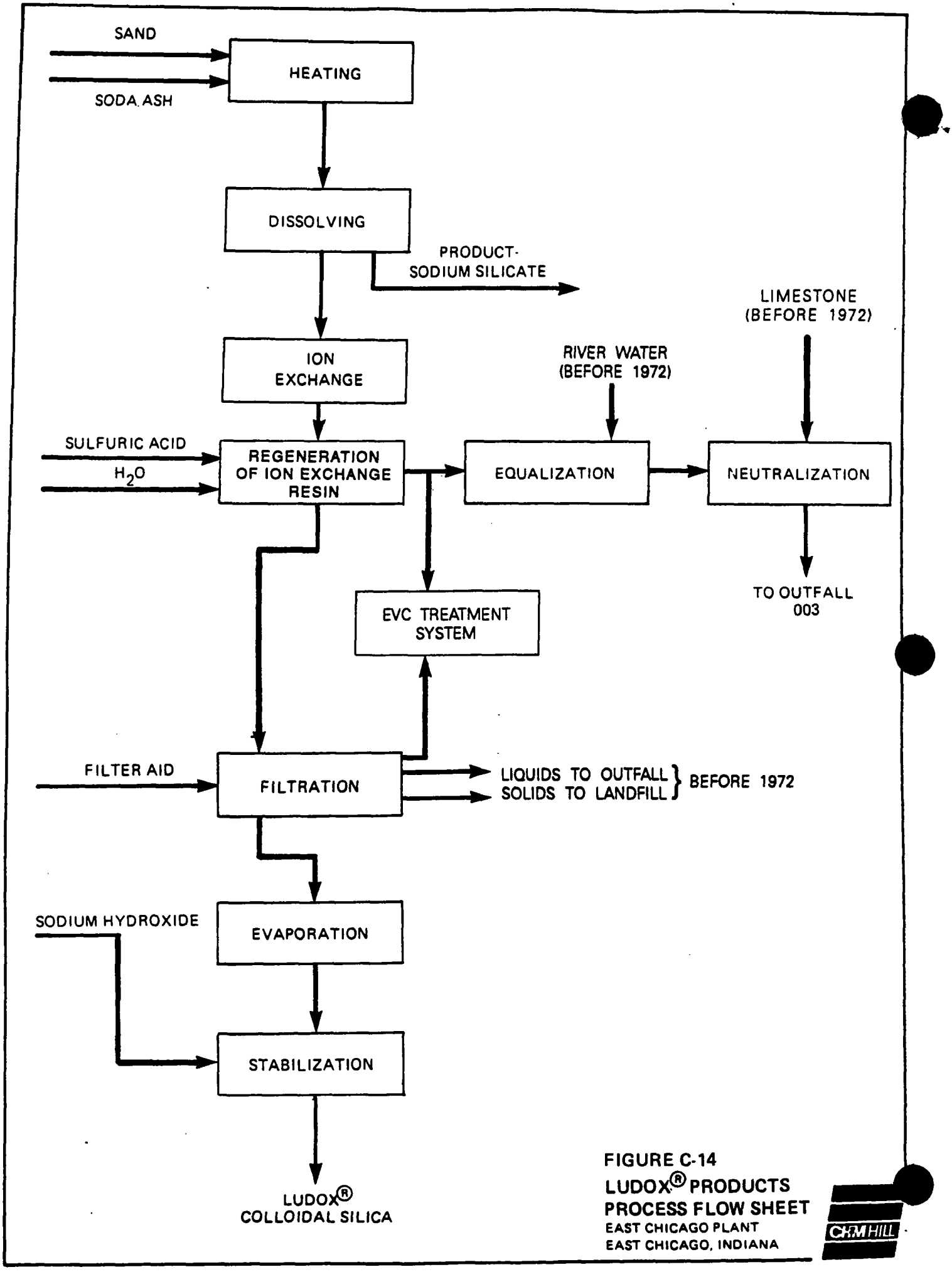
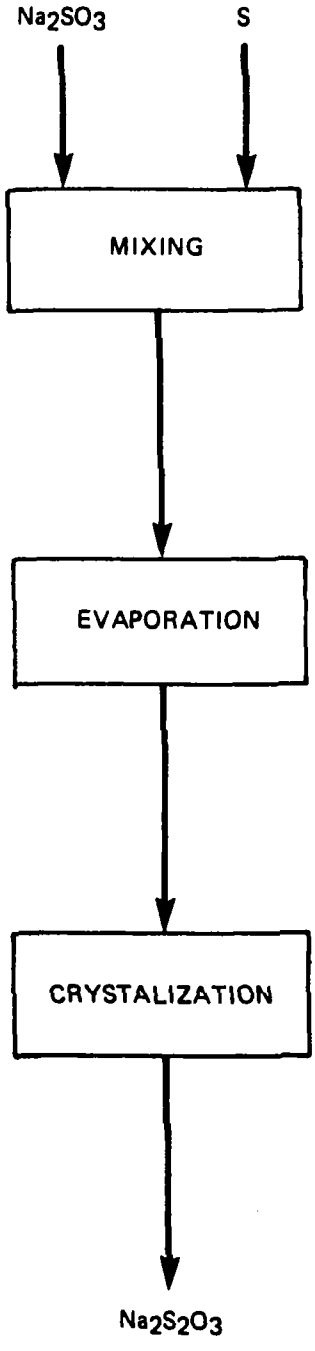


FIGURE C-14
LUDOX® PRODUCTS
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2MHILL



REFERENCE:
P 266-267, SHREVE

FIGURE C-15
ASSUMED SODIUM THIOSULFATE
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

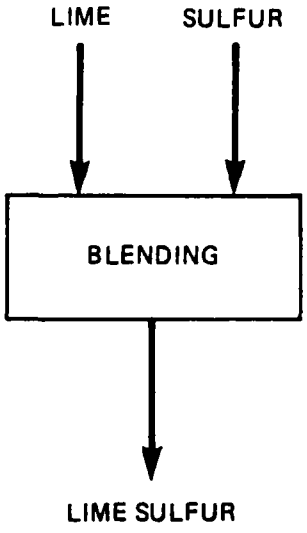
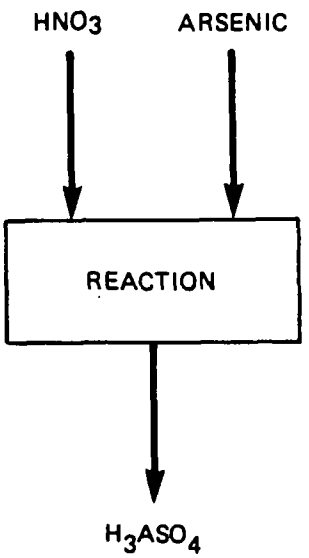


FIGURE C-16
ASSUMED LIME SULFUR
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL



REFERENCE:
P 69, THE CONDENSED CHEMICAL DICTIONARY

FIGURE C-17
ASSUMED ARSENIC ACID PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

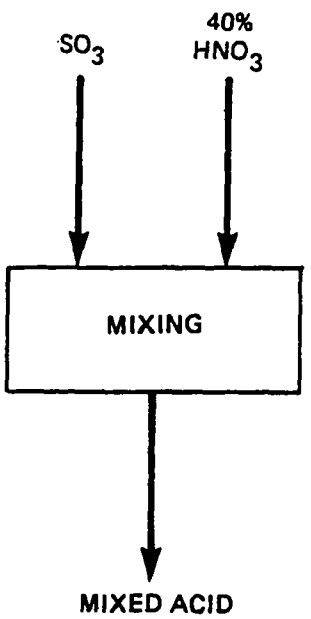
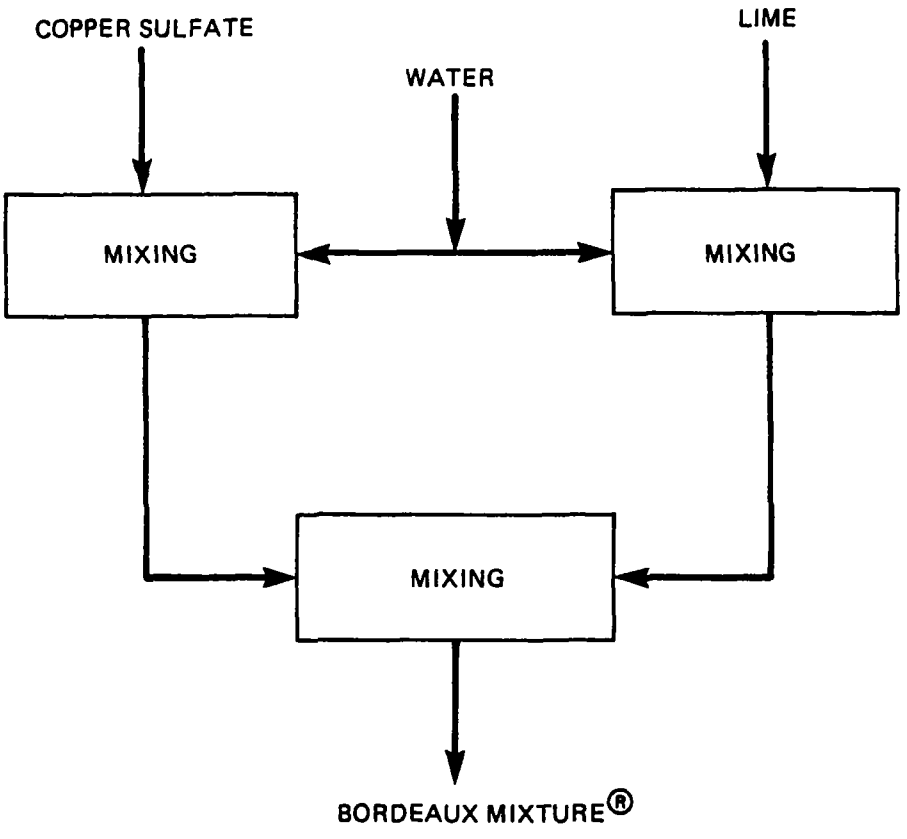


FIGURE C-18
ASSUMED MIXED ACID
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

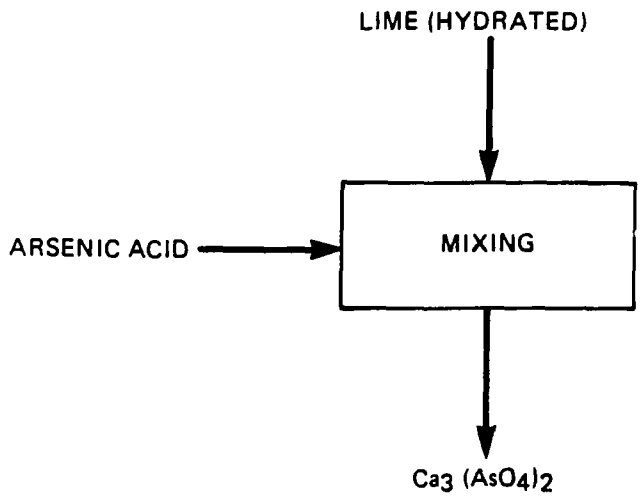
CH2M HILL



REFERENCE:
P 431, 541-542, SHREVE

FIGURE C-19
ASSUMED BORDEAUX MIXTURE®
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2MHILL



REFERENCE:
P 536, SHREVE

FIGURE C-20
ASSUMED CALCIUM ARSENATE PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

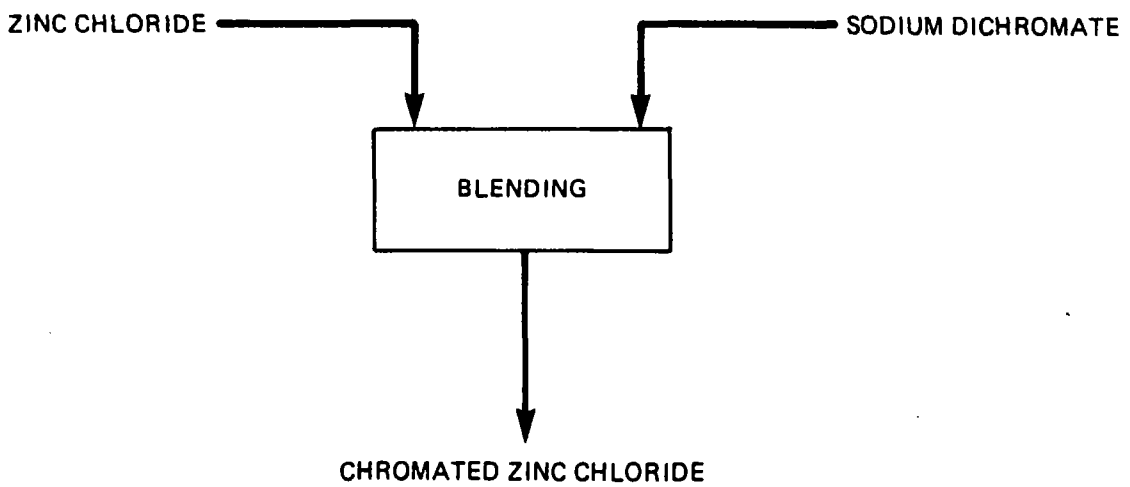


FIGURE C-21
CHROMATED ZINC CHLORIDE
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

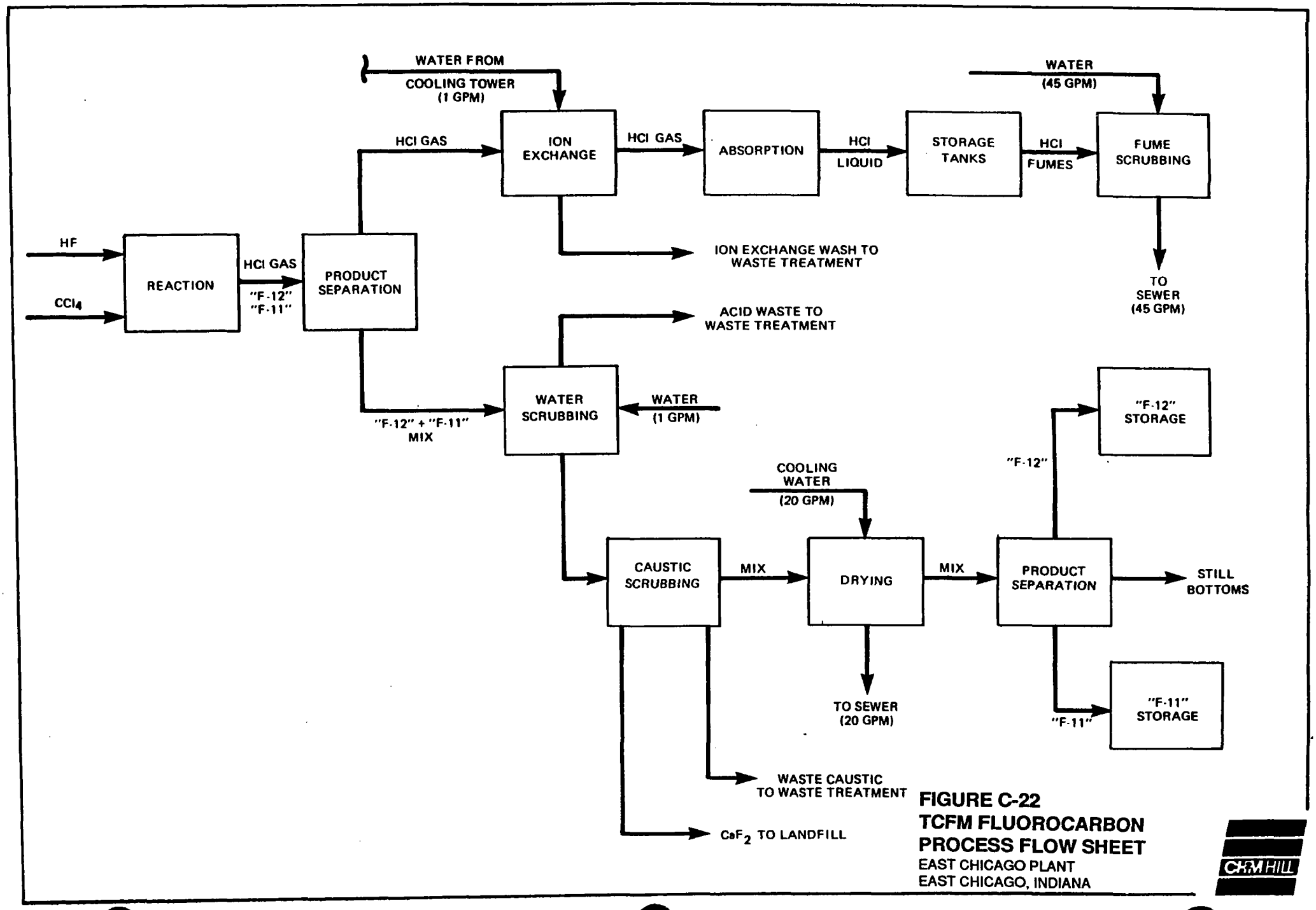


FIGURE C-22
TCFM FLUOROCARBON
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

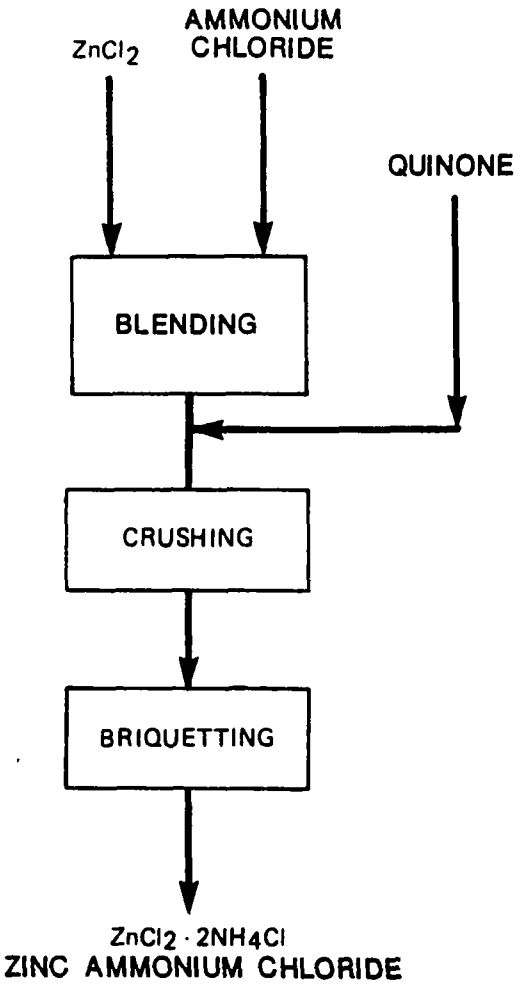


FIGURE C-23
ZINC AMMONIUM CHLORIDE PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

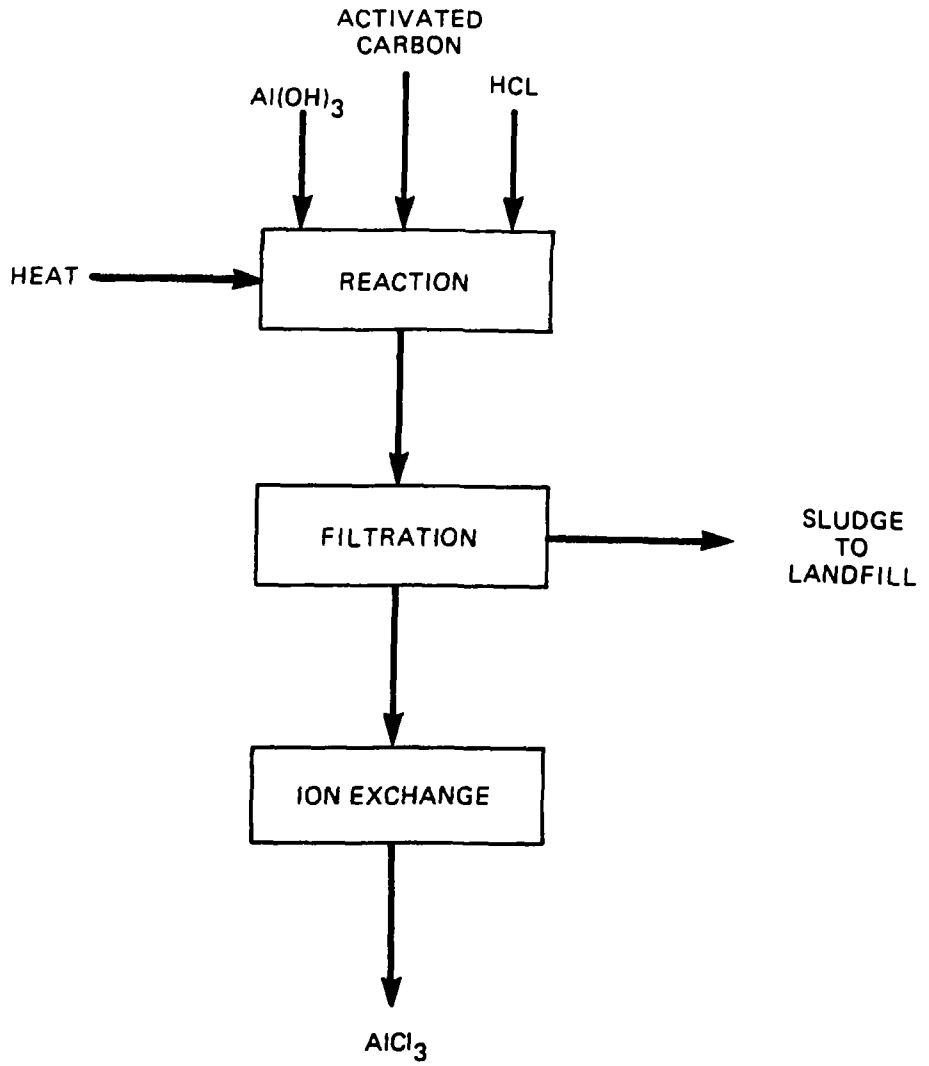


FIGURE C-24
ALUMINUM CHLORIDE PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, ILLINOIS

CH2M HILL

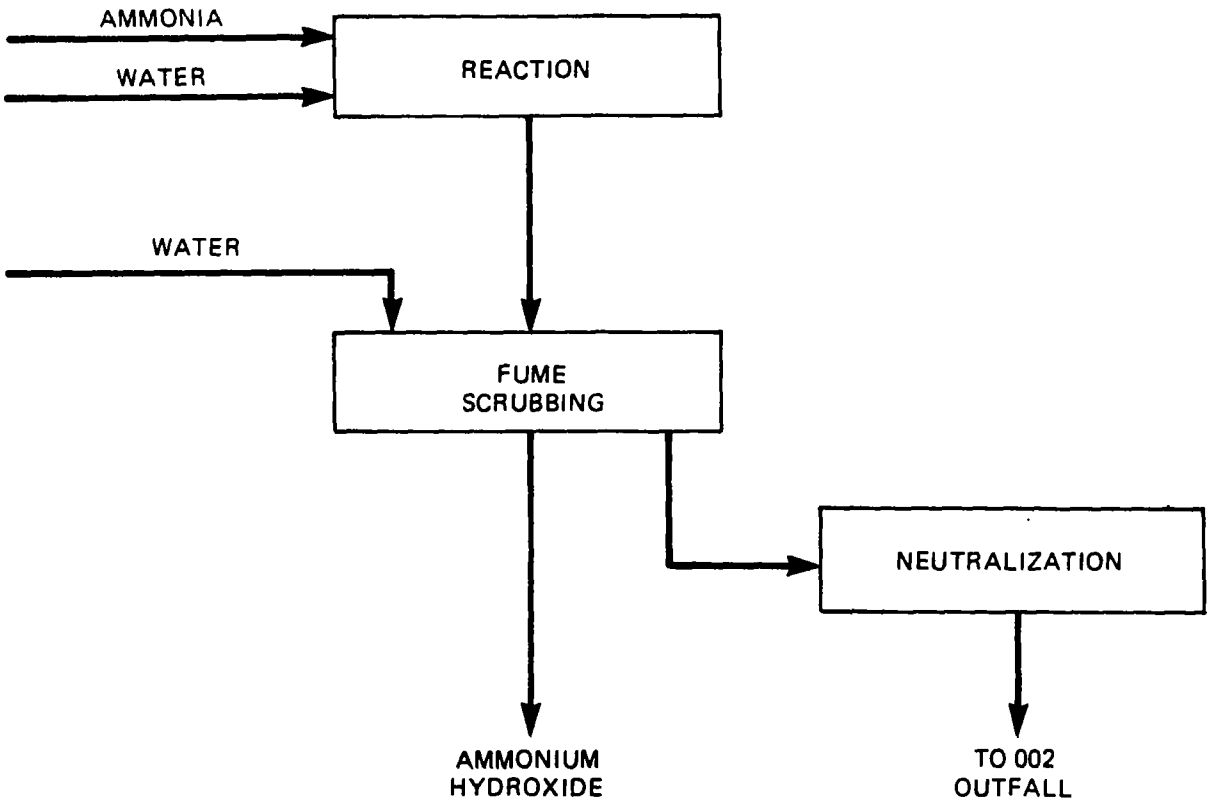
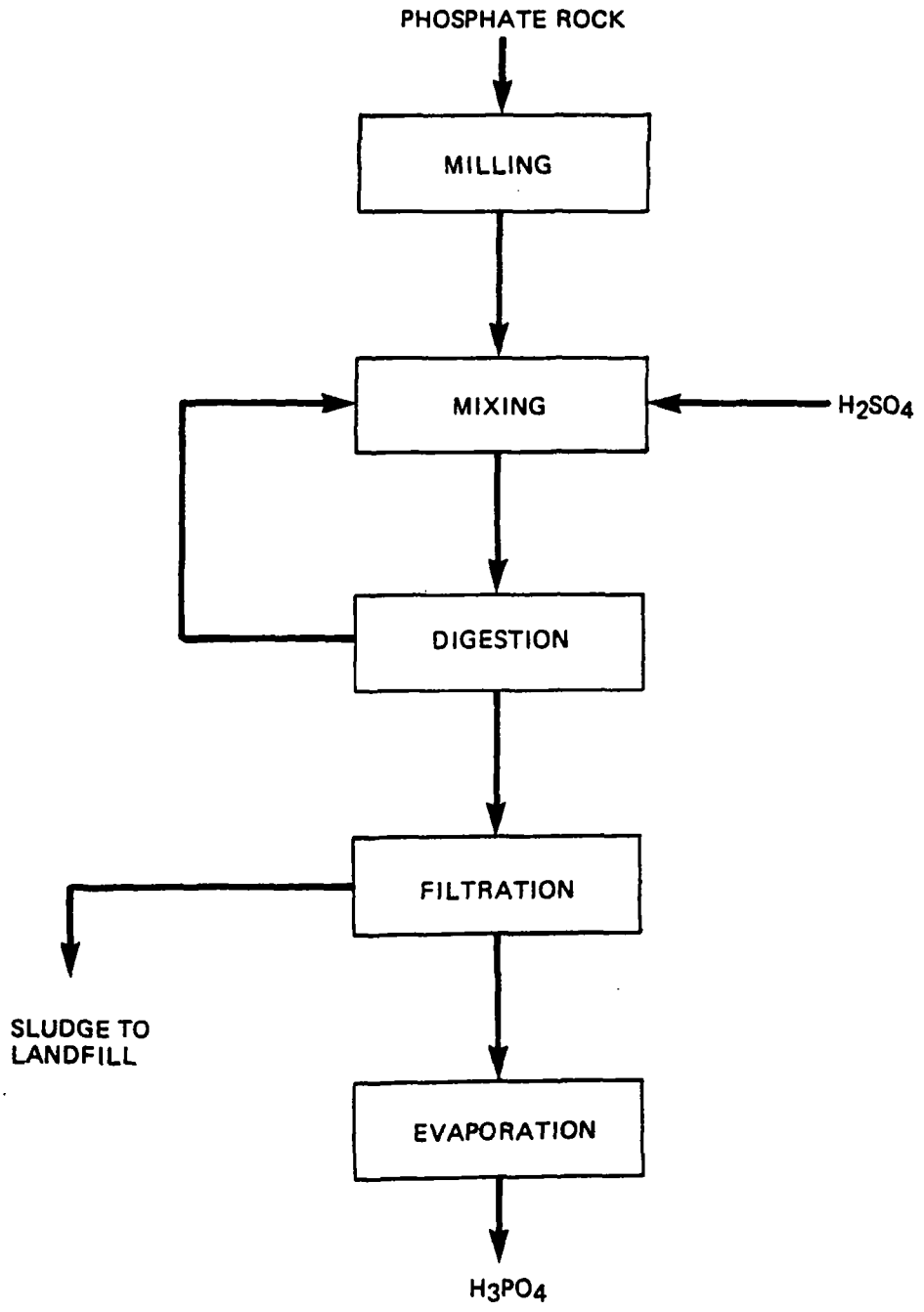


FIGURE C-25
REAGENT AMMONIUM HYDROXIDE
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

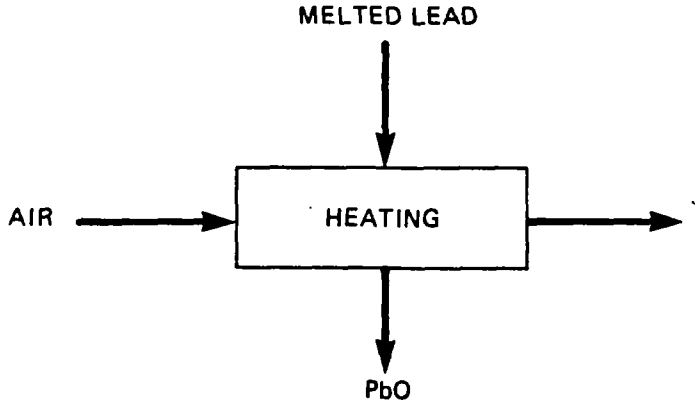
CH2MHILL



REFERENCE:
P 341-342, SHREVE

FIGURE C-26
ASSUMED PHOSPHORIC ACID PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2MHILL



REFERNCE:
P 498, SHREVE

FIGURE C-27
ASSUMED LITHARGE
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

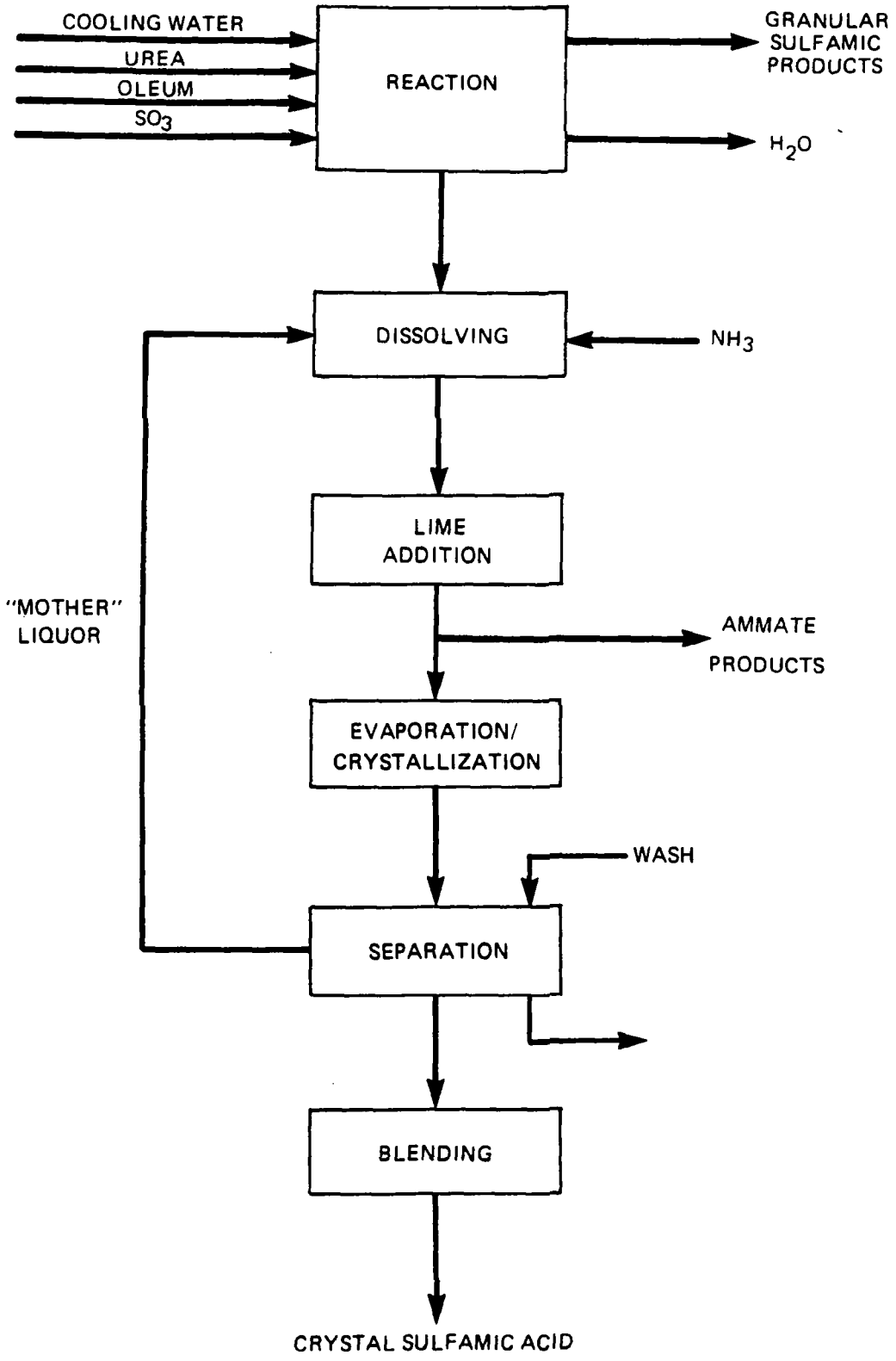


FIGURE C-28
SULFAMIC ACID
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

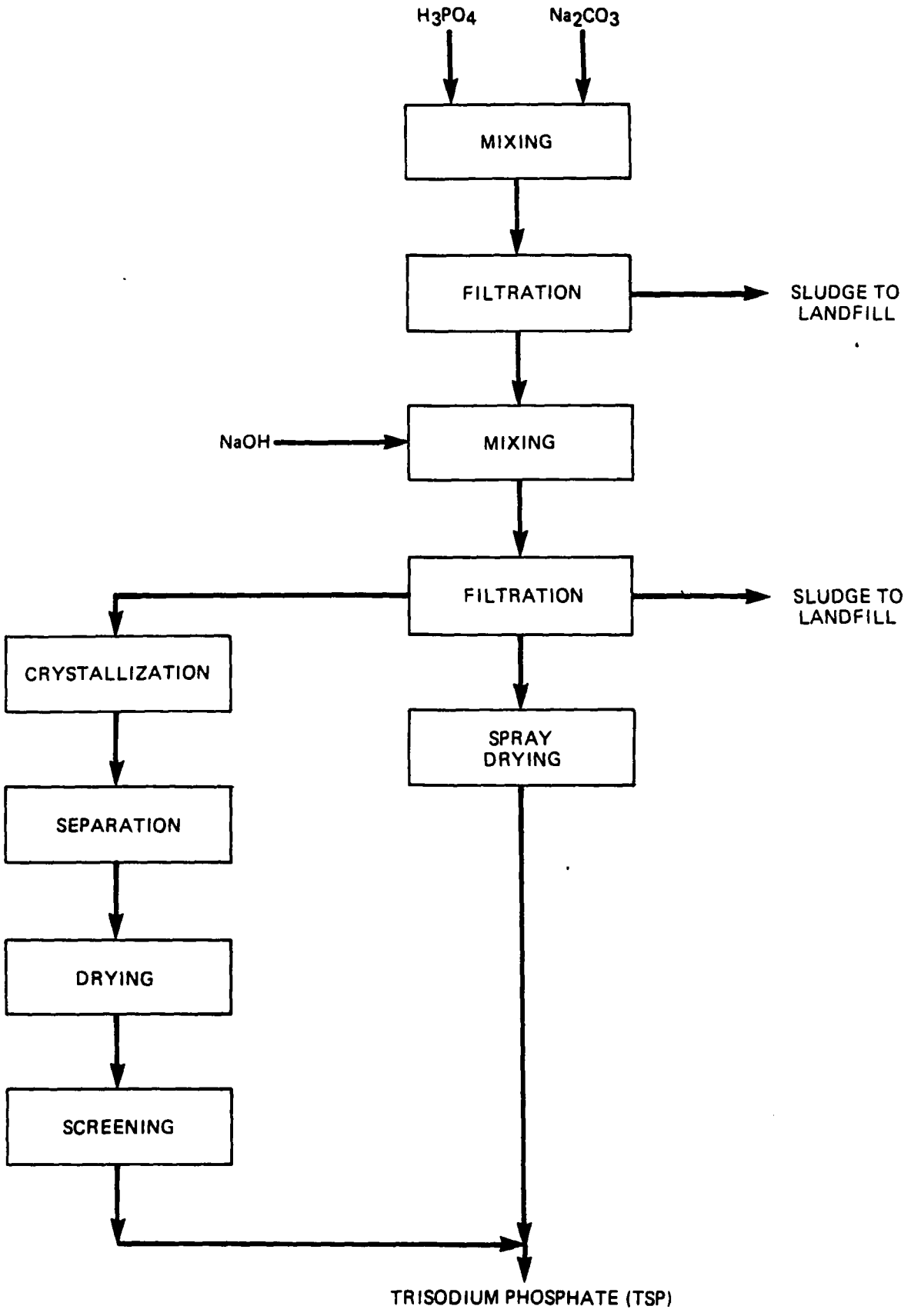


FIGURE C-29
ASSUMED TRISODIUM PHOSPHATE PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

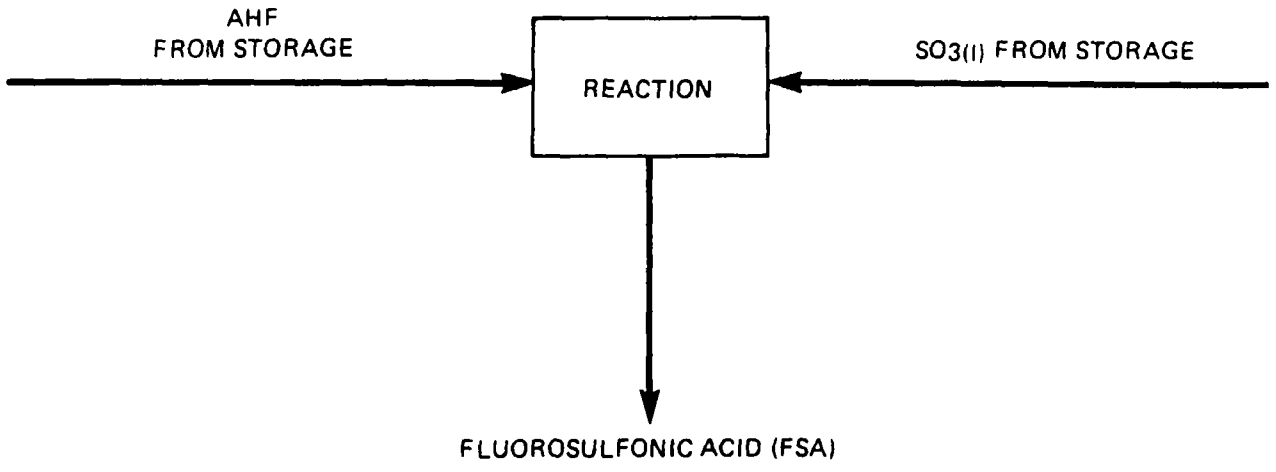


FIGURE C-30
FLUOROSULFONIC ACID
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

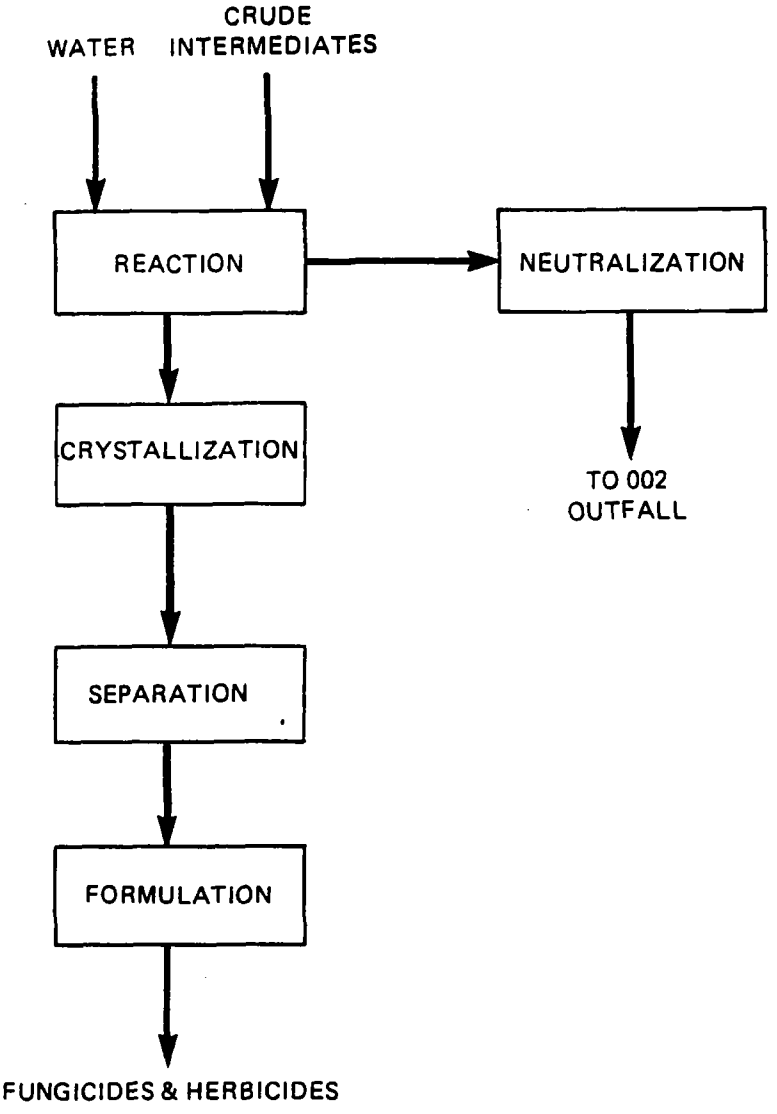


FIGURE C-31
GENERAL AGCHEM PRODUCTS
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2MHILL

EVD TREATMENT SYSTEM
$AlCl_3$, COLLOIDAL SILICA, SODIUM SILICATE, BARRELHOUSE, SETTLING PIT AND MAIN OFFICE PROCESS SEWERS

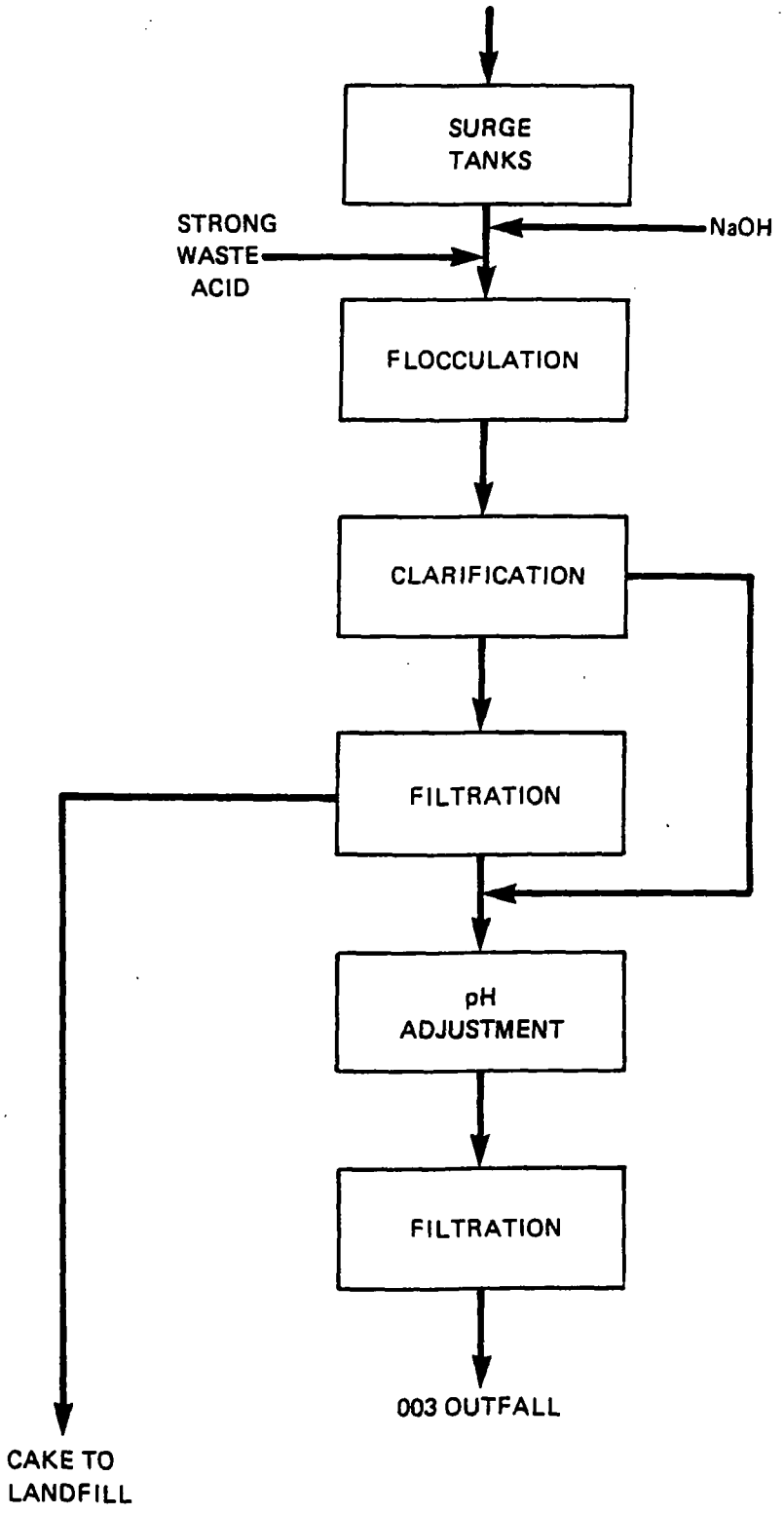


FIGURE C-32
EVC TREATMENT SYSTEM
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

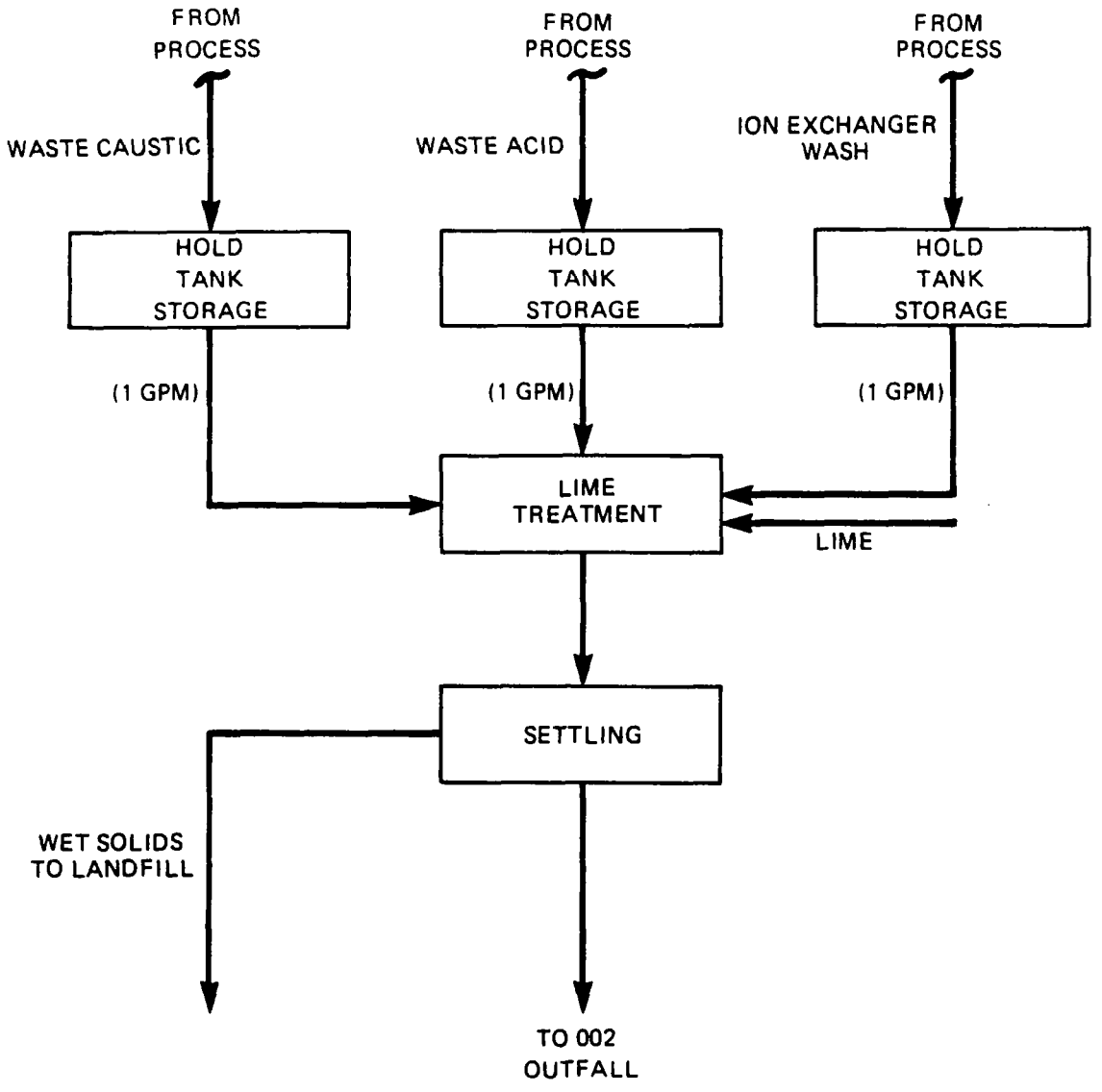


FIGURE C-33
TCFM FLUOROCARBON PROCESS
WASTE TREATMENT
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

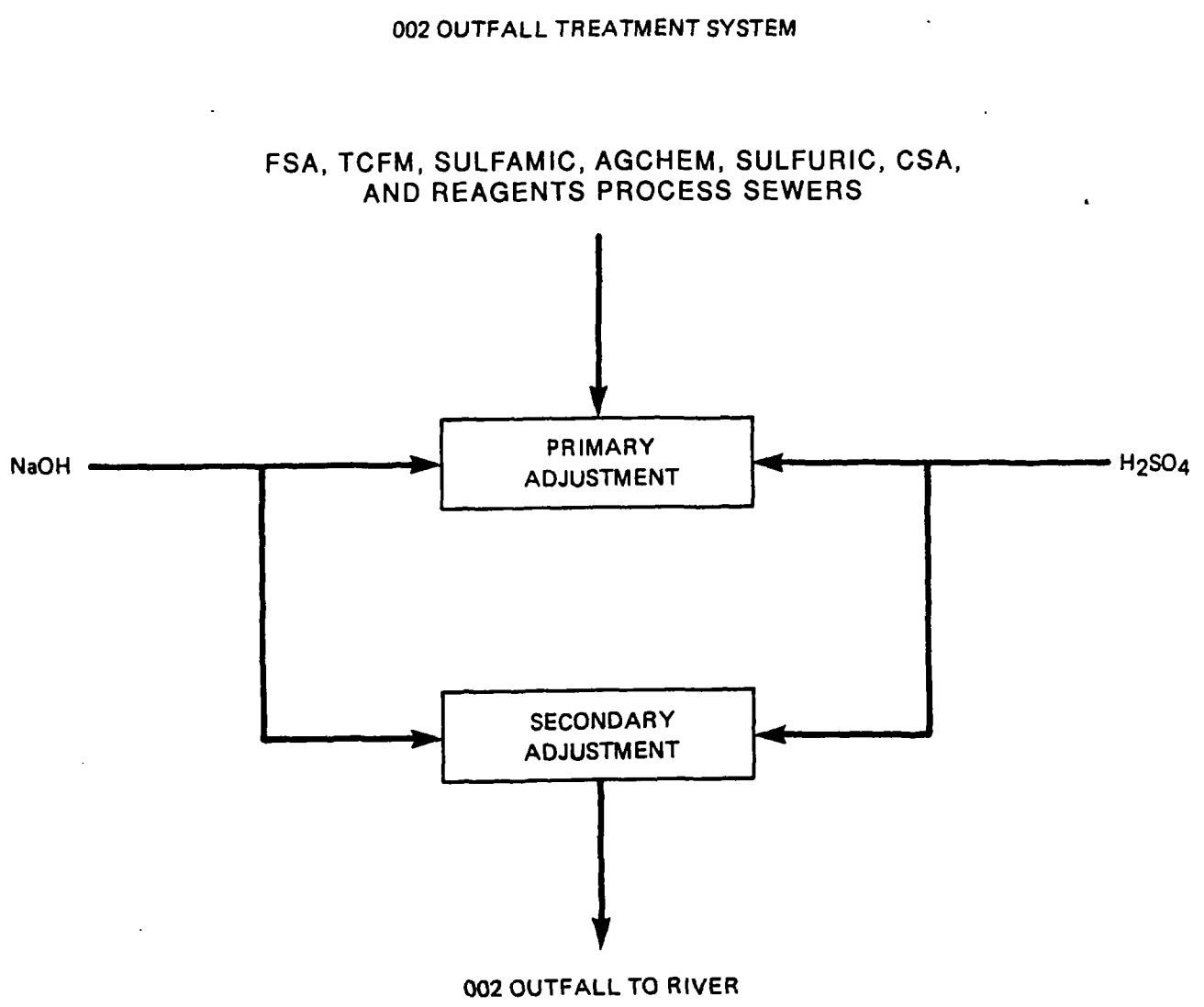


FIGURE C-34
002 OUTFALL TREATMENT SYSTEM PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

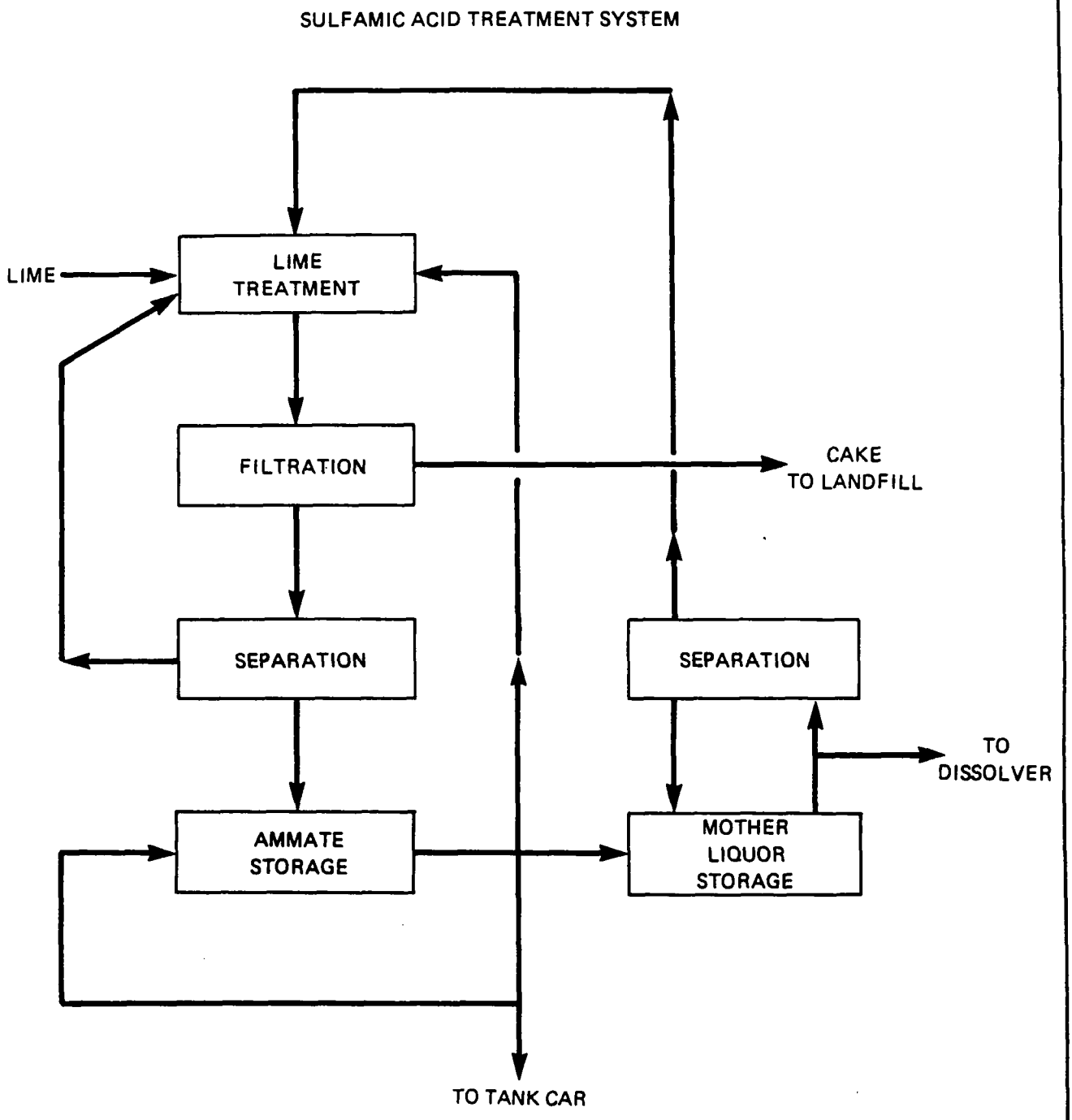
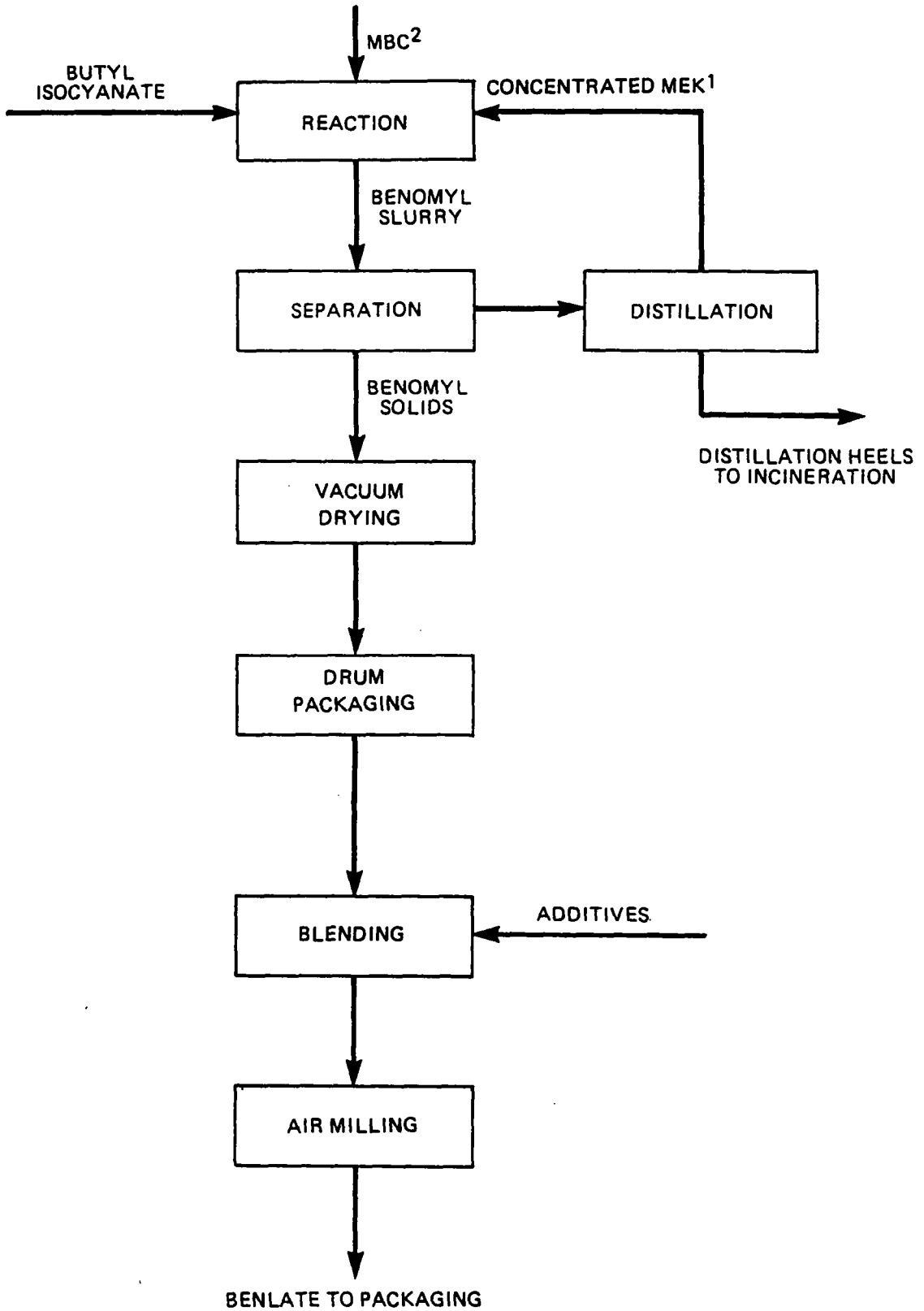


FIGURE C-35
SULFAMIC ACID TREATMENT SYSTEM PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL



1. Methylethyl Ketone
2. Methyl 2-benzimidazole carbamate

FIGURE D-1
BENOMYL/BENLATE PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

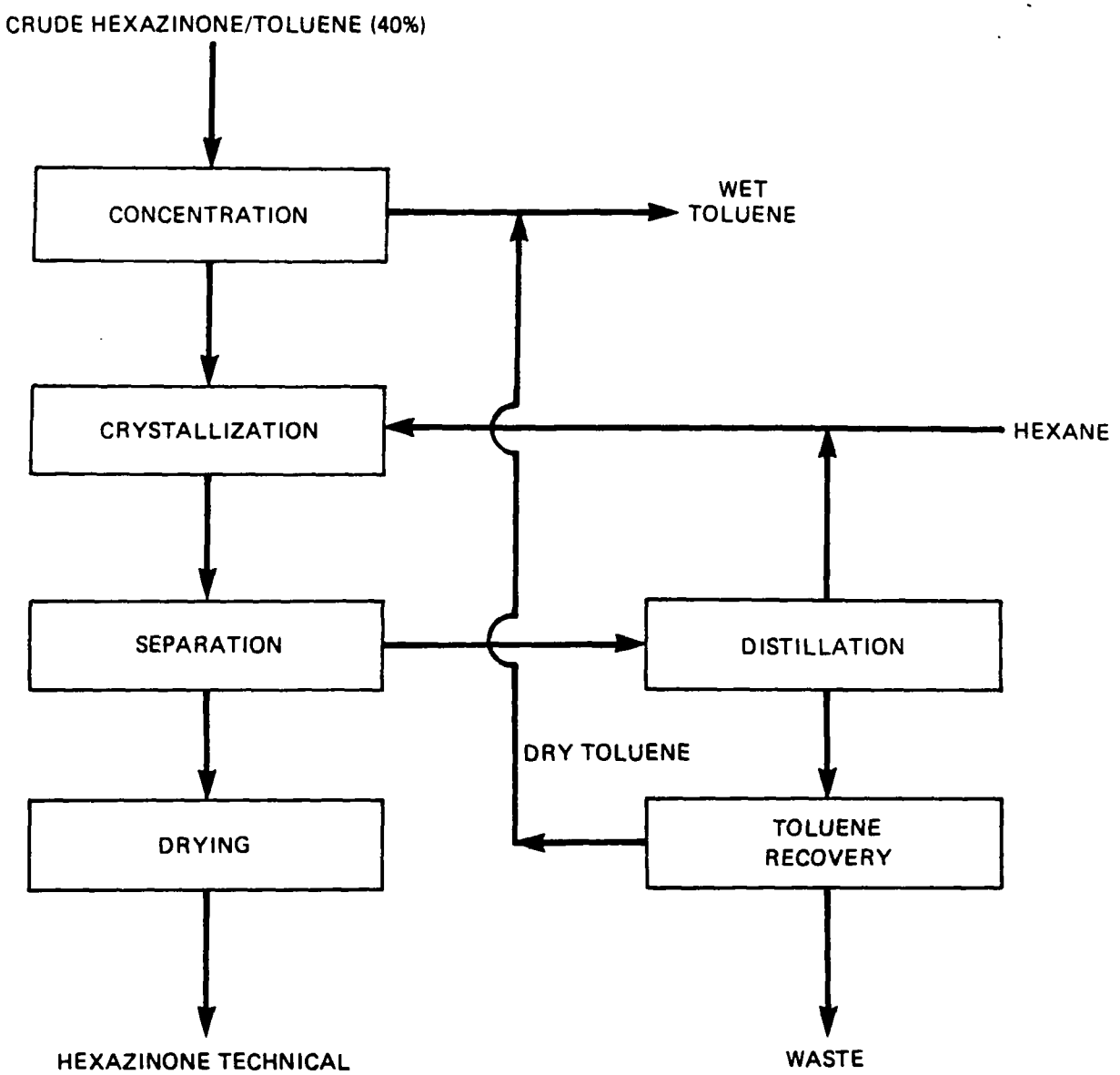
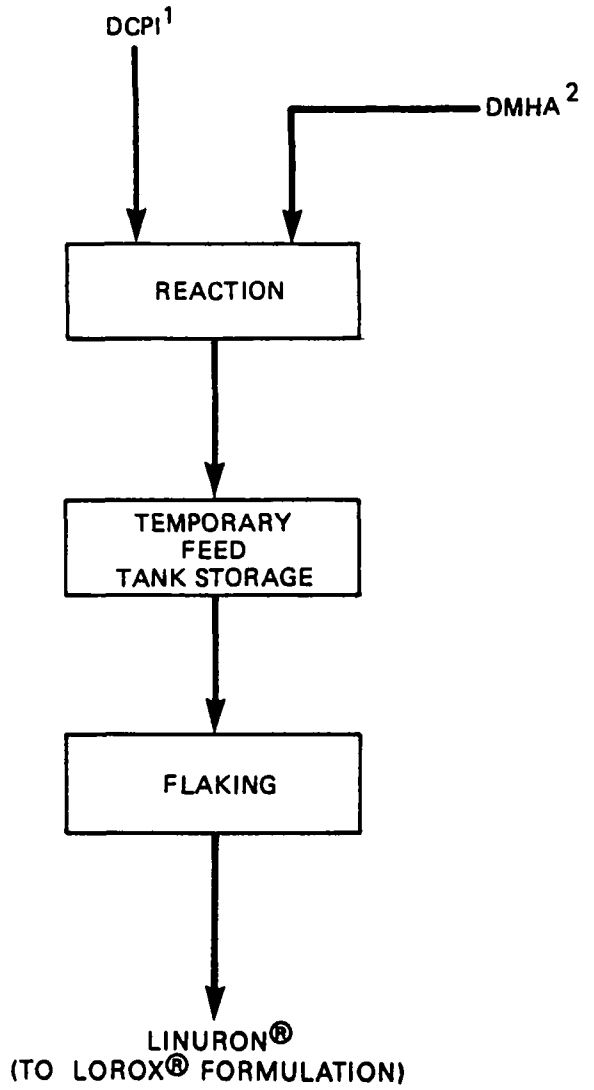


FIGURE D-2
HEXAZINONE
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL



1. Dichlorophenylisocyanate
2. Dimethylhexylamine

FIGURE D-3
LINURON® PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

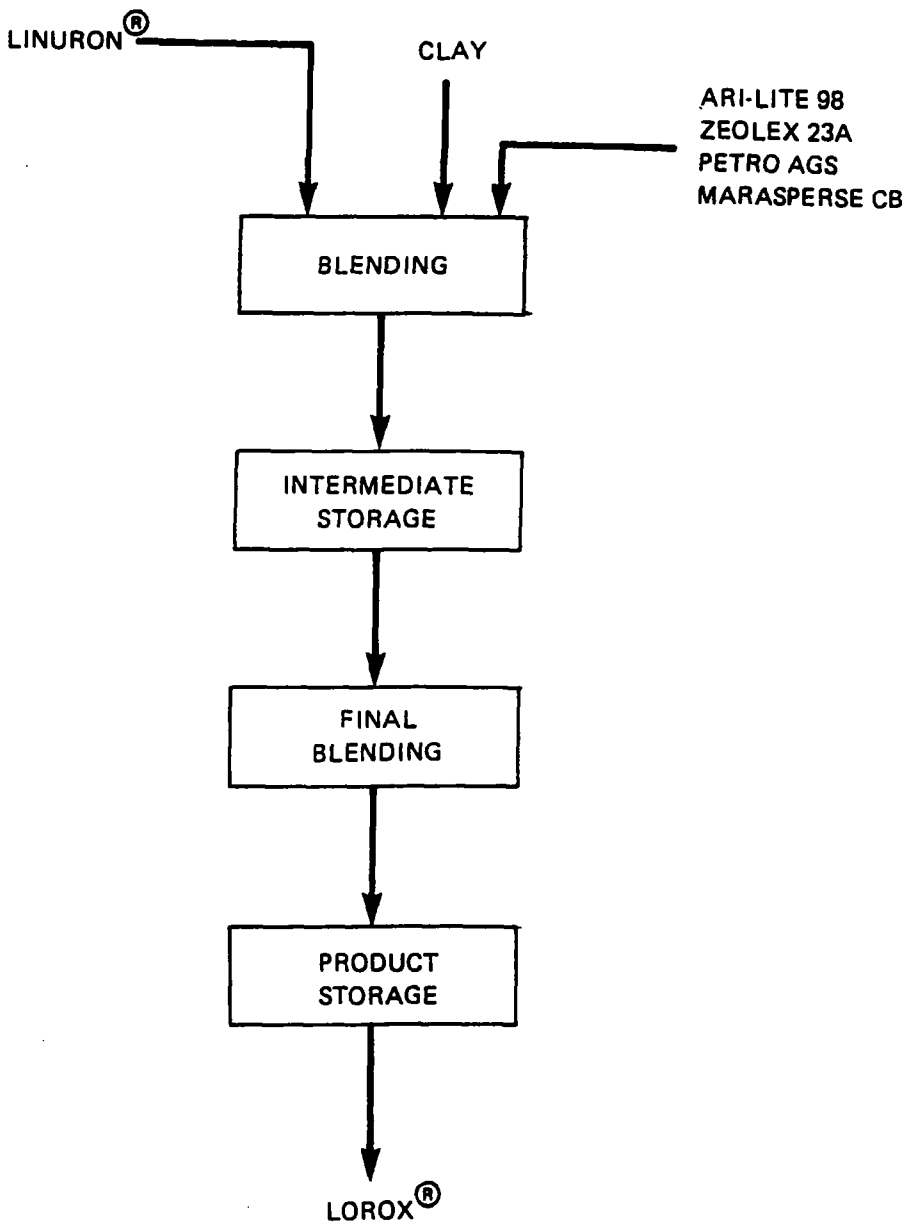
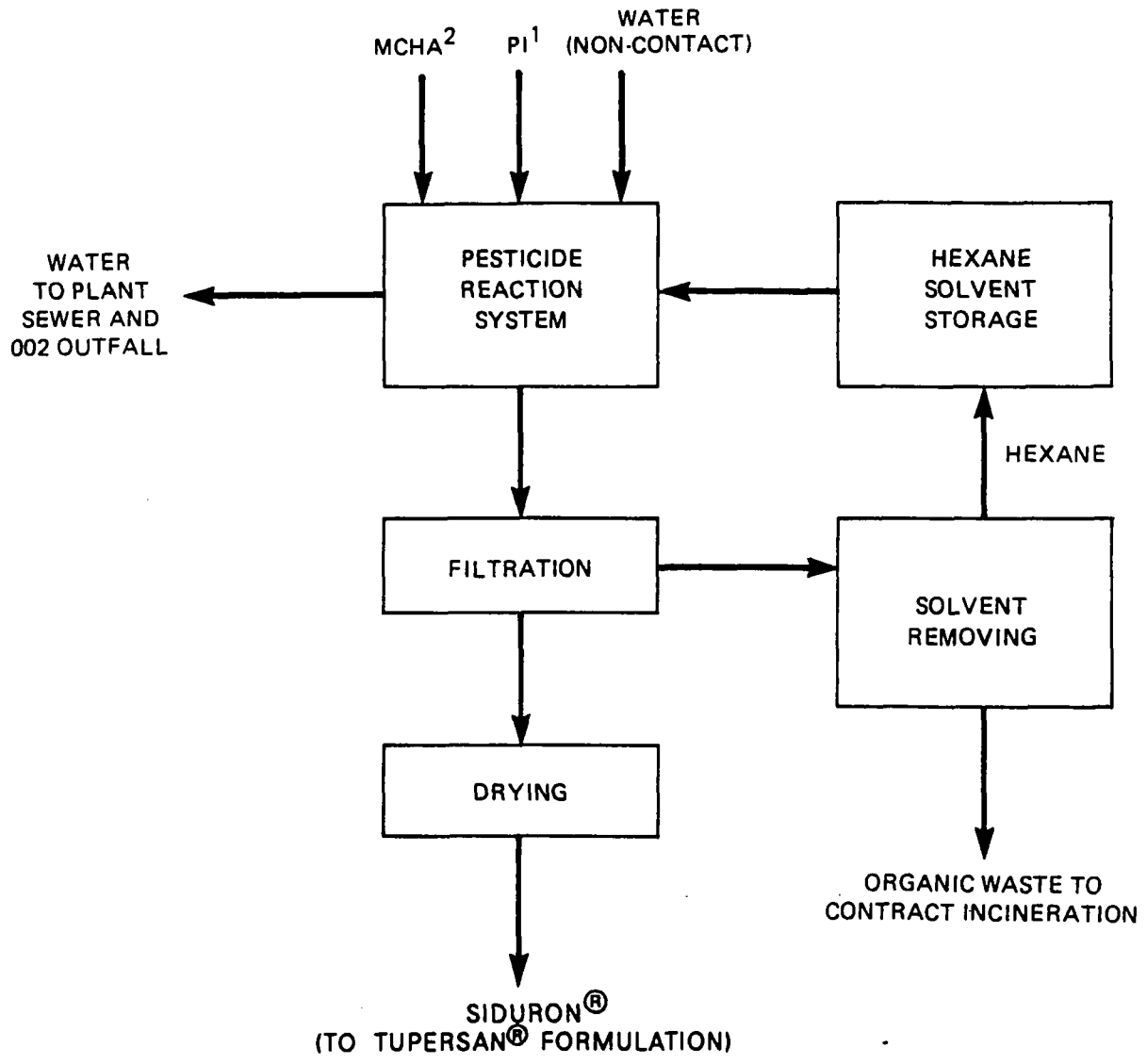


FIGURE D-4
LOROX® PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL



1. Phenylisocyanate
2. 2-Methyl cyclohexylamine

FIGURE D-5
SIDURON® PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

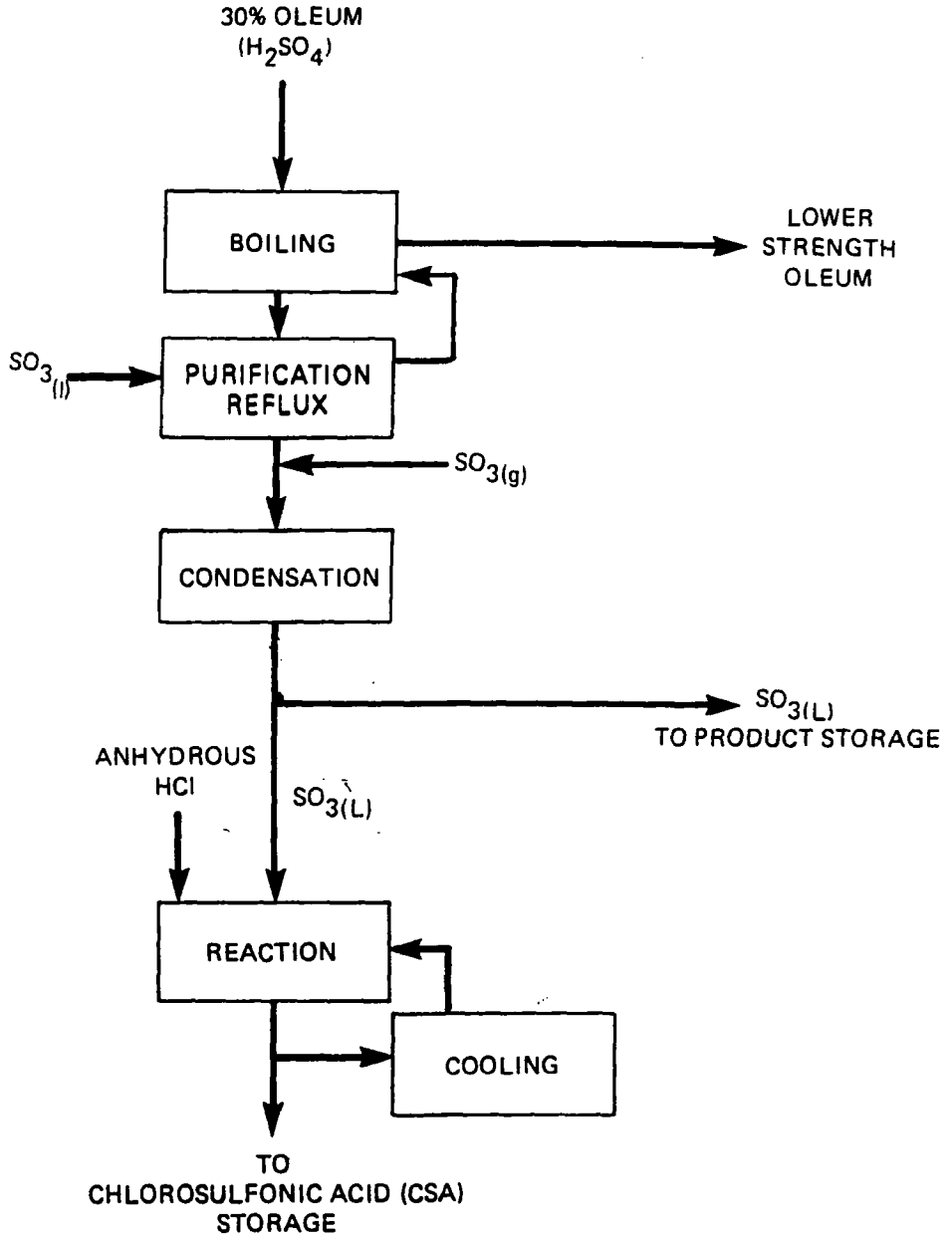


FIGURE D-6
$SO_{3(L)}$/CSA
PROCESS FLOW SHEET
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2MHILL

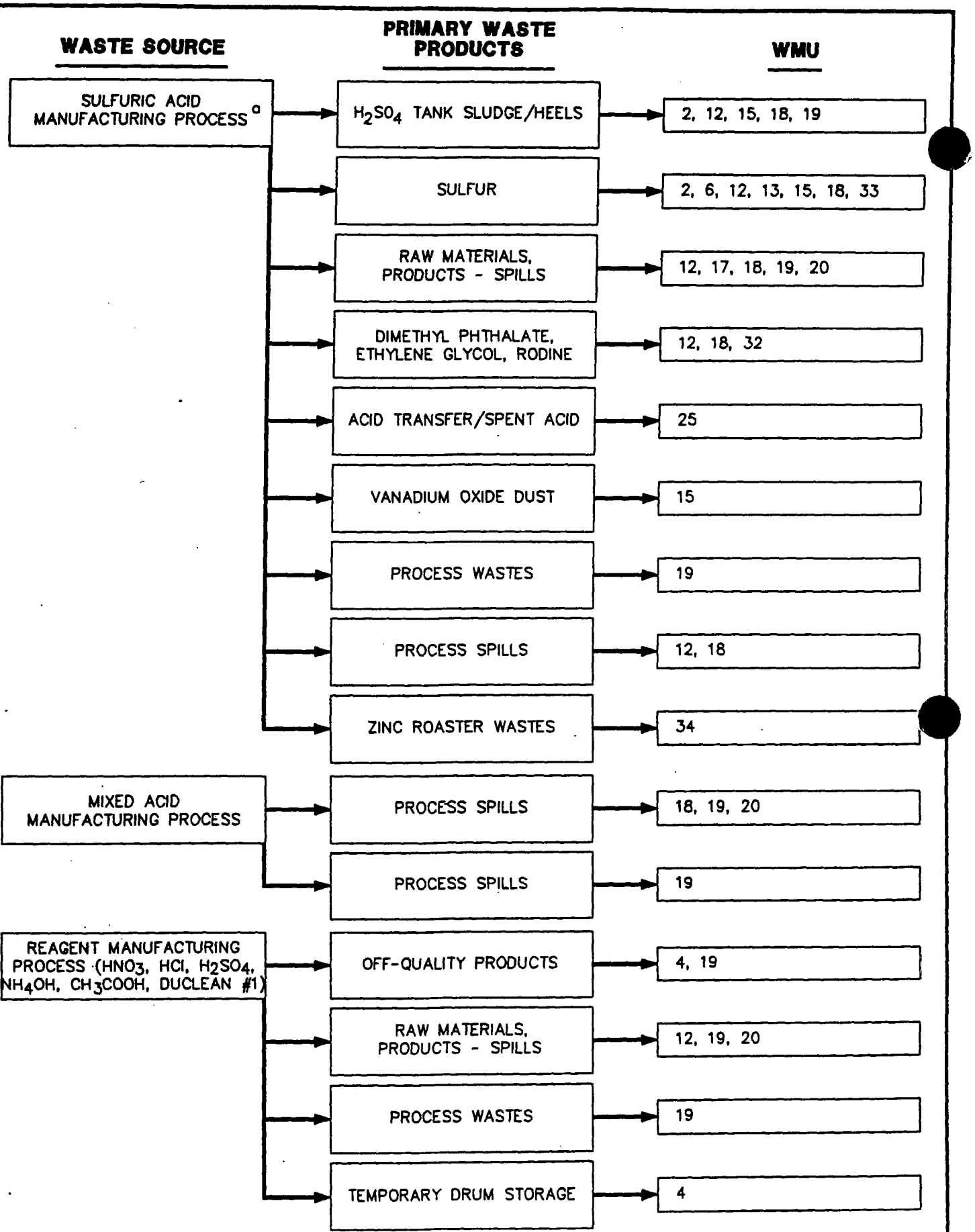
GLO218 G E-1 1 12/14/89

LEGEND

CODE NUMBER	WMU NAME
1	ASH LANDFILL/STOKER GRATE ASH
2	RUBBLE FILL AREA
3	COAL/FLY ASH PILES
4	HAZARDOUS WASTE STORAGE AREAS - CLOSED
5	SILICA/CALCIUM SULFATE AREA
6	SULFUR AREAS
7	GENERAL PLANT
8	HCL NEUTRALIZATION PIT
9	INCINERATORS
10	CALCIUM FLUORIDE AREA
11	CALCIUM SULFATE/TSP AREA
12	NONRAILROAD LOADING/UNLOADING AREAS
13	CHROME OUTFALL (COOLING TOWER BLOWDOWN)
14	NEW LANDFILL
15	MISC./GENERAL REFUSE AREA
16	PCB STORAGE AREAS
17	SPILLS (NOT ASSOCIATED WITH OTHER WMUs)
18	RAILROAD LOADING/UNLOADING AREAS
19	PROCESS SEWERS
20	ABOVEGROUND TANKS
21	UNDERGROUND STORAGE TANK - EXISTING
22	INSECTICIDE AREA
23	ANTIMONY PENTACHLORIDE SETTLING BASIN
24	ZINC CRUDE MILLING AREA
25	CITIES SERVICE ACID TRANSFER LINE
26	SANITARY SEWERS
27	COLLOIDAL SILICA SETTLING PITS
28	CHEMICAL STORAGE BUILDINGS - EXISTING
29	SULFAMIC ACID PITS
30	ENVIRONMENTAL CONTROL SYSTEM & OUTFALL 003
31	UNDERGROUND TANKS - ABANDONED
32	CHEMICAL STORAGE BUILDINGS - ABANDONED
33	MISC. PITS/PILES
34	ZINC ROASTERS (TRAIL ORE ROASTERS)
35	ZINC MUD AREA
36	OUTFALL 002

FIGURE E-1 (Page 1 of 14)
WASTE MANAGEMENT FLOW CHART
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL



NOTE:
a.) Secondary products with production less than 25 years are: sodium sulfate, zinc, zinc oxide, C&C Mixture ($ZnCl_2$ and Muriatic), Adhesives, Detergents, CSA, AgChem products (see AgChem Waste Management Flow Chart for listing), sodium sulfide products, copperized chromated zinc chloride products, sodium bisulfite solution, disodium phosphate, ferric sulfate (copperous), HF Storage, manganar, 4-All Drain solvent, colloidal silica, anisole, glotite, iron agglomerates, HCl translocding, and manganese sulfate.

FIGURE E-1 (Page 2 of 14)
WASTE MANAGEMENT FLOW CHART
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

3-4-1 1-26-89

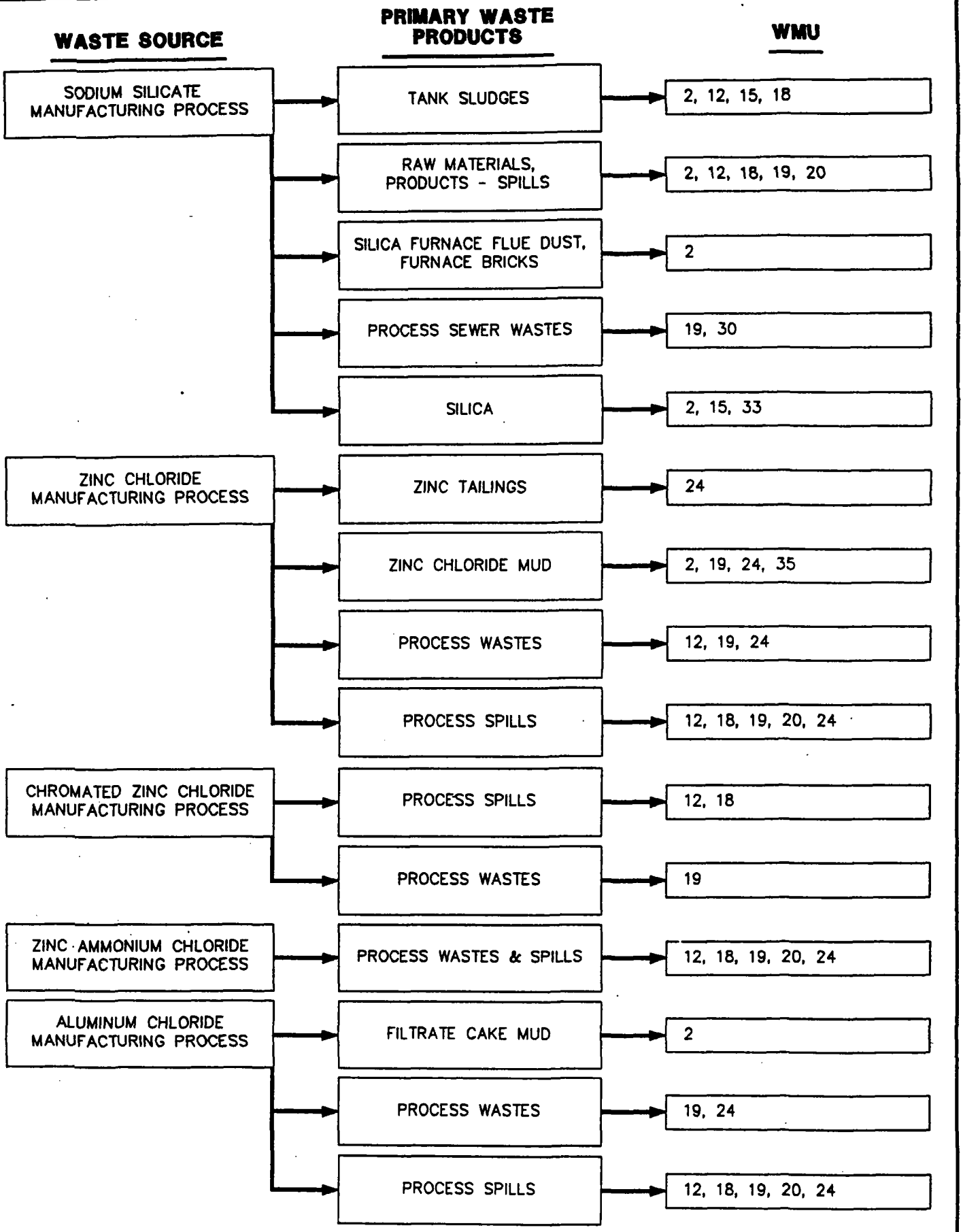


FIGURE E-1 (Page 3 of 14)
WASTE MANAGEMENT FLOW CHART
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

3-4-2 1-

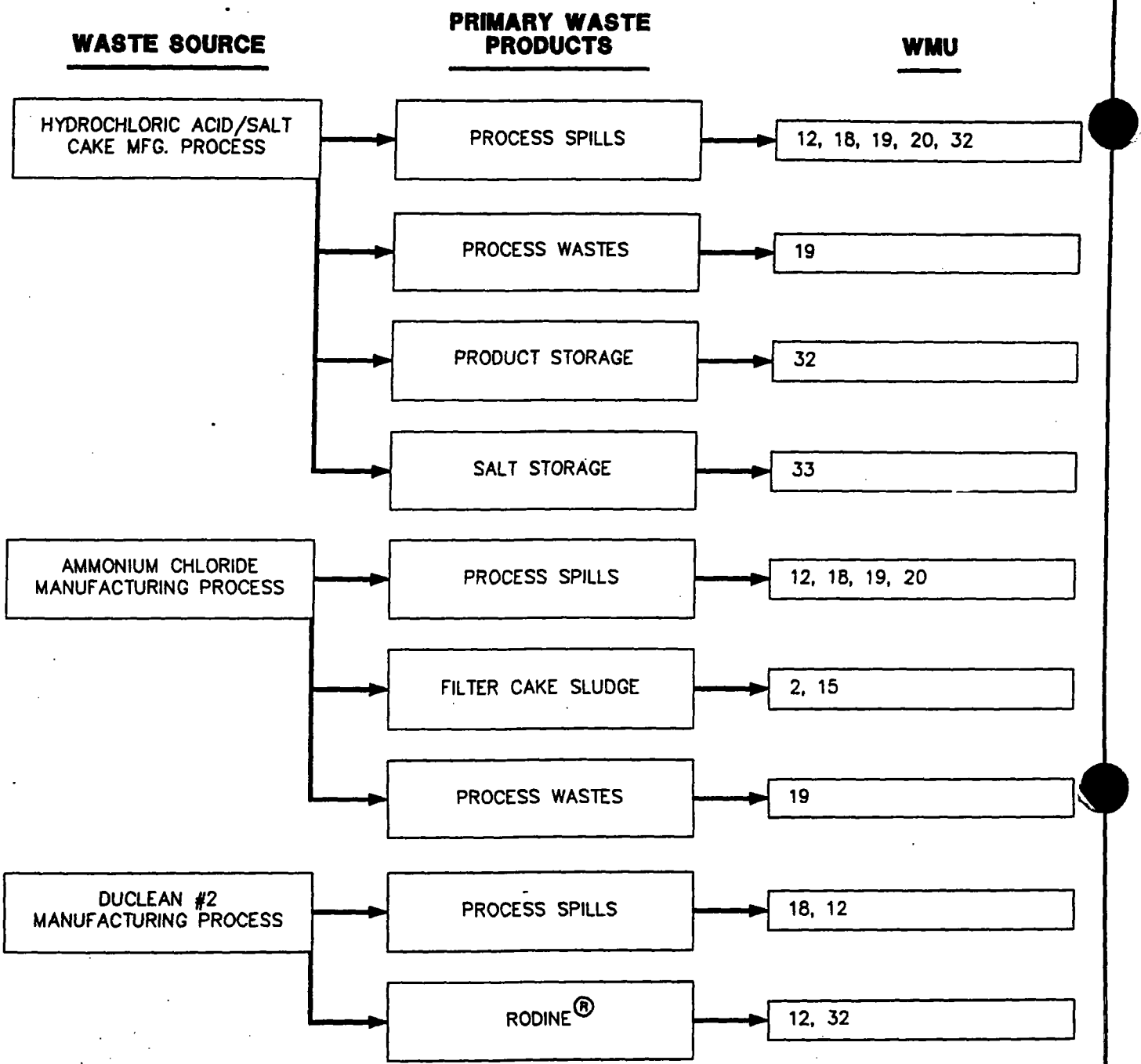
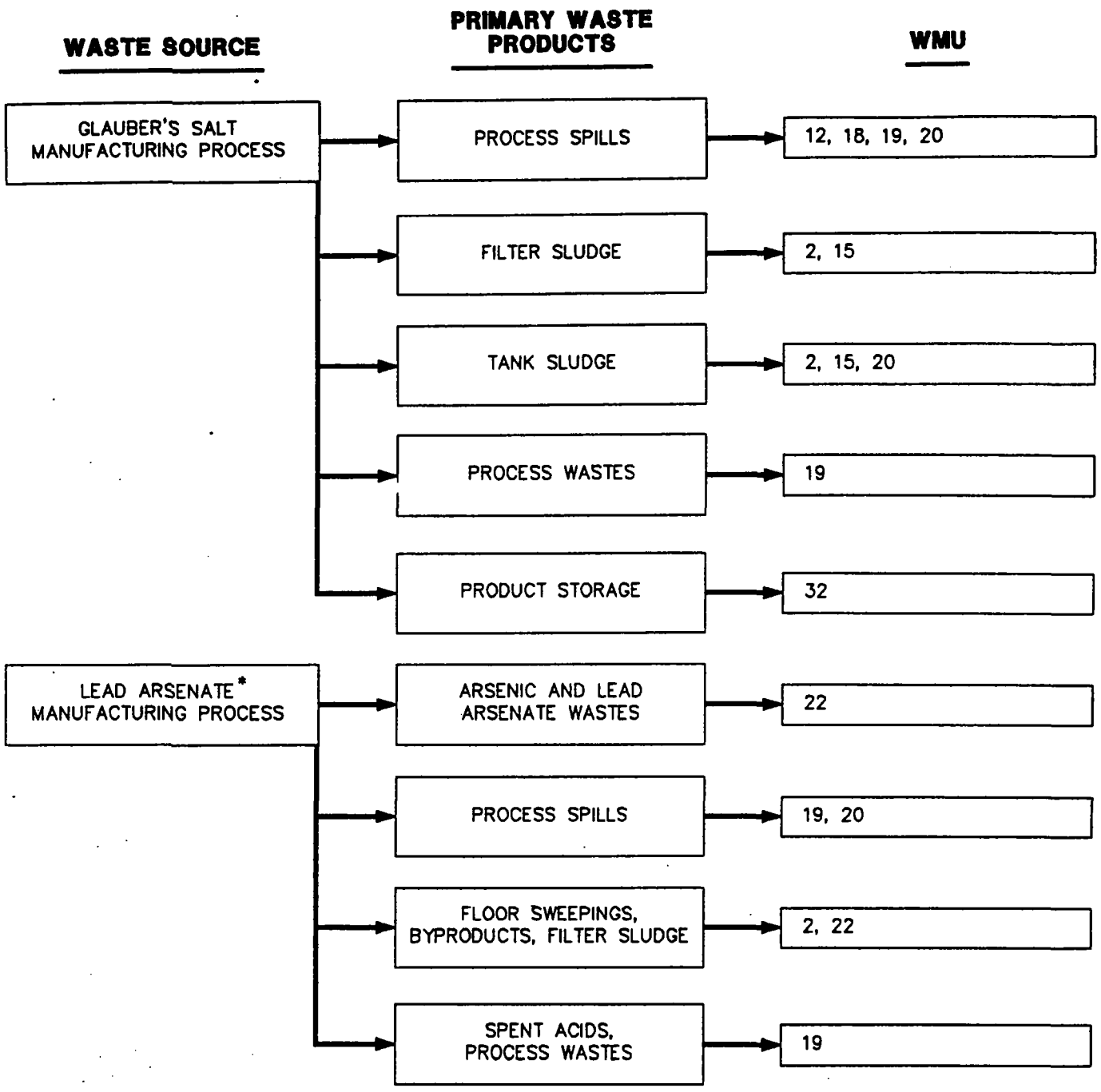


FIGURE E-1 (Page 4 of 14)
WASTE MANAGEMENT FLOW CHART
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

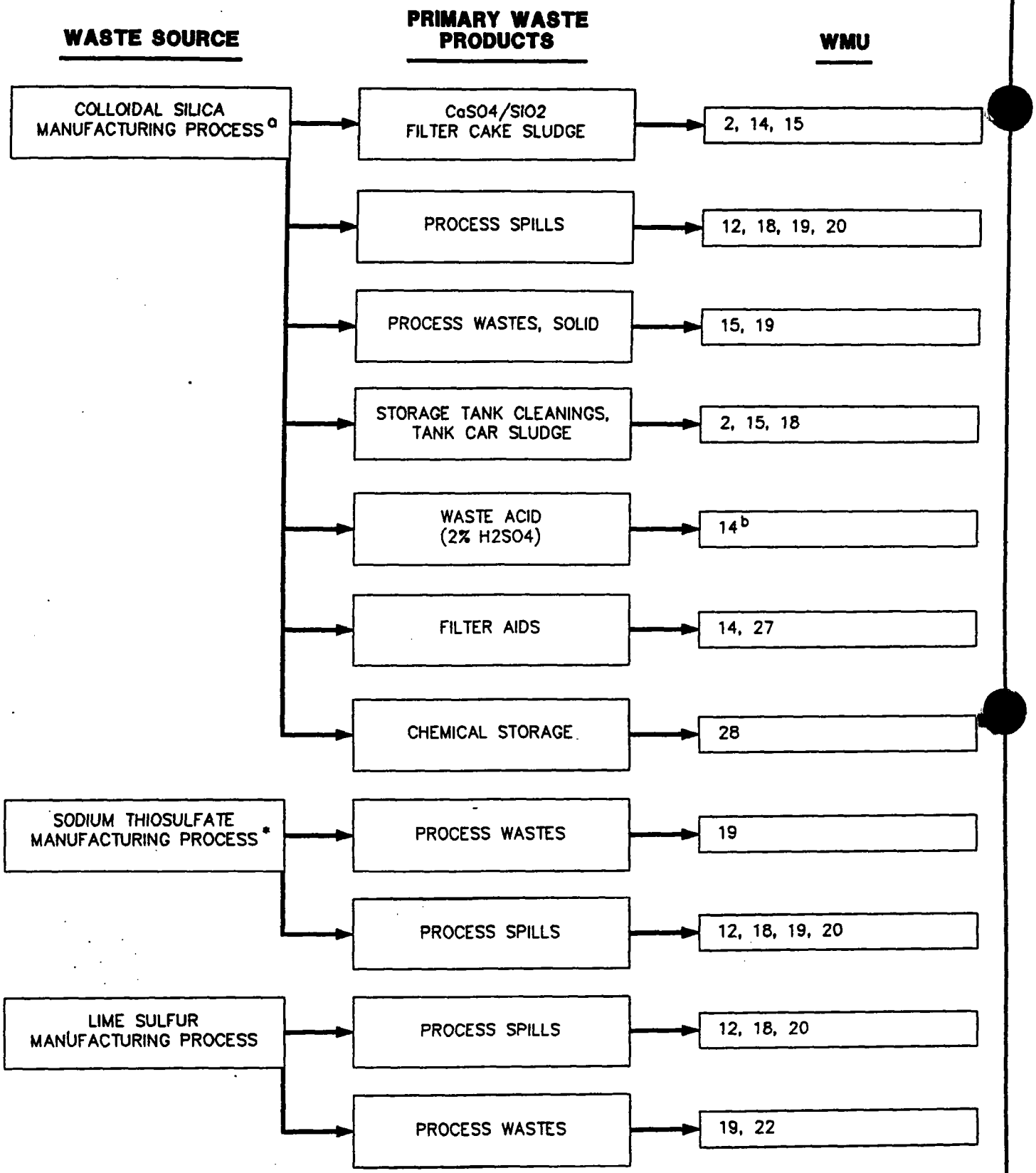
3-4-3 1-26-89



* Less information is available about this process because it was not used after the 1940's.

FIGURE E-1 (Page 5 of 14)
WASTE MANAGEMENT FLOW CHART
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

3-4-4 1-4



NOTES:

a.) All waste water flows go to 003 outfall via EVC.

b.) As $CaSO_4$

* Less information is available for this process.

FIGURE E-1 (Page 6 of 14)
WASTE MANAGEMENT FLOW CHART
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

3-4-5 1-4-89

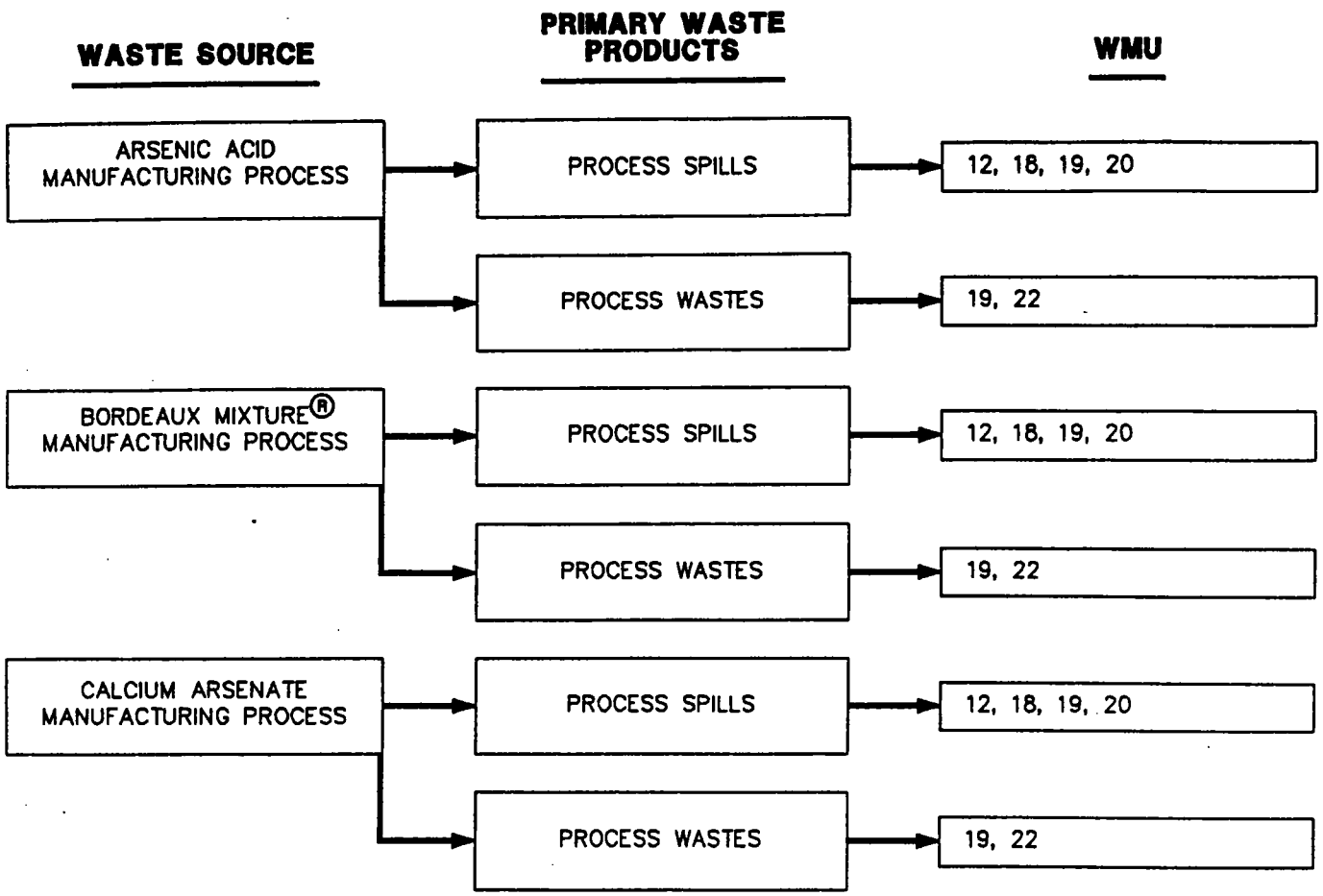


FIGURE E-1 (Page 7 of 14)
WASTE MANAGEMENT FLOW CHART
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

3-4-6 1-

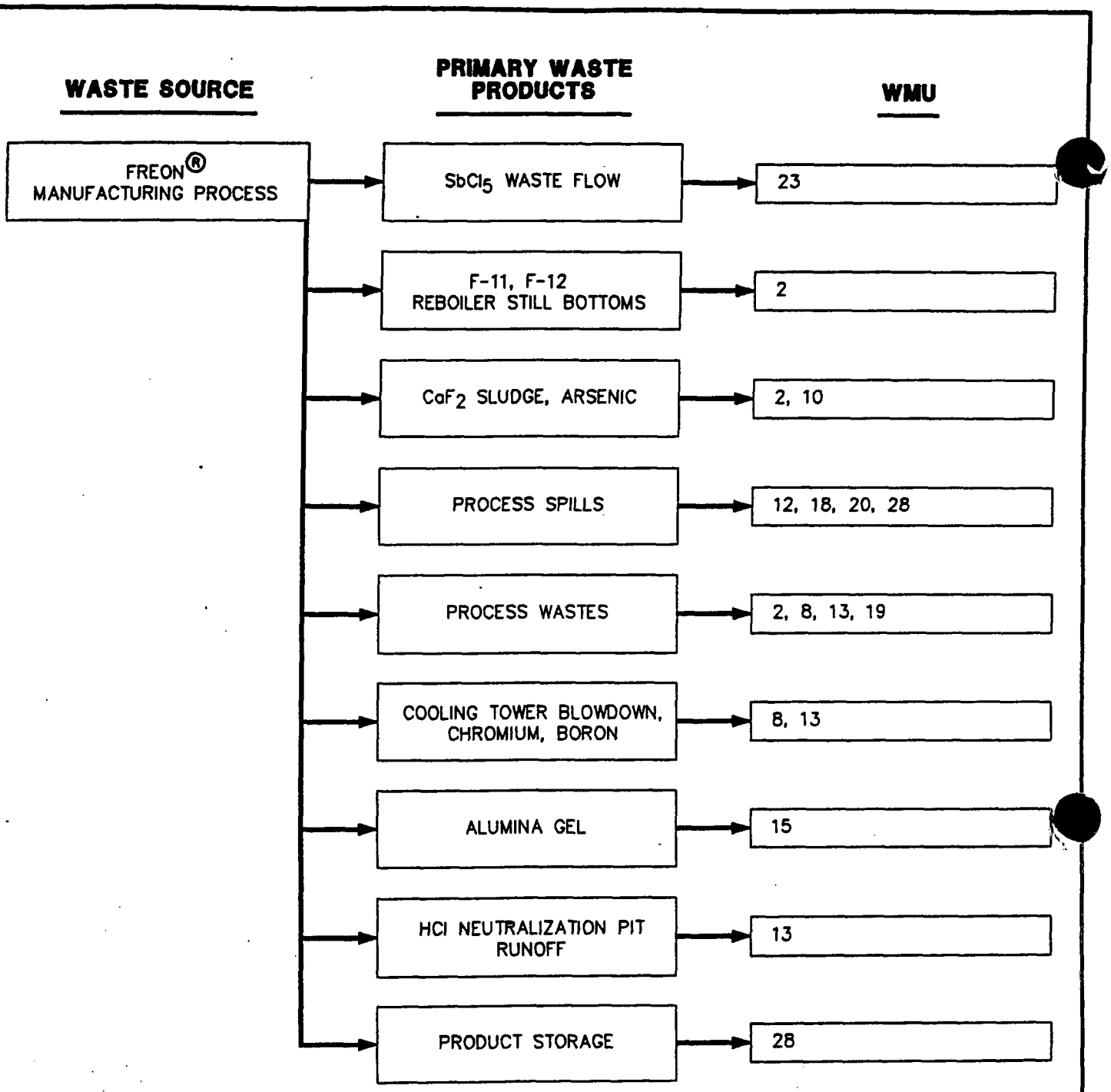


FIGURE E-1 (Page 8 of 14)
WASTE MANAGEMENT FLOW CHART
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

3-4-7 1-4-89

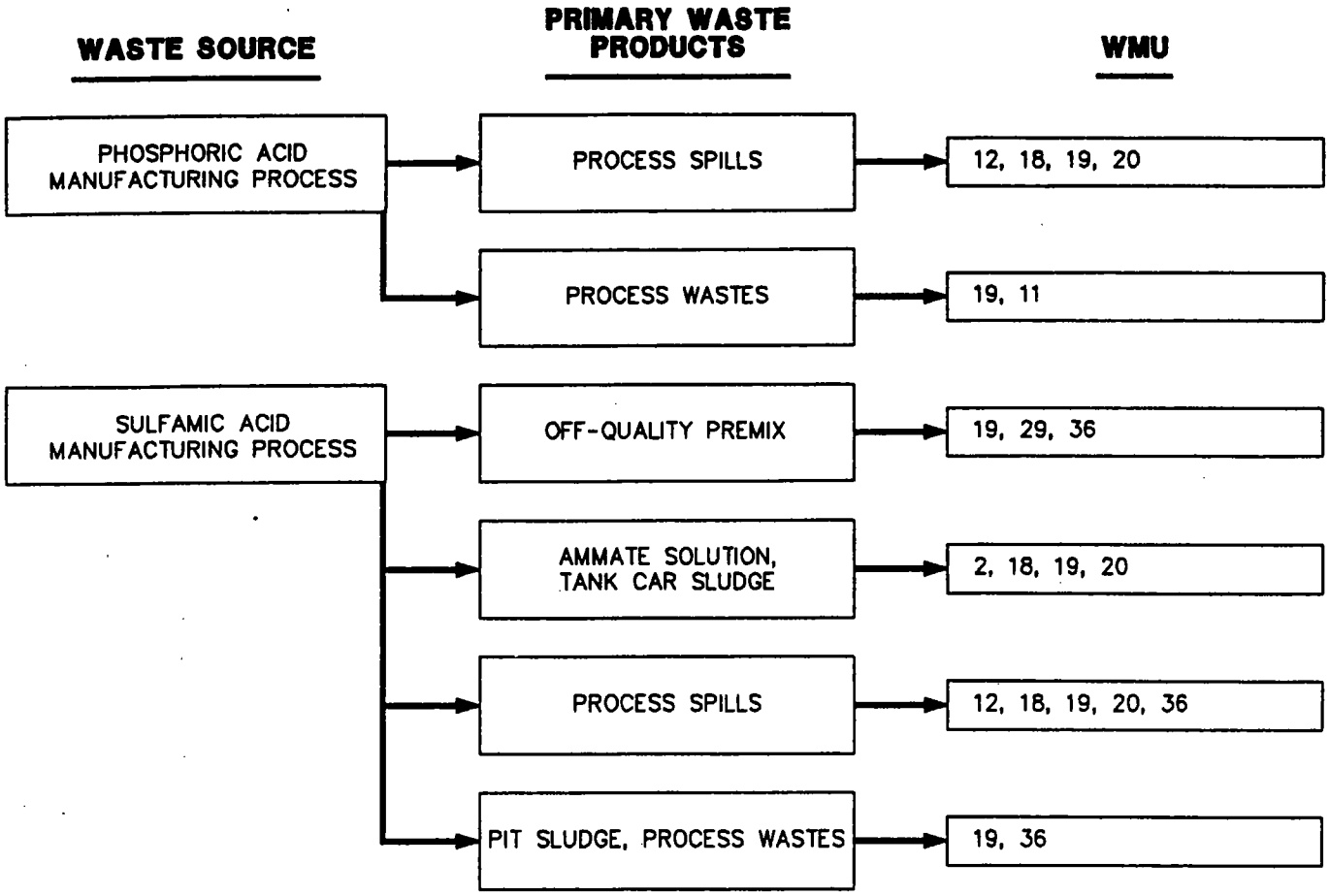


FIGURE E-1 (Page 9 of 14)
WASTE MANAGEMENT FLOW CHART
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

3-4-8 1-4

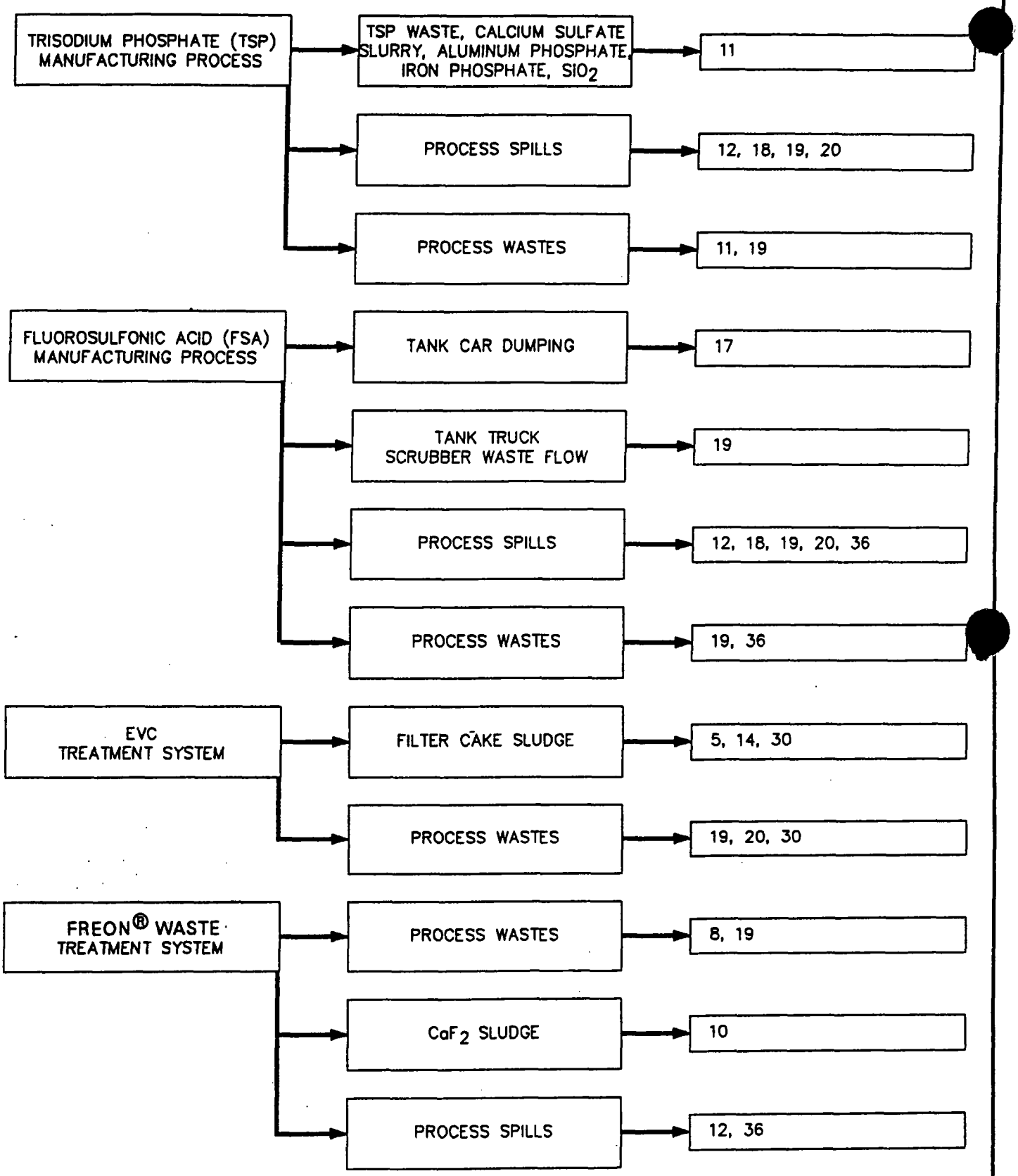


FIGURE E-1 (Page 10 of 14)
WASTE MANAGEMENT FLOW CHART
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

3-4-9 1-4-89

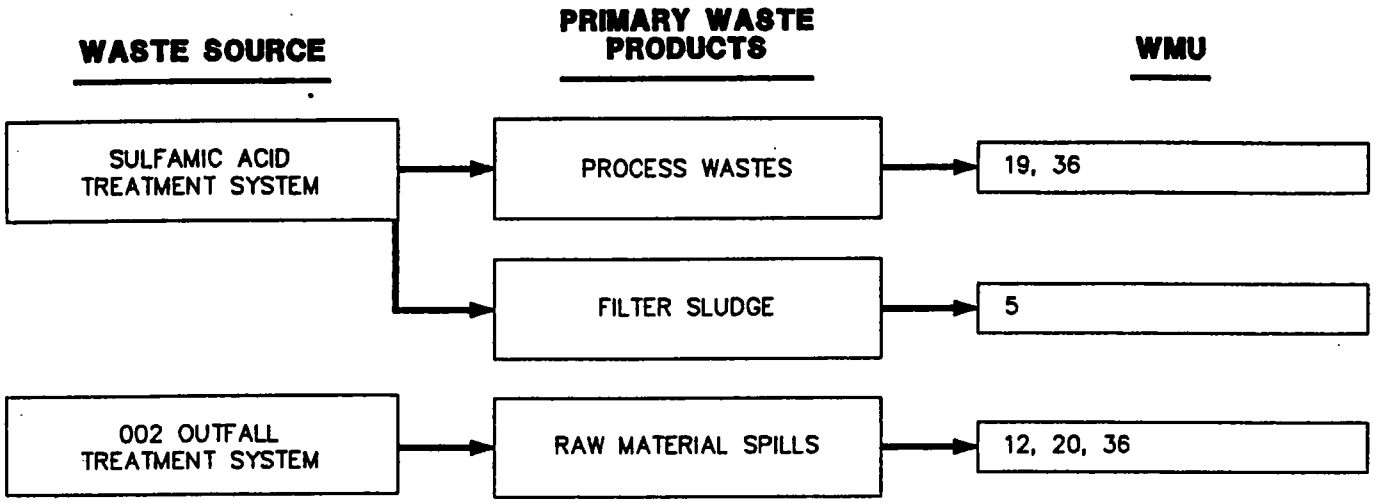
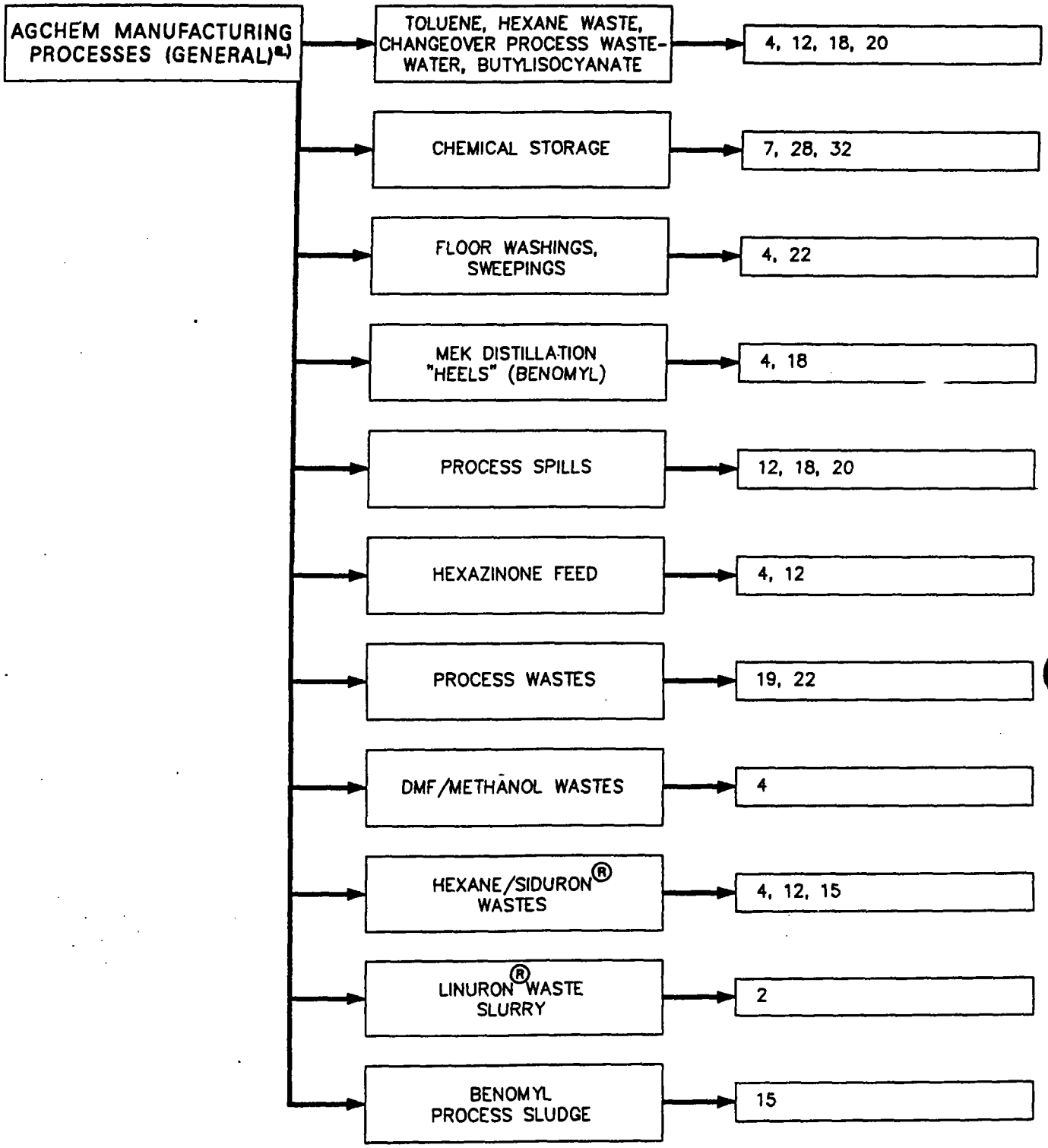


FIGURE E-1 (Page 11 of 14)
WASTE MANAGEMENT FLOW CHART
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

3-4-10 1-



NOTE:

a.) Individual AgChem Products: 2,4-D Sodium Weed Killer, Arsenate Green®, Arsenic Acid, Barium Fluorosilicate, Benomyl, Bordeaux Mixture®, Calcium Arsenate, Calcium Arsenite, Deenate® Insecticides, Diuron, EPN Insecticides, Fenuron, Garden and Potato Dust, Lead Acetate, Lead Arsenate, Lime Sulfur, Linuron®, Lithage®, Lorox®, Methoxychlor Products, Plant Food, Siduron®, Tuperson®, Valron®, Velpar® (Hexazinone).

FIGURE E-1 (Page 12 of 14)
WASTE MANAGEMENT FLOW CHART
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

3-4-11 1-4-89

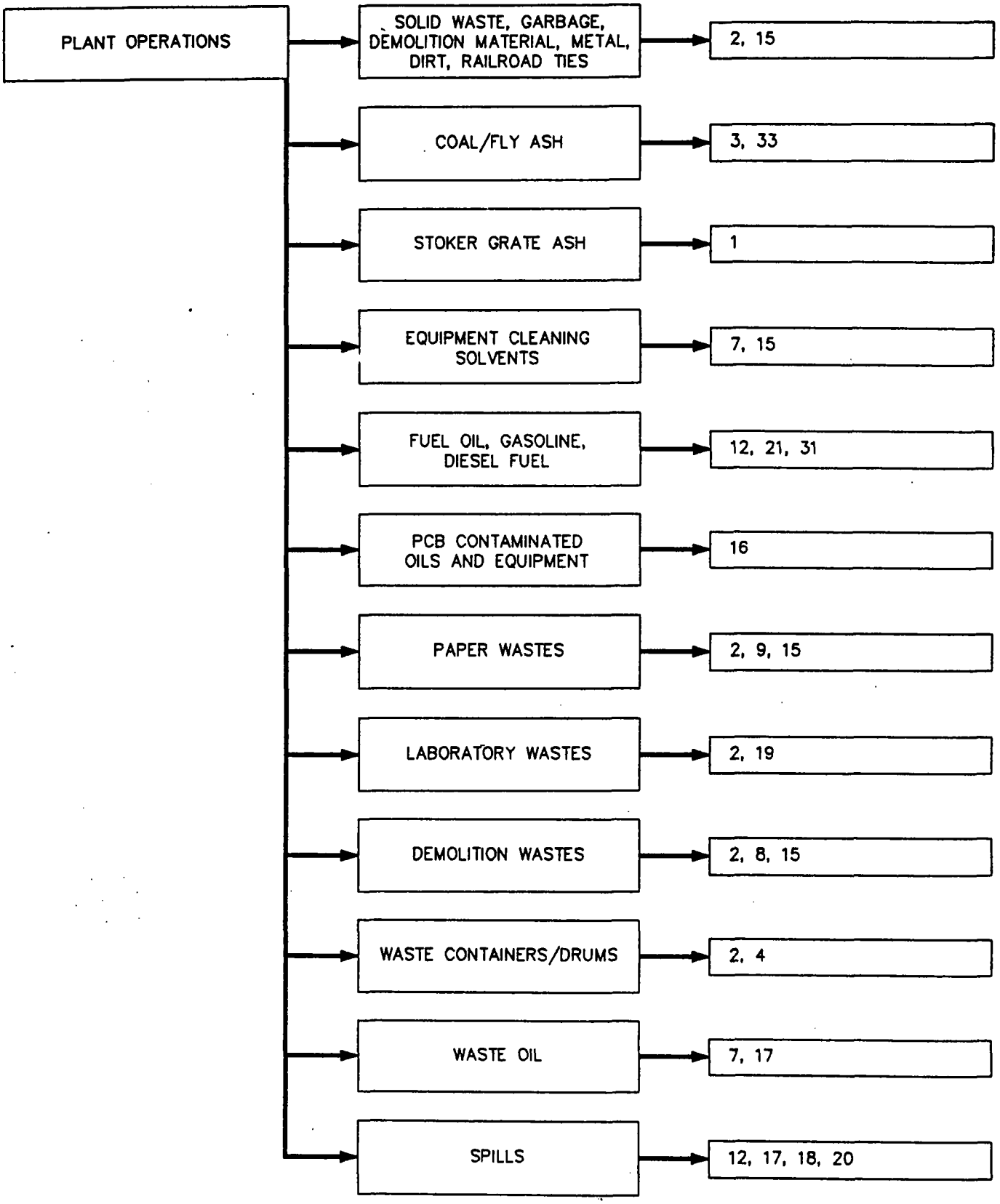


FIGURE E-1 (Page 13 of 14)
WASTE MANAGEMENT FLOW CHART
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

CH2M HILL

3-4-13 1-

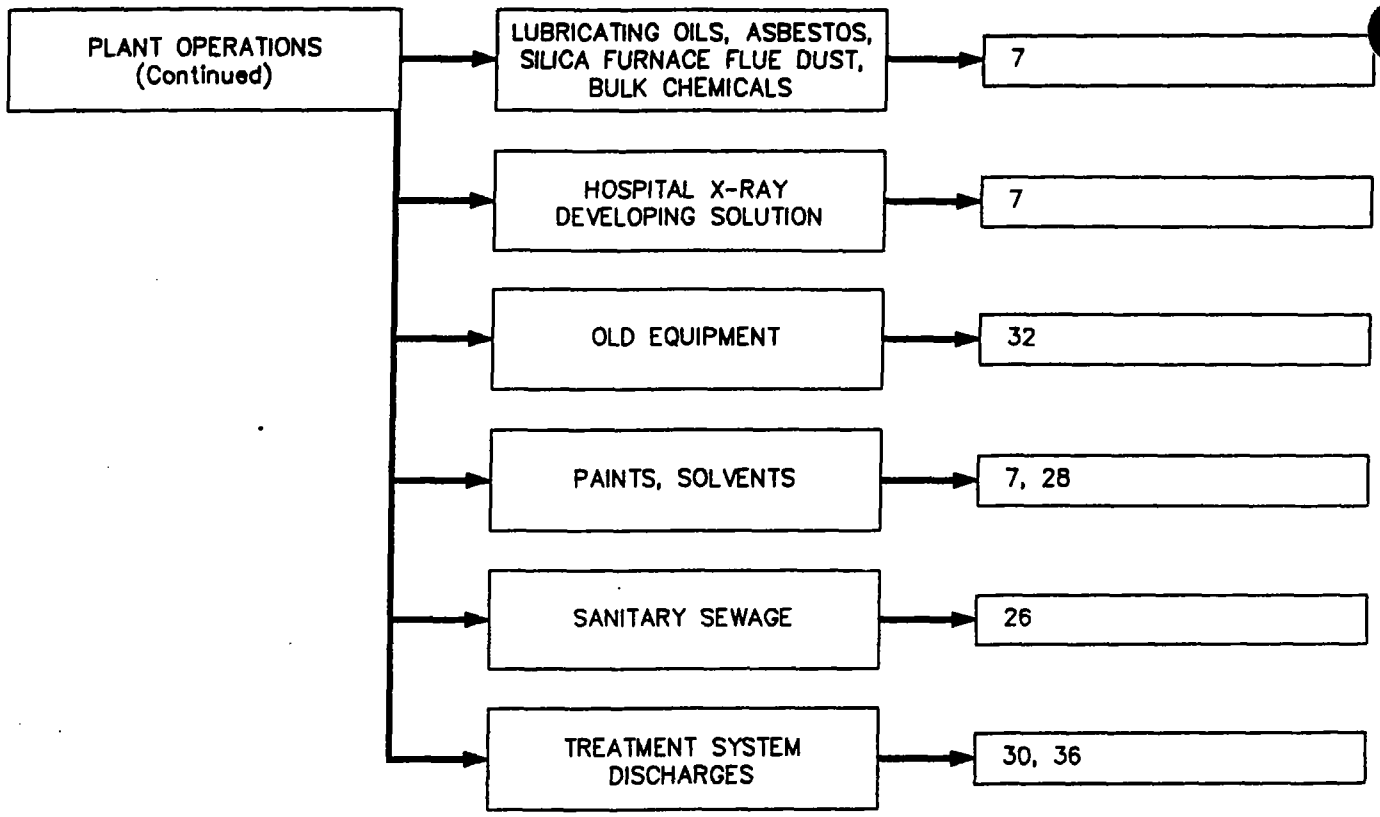


FIGURE E-1 (Page 14 of 14)
WASTE MANAGEMENT FLOW CHART
EAST CHICAGO PLANT
EAST CHICAGO, INDIANA

3-4-14 1-4-89

Line Shutdown and Facility Dismantlement

List of Facilities Dismantled

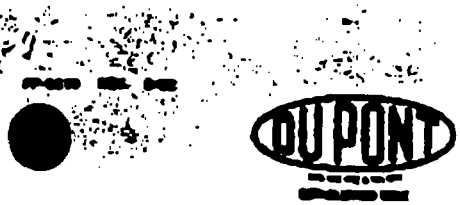
Procedures for Dismantlement

[redacted]

Appendix
Listing of Facilities Dismantled

Acetic Acid Facilities	Paint Shop
AgChem Facilities (Linuron, Lurox etc.)	Phosphoric Acid Facilities
Ammonium Hydroxide Reagent Facilities	Power Plant No. 2
Blacksmith & Boiler Shop	Sodium Thiosulfate Facilities
Change Houses	Sulfamic Acid Facilities
Chrome Outfall	Sulfuric Acid Facilities
Firewater Facilities	1) Chambers Process
Fluorosulfonic Acid/ Reagents Facilities	2) Contact No. 1
Incinerators	3) Contact No. 3
Insecticide Facilities	Storage Facilities (e.g. Morgue (Salt Cake
Lime Sulfur Facility	Storage Bldg) Freon Warehouse
Litharge Facility	Trichlorofluoromethane Facilities (Freon)
Locomotive Garage	Water Intake
Lurgis Kiln Building	Water Treatment Facilities (Outfall 002)
Muratic Acid Facilities	Zinc Chloride Facilities [a]
Nitric Acid Facilities	Zinc Oxide Facilities
Onsite Housing	Zinc Roasters

Note:
[a]These facilities in the vicinity of the Zinc Chloride Area were destroyed in a fire: the site was cleared of debris. These included the Glauber Salt facilities, Hydrochloric Acid and Salt Cake facilities, Zinc Ammonium Chloride facilities, the Ammonium Chloride facilities, and the Chromated Zinc Chloride facilities.



E. I. DU PONT DE NEMOURS & COMPANY

FINISHES & FABRICATED PRODUCTS DEPARTMENT

September 14, 1984

A. MURRISH
C&P DEPARTMENT
EAST CHICAGO

DISMANTLEMENT PACKAGE

We are forwarding the following information to assist you in preparing your scope for dismantlement.

I. Factors to Consider in Plant Disposal

II. Dismantlement Procedure

III. Factors to Consider in Selecting Site Liaison

IV. Dismantlement Steps Summarized

V. Questions to be Answered

VI. Information Needed by Investment Recovery

VII. Suggested Field Markings

VIII. Copy of Completed Offering for Reference (D-3550)

If you have additional questions or we can be of any assistance, please contact either Jeff Strauss (Ducom 992-2783) or Terri DiSanti (Ducom 992-2784).

F&FP - INVESTMENT RECOVERY

JEFFREY H. STRAUSS

JHS:tmd/Attach.

I. FACTORS TO CONSIDER IN PLANT DISPOSAL

1. Sale of business, technology, and/or equipment
2. Further use of property. Will it be retained or sold by Real Estate Division?
3. Facilities or equipment to be retained by the owning department at the site or at other locations
4. Facilities or equipment to be retained at the site by other departments
5. Facilities and equipment to be put in Class 2 Investment
6. Equipment for possible transfer to other company plants
7. Equipment for possible sale to outside companies
8. Savings on property taxes
9. Timing required to perform best overall job for Du Pont
10. Other areas or equipment that should be included in the same dismantlement for competitive price

II. DISMANTLEMENT PROCEDURE

Dismantlement projects result when equipment and buildings become idle and are no longer needed due to technology or product changes or through just wearing out.

Preliminary Steps

- The department and plant will determine the need to shut down a plant or major area and will develop a tentative shutdown plan.
- The department and plant will complete the shutdown and will clean out and decontaminate the equipment.
- The plant will assign a liaison and additional help, if necessary, to work with Investment Recovery on the dismantlement project.
- Investment Recovery and the plant liaison will develop and coordinate plans and schedules for the disposal of the facilities.
- The department will prepare and obtain Executive Committee and/or Finance Committee authorization of Adjustment of Permanent Investment.

Excess Equipment

- Investment Recovery will visit the plant when there's to be a major dismantlement involving a significant amount of usable excess equipment.
- The plant will provide Investment Recovery with design data and physical condition of items selected for advertising.
- Investment Recovery will develop a file of equipment information, review specifications, prepare broadcast and offering of equipment, and determine basis of transfer price to owning and other departments.
- Investment Recovery should receive all company requests for equipment reservations. Further requests resulting from Investment Recovery broadcasts will be received and recorded.
- Investment Recovery will receive and analyze bids and award equipment. Investment Recovery will also obtain payment when required by the Credit Division and will prepare materials orders to the plant. The plant will handle removal and shipment of any equipment that must be delivered before start of the dismantlement.

II. DISMANTLEMENT PROCEDURE (CONTINUED)

Dismantlement

- The plant will provide Investment Recovery with a scope of work to be done on the dismantlement.
- Investment Recovery will prepare and issue a Dismantlement Offering and mail it to selected bidders. All bids will be submitted to Investment Recovery. The plant representative will show the job to contractors who wish to bid.
- Investment Recovery will prepare and execute a contract for Du Pont and receive the contract, insurance certificate, and any other necessary documents.
- The Plant Representative will follow the field work, issue periodic progress reports to Investment Recovery on Contractor and job performance, and also notify Investment Recovery when the work is complete.
- Investment Recovery will process the invoice for payment.

III. FACTORS TO CONSIDER IN SELECTING SITE LIAISON

The plant will assign someone as the liaison with Investment Recovery along with sufficient help early enough to get the work done in the time required. The overall timing can range from three months to two years depending on the magnitude of the work and in some situations can even run longer.

Investment Recovery can provide a retired Du Pont employee who has expertise in scoping dismantlements to assist with large jobs.

The Site's Representative should have the following qualifications:

1. Be familiar with the area to be dismantled, the equipment, its physical condition, and the manufacturing process.

2. Be available to prepare or direct the preparation of the information needed by Investment Recovery.

3. Be available to show the job to prospective purchasers and to dismantlement bidders. Answer questions concerning condition of equipment, materials of construction, etc.

4. Be available to follow any equipment removal prior to dismantlement and to follow the performance of the dismantlement work to its completion.

5. Be knowledgeable regarding EPA and OSHA regulations for asbestos, hazardous materials, and safety practices.

6. Be familiar with field liaison and problems.
   - Co-management
   - Contractor will try to save costs no matter what specs say.

IV. DISMANTLEMENT STEPS SUMMARIZED

Investment Recovery	Department/Plant
Preliminary	
IR Notified FA List Received Site Visited Estimates Made - Budget	Decision Made/Approved S/D Announced APIR Prepared S/D Complete Clean Out Complete APIR Authorized
Equipment Sales	
IR Receive Specifications Offering Issued Bids Received	Equipment Removed & Shipped
Dismantlement Offering & Contract	
Prepare Offering Receive Bids Contract Signed Insurance Received	Project Authorized Disconnects Made
Field Work	**Field Liaison**
Authorize Start Follow Progress Obtain Release of Liens Pay Contractor (when required)	Start & Follow Work Sign Completion Notice

V. QUESTIONS TO BE ANSWERED

1. What buildings are involved in the dismantlements? Name and number.

2. Which buildings are to be demolished? Who obtains demolition permit?

3. What equipment is involved in the dismantlement? See information needed for further detail.

4. What is the total investment involved (approximate)? How much will be retained on the site?

5. What Department owns the investment? Is any consideration being given to selling as an operating facility including equipment and/or technology?

6. Identify equipment to be
   - Retained at the site
   - Transferred to other sites
   - Who is to remove the above?
   - Field markings to be used. (See suggestions attached.)

7. What are total weights of various materials in the dismantlement?
   - Carbon steel
   - Stainless steel
   - Copper
   - Aluminum
   - Nickel
   - Lead
   - Inconel
   - Hastelloy
   - Others

   Will give to Contractor only when he can't reasonably make an estimate.

8. What is to be done with concrete foundations, ground level floors and pads, building foundation walls and other. Remove to what level?

9. What are the exceptions to general rule in above question?

10. What temporary repairs or protection are required? (Roof, walls, floors, trenches, underground lines)

11. What permanent repairs will be required? Can Du Pont handle directly with general contractor following dismantlement?

12. What portions of what buildings or structures remain in place to support pipe lines or other remaining facilities?

V. QUESTIONS TO BE ANSWERED (CONTINUED)

13. What special requirements are there for leaving wall or roof intersections with buildings being removed?

14. What facilities must be relocated or resupported before dismantlement can proceed? When will it be completed?

15. Are the dismantlement areas readily accessible? (Pipe bridges, railroads, other buildings, electric lines, underground lines)

16. Are there any adjacent facilities that will remain in operation and require extreme care, protection, or working special hours or days?

17. Hazardous materials that were used in the process. (See information needed for further detail.)

18. Backfill--is any required? If so, who furnishes? What are specs? Compaction required? Grading required? Topping required? Seeding required? Sterilization required? (Basements, pits, ponds, foundations removed, excavations) Any available on the plant?

19. Gas cutting torch--any place where it cannot be used? If so, what cutting methods are permitted?

20. Explosives--if their use would be economical, are they permitted? If not, why not?

21. Debris and rubble disposal--burnable and where? Non-burnable and where?

22. Equipment retained - where to put?

23. Rope-off or barricade--who furnishes? What is required?

24. What personal protection will be required? (Hard hats, safety glasses with side shields, and other)

25. Compressed air available?

26. Sanitary facilities available?

27. Electric (110V) - where available?

28. Cafeteria or vending machines available?

29. Telephone service available?

30. Emergency first aid available?

V. QUESTIONS TO BE ANSWERED (CONTINUED)

31. Railroad siding available for carload shipments?

32. Truck scales available for weighing outgoing scrap?

33. Who will be Site Representative?

34. What labor requirements are there? Closed shop or open shop?

35. What alternate bids are required?
    - For decisions to be made
    - For accounting purposes

36. What insurance is required? (Normal, Excess Liability, Care, Custody & Control)

37. Any special time constraints? Acceptable schedule. Consider all factors such as potential sale of equipment.

38. Have any cost estimates of dismantlement been made? How much? By whom?

39. Property taxes - how much?

40. Any investment tax credit give back involved? How much?

41. Partial write-down of plant investment

42. Who will make initial disconnects (electric, process, service piping)?

VI. INFORMATION NEEDED BY INVESTMENT RECOVERY

1. Plant Plot Plan (scale 1" = 50') of areas involved.

   Interested in buildings, tank farms, pipe bridges, electric lines, roads, ditches, railroads, underground lines.

2. Building Layouts of each floor if possible scale 1" = 25', preferably 11" x 8-1/2" or 11" x 17".

   Show column identification (number "N" to "S" letters "W" to "E").
   Same equipment identification as in list of equipment
   Show numbers of buildings.
   Orient in same N-S direction as on Plot Plan if possible.

3. List of Equipment Involved - Arranged by Building and Floor and identified with field marking.

   a. Computer run-off of fixed assets showing FA No., Book Value, Bare Value, and Year Acquired. A good starting point. Also Sundry Accounts where applicable.

   b. Computer run-off of Sundry Accounts - Extra Machinery - Portable Mechanical and Lab Equipment - Trucks, Trailers, Tractors, and Furniture & Fixtures

   c. Description of Equipment Sections of the Operating Manuals. Often a ready source of information.

   d. Design Data from BPF Files, Project Records, and Purchase Orders.

   e. Condition of equipment as accurately as possible. More than "it was operating when we shut down" is needed.

   f. Changes made in equipment that was not recorded on the drawings.

   g. Identify any Du Pont "know-how" to be protected by destroying equipment.

4. Description of buildings to be dismantled

   Size and type of construction of each building (open steel, brick, tile, concrete block, steel frame with corrugated metal of transite siding)

   Roof and floor construction

VI. INFORMATION NEEDED BY INVESTMENT RECOVERY (CONTINUED)

5. Weights of each non-ferrous material in dismantlement as accurately as possible.

   Include equipment, piping, wiring, ducts.

6. List of chemicals used in the process

   a. Use full chemical name.

   b. Include amount of asbestos insulation.
   [illegible] equipment; LP and size of piping

   c. Safety Data Sheets

   d. EPA and OSHA regulations

   e. Can equipment be cleaned to make safe?

   f. Any special requirements for removal and disposal?

7. Pictures of area and equipment

   Interested in proximity of pipe bridges, electric lines, railroads, and operating areas.

8. Concrete and Steel Drawings of Buildings to be dismantled. One set should be available for each Contractor at time of bidding.

VII. SUGGESTED FIELD MARKINGS

A. Paint

Use		Use	Category
Red No Circle	D	1B	DU PONT RETAIN IN PLACE
Red White Circle	D	1A-1C	DU PONT REMOVE AND RETAIN
Red	D	1A-2B	DU PONT REMOVE AND TURN OVER TO CONTRACTOR.
Yellow Red Circle	C	2A-1C	CONTRACTOR REMOVE AND TURN OVER TO DU PONT FOR STORAGE ON SITE.
Yellow White Circle	C	2A-1D	CONTRACTOR REMOVE AND PREPARE AND LOAD FOR DU PONT FOR DOMESTIC SHIPMENT.
Yellow Blue Circle	C	2A-1E	CONTRACTOR REMOVE AND PREPARE AND LOAD FOR DU PONT FOR OVERSEAS SHIPMENT.
Yellow Yellow Circle	C	2A-2B	CONTRACTOR REMOVE AND IT BECOMES CONTRACTOR PROPERTY - Use in mixed areas only when all items are not to be removed.

B. Using pressure sensitive tape cut for 3" x 5" individual labels.

Use red background, white letters.

Use yellow background, black letters.

1A — DU PONT REMOVE

2A — CONTRACTOR REMOVE

1B — DU PONT PROPERTY

2B — CONTRACTOR PROPERTY

1C — DU PONT PROPERTY

1D — DU PONT PROPERTY Prepare & Load Domestic Ship

1E — DU PONT PROPERTY Prepare & Load Overseas Ship

NOTE: Paint is preferred since pressure sensitive markings can be removed and/or interchanged.

VIII. A COPY OF A COMPLETED OFFERING FOR REFERENCE

FP-3386 REV 7-82

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
WILMINGTON, DELAWARE 19898

August 25, 1983

FINISHES & FABRICATED PRODUCTS DEPARTMENT

Gentlemen:

Dismantlement D-3550
East Chicago Plant - East Chicago, Indiana
Formulation Area Equipment

You are invited to bid on work involving the dismantlement and removal of facilities located at Du Pont's plant at 5215 Kennedy Avenue, East Chicago, Indiana.

The attached "Specific Terms and Specifications" dated August 24, 1983 and its accompanying Exhibit "A" provide the details of the scope of work involved, and further information is given in the "General Conditions for Contracts Involving Dismantlements."

A copy of the Release of Liens form, which shall be used by the successful bidder at the completion of the work to fulfill the requirements of Article 17 of the "General Conditions", is also attached for your information.

Please include with your bid the time necessary to complete the work after you are authorized to start.

Interested Contractors should contact Duane Treadway at the plant to arrange for inspecting the facilities to be dismantled and removed. Telephone: (219) 398-2040, ext. 298. Please bring hard hat and safety glasses with side shields with you if possible.

After your inspection, you are invited to submit your bid **IN WRITING** by letter or telegram to the writer so that it will be received in this office by 4 p.m. Wilmington time of the closing date. Bids received after that time cannot be considered. Du Pont's Telex No. is 83-5420 or 83-5498. All mail should be addressed as follows: **E. I. DU PONT DE NEMOURS AND COMPANY, FINISHES & FABRICATED PRODUCTS DEPARTMENT, M.R.S. - INVESTMENT RECOVERY, BARLEY MILL - MARSHALL BUILDING, WILMINGTON, DELAWARE 19898.**

CLOSING DATE: WEDNESDAY, SEPTEMBER 28, 1983

Your interest in this job is appreciated. We reserve the right to reject any or all bids. All bidders will be notified whether their bid is successful.

Very truly yours,

J. R. Strauss

August 24, 1983

DISMANTLEMENT D-3550
SPECIFIC TERMS AND SPECIFICATIONS

1. The facilities generally listed in the attached Exhibit "A" are offered to competitive bidding for dismantlement on an "as is - where is" basis only. They are located at Du Pont's plant in East Chicago, Indiana and are the property of the Biochemicals Department.

2. In addition to the specific terms and specifications set forth herein, Contractor shall adhere to the terms and specifications in Exhibit "A" and "General Conditions for Contracts Involving Dismantlements" (Rev. 8-76) for this work. These are attached and made a part hereof.

3. Contractor shall submit a lump sum bid (please specify as payable by which party) for the work. Material resulting from this dismantlement shall become the property of the Contractor except those items in Exhibit "A" which are specified as being retained by Du Pont.

4. Contractor shall dismantle and remove the equipment including anchor bolts, supports, and attachments down to the concrete. After equipment is removed, the Contractor shall repair all holes in the building walls and roof and provide wood barricade or railing around floor openings left in inside working platforms. Barricades and railings must be constructed to Du Pont standard S1A, a copy of which will be provided during facility inspection.

5. Contractor is hereby put on notice that these facilities referred to in this dismantlement may have been used for flammable, toxic, or other dangerous substances such as "Lorox", "Tupersan", and "Karmex". Some of these substances may still remain in these facilities. Du Pont makes no guarantee or representation, expressed or implied, that the flammable, toxic, or other dangerous substances referred to herein have been lessened or removed to any extent.

   Contractor understands that the assumption of responsibility and indemnity provisions of Articles 6 and 7 of the "General Conditions" are fully applicable to Contractor with regard to such facilities.

   Contractor further agrees to give notice to any third party to whom these facilities are later conveyed of the possible presence of such flammable, toxic, or other dangerous substances which may be present in these facilities.

   Equipment and facilities from this dismantlement must not be reused in the food and drug industry.

ECIFIC TERMS AND SPECIFICATIONS
DISMANTLEMENT D-3550

6. Additional information regarding the flammable, toxic, or other dangerous substances referred to in Paragraph 5 above is provided in Material Safety Data Sheets which shall be made available during plant inspection. Contractor should become familiar with the hazards associated with these substances. It is understood these Material Safety Data Sheets are only applicable to this dismantlement and are not to be used at any other job or location.

7. Contractor is advised that there is no asbestos in this dismantlement.

8. Contractor may use a gas cutting torch for the dismantlement work provided written permission in the form of a "Burning Permit" is obtained from the Plant Representative before starting and provided the Contractor uses the torch in accordance with all regulations set forth by the Plant Representative. Some of these regulations, but not limited thereto, are as follows:

   a. Contractor shall furnish and maintain in effective usable condition dry chemical type extinguishers (minimum size ten pounds) readily accessible to the burners.

   b. When an area in which cutting torches have been used is to be left unoccupied during breaks, lunch, or at the end of the working day, the area shall be inspected by a responsible representative of the Contractor to detect and extinguish any smoldering fires or residual hot slag.

   c. Compressed gas cylinders in storage or in use must be fastened securely in an upright position away from any source of heat or flame.

9. Contractor shall remove all dismantled scrap materials and equipment that is not retained by Du Pont and all debris and rubble, both burnable and non-burnable, from the Plant. The dismantlement area must be cleaned up daily.

10. Contractor shall keep all passageways, roadways, and railroad tracks clear of any dismantled material or rubble.

11. Contractor shall rope off dismantlement area and post warning signs to exclude unauthorized personnel. Access gates should be provided as needed. The rope and sufficient stands to maintain the rope at a minimum of three (3) feet above grade shall be furnished by the Contractor. Extent of the area to be roped off shall be designated during plant inspection. Ropes shall not be removed until released by the Plant Representative.

    All work shall be done within these limits unless special arrangements are made with the Plant Representative.

SPECIFIC TERMS AND SPECIFICATIONS
DISMANTLEMENT D-3550

12. Hard hats and approved safety glasses with curved side shields must be worn by the Contractor's employees at all times when on the Plant.

13. Du Pont will not furnish compressed air facilities.

14. Building lights will be operative. Contractor is not to remove these lights or associated conduit.

15. Contractor shall furnish adequate sanitary facilities for his employees.

16. Contractor shall furnish his own office and storage space for tools and materials and shall arrange for his own telephone service if it is desired.

17. Contractor will furnish his own first aid and medical facilities as required.

    Although Contractor must arrange for first-aid treatment for its employees, Du Pont may make emergency first aid available to Contractor's employees in the case of emergency, in consideration for which Contractor, his successors, and assigns hereby assume full and complete responsibility and liability for all injuries and damages to any of his employees arising out of or allegedly attributable in any way to such emergency first-aid treatment and services. The Contractor further undertakes and agrees to indemnify and save harmless Du Pont, its employees, Contractors, successors, and assigns, from any and all actions, rights of action, suits, debts, claims, damages, expenses, and demands whatsoever with respect to or on account of any injury to or the death of any employee of the Contractor in any way attributable to or in connection with the performance of such emergency first-aid treatment, and related services of Du Pont, whether or not such injury, damage or death is caused by or alleged to have been caused by negligence of Du Pont. Nothing contained herein shall be construed as imposing any duty upon Du Pont to provide facilities necessary to furnish emergency first-aid treatment or related services to Contractor's employees or to make such facilities and services available to Contractor's employees.

18. All drawings, dimensions, descriptions, materials of constructions and weights which are provided herein or in attached Exhibits or supplied at the plant are made available to the Contractor for his information as a guide and not guaranteed by Du Pont. Contractor shall rely on his own skill, experience, knowledge, and physical inspection of the facilities in preparing his bid.

CIFIC TERMS AND SPECIFICATIONS
DISMANTLEMENT D-3550

19. In accordance with Articles 3 and 4 of the "General Conditions" the following are some, but not necessarily all, of the plant regulations that must be adhered to by Contractor's employees.

- A meeting will be held with the successful Contractor prior to start of work at which time plant safety regulations and general procedures that Contractor will be expected to follow will be discussed.

- Contractor's employees shall confine themselves within the work site, the designated route between the parking lot and the work site, and the Plant's roadways between the work site and the Plant's gate, unless authorization is obtained from the Du Pont representative.

- Contractor's employees shall be permitted to drive their automobiles on the Plant, and park in area designated by the Du Pont representative. Du Pont assumes no responsibility for any damage to said automobiles while on the Plant. Du Pont reserves the right to inspect automobiles before leaving Plant. All Plant traffic regulations shall be observed to the letter.

- Contractor shall furnish his employees with identification buttons which must be worn at all times while on the Plant.

- A Plant pass will be provided for the Contractor's designated representative, and it will be his responsibility to identify the Contractor's employees prior to entering the Du Pont Plant. All Contractor's employees must sign in and sign out on the gate log.

- Smoking is permitted only in the locations designated by the Plant Representative.

- Contractors shall have an approved Plant pass to remove their property or equipment from the Plant. Du Pont will inspect all tool boxes and trailers before release and will issue the necessary clearance passes.

- Plant working hours are from 8 a.m. to 4:30 p.m., Monday through Friday. If Contractor's working hours are different, it should be so stated in his bid.

- Contractors shall store all flammable gases and liquids at a location designated by the Du Pont representative. The storage site shall be barricaded and posted as a "No Smoking, No Open Flame Area". All storage tanks and containers shall be grounded. All storage tanks shall have adequate vents and flame arrestors.

SPECIFIC TERMS AND SPECIFICATIONS
DISMANTLEMENT D-3550

19. Continued

- The use of intoxicants on the Plant, in any degree, will positively not be tolerated. Contractor's employees shall not engage in acts of "horseplay" or in fights while on Du Pont property. Cameras are forbidden on the Plant except by special permission of Du Pont.

August 24, 1983

DISMANTLEMENT D-3550
EXHIBIT "A"

Scope of Work

This operation has been shut down; some of the equipment has been sold or is scheduled for transfer to other Du Pont plants. The building is to be retained for use by Du Pont.

Contractor will dismantle and remove, without damage, all equipment designated as being retained by Du Pont to a laydown area so that Du Pont may crate and prepare it for shipment.

Contractor will load same on trucks and secure for transport.

A laydown/loading area will be designated within 500 feet of the dismantlement area.

Facilities to be Dismantled and Removed by the Contractor, To Become the Property of the Contractor

- All equipment power wiring and service piping.
- All ductwork not marked with a "D".
- All exterior weather shelters.
- Dust collector sprinkler system.
- Process Equipment as detailed below:

FA6050-13	Drive & 1-1/2 H.P. motor var. screw feed EP5.0 - 1963
25	Platform, product dust collector
25	Platform, product dust collector
31	Vibrator - Pulv Disch Hopper - BEV 264
32	Vibrator - Magnetic Grate - BEV 204
33	Vibrolator - Crude blender grate - BEV 104
34	Silencer, Pulv air inlet - BEV 89 MCN 1360
35	Housing, Pulv Mot-fiber glass line stl
36	Gage, Jerguson reflex - BEV 93 118-R-5
37	Valve, 1/4 in. air reducing & regulator
41	Weather shelter, product dust collector - 1969
41	Weather shelter, product dust collector - 1970
50	Screw feeder & 1/2 H.P. Motor - BEV 2190
51	Jet Pulverizer #2 - BEV 7590 Micron-Master - 1970
51	P6847 GE 24537
52	Jet Compressor - BEV 299 2 in. S&K - 1970
57	Conveyor & 1 H.P. Motor - BEV 869
60	Mod 324SS Flexifeeder with 220/440V.
60	3 PH, 60 cycle motor BEV 2195 M1857
61	Hopper - Dwg. A 300338 & Cover - Dwg. A 300340
61	BEV 590-M1857

DISMANTLEMENT D-3550
EXHIBIT "A"

FA6050-62	Prater PAV 8C airlock feeder
62	BEV 791 - M1891
64	Feed screw assy. 3 in. - Mirro pul
64	BEV 533-M1891
65	Conveyor - Bin flite - BEV 586 - M1891
66	D-2 grate magnet - 4N68667
FA6060-01	Platf & stairs, screen - 20 x 25 x 14 ft.
05	Bin, product storage - BEV 4497 Type 304 SST
05	Bin, product storage - BEV 980 pneubin panels
05	Cylindrical EC 092862 EP 10.0 GE 6662
06	Duct, explosion 27 x 27 in. x 14 ft.
07	Conveyors, 9 in. live bin BEV 2548 GE6701
08	Varidrive, 2 H.P. US .5-5.0 rpm - BEV 1421
09	Conveyor, 9 in. cross screw BEV 654 GE6701
10	Reducer & 1 H.P. Motor, 1800 - 30 rpm - BEV 190
12	Motor, 2 H.P. 1800 rpm 440V
15	Explosion vent w/weather cap, blender
17	Motor, 2 H.P. 1800 rpm 220/440V
19	Control, explosion proof air
20	Valve, flow control mod OFV8 Syntron
23	Conveyor, blender - BEV 2479 - P9426
26	Duct overflow - blender/hopper M1972
27	Insulation Sweco convr - Item 24 - M2014
FA6080-01	Hood & ductwork
02	Collector, general dust - BEV 9702 Mod 25
02	Hoods & ductwork
02	12-4 Dustex carbon steel P6713 GE6402
03	Drive & 1-1/2 H.P. gear head motor, 440V
08	Collector, backup dust - BEV 12076 Mod 25
08	12-5 Dustex carbon steel P6713 GE6402
09	Drive & 1-1/2 H.P. gear head motor, 440V
14	Conveyor & drive, 9 in. screw - BEV 565 GE6741
15	Dust collector
15	Dust collector
16	Weather shelters, general dust collector
17	Weather shelters, backup dust collector
18	Ductwork - P8515
19	Blowers - 324-8-25P8F W Motors
19	Drives - BEV 3282 - P9426
20	Filter - Airmaze backup - M2032
21	Ductwork - M2032
21	Ductwork - M2093

DISMANTLEMENT D-3550
EXHIBIT "A"

Equipment to be Removed by Contractor, Retained by Du Pont,
To be Loaded on Truck by Contractor

FA No.	Description
6020-07	>Binomatic Levels
6020-08	> (if available)
6020-21	>
-22	>ACM Instrumentation
-23	>
6030-01	Part of MCC as marked
6050-03	>Blender, reducer & motor
-04	>
6050-07	>Redler conveyor & motor
-08	>
No Number	2nd Redler conveyor
6050-14	Hopper & spouts from live bins
6050-23	>Cyclone
-24	>Airlock
-26	>No. 1 Dust Collectors Mod. 48C-6
-27	>w/Pneubin Panels
-28	>No. 11 Fan & 5 H.P. motor
-29	>
-40	Spare pulverizer motor
-42	>Microblender DA 54" X 10'
-43	>W/15 H.P. motor, collector and
-45	>Vent filter
-54	>
-55	>Cyclone, airlock,
-56	>Dust collector Mod. 48C-6
-58	>Aerovent fan & Pneubin panel
-59	>
6060-02	>200 cu. ft. blender (raised sides)
-03	>Reducer & 25 H.P. motor
6060-21	>ACM CX-30 w/explosion
-22	>Vent, instruments,
-28	>Infeed conveyor, motor enclosure and >spare parts

DISMANTLEMENT D-3550
EXHIBIT "A"

6060-24	>60" S/S Sweco separator and >Conveyor & spare screens
6060-25	Welding jig & panels for ACM
6070-21	>2 live bins and hoppers (3' & 5' diameter)
-52	>S/S
-53	>
6080-05	>2 No. 19 Fans w/25 AWD 30 H.P. motors
-06	>
-11	>
-12	>
No Number	Micro discharge hopper
" "	R/L hose 4-50' lengths

SMANTLEMENT D-3550
EXHIBIT "A"

Equipment to be Removed by Contractor,
Retained by Du Pont

FA No.	Description
6030-01	Most elec. control center equip.
6050-09	Magnetic grate
-10	Micro pulverizer
-11	" " , 30 H.P. motor
-16	Rotary valve
-63	1 H.P. V-S drive
6060-18	Rotary valve
6020-39	Stretch wrap
6080-04	Rotary valve
-10	" "
No Number	Lump crusher & spare parts

DISMANTLEMENT D-3550
EXHIBIT "A"

Description of Facilities Located in Dismantlement Area, Not Included in this Dismantlement

All stairs, building ladders, building sprinkler systems, fire extinguishers, water coolers, lighting, and general service facilities are to remain in place.

DISMANTLEMENT D-3550
EXHIBIT "A"

Description of Facilities Located in Dismantlement Area, Not Included in this Dismantlement

All stairs, building ladders, building sprinkler systems, fire extinguishers, water coolers, lighting, and general service facilities are to remain in place.

10771 Rev. 8/76

GENERAL CONDITIONS
FOR
CONTRACTS INVOLVING DISMANTLEMENTS
E. I. DU PONT DE NEMOURS AND COMPANY
(Incorporated)

1. SITE AND LOCAL CONDITIONS – Contractor agrees that Contractor has had a reasonable opportunity to inspect and inspected the dismantling site and the property to be dismantled hereunder. Contractor accepts conditions at the site as of date of his proposal and no allowances will be made after award for any variance between these conditions and those believed the Contractor to exist.

2. COMPLIANCE WITH REGULATIONS – Contractor shall comply with all laws and regulations of governmental authorities, leral, state, county, municipal or other, which relate to Contractor's business in general and to Contractor's obligations under s agreement, and shall procure, at no expense to Du Pont all permits, licenses, certificates or any other authorization whatsoever ich may be required by such laws and regulations.

3. SAFETY AND HEALTH – Contractor shall perform the work in a careful and safe manner. If the equipment or buildings be dismantled are adjacent to operating equipment, Contractor shall exercise a high degree of care to avoid injury to personnel damage to equipment.

Contractor and Contractor's employees shall comply with all federal, state, and local regulations concerning safety and health, th applicable plant safety rules and regulations, and with any other special safety provisions set forth in the contract.

Contractor and Contractor's employees shall not start work in an area or building without first having received permission, truc[redacted]and identification from the Plant representative.

4. WORKMANSHIP, EMPLOYEES AND HOUSEKEEPING – Contractor represents to Du Pont that Contractor has the cessary experience, skill, and equipment to accomplish the work hereunder. Contractor shall have the exclusive control of the nner and method of performing the work and shall be responsible for persons engaged on the work. None of said persons shall nstitute an employee of Du Pont.

Contractor's employees shall comply with all rules relating to the entry to the plant, shall confine themselves to the site of the rk only and shall go to and from the dismantlement site by routes designated by the Plant representative.

The dismantlement site shall be kept clean and orderly at all times and shall not be used for the accumulation, storage or display salvage materials. At the completion of work, the dismantlement site shall be left in a broom-cleaned condition satisfactory the Plant representative.

5. INSURANCE AND TAXES – Contractor assumes full responsibility for payment of all social security, unemployment mpensation, and other taxes and charges for all employees engaged by Contractor in the performance of the dismantling operions hereunder and Contractor will require each of its subcontractors, if any, to do the same.

Unless other limits are specified by Du Pont, Contractor shall, at its expense, carry insurance of minimum limits as follows:

(a) Workmen's Compensation-statutory.

(b) General Liability Bodily Injury & Property Damage In a combined single limit-$500,000 per occurre

(c) Automotive Public Liability (covering owned, hired, and all classes of non-owned vehicles) Bodily Injury – $100,000/$300,000 and Property Damage – $100,000.

The above-referenced General Liability insurance policies shall contain specific reference to the dismantling work provided r in this contract and shall name Du Pont as an additional insured. Also such policies shall contain an endorsement whereby ntractor is insured as to any liability, obligation or responsibility undertaken by Contractor in this dismantling contract, among hich obligations are those contained in Article 6 – Indemnity. Contractor shall maintain at Du Pont's expense such other insurce as Du Pont may request in writing.

If any subcontractors are employed, each subcontractor must carry the same types of insurance of the same minimum limits, id C[redacted]ctor shall carry Contractor's Protective Public Liability Bodily Injury, and Protective Property Damage insurance of the me[redacted]num limits.

Certificates indicating this insurance is in effect and a statement that the insurance companies will not cancel or reduce the verage without giving Du Pont 30 days prior written notice must be furnished before starting work and shall be subject to u Pont's approval.

Identification of Solid Waste Management Units and Areas of Concern

Identification of SWMUs and AOCs

This appendix documents the process by which solid waste management units (SWMUs) and areas of concern (AOCs) at the DuPont facility were designated. Tables 1 and 2 list the areas designated as either SWMUs or AOCs.

Identification of Units

As part of the Phase I Groundwater Assessment report (CH2M HILL 1990), 36 waste management units (WMUs) were identified as locations where facility wastes, raw materials, or products were disposed of, treated, or stored. The term "waste management unit" was a misnomer for several of these units because no "wastes" were ever managed at these locations. Information on the WMUs was reviewed in light of the SWMU and AOC definitions cited in the Administrative Order on Consent and current regulatory definitions in order to designate a WMU as either a SWMU or AOC.

The original assessment and WMU identifications were based on available information regarding current and historic material and waste management practices at the facility and were proactive tasks conducted by DuPont outside the RCRA framework. Therefore, no effort was made initially to identify units within the RCRA vernacular of SWMUs and AOCs. The identification of SWMUs and AOCs within this CCR was based on the 1990 report unless more current information became available based on discussion with plant personnel or review of facility records. A few areas not identified in the previous report have been added as SWMUs based on the recent records review.

Once the WMUs were reviewed and designated as SWMUs, AOCs, or neither, the designated units were renumbered. An attempt was made to keep the former WMU names unless a more descriptive name was appropriate. The SWMUs and AOCs were numbered such that similar units had the same number but were distinguished by an alphabetic designation. For instance, all railroad loading and unloading areas are designated as AOC 2, with individual locations referred to as 2A, 2B, and so on. The numbering and grouping of certain units has been addressed in the first phase of the RCRA corrective action process to facilitate planning efforts associated with future investigations, risk assessment, or remediation, if necessary. Cross references between the current SWMU/AOC number and the original WMU numbers are provided in Tables 3 and 4. Figures showing the SWMU and AOC locations are provided in Volume 1.

It is believed that certain features for select SWMUs may be similar enough (i.e., physical characteristics, waste management practices, nature of contamination) that those SWMUs may be addressed as a group, rather than individual units, in future phases of the corrective action process. This will be reevaluated as new information is obtained on site conditions.

Tables 5 and 6 summarize the dates of operation for each unit, if known, and the possible contents or processes contributing to the wastes or releases from the SWMUs and AOCs respectively. This information was compiled from tables contained in the Phase I Groundwater Assessment.

Regulatory Definitions

In the RCRA Corrective Action program, the U.S. EPA initially focused attention on releases specifically from SWMUs at facilities subject to RCRA corrective action. Given the legislative history of RCRA, the corrective action program is evolving to a much broader focus that addresses unacceptable risks to human health and the environment from RCRA facilities. The EPA is now focusing more on releases that require remediation and less on the sources of releases. To reflect this more "holistic" approach, the term AOC has been developed to distinguish areas that are not SWMUs by definition but have the potential to have had significant releases.

The designation of a unit as a SWMU, AOC, or neither was based on the following definitions:

- The term *solid waste management unit* includes "any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility where solid wastes have been routinely and systematically released" (55 *FR* 30808 and 61 *FR* 19442). This definition has three parts. The first step is to determine whether solid or hazardous waste was placed (that is, managed or handled) in the unit. If so, the unit is considered a SWMU. If the unit did not manage a waste but there is evidence of a routine and systematic release, it was designated a SWMU. Finally, if the unit was discernible, it too was designated a SWMU. The term discernible in this context includes types of units typically identified in the RCRA regulatory program such as landfills, surface impoundments, container storage areas, incinerators, and wastewater treatment units.

- An *area of concern,* as defined by the U.S. EPA, "refers to releases which warrant investigation or remediation . . . regardless of whether they are associated with a specific SWMU" (61 *FR* 19443). For example, a one-time spill would not meet the definition of a SWMU, but it could be considered an AOC. The Phase I Groundwater Assessment identified areas such as railroad and vehicle loading and unloading areas. Plant records were reviewed at that time, and spills were documented to have occurred at some of the loading and unloading areas. Areas with documented spills are identified as AOCs for the purpose of corrective action. The original spill records were not reviewed for this CCR. The Phase I Groundwater Assessment also identified areas where aboveground storage tanks were located. Most aboveground tanks held products and raw materials, not wastes, and so they are not SWMUs. However, aboveground tank areas at which the Phase I Groundwater Assessment report indicated spills are considered AOCs.

During the SWMU/AOC designation process, it was determined that some of the original WMUs did not meet the definition of either unit. These WMUs are identified in Appendix Table 7 with comments as to why they are neither SWMUs nor AOCs. Appendix Table 8 provides additional information such as the period of operation, possible contents, and processes contributing to these units.

Additional Rationale for Unit Designations

The U.S. EPA has published additional guidance or clarification on the definitions of SWMUs and AOCs in preambles, case law, U.S. interpretive memorandums, and monthly Hot Line reports. The following discussion presents some of the supplemental guidance and rationale for making determinations at the DuPont site.

Underground Storage Tanks

Facility records indicate that roughly eight USTs contained petroleum products used as fuel for vehicles or heating. All the USTs were taken out of service. Although documentation is lacking, DuPont believes that all the USTs were closed in place or removed. Typically, tanks that were abandoned before 1985 were buried in place and filled with pea gravel. After 1985, operating USTs that were not already closed in place were removed.

Because the USTs contained products, not wastes, there are not considered SWMUs. The USTs could be considered AOCs depending on whether they were closed in accordance with EPA UST regulations and whether releases occurred. Provisions for the construction, containment, maintenance, operation, closure, and corrective action of USTs were enacted in amendments to RCRA in 1984 under Subtitle I as a result of releases throughout the nation from single wall stainless steel tanks leaking due to corrosion. The EPA has determined that USTs regulated under RCRA Subtitle I federal or state programs should not also be subject to RCRA corrective action programs (July 27, 1990 [55 *FR* 30856] and September 23, 1988 [53 *FR* 37176]). Facility records documenting the closure of the tanks in accordance with UST regulatory program were not available for review during the CCR. For this reason, and because of uncertainty as to whether releases occurred from the USTs, they have been identified as AOCs.

Process Sewers

The EPA states that industrial process sewers used for collecting wastes constitute a SWMU (July 27, 1990 [55 *FR* 30809] and May 1, 1996 [61 *FR* 19443]. This determination has also been affirmed by the Environmental Appeals Board in Amoco Oil Co., RCRA Appeal No. 92-21 (EAB November 23, 1993). Based on this, current and abandoned process sewers were identified as SWMUs.

Wastewater Treatment Units

The EPA has designated wastewater treatment units as SWMUs (50 *FR* 2812), even though they are exempt from regulation as hazardous waste management units if they are regulated under a Clean Water Act Permit. Based on the EPA's definition and interpretation of a wastewater treatment unit, associated tanks and ancillary equipment are considered to be part of the unit. Therefore, SWMU 15 (the Former Wastewater Treatment System) and SWMU 16 (the Current Wastewater Treatment System, or EVC) have been defined to include all tanks, ancillary equipment, effluent conveyance lines, and outfalls.

Process Units

In the *Federal Register* for July 27, 1990 (55 *FR* 30809), the U.S. EPA interpreted that leaking product storage tanks and process units are not considered SWMUs, but that contamination resulting from the routine and systematic releases from these units could constitute a SWMU. The U.S. EPA states:

> Leaking from a chemical product storage tank would generally not constitute a solid waste management unit; such "passive" leakage would not constitute a routine and systematic release since it is not the result of a systematic human activity. Likewise, releases from production processes, and contamination resulting from such releases, will generally not be considered solid waste management units, unless the Agency finds that the releases have been routine and systematic in nature.

In accordance with the above guidance, the process tanks themselves are not considered SWMUs. Spills from aboveground storage tanks containing raw materials and products at the DuPont facility are noted in the Phase I Groundwater Assessment report. Information is lacking as to whether these spills were routine and systematic, and so the spill is not considered a SWMU. With little information available about the nature of the spills, the tank areas where spills were reported are considered at this time to be AOCs.

Similarly, raw materials and products were distributed to and from various manufacturing areas within the facility by railroad cars or trucks. The railroad and vehicle loading and unloading areas where spills were reported in the Phase I Groundwater Assessment report are identified as AOCs.

Regulatory Resources Reviewed

RCRA Regulations

40 CFR Parts 260 to 299

Federal Registers

July 16, 1980, Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Interim Final Rule and Proposed Rule (45 *FR* 47832)

October 30, 1980, Hazardous Waste Management System; General and Identification and Listing of Hazardous Wastes; Interim Final Rule (45 *FR* 72024)

January 4, 1985, Hazardous Waste Management System; Definition of Solid Waste; Final Rule (50 *FR* 614)

July 15, 1985, Hazardous Wastes Management System: Final Rule (50 *FR* 28702)

September 2, 1988, Hazardous Waste Management System: Standards for Hazardous Waste Storage and Treatment Tank Systems; Final Rule (53 *FR* 34079)

September 23, 1988, USTs; Technical Requirements and State Program; Final Rules

July 27, 1990, Corrective Action for Releases From SWMUs at Hazardous Waste Management Facilities: Proposed Rule (55 *FR* 30798)

June 22, 1992, Hazardous Waste Management System, Identification and Listing of Hazardous Waste; Exclusion; Final Rule (57 *FR* 27881)

May 1, 1996, Corrective Action for Releases From SWMUs at Hazardous Waste Management Facilities: Proposed Rule (61 *FR* 19432)

Court Case

Environmental Appeals Board (EAB) in re Amoco Oil Co., RCRA Appeal No. 92-21, November 23, 1993

Monthly RCRA Hotline Reports

Wastewater Treatment Unit/Generator Accumulation Tank, July 1988, RCRA Hotline Q &A

The Wastewater Treatment Unit Exemption, October 1988, RCRA Hotline Q &A

Hazardous Wastes from Manufacturing Process Units, May 1990, RCRA Hotline Q & A

U. S. EPA Interpretive Memo

September 20, 1990, Lawrence to Fox, Re: Wastewater Treatment Units

APPENDIX TABLE 1
Solid Waste Management Units Identified at DuPont East Chicago Facility
(Page 1 of 3)

SWMU	Name	Description of Unit	Rationale for Unit Designation and Supplemental Comments*
1	Northern Onsite Waste Management Area		
1A	Ash Landfill/Stoker Grate Area	Former Land Disposal Area	
1B	Calcium Sulfate and TSP Area	Former Land Disposal Area	
1C	Rubble Fill Area	Former Land Disposal Area	
1D	Silica/Calcium Sulfate Area	Former Land Disposal Area for Waste Filtercake	
1E	Calcium Fluoride Area	Former Land Disposal Area	
1F	Zinc Mud Area	Former Land Disposal Area	
1G	General Refuse Area	Former Land Disposal Area and Former Open Burning Area	
1H	PCB Storage Area	In Rubble Fill Area	Wastes stored in this area
1I	Miscellaneous Pits and Piles—North	Former Land Disposal Area, red tainted area, located within SWMU 1A, the Ash Landifll/Stoker Grate Area.	This unit is contained in SWMU 1A and may be addressed as part of that SWMU
1J	Miscellaneous Pits and Piles—South	Former Land Disposal Area (red tainted area)	This unit is contained in SWMU 1A and may be addressed as part of that SWMU
1K	Spill Areas—South of Ash Landfill/Stoker Grate Area	Former Land Disposal Area	Facility records do not indicate the contents of the material placed in this area. The area is contained in the Ash Landfill/Stoker Grate Area
1L	New Landfill	Active Landfill for Wastewater Treatment Filter Cake	Closure activities also being addressed in an Interim Closure Plan being prepared at IDEM's request
2	Coal and Fly Ash Piles		
2A	Far West Pile	Former Fuel and Ash waste piles for Coal-fired Boiler Operations	
2B	West Pile	Former Fuel and Ash waste piles for Coal-fired Boiler Operations	
2C	East Pile	Former Fuel and Ash waste piles for Coal-fired Boiler Operations	

APPENDIX TABLE 1
Solid Waste Management Units Identified at DuPont East Chicago Facility
(Page 2 of 3)

SWMU	Name	Description of Unit	Rationale for Unit Designation and Supplemental Comments*
2D	Far East Pile	Former Fuel and Ash waste piles for Coal-fired Boiler Operations	
3	Disposal Area Near Chrome Outfall	Former Land Disposal Area	
4	Insecticide Disposal Area	Former Land Disposal Area	
5	PCB Electrical Storage Yard	Building with concrete floor and curb near Contact No. 1	PCB waste and electrical equipment reportedly stored in this area
6	Hazardous Waste Storage Areas		
6A	Waste Solvent Tank	Former above ground waste solvent tank (4000-gal, lined carbon, steel)	Received waste solvents from AgChem production
6B	AgChem Drum Storage	Former drum storage area	
6C	Reagent Drum Storage	Former drum storage area	
6D	Flue Dust Storage in Adhesives Building	Former drum storage area	
6E	Flue Dust Storage near North Warehouse	Former drum storage area	
7	Abandoned Chemical Storage Building	Former building which received wastes and had a wood floor. Referred to as "The Morgue"	
8	Zinc Roaster Sinter Area	Former Land Disposal Area	
9	Incinerators		
9A	Northwest Incinerator	Former solid waste incinerator	Reportedly burned paper wastes from the plant. Ceased operations some time before the mid-1970s. Incinerator was dismantled and removed.
9B	Incinerator West of Freon Warehouse	Former solid waste incinerator	Reportedly burned paper wastes from the plant. Ceased operations some time before the mid-1970s. Incinerator was dismantled and removed.
10	HCl Neutralization Pit	Former industrial waste neutralization pit	Received acids that were neutralized with limestone in the pit. Also received arsenic, chromium, and antimony pentachloride catalyst.
11	Sulfamic Acid Pits (2)	Surface impoundments, concrete-lined pits	Received process waste and spilled sulfamic acid. Used for acid neutralization.

APPENDIX TABLE 1
Solid Waste Management Units Identified at DuPont East Chicago Facility
(Page 3 of 3)

SWMU	Name	Description of Unit	Rationale for Unit Designation and Supplemental Comments[a]
12	Antimony Pentachloride Settling Basin	Surface Impoundment (approx. 6-ft-deep unlined)	Antimony pentachloride catalyst disposed in basin
13	Colloidal Silica Settling Pits (2)	Flow through surface impoundments for settling solids (silica particles) before influent enters EVC wastewater treatment system	
14	Chrome Outfall and Impoundment (Cooling Tower Blowdown)	Former outfall that was closed creating an impoundment, and was subsequently backfilled	The blowdown may have contained chrome at some time. The impoundment reportedly received overflow from neutralization pits.
15	Former Wastewater Treatment System	Wastewater treatment system and discharge to Outfall 002 to the Grand Calumet River	Part of the wastewater treatment system regulated under the NPDES program. No further action recommended under the Corrective Action Program.
16	Current Wastewater Treatment System (Environmental Control System and Outfall 003)	Wastewater Treatment System Referred to as EVC and discharge to Outfall 003	Regulated under the NPDES program. No further action recommended under the Corrective Action Program.
17	Process Sewers	Former French drains as well as abandoned sewer lines and current process sewers	
18	Sanitary Sewers	Abandoned and existing sanitary sewers	Addressed under the East Chicago Sanitary District regulations.
19	Building Maintenance Areas	Former cleaning solvent units, paints, and waste oils from maintenance operations stored within facility buildings	Most of these units were located inside buildings that have since been demolished. The exact locations of specific units are not known.
20	I-90 Fill Area	GCR was relocated for construction of I-90 by COE/DOT circa 1956, and fill was placed in this area based on aerial photo	
21	Lead Arsenate Sludge Disposal Area	Lead Arsenate sludge	AgChem Manufacturing
22	Former River Intake Canal	Earthen Canal and Former Land Disposal Area	Filled with debris from main office building demolition

[a]Designations are based on U.S. EPA's definition of SWMU and AOC from the July 15, 1985 (50 FR 28712), July 27, 1990 (55 FR 30798), and May 1, 1996 (61 FR 19432) *Federal Registers.*

Source: *Phase I Groundwater Assessment Report* (CH2M HILL 1990) and discussions with DuPont personnel.

APPENDIX TABLE 2
Areas of Concern (AOCs) Identified at DuPont East Chicago Facility

AOC	Name	Description of Area	Rationale for Unit Designation and Supplemental Comments[a]
1 (A–G)	Vehicle Loading/ Unloading Areas	Loading and unloading areas (concrete, paved, dirt, or gravel) near various manufacturing buildings	Areas where spills were reported.
2 (A–G)	Railroad Loading and Unloading Areas	Loading and unloading for bulk chemicals from railcars near various manufacturing processes/buildings	Areas where spills were reported.
3 (A–J)	Aboveground Storage Tanks	Aboveground storage tank holding raw materials or products associated with various manufacturing operations	Areas where spills were reported.
4	Tank Car Neutralization Impoundment	One-time neutralization of fluorosulfonic acid offloaded from tank car into bermed area	This was a one-time occurrence. Fluorosulfonic acid was neutralized.
5	Beneath Former Contact No.1	Ground beneath former Contact No. 1 process area where vegetative cover has not been reestablished	Facility records do not indicate the contents of the material placed in this area.
6	Zinc Crude Milling Area	Process area	Spills reportedly occurred in this processing area.
7	Former Commercial Packing House Building	Former building which contained acid raw materials and products.	Acid spills reported to have occurred.
8	Former Powerhouse Pit	Former pit constructed of railroad ties	
9	Open Sanitary Ditch	Disposal of sanitary sewage in open ditch	This is a one-time occurrence.
10 (A–H)	Former Underground Storage Tanks	Underground steel storage tanks containing gasoline or fuel oil	Documentation of closure was unavailable, therefore USTs remain AOCs at this time. Four USTs were filled with gravel or removed.

[a]Designations are based on U.S. EPA's definition of SWMU and AOC from the July 15, 1985 (50 *FR* 28712), July 27, 1990 (55 *FR* 30798), and May 1, 1996 (61 *FR* 19432) *Federal Registers.*

Source: *Phase I Groundwater Assessment Report* (CH2M HILL 1990) and discussions with DuPont personnel.

APPENDIX TABLE 3
Current SWMU Numbers Cross-Referenced to Former WMU Numbers
(Page 1 of 2)

SWMU No.		Name	Former WMU No.[a]
1		Northern Onsite Waste Management Area	
	1A	Ash Landfill/Stoker Grate Area	1
	1B	Calcium Sulfate and TSP Area	11
	1C	Rubble Fill Area	2
	1D	Silica/Calcium Sulfate Area	5
	1E	Calcium Fluoride Area	10
	1F	Zinc Mud Area	35
	1G	General Refuse Areas	15
	1H	PCB Storage Area—in Rubble Fill Area	16
	1I	Miscellaneous Pits and Piles-North	33
	1J	Miscellaneous Pits and Piles- South	33
	1K	Spill Areas—South of Ash Landfill/Stoker Grate Area	17
	1L	New Landfill	14
2		Coal and Fly Ash Piles	
	2A	Far West Pile	3
	2B	West Pile	3
	2C	East Pile	3
	2D	Far East Pile	3
3		Disposal Area Near Former Chrome Outfall	33
4		Insecticide Disposal Area	22
5		PCB Electrical Storage Yard	16
6		Hazardous Waste Storage Area	
	6A	Waste Solvent Tank	4
	6B	AgChem Drum Storage	4
	6C	Reagent Drum Storage	4
	6D	Flue Dust Storage in Adhesives Building	NA
	6E	Flue Dust Storage near North Warehouse	NA
7		Abandoned Chemical Storage Building "The Morgue"	32
8		Zinc Roaster Sinter Area	34

APPENDIX TABLE 3
Current SWMU Numbers Cross-Referenced to Former WMU Numbers

SWMU No.	Name	Former WMU No.[a]
9	Incinerators	
9A	Northwest Incinerator	9
9B	Incinerator West of Freon Warehouse	9
10	HCl Neutralization Pit	8
11	Sulfamic Acid Pits (2)	29
12	Antimony Pentachloride Settling Basin	23
13	Colloidal Silica Settling Pits (2)	27
14	Former Chrome Outfall and Impoundment	13
15	Former Wastewater Treatment System (and Outfall 002)	36
16	Current Wastewater Treatment System (EVC and Outfall 003)	30 and 20P
17	Process Sewers	19
18	Sanitary Sewers	26
19	Building Maintenance Areas	7
20	Fill Area near River	NA
21	Lead Arsenate Sludge Disposal Area	NA
22	Former River Intake Canal	NA

[a]Facility WMU number, as identified in the *Phase I Groundwater Assessment* report (CH2M HILL 1990).

APPENDIX TABLE 4
Current AOC Numbers Cross-Referenced to Former WMU Numbers
(Page 1 of 2)

AOC No.	Name	Former WMU No.
1	Vehicle Loading/ Unloading Areas (with reported spills)	
1A	Silica Area -South	12B
1B	Silica Area -North	12D
1C	Contact No. 1 Area	12F
1D	FSA/ Reagent Area	12K
1E	Sulfamic Acid Area	12L
1F	Freon® Area	12O
1G	Contact No. 3 Area	12P
2	Railroad Loading and Unloading (with reported spills)	
2A	Contact No. 3 Area North	18A
2B	Contact No. 3 Area South	18B
2C	Sulfamic Acid Area South	18C
2D	FSA/ Reagent Area	18D
2E	AgChem Area North	18F
2F	Zinc Chloride Area	18I
2G	Sulfamic Acid Area North	18N
3	Above Ground Storage Tank (with reported spills)	
3A	Freon Area South	20A
3B	Freon Area North	20C
3C	Sulfamic Acid Area	20D
3D	FSA/ Reagent Area	20E
3E	Contact No. 3 Area	20F
3F	Power house	20G
3G	AHF Area	20M
3H	Contact No. 1 Area	20R
3 I	Zinc Chloride Area	20T
3J	AgChem	20J
4	Tank Car Neutralization Impoundment	17
5	Beneath Former Contact No.1	17
6	Zinc Crude Milling Area	24

APPENDIX TABLE 4
Current AOC Numbers Cross-Referenced to Former WMU Numbers
(Page 2 of 2)

AOC No.	Name	Former WMU No.
7	Former Commercial Packing House Building	32
8	Former Powerhouse Pit	33
9	Open Sanitary Ditch	33
10	Former Underground Petroleum Storage Tanks	
10A	Front Gate (gasoline)	21
10B	Contact No. 3 (fuel oil)	31B
10C	Central Shops (gasoline)	31C
10D	AgChem (gasoline)	31D
10E	Contact No. 2 (fuel oil)	31E
10F	Trial Ore Roasters Tank 1 (fuel oil)	31F
10G	Power Plant No.2 (fuel oil No. 6)	31G
10H	Trial Ore Roasters Tank 2 (gasoline)	31H

Former WMU number, as presented in the *Phase I Groundwater Assessment* report (CH2M HILL 1990).

APPENDIX TABLE 5
Historical SWMU Information
(Page 1 of 3)

SWMU#	WMU#	WMU Description	Status	Period of Operation	Possible Contents	Contributing Processes
1A	1	Ash Landfill/Stoker Grate Ash	Inactive	1892 to 1950	Stoker chain grate ash	
1B	11	Calcium Sulfate/TSP Area	Inactive	1926 to 1951	Calcium sulfate, trisodium phosphate, aluminum phosphate, iron phosphate, SiO_2	Phosphoric Acid manufacturing, Trisodium Phosphate mfg.
1C	2	Rubble Fill Area	Inactive	1892 to 1985	Demolition material, sulfur, metal, silica, dirt, waste chemicals, glass, burned waste drums, railroad ties, clothing, $AlCl_3$, filter cake mud, sodium silicate, solid lab wastes, silica furnace flue dust, furnace bricks, zinc chloride mud, paper wastes, filter sludge, Freon bottoms	Sulfuric Acid Manufacturing, Sodium Silicate mfg., Zinc Chloride mfg., Aluminum Chloride mfg., Ammonium Chloride mfg., Glauber's Salt mfg., Lead Arsenate mfg., Colloidal Silica mfg., Freon^R mfg., Sulfamic Acid mfg., AgChem Mfg. Processes (General—includes individual AgChem products)
1D	5	Silica/Calcium Sulfate Area (diked)	Active	1974 to present	Calcium sulfate, silica solids, filter aid, small amounts of chemicals from waste treatment facility, dry ammate, linuron^R waste slurry	EVC Treatment System, Sulfamic Acid Treatment System, As of 1978 only Colloidal Silica
1E	10	Calcium Fluoride Area (bentonite lined)	Inactive	1974 to 1977	Calcium fluoride sludge, arsenic	Freon^R Manufacturing, Freon^R Waste Treatment System
1F	35	Zinc Mud Area	Inactive	1909 to 1969	Zinc chloride mud	Zinc Chloride Manufacturing
1G	15	General Refuse Area (open trash burning from 1972 to 1973; 1,000 55-gal drums of MEK & organic sludge burned)	Inactive	1955 to 1974	Includes: misc. chemicals, sulfur, filter sludges, tank cleaning sludges, bricks, spent silica gel from HF process, alumina gel from Freon process, vanadium oxide dust (prior to 1970), plant paper wastes, MEK and organic sludge from benomyl process, hexane wastes from siduron^R, demolition material, silica, calcium sulfate	Sulfuric Acid Manufacturing, Sodium silicate mfg., Ammonium Chloride mfg., Glauber's Salt mfg., Colloidal Silica mfg., Freon^R mfg., AgChem Mfg. Processes (General—Includes Individual AgChem Products)
1H	16	PCB Storage Areas—in Rubble Fill Area	Inactive	Unknown	PCB-contaminated soil	
1I	33	Miscellaneous Pits/Piles—North (Red, Tainted Area)	Inactive	Unknown	Unknown	
1J	33	Miscellaneous Pits/Piles—South	Inactive	Unknown	Unknown	
1K	33	Spill Area South of Ash Landfill/Stoker Grate Area	Inactive	Unknown	Unknown, large dark spot on site photos	
1L	14	New Landfill (unlined, bentonite berm)	Active	Unknown to Present	Calcium sulfate , Built over Rubble Area (WMU 2)	Colloidal Silica manufacturing (some as $CaSO_4$), EVC Treatment System
2A	3	Coal and Fly Ash Pile (Far West)	Inactive	1892 to 1968	Coal, fly ash	
2B	3	Coal and Fly Ash Pile (West)	Inactive	1893 to 1968	Coal, fly ash	
2C	3	Coal and Fly Ash Pile (East)	Inactive	1894 to 1968	Coal, fly ash	
2D	3	Coal and Fly Ash Pile (Far East)	Inactive	1895 to 1968	Coal, fly ash	
3	33	Disposal Area Near Chrome Outfall	Inactive	1913 to 1968	Fly ash, quartz, sulfur, chambers 4 and 5 wastes, sulfur filter process mud from Contact 3.	
4	22	Insecticide Disposal Area	Inactive	1910 to 1949	Insecticide by-products, lead arsenate, calcium arsenate, 2,4-D sodium weed killer, barium fluorosilicate, calcium arsenite, lead acetate, Deenate^R insecticides, methoxy-chlor products, plant food, arsenate green^R, garden potato dust, litharge, arsenic acid, bordeaux mixture^R, lime sulfur	Lead Arsenate manufacturing, Lime Sulfur mfg., Arsenic Acid mfg., Bordeaux Mixture^R mfg., Calcium Arsenate mfg., AgChem Mfg. Processes (General—Includes Individual AgChem Products)
5	16	PCB Storage Areas—Electric Storage Yard	Inactive	Unknown to present (estimated life 5 years)	PCB-contaminated oil and equipment	

APPENDIX TABLE 5
Historical SWMU Information
(Page 2 of 3)

SWMU#	WMU#	WMU Description	Status	Period of Operation	Possible Contents	Contributing Processes
6A	4	Hazardous Waste Storage Areas—Waste Solvent Tank (4,000-gal, lined carbon steel)	Inactive	Unknown to 1985	Toluene, hexane, waste herbicide	AgChem Mfg.
6B	4	Hazardous Waste Storage Areas—AgChem Drum Storage Area	Inactive	Unknown to 1984	Hexane waste, toluene waste, floor sweepings, hexazinone waste and feed, hexane/siduron^{R} waste, DFM/methanol	Reagent Manufacturing (HNO_3, HCl, H_2SO_4, NH_4OH, CH_3COOH, Duclean #1), AgChem manufacturing processes (General—includes individual AgChem products)
6C	4	Hazardous Waste Storage Areas—Reagent Drum Storage Area	Inactive	Unknown to 1984	H_2SO_4, HNO_3, HCL, and NH_4OH process wastes	
6D	NA	Hazardous Waste Storage Area—Flue Dust Storage in Adhesives Building	Inactive	1991 to 1993	Flue dust containing chromium (D007)	Sodium silicates refractory furnace
6E	NA	Hazardous Waste Storage Areas—Flue Dust Storage Near North Warehouse	Inactive	1991 to 1993	Flue dust containing chromium (D007)	Sodium silicates refractory furnace
7	32	Abandoned Chemical Storage Building—The Morgue	Inactive	Unknown to 1977	Old equipment, AgChem products	
8	34	Zinc Roaster Sinter Area	Inactive	1916 to 1937 and 1947 to 1967	zinc oxide, zinc sinters, zinc sulfide, iron sinters	
9A 9B	9	Incinerators (2)	Inactive	Unknown	Plant paper wastes	
10	8	HCL Neutralization Pit (unlined pit containing limestone, ~8 ft deep, filled w/demolition mater. in 1986)	Inactive	- 1941 to 1974 - 1948 to 1977	Freon wastes, acidic Freon waste stream, arsenic, boron, chromium, antimony pentachloride HCl, neutralized wastes, calcium chloride	Freon^{R} Manufacturing, Freon^{R} Waste Treatment System
11	29	Sulfamic Acid Pits (2)—(10k gal. capacity; concrete, acid brick liner)	Inactive	1973 to present	Sulfamic acid wastes, waste acid, neutralized waste acid	Sulfamic Acid manufacturing
12	23	Antimony Pentachloride Settling Basin (~6 ft deep)	Inactive	1948 to 1977	Sodium hydroxide, antimony pentachloride, sulfamic acid	Freon^{R} Manufacturing
13	27	Colloidal Silica Settling Pits (2) (Temporary lined pits. Flows to EVC)	Active	Unknown to present	Filter aid, precoat, silica scale, gelled colloidal silica	Colloidal Silica manufacturing
14	13	Chrome Outfall and Impoundment (Cooling Tower Blowdown) - (drainage ditch with discharge into river)	Inactive	1948 to 1977	Cooling tower blowdown, chromium, sulfur, HCl neutralization pit runoff (arsenic, chromium, & boron)	Sulfuric Acid Manufacturing, Freon^{R} mfg.
15	36	Outfall 002 and Wastewater Treatment System (includes primary and secondary pH adjustment tanks, caustic storage tank, H_2SO_4 storage tank)	Inactive	Unknown to present	Process wastes, pH adjusted process wastes	Sulfamic Acid manufacturing, Fluorosulfonic Acid (FSA) mfg., Freon^{R} Waste Treatment System, Sulfamic Acid Treatment System, 002 Outfall Treatment System
16	30	Environmental Control System and Outfall 003- Current Wastewater Treatment System (Clarifier, flocculator, surge tanks, above ground holding tanks, - two @ 300,000 gal. each, rotary vacuum, filters, sand filters)	Active	1973 to present	Colloidal silica, sodium silcate, and lab drain wastes, calcium sulfate	Sodium Silicate Manufacturing, EVC Treatment System

APPENDIX TABLE 5
Historical SWMU Information
(Page 3 of 3)

SWMU#	WMU#	WMU Description	Status	Period of Operation	Possible Contents	Contributing Processes
17	19	Process Sewer	Active	Unknown to present (some sewers were abandoned)	Operating and loading/unloading area spills. Past spills have included: H_2SO_4, HCl, FSA, CSA, NaOH, lab waste drains, ammonium sulfamate, reagent chemicals, sodium silicate, sulfamic acid, zinc chloride, Freon, tank sludges, phosphoric acid, salt cake, salt, ammonium chloride, Glauber's salt, AgChem products, colloidal silica, sodium thiosulfate, chromated zinc chlorine, trisodium phosphate	Sulfuric Acid manufacturing, Mixed Acid mfg., Reagent mfg. (HNO_3, HCl, H_2SO_4, NH_4OH, CH3COOH, Duclean #1), Sodium silicate mfg., Zinc Chloride mfg., Chromated Zinc Chloride mfg., Zinc Ammonium Chloride mfg., Aluminum Chloride mfg., Hydrochloric Acid/Salt Cake mfg., Ammonium Chloride mfg., Glauber's Salt mfg., Lead Arsenate mfg., Colloidal Silica mfg., Sodium Thiosulfate mfg., Lime Sulfur mfg., Arsenic Acid mfg., Bordeaux MixtureR mfg., Calcium Arsenate mfg., FreonR mfg., Phosphoric Acid mfg., Sulfamic Acid mfg., Trisodium Phosphate mfg., Fluorosulfonic Acid (FSA) mfg., EVC Treatment System, FreonR Waste Treatment System, Sulfamic Acid Treatment System, AgChem Mfg. Processes (General—includes individual AgChem products)
18	26	Sanitary Sewers	Active	Unknown to present (some sewers were abandoned)	Sewage	NA
19	7	Building Maintenance Areas	Inactive	- Unknown to 1980	Chlorothene NU^R (1,1,1-TCA)	AgChem Mfg. Processes (General—Includes Individual AgChem Products)
			Active	- 1980 to present	Safety Kleen solvents 105^R and 140^R	
			Active	- Unknown to present	Waste oils and lubricating oils	Maintenance equipment and support vehicles
			Active	- 1981 to present	Asbestos	Found during demolition of building/ offsite
			Active	- Unknown to present	Bulk chemicals (H_2SO_4, HCl, NH_4OH, NaOH)	
			Active	- 1964 to 1972	Silica furnace flue dust	Silica furnace retrofit (hexavalent chromium)/ offsite
			Inactive	- Unknown to present	Dichlorophenylisocyanate	Used in AgChem process, stored in AgChem building
			Inactive	- Unknown	Vythene^R (methyl chloroform)	
			Inactive	- Unknown	Hospital X-ray developing solution	
20	NA	Fill near River	Inactive	1956	Grand Calumet River sediments	COE/DOT relocation of Grand Calumet River for construction of I-90 Toll Road.
21	NA	Lead Arsenate Sludge Disposal Area	Inactive	Early 1950s	Lead Arsenate Sludge	AgChem Mfg
22	NA	Former River Intake Canal	Inactive		Grand Calumet River sediment and debris from the main office building demolition	Building demolition

Source: *Phase I Groundwater Assessment report* (CH2M HILL 1990).

APPENDIX TABLE 6
Historical AOC Information
(Page 1 of 2)

AOC#	WMU#	WMU Description	Status	Period of Operation	Possible Contents	Contributing Processes
1	12	Vehicle Loading/Unloading Areas (concrete, paved, dirt, or gravel; all areas near buildings)		1892 to present	Location dependent. Includes: lead arsenate, reagent chemicals, arsenic acid, chromated zinc chlor., trisodium phosph., dimethyl phthalate, dimethylformamide, ethylene glycol, etc., & chemicals listed below ("*" indicates documented spill of chemical)	Sulfuric acid manufacturing, Reagent mfg. (HNO_3, HCl, H_2SO_4, NH_4OH, CH_3OOH, Duclean #1), Sodium Silicate mfg., Zinc Chloride mfg., Chromated Zinc Chloride mfg., Zinc Ammonium Chloride mfg., Aluminum Chloride mfg., Hydrochloric Acid/Salt Cake mfg., Ammonium Chloride mfg., Duclean #2 mfg., Glauber's Salt mfg., Colloidal Silica mfg., Sodium Thiosulfate mfg., Lime Sulfur mfg., Arsenic Acid mfg., Bordeaux Mixture^R mfg., Calcium Arsenate mfg., Freon^R mfg., Phosphoric Acid mfg. Sulfamic Acid mfg., Trisodium Phosphate mfg., Fluorosulfonic Acid (FSA) mfg., Freon^R Waste Treatment System, 002 Outfall Treatment System, AgChem Manufacturing Processes (General—includes indiv. AgChem products)
1A	12B	Silica Area South	Active		- Colloidal silica*, sodium silicate*	
1B	12D	Silica Area North	Active		-Sodium silicate*, soda ash, caustic, sand	
1C	12F	Contact No. 1 Area	Active		-H_2SO_4*	
1D	12K	FSA/Reagents Area	Inactive		-FSA, SO_3*, FH*, H_2SO_4*, Hitric acid*, HCl*, HN_4OH	
1E	12L	Sulfamic Acid Area	Inactive		-HCl*, NH_3, H_2SO_4*, Sulfamic Acid	
1F	12O	Freon Area	Inactive		HCL*	
1G	12P	Contact No. 3 Area	Inactive		-CSA, H_2SO_4*, Fuel oil, SO_3*	
2	18	Railroad Loading/Unloading Areas --(near buildings)		1892 to present	Location dependent. Includes: TEL, sodium thiosulfate, Duclean products, deichlorophenylisocyanate, chromated zinc chloride, dimethylhexylamine, & others listed below) ("*" indicates documented spill of chemical)	Sulfuric Acid manufacturing, Mixed Acid mfg., Sodium silicate mfg., Zinc Chloride mfg., Chromated Zinc Chloride mfg., Zinc Ammonium Chloride mfg., Aluminum Chloride mfg., Hydrochloric Acid/Salt Cake mfg., Ammonium Chloride mfg., Duclean #2 mfg., Glauber's Salt mfg., Colloidal Silica mfg., Sodium Thiosulfate mfg., Lime Sulfur mfg., Arsenic Acid mfg., Bordeaux Mixture^R mfg., Calcium Arsenate mfg., Freon^R mfg., Phosphoric Acid mfg., Sulfamic Acid mfg., Trisodium Phosphate mfg., mfg., Fluorosulfonic Acid (FSA) mfg., AgChem Mfg. Processes (General—Includes individual AgChem Products)
2A	18A	Contact No. 3 Area North	Inactive		-CSA*, H_2SO_4*, Tank sludges	
2B	18B	Contact No. 3 Area South	Inactive		-SO_3*, H_2O_2, H_{2SO4}*, zinc ores, zinc sulfide, tank sludges	
2C	18C	Sulfamic Acid Area North	Inactive		-HCl*, H_2SO_4*, NH_3, Sulfamic Acid, Ammate*, tank sludges -	
2D	18D	Reagents/FSA Area	Inactive		FSA*, SO_3*, H_2SO_4*, AHF*	
2E	18F	AgChem Area North	Inactive		-Hexane, toluene, hexazinone, phenylisocyanate*, butyllisocyanate, MEK, wastewater, wastes*	
2F	18I	Zinc Chloride Area	Inactive		-Zinc, lime, ammonium chloride, zinc chloride, zinc ammonium chloride, aluminum chloride, HCl*	
2G	18N	Sulfamic Area South	Inactive		-Sulfamic acid*	
3	20	Aboveground Tanks		1892 to present	Location-dependent, includes: phosphoric acid, trisodium phosphate, sodium thiosulfate, AgChem products, colloidal silica, ammate mother liquor, sulfamic acid, etc., & chem. listed below ('*' indicates a documented spill)	Sulfuric Acid manufacturing, Mixed Acid mfg., Reagent mfg. (HNO_3, HCl, H_2SO_4, NH_4OH, CH_3COOH, Duclean #1), Sodium Silicate mfg., Zinc Chloride mfg., Zinc Ammonium Chloride mfg., Aluminum Chloride mfg., Hydrochloric Acid/Salt Cake mfg., Ammonium Chloride mfg., Glauber's Salt mfg., Lead Arsenate mfg., Colloidal Silica mfg., Sodium Thiosulfate mfg., Arsenic Acid mfg., Bordeaux Mixture^R mfg., Calcium Arsenate mfg., Freon^R mfg., Phosphoric Acid mfg., Sulfamic Acid mfg., Trisodium Phosphage mfg., Fluorosulfonic Acid (FSA) mfg., EVC Treatment System, 002 Outfall Treatment System, AgChem Mfg. Processes (General—includes
3A	20A	Freon Area South	Inactive		-HCl*	
3B	20C	Freon Area North	Inactive		-Freon, Propane, Butane, Isopentane, H2SO4*	
3C	20D	Sulfamic Area	Inactive		-H_2SO_4*, sulfamic premix*, NH_3, HCl	
3D	20E	FSA/Reagents Area	Inactive		-SO_3, FSA, HF*, H_2SO_4*, NH_4OH, HNO_3	
3E	20F	Contact No. 3 Area	Inactive		-CSA*, Alkyl acid, Cinder slurry, SO_3*, H_2SO_4*, H_2O_2, Acid wastewater	
3F	20G	Powerhouse	Inactive		-Oil, molten sulfur*, soft water	
3J	20J	AgChem Area	Inactive	To 1986	Hexane*, hexazinone, toluene*, ethylene glycol	
3G	20M	AHF Area	Inactive		-AHF*	
3H	20R	Contact No. 1 Area	Inactive		-H_2SO_4*	
3I	20T	Zinc Chloride Area	Inactive		-Zinc chloride, aluminum chloride*, zinc ammonium chloride, ammonium chloride, HCl*	

APPENDIX TABLE 6
Historical AOC Information
(Page 2 of 2)

AOC#	WMU#	WMU Description	Status	Period of Operation	Possible Contents	Contributing Processes
4	17	Neutralization Impoundment	Inactive	1978	FSA, SO_3	Sulfuric Acid Manufacturing, Fluorosulfonic Acid (FSA) mfg.
5	17	Contact No. 1 Area	Inactive	1923 to 1984	H_2SO_4	Sulfuric Acid Manufacturing, Fluorosulfonic Acid (FSA) mfg.
6	24	Zinc Crude Milling Area (dirt floor)	Inactive	1909 to 1969	Processing area. Area wastes and spills include crude processed zinc, wastes from manuf. of zinc, aluminum & ammonium chlorides. Muds from filtering process w/zinc, iron and barium, chromated zinc chloride, zinc ammonium chloride	Zinc Chloride manufacturing, Zinc Ammonium Chloride mfg., Aluminum Chloride mfg.
7	32	Former Commercial Packing House Building (dirt floor)	Inactive	1920s to 1969	Reagent chemicals (HNO_3, HCl, H_2SO_4, NH_4OH)	Sulfuric Acid Manufacturing, Hydrochloric Acid/Salt Cake mfg., Duclean #2 mfg., Glauber's Salt mfg., AgChem Mfg. Processes (General — includes individual AgChem products)
8	33	Former Powerhouse Pit (RR tie construct., size unknown)	Inactive	Unknown	unknown	Sulfuric Acid Manufacture, Sodium Silicate mfg, Hydrochloric Acid/Salt Cake mfg.
9	33	Open Sanitary Ditch	Inactive	1970s	Sanitary sewage, used for approx. 1 month.	NA
10		Underground Storage Tanks				
10A	21	Front Gate Area (2,000 gal, steel)	Inactive	1984 to early 1990s	Gasoline	NA
10B	31	Contact No. 3 Area (4,000 gal, steel, filled	Inactive	1954 to 1984	No. 2 fuel oil	
10C	31	Central Shops (1,000 gal, steel, filled w/gravel)	Inactive	1965 to 1985	Gasoline	
10D	31	AgChem Area (1,000 gal, steel, filled w/gravel)	Inactive	1956 to 1981	Gasoline	
10E	31	Contact No. 2 Area (1,000 gal., filled w/gravel)	Inactive	1947 to 1967	No. 2 fuel oil	
10F	31	Trail Ore (1,000 gal., location unknown)	Inactive	1942 to 1967	No. 2 fuel oil	
10G	31	Roaster Tank No. 1-Power Plant No. 2 (capacity unknown, location unk.)	Inactive	Unknown to 1968	No. 6 fuel oil	
10H	31	RoastersTank #2 (500 gal., location unknown)	Inactive	1942 to 1967	Gasoline	

Source: *Phase I Groundwater Assessment* report (CH2M HILL 1990).

APPENDIX TABLE 7
Waste Management Units That Are Neither SWMUs Nor AOCs at DuPont East Chicago Facility
(Page 1 of 2)

WMU No.[a]	WMU Name	Description of Unit	Additional Rationale for Unit Designation[b]
6	Sulfur Areas	Six former raw material storage piles	Areas where raw materials and products were handled are not considered SWMUs or AOCs. Sulfur is a raw materials and not a hazardous constituent. No further action recommended under the Corrective Action Program.
12A, 12C, 12E, 12G, 12H, 12 I, 12J, 12M, 12N, 12Q, 12R, 12S, 12T, 12U, 12V, 12W, 12X	Vehicle Loading and Unloading Areas (with no record of spills occurring)	Vehicle loading and unloading areas for raw materials and products	Areas where raw materials and products were handled are not considered SWMUs or AOCs. Facility records reviewed do not indicate spills at these areas. No further action is recommended under the Corrective Action Program.
16	PCB Storage Area—Freon Warehouse	Diked polychlorinated biphenyl (PCB) containment area inside the South Freon Warehouse	Used for temporary storage of electrical equipment while out of service. Equipment was reportedly returned to service. No further action recommended under the Corrective Action Program.
18E, 18G, 18H, 18J, 18K, 18L 18M, 18O, 18P, 18Q, 18R	Railroad Loading and Unloading Areas (with no record of spills occurring)	Railroad loading and unloading areas for raw materials and products	Areas where products and raw materials are handled are not considered SWMUs or AOCs if no indication of spills. The facility records reviewed do not indicate spills at these area. No further action is recommended under the Corrective Action Program.
20B, 20H, 20 I, 20K, 20L, 20N, 20O, 20Q, 20S	Aboveground Storage Tanks (with no record of spills occurring)	Aboveground storage tanks containing raw materials and products	Raw material and product storage tanks are not considered SWMUs or AOCs if there is no evidence of release. No further action is recommended under Corrective Action Program.
25A	Acid Transfer Line (east line)	Aboveground pipeline used to transport acid product to Cities Services Refinery	Contained product. Areas where raw materials and products were handled are not considered SWMUs or AOCs. Facility records do not indicate spills from pipeline occurred. No further action recommended under the Corrective Action Program.
25B	Acid Transfer Line (west line)	Aboveground pipeline used to transport acid from Cities Services Refinery	Spent acid from Cities Services refinery was used as a raw material by DuPont. Raw material pipelines are not considered SWMUs.

APPENDIX TABLE 7
Waste Management Units That Are Neither SWMUs Nor AOCs at DuPont East Chicago Facility
(Page 2 of 2)

WMU No.[a]	WMU Name	Description of Unit	Additional Rationale for Unit Designation[b]
28	Chemical Storage Buildings	Four warehouse buildings for storing products and raw materials	Areas where raw materials and products were handled are not considered SWMUs or AOCs. No further action recommended under the Corrective Action Program.
32	Abandoned Chemical Storage Buildings—Salt Cake Warehouse	Former building for warehouse products	Storage of raw materials or products. Areas where raw materials and products were handled are not considered SWMUs or AOCs. No further action recommended under the Corrective Action Program.
32	Abandoned Chemical Storage Buildings—Rodine Storage	Former building for warehouse additive or raw material	Storage of raw materials or products. Areas where raw materials and products were handled are not considered SWMUs or AOCs. No further action recommended under the Corrective Action Program.
32	Abandoned Chemical Storage Buildings—Insecticide Warehouse	Former building for warehousing products	Storage of raw materials or products. Areas where raw materials and products were handled are not considered SWMUs or AOCs. No further action recommended under the Corrective Action Program.
33	Miscellaneous Pits and Piles—Manheim Furnace Pile	Former product storage pile (salt)	Raw material or product storage areas not considered SWMUs or AOCs. No further action recommended under the Corrective Action Program.
33	Miscellaneous Pits and Piles—Phosphate Rock Area	Former product storage pile	Raw material or product storage areas not considered SWMUs or AOCs. No further action recommended under the Corrective Action Program.

[a] WMU number as identified in the Phase I Groundwater Assessment report by CH2M HILL 1990.
[b] Designation as neither SWMU or AOC is based on U.S. EPA's definition of SWMU and AOC from the *Federal Register* of July 15, 1985 (50 *FR* 28712), July 27, 1990 (55 *FR* 30798), and May 1, 1996 (61 *FR* 19432).

APPENDIX TABLE 8

Historical Information on Waste Management Units that are Neither SWMU's Nor AOC's

(Page 1 of 3)

WMU#	WMU Description	Status	Period of Operation	Possible Contents	Contributing Processes
6	Sulfur Areas:				Sulfuric Acid manufacturing
	- Sulfur Pile — Chamber 1	Inactive	1893 to 1947	Sulfur	
	- Sulfur Pile — Chambers 2 & 3	Inactive	1893 to 1947	Sulfur	
	- Sulfur Pile — Chambers 4 & 5	Inactive	1913 to 1955	Sulfur, sulfur process filter acid, zinc sinter from roasters	
	- Sulfur Pile — Contact 1	Inactive	1923 to 1955	Sulfur	
	- Sulfur Pit — Contact 3	Inactive	1955 to 1984	Molten sulfur	
	- Sulfur Pile — Contact 3, near CSA	Inactive	1955 to 1958	Sulfur	
12	Non-railroad Loading/Unloading Areas --(concrete, paved, dirt, or gravel; all areas near buildings)		1892 to present	Location dependent, includes: lead arsenate, reagent chemicals, arsenic acid, chromated zinc chlor., trisodium phosph., dimethyl phthalate, dimethylformamide, ethylene glycol, etc., & chemicals listed below)	Sulfuric Acid manufacturing, Reagent mfg. (HNO_3, HCl, H_2SO_4, NH_4OH, CH_3OOH, Duclean #1), Sodium Silicate mfg., Zinc Chloride mfg., Chromated Zinc Chloride mfg., Zinc Ammonium Chloride mfg., Aluminum Chloride mfg., Hydrochloric Acid/Salt Cake mfg., Ammonium Chloride mfg., Duclean #2 mfg., Glauber's Salt mfg., Colloidal Silica mfg., Sodium Thiosulfate mfg., Lime Sulfur mfg., Arsenic Acid mfg., Bordeaux Mixture^R mfg., Calcium Arsenate mfg., Freon^R mfg., Phosphoric Acid mfg., Sulfamic Acid mfg., Trisodium Phosphate mfg., Fluorosulfonic Acid (FSA) mfg., Freon^R Waste Treatment System, 002 Outfall Treatment System, AgChem Manufacturing Processes (General— includes indiv. AgChem products)
	-12-A (002 Outfall)	Inactive		-Caustic, H_2SO_4	
	-12-C (Silica area)	Inactive		-Waste acids, H_2SO_4	
	-12-E (Phosphoric acid area)	Inactive		-Phosphate rock, phosphoric acid	
	-12-G (AgChem area)	Inactive		-Hexane, toluene, hexazinone, butylisocyanate, wastes, Siduron^R, misc. AgChem products (i.e,, 2,4-D sodium weed killer, bordeaux mix.^{R}, c arsenate, litharge^R, lorox^R, tupersan^R, linuron^R, karmex^R, valron^R, Deenate^R insecticides, EPN insecticides, methoxychlor products, plant food, arsenate green^R, fenuron^R, garden potato dust^R)	
	-12-H (Chamber bldg)	Inactive		-H_2SO_4	
	-12-I (zinc chloride area)	Inactive		-Zinc chloride, ammonium chloride, aluminum chloride, zinc ammonium chloride	
	-12-J (New power house)	Inactive		-H_2SO_4, Caustic	
	-12-M (Freon area)	Inactive		-Freon, propane, butane, isopentane	
	-12-N (Freon area)	Inactive		-HF, CCl_4, caustic	
	-12-Q (Fuels area)	Inactive		-Diesel fuel, fuel oil, gasoline	
	-12-R (Glauber's salt area)	Inactive		-Glauber's salt	
	-12-S (Sulfur area)	Inactive		-Sulfur	
	-12-T (Contact No. 3 area)	Inactive		-H_2SO_4	
	-12-U (Contact No. 3 area)	Inactive		-CSA	
	-12-V (Contact No. 3 area)	Inactive		-SO_3	
	-12-W (Manheim furnace area)	Inactive		-Salt	
	-12-X (salt cake area)	Inactive			
16	PCB Storage Areas—Freon Warehouse	Inactive	1981 to 1984	PCB-contaminated oil and equipment	

APPENDIX TABLE 8

Historical Information on Waste Management Units that are Neither SWMU's Nor AOC's

(Page 2 of 3)

WMU#	WMU Description	Status	Period of Operation	Possible Contents	Contributing Processes
18	Railroad Loading/Unloading Areas --(near buildings)		1892 to present	Location-dependent. Includes: TEL, sodium thiosulfate, duclean products, deichlorophenylisocyanate, chromated zinc chloride, dimethylhexylamine, & others listed below	Sulfuric Acid manufacturing, Mixed Acid mfg., Sodium silicate mfg., Zinc Chloride mfg., Chromated Zinc Chloride mfg., Zinc Ammonium Chloride mfg., Aluminum Chloride mfg., Hydrochloric Acid/Salt Cake mfg., Ammonium Chloride mfg., Duclean #2 mfg., Glauber's Salt mfg., Colloidal Silica mfg., Sodium Thiosulfate mfg., Lime Sulfur mfg., Arsenic Acid mfg., Bordeaux Mixture[R] mfg., Calcium Arsenate mfg., Freon[R] mfg., Phosphoric Acid mfg., Sulfamic Acid mfg., Trisodium Phosphate mfg., Fluorosulfonic Acid (FSA) mfg., AgChem Mfg. Processes (General — Includes Individual AgChem Products)
	- 18-E (AgChem area)	Inactive		-Hexane	
	- 18-G (Phosphoric Acid/Contact No.1)	Inactive		-phosphoric acid, H_2SO_4, phosphate of soda, rock, tank sludge	
	- 18-H (AHF area)	Inactive		-AHF ammonium chloride, aluminum chloride, HCl*	
	- 18-J (Salt Cake area)	Inactive			
	- 18-K (Silica area)	Inactive		-Lime, soda ash, caustic, tank sludges, sodium silicate	
	- 18-L (Silica area)	Inactive		-Colloidal silica, H_2S0_4, tank sludges, sodium silicate	
	- 18-M (Manheim Furnace area)	Inactive		-Salt	
	- 18-O (Freon area)	Inactive		-Freon (liquid product)	
	- 18-P (Sulfur area)	Inactive		-Sulfur	
	- 18-Q (Freon area)	Inactive		-CCl_4, AHF	
	- 18-R (Freon area)	Inactive		-HCl	
20	Above-Ground Tanks		1892 to present	Location-dependent, includes: phosphoric acid, trisodium phosphate, sodium thiosulfate, AgChem products, colloidal silica, ammate mother liquor, sulfamic acid, etc., & chem. listed below	Sulfuric Acid manufacturing, Mixed Acid mfg., Reagent mfg. (HNO_3, HCl, H_2SO_4, NH_4OH, CH_3COOH, Duclean #1), Sodium Silicate mfg., Zinc Chloride mfg., Zinc Ammonium Chloride mfg., Aluminum Chloride mfg., Hydrochloric Acid/Salt Cake mfg., Ammonium Chloride mfg., Glauber's Salt mfg., Lead Arsenate mfg., Colloidal Silica mfg., Sodium Thiosulfate mfg., Arsenic Acid mfg., Bordeaux Mixture[R] mfg., Calcium Arsenate mfg., Freon[R] mfg., Phosphoric Acid mfg., Sulfamic Acid mfg., Trisodium Phosphate mfg., Fluorosulfonic Acid (FSA) mfg., EVC Treatment System, 002 Outfall Treatment System, AgChem Mfg. Processes (General — Includes Individual AgChem products)
	-20-B (Freon area)	Inactive		-Caustic, CCl_4, HF	
	-20-H (002 Outfall)	Inactive		-Caustic, H_2SO_4	
	-20-I (southeast of AgChem)	Active		-Fuel Oil	
	-20-K (Phosphoric acid area)	Active		-Phosphate of soda, Phosphate rock	
	-20-L (north of Zinc Oxides)	Active		-Fuel Oil	
	-20-N (HCl/Salt Cake area)	Active		-HCl, Fuel Oil	
	-20-O (New powerhouse)	Active		-H_2SO_4, wastewater	
	-20-P (Sodium Silicate & Colloidal silica/EVC)	Active		-Waste acid, sodium silicate, fuel oil, wastewaters	
	-20-Q (north of zinc Chlorides)	Active		-Diesel fuel	
	-20-S (Power Plant No. 2)	Active		-Treating tanks	
25	Cities Services Acid Transfer Lines (above-ground, except for fence & railroad crossings, 1,700 ft long)	Inactive	1955 to 1972	99 weight percent sulfuric acid, spent sulfuric acid with 95 weight percent H_2SO_4 and 5 weight percent oil and gas.	Sulfuric Acid manufacturing
28	Chemical Storage Buildings (existing):				Colloidal Silica manufacturing, Freon[R] mfg., AgChem Manufacturing processes (General — Includes individual AgChem products)
	- Barrelhouse No. 1	Inactive	1902 to present	Formaldehyde, hexachlorophene, dowicil[R], ethylene glycol, bactericides, caustic	
	- Adhesives Warehouse	Inactive	1944 to present	Lithium hydroxide, flake caustic, ethylene glycol, ammonium bicarbonate, sodium aluminate, resins	
	- AgChem Warehouse	Inactive	1926 to 1985	Hexazindone, siduron[R], lorox[R], tupersan[R] benomyl	
	- Freon Warehouse —Barrelhouse No 2	Inactive	1948 to Closed to present	Freon, paint, solvents, colloidal silica, silica gel	

APPENDIX TABLE 8

Historical Information on Waste Management Units that are Neither SWMU's Nor AOC's

(Page 3 of 3)

WMU#	WMU Description	Status	Period of Operation	Possible Contents	Contributing Processes
32	Chemical Storage Buildings — (abandoned)				Sulfuric Acid Manufacturing, Hydrochloric Acid/Salt Cake mfg., Duclean #2 mfg., Glauber's Salt mfg., AgChem Mfg. Processes (General — includes individual AgChem products)
	- Salt Cake Warehouse	Inactive	1897 to unknown	Na_2SO_4, glauber's salt	
	- Insecticide Warehouse	Inactive	unknown	Insecticides	
	- Rodine^R Storage (near alkyl acid tank, Contact no. 3 area)	Inactive	1929 to 1984	Rodine 50^R and 92A^R	
33	Miscellaneous Pits and Piles				
	- Manheim Furnace Pile	Inactive	1897 to 1959	Salt	
	- Phosphate Rock Area	Inactive	1925 to 1951	Phosphate Rock	

Source: *Phase I Groundwater Assessment report* (CH2M HILL 1990).

Flue Dust Information

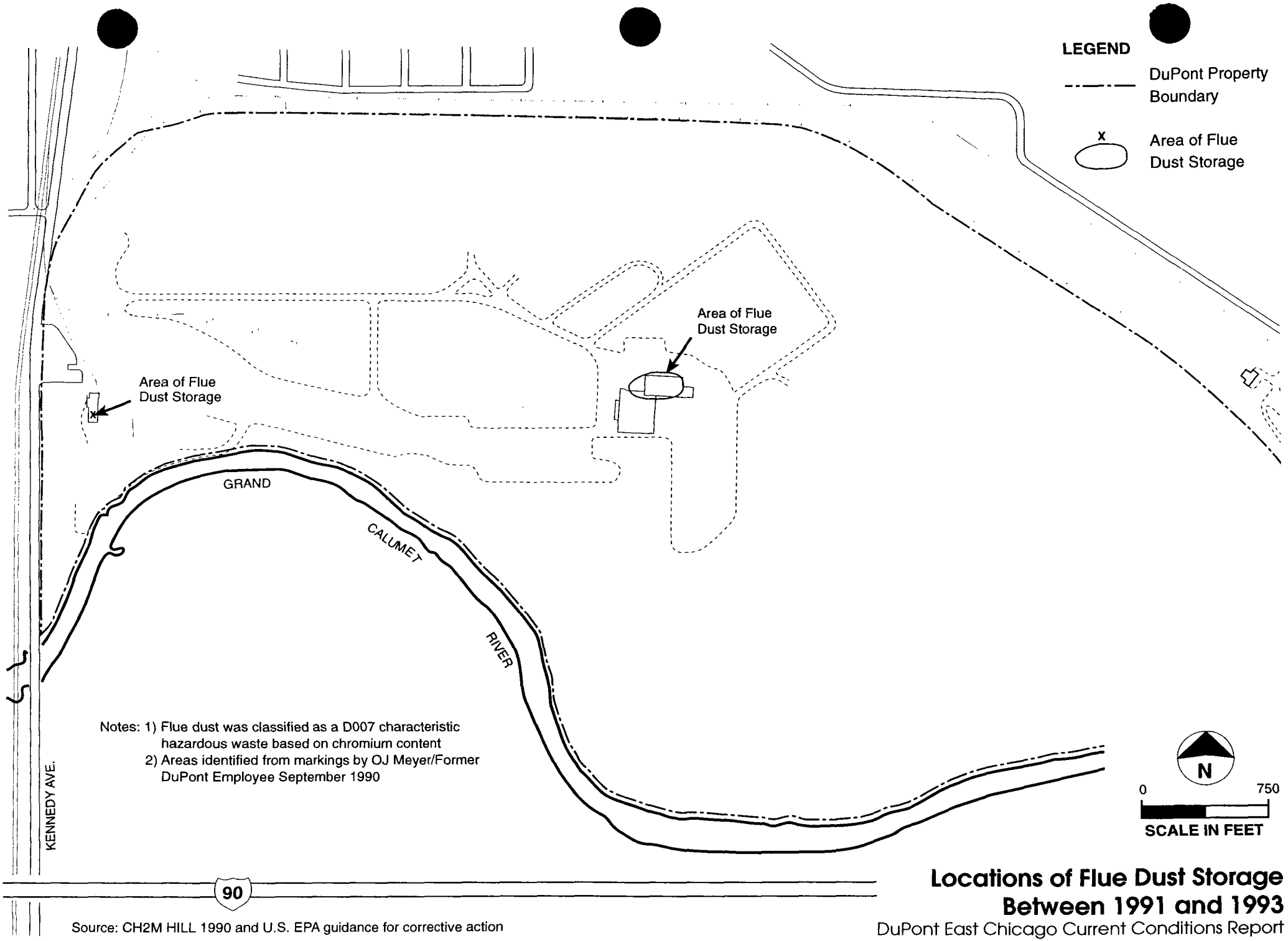
DuPont received a Notice of Violation from the Indiana Department of Environmental Management (IDEM) in January 1997. The violation is in reference to Indiana Code (IC) 13-7 (currently IC 13-30) and the Hazardous Waste Management Rules under 329 IAC 3.1. The referenced regulations contain the requirements for the treatment, storage, and disposal of hazardous waste. Based on an inspection by IDEM it was determined that the facility was not in compliance with the regulations.

Flue dust is generated from the degradation of the refractory bricks used to construct the sodium silicate furnace. The general plant practice was to remove flue dust from the furnace roughly once every third or forth year. During furnace rebuilding were larger quantities of waste generated. The rebuild waste contains both flue dust (hazardous waste by characteristic) and brick (which is not believed to be hazardous by characteristic). The brick manufacturer's Material Safety Data Sheet states that the brick contained trivalent (nonhazardous) chromium.

The volume of waste generated in the June 1991 furnace rebuild filled 71 55-gallon drums. Upon generation of this waste, the flue dust was misclassified and stored onsite in drums in the Adhesives Building and the North Warehouse (see attached figure) for a period greater than 90 days. Testing performed while the material was onsite indicated it was hazardous waste by characteristic for chromium (D007). It was subsequently manifested and disposed of offsite. The areas where the flue dust and bricks were stored for more than 2 years will be addressed as solid waste management units (SWMUs) as part of the RCRA Facility Investigation.

Interviews with plant personnel also indicated that refractory bricks and flue dust from rebuilding the furnace were historically placed in the rubble fill area (also designated as a SWMU). Documentation was not available to determine whether the previous furnace construction materials are of the same origin as the bricks removed in the 1991 rebuild.

The materials used to make refractory brick changed in the early 1990s, and the current furnace rebuilding and generation of flue dust is not considered hazardous waste for chromium.



Source: CH2M HILL 1990 and U.S. EPA guidance for corrective action

Locations of Flue Dust Storage Between 1991 and 1993

DuPont East Chicago Current Conditions Report

CH2MHILL

Agency Contacts Familiar with Environmental Issues at the Facility

Agency Contacts

IDEM

Lee Bridges, Biology Studies Section Chief

Robert (Skip) Bunner, Office of Enforcement, Administrative Assistant

Michael Kuss, Local Inspections

Carla Miller, Enforcement

Kay Nelson, Director of Northwest Regional Office

Richard Nelson, Enforcement

Tom Rarick, Commissioner

Jackie Strecker, Environmental Branch Chief

Joe Thomas, RAP Coordinator

U.S. EPA Region 5

Roger Beld, Assistant Regional Council

Dale S. Bryson, Water Division

George Clark, Groundwater Branch

Jim Filippini, Water Division

Ron Kovach, Water Division

Joe Malek, Superfund Program Management Branch

Tom Marcs, Chief of the Responsible Party Section

Thomas Marks, Superfund

William Melville, Groundwater Branch

Mike Mikulka, Environmental Engineer

Jim Novak, Water Division

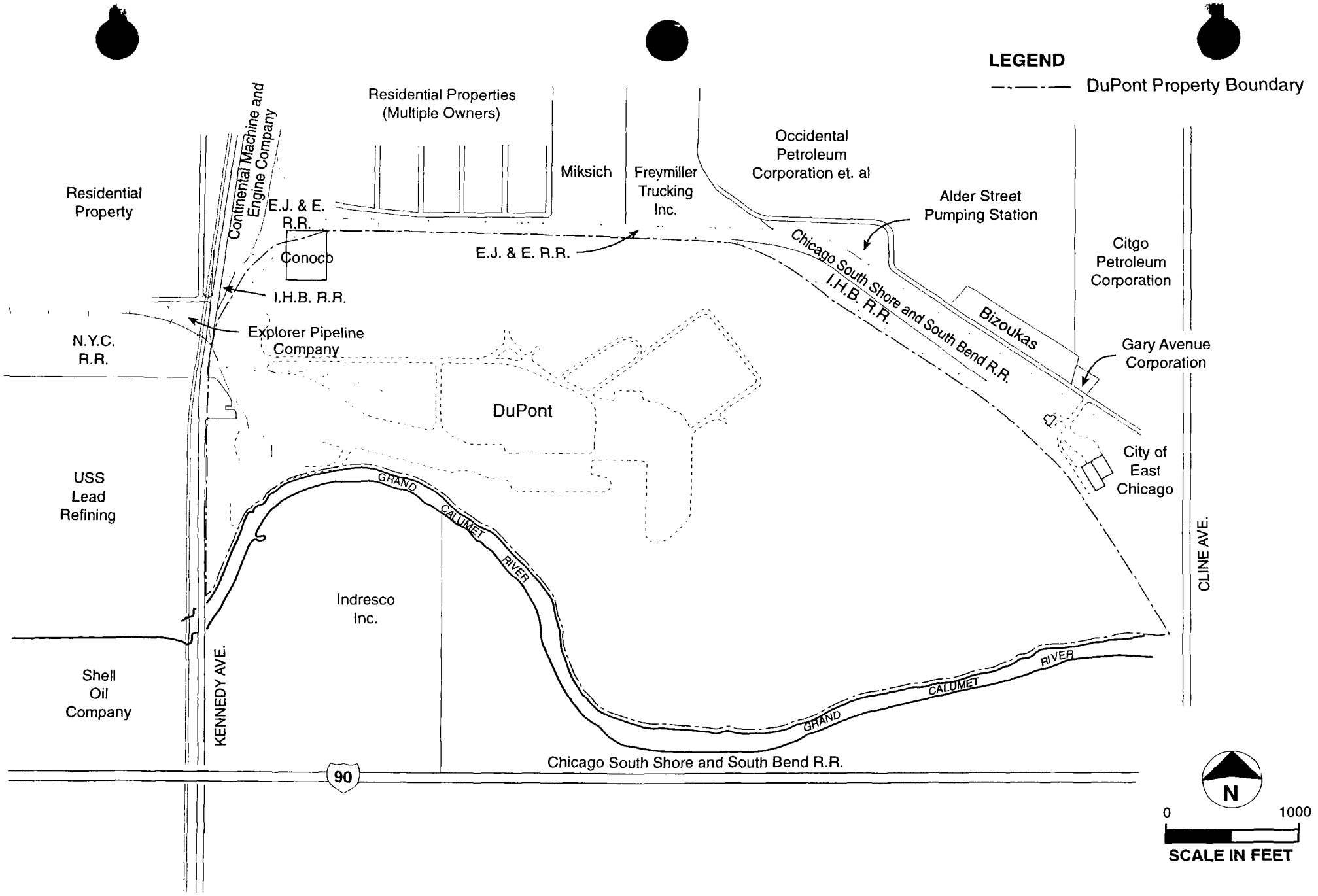
Thad Slaughter, Enforcement Officer RCRA

Bill Thong, Water Division

Robert Tolpa, Water Division, Chief of the Special Activities Unit

Jodi Traub, Waste Division

Allen Wojtas, Environmental Engineer



Source: East Chicago Quarter Section Maps, Original print 1965, Revisions through July 31, 1986
Lake County, North Township Assessor's Office

Adjacent Property Owners

DuPont East Chicago Current Conditions Report

CH2MHILL

Wells within 1 Mile of the DuPont East Chicago Facility

Wells within One Mile of the DuPont East Chicago Facility

Following are two attachments illustrating the proximity of wells to the DuPont East Chicago Site. Attachment 1 is a 2-page listing of wells within a 3-mile radius of the center of the plant. The listing was included as Table 4-4 of the Phase I Groundwater assessment for the site. A plot of approximate well locations corresponding to this list is included in Attachment 1, previously included as Figure 4-10 of the Phase I.

The Indiana Department of Natural Resources conducted a database search for wells in the area around the facility. That area included parts of Townships T36N, R9W and T37N, R9W. The results of this search were received by CH2M HILL on September 12, 1997, and are included as Attachment 2. This listing is more current than Attachment 1. However, it does not provide adequate information for precisely locating many of the listed wells.

Table 4-4 (Page 1 of 2)
WELLS LOCATED WITHIN A THREE-MILE RADIUS
OF THE EAST CHICAGO DUPONT FACILITY*

Owner/Location	Aquifer	Use	Distance From Site WMUs				
			<1 mi	1-1½ mi	1½-2 mi	2-2½ mi	2½-3 mi
CALUMET SAND AQUIFER WELLS							
Linde Air Products (3)	Calumet Sand	Test		X			
Gary Airport (1)	Calumet Sand	Fire Protection			X		
Gary Airport (1)	Calumet Sand	Fire Protection			X		
Reed Mineral Division (1)	Calumet Sand	Not Specified			X		
D&B Auto Parts (1)	Calumet Sand	Sprinkling				X	
Cuevos Residence (1)	Calumet Sand	Home				X	
Tennessee Co. Meats Inc. (1)	Calumet Sand	Sprinkling				X	
Jones & Laughlin Steel Co. (2)	Calumet Sand	Industrial (Monitoring)				X	
Jones & Laughlin Steel Co. (2)	Calumet Sand	Industrial (Monitoring)				X	
Nipsco (1)	Calumet Sand	Water Supply				X	
Northern Indiana Public Service Co. (3)	Calumet Sand	Not Specified				X	
US Gypsum Co. (3)	Calumet Sand	Not Specified				X	
Purdue University (3)	Calumet Sand	Not Specified				X	
Mid-Continent Coke Co. (1)	Calumet Sand	Industrial					X
BEDROCK AQUIFER WELLS							
Shell Oil Co. (1)	Silurian Dolomite	Industrial	X				
Republic Iron & Steel Co. (3)	Silurian-Cambrian Limestones and Sandstones	Not Specified	X				
Harbison-Walker Co. (2,3)	Silurian-Cambrian Limestones and Sandstones	Industrial		X			
Indiana State Highway Commission (1)	Silurian Dolomite	Not Specified		X			
Indiana State Highway Commission (1)	Silurian Dolomite	Not Specified		X			
Clark Residence (1)	Silurian Dolomite	Home			X		
Youngstown Sheet & Tube Co. (2,3)	Silurian Dolomite	Industrial				X	
Northern Indiana Public Service Co. (3)	Silurian Dolomite	Not Specified				X	
U.S. Gypsum Co. (3)	Silurian Dolomite	Not Specified				X	
Red Top Trucking Co. (3)	Silurian Dolomite	Not Specified				X	
Universal Atlas Cement Co. (3)	Silurian Dolomite	Not Specified				X	
Jackson Residence (1)	Silurian Dolomite	Home					X

Table 4-4 (Page 2 of 2)

Owner/Location	Aquifer	Use	Distance From Site WMUs				
			<1 mi	1-1½ mi	1½-2 mi	2-2½ mi	2½-3 mi
Inland Steel Co. (2,3)	Silurian Dolomite	Industrial					
Youngstown Sheet & Tube Co. (2,3)	Silurian-Cambrian Limestones and Sandstones	Industrial					X X

*Source: (1) Well records are filed with Indiana Dept. of Natural Resources, Division of Water in Indianapolis, IN; (2) Well records in U.S. EPA's HRS file for the facility in Chicago, IL; (3) DNR Bulletin No. 10.

GLT678/13

DOW -- GROUNDWATER WELL LOG DATABASE

Structure of the master, DNR table. This table holds the bulk of the information from the water well record, and is tied to the lithologic table through the reference number (key field).

Field Name	Field Type	Description
Refno	N*	Reference number, only key field
Div	A2	Source ID - division
Group	A2	Source ID - group
Compdate	D	Well completion date
Drive	A150	Driving direction to well
County-1	A15	County name, linked to COUNTY look-up table
Civilt	A20	Civil township
Twn-1	A4	Verified Congressional township
Rng-1	A4	Verified Congressioral range
Quar1	A4	Smallest quarter, linked to QUARTER look-up table for value checking
Quar2	A4	Middle quarter, a/a
Quar3	A4	Largest quarter, a/a
Sec-1	N	Verified section number
Topo	A25	Topographic map well is on, linked to QUADLU look-up table
Subdiv	A25	Subdivision name
Lotno	A5	Lot number within subdivision
Feetns	N	Feet N of the south sec. line
Feetsn	N	Feet S of the north sec. line
Feetew	N	Feet E of the west sec. line
Feetwe	N	feet W of the east sec. line
Utmx	N	UTM East value
Utmy	N	UTM North value
Loc_qual	A3	Method of calculation for UTM's
Gps_adj	A3	Adjustment of UTM if unit not on well head
Grndelev	N	Wellsite ground elevation, established from topographic quad
Depth	N	Total well depth
Bedrocke	N	Bedrock elevation - from log
Bedrockd	N	Bedrock depth
Aquelv	N	Bottom of the aquifer, if gravel
Static	N	Static water level
Typetest	A3	Method used during production test, linked with TYPETEST look-up table
Pumprate	N	Test production rate - pump test
Pumphour	N	Duration of pump test
Pumpdw	N	Drawdown during pump test
Bailerrt	N	Test production rate - bailing test
Bailerhr	N	Duration of bailing test
Bailerdr	N	Drawdown during bailing test
Welltype	A3	From old records, was well

		drilled, gravel pack, driven, etc., linked with TYPEWELL look-up table
Welluse	A3	Intended use of well, home, stock, etc., linked with USEWELL look-up table
Useother	A15	Alternative to welluse, monitoring, etc.
Method	A3	Well installation method, linked with DRILLMET look-up table
Met_othr	A12	Alternative to method of installation, hollow stem auger, etc.
Casingl	N	Total length of casing used
Casingd	N	Casing diameter
Casingm	A12	Casing material
Screenl	N	Total length of screen used
Screend	N	Screen diameter
Screenm	A12	Screen material
Slot	A12	Slot size in screen
Linertot	N	Length of liner used
Linerdia	N	Liner diameter
Pumpset	N	Depth of pump setting
Typepump	A3	Type of pump used, linked to TYPEPUMP look-up table
Pumpothr	A15	Alternative to typepump, wind mill etc.
Quality	A15	General water quality, often see hardness, smell, iron, etc.
Groutm	A20	Type of grout material used
Groutf	N	Top of grout material
Groutt	N	Bottom of grout material
Methodg	A20	Method used to install grout
Groutbag	N	Number of bags of grout used
Sealing	A20	Type of sealing material used, listed under well abandonment
Filledf	A7	Top of seal material
Filledt	A7	Bottom of seal material
Methods	A15	Method used to install sealant
Sealbags	N	Number of bags of sealant
Owner	A30	Well owner at time of drilling
Ownerad	A50	Address of owner
Ownerzc	N	Zip code of owner
Ownertx	A13	Telephone number of owner
Driller	A30	Well driller
Drillad	A50	Drillers address
Drillzc	N	drillers zip code
Drilltx	A13	Drillers telephone number
Operator	A30	Equipment operator
License	A10	Department of Natural Res. Water Well Drillers License Number
Date_com	D	Date of record completion
Cbuilder	A30	Name of contractor or housing developer in new addition
Buildad	A50	Address of contractor
Buildzc	N	Contractors zip code
Buildtx	A13	Contractors telephone number
Fieldby	A12	Initials of the individual that field located well
Field_dt	D	Date on which well was field located
Courtby	A12	Location was established at

		local courthouse
Court_dt	D	Date of courthouse locating
Classby	A12	Individual classifying well log
Class_dt	D	Date of log classification, both classification fields are related to the oldest well records and not the current ones
Accwo	A20	Initials and comment on well locations acquired by other than owner contact
Accwo_dt	D	Date of alternative field location
County	A15	County, as supplied by driller
Twn	A4	Congressional township as supplied by driller
Rng	A4	Range as supplied by driller
Sec	N	Section as supplied by driller
Entered by	A4	Initials of data entry person
WELLNAME	A15	Currently used in making reports

The following is a list of the smaller look up tables used for the various fields in the master table, not included are COUNTY, and the QUADS tables.

USEWELL.DB -- Look up table for WELLUSE field

		Structure	
H	HOME	Code	A3
I	INDUSTRY	Description	A20
T	TEST		
R	IRRIGATION		
P	PUBLIC SUPPLY		
S	STOCK		
O	OTHER		
D	DOMESTIC		

DRILLMET.DB -- look-up table for METHOD field

		Structure	
C	CABLE TOOL	Abbrev	A3
R	ROTARY	Name	A15
J	JET		
V	REVERSE ROTARY		
B	BUCKET RIG		
O	OTHER		

TYPEWELL.DB -- look-up table for TYPEWELL field

		Structure	
D	DRILLED	Code	A3
G	GRAVEL PACK	Name	A15
V	DRIVEN		
O	OTHER		

TYPEPUMP.DB -- look-up for TYPEPUMP field

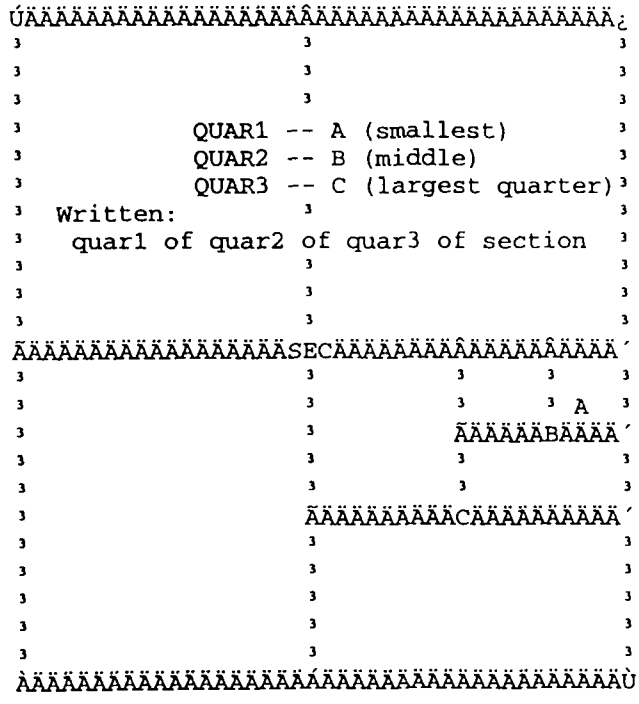
		Structure	
S	SUBMERSIBLE	Code	A3
H	SHALLOW-WELL JET	Description	A20
D	DEEP-WELL JET		
O	OTHER		

TYPETEST.DB -- look-up table for TYPETEST field

A	AIR	Structure	
B	BAILING	Abbrev	A3
P	PUMPING	Description	A15
PL	PLUNGING		

QUARTER.DB -- look-up table used to control entry into QUAR1, QUAR2, and QUAR3 fields

NW	NORTHWEST	Structure	
NE	NORTHEAST	Code	A4
SW	SOUTHWEST	Description	A15
SE	SOUTHEAST		



Entry into other fields is controlled through the use of pictures and default fill-ins: UTM values entered are required to have 6 digits (east) and 7 digits (north); DIV and GROUP are currently automatic fill-ins while DOW is entering only their records; telephone number fields use pictures.

The following structure is for the lithologic table (LITHOL). This table has a many-one relationship with the master table, DNR. This is done by using both REFNO and TOP as key fields (asterisks indicate key field).

Field	Field type	Description
Refno	N*	Reference number as with DNR.DB
Top	N*	Top of the formationencountered
Bottom	N	Bottom of the formation encountered
Formation	A30	Description of the material encountered

The structure of the comment table follows. There is a one to one relationship between this table and the master, DNR, table. This will probably change with the move to Paradox 4.0.

Field	Field type	Description
REFNO	N	Reference number as with DNR.DB
COMMENT	A200	Comment attached to the field. This may include any comment for which there is insufficient room on the form

The structure for the other two major look-up tables, QUADS and COUNTY are as follows. Note that the ASCII delimited COUNTY and QUADS tables are also on the disk.

COUNTY.DB	County-1	A15
QUADS.DB	Topo	A25

RefNo	Div	Group	CompDate	Drive	County-1	Civilt	Twn-1	Rng-1	Quar1	Quar2	Quar3	Sec-1	Topo	FeetNS	FeetSN	FeetEW	FeetWE	UtmX
11105	01	01	7/16/91	HAMMOND, INDIANA, 169YH & GRAND. SW CORNER.	LAKE	NORTH	36N	9W				3	HIGHLAND					
270752	01	01		TAKE US 41N INTO GRIFFICH, IN. TAKE R(E) ON MAIN ST. GO TO COLFAX TAKE R(S). GO TO 420S COLFAX PLACE IS ON R.(W)	LAKE	GRITTION	36N	9W			SE	2	HIGHLAND					
273875	01	01		TAKE US41 NORTH INTO GRIFFITH, IN. TAKE RIGHT (EAST) ON MAIN ST. GO TO COLFAX TAKE RIGHT (SOUTH). GO TO 420 SOUTH COLFAX PLACE IS ON RIGHT (WEST).	LAKE	GRIFFITH	36N	9W			SE	2	HIGHLAND					
273876	01	01		TAKE US41 NORTH INTO GRIFFITH, IN. TAKE RIGHT (EAST) ON MAIN STREET. GO TO COLFAX TAKE RIGHT (SOUTH). GO TO 420 SOUTH COLFAX PLACE IS ON RIGHT (WEST).	LAKE	GRIFFITH	36N	9W			SE	2	HIGHLAND					
273877	01	01		TAKE US41 NORTH INTO GRIFFITH, IN. TAKE RIGHT (EAST) ON MAIN ST. GO TO COLFAX TAKE RIGHT (SOUTH). GO TO 420 SOUTH COLFAX PLACE IS ON RIGHT (WEST).	LAKE	GRIFFITH	36N	9W			SE	2	HIGHLAND					
273878	01	01		TAKE US 41 NORTH INTO GRIFFITH, IN. TAKE RIGHT (EAST) ON MAIN STREET. GO TO COLFAX TAKE RIGHT (SOUTH). GO TO 420 SOUTH COLFAX PLACE IS ON RIGHT (WEST)	LAKE	GRIFFITH	36N	9W			SE	2	HIGHLAND					
273879	01	01		TAKE US41 NORTH INTO GRIFFITH, IN. TAKE RIGHT (EAST) ON MAIN ST. GO TO COLFAX TAKE RIGHT (SOUTH). GO TO 420 SOUTH COLFAX PLACE IS ON RIGHT (WEST).	LAKE	GRIFFITH	36N	9W			SE	2	HIGHLAND					
273880	01	01		TAKE US41 NORTH INTO GRIFFITH, IN. TAKE RIGHT (EAST) ON MAIN STREET. GO TO COLFAX TAKE RIGHT (SOUTH). GO TO 420 SOUTH COLFAX PLACE IS ON RIGHT (WEST).	LAKE	GRIFFITH	36N	9W			SE	2	HIGHLAND					
273881	01	01		TAKE US41 NORTH INTO GRIFFITH, IN. TAKE RIGHT (EAST) ON MAIN ST. GO TO COLFAX TAKE RIGHT (SOUTH). GO TO 420 COLFAX PLACE IS ON RIGHT (WEST).	LAKE	GRIFFITH	36N	9W			SE	2	HIGHLAND					
273882	01	01		TAKE US41 NORTH INTO GRIFFITH, IN. TAKE RIGHT (EAST) ON MAIN ST. GO TO COLFAX TAKE RIGHT (SOUTH). GO TO 420 SOUTH COLFAX PLACE IS ON RIGHT (WEST).	LAKE	GRIFFITH	36N	9W			SE	2	HIGHLAND					
273883	01	01		TAKE US41 NORTH INTO GRIFFITH, IN. TAKE RIGHT (EAST) ON MAIN ST. GO TO COLFAX TAKE RIGHT (SOUTH). GO TO 420 SOUTH COLFAX PLACE IS ON RIGHT (WEST).	LAKE	GRIFFITH	36N	9W			SE	2	HIGHLAND					
273884	01	01		TAKE US41 NORTH INTO GRIFFITH, IN. TAKE RIGHT (EAST) ON MAIN ST. GO TO COLFAX TAKE RIGHT (SOUTH). GO TO 420 SOUTH COLFAX PLACE IS ON RIGHT (WEST).	LAKE	GRIFFITH	36N	9W			SE	2	HIGHLAND					
273885	01	01		TAKE US41 NORTH INTO GRIFFITH, IN. TAKE RIGHT (EAST) ON MAIN STREET. GO TO COLFAX TAKE RIGHT (SOUTH). GO TO 420 SOUTH COLFAX PLACE IS ON RIGHT (WEST).	LAKE	GRIFFITH	36N	9W			SE	2	HIGHLAND					
270752	01	01		US 41 N INTO GRIFFITH TAKE R ON MAIN ST GO TO COLFAX TAKE R GO TO 420 S COLFAX PLACE IS ON R	LAKE	GRIFFON	36N	9W			SE	2	HIGHLAND					
8259	01	01	9/9/89	INTERSECTION OF CHICAGO AVE AND INDUSTRIAL HWY BY GARY AIRPORT.	LAKE	CALUMENT	37N	9W				26	WHITING					
8370	01	01	2/18/87		LAKE	CALUMET	36N	9W	SW	SE	SE	2	HIGHLAND	600			900	465291
10661	01	01		S OF JCT OF SR 912 AND US 12	LAKE		37N	9W	NW	SW	NW	26	WHITING					
10666	01	01		TB #107	LAKE		37N	9W	NW	SW	NW	26	WHITING					464075
10671	01	01		LOCATED N OF JCT OF SR 912 AND US 12	LAKE		37N	9W	NE	NE	NE	27	WHITING					463850
10676	01	01		LOCATED S OF JCT OF SR 912 AND US 12	LAKE		37N	9W	NW	SW	NW	26	WHITING					
10681	01	01		JUST N OF SR 912 AND US 12	LAKE		37N	9W	NE	NE	NE	27	WHITING					

RefNo	Div	Group	CompDate	Drive	County-1	Civilt	Twn-1	Rng-1	Quar1	Quar2	Quar3	Sec-1	Topo	FeetNS	FeetSN	FeetEW	FeetWE	UtmX
10686	01	01			LAKE		37N	9W		NW	NE	28	WHITING					461650
10691	01	01	1/1/29	KENNEDY AVE. AT 143 ST (EXT) E. CHICAGO, IN	LAKE		37N	9W		NW	NE	28	WHITING					461650
10692	01	01	6/15/87	5215 KENNEDY AVE., E.CHICAGO, IN. ON PROPERTY OWNED BY EI DUPONT DE NEMOURS & CO APPROX 50FT N OF G CAL RIVER AND 75FT E OF KENNEDY AV.	LAKE	NORTH	37N	9W	SW	NW	SE	33	HIGHLAND	1700			2550	461580
10697	01	01	6/15/87	ACCESS FROM GARY AVE., BY E CHICAGO INCINERATOR. DR BEHIND INCINERATOR ALONG ABANDONED RR R/W TO GATE PW LINES & UNDER PW L TO LAST POLE N G.CAL R.	LAKE	NORTH	37N	9W	SE	NW	SE	34	HIGHLAND	1550			1550	463540
10702	01	01	11/19/77		LAKE		37N	9W	NE	SE	SE	35	HIGHLAND	1250			50	465560
11025	01	01	6/11/87	ON US20 @THE E.J.& E. RR CROSSING IN GARY, IND. APPROX. .5 MILE EAST OF CLINE AVE. @NE CORNER OF HIGHWAY & RR.	LAKE	CALUMET	36N	9W	NW	NW	SE	2	HIGHLAND	2400			2500	464815
11030	01	01	7/26/54	36N 9W NE1/4 NW1/4 SEC 2	LAKE		36N	9W		NE	NW	2	HIGHLAND					
11035	01	01	6/1/54	36N 9W NW1/4 NE1/4 SEC 2	LAKE		36N	9W		NW	NE	2	HIGHLAND					
11040	01	01	7/26/54	36N 9W NE1/4 NW1/4 SEC 2	LAKE		36N	9W		NE	NW	2	HIGHLAND					
11045	01	01	7/28/54	36N 9W NE1/4 NW1/4 SEC 2	LAKE		36N	9W		NE	NW	2	HIGHLAND					
11050	01	01	6/15/54	36N 9W NE1/4 NE1/4 SEC 2	LAKE		36N	9W		NE	NE	2	HIGHLAND					
11055	01	01	6/1/54	36N 9W NW1/4 NE1/4 SEC 2	LAKE		36N	9W		NW	NE	2						
11060	01	01	8/6/54	36N 9W NE1/4 NE1/4 SEC 2	LAKE		36N	9W		NE	NE	2	HIGHLAND					
11065	01	01	9/17/86		LAKE	CALUMET	36N	9W	SW	SE	SW	2	HIGHLAND	650		1950		464543
11070	01	01	6/1/54	36N 9W NW1/4 NE1/4 SEC 2	LAKE		36N	9W		NW	NE	2	HIGHLAND					
11075	01	01	6/14/54	36N 9W NW1/4 NE1/4 SEC 2	LAKE		36N	9W		NW	NE	2	HIGHLAND					
11080	01	01	7/30/54	36N 9W NE1/4 NE1/4 SEC 2	LAKE		36N	9W		NE	NE	2	HIGHLAND					
11085	01	01	7/1/54	36N 9W NE1/4 NW1/4 SEC 2	LAKE		36N	9W		NE	NW	2	HIGHLAND					
11090	01	01	8/3/59	36N 9W NE1/4 NE1/4 SEC 2	LAKE		36N	9W		NE	NE	2	HIGHLAND					
11100	01	01	10/14/85		LAKE	CALUMET	36N	9W	NE	SE	SW	2	HIGHLAND	1050		2000		464600
11110	01	01	7/18/86		LAKE	NORTH	36N	9W	SW	NW	SW	3	HIGHLAND	1700		450		462450
11115	01	01	1/1/53		LAKE		36N	9W		SE	NE	3	HIGHLAND					
11125	01	01	12/15/86	TAKE US20 (5TH AVE) .25 MILE W OF CLINE AVE. S ON RD TO WOLVERINE PIPELINE. TO LOCKED GATE DOWN RD S ON GIBSON WOODS PROPERTY.	LAKE	NORTH	36N	9W	SW	NE		3	HIGHLAND	3100	2200	3600	1700	
11130	01	01			LAKE		36N	9W		SW	NE	3	HIGHLAND					463870

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UtmY	Loc_Qual	Gps_Adj	GrndElev	Depth	BedRockE	BedRockD	AqueLv	Static	TypeTest	PumpRate	PumpHour	PumpDW	BailerRT	BailerHR	BailerDR	WellType	WellUse	UseOther	Method	Met_Othr	CasingL	CasingD
								7.5									O	TEST	O	AUGER	3.5	2
				86													O	TEST, MONITOR	O	SONIC	78.5	2
				57													O	MONITOR	O	SONIC	49.5	2
				93.5													O	MONITOR	O	SONIC	86	2
				59													O	MONITOR	O	SONIC	51.5	2
				92.5													O	MONITOR	O	SONIC	85	2
				62.5													O	PIEZOMETRIC	O	SONIC	55	2
				89													O	MONITOR	O	SONIC	81.5	2
				99													O	PIEZOMETRIC	O	SONIC	94	2
				85													O	PIEZOMETRIC	O	SONIC	80	2
				70													O	MONITOR	O	SONIC	60	2
				75													O	MONITOR	O	SONIC	67.5	2
				99													O	PIEZOMETRIC	O	SONIC	91.5	2
				86														MONITOR		SONIC	78.5	2
	N	LB		38				12	P	60	2	20					I		R		28	6
4604910	GPS	YES	599	30			569	10	P	10	1	2				D	H		J		26	2
	N	JN	586.5	126																		
4609050	P	JN	587	138				4														
4609475	P	JN	588	140				4.5														
	N	JN	588.5	96.5				1														
	N	JN	589.3	91.5				6											O	AUGER HOLE		

UtmY	Loc_Qual	Gps_Adj	GrndElev	Depth	BedRockE	BedRockD	AqueLv	Static	TypeTest	PumpRate	PumpHour	PumpDW	BailerRT	BailerHR	BailerDR	WellType	WellUse	UseOther	Method	Met_Othr	CasingL	CasingD
4609355	P	JN	590	1830				142		300	1.5	52					I				160	12
4609355	P	JN	590	1830	436	154		142		350	2	52				D	I				160	12
4606910	P	JN	586	28			561									D	O	OBS	O	AUGER	20	2
4606825	P	JN	589	23			569	2		7	0.5					D	O	OBS	O	AUGER	15	2
4606650	P	JN	585	26			544	4.5					30	1	4.5	D	O	E PROTECTI	C		12.5	6
4603470	P	LB	597	28			572	3		7						D		OBS		AUGER	20	2
	N		587	40				1								O	O	TEST				
	N		587	87												O	O	TEST				
	N		592	49				6								O	O	TEST				
	N		587	45				2								O	O	TEST				
	N		589	47				6								O	O	TEST				
	N		583	40				-7								O	O	TEST				
	N		592	48				8								O	O	TEST				
4604900	P	LB	601				569	6	P	35	1.5	21				D	R		R		22	6
	N		590	49												O	O	TEST				
	N		590	50				8								O	O	TEST				
	N		589	45				6								O	O	TEST				
	N		589	86		81										O	O	TEST				
	N		588	91				4								O	O	TEST				
4605025	P	LB	595				562	7	P	35	1.5	16				D			R		23	6
4605240			592				583	4	P	12	1	11				G	T	MONITOR	R		21	6
	N	LB	595	310		140		37								D	I	OPEN HOLE		TURBINE		6
	N	JN		6												V	O	BSERVATIO	O	AND DRIVE	3	2
4605410	P	LB	515	310		216										D	I				216	6

CasingM	ScreenL	ScreenD	ScreenM	Slot	LinerTot	LinerDia	PumpSet	TypePump	PumpOthr	Quality	GroutM	GroutF	GroutT	MethodG	GroutBag	Owner	OwnerAD	OwnerZC	OwnerTX
PVC	10	2	PVC	.010				O	NONE		BENTONITE	0	2	SURFACE		AMOCO OIL CO.	1400 E TOUGHY	60018	(312)827-9681
SS	10	2	SS	.010							BENT.	72	0	TREMIE	3	AMERICAN CHEMICAL SERVICES	420 S. COLFAX GRIFFICH, IN	46319	
SS	10	2	SS	.010							BENT	43	0	TREMIE	2	AMERICAN CHEMICAL SERVICES	420 SOUTH COLFAX GRIFFITH, IN	46319	
SS	10	2	SS	.010							BENT	79.5	0	TREMIE	4	AMERICAN CHEMICAL SERVICES	420 SOUTH COLFAX GRIFFITH, IN	46319	
SS	10	2	SS	.010							BENT	45	0	TREMIE	3	AMERICAN CHEMICAL SERVICES	420 SOUTH COLFAX GRIFFITH, IN	46319	
SS	10	2	SS	.010							BENT	78	0	TREMIE	4	AMERICAN CHEMICAL SERVICES	420 SOUTH COLFAX GRIFFITH, IN	46319	
PVC	5	2	PVC	.010							BENT	48	0	TREMIE	3	AMERICAN CHEMICAL SERVICES	420 SOUTH COLFAX GRIFFITH, IN	46319	
SS	10	2	SS	.010							BENT	74	0	TREMIE	4	AMERICAN CHEMICAL SERVICES	420 SOUTH COLFAX GRIFFITH, IN	46319	
PVC	5	2	PVC	.010							BENT	89	1	TREMIE	4	AMERICAN CHEMICAL SERVICES	420 SOUTH COLFAX GRIFFITH, IN	46319	
PVC	5	2	PVC	.010							BENT	76	0	TREMIE	3	AMERICAN CHEMICAL SERVICES	420 SOUTH COLFAX GRIFFITH, IN	46319	
SS	10	2	SS	.010							BENT	56	0	TREMIE	3	AMERICAN CHEMICAL SERVICES	420 SOUTH COLFAX GRIFFITH, IN	46319	
SS	10	2	SS	.010							BENT	61	0	TREMIE	3	AMERICAN CHEMICAL SERVICES	420 SOUTH COLFAX GRIFFITH, IN	46319	
SS	10	2	SS	.010							BENT	85	0	TREMIE	4	AMERICAN CHEMICAL SERVICES	420 SOUTH COLFAX GRIFFITH, IN	46319	
SS	10	2	SS	.010							BENT	72	0	TREM	3	AMERICAN CHEMICAL SERV	420 S COLFAX GRIFFITH, IN	46319	
PVC	10	6	PVC JOHNSON	.010			30	S		CLEAR	HOLE PLUG	10	0	POURED	3	BEEMSTER BOER	3411 SHEFFIELD AVE, HAMMOND		(219)931-7462
	4	1.25		.008				H		CLEAR						MR. WILSON	805 HOBART ST, GARY, IN		
																ISHC			
																ISHC			
																ISHC			
																ISHC			

CasingM	ScreenL	ScreenD	ScreenM	Slot	LinerTot	LinerDia	PumpSet	TypePump	PumpOthr	Quality	GroutM	GroutF	GroutT	MethodG	GroutBag	Owner	OwnerAD	OwnerZC	OwnerTX
				8 OPEN HOLE												HARBISON WALKER CO			
	8				10	970										HARBISON & WALKER			
	5.5	2		6												US GEO SURVEY WRD	5957 LAKESIDE BLVD., INDIANAPOLIS, IN 46278		
	5.5	2		6												US GEO SURVEY WRD	5957 LAKESIDE BLVD., INDIANAPOLIS, IN 46278		
	15.5	5		.006												GARY AIRPORT	CONTROL TOWER WELL		
	5.5	2		6												US GEO SURVEY, WRD	5957 LAKESIDE BLVD., INDIANAPOLIS, IN 46278		
																IN. TOLL RD. COMM.			
																IN. TOLL ROAD COMM			
																IN. TOLL ROAD COMM			
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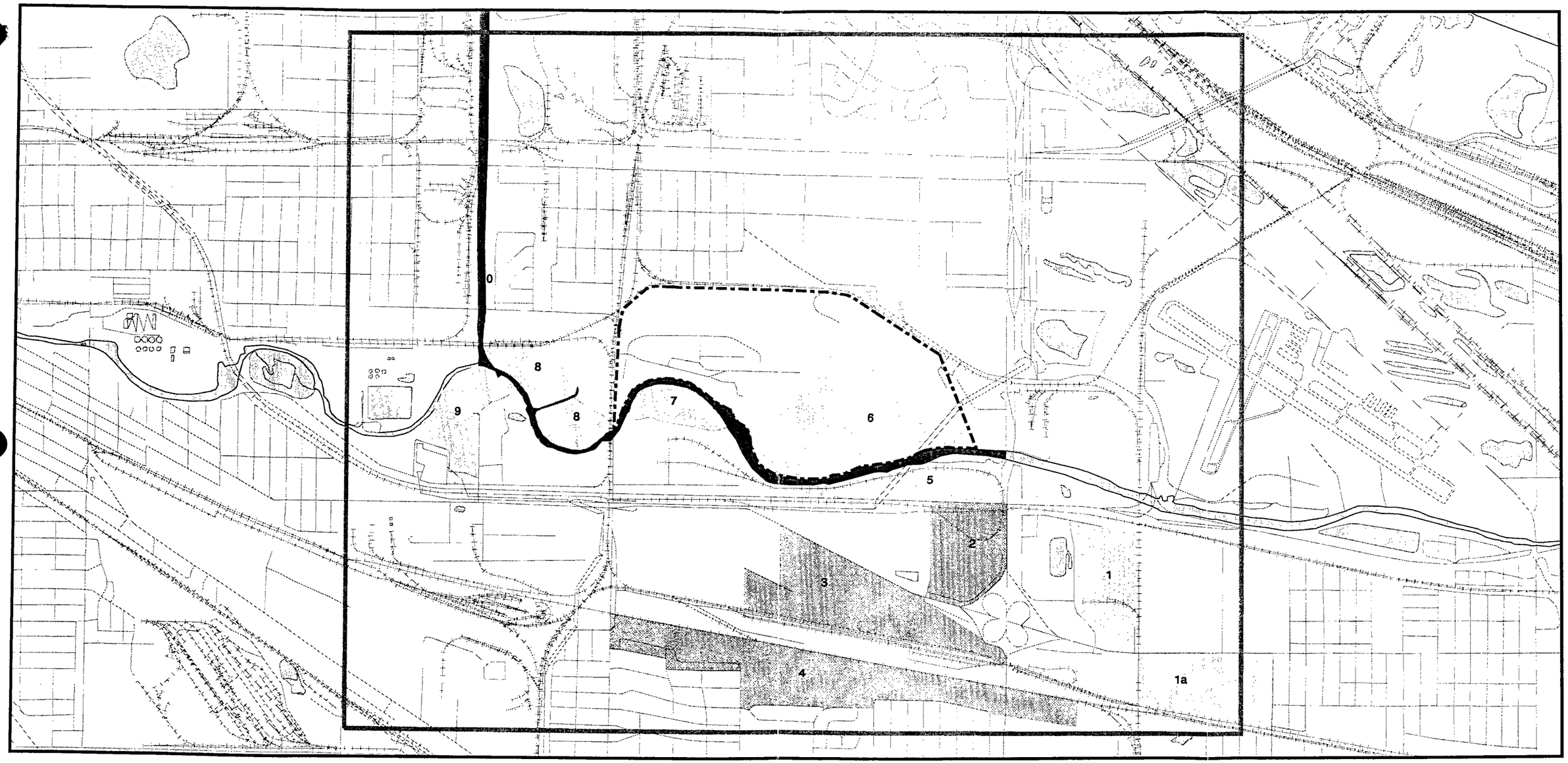
																IN. TOLL RD. COMM			
																IN. TOLL RD. COMM			
	10	6		.01			30	S		CLEAR						Reed Minerals Division	7100 W. 9th Ave, Gary, IN		
																IN. TOLL RD. COMM.			
																IN. TOLL RD. COMM.			
																IN. TOLL RD. COMM.			
																IN. TOLL RD. COMM			
																IN. TOLL RD. COMM			
	10	6		.006				S		CLEAR						REED MINERAL DIVISION	7100 WEST 9TH AVE, GARY, IN 46406		
	5	6		.008				O	RECORDER	CLEAR						U S G S			
																SHELL OIL CO			
	3	2		6												USGS	5957 LAKE SIDE BLVD		
																SHELL OIL CO	3737 MICHIGAN AVE		

Driller	DrillAD	DrillZC	DrillTX	Operator	License	Date_Com	CBuilder	FieldBY	Field_DT	County	Twn	Rng	Sec	EnteredBY
EXPLORATION TECHNOLOGY INC	1402 EMIL ST.	55715	(608)258-9550	JOEL RUDA	1052	12/17/91	SAME				T36N	R9W	3	DML
BOART HONGYEAR	620 MONROE ST. ROCHESTER, IN	46975		KALE BITTNER	1391	2/29/96				LAKE				DJW
BOART HONGYEAR	620 MONROE ST ROCHESTER IN	46975	(800)430-9834	KALE BITTNER	1391	2/29/96				LAKE				REL
BOART HONGYEAR	620 MONROE ST ROCHESTER IN	46975	(800)430-9834	KALE BITTNER	1391	2/29/96				LAKE				REL
BOART HONGYEAR	620 MONROE ST ROCHESTER IN	46975	(800)430-9834	KALE BITTNER	1391	2/29/96				LAKE				REL
BOART HONGYEAR	620 MONROE ST ROCHESTER IN	46975	(800)430-9834	KALE BITTNER	1391	2/29/96				LAKE				REL
BOART HONGYEAR	620 MONROE ST ROCHESTER IN	46975		KALE BITTNER	1391	2/29/96				LAKE				REL
BOART HONGYEAR	620 MONROE ST ROCHESTER IN	46975	(800)430-9834	KALE BITTNER	1391	2/29/96				LAKE				REL
BOART HONGYEAR	620 MONROE ST ROCHESTER, IN	46975	(800)430-9834	KALE BITTNER	1391	2/29/96				LAKE				REL
BOART HONGYEAR	620 MONROE ST ROCHESTER IN	46975	(800)430-9834	KALE BITTNER	1391	2/29/96				LAKE				REL
BOART HONGYEAR	620 MONROE ST ROCHESTER IN	46975	(800)430-9834	KALE BITTNER	1391	2/29/96				LAKE				REL
BOART HONGYEAR	620 MONROE ST ROCHESTER, IN	46975	(800)430-9834	KALE BITTNER	1391	2/29/96				LAKE				REL
BOART HONGYEAR	620 MONROE ST ROCHESTER IN	46975	(800)430-9834	KALE BITTNER	1391	2/29/96				LAKE				CAC
SHEEHY WELL CO.	PO BOX 606, 15530 WICKER AVE., CEDAR LAKE			FRANK SHEEHY & P. HOLLANSWORTH	544					LAKE	37N	9W	26	LB
JOHN FARMER & SONS WELL & PUMP	9703 KENNEDY AVE, HIGHLAND, IN 46322			DONALD FARMER				JRN	7/23/93	LAKE				AW
										LAKE	37N	9W	26	LB
										LAKE	37N	9W	26	LB
										LAKE	37N	9W	27	LB
										LAKE	37N	9W	26	LB
										LAKE	37N	9W	27	LB

Driller	DrillAD	DrillZC	DrillTX	Operator	License	Date_Com	CBuilder	FieldBY	Field_DT	County	Twn	Rng	Sec	EnteredBY
S.B. GEIGER CO										LAKE	37N	9W	28	LB
S.B. GEIGER CO.								USGS	1/1/57	LAKE	37N	9W	28	LB
COOK DRILLING CO.	SOUTH BEND, IN			CRAIG NEILSEN		9/3/87				LAKE	37N	9W	33	LB
COOK DRILLING CO.	SOUT BEND, IN			CRAIG NEILSEN		9/3/87				LAKE	37N	9W	34	LB
SHEEHY WELL CO.	15530 WICKER AVE. CLARK LAKE, IN			FRANK SHEEHY JR				L WEISS		LAKE	37N	9W	35	LB
COOK DRILLING CO	SOUTH BEND, IN			CRAIG NIELSON		9/3/87				LAKE	36N	9W	2	LB
SPRAGUE & HENWOOD										LAKE	36N	9W	2	JRN
SPRAGUE & HENWOOD										LAKE	36N	9W	2	JRN
SPRAGUE & HENWOOD										LAKE	36N	9W	2	JRN
SPRAGUE & HENWOOD										LAKE	36N	9W	2	JRN
SPRAGUE & HENWOOD										LAKE	36N	9W	2	JRN
SPRAGUE & HENWOOD										LAKE	36N	9W	2	JRN
SPRAGUE & HENWOOD										LAKE	36N	9W	2	JRN
J. Farmer & Sons Well and Pump	9703 Kennedy Ave, Highland, IN 46322			Everett W. Farmer				MH	7/22/87	LAKE				JRN
SPRAGUE & HENWOOD										LAKE	36N	9W	2	JRN
SPRAGUE & HENWOOD										LAKE	36N	9W	2	JRN
SPRAGUE & HENWOOD										LAKE	36N	9W	2	JRN
SPRAGUE & HENWOOD										LAKE	36N	9W	2	JRN
SPRAGUE & HENWOOD										LAKE	36N	9W	2	JRN
JOHN FARMER & SONS WELL & PUMP	9703 KENNEDY AVE, HIGHLAND, IN 46322			EVERETT W. FARMER				KM	8/29/36	LAKE				JRN
DEAN WELL DRILLING INC	841 W SUMNER AVE INDPLS IN 46217			JOHN AUFDERHEIDE		8/4/86	GIBSON WOODS NATURE PRES			LAKE				LB
GARY WELL & PUMP CO										LAKE	36N	9W	3	LB
USGS							USGS			LAKE				LB
										LAKE	36N	9W	3	LB

Natural Areas Located Nearby



Legend

- DuPont Property Line
- 1 Mile Boundary Around DuPont Property
- Grand Calumet River/Indiana Harbor Canal
- Private Land
- Natural Preserves/Public Lands

N

Scale 1:24000
1 inch = 2000 feet

1 - Ivanhoe Natural Area (Nat. Cons.) and abutting property
1a - Ivanhoe Dune and Swale
2 - Cline Ave. Dune and Swale
3 - Tolleston Ridges Nature Preserve
4 - Gibson Woods Nature Preserve
5 - Beamster Boer Property
6 - Dupont Facility Natural Area
7 - Harbison-Walker Property/Grand Calumet River Term Site
8 - USS Lead Property
9 - Roxanna Substation
10 - Grand Calumet River

Sources:
USGS Digital Line Graphs 1:100,000;
USGS Land Use/Land Cover 1:250,000

Universal Transverse Mercator Projection,
Zone 16, 1983 North American datum.

Natural Areas Located Nearby

DuPont East Chicago Current Conditions Report

CH2MHILL

October 20, 1997

Ecological Habitats and Species within the Region Identified by Others

List of Endangered, Threatened, and Rare Species

List of Native Plants and Exotics

Morton Arboretum Information

ANA DEPARTMENT OF NATURAL RESOURCES

PATRICK R. RALSTON, DIRECTOR

Division of Nature Preserves
605B State Office Building
Indianapolis, Indiana 46204-2267
317-232-4052

September 24, 1990

Linda Hoehne
CH2M HILL
310 West Wisconsin Avenue, Suite 700
PO Box 2090
Milwaukee, WI 53201

Dear Ms. Hoehne:

I am responding to your request for information on the endangered, threatened, or rare (ETR) species found at Du Pont's East Chicago facility. The Indiana Natural Heritage Program's databank has been checked and enclosed you will find a list of the ETR animals found at the site. We have no documented occurrences of ETR plants here. I have also included information on the high quality natural communities known from the site. Please note that the Du Pont site was initially identified as a notable natural area by the Coastal Zone Management study of 1978.

The information I am providing does not preclude the requirement for further consultation with the U.S. Fish and Wildlife Service as required under Section 7 of the Endangered Species Act of 1973. You should contact the Service at their Bloomington, Indiana office.

U.S. Fish and Wildlife Service
718 North Walnut
Bloomington, Indiana 47401
(812)334-4261

At some point, you may need to contact the Department of Natural Resources' Environmental Review Coordinator so that other divisions within the department have the opportunity to review your proposal. Please refer to the enclosed Environmental Review Guidelines. For more information, please contact:

Patrick R. Ralston, Director
Department of Natural Resources
attn: Steve Jose
Environmental Review Coordinator
605 State Office Building
Indianapolis, IN 46204
(317)232-4070

I have enclosed an invoice for $30.00 to cover the cost of the request.

Thank you for contacting the Indiana Natural Heritage Program. Please contact me if you have any questions or need additional information.

Sincerely,

Michelle L. Martin

Michelle L. Martin
Indiana Natural Heritage Program

enclosures

ENDANGERED, THREATENED, RARE SPECIES AND HIGH QUALITY NATURAL AREAS
DOCUMENTED FROM DU PONT'S FACILITY IN EAST CHICAGO, INDIANA

Species Name.....	Common Name.....	State	Fed..
IXOBRYCHUS EXILIS	LEAST BITTERN	SSC	
RALLUS ELEGANS	KING RAIL	SE	

PRAIRIE - SAND DRY-MESIC	DRY-MESIC SAND PRAIRIE
PRAIRIE - SAND WET-MESIC	WET-MESIC SAND PRAIRIE
SAVANNA - SAND DRY	DRY SAND SAVANNA
WETLAND - MARSH	MARSH
WETLAND - MEADOW SEDGE	SEDGE MEADOW

STATE STATUS: SE=endangered, SSC=special concern
FEDERAL STATUS: none documented for this site

CHECKLIST OF ENDANGERED & THREATENED SPECIES

This publication was developed to provide a checklist of rare plants and animals in Indiana. The director of the Indiana Department of Natural Resources has the legislative authority for the conservation of endangered natural resources in Indiana. The Division of Fish and Wildlife and Division of Nature Preserves are responsible for the conservation of animals and plants, respectively, and each agency has developed the lists included in this publication. These lists are organized by the degree of endangerment within each major taxonomic group. Animals are listed in taxonomic order and plants are listed in alphabetical order by scientific name within each category of state classification.

Indiana Classification and Protection

Vertebrates and mollusks classified as endangered or threatened in Indiana are protected from "taking" pursuant to the Nongame and Endangered Species Act of 1973 (Indiana Code 14-2-8.5) and Fish and Wildlife Administrative Rules (310 IAC 3.1-2-7). Plants are protected by the Nature Preserves Act (Indiana Code 14-4-5) which prohibits the collecting of plants occurring on dedicated Nature Preserves. Plants are also afforded protection by the IDNR General Property Rules (310 IAC 5-1-4,9) which prohibit the picking or molesting of trees, shrubs, vines or flowers occurring on Nature Preserves, Museum and Historic Sites, Wetland Conservation Areas, Wildlife Habitat Trust Areas, and lands owned, licensed and leased to the IDNR. State parks, state forests and state reservoir properties provide protection under 310 IAC 5-1-9, paragraph d.

Federal Classification and Protection

Species are classified as federally endangered or threatened pursuant to the Endangered Species Act of 1973 (Public Law 93-205 as amended) and are listed under 50 CFR 17.11 (Animals) and 17.12 (Plants). This act prohibits the "taking" of animals listed as endangered or threatened. Federally listed plants are protected when federal funding or permits are required. The federal government also maintains a Notice of Review for Plants and Animals. The following lists include those species that are formally listed as endangered or threatened, as well as those species that are either in the process of being listed (Category 1) as endangered or threatened, or under review for listing (Category 2).

This is not intended to be a complete listing of all restrictions applied to the protection of endangered or threatened plants and animals. Please contact the appropriate agency listed on the last page for more specific information.

The duPont tract lies just north of the Grand Calumet in East Chicago. Owned by E. I. duPont deNemours & Company, the site is bordered by the duPont plant on the west, Cline Avenue on the east, the Grand Calumet on the south, and railroad tracks on the north. Because this area is so large and diverse, it was divided into two distinct portions for the purpose of this inventory: the riverfront habitats and the area farther inland.

duPont: Inland

The inland portion of the duPont tract is itself diverse, including sand savanna (with mesic and xeric prairie conditions) cattail marshes, sedge meadows and ponds. Along the northernmost end of the area, cattail marshes dominate, until they reach the open water of a large pond on the south. In the pond itself, the cattails are replaced by giant reeds (Phragmites communis).

Other smaller ponds lie to the southwest of this main pond, each surrounded by steep banks. As with the larger pond, water quality is poor, and a visual spot check of the water confirmed only a few signs of life. The far southwest corner of the natural area is shared by two habitats, a flooded woodland near the river, and just north of it, a thicket of giant reeds.

A large section of the duPont tract, in the central and eastern portion, is sand savanna, a sparsely wooded community with prairie plants as ground cover. Here the predominant species are black oak and white oak.

SPECIES LIST
FOR DuPONT (INLAND)

AMPHIBIANS	
Chorus Frog	Pseudacris triseriata
REPTILES	
Painted Turtle	Chrysemys picta
MAMMALS	
Deer	Odocileus virginianus (tracks only)
Muskrat	Ondatra zibethica (tracks only)
BIRDS	
American Coot	Fulica americana
Mallard	Anas platyrhynchos
Wood Duck	Aix sponsa
Blue-winged Teal	Anas discors
Pintail	Anas acuta
Goldeneye	Bucephala clangula
Oldsquaw	Clangula hyemalis
Horned Grebe	Colymbus auritus
Common Snipe	Capella gallinago
Long-billed Dowitcher	Limnodromus scolopaceus
Killdeer	Charadrius vociferus
American Crow	Corvus brachyrhynchos
Common Flicker	Colaptes auratus
Brown Thrasher	Toxastoma rufum
Rufous-sided Towhee	Pipilo erythropthalmus

Both the north and south banks of the Grand Calumet River near duPont were inventoried. During numerous site visits to this part of the river, it was observed that the water was teeming with carp that had swum upstream to spawn. Their presence underscores the progress this river has made--many years elapsed when no fish were seen in the Grand Calumet at all.

On the north side of the river, the flooded woodland mentioned earlier extends all the way to the shore, but is interspersed with arrowheads. As one travels eastward on the north bank, cattails take over, bordered on the north by mesic prairie and a sedge meadow.

On the south bank of the Grand Calumet, which is composed of pumice and boulders, an oak wood community gradually gives way to mesic prairie as the river flows west. Along the riverfront, the unique blend of forest, prairie and marsh harbors an integrated wildlife population that represents each habitat. Animals typically spotted along a river include: herons, turtles, bull frogs, kingfishers, water snakes, otters and muskrats. A list of species sighted along the duPont area riverfront and farther inland is included in this report.

SPECIES LIST
FOR DuPONT (RIVERFRONT)

AMPHIBIANS	
American Frog	Bufo americanus
Chorus Frog	Pseudacris triseriata
REPTILES	
Snapping Turtle	Chelydra serpentina
FISH	
Carp	Cyprinus carpio
MAMMALS	
Virginia Opossum	Didelphis virginiana
Muskrat	Ondatra zibethicus
Eastern Raccoon	Procyon lotor
BIRDS	
Mallard	Anas platyrhynchos
Blue-winged Teal	Anas discors
Red-tailed Hawk	Buteo jamaicensis
Ring-necked Pheasant	Phasianus colchicus
Common Gallinule	Gallinula chloropus
American Coot	Fulica americana
Bank Swallow	Riparia riparia
Cliff Swallow	Petrochelidon pyrrhonota
Red-winged Blackbird	Agelaius phoeniceus

for Rxie

18 East Road, Dune Acres
Chesterton, IN 46304
July 15, 1990

Mr. Doug Stevens
8533 Garfield Avenue
Munster, IN 46321

Dear Doug:

Thank you very much for inviting me to accompany you on last Sunday's expedition to the Dupont property on Kennedy Avenue. I thoroughly enjoyed the hike through the dunes and swales. Dupont certainly deserves applause for its clean-up efforts and for preserving these valuable habitats.

I enclose two lists, one of native plants and the other of exotics (aliens). To get help with controlling the latter, please write or call Mr. Thomas Post/ Jasper-Pulaski Fish and Wildlife Area/ RR1, Box 166/ Medaryville, IN 47957. The telephone number is (219) 843-4841. It is possible that the Indiana Dunes National Lakeshore will provide you with a copy of its in-house publication on exotics: Exotic Plants of Indiana Dunes National Lakeshore: A Management Review of Their Extent and Implications by Kenneth Klick, Sandra O'Brien, and Linda Lobik-Klick (March, 1989). To inquire, write Mr. Noel Pavlovic/ Science Division / INDU/ 1100 North Mineral Springs/ Porter, IN 46304. The telephone number is (219) 926-7561. Tell Noel what you want to do, and offer to pay for copying and postage.

I would very much like to see your article.

Again, thank you for providing a memorable expedition.

Sincerely yours,

Barbara E. Plampin
(210) 787-9438

Enclosures

--List submitted by Barbara E. Plampin/18 East Rd., Dune Acres/ Chesterton IN 46304/ (219) 787-9438

N.B. This list is by no means complete. You may want to check identities by using Swink and Wilhelm, Plants of the Chicago Region, Third Edition, The Morton Arboretum, Lisle, Illinois 60532 (sold at Indiana Dunes National Lakeshore Visitor Center on Kemil Road, locally, at $14.95) or Peterson and McKenny, A Field Guide to Wildflowers of Northeastern and Northeentral North America. A Visual Approach, Houghton Mifflin, Boston, 1968. (Perhaps there is a later edition.) I have used Swink and Wilhelm's common names which sometimes differ from Peterson's. By reading the names in parentheses in S and W, you can decode Peterson's names. The rating system comes from Swink and Wilhelm; roughly, 20 is top (very rare), 15 (rare), 10 (uncommon), and then by single numbers from 9 to minus 3. The minuses are aliens. I do not believe I saw any state-listed plants. You probably do have some state-listed sedges and other plants, so I hope that you will find a good sedge and grass person to go over the property slowly. The reward of clean water ought to be a variety of valuable and interesting plants growing in an unusual habitat. In particular, the wet places need exploring; they are not as dangerous as they look! It is best not to pick any tens, fifteens, or twenties.

Rating	English and Botanical Names
4	Water Plantain (Alisma sp.)
5	Little Bluestem Grass (Andropogon scoparius)
2	Thimbleweed (Anemone qquinquefolia interior)
6	Ground Nut (Apios americana)
5	Beach Wormwood (Artemesia caudata)
4	Swamp Milkweed (Asclepias incarnata) -- Thanks for having me smell this one!
0	Common Milkweed (Asclepias syriaca)
10	Butterfly Weed (Asclepias tuberosa)
8	White Wild Indigo (Baptisia leucantha)
? -	Beggar's Ticks (Bidens sp. or spp.)
7	Marsh Bellflower (Campanula arparinoides)
15	Indian Paint Brush (Castilleja coccinea)
7	Sand (Lance-leaved) Coreopsis (Coreopsis lanceolata). In this location, looking for Coreopsis lanceolata villosa might be worthwhile.)
5	Tall Coreopsis (Coreopsis tripteris)
1	Gray Dogwood (Cornus racemosa)
-	Hawthorn or Hawthorns (Cratagus sp. or spp.)
5	Sand Cyperus (Cyperus filiculmis)
4	Canada Wild Rye Grass (Elymus canadensis)
6	Marsh Shield Fern (Dryopteris thelypteris pubescens)
0	Horsetail (Equisetum arvense)
3	Daisy Fleabane (Erigeron strigosus)
9	Rattlesnake Master (Eryngium yuccifolium)
6	Common Boneset (Eupatorium perfoliatum)
2	Flowering Spurge (Euphorbia collorata)
-	Bedstraws (Galium spp.)
5	Woodland Sunflower (Helianthus divaricatus)
10	Western Sunflower (Helianthus occidentalis)
8	Prairie Alum Root (like garden Coral Bells, only green-yellow) (Heuchera richardsonii)
8	Marsh St. HJohn's Wort (Hypericum virginicum)
-	Rushes (Juncus spp.)
? 8	Marsh Vetchling (Lathyrus palustris)

Rating	English and Botanical Names)
4	Round-headed Bush Clover (Lespedeza capitata)
15	Prairie (Wood) Lily (Lilium phila delphicum andinum)
6	Hoary Puccoon (Lithospermum croceum)
8	Hairy Puccoon (Lithospermum canescens)
8	Swamp Candles (Lysimachia terrestris) These are yellow.
-	Loosestrifes (Lysimachia sp. or spp.)
7	Winged Loosestrife (Lythrum alatum) The good purple one.
-	Waterhorehoubd (Lycopus sp.or spp.)
10	Hairy Canada Mayflower (Maianthemum canadense interius)
5	Horse Mint (Monarda punctata villicaulis)
7	Sand Primrose (Oenothera rhombipetala)
8	Sensitive Fern (Onoclea sensibilis)
5	Prickly Pear Cactus (Opuntia humifusa)
6	Prairie Phlox (Phlox pilosa)
4	Common Reed (Phragmites communis berlandieri --see other sheet!)
8	Ninebark (Physocarpus opulifolius)
-	Solomon's Seal (Polygonatum Sp. or Spp.)
4	Quaking Aspen (Populus tremuloides)
1	Wild Black Cherry (Prunus serotina)
5	Bracken Fern (Pteridium aquilinum latiusculum)
6	Black Oak (Quercus velutina)
1	Poison Ivy (Rhus radicans)
7	Wild Black Currant (Ribes americanum)
5	Pasture Rose (Rosa carolina)
1	Black-eyed Susan (Rudbeckia hirta)
7	Blue-leaved Willow (Salix glaucophylloides glaucophylla)
4	Black Willow (Salix nigra)
1	Elderberry (Sambucus canadensis)
7	Chairmaker's Rush (Scirpus americanus)
5	Great (Soft-stemmed) Bulrush (Scirpus validus creber)
4	Late Figwort (Scrophularia marilandica)
5	Marsh Skullcap (Scutellaria epilobiifolia)
5	Rosin Weed (Silphium integrifolium)
5	Starry False Solomon's Seal (Smilacena stellata)
10	Slender-leaved Goldenrod (Solidago tenuifolia)
7	Meadowsweet (Spirea alba)
8	Goat's Rue, Hoary Pea (Tephrosia virginiana)
2	Spiderwort (Tradescantia ohiensis)
1	Cattail (Typha latifolia) See other sheet.
7	Lance-leaved Violet (Viola lanceolata) Look here for other interesting plants such as Meadow Beauty (Rhexia virginiana)and Gentiana Spp.)
4	Riverbank Grape (Vitis riparia)

Exotics (Alien Plants) Seen at Dupont Property on 7/8/90

N.B. This list is probably incomplete. I have starred the worst offenders. Please check list of native plants for explanation of numbers. B.P.

Rating	English and Botanical Names
1	Yarrow, Milfoil (Achillea millefolium)
1	Asparagus (Asparagus officinalis)
* * -2	Nodding, Musk Thistle (Carduus nutans). Swink and Wilhelm of the Morton Arboretum say this one "invades rapidly and is almost impossible to eradicate." Getting rid of the one or two here now will pay dividends later.
2	Showy Centaury (Centaurium pulchellum)
-3	Poison Hemlock (Conium maculatum)
- 1	Queen Anne's Lace (Daucus carota)
2	Helleborine Orchid (Epipactis helleborine. Our only successful immigrant orchid)
-1	Squirrel-tail Grass (Hordeum jubatum)
** -2 to -3	Honeysuckle Shrubs (Lonicera Sp. or Spp.) There is at least one kind of this invader here. There are native vining honeysuckles to look for here, but the alien shrubs are bad news.
2	Bird's Foot Trefoil (Lotus corniculatus)
-2	White Campion (Lychnis alba)
** 1	Purple Loosestrife (Lythrum salicaria) Some call this "Purple Plague." Its spread can endanger the Black Tern and the Canvasback Duck as well as native plants.
-3	White Sweet Clover (Melilotus alba)
-3	Wild Parsnip (Pastinaca sativa)
1	Timothy (grass) (Phleum pratense)
* -	Blue Grass(es) (Poa Sp or Spp.)
** -3	Glossy Buckthorn (Rhamnus frangula)
0	Bladder Campion (Silene cucubalus)
1	Common Mullein (Verbascum thapsus)
** 4	COMMON REED (PHRAGMITES COMMUNIS BERLANDIERI a.k.a. PHRAGMITES AUSTRALIS) Though some authorities do not consider this twelve-footer and alien, it is a vigorous invader of polluted -- and, perhaps, non-polluted land.
** 1 or 2	Cattail (Typha Spp.). Here's a native gifted at driving out better plants. It needs to learn to do a little more sharing of its turf.

Add:

0	Shepherd's Purse (Capsella bursa-pastoris)
-3	Bittersweet Nightshade (Solanum dulcamara)
-3	Wild Parsnip (Pastinaca sativa)

Received from DuPont
9/12/97 190100

DuPont Specialty Chemicals
East Chicago, IN 46312

DuPont Specialty Chemicals

January 8, 1996

CH2MHILL
c/o Susan Freiburger
411 E.Wisconsin Ave, Suite 1600
Milwaukee, Wisconsin 53202

Re: Flora and Fauna, etc.

Susan,

This information is in response to your phone inquiry to Mr. O. J. Meyer and myself last week.

Attached please find copies of surveys that I found in the files left to me. I hope this information is what you are looking for and is helpful.

Give me a call if I can be of further assistance.

Sincerely yours,

Chester F. Ciecko
(219)391-4676

CFC/bjg

Flra&Fna.cfc

E. I. du Pont de Nemours and Company

Printed on Recycled Paper

FILE
PLANT FLORA

140100

SITE: Du Pont Dune & Swale
CO: Lake IN
DATE: Compilation to Date - 1992

226 NATIVE TAXA
262 W/Adventives
5.48 NATIVE QUALITY
4.65 W/Adventives
82.35 NATIVE INDEX
75.19 W/Adventives
-0.2 NATIVE WETNESS
0.1 W/Adventives
AVG: FACULTATIVE

NATIVE	#	%
Trees	14	5.3
Shrubs	19	7.3
Vines	6	2.3
Ferns	8	3.1
Forbs	133	50.8
Grasses	21	8.0
Sedges	25	9.5
ADVENTIVE		
Trees	1	0.4
Shrubs	5	1.9
Vines	1	0.4
Forbs	24	9.2
Grasses	5	1.9
Sedges	0	0.0

The following inventory, prepared by the MORTON ARBORETUM, follows the nomenclature given in Swink & Wilhelm, PLANTS OF THE CHICAGO REGION, 1979. Each species is preceded by its coefficient of conservatism (0 = weedy, 10 = conservative, 15 or 20 = rare), and followed by its wetness coefficient (-5 = wet, +5 = dry) and corresponding National Wetland Category (OBL = obligate wetland species, FAC = facultative species, UPL = upland species). Common names are those employed by Swink & Wilhelm. Native taxa are those species believed to have been present in the Chicago region prior to settlement. Adventives, shown in ALL CAPS, include those species which have entered the region since settlement and are therefore not integral to any natural community. The QUALITY datum indicates the mean coefficient of conservatism for all species present, NATIVE and with adventives. The INDEX is derived by multiplying the QUALITY by the square root of the number of TAXA. If the INDEX of an area registers in the middle 30's or higher, one can be relatively certain that there is sufficient native character to be of rather profound environmental importance in terms of a regional natural area perspective. The WETNESS datum indicates the mean wetness coefficient for all species present, NATIVE and with adventives. The table in the upper right hand corner indicates the number of species in each physiognomic class, along with their percentage of the total inventory.

0	Acer negundo	-2 FACW-	BOX ELDER
0	Acer saccharinum	-3 FACW	SILVER MAPLE
1	ACHILLEA MILLEFOLIUM	3 FACU	YARROW
1	AGROSTIS ALBA	-3 FACW	REDTOP
1	AILANTHUS ALTISSIMA	5 [UPL]	TREE OF HEAVEN
4	Alisma triviale	-5 OBL	LARGE-FLOWERED WATER PLANTAIN
6	Allium cernuum	5 UPL	NODDING WILD ONION
0	ALTHAEA ROSEA	5 UPL	HOLLYHOCK
0	Ambrosia artemisiifolia elatior	3 FACU	COMMON RAGWEED
0	Ambrosia trifida	-1 FAC+	GIANT RAGWEED
10	Amorpha canescens	5 UPL	LEAD PLANT
4	Andropogon gerardii	1 FAC-	BIG BLUESTEM GRASS
5	Andropogon scoparius	4 FACU-	LITTLE BLUESTEM GRASS
2	Anemone cylindrica	5 UPL	THIMBLEWEED
6	Apios americana	-3 FACW	GROUND NUT
4	Apocynum cannabinum	0 FAC	INDIAN HEMP
2	Apocynum sibiricum	-1 FAC+	INDIAN HEMP
7	Arabis lyrata	4 FACU-	SAND CRESS
8	Aralia nudicaulis	3 FACU	WILD SARSAPARILLA
9	Arenaria lateriflora	3 FACU	WOOD SANDWORT
5	Artemisia caudata	5 UPL	BEACH WORMWOOD
4	Asclepias incarnata	-5 OBL	SWAMP MILKWEED
0	Asclepias syriaca	5 UPL	COMMON MILKWEED
10	Asclepias tuberosa	5 UPL	BUTTERFLY WEED
1	Asclepias verticillata	5 UPL	WHORLED MILKWEED
1	ASPARAGUS OFFICINALIS	3 FACU	ASPARAGUS
8	Aster azureus	5 UPL	SKY-BLUE ASTER
5	Aster ericoides	4 FACU-	HEATH ASTER
4	Aster novae-angliae	-3 FACW	NEW ENGLAND ASTER
15	Aster ptarmicoides	5 UPL	STIFF ASTER
3	Aster simplex	-5 [OBL]	PANICLED ASTER
8	Baptisia leucantha	3 FACU	WHITE WILD INDIGO
15	Betula papyrifera	2 FACU+	PAPER BIRCH
2	Boehmeria cylindrica	-5 OBL	FALSE NETTLE
15	Bromus kalmii	0 FAC	PRAIRIE BROME
0	BROMUS TECTORUM	5 UPL	DOWNY BROME
3	Calamagrostis canadensis	-5 OBL	BLUE JOINT GRASS
10	Calamovilfa longifolia	5 UPL	SAND REED

7	Campanula aparinoides	-5 OBL	MARSH BELLFLOWER
10	Campanula uliginosa	-5 OBL	MARSH BELLFLOWER
-2	CARDUUS NUTANS	5 UPL	MUSK THISTLE
15	Carex aurea	-4 FACW+	GOLDEN SEDGE
3	Carex bebbii	-5 OBL	BEBB'S SEDGE
3	Carex brevior	0 FAC	FIELD SEDGE
8	Carex buxbaumii	-5 OBL	DARK-SCALED FEN SEDGE
10	Carex interior	-5 OBL	DWARF TUFTED FEN SEDGE
4	Carex lanuginosa	-5 OBL	WOOLLY SEDGE
5	Carex muhlenbergii	5 UPL	SAND SEDGE
5	Carex pensylvanica	5 UPL	PENNSYLVANIA SEDGE
10	Carex sartwellii	-5 [OBL]	RUNNING MARSH SEDGE
5	Carex stricta	-5 OBL	MEADOW SEDGE
8	Carex suberecta	-5 OBL	POINTED FEN SEDGE
8	Carex tenera	-1 FAC+	FLEXED SEDGED
9	Carex tetanica	-3 FACW	RUNNING PRAIRIE SEDGE
10	Carex umbellata	5 UPL	LAX SAND SEDGE
15	Castilleja coccinea	0 FAC	INDIAN PAINT BRUSH
8	Ceanothus americanus	5 UPL	NEW JERSEY TEA
0	Cenchrus longispinus	5 UPL	SANDBUR
2	CENTAURIUM PULCHELLUM	4 FACU-	SHOWY CENTAURY
7	Cephalanthus occidentalis	-5 OBL	BUTTONBUSH
8	Chelone glabra	-5 OBL	TURTLEHEAD
6	Cicuta maculata	-5 OBL	WATER HEMLOCK
5	Cinna arundinacea	-3 FACW	COMMON WOOD REED
2	Cirsium discolor	5 UPL	PASTURE THISTLE
10	Cirsium muticum	-5 OBL	SWAMP THISTLE
-3	CIRSIUM VULGARE	4 FACU-	BULL THISTLE
15	Cladium mariscoides	-5 OBL	TWIG RUSH
7	Comandra richardsiana	3 FACU	FALSE TOADFLAX
1	COMMELINA COMMUNIS	0 FAC	COMMON DAY FLOWER
-3	CONIUM MACULATUM	-3 FACW	POISON HEMLOCK
-3	CONVOLVULUS ARVENSIS	5 UPL	FIELD BINDWEED
1	Convolvulus sepium	0 FAC	HEDGE BINDWEED
7	Coreopsis lanceolata	3 FACU	SAND COREOPSIS
5	Coreopsis tripteris	0 FAC	TALL COREOPSIS
5	Cornus obliqua	-5 [OBL]	PALE DOGWOOD
6	Cornus stolonifera	-3 FACW	RED-OSIER DOGWOOD
4	Cuscuta gronovii	-3 [FACW]	COMMON DODDER
7	Cycloloma atriplicifolium	3 FACU	WINGED PIGWEED
2	Cyperus ferruginescens	-5 OBL	BROWNISH SHORELINE SEDGE
4	Cyperus rivularis	-4 FACW+	BROOK SEDGE
5	Cyperus schweinitzii	2 FACU+	SCHWEINITZ'S SAND SEDGE
1	Cyperus strigosus	-3 FACW	COMMON SHORELINE SEDGE
1	DAUCUS CAROTA	5 UPL	WILD CARROT
4	Desmodium canadense	1 FAC-	SHOWY TICK TREFOIL
5	Desmodium paniculatum	3 FACU	PANICLED TICK TREFOIL
10	Desmodium sessilifolium	5 UPL	SESSILE-LEAVED TICK TREFOIL
6	Dryopteris thelypteris pubescens	-4 FACW+	MARSH SHIELD FERN
1	ECHIUM VULGARE	5 UPL	VIPER'S BUGLOSS
5	Eleocharis calva	-5 OBL	RED-FOOTED SPIKE RUSH
8	Eleocharis elliptica	-3 FACW	GOLDEN-SEEDED SPIKE RUSH
9	Eleocharis engelmanni	-5 [OBL]	
4	Elymus canadensis	1 FAC-	CANADA WILD RYE
8	Epilobium leptophyllum	-5 OBL	FEN WILLOW HERB
0	Equisetum arvense	0 FAC	HORSETAIL
4	Equisetum hyemale affine	-2 FACW-	TALL SCOURING RUSH
3	Equisetum hyemale intermedium	-3 FACW	SMOOTH SCOURING RUSH
5	Eragrostis hypnoides	-5 OBL	CREEPING LOVE GRASS
0	ERAGROSTIS POAEOIDES	5 UPL	LOW LOVE GRASS
3	Eragrostis spectabilis	5 UPL	PURPLE LOVE GRASS
2	Erechtites hieracifolia	3 FACU	FIREWEED
0	Erigeron canadensis	1 FAC-	HORSEWEED
10	Erigeron pulchellus	3 FACU	ROBIN'S PLANTAIN
3	Erigeron strigosus	1 FAC-	DAISY FLEABANE
15	Eriophorum angustifolium	-5 OBL	NARROW-LEAVED COTTON GRASS
9	Eryngium yuccifolium	-1 FAC+	RATTLESNAKE MASTER
0	Eupatorium altissimum	3 FACU	TALL BONESET
5	Eupatorium maculatum	-5 OBL	SPOTTED JOE PYE WEED
6	Eupatorium perfoliatum	-5 [OBL]	COMMON BONESET
1	Eupatorium serotinum	-1 FAC+	LATE BONESET
2	Euphorbia corollata	5 UPL	FLOWERING SPURGE
1	Fragaria virginiana	1 FAC-	WILD STRAWBERRY
5	Galium obtusum	-5 [OBL]	WILD MADDER
3	Geranium carolinianum	5 UPL	CAROLINA CRANESBILL
7	Gerardia purpurea	-3 FACW	PURPLE FALSE FOXGLOVE

7	Gerardia tenuifolia	-3 FACW	SLENDER FALSE FOXGLOVE
0	Gleditsia triacanthos	0 FAC	HONEY LOCUST
4	Glyceria striata	-5 OBL	FOWL MANNA GRASS
15	Habenaria flava herbiola	-3 FACW	TUBERCLED ORCHID
5	Helianthus divaricatus	5 UPL	WOODLAND SUNFLOWER
2	Helianthus grosseserratus	-2 FACW-	SAWTOOTH SUNFLOWER
10	Helianthus occidentalis	4 FACU-	WESTERN SUNFLOWER
5	Heliopsis helianthoides	5 UPL	FALSE SUNFLOWER
6	Hieracium canadense fasciculatum	5 UPL	CANADA HAWKWEED
8	Hypericum virginicum fraseri	-5 OBL	MARSH ST. JOHN'S WORT
10	Hypoxis hirsuta	0 FAC	YELLOW STAR GRASS
3	Impatiens capensis	-3 FACW	ORANGE JEWELWEED
6	Impatiens pallida	-3 FACW	YELLOW JEWELWEED
5	Iris virginica shrevei	-5 OBL	BLUE FLAG
9	Juncus alpinus rariflorus	-5 OBL	RICHARDSON'S RUSH
8	Juncus balticus littoralis	-5 OBL	LAKE SHORE RUSH
4	Juncus dudleyi	0 FAC	DUDLEY'S RUSH
6	Juncus nodosus	-5 OBL	JOINT RUSH
0	Juncus tenuis	0 FAC	ROADSIDE RUSH
4	Juncus torreyi	-3 FACW	TORREY'S RUSH
7	Koeleria cristata	5 UPL	JUNE GRASS
7	Krigia biflora	3 FACU	FALSE DANDELION
2	Lactuca canadensis	2 FACU+	WILD LETTUCE
-1	LACTUCA SCARIOLA	0 FAC	PRICKLY LETTUCE
6	Lathyrus palustris myrtifolius	-5 [OBL]	MARSH VETCHLING
4	Lespedeza capitata	3 FACU	ROUND-HEADED BUSH CLOVER
6	Liatris aspera	5 UPL	ROUGH BLAZING STAR
8	Liatris cylindracea	5 UPL	CYLINDRICAL BLAZING STAR
6	Liatris spicata	-3 [FACW]	MARSH BLAZING STAR
15	Lilium philadelphicum andinum	1 FAC-	PRAIRIE LILY
8	Liparis lilifolia	4 FACU-	PURPLE TWAYBLADE
6	Lithospermum canescens	5 UPL	HOARY PUCCOON
8	Lithospermum croceum	5 UPL	HAIRY PUCCOON
6	Lobelia siphilitica	-4 FACW+	GREAT BLUE LOBELIA
6	Lobelia spicata	0 FAC	PALE SPIKED LOBELIA
-3	LONICERA TATARICA	3 FACU	SMOOTH TARTARIAN HONEYSUCKLE
-3	LONICERA X MUENDENIENSIS	5 UPL	COMMON BUSH HONEYSUCKLE
7	Lupinus perennis occidentalis	5 UPL	WILD LUPINE
-2	LYCHNIS ALBA	5 UPL	WHITE CAMPION
5	Lycopus americanus	-5 OBL	COMMON WATER HOREHOUND
2	LYCOPUS ASPER	-5 OBL	ROUGH WATER HOREHOUND
7	Lysimachia lanceolata	0 FAC	LANCE-LEAVED LOOSESTRIFE
9	Lysimachia quadriflora	-5 OBL	NARROW-LEAVED LOOSESTRIFE
15	Lysimachia quadrifolia	5 UPL	WHORLED LOOSESTRIFE
8	Lysimachia terrestris	-5 OBL	SWAMP CANDLES
7	Lythrum alatum	-5 OBL	WINGED LOOSESTRIFE
1	LYTHRUM SALICARIA	-5 OBL	PURPLE LOOSESTRIFE
10	Maianthemum canadense interius	0 FAC	CANADA MAYFLOWER
0	MEDICAGO LUPULINA	1 FAC-	BLACK MEDICK
-3	MELILOTUS ALBA	3 FACU	WHITE SWEET CLOVER
5	Mentha arvensis villosa	-3 FACW	WILD MINT
4	Monarda fistulosa	3 FACU	WILD BERGAMOT
5	Monarda punctata villicaulis	5 UPL	HORSE MINT
5	Muhlenbergia mexicana	-3 FACW	LEAFY SATIN GRASS
-1	NEPETA CATARIA	1 FAC-	CATNIP
1	Oenothera biennis	3 FACU	COMMON EVENING PRIMROSE
8	Onoclea sensibilis	-3 FACW	SENSITIVE FERN
5	Opuntia humifusa	5 UPL	PRICKLY PEAR
8	Osmunda regalis spectabilis	-5 OBL	ROYAL FERN
7	Oxypolis rigidior	-5 OBL	COWBANE
3	Panicum implicatum	0 FAC	COMMON WOOLY PANIC GRASS
7	Panicum oligosanthes scribnerianum	3 FACU	SCRIBNER'S PANIC GRASS
5	Panicum virgatum	-1 FAC+	SWITCH GRASS
1	Parthenocissus inserta	3 FACU	THICKET CREEPER
2	Parthenocissus quinquefolia	1 FAC-	VIRGINIA CREEPER
10	Pedicularis canadensis	2 FACU+	WOOD BETONY
7	Pedicularis lanceolata	-4 FACW+	SWAMP BETONY
0	Phalaris arundinacea	-4 FACW+	REED CANARY GRASS
6	Phlox pilosa	1 FAC-	PRAIRIE PHLOX
4	Phragmites communis berlandieri	-4 FACW+	COMMON REED
3	Physalis heterophylla	5 UPL	CLAMMY GROUND CHERRY
5	Physostegia virginiana	-3 FACW	FALSE DRAGONHEAD
0	Plantago rugelii	0 FAC	RED-STALKED PLANTAIN
0	POA COMPRESSA	2 FACU+	CANADA BLUE GRASS
0	POA PRATENSIS	1 FAC-	KENTUCKY BLUE GRASS
3	Polygonatum canaliculatum	3 FACU	SMOOTH SOLOMON'S SEAL

5	Polygonum amphibium stipulaceum	-5 OBL	WATER KNOTWEED
6	Polygonum punctatum	-5 OBL	SMARTWEED
2	Populus deltoides	-1 FAC+	COTTONWOOD POPLAR
4	Populus tremuloides	0 FAC	QUAKING ASPEN
8	Prenanthes racemosa	-3 FACW	GLAUCOUS WHITE LETTUCE
0	Prunella vulgaris lanceolata	0 FAC	SELF HEAL
1	Prunus serotina	3 FACU	WILD BLACK CHERRY
1	Prunus virginiana	1 FAC-	CHOKE CHERRY
5	Pteridium aquilinum latiusculum	3 FACU	BRACKEN FERN
5	Pycnanthemum virginianum	-4 FACW+	COMMON MOUNTAIN MINT
2	Pyrus ioensis	5 UPL	IOWA CRAB
4	Quercus alba	3 FACU	WHITE OAK
4	Quercus ellipsoidalis	5 UPL	HILL'S OAK
6	Quercus velutina	5 UPL	BLACK OAK
4	Ratibida pinnata	5 UPL	YELLOW CONEFLOWER
-3	RHAMNUS CATHARTICA	3 FACU	COMMON BUCKTHORN
-3	RHAMNUS FRANGULA	-1 FAC+	GLOSSY BUCKTHORN
9	Rhus aromatica	5 UPL	FRAGRANT SUMAC
6	Rhus copallina latifolia	5 UPL	SHINING SUMAC
1	Rhus radicans	3 [FACU]	POISON IVY
3	Rhus typhina	5 UPL	STAGHORN SUMAC
7	Ribes americanum	-3 FACW	WILD BLACK CURRANT
10	Rorippa islandica hispida	-5 OBL	HAIRY MARSH CRESS
5	Rosa carolina	4 FACU-	PASTURE ROSE
-3	ROSA MULTIFLORA	3 FACU	MULTIFLORA ROSE
4	Rubus flagellaris	4 FACU-	COMMON DEWBERRY
1	Rudbeckia hirta	3 FACU	BLACK-EYED SUSAN
5	Salix amygdaloides	-3 FACW	PEACH-LEAVED WILLOW
2	Salix discolor	-3 FACW	PUSSY WILLOW
7	Salix glaucophylloides glaucophylla	-3 FACW	BLUE-LEAVED WILLOW
6	Salix humilis	3 FACU	PRAIRIE WILLOW
1	Salix interior	-5 OBL	SANDBAR WILLOW
1	Sambucus canadensis	-2 FACW-	ELDERBERRY
-1	SAPONARIA OFFICINALIS	3 FACU	BOUNCING BET
6	Sassafras albidum	3 FACU	SASSAFRAS
7	Scirpus americanus	-5 OBL	CHAIRMAKER'S RUSH
5	Scirpus validus creber	-5 OBL	GREAT BULRUSH
5	Scrophularia lanceolata	2 FACU+	EARLY FIGWORT
5	Scutellaria epilobiifolia	-5 OBL	MARSH SKULLCAP
5	Scutellaria lateriflora	-5 OBL	MAD-DOG SKULLCAP
10	Selaginella apoda	-5 [OBL]	MARSH CLUB MOSS
2	Silene antirrhina	5 UPL	SLEEPY CATCHFLY
5	Silphium integrifolium	5 UPL	ROSIN WEED
7	Sisyrinchium albidum	3 FACU	COMMON BLUE-EYED GRASS
2	Smilacina racemosa	3 FACU	FEATHERY FALSE SOLOMON'S SEAL
5	Smilacina stellata	1 FAC-	STARRY FALSE SOLOMON'S SEAL
4	Smilax lasioneura	5 UPL	COMMON CARRION FLOWER
5	Smilax tamnoides hispida	0 FAC	BRISTLY GREEN BRIER
-3	SOLANUM DULCAMARA	0 FAC	BITTERSWEET NIGHTSHADE
1	Solidago altissima	3 FACU	TALL GOLDENROD
3	Solidago gigantea	-3 FACW	LATE GOLDENROD
3	Solidago graminifolia nuttallii	-2 FACW-	GRASS-LEAVED GOLDENROD
4	Solidago nemoralis	5 UPL	OLD-FIELD GOLDENROD
7	Solidago riddellii	-5 OBL	RIDDELL'S GOLDENROD
2	SOLIDAGO SEMPERVIRENS	-2 FACW-	SEASIDE GOLDENROD
7	Solidago speciosa	5 UPL	SHOWY GOLDENROD
10	Solidago tenuifolia	-3 FACW	SLENDER-LEAVED GOLDENROD
5	Sorghastrum nutans	2 FACU+	INDIAN GRASS
5	Spartina pectinata	-4 FACW+	PRAIRIE CORD GRASS
7	Spiraea alba	-4 FACW+	MEADOWSWEET
6	Stipa spartea	5 UPL	PORCUPINE GRASS
0	TARAXACUM OFFICINALE	3 FACU	COMMON DANDELION
8	Tephrosia virginiana	5 UPL	HOARY PEA
2	Tradescantia ohiensis	2 FACU+	COMMON SPIDERWORT
1	TRAGOPOGON MAJOR	5 UPL	SAND GOAT'S BEARD
0	TYPHA ANGUSTIFOLIA	-5 OBL	NARROW-LEAVED CAT-TAIL
1	Typha latifolia	-5 OBL	BROAD-LEAVED CAT-TAIL
1	VERBASCUM THAPSUS	5 UPL	COMMON MULLEIN
4	Verbena hastata	-4 FACW+	BLUE VERVAIN
4	Verbena stricta	5 UPL	HOARY VERVAIN
4	Vitis riparia	-2 FACW-	RIVERBANK GRAPE
7	Zizia aurea	-1 FAC+	GOLDEN ALEXANDERS

NORTHWESTERN INDIANA REGIONAL PLANNING COMMISSION
6100 Southport Road, Portage, Indiana 46368
219/ 763-6060 Fax: 219/ 762-1653

FACSIMILE TRANSMISSION

1990 Census Of Population And Housing Summary Tape File 1A

040 Indiana
160 East Chicago city

AGE
Universe: Persons

Under 1 year	507
1 and 2 years	1,079
3 and 4 years	1,080
5 years	548
6 years	558
7 to 9 years	1,759
10 and 11 years	1,247
12 and 13 years	1,202
14 years	624
15 years	635
16 years	601
17 years	616
18 years	518
19 years	572
20 years	480
21 years	448
22 to 24 years	1,481
25 to 29 years	2,610
30 to 34 years	2,696
35 to 39 years	2,209
to 44 years	1,746
45 to 49 years	1,453
50 to 54 years	1,425
55 to 59 years	1,591
60 and 61 years	685
62 to 64 years	1,039
65 to 69 years	1,566
70 to 74 years	1,249
75 to 79 years	872
80 to 84 years	497
85 years and over	299

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Search... Yellow Pages

Your Query: Nursing & Personal Care Facilities in East Chicago, IN
Results 1-2 of 2

Expand Your Search Area to 20 Miles

All Listings

Lake County Nursing And Rehabilitation Center 219-397-0380
5025 Mccook Ave East Chicago, IN 46312-3759
[View Map] [Get Directions]

Lake County Nursing And Rehabilitation Center Pt Ot 24 Hr Skilld 219-397-0380
5025 Mccook Ave East Chicago, IN 46312-3759
[View Map] [Get Directions]

Results 1-2 of 2

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Ask yourself these questions a:
write down your answers. Be
honest, now, because this

for more advice

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Your Query: Hospitals in East Chicago, IN
Results 1-2 of 2

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All Listings

St Catherine Hospital 219-378-0609
4321 Fir St East Chicago, IN 46312-3097
[View Map] [Get Directions]

St Catherine Hospital 219-392-1700
4321 Fir St East Chicago, IN 46312-3097
[View Map] [Get Directions]

Results 1-2 of 2

Expand Your Search Area to 20 Miles

JumpTo: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
All

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honest, now, because this

for more advice

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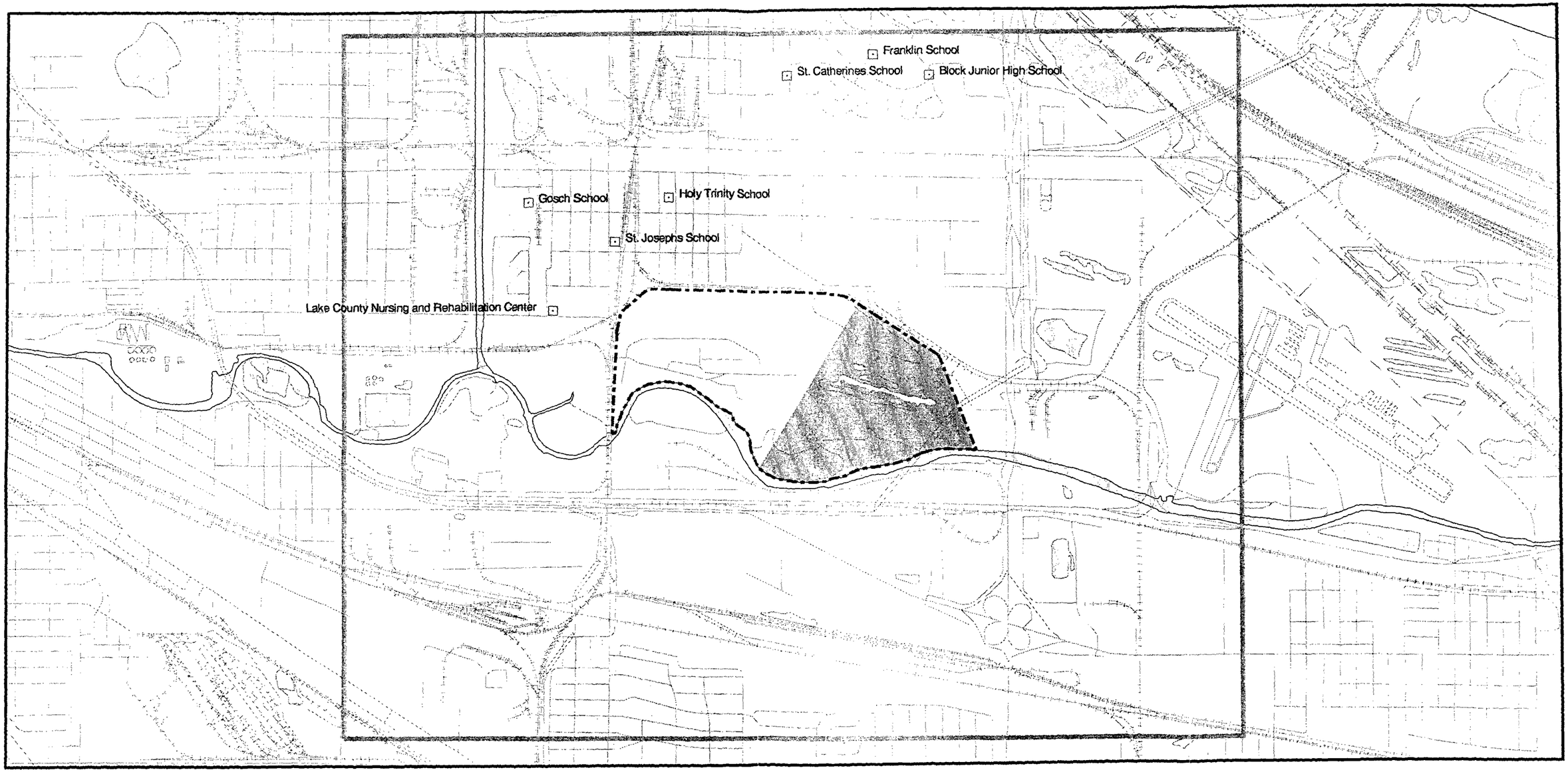

Legend

- DuPont Property Line
- 1 Mile Boundary Around DuPont Property
- Locations of Potentially Sensitive Receptors (Schools, Hospitals, Nursing Homes)
- Residential Areas
- Potential Trespasser Exposure Area
- Potential Recreational Exposure Area

Scale 1:24000
1 inch = 2000 feet

Potentially Sensitive Receptors and Potential Exposure Areas

DuPont East Chicago Current Conditions Report

CH2MHILL

Sources:
USGS Digital Line Graphs 1:100,000;
USGS Land Use/Land Cover 1:250,000

Universal Transverse Mercator Projection,
Zone 16, 1983 North American datum.

October 22, 1997

Riley Park Water Quality Sampling

According to the East Chicago Sanitary District, the sewer system in Riley Park acts as a drain receiving infiltration from the Calumet Aquifer. Basement sumps in the area remove stormwater infiltration and shallow groundwater. CH2M HILL collected samples from the sewers within Riley Park at night during the low usage period in September 1990 and from selected basement sumps. The samples were analyzed for arsenic, cadmium, chloride, copper, fluoride, iron magnesium, sulfate, and zinc. The results of the sampling are summarized in Table 5-3 and reported in full in Table E-2 of the Phase II Groundwater Assessment (CH2M HILL 1991). A figure showing sample locations (Figure 5-4) is also provided.

Table 5-3
WATER QUALITY RESULTS BY LOCATION
RILEY PARK / DU PONT EAST CHICAGO PLANT

Location:	Chemical Concentrations (mg/l)											
	4800 Block Sewer of Riley Park			4900 Block Sewer of Riley Park			Sumps, Southern Half 4900 Block of Riley Park			Northern Portion of Du Pont Facility *		
Constituent	Minimum	Maximum	Average **	Minimum	Maximum	Average **	Minimum	Maximum	Average **	Minimum	Maximum	Average **
Arsenic	0.003	0.022	0.008	0.03	0.20	0.09		0.028	<0.006	0.01	0.4	0.21
Cadmium					0.011	<0.007					0.013	<0.006
Chloride	66	94	83	28	64	42	8	100	30	18	108	67
Copper					0.02	<0.01		0.02	<0.01			
Fluoride	1.1	1.5	1.3	1.7	3.8	2.8	1.4	3.5	2.2	3	8	5
Iron	0.25	1.11	0.56	2.35	7.09	5.09	0.10	17.4	4.04	11.7	61.4	30.1
Magnesium	17	28	21	22	48	28	13	48	23	17.8	24.3	20.7
Sulfate	110	200	142	400	1100	900	480	1510	900	1100	1810	1540
Zinc		0.006	<0.006	0.014	1.5	0.41	0.042	9.52	1.3	0.049	7.46	3.07

NOTES:

* Based on water quality results for MW-1, MW-10, and MW-11.

** Sample and replicate averaged in calculation of constituent average.

<x.xxx = Average less than stated value. Average calculated using method detection level (MDL) for analyses below the MDL.

ND means not detected above the laboratory method detection limit.

Table E-2

RESIDENCE AND SEWER SAMPLING RESULTS
RILEY PARK

Manhole Number	Location	Concentration (mg/l) Chloride	Fluoride	Sulfate	Arsenic	Cadmium	Copper	Iron	Magnesium	Zinc	Manganese
		Sewers									
4-51	Parish & 148th	88	1.3	140	0.005	<0.005	<0.01	1.11	28	0.006	NA
4-71	Ivy & 148th	66	1.3	130	0.004	<0.005	<0.01	0.26	17	0.005	NA
	Split	70.8	1.2	104	0.01	<0.002	NA	0.280	19.400	0.057	0.120
4-89	Euclid & 148th	94	1.5	200	0.007	<0.005	<0.01	0.25	24	<0.005	NA
4-107	Drummond & 148th	88	1.3	110	0.022	<0.005	<0.01	0.78	19	0.006	NA
	Split	88.8	1.3	69.6	0.024	<0.002	NA	0.690	17.400	<0.020	0.110
4-125	Carey & 148th	80	1.1	130	0.003	<0.005	<0.01	0.39	18	0.006	NA
4-62	Parish & 149th	28	3.7	1100	0.03	0.011	<0.01	7.09	48	0.018	NA
4-75	Near 4912 Ivy	28	3.8	900	0.05	0.008	<0.01	7.02	23	0.128	NA
4-93	Euclid & 149th	40	1.7	400	0.08	<0.005	<0.01	2.35	23	1.50	NA
	Duplicate	40	2.3	800	0.07	<0.005	<0.01	2.78	24	1.53	NA
	Split	44.3	1.7	786	0.069	<0.002	NA	2.900	23.300	1.700	0.554
4-111	Drummond & 149th	52	2.1	800	0.20	<0.005	<0.01	2.96	23	0.042	NA
4-129	Carey & 149th	42	2.6	1100	0.18	0.008	0.02	6.22	22	0.764	NA
	Duplicate	42	2.4	1100	0.15	<0.005	<0.01	5.41	21	0.684	NA
	Split	51.7	0.9	956	0.200	<0.002	NA	5.400	20.500	0.630	0.539
4-147	Grasselli & 149th	64	2.5	800	0.011	<0.005	<0.01	5.08	29	0.014	NA
		RESIDENCES*									
	Residence 1	30	2.9	1510	0.002	<0.005	<0.01	0.10	48	0.042	
	Residence 2	8	3.5	1110	0.010	<0.005	<0.01	7.18	17	0.267	
	Residence 3	26	2.0	480	0.001	<0.005	<0.01	0.16	13	0.119	
	Duplicate	28	2.1	430	0.001	<0.005	<0.01	0.11	12	0.039	
	Residence 4	12	2.8	910	0.001	<0.005	<0.01	0.77	21	9.52	
	Residence 5	36	1.8	608	<0.001	<0.005	<0.01	1.21	18	0.088	
	Residence 6	8	1.4	720	<0.001	<0.005	<0.01	1.51	13	0.094	
	Duplicate	10	1.5	710	<0.001	<0.005	<0.01	1.80	14	0.067	
	Residence 7	100	1.8	1120	0.028	<0.005	0.02	17.4	32	0.060	
	Residence 8	20	1.6	1080	0.006	<0.005	<0.01	3.88	19	0.077	

Notes:

* Residential sampling locations confidential.

Split samples analyses from the testing laboratory ETC.

Duplicate and sample analyses from the testing laboratory NET.

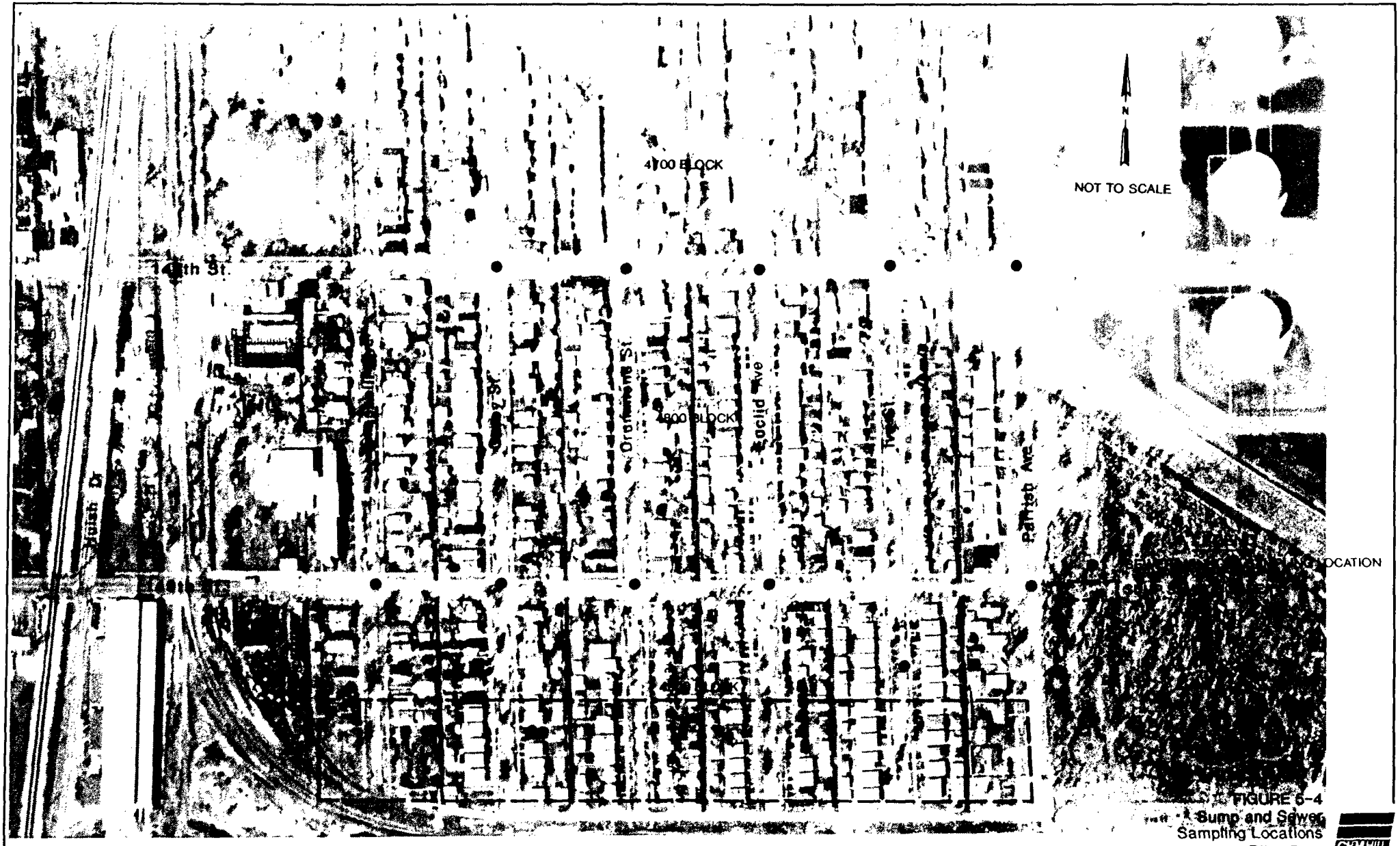

FIGURE 6-4
Sump and Sewer
Sampling Locations
Riley Park

CH2M HILL

Appendix H

MEMORANDUM: DU PONT – RILEY PARK SEWER SURVEY

CH2M HILL

MEMORANDUM

TO: Gene Hartstein/Du Pont
O.J. Meyer/Du Pont
Steve Cline/Du Pont
Diane Heck/Du Pont

FROM: Willie Gonwa/CH2M HILL
Don Johnson/CH2M HILL
Pixie Newman/CH2M HILL

DATE: October 15, 1990

SUBJECT: Du Pont--Riley Park Sewer Survey

PROJECT: CHI28770.A0.SU

INTRODUCTION

This memorandum describes the sewer survey conducted from September 27 to September 29, 1990, in the Riley Park area and followup field work conducted on October 26, 1990. The purpose of the survey was to assess the general effect of the sewer system on groundwater flow in the area. Sewer manholes and catch basins were inspected to:

(1) Determine the layout of the sewer system

(2) Assess the integrity of the sewer lines and the potential for exfiltration or infiltration of groundwater from water table aquifer

(3) Look for evidence of exfiltration of or infiltration by groundwater

(4) Use the information collected to help characterize hydraulic conditions controlling groundwater flow north of the Du Pont East Chicago plant

To support this effort, two maps were obtained from the East Chicago City Engineer's Office:

- A 1954 plan showing the original sewer system
- An undated "current" atlas showing the relief sewer system as well as the sewers illustrated in the 1954 plan (the atlas assigns numbers to the manholes throughout the system)

No as-built plans or elevations are available for the sewer system.

During the inspection, depth measurements were made of sewer inverts and evidence of groundwater infiltration, if present (Table 1). Measurements were made relative to the edge of the sewer surface structure (rim). Rim elevations were surveyed in October (Table 1). Water table elevations, inferred from the field data, are listed in Table 1 and inert elevations are listed in Table 2.

The purpose of the followup field effort conducted on October 26, 1990, was to measure flow rates in selected sewers that might be acting as line "sinks" (draining groundwater out of the aquifer). The flow rates in 10 of the 12 north/south sewer pipes serving the 4900 and 4800 blocks of Riley Park were measured (Table 3).

SEWER SYSTEM CHARACTERISTICS

LAYOUT

The original sewer system in Riley Park consists of 12- to 15-inch combined sewers flowing north from the paved, unnamed road that runs along the southern edge of Riley Park (shown as the NYC Railroad right-of-way on the City's plans) and south from the B & O Railroad right-of-way to a 36- to 48-inch brick collector on 148th Street (see Figure 1). This service area is called Sub-System 4 by the City of East Chicago and the East Chicago Sanitary District (the owner of the system). The sewers in this area also serve Sub-System 4A, which is bounded by Huish to the east, the B & O Railroad right-of-way to the north, the Indiana Harbor Canal to the west, and 151st Street to the south. A portion of the Sub-System 4A sewer system (southwest of Riley Park) is serviced by separate storm and sanitary sewers.

To provide relief from flooding for the over-taxed brick collector on 148th Street, a relief sewer was constructed. The relief sewer starts with a 15-inch-diameter sewer at Chicago Avenue and McCook Avenue in Sub-System 4A. The relief sewer initially flows south for 2 blocks to 149th Street and then east to Parrish Avenue. At Parrish Avenue, the relief sewer jogs to the north and then flows southeast down Gary Avenue. As it flows through Riley Park, the relief sewer increases to 54 inches in diameter.

Within the Riley Park area, the relief sewer intercepts all water flowing north from the 4900 blocks and all water from 149th Street. The remainder of Sub-System 4 continues to flow to the original brick collector. Within Sub-System 4A, the brick collector serves the area north of 149th Street and east of Melville Avenue, with the remaining flow accommodated by the relief sewer.

Table 1
SUMMARY OF SEWER SURVEY DATA

Manhole Number	Location	Measured					Estimated		
		Pipe Diameter (in)	Rim Elevations (AMSL-ft)	Depth To Invert (in) *	Groundwater Infiltration Depth (in)*	Evidence of High Water Depth (in) *	Flow Depth (in) **	Flow Velocity (fps)	Flow Rate (gpm)
4-45	Parrish & Gary	60	587.85	246	—	—	9	—	—
4-49	4716 Parrish	18	587.73	130	44	24	4	1	131
4-50	4744 Parrish	18	587.63	132	62	34	9	2	—
4-51	Parrish & 148th	48	588.12	201	75	—	13	—	—
4-51A	Parrish & 148th	—	586.88	—	38	—		—	—
4-53	4822 Parrish	18	587.57	141	83	—	4	0.4	52
4-55	4854 Parrish	18	586.25	119	59	—	5	0.1	—
4-55B	4832 Parrish	18	586.89	132	57	—	5	0.1	—
4-56	Parrish & 149th	18	585.42	107	40	—	6	—	—
4-57	Parrish & 149th	—	585.40	106	48	85	6	0.5	—
4-58	4916 Parrish	12	585.59	102	41	—	5	0.1	14
4-59	4936 Parrish	12	585.70	98	34	21	7	0.3	52
4-60	Parrish & NYC RR ROW	12	—	—	—	—	—	—	—
Valve Box	Near 4-60 Parrish & NYC RR ROW	—	586.33	—	24	—	—	0	—
4-61	148th near Parrish	42	586.05	201	60		13	0.6	680
4-62	Parrish & 149th	54	585.42	220	48	—	—	—	—
Valve Box	Near 4-62 Parrish & 149th	—	585.51	—	—	—	—	—	—
4-68	4713 Ivy	15	587.54	133	69	—	3	0.4	31
4-69	4732 Ivy	15	587.52	141	69	32	3	0.5	39
4-69B	4723 Ivy	15	587.74	—	—	—	—	—	—
4-71	Ivy & 148th	42	588.10	200	70	—	13	—	—
4-75	Ivy & 149th	12	585.61	107	55	—	1	0	0
4-75A	Ivy & 149th	—	585.52	—	—	—	—	—	—
4-76	Ivy & 149th	54	585.57	211	129	—	7	1	—
4-77	4912 Ivy	12	585.50	99	48	30	3	1	69
4-78	4928 Ivy	12	585.10	89	45	32	2	0.4	15
4-78A	4925 Ivy	—	585.23	—	—	—	—	—	—
4-79	Ivy & NYC RR ROW	12	585.75	85	30	19	2	0	0
4-86	4714 Euclid	15	587.91	136	70	—	2	2	87
4-87	4732 Euclid	15	587.86	143	74	21	2	4	175
4-87A	4737 Euclid	—	587.80	—	—	—	—	—	—
4-89	Euclid & 148th	42	586.86	179	69	—	13	—	—
4-92	4846 Euclid	15	585.71	115	60	35	3	0.5	39
4-93	Euclid & 149th	12	585.09	102	48	31	2	0.25	—

Notes: * Measured from manhole rim.
** Measured from bottom of sewer pipe.

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Table 1
SUMMARY OF SEWER SURVEY DATA

Manhole Number	Location	Measured					Estimated		
		Pipe Diameter (in)	Rim Elevations (AMSL-ft)	Depth To Invert (in) *	Groundwater Infiltration Depth (in)*	Evidence of High Water Depth (in) *	Flow Depth (in) **	Flow Velocity (fps)	Flow Rate (gpm)
4-93A	Euclid & 149th	—	584.98	54	—	36	8	0	—
4-94	Euclid & 149th	54	585.08	212	—	69	7	1	540
4-95	4911 Euclid	12	585.84	106	51	35	3	—	—
4-96	4923 Euclid	12	586.10	105	51	34	6	—	—
4-96A	4928 Euclid	—	585.84	57	—	35	6	—	—
4-97	Euclid & NYC RR ROW	12	586.85	96	56	42	0.5	0	0
4-104	4714 Drummond	15	587.51	131	57	—	4	0.2	—
4-105	4732 Drummond	15	586.90	140	68	—	4	0.25	29
4-105B	4732 Drummond	—	586.93	—	—	—	—	—	—
4-107	Drummond & 148th	42	586.54	176	63	—	13	—	—
4-109	4834 Drummond	15	585.87	114	—	40	3	1	78
4-110	4848 Drummond	15	586.08						—
4-111	Drummond & 149th	12	585.83	107	72	58	1.5	0	0
4-112	Drummond & 149th	54	585.61	215	99	73	21	2	5100
4-113	4910 Drummond	12	585.95	102	66	39	2	2	77
4-114	4913 Drummond	12	586.11	100	54	43	4	1	103
4-114A	4920 Drummond	—	NA	77	—	—	34	0	—
4-115	Drummond & NYC RR ROW	12	586.89	97	40	25	6	0	—
4-122	4716 Carey	15	588.10	136	68	—	3	0.2	—
4-123	4729 Carey	15	586.40	122	60	—	3	0.3	—
4-125	Carey & 148th	42	585.02	154	60	—	13	—	—
4-128	4849 Carey	15	585.76	117	—	50	3.5	0.3	—
4-129	Carey & 149th	12	585.48	106	50	—	5	—	—
4-130	Carey & 149th	54	585.50	193	—	—	—	—	—
4-131	4909 Carey	12	586.07	108	—	52	2.5	1.5	80
4-132	4921 Carey	12	585.63	97	53	31	3	—	—
4-133	Carey & NYC RR ROW	12	586.03	89	32	28	6	—	—
4-139	4711 Grasselli	15	586.96	121	49	—	5	0.5	80
4-140	4727 Grasselli	15	586.32	—	—	—	—	—	—
4-142	Grasselli & 148th	36	584.86	150	62		13	—	—
4-145	4853 Grasselli	15	586.05	117	—	55	1.5	1.5	43
4-146	Grasselli & 149th	12	585.77						—
4-147	Grasselli & 149th	54	585.65	192	—	—	32	—	—
4-148	4909 Grasselli	12	586.02	110	—	54	2.5	0.3	16
4-149	4917 Grasselli	12	585.94	107	50	—	1	2	28
4-150	4931 Grasselli	12	585.64	99.5	43	—	2.5	0.2	11
4-151	Grasselli & NYC RR ROW	12	585.74	—	—	—	—	—	—
4-155	148th near Grasselli	36	585.02	163	65	—	13	2	2100

Notes: * Measured from manhole rim.
** Measured from bottom of sewer pipe.

Table 1
SUMMARY OF SEWER SURVEY DATA

Manhole Number	Location	Measured Flow Area (sq in)	Estimated Flow (gpm)	Comments
4-45	Parrish & Gary	—	—	No infiltration
4-49	4716 Parrish	42	131	Oily sheen
4-50	4744 Parrish	—	—	Laterals collapsed on both sides, causing street to fall; 2 abandoned laterals coming in; flow partially obstructed; much infiltration
4-51	Parrish & 148th	—	—	Much infiltration
4-51A	Parrish & 148th	—	—	Catch basin; depth to standing water = 67"
4-53	4822 Parrish	42	52	Medium infiltration; no connection to relief sewer
4-55	4854 Parrish	—	—	Flow partially obstructed
4-55B	4832 Parrish	—	—	Little infiltration; abandoned lateral enters manhole
4-56	Parrish & 149th	—	—	No flow; oily sheen; much infiltration; clear water flow
4-57	Parrish & 149th	—	—	Oily sheen; new manhole; 3" debris; little infiltration, flow depth to estimated invert, irregular cross-section
4-58	4916 Parrish	45	14	Oily sheen; some sanitary flow; some visible infiltration
4-59	4936 Parrish	56	52	Much infiltration; clear water flow, about 2" of debris in invert, flow depth to estimated invert
4-60	Parrish & NYC RR ROW	—	—	Could not locate
Valve Box	Near 4-60 Parrish & NYC RR ROW	—	—	31" depth to standing water; no flow; much debris, some infiltration, oily sheen
4-61	148th near Parrish	365	680	Medium infiltration
4-62	Parrish & 149th	—	—	New manhole; little infiltration
Valve Box	Near 4-62 Parrish & 149th	—	—	
4-68	4713 Ivy	25	31	Some visible infiltration; 8" pipe from catch basin
4-69	4732 Ivy	25	39	Clear water flow
4-69B	4723 Ivy	—	—	Could not open
4-71	Ivy & 148th	—	—	Much flow from both directions
4-75	Ivy & 149th	4	0	Some visible infiltration; some staining
4-75A	Ivy & 149th	—	—	Catch basin; could not open
4-76	Ivy & 149th	—	—	Partially obstructed flow; some visible infiltration
4-77	4912 Ivy	22	69	No visible infiltration
4-78	4928 Ivy	12	15	Much visible iron-stained infiltration
4-78A	4925 Ivy	—	—	Catch basin
4-79	Ivy & NYC RR ROW	12	0	Much visible iron-stained infiltration
4-86	4714 Euclid	14	87	Clear water flow
4-87	4732 Euclid	14	175	
4-87A	4737 Euclid	—	—	Did not measure; catch basin
4-89	Euclid & 148th	—	—	Much flow from both directions
4-92	4846 Euclid	25	39	
4-93	Euclid & 149th	—	—	Flow partially obstructed

Notes: * Measured from manhole rim.
** Measured from bottom of sewer pipe.

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Table 1
SUMMARY OF SEWER SURVEY DATA

Manhole Number	Location	Measured Flow Area (sq in)	Estimated Flow (gpm)	Comments
4-93A	Euclid & 149th	—	—	Catch basin
4-94	Euclid & 149th	174	540	
4-95	4911 Euclid	—	—	Flow obstructed
4-96	4923 Euclid	—	—	Flow obstructed
4-96A	4928 Euclid	—	—	Catch basin; no flow
4-97	Euclid & NYC RR ROW	2	0	No flow
4-104	4714 Drummond	—	—	Oily sheen; flow partially obstructed; medium infiltration
4-105	4732 Drummond	38	29	
4-105B	4732 Drummond	—	—	Did not measure; catch basin
4-107	Drummond & 148th	—	—	Much flow from both directions
4-109	4834 Drummond	25	78	
4-110	4848 Drummond	—	—	Unable to remove cover
4-111	Drummond & 149th	8	0	Virtually no flow
4-112	Drummond & 149th	824	5100	
4-113	4910 Drummond	12	77	
4-114	4913 Drummond	33	103	No flow in line from adjacent 4-114A
4-114A	4920 Drummond	—	—	Catch basin; dark oily appearance in standing water
4-115	Drummond & NYC RR ROW	—	—	Flow obstructed, wet but no flow
4-122	4716 Carey	—	—	Flow partially obstructed
4-123	4729 Carey	—	—	Flow partially obstructed; much infiltration
4-125	Carey & 148th	—	—	Much flow from both directions; much infiltration
4-128	4849 Carey	—	—	Flow partially obstructed
4-129	Carey & 149th	—	—	Obstructed, little flow
4-130	Carey & 149th	—	—	
4-131	4909 Carey	17	80	
4-132	4921 Carey	—	—	Much visable infiltration, partially obstructed
4-133	Carey & NYC RR ROW	—	—	Obstructed
4-139	4711 Grasselli	52	80	Little infiltration; some sanitary flow
4-140	4727 Grasselli	—	—	Could not open
4-142	Grasselli & 148th	—	—	Lateral from storm inlet collapsed, causing street to fail; much infiltration
4-145	4853 Grasselli	9	43	
4-146	Grasselli & 149th	—	—	Could not open
4-147	Grasselli & 149th	1414	—	
4-148	4909 Grasselli	17	16	
4-149	4917 Grasselli	5	28	Much visable infiltration
4-150	4931 Grasselli	17	11	Much visable infiltration
4-151	Grasselli & NYC RR ROW	—	—	Under asphalt – not located
4-155	148th near Grasselli	331	2100	4" – 5" of muck in invert

Notes: * Measured from manhole rim.
** Measured from bottom of sewer pipe.

Table 2
SEWER AND INFERRED GROUNDWATER ELEVATIONS
SEPTEMBER 27-29, 1990

Manhole Number	Location	Elevation (ft) *		Head Difference (ft)
		Invert	Groundwater Infiltration**	
4-139	4711 Grasselli	576.88	582.88	6.00
4-142	Grasselli and 148th	572.36	579.69	7.33
4-149	4917 Grasselli	577.02	581.77	4.75
4-150	4931 Grasselli	577.35	582.06	4.71
4-155	148th near Grasselli	571.44	579.60	8.17
4-122	4716 Carey	576.77	582.43	5.67
4-123	4729 Carey	576.23	581.40	5.17
4-125	Carey and 148th	572.19	580.02	7.83
4-129	Carey and 149th	576.65	581.31	4.67
4-132	4921 Carey	577.55	581.21	3.67
4-133	Carey and NYC RR ROW	578.61	583.36	4.75
4-104	4714 Drummond	576.59	582.76	6.17
4-105	4732 Drummond	575.23	581.23	6.00
4-107	Drummond and 148th	571.87	581.29	9.42
4-111	Drummond and 149th	576.91	579.83	2.92
4-112	Drummond and 149th	567.69	577.36	9.67
4-113	4910 Drummond	577.45	580.45	3.00
4-114	4913 Drummond	577.78	581.61	3.83
4-115	Drummond & NYC RR ROW	578.81	583.56	4.75
4-86	4714 Euclid	576.58	582.08	5.50
4-87	4732 Euclid	575.94	581.69	5.75
4-89	Euclid and 148th	571.94	581.11	9.17
4-92	4846 Euclid	576.13	580.71	4.58
4-93	Euclid and 149th	576.59	581.09	4.50
4-95	4911 Euclid	577.01	581.59	4.58
4-96	4923 Euclid	577.35	581.85	4.50
4-97	Euclid and NYC RR ROW	578.85	582.18	3.33
4-68	4713 Ivy	576.46	581.79	5.33
4-69	4732 Ivy	575.77	581.77	6.00
4-71	Ivy and 148th	571.43	582.27	10.83
4-75	Ivy and 149th	576.69	581.03	4.33

Table 2
SEWER AND INFERRED GROUNDWATER ELEVATIONS
SEPTEMBER 27–29, 1990

Manhole Number	Location	Elevation (ft) *		Head Difference (ft)
		Invert	Groundwater Infiltration**	
4–76	Ivy and 149th	567.99	574.82	6.83
4–77	4912 Ivy	577.25	581.50	4.25
4–78	4928 Ivy	577.68	581.35	3.67
4–79	Ivy and NYC RR ROW	578.67	583.25	4.58
4–49	4716 Parrish	576.90	584.06	7.17
4–50	4744 Parrish	576.63	582.46	5.83
4–51	Parrish and 148th	571.37	581.87	10.50
4–53	4822 Parrish	575.82	580.65	4.83
4–55	4854 Parrish	576.33	581.33	5.00
4–55B	4832 Parrish	575.89	582.14	6.25
4–56	Parrish and 149th	576.50	582.09	5.58
4–57	Parrish and 149th	576.57	581.40	4.83
4–58	4916 Parrish	577.09	582.17	5.08
4–59	4936 Parrish	577.53	582.87	5.33
4–61	148th near Parrish	571.30	583.05	11.75
4–62	Parrish and 149th	567.09	581.42	14.33

Notes:
* Above mean sea level.
** Observed groundwater infiltration elevation.

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Table 3 MEASURED SEWER FLOW OCTOBER 26, 1990			
Manhole Number	Address	Time	Flow (gpm)
4-51	Parrish and 148th	0400	2.7
4-62	Parrish and 149th	0344	5.8
4-71	Ivy and 148th	0415	5.4
4-76	Ivy and 149th	NA	NA
4-89	Euclid and 148th	0432	3.9
4-94	Euclid and 149th	0309	2.1
4-107	Drummond and 148th	0449	4.7
4-112	Drummond and 149th	0256	2.1
4-125	Carey and 148th	0504	2.8
4-130	Carey and 149th	0226	2.0
4-142	Grasselli and 148th	NA	NA
4-147	Grasselli and 149th	0205	7.9
		Maximum	7.9
		Minimum	2.0
		Average	3.9
	Total measured flow to the 148th Street Main		19.5
	Total estimated flow to 148th Street Main		23.4
	Total measured flow to the 149th Street Main		19.9
	Total estimated flow to 149th Street Main		23.9

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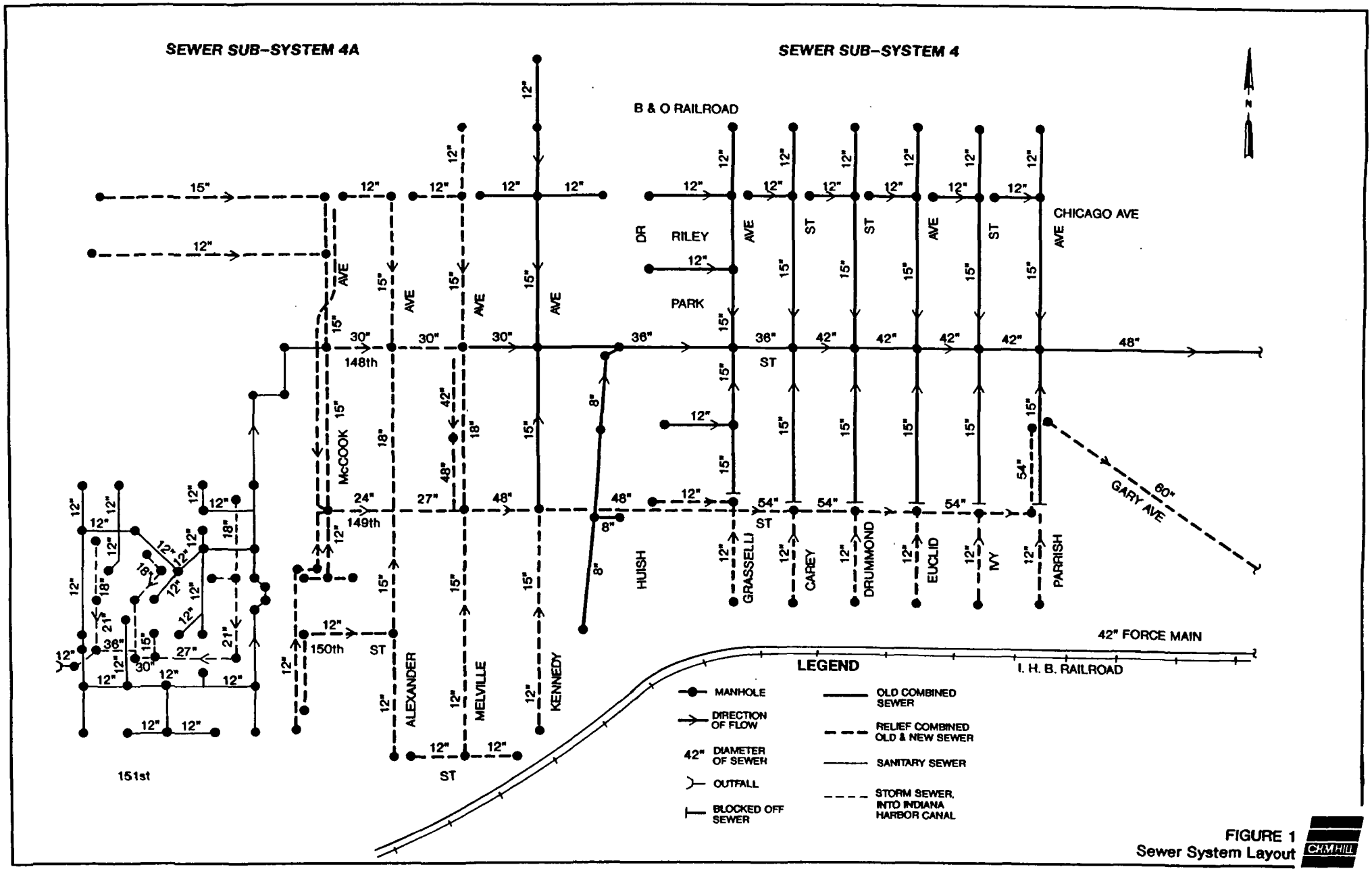

FIGURE 1
Sewer System Layout

Upon leaving the Riley Park area, both the brick collector and the relief sewer flow east to the Alder Street Pumping Station. There, water is combined with an 84-inch sewer serving Inland Steel and residential areas to the north of Riley Park, and is pumped through a 42-inch force main to the East Chicago Wastewater Treatment Plant. Overflow passes through a concrete flume into the Grand Calumet River.

In Riley Park, the 12- to 15-inch combined sewers are typically 8 to 12 feet below grade. The 54-inch relief sewer varies from 16 to 20 feet below grade and the 36- to 42-inch brick collector is 12 to 17 feet below grade. Storm inlets consist of a grate with an 8- to 12-inch discharge pipe that projects from the bottom. An elbow at approximately 3 feet deep directs the flow to a manhole or catch basin at the crown of the street. Where a catch basin exists, it is usually 10 to 15 feet away from the manhole into which it discharges. Both catch basin and manhole are located near the centerline of the street (Figure 2).

PHYSICAL CONDITION

The original sewer system consists of 12- to 15-inch vitreous clay pipe (VCP) local sewers on the north-south streets which convey flow to a 48-inch brick collector. Individual houses are served by 4-inch VCP laterals, which is typical for the era in which these houses were constructed. Manholes are of brick construction. The structural condition of all elements of the original system is generally poor. The cone of most manholes contain missing or crumbling bricks, and many of the barrels are failing similarly. Many frames are cracked and misaligned. Typically, the shelf and invert of most manholes are constructed of concrete and are in good shape (Figure 3). These observations were made from visual inspection of the manholes and catch basins from the surface. Although no direct inspection of the sewers was done, there was ample surficial evidence of localized street subsidence caused by failure of the VCP storm inlet laterals. Also, a local resident reported a recent cave-in of the brick collector which necessitated major emergency repairs.

The relief sewer (new sewer) is of reinforced concrete construction with precast manholes. The structural condition of the manholes appears to be good.

GROUNDWATER INFILTRATION

VISUAL EVIDENCE

Substantial infiltration was visible in many of the manholes inspected. This was especially true within the 4900 blocks where the water table appeared to be only 1-1/2 to 2 feet below grade. Observed flow in many of the manholes throughout the area consisted mainly of clear water. There was no rain during the manhole inspections, so none of the flow could be attributed to the inflow of stormwater runoff.

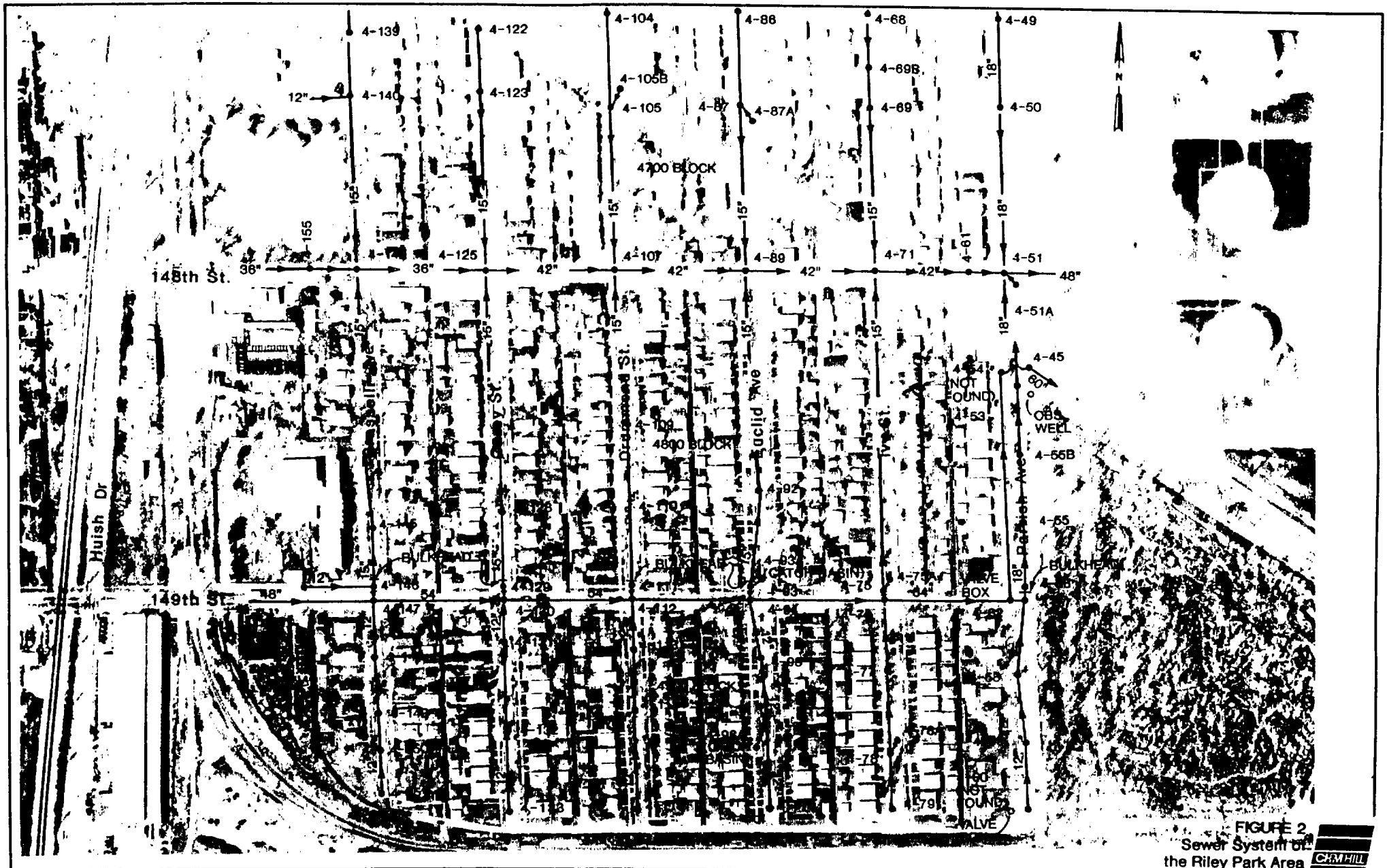

FIGURE 2
Sewer System of the Riley Park Area

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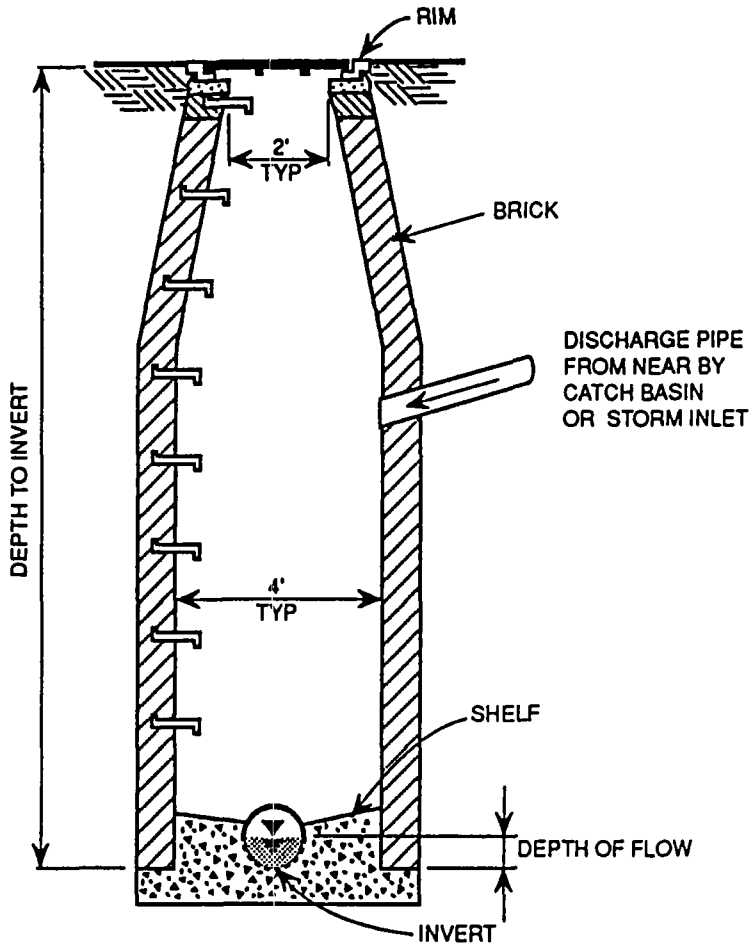
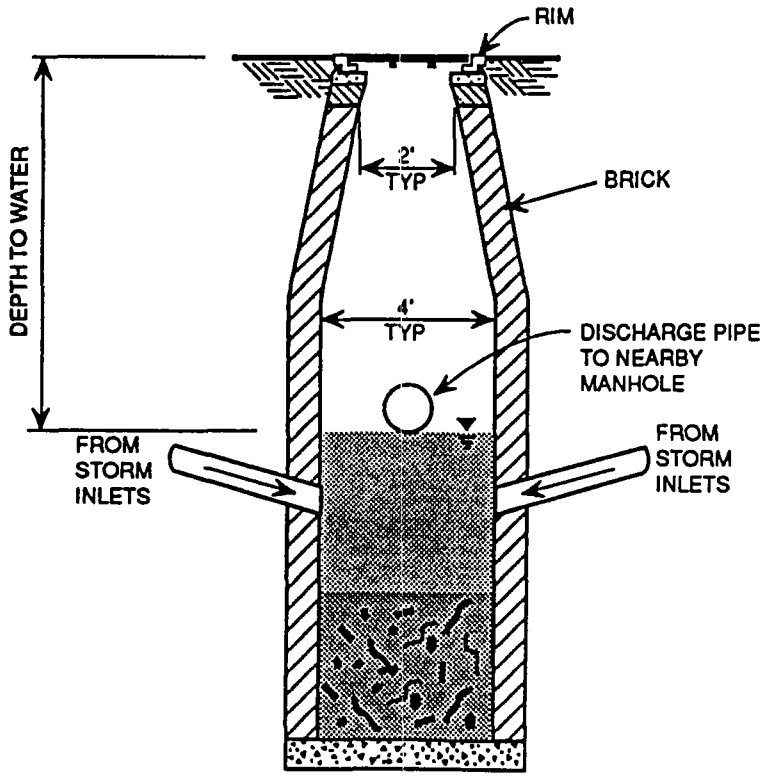


TYPICAL MANHOLE

NOT TO SCALE



TYPICAL CATCH BASIN

NOT TO SCALE

MISC. MANHOLE 10-29-90MMS

FIGURE 3
Manhole and Catch Basin Construction

CH2M HILL

In many cases, there was evidence such as staining or mottling which indicated higher groundwater levels than visible on the day of inspection.

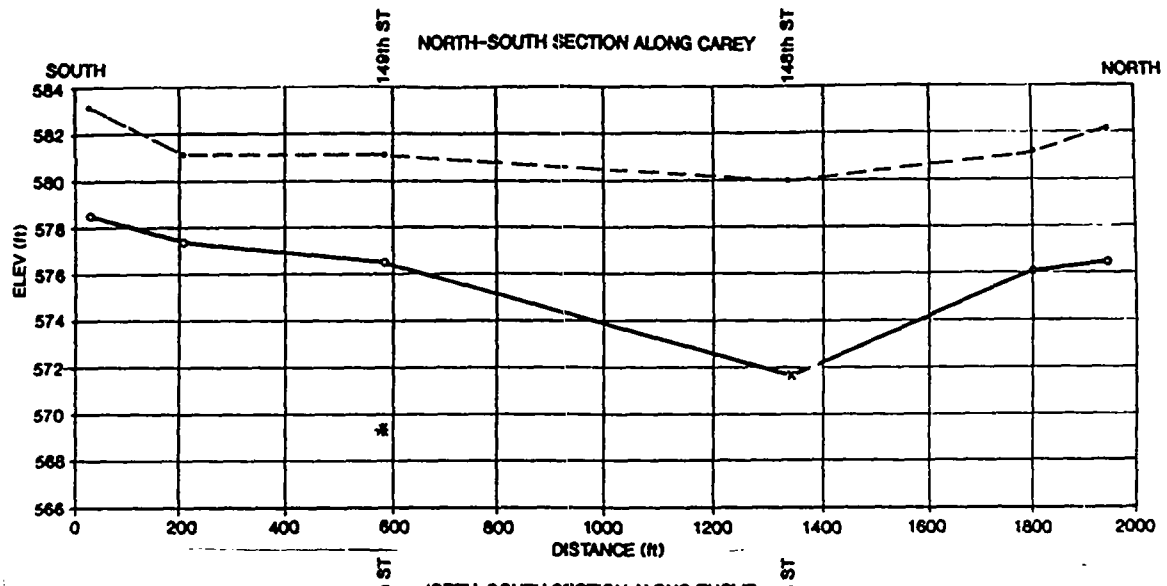
HYDRAULICS

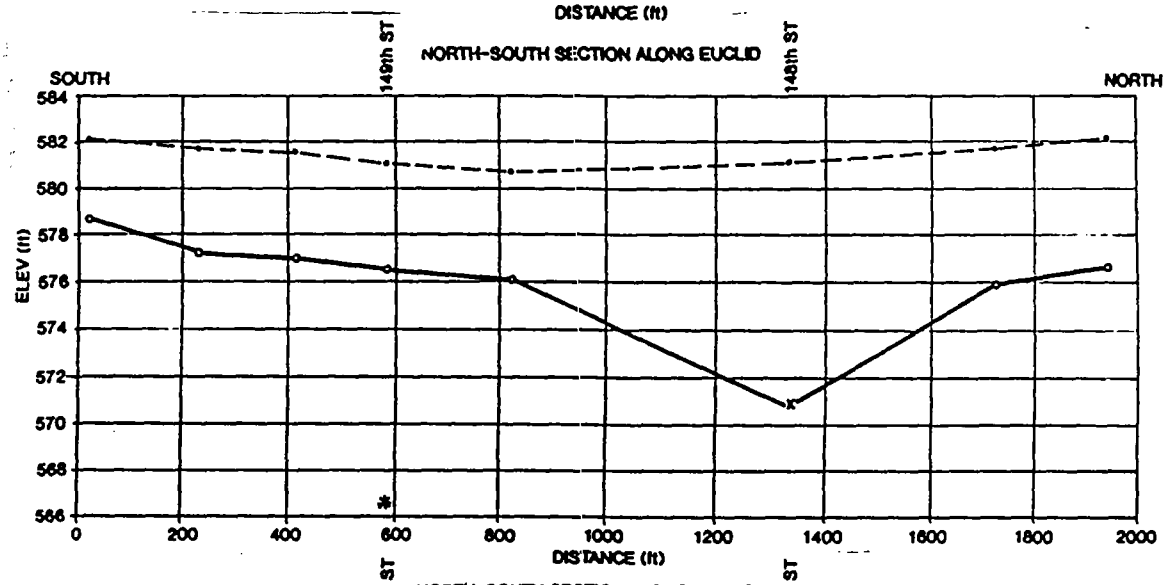
In general, the sewer system in the Riley Park area is approximately 3 to 11 feet below the groundwater surface (Table 2 and Figure 4). As a result of this head difference and the poor integrity of the old sewer system, groundwater appears to be infiltrating the sewers on a continuous basis. Data collected indicate that the sewers are acting as a series of line sinks or drains, influencing the groundwater flow and the potentiometric surface of the shallow Calumet Sand aquifer system.

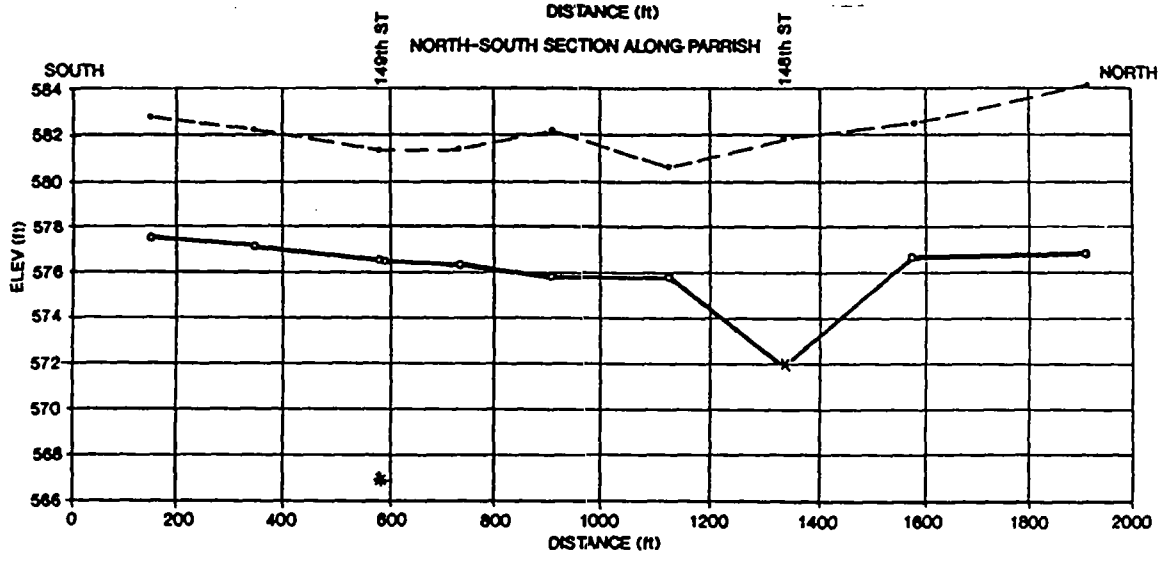
Groundwater infiltration was observed in late September and measured on October 26, 1990. Flow measurements were made during the 2:00 to 5:30 am time period to minimize the relative contribution of sanitary inflow to sewer flow. No precipitation had occurred for several days prior to measuring flows. For these reasons, the observed flows were primarily attributed to groundwater infiltration and basement sump pump discharge directly conveyed to these sewers. (See the Well and Basement Sumps Memorandum for further information on sump pump and discharge).

Individual flow rates for the 4900-block and 4800-block sewers varied from approximately 2 to 8 gpm and averaged 4 gpm (Table 3). On October 26, 1990, the total discharge to the new relief sewer on 149th Street from the 4900-block sewers was estimated at approximately 24 gpm; the discharge to the old combined sewer main on 148th Street from the 4800-block sewers was estimated at approximately 24 gpm. (Up to 10 percent of the flow from the 4800-block sewers may be sanitary flow because some of the individual pipeflow measurements were as late as 5:30 in the morning).

The potentiometric surface in Riley Park and along the northern edge of the Du Pont facility (Figure 5) was approximated using the September infiltration elevation data (Table 2) and groundwater levels measured in the Du Pont monitoring wells on September 10, 1990. An east-west groundwater divide was identified within the center of the 4800 blocks of Grasselli Avenue, Drummond Street, Carey Street, Euclid Avenue, Ivy Street, and Parrish Avenue. A 3-foot head difference existed between this divide and the southern boundary of the Riley Park neighborhood. A head drop of 3 feet (northern gradient of 0.0078 ft/ft) was also observed between the northern portion of the Du Pont site and the southern boundary of the Riley Park neighborhood. These head differences were attributed to the combined effect of sewer infiltration and aquifer dewatering due to sump pump use and discharge to the sewer.







KEY

- • POTENTIOMETRIC SURFACE ELEVATION, BASED ON INFILTRATION OBSERVATIONS
- o ELEVATION OF INVERT
- * ELEVATION OF RELIEF MAIN
- × ELEVATION OF OLD COMBINED SEWER MAIN

FIGURE 4
Potentiometric Surface and Invert Elevation Cross Sections

CH2M HILL

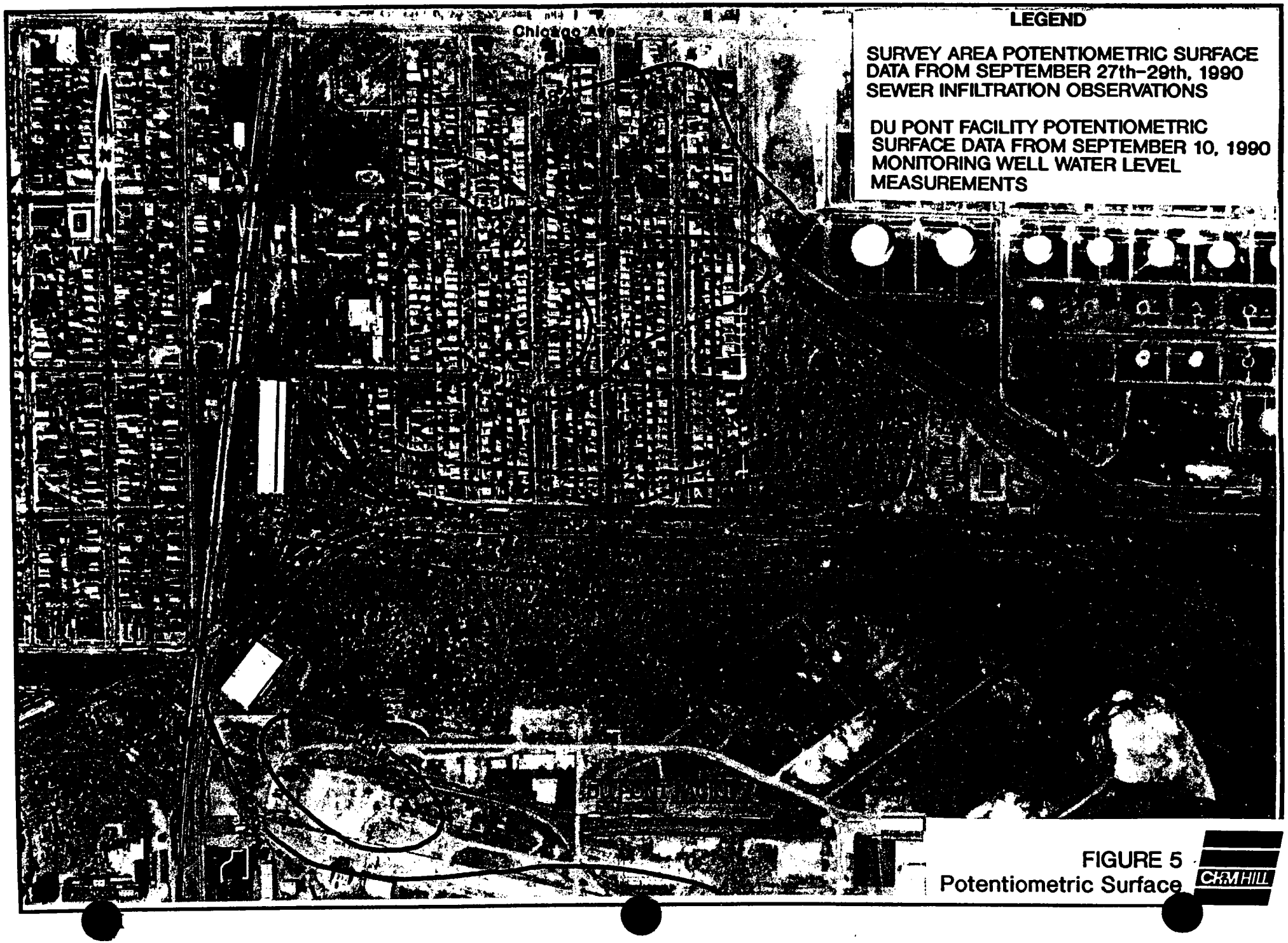


FIGURE 5
Potentiometric Surface

CH2M HILL

Based on these findings, groundwater in the shallow aquifer, migrating north from the Du Pont facility into Riley Park, is captured by the 4900- and 4800-block sewers. The east-west divide in the 4800 block limits northward flow of groundwater from the Du Pont facility.

Appendix G

MEMORANDUM: RILEY PARK WELL AND BASEMENT SUMP SURVEY

Appendix G Contents

Memorandum: Riley Park Well & Basement Sump Survey

- Attachment A: Questionnaire
- Attachment B: First Contact Letter and Press Release
- Attachment C: Second and Third Contact Letters

MEMORANDUM

TO: Gene Hartstein/Du Pont
O. J. Meyer/Du Pont
Steve Cline/Du Pont

FROM: Pixie Newman/CH2M HILL
Don Johnson/CH2M HILL
Bernice Aument/CH2M HILL

DATE: October 15, 1990

PROJECT NO: CHI28770.A0.SU

SUBJECT: Riley Park
Well & Basement Sump Survey

Note: Specific addresses are not presented in this Appendix to protect the confidentiality of individual residents.

INTRODUCTION

This memorandum presents the results of a door-to-door well and basement sump survey in the Riley Park neighborhood of East Chicago, Indiana. Interviews were conducted between September 26 and 28, 1990. Land use in the study area is primarily residential, with a few businesses on the northern and western margins of the area. It is bordered by Chicago Avenue to the north, Huish Street to the west, Parrish Avenue to the east, and an unnamed road just north of the E.J. and E. Railroad right-of-way to the south (Figure 1).

The preliminary results of the Phase II East Chicago Plant Groundwater Assessment showed groundwater concentrations of arsenic and cadmium in excess of the federal primary drinking water standards at sites located near the northern edge of the plant. Water levels in wells open to the shallow Calumet Sand aquifer indicate that the potential exists for groundwater to flow both north and south away from the center of the plant.

When the potential for offsite migration of contaminated groundwater was discovered, Du Pont asked CH2M HILL to conduct a survey of groundwater use in the Riley Park area. The purpose of this survey was to locate wells and basement sumps that may be affecting the direction and rate of groundwater flow north of the plant. This information was also used to determine the need for and scope of future investigations in this area.

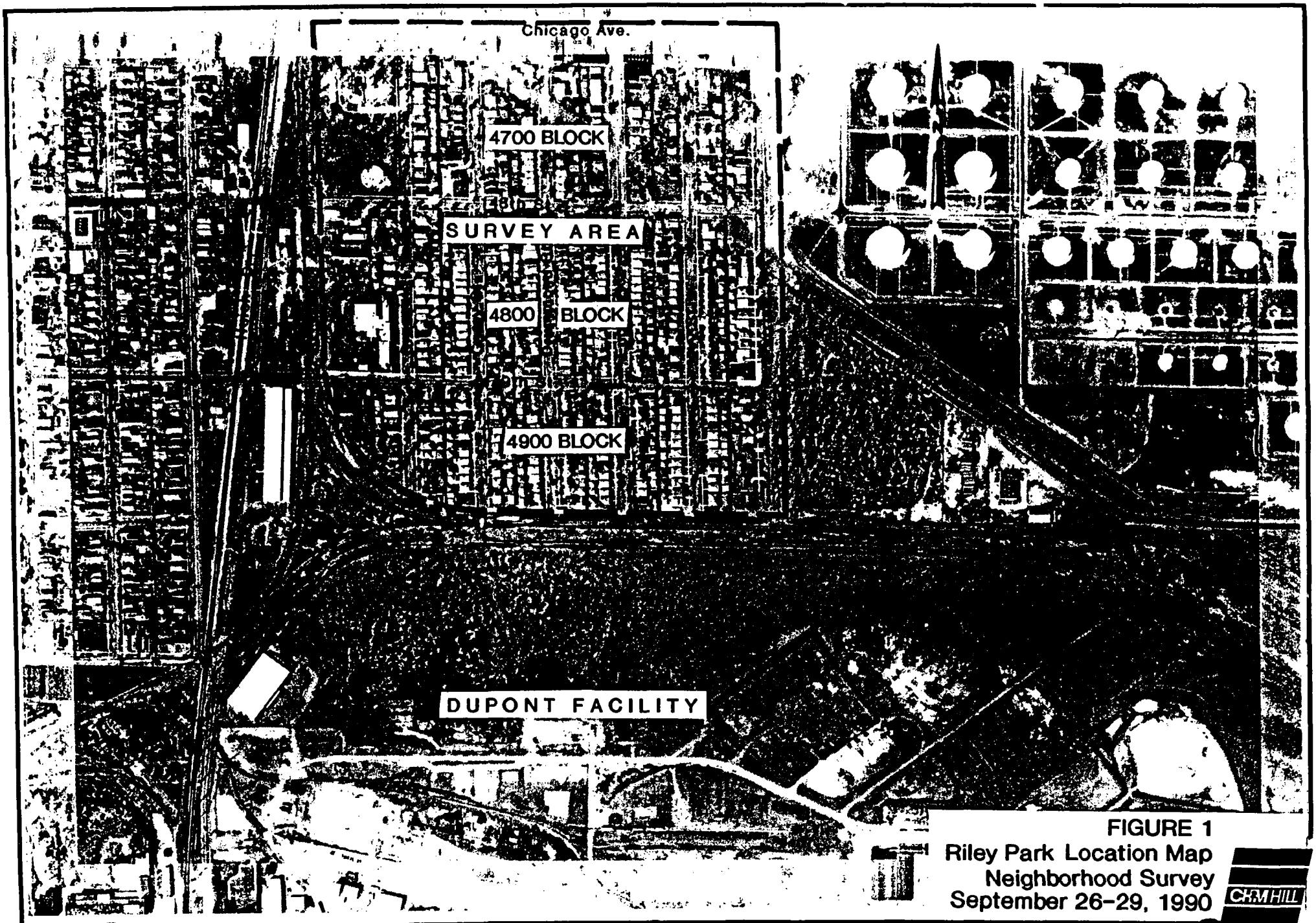


FIGURE 1
Riley Park Location Map
Neighborhood Survey
September 26-29, 1990

CH2M HILL

APPROACH AND RESPONSE RATE

The task team consisted of five 2-person, door-to-door survey crews and one person dedicated to tracking survey progress and processing information collected. The crews attempted to interview an occupant of each residence or business in the survey area.

A maximum of three attempts to interview were made at each address. If an individual was available to answer the survey questions, the questionnaire (Attachment A) was completed and a copy of the press release was provided to the respondent. If no resident was available to answer the survey questions during the first attempt, the survey team left copies of the first contact letter and the press release (Attachment B). Second and third attempts were made by contact letter mailings (see Attachment C). The options of making an appointment to complete the survey or completing the survey by phone were presented.

Of the 454 residences and businesses surveyed, 369 (81 percent) responded. Responses are summarized in Table 1. A listing of those who did not respond was submitted to the City of East Chicago Water Department to verify that these residences are supplied with City water.

RESULTS

PRIVATE WELLS

No drinking water wells were reported to exist in the study area. Four private wells used for other purposes were located during the survey. Of these wells, one on Ivy Street is currently in use. This well is used exclusively for the purpose of removing basement seepage. The other three wells are inactive and were never used to produce water for purposes of consumption.

A well on Euclid Street was removed approximately 25 years ago. The current resident reported the well to be about 12 feet deep. It was used for watering fruits, vegetables, lawns, and flower gardens. The well is no longer used.

A well point about 4 feet deep was installed in a residential basement on Ivy Street in August of 1990. The pump is activated during rainstorm events to remove excess water from the basement. The well discharges directly to the sewer.

A steel well point was installed in another residential basement on Ivy Street approximately 12 years ago. It is 5 feet deep and was formerly used to water gardens and lawns. The owner reported the water to be oily-smelling and "caustic," and attributed the poor water quality to a former junk/scrap yard east of Parrish Street. The well is no longer used.

The presence of a well on Carey Street was reported by a neighboring Carey Street resident. The current resident at this address may not know that the well exists. Allegedly, it was located outside the garage and was used to water gardens.

BASEMENT SUMPS AND FLOODING

All recorded basement flooding problems were evaluated to determine if the primary cause for flooding was shallow depth to groundwater. Locations where basement flooding occurred only during heavy rain events were not considered to be groundwater-related problems.

Thirty-two residences with basement flooding problems attributable to high water table conditions were identified. Thirty of these residences use sump pumps to remove the excess water. Two residents relied solely on the basement floor drain, or manual efforts (mop, shop vacuum) to remove excess water.

Sixteen of the thirty residences using sumps reported that their pumps operate continuously and adequately remove the excess water; three did not know the frequency of operation of their sump pump, but felt the excess water was removed adequately; and eleven continued to experience basement flooding despite the use of the sump pump.

Sump water is discharged directly to the sewer (14 of the 30, or 47 percent), the ground surface (8 of the 30, or 27 percent), and both the sewer and the ground surface (2 of the 30, or 7 percent). Six of the residents who actively remove excess water from their basements did not know where this water was discharged.

Table 1
RILEY PARK SUMP AND BASEMENT INFORMATION
SEPT 26-SEPT 29, 1990

STREET ADDRESS INDIVIDUAL ADDRESSES CONFIDENTIAL	NAME/CONTACT NAMES CONFIDENTIAL	CONTACT MADE X=YES	EAST CHICAGO WATER X=YES	PRIVATE WELL X=YES	SUMP PUMPS			BASEMENT FLOODING				ACCESS X=YES	BASEMENT WATER DISPOSAL METHOD(S) AND OTHER COMMENTS
					PUMP X=YES	RUN CONT. X=YES	DISCHARGE	FLOOD X=YES	WHEN H=HEAVY	HOW OFTEN H=HEAVY	DEPTH		
4700 BLOCK CAREY STREET		X	X					X	H.RAINS				DOWN SEWER
		X	X										
		X	X										
		X	X										
		X	X										
		X	X					X	H.RAINS	3/25 YRS			
		X	X										
		X	X					?					CITY PUMP STATION OFF
		X	X										
		X	X						H.RAINS	1/YR		X	DOWN SEWER
		X	X						H.RAINS	1/YR		X	DOWN SEWER
		X	X						H.RAINS	2/YR	3-4"	X	DOWN SEWER
		X	X		X								
		X	X					X	H.RAIN		1'	X	DOWN SEWER
		X	X		X								
		X	X	?									
		X	X					X					CITY PUMP STATION OFF
		X	X										DOWN SEWER
		X	X	?					RARELY				
		X	X		X		SEWER						DOWN SEWER
		X	X		?			X	H.RAIN	RARELY	2"		
		X	X										
		X	X										DOWN SEWER
		X	X										
		X	X										
		X	X										NO BASEMENT
		X	X										
		X	X										DOWN SEWER
		X	X										
		X											
4800 BLOCK CAREY STREET		X	X										
		X	X					X	RAINS	RAIN	1'	X	DOWN SEWER
		X											UNFINISHED ADDITION
		X	X					X	H.RAIN	1/YR	1'	X	DOWN SEWER
		X											
		X	X										
		X	X		X		SEWER					X	PUMP HASN'T RUN FOR A YEAR
		X	X									X	
		X	X										
		X	X										
		X	X										
		X	X										DAMP, SPANISH
		X	X										
		X	X										
		X	X										
		X											NO BASEMENT
		X	X										
		X	X					X	H.RAINS			X	DOWN DRAIN
		X	X										
		X	X		X		SEWER						
		X	X					X	H.RAINS		1/4"	X	WET/DRY VACUUM
		X	X										
		X											
		X	X					X	H.RAINS		1/2"	X	FLOOR DRAIN
		X	X										
		X	X		X		SEWER						SEEPAGE

Table 1
RILEY PARK SUMP AND BASEMENT INFORMATION
SEPT 26-SEPT 29, 1990

STREET ADDRESS INDIVIDUAL ADDRESSES CONFIDENTIAL	NAME/CONTACT NAMES CONFIDENTIAL	CONTACT MADE X=YES	EAST CHICAGO WATER X=YES	PRIVATE WELL X=YES	SUMP PUMPS			BASEMENT FLOODING				ACCESS X=YES	BASEMENT WATER DISPOSAL METHOD(S) AND OTHER COMMENTS
					PUMP X=YES	RUN CONT. X=YES	DISCHARGE	FLOOD X=YES	WHEN H=HEAVY	HOW OFTEN H=HEAVY	DEPTH		
4800 BLOCK CAREY STREET		X	X					X	H.RAINS		SEEPAGE	X	
		X											
		X	X					X	RAINS		2"	X	SEEPAGE
		X	X										
		X											
		X	X										DAMP
		X	X										
		X	X										
		X	X										
		X	X		X			X					
		X	X										
4900 BLOCK CAREY STREET		X	X										
		X											
		X	X		X		SIDE OF HOUSE	X	RAINS		1"	X	
		X	X							ONCE		X	SEEPAGE
		X	X								SEEPAGE	X	DOWN DRAIN
		X	X										SEEPAGE
		X											
		X	X		X		CITY SEWER	X	H.RAINS	TWICE		X	
		X	X										NO BASEMENT
		X	X								SEEPAGE	X	SEWER
		X	X					X		OFTEN	3'		SEEPAGE/SOAK UP W/NEWSPA
		X	X		X		CITY SEWER						DAMP
		X	X					X	TWICE	RARELY			LARGE TREE ROOTS
		X	X		2	X	ALLEY/YARD	X	CITY NO P	H.RAIN	5-6"	X	DOWN DRAIN
		X	X		X		SEWER	X	RAINS		1"	X	BAIL WATER OUT
		X	X		X	X	CITY SEWER	X				X	SUMP PUMP KEEPS UP
		X	X										
		X	X					X	RAINS	RAIN	6" MAX	X	DOWN DRAIN
		X	X		X	X	SEWER					X	DAMP
		X	X					X	RAINS	RAIN	<1"	?	FIX BASEMENT NEXT WEEK
		X	X					X	H.RAINS	RAINS	1"	X	WET/DRY VAC
		X	X					X	RAINS		TRICKLES		SEEPAGE
		X	X		X	X	SEWER	X	DAILY	TWICE/DA	4"	X	
		X	X		X	X	YARD					X	
4700 BLOCK DRUMMOND STREET		X	X		X		SEWER	X	H.RAIN	H.RAIN	6-8"	X	
		X											
		X											
		X	X										
		X	X						ONCE				
		X											
		X	X						H.RAIN				SEEPAGE
		X	X										
		X	X										
		X	X										
		X	X	?								NO	
		X	X									NO	
		X											
		X	X					X					
		X											
		X	X					X					BAD DRAINAGE
		X	X					X	H.RAINS	H.RAINS	3"	X	DOWN SEWER
		X	X										
		X											
		X	X										

Table 1
RILEY PARK SUMP AND BASEMENT INFORMATION
SEPT 26-SEPT 29, 1990

STREET ADDRESS INDIVIDUAL ADDRESSES CONFIDENTIAL	NAME/CONTACT NAMES CONFIDENTIAL	CONTACT MADE X=YES	EAST CHICAGO WATER X=YES	PRIVATE WELL X=YES	SUMP PUMPS			BASEMENT FLOODING				ACCESS X=YES	BASEMENT WATER DISPOSAL METHOD(S) AND OTHER COMMENTS
					PUMP X=YES	RUN CONT. X=YES	DISCHARGE	FLOOD X=YES	WHEN H=HEAVY	HOW OFTEN H=HEAVY	DEPTH		
4700 BLOCK DRUMMOND STREET		X	X										
		X	X										
		X											
		X	X									NO	
		X											
		X											
		X	X										
		X	X										
		X	X										NO BASEMENT
4800 BLOCK DRUMMOND STREET		X											
		X	X										
		X											
		X											
		X	X										
		X	X										
		X											
		X	X					X	H.RAIN	H.RAIN	<1/2"	X	
		X	X					X	RAINS	2/YR	<1"	NO	DOWN DRAIN
		X	X					X	H.H.RAIN			X	WAIT TILL DRIES UP
		X	X					X	H.RAIN	H.RAIN	<1/2"	X	MOP UP WATER
		X	X										
		X	X		X		BACK YARD	X	RAINS	RAINS		X	REPLACE SHOPVAC
		X											GAVE PAPER, UNCOOPERATIVE
		X	X		?								
		X											GAVE PAPER, UNCOOPERATIVE
		X	X					X	H.RAIN	H.RAIN	SEEPAGE		
		X	X										
		X	X					X	H.RAINS	H.RAINS			FLOOR DRAIN
		X	X										
		X	X										
		X	X										
		X	X										
		X	X					X	RAINS	RAINS	SHALLOW		WAIT TILL DRIES UP
		X											
		X	X										
		X											
		X	X					X	FLOOD		SHALLOW	X	
		X	X							H.RAIN	TRICKLE		
		X											
		X	X					X	RAINS	RAINS	EV INCHE	X	VACUUM/DOWN SEWER
		X	X					X	RAIN/SNOW	MELT	SEEPAGE	X	DOWN DRAIN
		X											
		X	X										
		X	X					X	RAINS	RAINS	PUDDLES	X	MOP TO FLOOR DRAIN
		X	X										NO BASEMENT
		X	X										
		X											
		X	X										SEEPAGE
		X	X										
		X	X					X	RAINS	RAIN	PUDDLES		DOWN DRAIN
4900 BLOCK DRUMMOND STREET		X											
		X	X										
		X	X										
		X	X					X	H.RAINS	H.RAIN	1"	?	MOP/FLOOR DRAIN
		X	X	?									
		X	X					X	OCCASS	H.RAINS	SEV. FEET		FLOOR DRAIN

Table 1
RILEY PARK SUMP AND BASEMENT INFORMATION
SEPT 26-SEPT 29, 1990

STREET ADDRESS INDIVIDUAL ADDRESSES CONFIDENTIAL	NAME/CONTACT NAMES CONFIDENTIAL	CONTACT MADE X=YES	EAST CHICAGO WATER X=YES	PRIVATE WELL X=YES	SUMP PUMPS			BASEMENT FLOODING				ACCESS X=YES	BASEMENT WATER DISPOSAL METHOD(S) AND OTHER COMMENTS
					PUMP X=YES	RUN CONT. X=YES	DISCHARGE	FLOOD X=YES	WHEN H=HEAVY	HOW OFTEN H=HEAVY	DEPTH		
4900 BLOCK DRUMMOND STREET		X											
		X	X										
		X	X					X	H.RAINS	H.RAINS	1/2"		FLOOR DRAIN
		X											
		X	X										
		X	X		X		BACK YARD						
		X											
		X	X										SEEPAGE
		X	X					X			1/2"	X	PUDDLES
		X	X					X			1"		
		X	X		X	X	SEWER						
		X	X					X	RAINS	RAINS	2"		WAIT TILL DRIES UP
		X	X										
		X	X		X		CITY SEWER					X	
		X	X					X	RAIN	RAIN	1"		MOP UP
		X	X					X	H.RAINS	HRAINS	SEPPAGE	X	WAIT TILL DRIES UP
		X	X		X	X	YARD	X				X	
		X	X		?			X					
		X	X		X	?	?						
4700 BLOCK EUCLID AVENUE		X	X					X	INFREQ	H.RAIN			
		X	X										
		X	X										
		X	X										
		X	X										
		X	X										
		X	X					X	H.RAIN	SEEPAGE	FILM		
		X	X					X	RAIN	INFREQ	INCHES	X	
		X	X										
		X	X										
		X	X										
		X	X					?	H.RAIN	H.RAIN		?	
		X	X										
		X	X										
		X											
		X	X										
		X	X										
		X											
		X	X										
4800 BLOCK EUCLID AVENUE		X	X					X	RAIN	RAIN	4-6"	X	
		X	X										
		X	X										
		X											
		X	X										
		X											
		X	X										
		X	X										
		X	X		X		SEWER	X	H.RAIN			X	
		X											
		X	X										
		X	X										
		X	X										SEEPAGE
		X	X										
		X	X					X	H.RAINS	H.RAINS	SEEPAGE		
		X	X					X	RAIN	RAIN	1-6"	X	PORTABLE PUMP TO STREET
		X	X										

Table 1
RILEY PARK SUMP AND BASEMENT INFORMATION
SEPT 26-SEPT 29, 1990

STREET ADDRESS INDIVIDUAL ADDRESSES CONFIDENTIAL	NAME/CONTACT NAMES CONFIDENTIAL	CONTACT MADE X=YES	EAST CHICAGO WATER X=YES	PRIVATE WELL X=YES	SUMP PUMPS			BASEMENT FLOODING				ACCESS X=YES	BASEMENT WATER DISPOSAL METHOD(S) AND OTHER COMMENTS
					PUMP X=YES	RUN CONT. X=YES	DISCHARGE	FLOOD X=YES	WHEN H=HEAVY	HOW OFTEN H=HEAVY	DEPTH		
4800 BLOCK EUCLID AVENUE		X											
		X	X					X	1990	1/10 YR			
		X	X										
		X	X										
		X	X										
		X	X					X		2/20 YR			
		X	X					X	RAIN		WET FLOORS		DOWN DRAIN
		X	X										
		X	X										
		X	X										
		X	X					X		1/11YR	ANKLE		
		X											
		X	X									?	
		X	X					X	H.RAINS	RAIN	1-2"	X	DOWN DRAIN
		X	X										
		X											
		X	X					X	H.RAINS	1/8 YRS			
		X	X										SEEPAGE
		X	X										
		X	X					X			NOT MUCH		SEEPAGE
		X	X	X	G			X	1957	INFREQ		X	WELL REM. 2-5 YRS/AGO
BLOCK EUCLID AVENUE		X	X		?			?				?	SEEPAGE
		X											
		X	X		X		BACK YARD	X	RAIN		MESSY"	X	SQUEEGY
		X	X										
		X	X					X	RAIN	RAIN	2"	X	FLOOR DRAIN
		X	X										
		X	X					X	RAIN	RAIN		X	
		X	X					X	SEWER B	INFREQ	1"	X	WET/DRY VACUUM
		X	X		X		CITY SEWER					X	
		X											
		X	X					X	H.RAINS	RAINS	1"	X	SEWER
		X	X					X	RAIN	RAIN	1/8"		SQUEEGE WATER TO DRAIN
		X	X										
		X											
		X	X										
		X	X		X		CITY SEWER	X	RAINS		TRICKLES	X	SUMP PUMP WATER OUT
		X	X		?			X	H.RAINS	RAINS	SEEPAGE	X	WAIT TILL DRIES UP
		X	X		X	X	OUTSIDE	X	H.RAINS	RAINS	12"	X	DOWN DRAIN
		X											
		X											
		X	X					X	RAINS	RAINS	?		WAIT TILL DRIES UP
		X											
		X	X		X	X	?	X	H.RAINS	H.RAINS	INCHES	?	
		X	X									X	
		X	X		X	X	SEWER	X	RAINS	RAINS		X	ALL SUMMER DURING RAINS
4700 BLOCK GRASSELLI AVENUE		X	X										
		X	X		?								
		X	X		X			X	H.RAIN	H.RAIN	SHALLOW	X	DOWN DRAIN
		X	X					?					
		X											
		X	X										
		X	X										DRAIN BACKS-UP
		X	X										
		X											

Table 1
RILEY PARK SUMP AND BASEMENT INFORMATION
SEPT 26-SEPT 29, 1990

STREET ADDRESS INDIVIDUAL ADDRESSES CONFIDENTIAL	NAME/CONTACT NAMES CONFIDENTIAL	CONTACT MADE X=YES	EAST CHICAGO WATER X=YES	PRIVATE WELL X=YES	SUMP PUMPS			BASEMENT FLOODING				ACCESS X=YES	BASEMENT WATER DISPOSAL METHOD(S) AND OTHER COMMENTS
					PUMP X=YES	RUN CONT. X=YES	DISCHARGE	FLOOD X=YES	WHEN H=HEAVY	HOW OFTEN H=HEAVY	DEPTH		
4700 BLOCK GRASSELLI AVENUE		X											
		X	X		?			X	RAINS		PUDDLE	?	DRAIN BACKS UP
		X	X										
		X											
		X											
		X	X					X	H.RAINS	OCC.	PUDDLES	X	
		X	X					X	H.RAINS	H.RAINS	6"	X	FLOOR DRAIN
		X											
		X	X					X	H.RAINS	H.RAINS	1/2"	X	DRAIN BACKS UP
		X											
		X	X					X	H.RAINS	H.RAINS	TRICKLE	X	FLOOR DRAIN
		X	X										
		X	X										
		X	X										
4800 BLOCK GRASSELLI AVENUE		X	X										
		X											
		X	X					X	H.RAINS	RAINS	?	X	FLOOR DRAIN
		X	X					X					
		X	X										
		X	X		X		BACK YARD					?	
		X	X					X	RAINS	NOT OFT	TRICKLE	?	FLOOR DRAIN/VACUUM UP
		X	X					X	RAINS	RARELY		X	
		X	X										
		X	X		X			X	H.RAINS	H.RAINS	1"	X	DOWN DRAIN
		X	X										
		X											
		X	X					X	H.RAINS		SEEPAGE	X	FLOOR DRAIN
		X											
		X	X		X		SEWER	X	H.RAINS	H.RAINS	SEEPAGE	X	FLOOR DRAIN/BACKUP
		X	X										
		X	X		X		SEWER					X	
		X											
		X	X					X	RAINS	H.RAINS	SEEPAGE	X	FLOOR DRAIN
		X	X		X		SEWER	X	H.RAINS	H.RAINS	SEEPAGE	X	SUMP PUMP OUT
		X	X					X	1975	ONCE	3"		
		X	X					X	H.RAINS		1"	N	FLOOR DRAIN
		X	X										
		X	X					X	ALWAYS	MORE WH	1"	?	FLOOR DRAIN
		X											
		X	X					X	H.RAINS	H.RAINS	1" FL	X	DRAIN TO SEWER
		X											
		X	X										
		X	X										
4900 BLOCK GRASSELLI AVENUE		X	X										SEEPAGE
		X	X										
		X	X										
		X	X										
		X	X										
		X	X					X	H.RAINS	H.RAINS	1" MAX	X	FLOOR DRAIN
		X	X					X	RAINS	RAINS	SEEPAGE	?	
		X	X					X	H.RAIN	H.RAIN	TRICKLE	X	WET/DRY VACUUM UP
		X											
		X	X										SEEPAGE
		X	X					X	H.RAIN/SNOW MELT		3-4"	X	FLOOR DRAIN
		X											
		X	X		X		FRONT LAWN					?	

Table 1
RILEY PARK SUMP AND BASEMENT INFORMATION
SEPT 26-SEPT 29, 1990

STREET ADDRESS INDIVIDUAL ADDRESSES CONFIDENTIAL	NAME/CONTACT NAMES CONFIDENTIAL	CONTACT MADE X=YES	EAST CHICAGO WATER X=YES	PRIVATE WELL X=YES	SUMP PUMPS			BASEMENT FLOODING				ACCESS X=YES	BASEMENT WATER DISPOSAL METHOD(S) AND OTHER COMMENTS
					PUMP X=YES	RUN CONT. X=YES	DISCHARGE	FLOOD X=YES	WHEN H=HEAVY	HOW OFTEN H=HEAVY	DEPTH		
4900 BLOCK GRASSELLI AVENUE		X	X					X	H.RAIN	RAIN			DOWN DRAIN
		X	X		X	X	SEWER	X				X	
		X	X					X	H.RAIN	H.RAIN	NOT DEE	X	FLOOR DRAIN
		X											
		X	X					X	ALL THE T	ME	<1"	X	
		X	X		X	X	GRASSELLI ST	X	SP OUT	POWER O	<1"	X	FLOOR DRAIN
MISCELLANEOUS ADDRESSES		X	X										
		X	X										
		X	X										
4700 BLOCK IVY STREET		X	X										NO BASEMENT
		X	X					X	H.RAIN			Y	FLOOR DRAIN/BACKUP
		X											NEIGHBOR BASEMENT FLOODIN
		X	X	X	X		SEWER	X	H.RAIN	H.RAIN		X	WELL ACTS AS SUMP(BSMT)
		X	X					X	H.RAIN	H.RAIN	3"	X	FLOOR DRAIN
		X	X										
		X											
		X	X					X	H.RAIN			?	MOP UP
		X	X										
		X	X										
		X	X										
		X	X										
		X	X										
		X											
		X											
		X	X					X	H.RAIN	H.RAIN	SEEPAGE	X	FLOOR DRAIN
		X											
		X	X										
		X	X										
		X	X										
		X											
		X	X										
		X											
		X	X										
		X	X										
		X											
		X	X										
4800 BLOCK IVY STREET		X	X					X				X	
		X	X		X		LAWN	X	H.RAIN	H.RAIN	1"	X	SUMP/DRAIN
		X	X										
		X	X					X	RAIN	NOT MUC	TRICKLE		
		X	X										
		X	X					X	RAIN	RAIN	SM STREAM		MOP UP
		X	X					X	H.RAIN	INFREQ		X	FLOOR DRAIN
		X	X										
		X											
		X	X										
		X	X										
		X	X										
		X	X										
		X	X										
		X	X										
		X	X										
		X											
		X											

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					PUMP X=YES	RUN CONT. X=YES	DISCHARGE	FLOOD X=YES	WHEN H=HEAVY	HOW OFTEN H=HEAVY	DEPTH		
4800 BLOCK IVY STREET		X	X		X		YARD	X				?	
		X	X										
		X	X		X		LAWN	X	H.RAIN	H.RAIN	<1"	X	
		X	X										
		X	X					X			3"	X	WET/DRY VACUUM UP
		X											
		X	X					X	H.RAIN	H.RAIN		?	DOWN DRAIN
		X											
		X	X					X	H.RAIN		LITTLE		
		X	X					X	H.RAIN		?	X	BUCKET TO YARD
		X	X					X	I.RAIN				FLOOR DRAIN
		X	X										
		X	X										
		X	X										
		X	X		X		?	X	?	?	?	X	JUST MOVED, DON'T KNOW HIS
		X	X		X		?	X	H.RAIN	H.RAIN	DEEP	X	SUMP
		X	X										DAMP WHEN RAINS
		X	X										
4900 BLOCK IVY STREET		X											
		X											
		X	X										
		X	X										
		X											
		X											
		X											
		X	X										DAMP
		X	X										
		X	X		X	X	ALLEY	X	RAIN	RAIN	1"	X	DOWN DRAIN
		X	X										
		X	X					X	RAIN	RAIN		X	
		X	X										
		X	X		2	X	LAWN/SEWER	X	H.RAIN	H.RAIN		X	
		X	X										
		X	X		X			X	RAIN	RAIN		X	
		X	X					X	RAIN	RAIN		X	DOWN DRAIN
		X	X		X		SEWER	X	H.RAIN	H.RAIN	SEEPAGE	X	DOWN SEWER
		X	X		2		YARD, SEWER	X	RAIN	RAIN		X	
		X	X										
		X	X		X		?	X	RAIN	RAIN	3/4"	X	SUMP PUMP OUT
		X	X										
		X	X		2	X	SEWER	X	H.RAIN	H.RAIN		X	SUMP PUMP OUT
		X	X	X	X		SEWER	X	RAIN	1/YR	1/2"-2"	X	S.PUMP OUT/WELL IN BSMT
		X	X		X	?	LAWN	X	RAIN			X	
4700 BLOCK PARRISH AVENUE		X	X										
		X	X										
		X	X					X	H.RAINS	H.RAINS	4"	X	DOWN DRAIN
		X	X					X	H.RAINS	H.RAINS	1/2-1"	X	DOWN DRAIN
		X											
		X	X		X		SEWER						
		X	X										
		X	X										
4800 BLOCK PARRISH AVENUE		X	X		X	X	SIDE OF HOUSE	X	S/P OFF			X	PUMP OUT SIDE OF HOUSE
		X	X					X		2/16YRS		?	DOWN DRAIN
		X	X										
		X	X					X	H.RAINS	H.RAINS	SEEPAGE	?	DOWN DRAIN

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SEPT 26-SEPT 29, 1990

STREET ADDRESS INDIVIDUAL ADDRESSES CONFIDENTIAL	NAME/CONTACT NAMES CONFIDENTIAL	CONTACT MADE X=YES	EAST CHICAGO WATER X=YES	PRIVATE WELL X=YES	SUMP PUMPS			BASEMENT FLOODING				ACCESS X=YES	BASEMENT WATER DISPOSAL METHOD(S) AND OTHER COMMENTS
					PUMP X=YES	RUN CONT. X=YES	DISCHARGE	FLOOD X=YES	WHEN H=HEAVY	HOW OFTEN H=HEAVY	DEPTH		
4800 BLOCK PARRISH AVENUE		X	X		X								
		X	X					X	H.RAINS	H.RAINS	SEEPAGE	?	DOWN DRAIN
		X	X					X	ONCE	H.RAINS	1"	?	PUMP OUTSIDE
		X											
		X	X		?			X	H.RAINS		1-2.5"	X	MOP/VACUUM UP
		X	X					X	H.RAINS		TRICKLE	X	DOWN DRAIN
		X	X		X		SEWER	X	H.RAINS	H.RAINS	1"	X	DOWN DRAIN
4900 BLOCK PARRISH AVENUE		X	X		?			X	H.RAINS	H.RAINS	1"	X	MOP UP
		X											
		X	X		X		SIDE OF HOUSE	X	H.RAINS	H.RAINS		X	
		X	X		?								
		X	X					X	H.RAINS	H.RAIN	3-4"	X	

ID Code:

First Attempt: Date Time

Second Attempt: Date Time

Third Attempt: Date Time

Team Leader:___ Team Leader:___ Team Leader:___

INTRODUCTORY COMMENTS (See separate sheet).

QUESTIONNAIRE

INTRODUCTORY QUESTIONS:

1. What is your name? _____

2. What is your address? _____

3. What is your phone no?_____

WATER USE QUESTIONS:

1. Do you use City of East Chicago water? Y N ?

2. Do you or did you ever have a private groundwater well at this address? Y N ?

If Yes:

2a. Can you show me where it is? Y N ?

Notes:_____

_____

2b. What do you know about this well?

Notes:Depth, Construction, Date installed

_____

_____

ID Code:

2c. Is it still in use? Y N ?

If Yes:

2c1. What is the water used for?

2c1a. Watering fruits & Vegetables? Y N ?

If Yes:

What fruits & vegetables

do you grow?

Notes: _____

_____

2c1b. Watering lawns & flower gardens? Y N ?

2c1c. Washing cars? Y N ?

2c1d. Swimming pools? Y N ?

2c1e. Showering? Y N ?

2c1f. Drinking? Y N ?

2c1g. Washing dishes? Y N ?

2c1h. Laundering clothes? Y N ?

3. Does your basement have a sump pump? Y N ?

If Yes:

3a. Does it run continuously? Y N ?

3b. Where does it discharge?

Notes: _____

_____

ID Code: _____

What happens to that water?

Notes: _____

_____

3c. Does your basement flood? Y N ?

3c1. When?

Notes: _____

_____

3c2. How often?

Notes: _____

_____

3c3. How deep does it get?

Notes: _____

3c4. What do you do about it?

Notes: _____

_____

4. In the future (as part of this study), we may need to sample basements and wells.

Could we sample yours, if needed? Y N ?

Thank you for your time.

Once this information has been compiled, the results will be made available for review at the Main and the Pastrick Branch Libraries.

GLCOM7/029.51

ID Code:

__ Flooded Basement

__ Access

__ Lawn Discharge

__ Well

__ Acess

__ Inactive

__ Active

__ Shallow

__ Fruits & Vegs

__ Lawns & Flower Gardens

__ Washing Cars

__ Swimming Pools

__ Showering

__ Drinking

__ Washing Dishes

__ Laundering Clothes

CH-1046 REV. 11/80

DUPONT

ESTABLISHED 1802

E. I. DU PONT DE NEMOURS & COMPANY

INCORPORATED

EAST CHICAGO, INDIANA 46312

CHEMICALS AND PIGMENTS DEPARTMENT

Dear Resident,

Under contract to Du Pont, CH2M HILL is performing a survey of groundwater use in your neighborhood. The attached press release briefly describes the survey.

We stopped by today with a brief questionnaire, but no one was at home. We would like to schedule a convenient time for an interview, please call 391-4600 today until 7:30 p.m. and ask for Dave Cox. We hope you will cooperate with this survey.

We appreciate your assistance.

CHI120\006

FOR IMMEDIATE RELEASE

September 26, 1990

Contact: Gene Hartstein
Du Pont
(219) 391-4601

COMMUNITY SURVEY IS NEWEST PART OF DUPONT'S
VOLUNTARY GROUNDWATER ASSESSMENT PROGRAM

Du Pont environmental consultants today began a door-to-door survey of the Riley Park area of East Chicago to help determine the direction of flow, quality and use of groundwater in the area. The survey is the latest part of a voluntary groundwater assessment program undertaken by the company's East Chicago Plant.

"Although we believe all the homes in the area are using public water supplies, our survey teams are specifically interested in locating groundwater wells," said Gene Hartstein, Plant Manager.

Analyses of samples taken from monitoring wells in the northern areas of the Du Pont plant site in the second phase of the groundwater assessment revealed the presence of two contaminants at levels exceeding federal primary drinking water standards. Cadmium was found at a level slightly in excess of the federal standard. Arsenic was found at a significantly higher level than the federal drinking water standard. Arsenic was used in a manufacturing process at the site, but has not been in use for the last 45 years. Cadmium was never used at the Du Pont plant, so the source of that contaminant is unknown.

"We have no proof that these contaminants have moved north beyond our property," said Hartstein. "But to get a complete picture of groundwater movement in the area, we need to identify factors, such as wells, that could affect its flow. At some future time, we will probably ask to drill test wells in the neighborhood to gather additional information."

Until this phase of the groundwater assessment is completed, including a determination of whether the two contaminants have moved off Du Pont property, company officials want to make certain that Riley Park residents are not using well water for drinking purposes, according to Hartstein.

"The appropriate federal, state and local officials receive regular reports on the progress of this program," he said. "We are committed to working with them. We are also committed to protecting the health of our neighbors and keeping them fully informed about this program."

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CH-1046 REV. 11/80

DUPONT
ESTABLISHED 1802
E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
EAST CHICAGO, INDIANA 46312

CHEMICALS AND PIGMENTS DEPARTMENT

Muy Estimado Residente,

Bajo contracto con Du Pont, CH2M HILL está conduciendo un investigación de uso de agua subterránea an su vecinidad. La noticia acompañando esta carta describe la investigación.

Visitamos su casa hoy, pero nadie estuvo a casa. Quisiéramos arreglar un tiempo conveniente por una entrevista. Por favor llamar a 391-4600 hoy antes de 7:30 por la tarde y pedir por Dave Cox.

Apreciéramos toda la assistencia que pueden darnos con este investigación.

CHI120\006

NOTICIA DE PRENSA

CONTACTAR: Gene Hartstein
Du Pont
391-4601

RECONOCIMIENTO DE COMUNIDAD ES LA PARTE MAS NUEVA DEL PROGRAMA VOLUNTARIO DE AVALUACION DE AGUAS SUBTERRANEOS

Consultos ambientales de Du Pont hoy comenzaron un reconocimiento del area de Riley Park de East Chicago para ayudar en la determinación de la dirección de flujo, calidad y uso de aguas subterraneos en el area. El reconocimiento es la parte más nuevo de un programa voluntario de avaluación de aguas subterraneos hecho por el East Chicago Plant.

"Aunque creímos que todas las casas en el area usan aqua publico, nuestros grupos de reconocimiento esperan colocar cualquieros pozos de aguas subterraneos" dijo Gene Hartstein, el mayordomo de la planta.

Analisis de aguas obtenidos de pozos colocados en el norte limite del sitio de la plant de DuPont contienen la presencia de dos contaminantes con niveles que exceden normas federales primarias por aguas potables. Cadmium estuvo encontrado en niveles un poco más elevado que normas federales. Arsenic estuvo encontrado en niveles significante más elevado que normas federales. Se usaban arsenic en la manufactura en el sitio, pero hace 45 años que no se ha usado. Nunca se habia usado Cadmium en la planta DuPont, y por eso el origen de esta contaminación no se sabe.

"No hay prueba que esta contaminación ha viajado al norte del limite de nuestra propiedad," dijo Hartstein. "Pero para obtener un idea completa del movimiento de los aguas subterraneos, necesitamos identificar factores, como pozos, que puedan afectar su flujo. En el futuro, a lo mejor, queríamos pedir permiso a colocar pozos de prueba en la vecinidad para obtener mas información."

Hasta se completa este fase del reconocimiento, incluyendo una determinación si estas dos contaminantes han viajado al norte de la propiedad de DuPont, oficiales de la compañía quieren estar seguro que los residentes de Riley Park no estan usando agua de pozo para beber, segun Hartstein.

"Oficiales federales, estatales, y locales apropiados recibiran noticias regulares del progreso de este programa", el dijo. "Nos comprometimos a trabajar con ellos. Además, nos comprometimos a proteger la salúd de nuestros vecinos y en dandoles toda información sobre este programa."

CH-1046 REV. 11/80

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
EAST CHICAGO, INDIANA 46312

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CHI120\006

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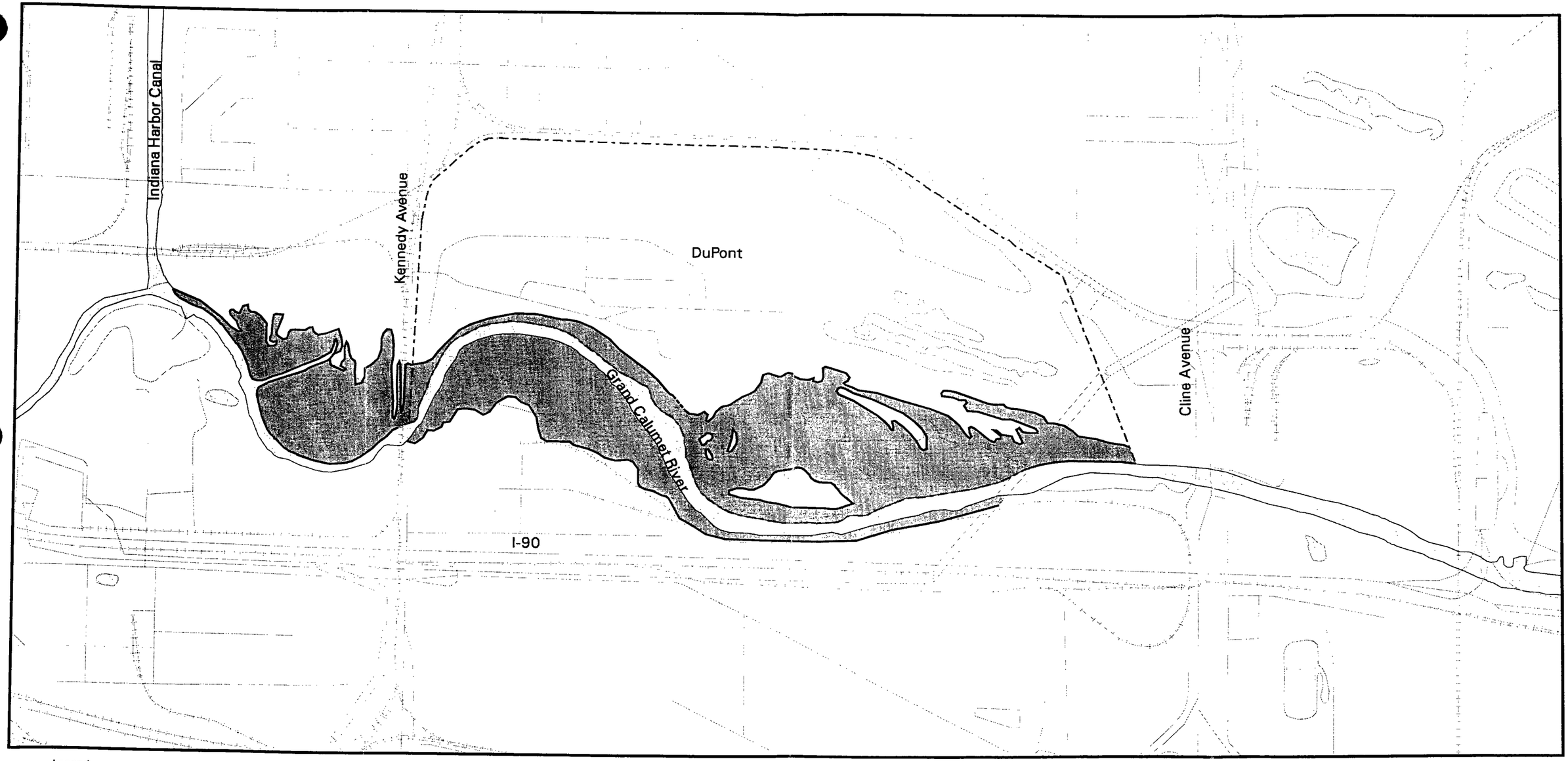
CHI120\006



Legend

- - - DuPont Property Line
—— 100-Year Floodway Boundary
----- Revised Floodway Boundary Based on DuPont Documentation *

Area of Minimal Flooding

Area of 100-Year Flood

N

Scale 1:12000
1 inch = 1000 feet

100-Year Flood Plain within the DuPont Study Area

DuPont East Chicago Current Conditions Report

Sources:
USGS Digital Line Graphs 1:100,000;
USGS Land Use/Land Cover 1:250,000

Universal Transverse Mercator Projection, Zone 16, 1983 North American datum.

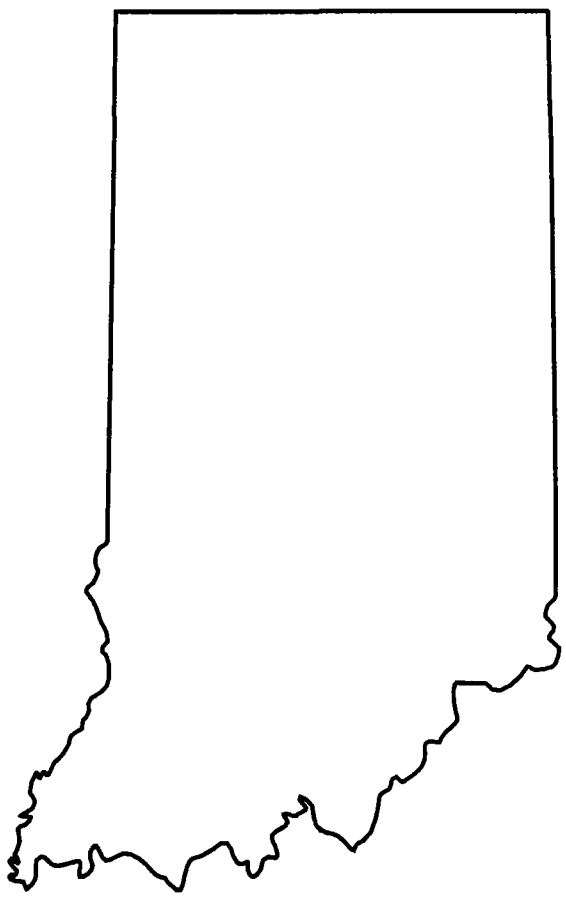
National Flood Insurance Rate Map for East Chicago, Indiana, Lake County (number 180130, 5 and 6 of 6), June 4, 1980 and City of Hammond, Indiana, Lake County (number 180134, 6 of 8), March 16, 1981.

* O.J. Meyer, DuPont

CH2MHILL

'October 17, 1997'

Water Resources Data
Indiana
Water Year 1996



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT IN-96-1

Prepared in cooperation with the State of Indiana
and with other agencies

04092750 INDIANA HARBOR CANAL AT EAST CHICAGO, IN

LOCATION.--Lat 41°39'27", long 87°27'21", in NE¼SE¼ sec.16, T.37N., R.9W., Lake County, Hydrologic Unit 04040001, on right bank 1200 ft downstream (northeast) of Dickey Road bridge, 1.2 miles upstream (southwest) of mouth at Indiana Harbor, 1.3 miles east of Indianapolis Boulevard, 1 mile north of East Chicago, IN.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--October 1991 to current year.

GAGE.--Water-stage recorder, Acoustic Velocity Meter. Datum of gage is 570.00 ft above sea level.

REMARKS.--Records fair, except for estimated daily discharges and the period Oct. 1-21, 1993, which are poor.

REVISIONS.--The instantaneous peak flow date for the period of record was published erroneously as April 10, 1992. The correct date is April 11, 1992.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	654	619	e540	e660	667	670	721	649	791	601	717	790
2	664	622	536	e620	691	657	649	628	813	589	710	819
3	684	513	580	e660	673	723	614	611	794	726	712	795
4	668	410	627	e680	747	668	595	632	775	774	575	797
5	673	507	e690	e660	678	703	686	537	758	800	e560	756
6	728	634	e670	e680	697	666	671	623	739	765	e540	768
7	679	600	e679	e690	653	740	682	590	799	804	519	823
8	685	550	e650	e700	666	752	674	611	762	695	653	751
9	636	e580	e660	e680	653	693	654	747	812	754	917	724
10	666	e615	e690	e680	693	689	641	672	797	736	798	786
11	666	793	e620	e688	636	646	558	694	833	723	846	781
12	642	369	e685	691	695	643	577	652	759	752	805	633
13	678	654	e680	682	627	616	521	716	606	715	833	810
14	618	704	e700	612	690	619	664	640	592	716	847	720
15	662	e690	e700	727	652	634	596	623	657	708	786	731
16	666	e660	e700	659	746	691	611	617	686	713	766	672
17	670	e640	e600	714	612	709	591	651	716	947	756	738
18	659	e621	e700	767	694	667	629	662	865	1370	779	774
19	577	658	e680	729	624	462	704	668	698	598	826	774
20	591	654	e700	666	604	647	701	656	708	492	758	755
21	594	672	e720	738	718	811	614	690	672	720	1000	727
22	548	641	e680	643	711	750	710	670	721	e880	965	731
23	662	e695	e680	666	672	658	713	694	681	e840	801	718
24	450	e699	e720	742	675	677	628	671	745	801	764	755
25	522	e680	e700	708	616	736	638	683	760	786	774	739
26	504	e700	e640	768	637	704	586	704	661	804	664	839
27	602	e700	e680	675	829	684	530	805	658	823	771	817
28	569	e695	e700	715	768	647	573	947	648	736	776	792
29	551	e700	e700	675	722	671	707	875	636	626	741	706
30	577	e640	e705	683	---	657	677	838	565	927	792	738
31	626	---	e700	687	---	698	---	791	---	665	790	---
TOTAL	19371	18915	20712	21345	19746	20988	19115	21247	21707	23586	23541	22759
MEAN	625	630	668	689	681	677	637	685	724	761	759	759
MAX	728	793	720	768	829	811	721	947	865	1370	1000	839
MIN	450	369	536	612	604	462	521	537	565	492	519	633

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1996, BY WATER YEAR (WY)

MEAN	648	667	667	680	656	666	664	656	682	664	725	728
MAX	672	704	668	689	681	677	690	685	724	761	759	759
(WY)	1995	1995	1996	1996	1996	1996	1995	1996	1996	1996	1996	1996
MIN	625	630	665	671	631	654	637	628	641	566	691	697
(WY)	1996	1996	1995	1995	1995	1995	1996	1995	1995	1995	1995	1995

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR		FOR 1996 WATER YEAR		WATER YEARS 1994 - 1996	
ANNUAL TOTAL	237025		253032			
ANNUAL MEAN	649		691		675	
HIGHEST ANNUAL MEAN					691	1996
LOWEST ANNUAL MEAN					659	1995
HIGHEST DAILY MEAN	943	Jan 14	1370	Jul 18	1370	Jul 18 1996
LOWEST DAILY MEAN	303	Jul 8	369	Nov 12	-641	Oct 21 1993
ANNUAL SEVEN-DAY MINIMUM	496	Jul 17	539	Oct 24	-180	Oct 15 1993
INSTANTANEOUS PEAK FLOW			2970	Jul 18	8530	Apr 11 1992
INSTANTANEOUS PEAK STAGE			12.23	Sep 12	12.27	Mar 10 1992
10 PERCENT EXCEEDS	737		797		773	
50 PERCENT EXCEEDS	659		684		672	
90 PERCENT EXCEEDS	540		593		554	

e Estimated

04092677 GRAND CALUMET RIVER AND INDUSTRIAL HWY AT GARY, IN

LOCATION.--Lat 41°36'29", long 87°23'39", in NW¼NW¼ sec.6, T.37 N., R.8W., Lake County, Hydrologic Unit 04040001, on left bank, 30 feet upstream of U.S. 12 (Industrial Highway), 100 feet streamward of the centerline of Interstate 90, 2,000 feet downstream of Norfolk and Western railroad bridge, 6,000 feet southeast of Gary Airport terminal.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--October 1991 to September 1994, (gage heights only), October 1994 to current year.

GAGE.--Water-stage recorder and Acoustic Velocity Meter, Datum of gage is 580.00 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Discharge is primarily from Industrial and city effluent.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	482	452	432	411	424	411	414	382	491	475	514	481
2	479	478	438	404	431	412	420	375	513	470	516	476
3	487	437	434	419	436	415	396	382	496	468	506	483
4	477	449	436	420	443	411	381	373	482	473	499	486
5	463	436	431	413	434	436	383	366	487	484	503	471
6	478	442	431	421	433	402	402	369	504	464	501	488
7	467	448	433	421	424	401	401	374	498	474	501	512
8	467	454	434	428	433	404	396	347	494	463	518	504
9	448	449	442	424	413	411	393	426	510	468	499	483
10	453	485	427	425	435	410	391	414	509	465	502	504
11	463	480	429	410	409	376	322	375	509	478	506	510
12	450	465	414	410	410	355	376	364	499	464	507	439
13	474	437	419	422	410	344	366	374	500	461	502	469
14	474	435	407	416	402	347	362	370	504	465	511	468
15	466	402	408	415	404	388	395	358	491	460	499	462
16	475	397	416	428	412	416	367	357	503	462	505	446
17	479	418	391	436	410	419	342	362	548	522	504	459
18	483	424	415	455	409	414	372	370	523	598	506	466
19	469	423	416	444	379	402	393	362	494	503	481	472
20	515	421	430	434	409	387	393	391	510	512	480	479
21	475	419	432	430	407	416	379	430	504	537	487	478
22	471	413	423	433	407	413	428	420	472	506	475	478
23	455	427	427	427	406	420	415	403	464	496	461	483
24	444	440	428	437	418	412	391	411	493	501	474	481
25	435	447	414	436	415	430	371	438	488	501	481	489
26	433	431	411	431	409	417	327	421	484	512	465	523
27	478	420	427	444	477	413	305	469	482	497	473	502
28	455	444	429	440	435	412	342	488	484	516	488	499
29	445	436	427	442	416	410	402	466	480	526	464	491
30	448	443	437	433	---	407	398	473	470	553	476	492
31	461	---	427	428	---	417	---	488	---	520	488	---
TOTAL	14449	13152	13165	13237	12150	12528	11423	12398	14886	15294	15292	14474
MEAN	466	438	425	427	419	404	381	400	496	493	493	482
MAX	515	485	442	455	477	436	428	488	548	598	518	523
MIN	433	397	391	404	379	344	305	347	464	460	461	439

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1996, BY WATER YEAR (WY)

MEAN	460	456	440	437	434	437	432	430	478	464	481	480
MAX	466	473	455	448	450	470	483	460	496	493	493	482
(WY)	1996	1995	1995	1995	1995	1995	1995	1995	1996	1996	1996	1996
MIN	454	438	425	427	419	404	381	400	459	434	469	478
(WY)	1995	1996	1996	1996	1996	1996	1996	1996	1995	1995	1995	1995

SUMMARY STATISTICS	FOR 1995 CALENDAR YEAR		FOR 1996 WATER YEAR		WATER YEARS 1995 - 1996	
ANNUAL TOTAL	166669		162448			
ANNUAL MEAN	457		444		452	
HIGHEST ANNUAL MEAN					461	1995
LOWEST ANNUAL MEAN					444	1996
HIGHEST DAILY MEAN	539	Aug 3	598	Jul 18	598	Jul 18 1996
LOWEST DAILY MEAN	391	Dec 17	305	Apr 27	305	Apr 27 1996
ANNUAL SEVEN-DAY MINIMUM	410	Dec 12	361	Apr 25	361	Apr 25 1996
INSTANTANEOUS PEAK FLOW			891	Jul 18	891	Jul 18 1996
INSTANTANEOUS PEAK STAGE			3.97	Jul 18	4.81	Jun 13 1994
10 PERCENT EXCEEDS	485		503		498	
50 PERCENT EXCEEDS	455		437		455	
90 PERCENT EXCEEDS	427		386		409	