US EPA RECORDS CENTER REGION 5
466159

RECEIVED
APR 10 1975
Minnesota Water, Soil & Minerals

HIBBING 11C

Well 11C

Location - NW¼, NW¼, Sec. 31, T57N, R20W.

Year Drilled - 1973. 12013

Contractor - Thein Well Co., Clara City, Minnesota.

| | Thickness (ft.) | Depth (ft.) |
|---|---|---|
| Clay, red to gray | 26 | 26 |
| Sand, fine to coarse | 49 | 75 |
| Clay | 30 | 105 |
| Sand and gravel | 40 | 145 |
| Clay and sand, interbedded | 10 | 155 |

Casing: 12-inch, set to 112 feet.
Screen: 12-inch, set from 112 to 142 feet.
Slot size: No. 50 slot = 0.05 inch.

Pumping characteristics - 43 feet of drawdown after 24 hours of pumping at 400 gallons per minute; 66 feet of drawdown after 48 hours of pumping at 600 gallons per minute. All measurements were made while Well No. 8A was inactive.

57-20-31bbb AAC
elev. 1426 ± 5'
294-B
A-QBAA

LOCATED BY
1 - ☐ Address Verification
2 - ☐ Name on Mailbox
3 - ☐ Lot-Block
4 - ☐ Plat Book
5 - ☑ Info. From Owner
6 - ☐ Info. From Neighbor
7 - ☐ Other
☐ Can't Locate State Why

LOCATED BY

1 - ☐ Address Verification
2 - ☐ Name on Mailbox
3 - ☐ Lot-Block
4 - ☐ Plat Book
5 - ☑ Info. From Owner
6 - ☐ Info. From Neighbor
7 - ☐ Other_____
☐ Can't Locate State Why

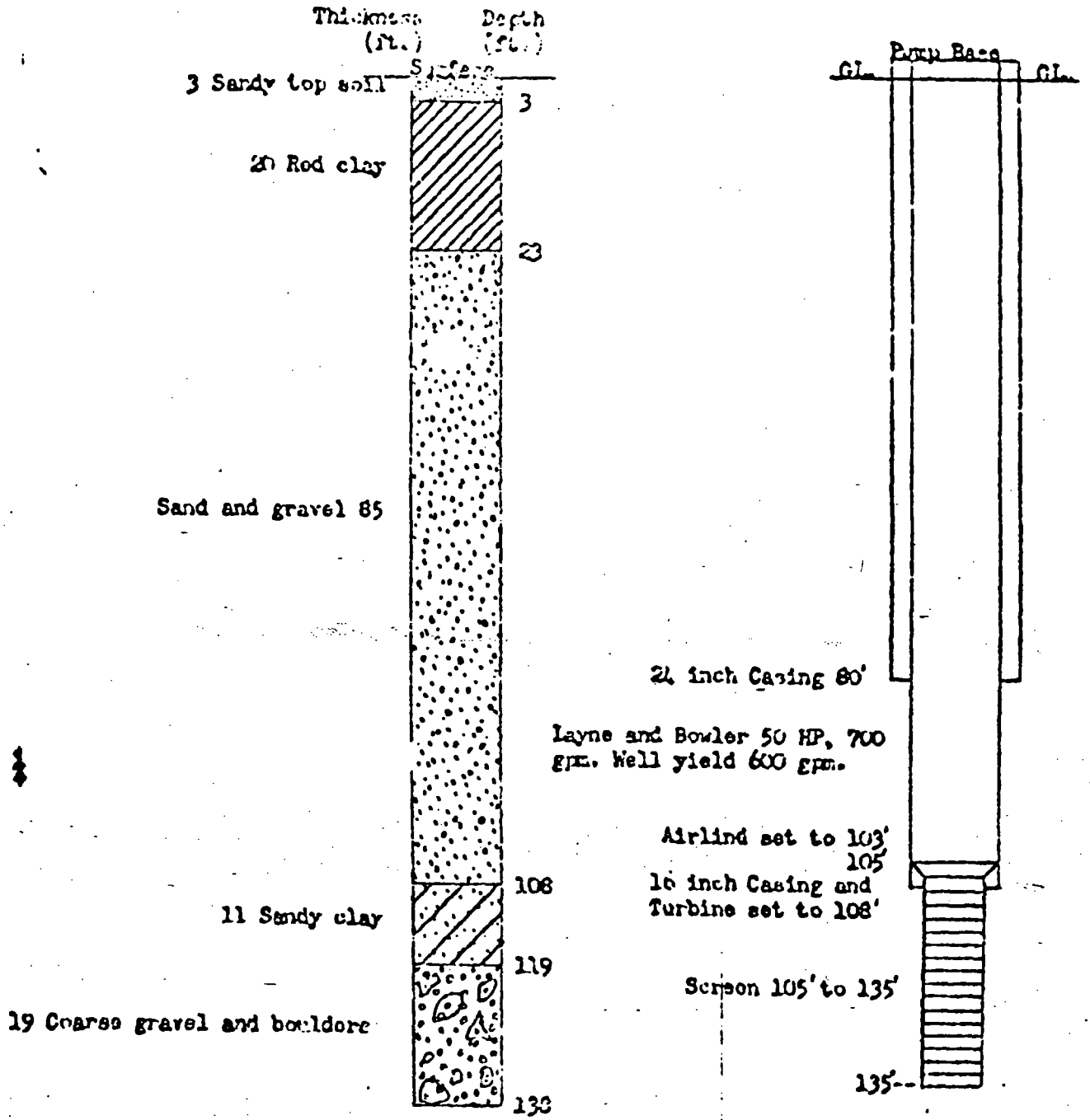
HIBBING (8)

Well No. 8
Elevation 1425 feet
Sea Level Datum

75-2222

RECEIVED
AUG 22 1975
Division of Waters

I



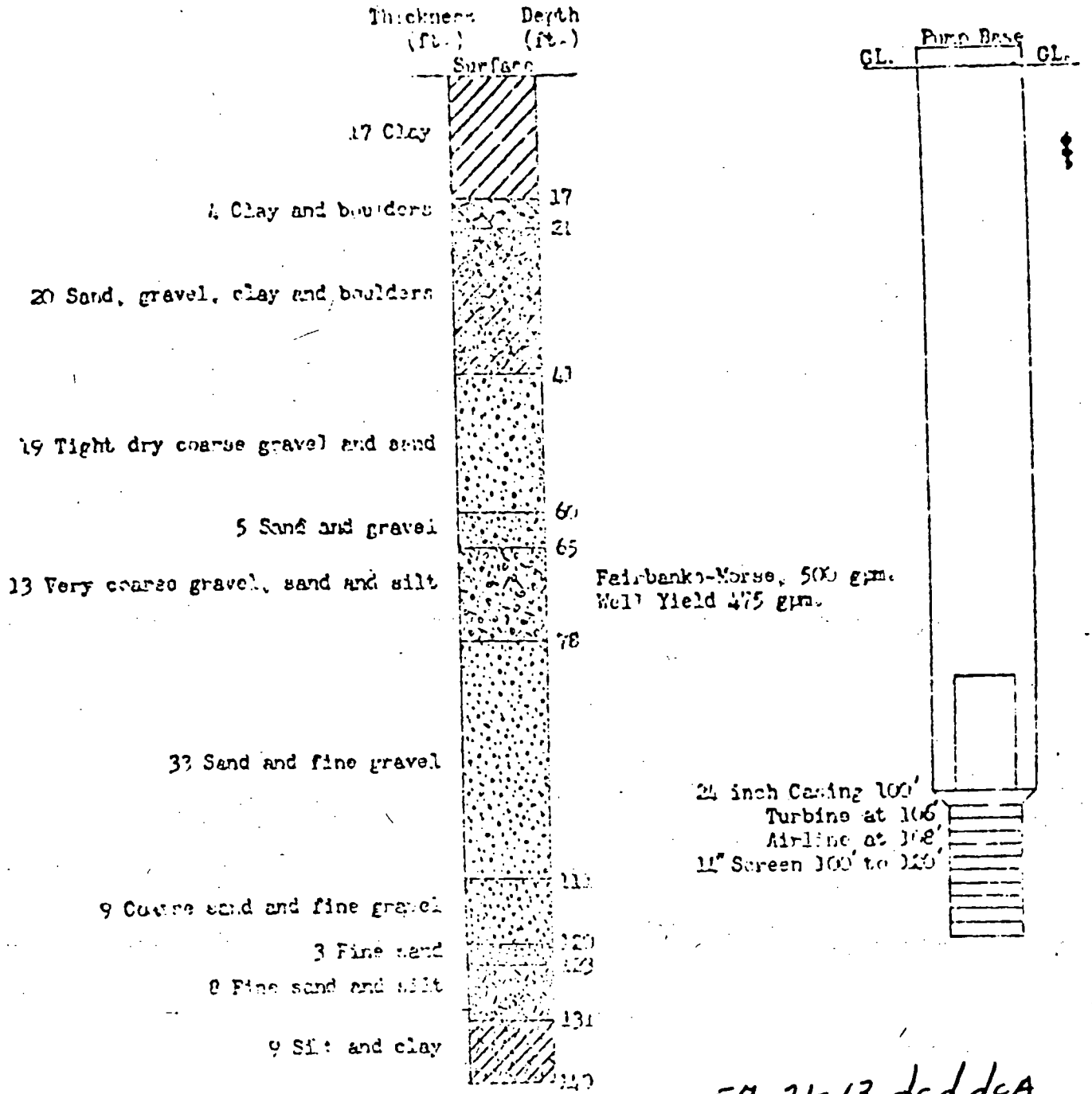

A-QBAA

57-20-31bbAAbc
elev. 1425±5'
294-B

233065
RECEIVED
AUG 22 1975
Division of Waters

# HIBBING (14)

Well No. 14
Elevation 1520 feet
Sea Level datum



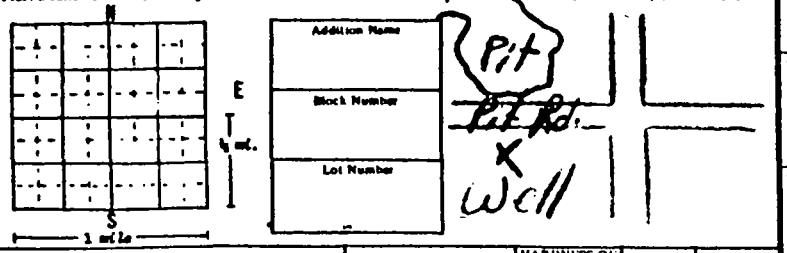

57-21-13 dcd dcA
elev. 1520±5'
294-B
OWNER

Aqu. QBAA

Township Name: St. Louis | Township Number: 57 N | Range Number: 21 W | Section No.: 13 | Fraction: N W

Distance and Direction from Road Intersections or Street Address and City of Well Location: So. End of Scranton Mine Pit

Sketch location of well in section grid with "X". | Sketch map of well location.




| 3. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Rock Clay, Boulders | Gray | | 0 | 18 |
| Coarse sand, gravel | | | 18 | 72 |
| Gray clay | | | 72 | 84 |
| Clay gravel rock | | | 84 | 97 |
| Rock | | | 97 | 110 |
| Blue Clay, Taconite | KLEG | | 110 | 115 |
| Taconite - Broken | | | 115 | 175 |
| Hard Taconite | PxBE | | 175 | 199 |
| Taconite - Soft - hard red | | | 199 | 234 |
| Taconite hard | red dark | | 234 | 266 |
| Taconite hard some soft red ore | | | 266 | 343 |
| Extra hard black ore | | | 343 | 470 |
| Gray rock broken | | | 470 | 491 |
| Brown rock gravel loose | | | 491 | 535 |
| 57-21-13 ADBCAC | | | | |
| elev. 1493±5' | | | | |
| 294-B | | | | |
| | | A- | PxBE | |

LOCATED BY
1 - ☐ Address Verification
2 - ☐ Name on Mailbox
3 - ☐ Lot-Block
4 - ☐ Plat Book
5 - ☑ Info. From Owner
6 - ☐ Info. From Neighbor
7 - ☐ Other
☐ Can't Locate State Why

MINN. GEOLOGICAL SURVEY COPY

1. PROPERTY OWNER'S NAME: City of Hibbing MN.
Address:

4. WELL DEPTH (completed): — ft. | Date of Completion: 12/84

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☐ Air 8☐ Bored 11☐
3☐ Rotary 6☐ Jetted 9☐ Power Auger

6. USE: 1☐ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING: 1☐ Black 4☐ Threaded; 2☐ Galv. 5☐ Welded; 3☐ 6☐
HEIGHT: Above/Below — Surface 2 ft.; Drive Shoe? Yes ☒ No
24 in. to 304 ft. Weight Std lbs./ft.
18 in. to 500 ft. Weight Std lbs./ft.
in. to 460 ft. Weight Std lbs./ft.
HOLE DIAM: in. to ft.; in. to ft.; in. to ft.

8. SCREEN: Make N.A. | Or open hole from 460 ft. to 535 ft.
Type: Dia.:
Slot/Gauge: Length:
Set between ft. and ft.; ft. and ft.; ft. and ft.
FITTINGS:

9. STATIC WATER LEVEL: 251 ft. ☐ below land surface ☐ above | Date Measured 12-84

10. PUMPING LEVEL (below land surface): 360 ft. after 6 hrs. pumping 1000 g.p.m.; ft. after hrs. pumping g.p.m.

11. WELL HEAD COMPLETION: 1☐ Pitless adapter 3☐ Basement offset ☒ At least 12" above grade

12. Well grouted? ☒ Yes ☐ No | Cu. Yds. 35
1☒ Neat Cement 2☐ Bentonite 3☐
Depth: from 0 ft. to 470 ft.; from ft. to ft.

13. Nearest sources of possible contamination: ft. direction type
Well disinfected upon completion? Yes ☐ No ☒

14. PUMP: Date Installed 12-84 ☐ Not Installed
Manufacturer's Name: Layne & Bowler
Model Number: HP 300 Volts 480
Length of drop pipe: 280 ft. capacity 1000 g.p.m.
Material of drop pipe: Steel
Type: 1☐ Submersible 3☒ L.S. Turbine 5☐ Reciprocating; 2☐ Jet 4☐ Centrifugal 6☐

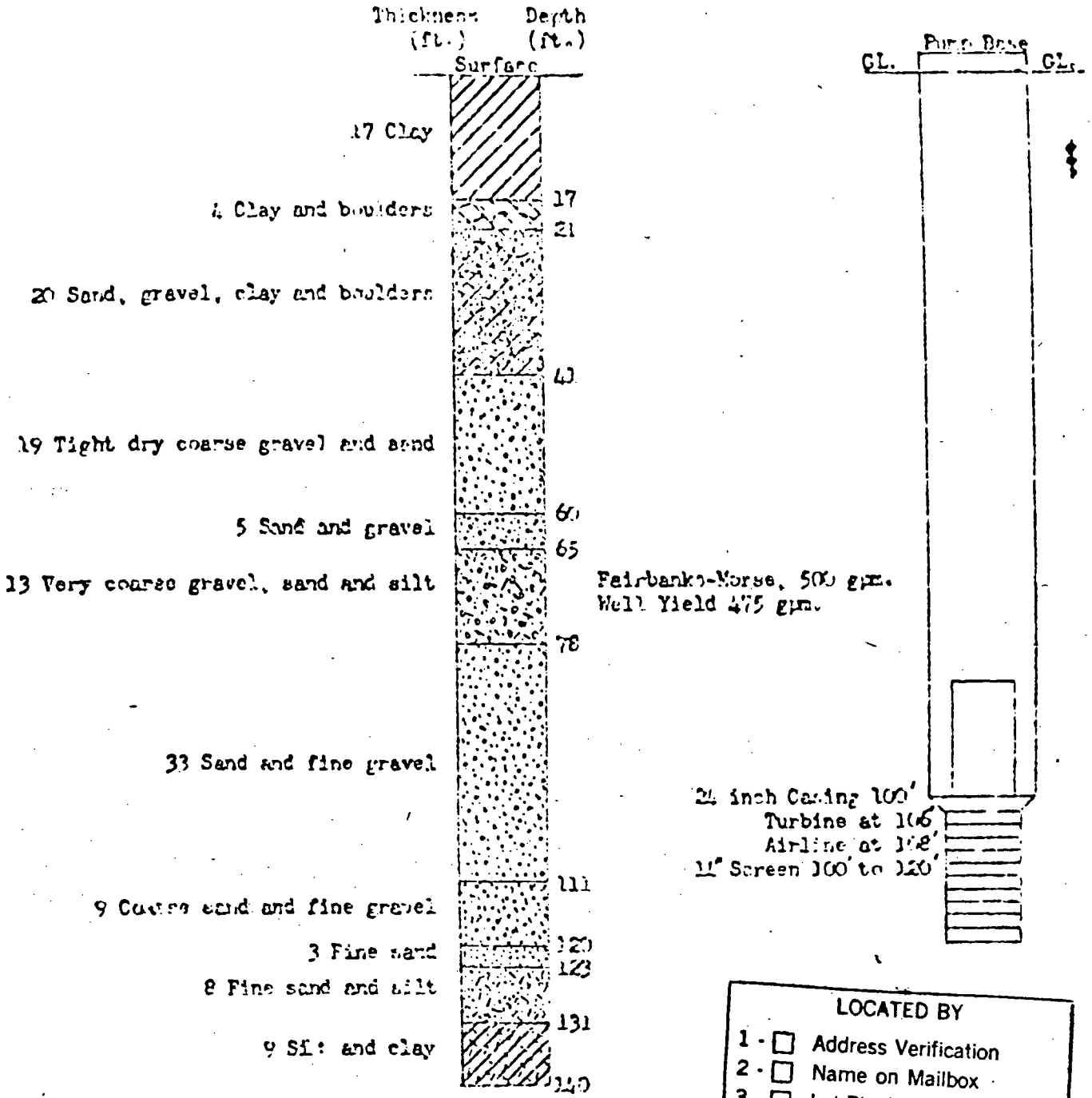
16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Layne Minn. Co. 27010
Licensed Business Name: Layne Minn. Co. | License No.: 27010
Address: 2147 Q.A. St. NE Mpls.
Signed: Joseph S. Sparks | Date:
Authorized Representative
Bill McLaughlin | Date 1-31-85
Name of Driller

8/74 30M
7/76 30M

RECEIVED
AUG 22 1975
Division of Waters

# HIBBING (14)

Well No. 14
Elevation 1520 feet
Sea level datum




LOCATED BY
1 - ☐ Address Verification
2 - ☐ Name on Mailbox
3 - ☐ Lot-Block
4 - ☐ Plat Book
5 - ☑ Info. From Owner
6 - ☐ Info. From Neighbor
7 - ☐ Other _____
☐ Can't Locate State Why

A-QBAA

57-21-13 dcddcA
elev. 1520±5'
294-B

STATE OF MINNESOTA — DEPARTMENT OF HEALTH

# WATER WELL RECORD

Minnesota Statutes 156A.01-.08

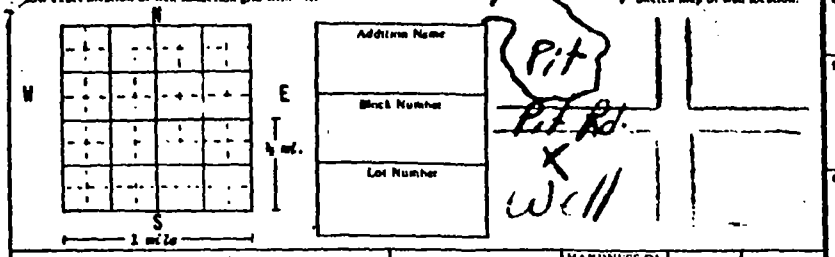
MINNESOTA UNIQUE WELL NO. for Water Sample: 147463

| County | Township Number | Range Number | Section No. | Fractions |
|---|---|---|---|---|
| | 57 N or S | 21 E or W | 13 | |

Direction from Road Intersections or Street Address and City of Well Location: End of Scenic Mine Pit

Approximate location of well location given with "X"

Sketch map of well location.




| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Rock Chips & Clay | Gray | | 0 | 18 |
| Coarse sand & gravel | | | 18 | 72 |
| Gray clay | | | 72 | 84 |
| Clay gray rock | | | 84 | 97 |
| Rock | | | 97 | 110 |
| Blue Clay, Taconite | | | 110 | 115 |
| Taconite - Rock | | | 115 | 175 |
| Hard Taconite | | | 175 | 199 |
| Taconite - Soft - hard red | | | 199 | 234 |
| Taconite hard | red dark | | 234 | 266 |
| Taconite hard some soft red | | | 266 | 345 |
| Extra hard black rock | | | 345 | 470 |
| Gray rock broken | | | 470 | 491 |
| Extra hard gray rock | | | 491 | 535 |

57-21-13 ADBCAC

Aqu. PEBI elev. 1493±5'

294-B

LOCATED BY
1 - ☐ Address Verification
2 - ☐ Name on Mailbox
3 - ☐ Lot-Block
4 - ☐ Plat Book
5 - ☑ Info. From Owner
6 - ☐ Info. From Neighbor
7 - ☐ Other _____
☐ Can't Locate State Why

MINN. GEOLOGICAL SURVEY COPY

18. REMARKS, ELEVATION, SOURCE OF DATA, etc. (Use back or second sheet, if needed)

3. PROPERTY OWNER'S NAME: City of Hibbing Minn.

4. WELL DEPTH (completed): — ft. Date of Completion: 12/84

5. ☐1 Cable tool ☐4 Reverse ☐7 Driven ☐10 Dug ☐2 Hollow rod ☐5 Air ☐8 Bored ☐11 _____ ☒3 Rotary ☐6 Jetted ☐9 Power Auger

6. USE: ☐1 Domestic ☒4 Public Supply ☐7 Industry ☐2 Irrigation ☐5 Municipal ☐8 Commercial ☐3 Test Well ☐6 Air Conditioning ☐9

7. CASING: ☐1 Black ☐4 Threaded ☐2 Galv. ☒5 Welded ☐3 ☐6 — HEIGHT: Above/Below Surface 2 ft. Drive Shoe? Yes ☒ No ☐

| Diameter | From | To | Weight | HOLE DIAM |
|---|---|---|---|---|
| 24 in. | to 384 ft. | | Std lbs./ft. | in. to ft. |
| 16 in. | to 460 ft. | | Std lbs./ft. | in. to ft. |
| in. | to 460 ft. | | Std lbs./ft. | in. to ft. |

8. SCREEN: Make N.A. Type PEBI Dia. _____ Slot/Gauze _____ Length _____ Set between _____ ft. and _____ ft. FITTINGS: Or open hole from 460 ft. to 535 ft.

9. STATIC WATER LEVEL: 351 ft. ☐ below land surface ☐ above Date Measured 12-84

10. PUMPING LEVEL (below land surface): 351 ft. after 1 hrs. pumping 1000 g.p.m.

11. WELL HEAD COMPLETION: ☐1 Pitless adapter ☐2 Basement offset ☒3 At least 12" above grade

12. Well grouted? ☒ Yes ☐ No Cu. Yds. 35

☒1 Neat Cement ☐2 Bentonite ☐3 _____

Depth: from 0 ft. to 470 ft.

13. Nearest sources of possible contamination: _____ feet _____ direction _____ type

Well disinfected upon completion? Yes ☐ No ☒

14. PUMP: Date Installed 12-84 ☐ Not Installed

Manufacturer's Name: Layne & Bowler

Model Number _____ HP 300 Volts 460

Length of drop pipe 380 ft. capacity 1000 g.p.m.

Material of drop pipe: Steel

Type: ☐1 Submersible ☒2 L.S. Turbine ☐5 Reciprocating ☐2 Jet ☐4 Centrifugal ☐6 _____

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Layne Minn. Co. 27010
Licensed Business Name — License No.

Address 2147 [illegible]

Signed Joseph S. [illegible] Authorized Representative — Date

Bill [illegible] Name of Driller — Date 1-31-85

5/74 30M
7/76 30M

Test hole MR. JACK ....
Cuttings Davey & McKee Consultants
0-120 Drift
120-200 Cretaceous
200-525 Highly Oxidized Fe ++ Am. 75-2222

# PUBLIC UTILITIES COMMISSION

CITY OF HIBBING
HIBBING, MINNESOTA 55746

R. K. STIMAC
SUPERINTENDENT

July 24, 1975

PHONE (218) 263-7515

RECEIVED
JUL 28 1975
Division of Waters, Soils & Minerals

Howard G. Grant, Hydrologist
Hydrologic Services Unit, DNR
Centennial Office Building
St. Paul, Minnesota 55155

Dear Mr. Grant:

We are applying for one permit to include all wells in our system. The following wells are listed with their present permit numbers. The five dollar per well has been submitted at the beginning of the year. Include the application for the two new wells PA 75-2222.

Now 75-2222

| Uniq. # | Existing Wells | Permit Nos. | PA | Legal Description of Location |
|---|---|---|---|---|
| 233052 | 1-A Not perf well | 690046 | PA 66317 | NW, NW, Sec. 7, 56-20-7 el. 294-C |
| 226635 | 1-B | 690047 | PA 18 | T 56 N, R 20 W. Sec 7 el. 294-C |
| 54 | 1-C | | " | T 56 N, R 20 W. |
| 55 | 2-A | 690048 | PA 19 | T 56 N, R 20 W. Sec 7 el. 294-C |
| ~~56~~ | ~~5~~ | ~~690049~~ | ~~PA 20~~ | ~~NE, NE, Sec. 1, T 56 N, R 21 W. el.~~ |
| 226634 | 7 | 690050 | PA 21 | NW corner, Sec. 6, T 56 N, R 20 W. el. |
| 233058 | 8 | 690051 | PA " 22 | NW, NW, Sec. 31, T 57 N, R 20 W. el. |
| ~~59~~ | ~~9~~ | ~~690052~~ | ~~PA 23~~ | ~~NE, NE, Sec. 1, T 56 N, R 21 W. el.~~ |
| " 60 | 11-B Not Active | 690053 | PA 24 | NW, NW, Sec. 31, T 57 N, R 20 W. el. |
| 61 | 11-C | | " | NW, NW, Sec. 31, T 57 N, R 20 W. el. |
| 62 | 12 | 690054 | PA 25 | SW, SW, Sec. 31, T 57 N, R 20 W. el. |
| 63 | 12-A Not Active | 690055 | PA " 26 | SW, SW, Sec. 31, T 57 N, R 20 W. el. |
| 64 | 13 | 690056 | PA 27 | SW, SW, Sec. 7, T 57 N, R 20 W. |
| " ~~65~~ | ~~14~~ | ~~690057~~ | ~~PA " 28~~ | ~~SW, SW, Sec. 13, T 57 N, R 21 W.~~ |
| 66 | 15 | 690058 | PA 29 | NW, NW, Sec. 4, T 57 N, R 20 W. el. |
| ~~226637~~ | ~~Scranton~~ | ~~690059~~ | ~~PA 66330~~ | ~~NW, NW, Sec. 12, T 57 N, R 21 W.~~ |

1-C and 11-C permits are needed.

If there is any further information required, please contact me.

Very truly yours,

PUBLIC UTILITIES COMMISSION

Richard K. Stimac

Richard K. Stimac, Superintendent

RKS:sr
Enc

CITY OF HIBBING (ENERGY WELL)

[illegible] - Elevation 1880 [illegible]

[illegible] - SW¼, SE¼, Sec.-13, T-57N, R-21W.

[illegible] - 1956. Municipal Swimming Pool Water Tank.

Contractor - Tri-State Drilling Co.

| | Thickness (ft.) | Depth (ft.) |
|---|---|---|
| Clay | 17 | 17 |
| Clay and boulders | 4 | 21 |
| Sand, gravel, clay and boulders | 20 | 41 |
| Tight dry coarse gravel and sand | 19 | 60 |
| Sand and gravel | 5 | 65 |
| Very coarse gravel, sand and silt | 13 | 78 |
| Sand and fine gravel | 33 | 111 |
| Coarse sand and fine gravel | 9 | 120 |
| Fine sand | 3 | 123 |
| Fine sand and silt | 8 | 131 |
| Silt and clay | 9 | 140 |

Casing - 24 inch set from pump base to 100 feet.

Screen - 14 inch Everdur wire wound screen set from 100 to 120 feet with 12 inch overlap pipe from 84 to 100 feet. Gravel packed.

Slot size - No. 70 slot = 0.70 inch.

Pump - Fairbanks-Morse, 500 gpm turbine set to 106 feet. Airline set to 108 feet.

Well yield - 475 gpm.

Well No. 8A - Elevation 1425 feet mean sea level datum.

Location - NW¼, NW¼, Sec.-31, T-57N, R-20W.

Year drilled - 1944.

Contractor - Layne-Western Co.

| | Thickness (ft.) | Depth (ft.) |
|---|---|---|
| Sandy top soil | 3 | 3 |
| Red clay | 20 | 23 |
| Sand and gravel | 85 | 108 |
| Sandy clay | 11 | 119 |
| Coarse gravel and boulders | 19 | 138 |

Casing - 24 inch set from pump base to 80 feet.
16 inch set from pump base to 108 feet.

Screen - 16 inch bronze shutter screen set from 105 feet to 135 feet. Gravel pack.

Slot size - No. 5 shutter = 0.105 inch.

Pump - Layne and Bowler 50 HP, 700 gpm. Turbine set to 108 feet. Airline set to 104 feet.

Redevelopment - Cleaned with chemicals and redeveloped with compressed air during March and April, 1972. Airline reinstalled to depth of 104 feet is inoperative because of leakage through small holes in the copper tubing. Water level measurements can be made with an electric tape through vent hole on the west side of pump base.

Specific Capacity Data

| Date | Static Water Level (ft) | Drawdown (ft) | Pumping Rate (gpm) | Specific Capacity (gpm/ft of drawdown) |
|---|---|---|---|---|
| 1944 | 20 | 55 | 600 | 11 |
| 1970 | 6.5 | 105 | 626 | 5.7 |
| 1972 | 8.75 | 89 | 566 | 6.3 |

June, 1972

Bruce A. Liesch
Consulting Hydrologist
Wayzata, Minnesota

CITY OF HIBBING

[illegible] - [illegible] [illegible]

[illegible]

[illegible] - 1951

[illegible] - Layne-Minnesota Co.

| | Thickness (ft.) | Depth (ft.) |
|---|---|---|
| Peat | 4½ | 4½ |
| Clay | 15½ | 20 |
| Coarse gravel | 9 | 29 |
| Sand and gravel | 7 | 36 |
| Clay, "Hardpan" | 3 | 39 |
| Coarse sand and gravel, clay streaks | 5 | 44 |
| Coarse gravel and boulders | 5 | 49 |
| Coarse gravel and sand | 17 | 66 |
| Clay "Hardpan" | 2 | 68 |
| Gravel and sand, clay streaks | 15 | 83 |
| Coarse sand and gravel | 13 | 96 |
| Medium sand, clean | 11 | 107 |
| Coarse gravel and boulders | 5 | 112 |
| Blue clay | 4 | 116 |

Casing - 34 inch set from pump base to 30 feet.
16 inch set from pump base to 82 feet.

Screen- 16 inch Everdur shutter type screen set from 82 to 112 feet.

Slot size - No. 5 shutter = 0.105 inches.

Pump - Fairbanks-Morse, 40 HP, 600 gpm turbine set to 94 feet. Airline set to 94 feet.

Well yield- 550 gpm.

CITY OF HIBBING

No. 3A - Elevation 1412 from [illegible] datum.

Location - NW¼, NE¼, Sec.-1, T-57, [illegible].

Year Drilled - 1934.

Contractor - Public Utilities Commission.

| | Thickness (ft.) | Depth (ft.) |
|---|---|---|
| Glacial till, rocks, boulders, sand and gravel | 40 | 40 |
| Sand, gravel and clay | 5 | 45 |
| Sand and gravel | 10 | 55 |
| Sand | 5 | 60 |
| "Quicksand" | 15 | 75 |
| Sand | 20 | 95 |
| Sand and gravel | 5 | 100 |
| Sand | 10 | 110 |
| Sand and gravel, little clay | 5 | 115 |
| Sand, little clay | 10 | 125 |
| "Quicksand" | 10 | 135 |
| Sand | 5 | 140 |
| Gravel | 18 | 158 |

Casing - 24 inch set from pump base to 81 feet.
24 inch set from 105 feet to 113 feet.
18 inch set from 105 feet to 121 feet.
16 inch set from pump base to 82 feet.
10 inch set from 104 feet to 120 feet.

Screens- 24 inch Armcoiron shutter type screen set from 81 to 105 feet.
18 inch Armcoiron shutter type screen set from 121 feet to 145 feet.
12 inch Silican Bronze wire wound screen set from 120 to 145 feet.

Slot size- 12 inch screen - No. 100 slot - 0.100 inch.

Note - Well No. 3A was reconstructed during 1960 by installing the 16 inch pipe, 10 inch pipe and 12 inch screen inside the old casings and screens and placing gravel in the annular space.

Pump - Layne-Bowler, 60 HP, 900 gpm. turbine set to 87 feet. Airline set to 83 feet.

Well yield - 750 gpm.

City of Hibbing

7 [illegible]

[illegible] - [illegible]-Bowler Co.

| | Thickness (ft.) | Depth (ft.) |
|---|---|---|
| Loam | 4 | 4 |
| Clay | 9 | 13 |
| Gravel and boulders | 12 | 25 |
| Sand and gravel | 12 | 37 |
| Sand | 8 | 45 |
| Gravel | 9 | 54 |
| "Hardpan" | 2 | 56 |
| Sand and gravel | 61 | 122 |

Casing - 24 inch set from pump base to 31 feet.

12 inch set from pump base to 94 feet.

Screens - 24 inch Armco iron shutter screen set from 31 feet to 86 feet.
18 inch Armco iron shutter screen set from 86 feet to 90 feet.
14 inch Armco iron shutter screen set from 90 feet to 117 feet.
12 inch Everdur wire wound screen set from 94 to 122 feet.

Slot size - 12 inch screen - No. 100 slot = 0.100 inch.

Note - Well No. 7 was reconstructed during 1959 by installing the 12 inch pipe and screen inside the old casing and screens and placing gravel in the annular space.

Pump - Jacuzzi, 20 HP, 400 gpm. submersible set to 97 feet. Airline set to 97 feet.

Well yield - 195 gpm

Specific Capacity Data

| Date | Static Water Level (ft) | Drawdown (ft) | Pumping Rate(gpm) | Specific Capacity (gpm/ft of drawdown) |
|---|---|---|---|---|
| 1959 | 42 | 46 | 430 | 9 |
| 1969 | 41 | 30 | 250 est. | 8 |
| 1972 | 41 | 45 | 108 | 2.4 |
| 1973 | 46 | 38 | 195 | 5 |

Bruce A. Liesch
Consulting Hydrologist
Wayzata, Minnesota

August, 1971

City of Hibbing

# FIELD REPORT OF COMPLETED WELL

Name of Job- City of Hibbing - Well #3

Address - Hibbing, Minnesota

Date Started-Started Drilling Aug. 3, 1944

Date Completed-December 6, 1944

No. of Days - Approximately 4 months

## LOG OF WELL

| From | To | Material | From | To | Material |
|---|---|---|---|---|---|
| 0' | 6" | Sand | 60' | 62' | Hard Clay |
| 6' | 17' | Clay | 62' | 68' | Sand |
| 17' | 25' | Sand | 68' | 71' | Hard Clay-Boulders |
| 25' | 39' | Sandy Clay-Boulders | 71' | 80' | Sand |
| 39' | 41' | Hard Clay -Gravel | 80' | 84' | Hard Clay |
| 41' | 60' | Coarse Sand & Gravel | 84' | 95' | Sandy Clay - Gravel |

(Formation cont'd on other side)

Kind of plug in well - Cement

Static Water level - 19' - 6"

Depth of well - ground level to top of plug - 182'

## MATERIAL LEFT IN WELL

| | Opening | Length-Feet | Diameter-inches | Material |
|---|---|---|---|---|
| Screen | #5 (6.105" slotted) | 30' | 16" | Bronze |
| Inner Casing | | 155' | 16" | Steel |
| Outer Casing | | 38' | 24") | |
| | | 10' | 34") | Steel |

Size of gravel used 1/8" - Quarter 1/4" in Amount - Approximately 82 Yards

Was outer casing cemented - Yes

Amount - Approximately 25 Bags

## TEST OF WELL

| Hours Pumped From - To | Yield Gal. per Min. | Water Level Ft. below surface | Remarks |
|---|---|---|---|
| Dec. 4-3 P.M. to Dec. 5-4 P.M. | 560 | 87' | |

Did well clear up - Yes

Time to clear - Approximately 1/2 hours

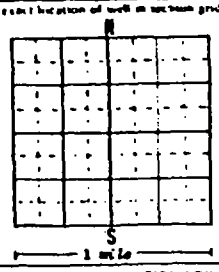
Date - December 7, 1944

Driller - Howard K. Twilin

| Township Name | Township Number | Range Number | Section No. | Location |
|---|---|---|---|---|
| | 57 N or S | 21 E or W | 26 | NW SW |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well on section grid with "X"




Sketch map of well location

Addition Name

Block Number

Lot Number

| 3. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | red | | 0 | 13 |
| Hardpan | | | 13 | 65 |
| Sand & Gravel | | | 65 | 69 |

Use a second sheet, if needed

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY

162645

2. PROPERTY OWNER'S NAME

Address: Hugh Vidovac
Hibbing, Minn. 55746

4. WELL DEPTH (completed): 69' ft. Date of Completion: 7/23/79

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 3☒ Air 8☐ Bored 11☐
☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING
1☒ Black 4☒ Threaded
2☐ Galv. 5☒ Welded
3☐ Plastic 6☐
HEIGHT: Above/Below Surface 1 ft.
Drive Shoe? Yes ☒ No ☐
6 in. to 69 ft. Weight 20 lbs./ft.
in. to ft. Weight lbs./ft.
in. to ft. Weight lbs./ft.
HOLE DIAM.
in. to ft.
in. to ft.
in. to ft.

8. SCREEN
Make
Or open hole from ft. to ft.
Type Dia.
Slot/Gauze Length
FITTINGS:
Set between ft. and ft.
ft. and ft.
ft. and ft.

9. STATIC WATER LEVEL
45 ft. below ☒ land surface ☐ above Date Measured 7/23/79

10. PUMPING LEVEL (below land surface)
ft. after hrs. pumping g.p.m.
ft. after hrs. pumping g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter 2☐ Basement offset 3☐ At least 12" above grade

12. Well grouted?
☐ Yes ☒ No Cu. Yds.
1☐ Neat Cement 2☐ Bentonite 3☐
Depth: from ft. to ft.
from ft. to ft.

13. Nearest sources of possible contamination
feet direction type
Well disinfected upon completion? Yes ☐ No ☒

14. PUMP
Date Installed
☐ Not Installed
Manufacturer's Name
Model Number HP Volts
Length of drop pipe ft. capacity g.p.m.
Material of drop pipe
Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

PETERSEN WELL DRILLING INC. #69483

Address Parkville, Minn. 55773

Signed B Parker Date 8/31/79
Authorized Representative

Dale Olson Date 7/23/79
Name of Driller

5/74 30M
7/76 30M
7/78 30M

| County Name | Township Number | Range Number | Section No. | Direction |
|---|---|---|---|---|
| Unorg | 57N | 20W | 5 | SE. SW. NW. NE. |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well in section grid with "X." Sketch map of well location.

N W E S ½ mi. 1 mile

Addition Name

Block Number

Lot Number

| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | brown | | 0 | 13 |
| Hardpan | | | 13 | 68 |
| Clay | gray | | 68 | 76 |
| Sand & gravel | | | 76 | 79 |
| 30 GPM | | | | |
| 57-20-5 ddccbb | | | | |
| el 1481.5' | | | | |
| 294-B | | | | |
| Aqu. Q BAA | | | | |

LOCATED BY

1 - ☐ Address Verification
2 - ☐ Name on Mailbox
3 - ☐ Lot-Block
4 - ☐ Plat Book
5 - ☐ Info. From Owner
6 - ☐ Info. From Neighbor
7 - ☒ Other Sun well
☐ Can't Locate State Why

C3V33B
C3U B 1/4

15. REMARKS, ELEVATION OF TOP OF CASING (use second sheet, if needed)

MINN. GEOLOGICAL SURVEY COPY

3. PROPERTY OWNER'S NAME: Sunny Hill Distributing
Address: E. 5th Ave. Hibbing, Minn 55746

4. WELL DEPTH (completed): 79 ft. Date of Completion: 9/13/78

5. 1☐ Cable tool 2☐ Jetted 3☐ Driven 4☐ Dug 5☐ Hollow rod 6☒ Air 7☐ Bored 8☐ _____ 9☒ Rotary 10☐ Jetted 11☐ Power Auger

6. USE: 1☒ Domestic 2☐ Public Supply 3☐ Industry 4☐ Irrigation 5☐ Municipal 6☐ Commercial 7☐ Test Well 8☐ Air Conditioning 9☐

7. CASING: 1☒ Black 2☒ Threaded 3☐ Galv. 4☐ Welded 5☐ 6☐ Height: Above/Below Surface 1 ft. Drive Shoe? Yes ☒ No ☐
6 in. to 79 ft. Weight 20 lbs./ft.
_____ in. to _____ ft. Weight _____ lbs./ft.
_____ in. to _____ ft. Weight _____ lbs./ft.
Hole Diam: _____ in. to _____ ft.; _____ in. to _____ ft.; _____ in. to _____ ft.

8. SCREEN: Make _____ Open hole from _____ ft. to _____ ft.
Type _____ Dia. _____
Slot/Gauge _____ Length _____ Fittings:
Set between _____ ft. and _____ ft.
_____ ft. and _____ ft.
_____ ft. and _____ ft.

9. STATIC WATER LEVEL: 30 ft. ☒ below surface ☐ above Date Measured 9/13/78

10. PUMPING LEVEL (below land surface): _____ ft. after _____ hrs. pumping _____ g.p.m.
_____ ft. after _____ hrs. pumping _____ g.p.m.

11. WELL HEAD COMPLETION: 1☐ Pitless adapter 2☐ Basement offset 3☐ At least 12" above grade

12. Well grouted? ☐ Yes ☐ No Ck. Yes _____
1☐ Neat Cement 2☐ Bentonite 3☐ _____
Depth: from _____ ft. to _____ ft.
from _____ ft. to _____ ft.

13. Nearest sources of possible contamination
_____ feet _____ direction _____ type
Well disinfected upon completion? Yes ☒ No ☐

14. PUMP: Date Installed _____ ☐ Not Installed
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of drop pipe _____ ft. capacity _____ g.p.m.
Material of drop pipe _____
Type: 1☐ Submersible 2☐ L. S. Turbine 3☐ Reciprocating 4☐ Jet 5☐ Centrifugal 6☐ _____

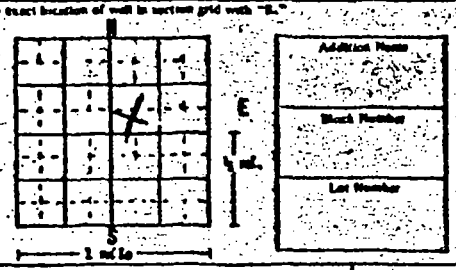
16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Licensee Business Name: PETERSEN WELL DRILLING, INC. License No. # 6983
Address: Parkville, Minn 55773
Signed: [signature] Date: 10/24/78
Dale Olson Date: 9/13/78
Name of Driller

MINN. GEOLOGICAL SURVEY COPY

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| STUNT 2 | 57 N | 20 W | 9 | SW NE |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well in section grid with "X." Sketch map of well location.




P. 3634
141-0020-01052

| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | Brown | Hard | 0 | 20 |
| Clay - Sand | Brown | Varied | 20 | 30 |
| Sand | Gray | Soft | 30 | 42 |
| 57-20-9 | aaaaac | | | |
| ll 1457 ±5' | | | | |
| 294-B | | | | |
| A-QBAA | | | | |

Use a second sheet, if needed.

LOCATED BY
1 - ☒ Address Verification
2 - ☒ Name on Mailbox
3 - ☐ Lot-Block
4 - ☐ Plat Book
5 - ☐ Info. From Owner
6 - ☐ Info. From Neighbor
7 - ☐ Other
☐ Can't Locate State Why

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

RECEIVED
AUG 8 1978
MINN. GEOLOGICAL SURVEY

MINN. GEOLOGICAL SURVEY COPY

1. PROPERTY OWNER'S NAME: Laura Eliason
Address: Star Rt 2 Box 15
Hibbing, MN 55746

4. WELL DEPTH (completed): 42 ft. Date of Completion: 6-13-78

5. 1☐ Cable tool 3☐ Reverse 5☐ Driven 7☐ Dug
2☐ Hollow rod 4☐ Air 6☐ Bored 8☐
3☒ Rotary 5☐ Jetted 6☐ Power Auger

6. USE
1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING
1☒ Black 3☒ Threaded HEIGHT: Above/Below Surface
2☐ Galv. 4☐ Welded Surface 1 ft.
3☐ 4☐ Drive Shoe? Yes ___ No X
5 in. to 38 ft. Weight 14.81 lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
HOLE DIAM ___ in. to ___ ft.

8. SCREEN
Make Johnson Or open hole from ___ ft. to ___ ft.
Type Stainless Steel Dia. 2"
Slot/Gauze .012 Length 4'
Set between 38 ft. and 42 ft.
___ ft. and ___ ft.
___ ft. and ___ ft.
FITTINGS:

9. STATIC WATER LEVEL
15 ft. ☒ below land surface ☐ above Date Measured 6-13-78

10. PUMPING LEVEL (below land surface)
20 ft. after 1 hrs. pumping 20 g.p.m.
___ ft. after ___ hrs. pumping ___ g.p.m.

11. WELL HEAD COMPLETION
☒ Pitless adapter 2☐ Basement offset 3☐ At least 12" above grade

12. Well grouted?
☐ Yes ☒ No Ca. Yd.
1☐ Neat Cement 2☐ Bentonite 3☐
Depth: from ___ ft. to ___ ft.
from ___ ft. to ___ ft.

13. Nearest sources of possible contamination
10'+ feet NE direction Septic type
Well disinfected upon completion? Yes ☒ No ☐

14. PUMP
Date Installed 6-16-78
☐ Not Installed
Manufacturer's Name Reda
Model Number 9M9P051 HP ½ Volts 230
Length of drop pipe 25 ft. capacity 9 g.p.m.
Material of drop pipe PVC
Type: 1☒ Submersible 2☐ L. S. Turbine 3☐ Reciprocating
4☐ Jet 5☐ Centrifugal 6☐

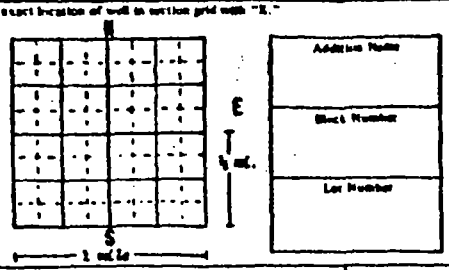
16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
NORTH SIDE DRILLING INC 48038
Licensee Business Name License No.
Address Box 23 Tace, MN
Signature Date 8/14/78
Signature of Driller Mike Evsted Date 6-13-78

8/78 XRG
7/76 XRG

Township Name | Township Number: 57 N | Range Number: 20 W | Section No.: 9 | Fraction: SW ¼ NE ¼

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well in section grid with "X." Sketch map of well location.




P. 3634

141-0020-01055

| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | Red | | 0 | 18 |
| Hardpan & Boulders | Brn. | | 18 | 65 |
| Hardpan & Boulders | Grey | | 65 | 95 |
| Sand | Brown | | 85 | 105 |
| Hardpan & Gravel | Brown | | 105 | 108 |
| 7-8 GPM | | | | |
| 57-20-9 acadc | | | | |
| el 1463 ±5' | | | | |
| 294-B | | | | |
| A-QBAA | | | | |

Use a second sheet, if needed.

LOCATED BY
1 - ☐ Address Verification
2 - ☐ Name on Mailbox
3 - ☐ Lot-Block
4 - ☐ Plat Book
5 - ☒ Info. From Owner
6 - ☐ Info. From Neighbor
7 - ☐ Other
☐ Can't Locate State Why

15. REMARKS, SOURCE OF DATA, etc.

RECEIVED
AUG 03 1981
Minn. Dept. of Health
Div. of Environmental Health

MINN. GEOLOGICAL SURVEY COPY

189481

3. PROPERTY OWNER'S NAME: Urho Elaison
Address: Birch Lane Trailer Court-Lot #61
Hibbing, Minnesota 55746

4. WELL DEPTH (completed): 108 ft. | Date of Completion: 6-25-81

5. ☐ Cable tool ☐ Reverse ☐ Driven ☐ Dug ☐ Hollow rod ☒ Air ☐ Bored ☐ ☐ Rotary ☐ Jetted ☐ Power Auger

6. USE: ☒ Domestic ☐ Public Supply ☐ Industry ☐ Irrigation ☐ Municipal ☐ Commercial ☐ Test Well ☐ Air Conditioning ☐

7. CASING: ☒ Black ☐ Threaded ☐ Galv. ☒ Welded ☐ Plastic ☐ HEIGHT: Above/Below Surface 1 ft. Drive Shoe? Yes ☒ No ☐
6 in. to 100 ft. Weight 20 lbs./ft.
HOLE DIAM: ___ in. to ___ ft.

8. SCREEN: Make Johnson SS | Or open hole from ___ ft. to ___ ft.
Type 4" pipe size Dia. 4"
Slot/Gauge 20 & 12 Length
Set between 100 ft. and 104 ft.
104 ft. and 108 ft.
FITTINGS: 1 Jasewell seal

9. STATIC WATER LEVEL: ___ ft. ☐ below land surface ☐ above | Date Measured

10. PUMPING LEVEL (below land surface): ___ ft. after ___ hrs. pumping ___ g.p.m.

11. WELL HEAD COMPLETION: ☐ Pitless adapter ☐ Basement offset ☐ At least 12" above grade

12. Well grouted? ☐ Yes ☒ No | Cu. Yds.
☐ Neat Cement ☐ Bentonite ☐
Depth: from ___ ft. to ___ ft.

13. Nearest sources of possible contamination: ___ feet ___ direction ___ type
Well disinfected upon completion? Yes ☒ No ☐

14. PUMP: Date Installed ___ ☐ Not Installed
Manufacturer's Name
Model Number HP Volts
Length of drop pipe ft. capacity g.p.m.
Material of drop pipe
Type: ☐ Submersible ☐ L.S. Turbine ☐ Reciprocating ☐ Jet ☐ Centrifugal ☐

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

PETERSEN WELL DRILLING, INC. 69183
Licensee Business Name | License No.

Address: Parkville, Mn. 55773

Signed: J. Jens Date: 6-25-81
Authorized Representative

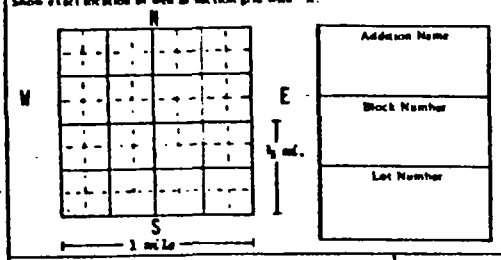
Denny Petersen Date: 6-25-81
Name of Driller

5/74 30M
7/76 30M
7/78 30M

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| | 57 N/S | 21 E/W | 26 | B |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well on section grid with "X."




Sketch map of well location.

| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | Brown | Soft | 0 | 30 |
| Sand Clay | Brown | Soft | 30 | 60 |
| Clay Rocks | Gray | Hard | 60 | 122 |
| Sand | Gray | Soft | 122 | 130 |

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

**MINN. GEOLOGICAL SURVEY COPY**

3. PROPERTY OWNER'S NAME: Ivan Cornwall

Address: Rt 1 Box 415 B, Ely, MN 55741

4. WELL DEPTH (completed): 130 ft. Date of Completion: 9-28-77

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☐ Air 8☐ Bored 11☐ _____
3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING
1☒ Black 4☒ Threaded
2☐ Galv. 5☐ Welded
3☐ 6☐
HEIGHT: Above/Below — Surface 1 ft.
Drive Shoe? Yes ___ No X
5" in. to 122 ft. Weight 14.81 lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
HOLE DIAM: ___ in. to ___ ft.; ___ in. to ___ ft.; ___ in. to ___ ft.

8. SCREEN
Make Johnson — Or open hole from ___ ft. to ___ ft.
Type Stainless steel Dia. 3"
Slot/Gauze .012 Length 8'
FITTINGS:
Set between 122 ft. and 130 ft.
___ ft. and ___ ft.
___ ft. and ___ ft.

9. STATIC WATER LEVEL
52 ft. ☒ below land surface ☐ above Date Measured 9-29-77

10. PUMPING LEVEL (below land surface)
100 ft. after 1 hrs. pumping 6 g.p.m.
___ ft. after ___ hrs. pumping ___ g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter 2☐ Basement offset 3☒ At least 12" above grade

12. Well grouted?
☐ Yes ☒ No Cu. Yds. ___
4☐ Neat Cement 2☐ Bentonite 3☐ ___
Depth: from ___ ft. to ___ ft.
from ___ ft. to ___ ft.

13. Nearest sources of possible contamination
100 feet 5 direction Septic Tank
Well disinfected upon completion? Yes ☒ No ☐

14. PUMP
Date Installed ___
☒ Not Installed
Manufacturer's Name ___
Model Number ___ HP ___ Volts ___
Length of drop pipe ___ ft. capacity ___ g.p.m.
Material of drop pipe ___
Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐ ___

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

North Star Drilling Inc — License Business Name — License No. 48038

Address: Box 23 Isle, MN

Signed: [signature] — Authorized Representative — Date 10/12/77

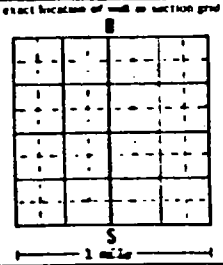
Walt Benning — Name of Driller — Date 9-28-77

5/74 30M
7/76 30M

| Township Name | Township Number | Range Number | Section No. | Tract No. |
|---|---|---|---|---|
| | 57 N/S | 21 E/W | 26 | |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well on section grid with "X." Sketch map of well location.




Addition Name

Block Number

Lot Number

3. PROPERTY OWNER'S NAME

Larry Banner

Address Rt. 1, Box 261

Hibbing, Minnesota 55746

4. WELL DEPTH (completed) 230 ft. Date of Completion 5-26-77

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug 2☐ Hollow rod 5☐ Air 8☐ Bored 11☐ ____ X☐ Rotary 6☐ Jetted 9☐ Power Auger

6. USE X☐ Domestic 4☐ Public Supply 7☐ Industry 2☐ Irrigation 5☐ Municipal 8☐ Commercial 3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING X☐ Black 4☐ Threaded 2☐ Galv. X☐ Welded 3☐ 6☐

HEIGHT: Above/Below Surface 1 ft. Drive Shoe? Yes ___ No X

6 in. to 220 ft. Weight 19 lbs./ft.

HOLE DIAM ___ in. to ___ ft.

8. SCREEN Make Johnson Type Stainless steel Dia. 6" Slot/Gauge 15 Length 10' FITTINGS

Or open hole from ___ ft. to ___ ft.

Set between 220 ft. and 230 ft.

9. STATIC WATER LEVEL ___ ft. ☐ below ☐ above land surface Date Measured ___

10. PUMPING LEVEL (below land surface) 140 ft. after 1 hrs. pumping 1.5 g.p.m.

11. WELL HEAD COMPLETION 1☐ Pitless adapter 2☐ Basement offset X☐ At least 12" above grade

12. Well grouted? X☐ Yes ☐ No Cu. Yds. ___ 1☐ Neat Cement 2☐ Bentonite X Nat. Fill

Depth: from ___ ft. to ___ ft.

13. Nearest sources of possible contamination 50 feet ___ direction septic type

Well disinfected upon completion? Yes X No ☐

14. PUMP Date Installed ___ X☐ Not Installed

Manufacturer's Name ___

Model Number ___ HP ___ Volts ___

Length of drop pipe ___ ft. capacity ___ g.p.m.

Material of drop pipe ___

Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating 2☐ Jet 4☐ Centrifugal 6☐ ___

| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Rock & Clay | | H | 0 | 40 |
| Gravel | Brown | M | 40 | 42 |
| Clay & Sand | Brown | S | 42 | 63 |
| Gravel & Rock | | H | 63 | 65 |
| Clay & Rock | Gray | M | 65 | 92 |
| Sand | Gray | S | 92 | 94 |
| Clay & Rock | Brown | H | 94 | 119 |
| Clay | Green | M | 119 | 133 |
| Clay | Gray | H | 133 | 220 |
| Clay & Gravel | | M | 220 | 230 |
| Clay | Gray | M | 230 | 237 |

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Diamond Water Wells, Inc. 18156

Licensee Business Name License No.

Address Box 769, Brainerd, Minnesota

Signed ___ Authorized Representative

Gary Jensen Date ___

Name of Driller

MINN. GEOLOGICAL SURVEY COPY

5/74 30M
7/76 30M

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| | 51 (N or S) | 31 (E or W) | 27 | SE ¼ N.W. |

Distance and Direction from Named Intersections or Street Address and City of Well Location

Show exact location of well on section grid with "X." Sketch map of well location

N, W, E, S, X, 1 mile, ½ mi.

Addition Name

Block Number

Lot Number

| 3. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | | Hard | | 41 |

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY

2. PROPERTY OWNER'S NAME: Eugene Swanson

Address: Litchfield, Minn. Hiway 15 - 94

4. WELL DEPTH (completed): 41 ft. Date of Completion: 8-5-71

5. 1☒ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☐ Air 8☐ Bored 11☐
3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING
1☒ Black 4☒ Threaded
2☐ Galv. 5☐ Welded
3☐ 6☐
Height: Above/Below
Surface 1 ft.
Drive Shoe? Yes ___ No X
4 in. to 41 ft. Weight 10.89 lbs./ft.
6 in. to 41 ft. Weight 17.16 lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
Hole Diam: ___ in. to ___ ft.; ___ in. to ___ ft.; ___ in. to ___ ft.

8. SCREEN
Make ___ Or open hole from ___ ft. to ___ ft.
Type ___ Dia. ___
Slot/Gauze ___ Length ___
Set between ___ ft. and ___ ft.
___ ft. and ___ ft.
___ ft. and ___ ft.
FITTINGS:

9. STATIC WATER LEVEL
7½ ft. ☒ below land surface ☐ above Date Measured ___

10. PUMPING LEVEL (below land surface)
30 ft. after 1 hrs. pumping 1 g.p.m.
___ ft. after ___ hrs. pumping ___ g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter 2☐ Basement offset 3☒ At least 12" above grade

12. Well grouted?
☐ Yes ☒ No Cu. Yds. ___
1☐ Neat Cement 2☐ Bentonite 3☐ ___
Depth: from ___ ft. to ___ ft.
from ___ ft. to ___ ft.

13. Nearest source of possible contamination
100 feet E direction Septic tank
Well disinfected upon completion? Yes ☒ No ☐

14. PUMP
Date Installed ___
☒ Not Installed
Manufacturer's Name ___
Model Number ___ HP ___ Volts ___
Length of drop pipe ___ ft. capacity ___ g.p.m.
Material of drop pipe ___
Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐ ___

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

North Star Drilling Inc. (Licensed Business Name) 48028 (License No.)

Address: Box 22 Isle

Signed: [signature] (By Permanent Employee) Date 9/13/71

Walt Rehning (Name of Driller) Date 8-5-71

5/74 30M
7/76 30M

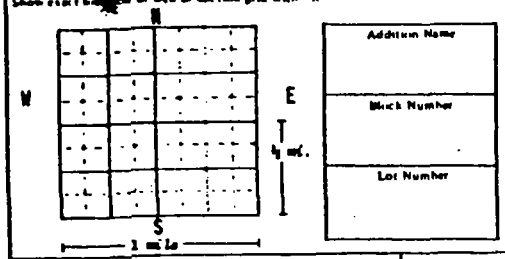
St. Louis

Minnesota Statutes 156A.01 et seq

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| | 57 N or S | 21 E or W | 27 | SE ¼ SE ¼ ¼ |

Distance and Direction from Nearest Intersection or Street Address and City of Well Location

Show exact location of well on section grid with "X"




Addition Name

Block Number

Lot Number

Sketch map of well location.

| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | red | | 0 | 9 |
| Hardpan | | | 9 | 56 |
| Sand & gravel | | | 56 | 61 |

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY 162644

3. PROPERTY OWNER'S NAME

Mike Stavnes

Address 3821 4th Ave. W.

Hibbing, Minn. 55746

4. WELL DEPTH (completed) 61 ft. Date of Completion 7/20/79

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☒ Air 8☐ Bored 11☐ _____
3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING
1☒ Black 4☒ Threaded
2☐ Galv. 5☒ Welded
3☐ Plastic 6☐
Drive Shoe? Yes ☒ No ☐
6 in. to 61 ft. Weight 20 lbs./ft.
____ in. to ____ ft. Weight ____ lbs./ft.
____ in. to ____ ft. Weight ____ lbs./ft.
HEIGHT: Above/Below Surface 1 ft.
HOLE DIAM
____ in. to ____ ft.
____ in. to ____ ft.
____ in. to ____ ft.

8. SCREEN
Make _____ Or open hole from ____ ft. to ____ ft.
Type _____ Dia. _____
Slot/Gauge _____ Length _____
FITTINGS.
Set between ____ ft. and ____ ft.
____ ft. and ____ ft.
____ ft. and ____ ft.

9. STATIC WATER LEVEL
45 ft. ☐ below ☐ above Land Surface Date Measured 7/20/79

10. PUMPING LEVEL (below land surface)
____ ft. after ____ hrs. pumping ____ g.p.m.
____ ft. after ____ hrs. pumping ____ g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter 2☐ Basement offset 3☐ At least 12" above grade

12. Well grouted? ☐ Yes ☐ No ☒ Cu. Yds. _____
1☐ Neat Cement 2☐ Bentonite 3☐ _____
Depth: from ____ ft. to ____ ft.
from ____ ft. to ____ ft.

13. Nearest sources of possible contamination
____ feet ____ direction ____ type
Well disinfected upon completion? Yes ☐ No ☒

14. PUMP
Date Installed _____
☐ Not Installed
Manufacturer's Name _____
Model Number _____ HP ____ Volts ____
Length of drop pipe ____ ft. capacity ____ g.p.m.
Material of drop pipe _____
Type: 1☐ Submersible 3☐ L.S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐ _____

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

PETERSEN WELL DRILLING INC. # 69183

Address Parkville, Minn. 55773

Signed [illegible] Date [illegible]
Authorized Representative

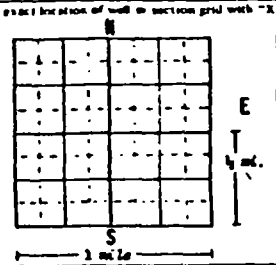
Dale Olson Date 7/20/79
Name of Driller

5/77 30M
7/76 30M
7/78 30M

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| Stuntz | 57 N | 21 W | 27 | NE 1/4 |

Distance and Direction from Road Intersection or Street Address and City of Well Location

Show exact location of well or section grid with "X."




| Addition Name |
|---|
| Block Number |
| Lot Number |

Sketch map of well location.

Old Hwy #161

| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay & rock | Brown | Med | 0 | 32 |
| Clay | Gray | Med | 32 | 53 |
| Very fine Sand | Gray | Soft | 53 | 75 |

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY

3. PROPERTY OWNER'S NAME: Gene Aal

Address: Box 114 Rt 1, Hibbing, MN 746

4. WELL DEPTH (completed): 75 ft. Date of Completion: 5-9-77

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☐ Air 8☐ Bored 11☐ _____
3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING — HEIGHT: Above/Below —
1☒ Black 4☒ Threaded
2☐ Galv. 5☐ Welded
3☐ 6☐
Surface 1 ft.
Drive Shoe? Yes ___ No X
6 in. to 53 ft. Weight 14 lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
HOLE DIAM: ___ in. to ___ ft.; ___ in. to ___ ft.; ___ in. to ___ ft.

8. SCREEN
Make: Johnson
Type: Stainless Steel Dia. 3"
Slot/Gauze: .015 Length: 15' FITTINGS.
Set between 53 ft. and 75 ft.
___ ft. and ___ ft.
___ ft. and ___ ft.
Or open hole from ___ ft. to ___ ft.

9. STATIC WATER LEVEL
32 ft. ☐ below land surface ☐ above Date Measured ___

10. PUMPING LEVEL (below land surface)
51 ft. after 1 hrs. pumping 9 g.p.m.
___ ft. after ___ hrs. pumping ___ g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter 2☐ Basement offset 3☒ At least 12" above grade

12. Well grouted?
☐ Yes ☒ No Cu. Yds. ___
1☐ Neat Cement 2☐ Bentonite 3☐ ___
Depth: from ___ ft. to ___ ft.
from ___ ft. to ___ ft.

13. Nearest source of possible contamination
75 feet NW direction Septic TYPE
Well disinfected upon completion? Yes ☒ No ☐

14. PUMP
Date Installed ___
☒ Not Installed
Manufacturer's Name ___
Model Number ___ HP ___ Volts ___
Length of drop pipe ___ ft. capacity ___ g.p.m.
Material of drop pipe ___
Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐ ___

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Licensee Business Name: North Star Drilling Inc. License No. 4332
Address: Box 23 Isle MN
Signed: ___ Authorized Representative Date: 7/14/77
Name of Driller: Walt Pawlowski Date: 5-9-77

S/74 30M
7/76 30M

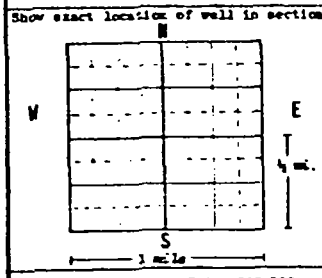
DEPARTMENT OF HEALTH — WATER WELL RECORD — Minnesota Statutes 156A.01-.08 — for Water Sample: 111472

**1. LOCATION OF WELL**

| County Name | Fraction | Section Number | Township Number | Range Number |
|---|---|---|---|---|
| St Louis | | 27 | T57 N or S. | 21 E. or W. |

Distance and Direction from Road Intersections or Street Address and City of Well Location: Parkel 5240

Show exact location of well in section grid with "X." Sketch map of well location.




**2.**

| FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Top Soil | Brown | | 0' | 2' |
| Hard pan | Brown | hard | 2' | 40' |
| Gravel Rocks | Brown | | 40' | 60' |

Use a second sheet, if needed.

**15. REMARKS, ELEVATION, SOURCE OF DATA, etc.**

MINN. GEOLOGICAL SURVEY COPY

**3. OWNER'S NAME** Rudy Laurich

Address: RR#1 Box 17 Hibbing, MN

**4. WELL DEPTH (completed)** 60 ft. Date of Completion: Dec. 27, 1975

**5.** [1] Cable tool [2] Hollow rod [X] Rotary [4] Reverse [5] Air [6] Jetted [7] Driven [8] Bored [9] Power Auger [10] Dug [11]

**6. USE** [1] Domestic [2] Irrigation [3] Test Well [4] Public Supply [5] Air Conditioning [6] [7] Industry [8] Commercial

**7. CASING** Threaded [1] Welded [X] Black [X] Galv. [4]

DIAM. 6 in. to 20 ft. depth; 6 in. to 30 ft. depth; 6 in. to 43 ft. depth

HEIGHT: Above/Below Surface 1.5 ft. Weight 19 lbs./ft. Drive Shoe? Yes ✓ No

**8. SCREEN** Make Johnson Type 304 Stainless Dia. 6" Telescope Slot/Gauge 20 Length 10' Set between 43 ft. and 53 ft.

Or open hole from ft. to ft.

FITTINGS: 4" lead Pipe; K-6 X 4 Packer

**9. STATIC WATER LEVEL** 40 ft. [X] below land surface [ ] above Date Measured Dec 27

**10. PUMPING LEVEL (below land surface)** 40 ft. after 2 hrs. pumping 6 g.p.m.

**11. WELL HEAD COMPLETION** [1] Pitless adapter [2] Basement offset [X] At least 12" above grade

**12. Well grouted?** [ ] Yes [ ] No

[1] Neat cement [2] Bentonite [X] Puddled Clay

Depth: from 0 ft. to 43 ft.

**13. Nearest source of possible contamination** 100 feet SW direction Septic type

Well disinfected upon completion? Yes [X] No [ ]

**14. PUMP** None Date installed: [X] Not installed

Manufacturer's Name:

Model Number: HP: Volts:

Length of drop pipe: ft. capacity: g.p.m.

Material of drop pipe:

Type: [1] Submersible [2] Jet [3] L.S. Turbine [4] Centrifugal [5] Reciprocating [6]

**16. WATER WELL CONTRACTOR'S CERTIFICATION**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Mead Well Drlg Inc — Licensee Business Name — License No. 007

Address: Box 569 Grand Rapids, Minn

Signed: Al Mac Donell — Authorized Representative — Date: Jan 9, 1976

Steve McNamara — Name of Driller

7/76 30M

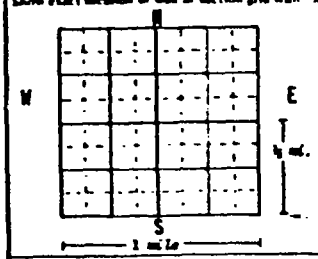
St. Louis

Minnesota Statutes 1944 § 86

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| | 57 N/S | 21W E/W | 28 | SE NW |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well on section grid with "X"




Sketch map of well location

Addition Name

Block Number

Lot Number

| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Sand & Gravel | Brn. | | 0 | 9 |
| Gravel & Boulders | | | 9 | 45 |
| Hardpan | | | 45 | 87 |
| Sand | Gray | | 87 | 101 |
| Clay | Gray | | 101 | 104 |
| Sand & Gravel | | | 104 | 109 |
| 25 - 30 GPM | | | | |

Use a second sheet, if needed

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

RECEIVED
JUN 15 1983
Minn. Dept. of Natural Resources
CWC

MINN. GEOLOGICAL SURVEY COPY

192354

3. PROPERTY OWNER'S NAME

Address: Mike Eagen
Star Route 2, Box 162
Hibbing, Minn. 55746

4. WELL DEPTH (completed): 109 ft.

Date of Completion: 10-19-82

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod X Air 8☐ Bored 11☐
X Rotary 6☐ Jetted 9☐ Power Auger

6. USE
1X Domestic 3☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
4☐ Test Well 6☐ Air Conditioning 9☐

7. CASING
X Black X Threaded
2☐ Galv. X Welded
3☐ Plastic 6☐
HEIGHT: Above/Below
Surface 1 ft.
Drive Shoe? Yes X No
6 in. to 109 ft. Weight 20 lbs./ft.
in. to ft. Weight lbs./ft.
in. to ft. Weight lbs./ft.
HOLE DIAM
in. to ft.
in. to ft.
in. to ft.

8. SCREEN
Make
Or open hole from ft. to ft.
Type Dia.
Slot/Gauge Length
FITTINGS:
Set between ft. and ft.
ft. and ft.

9. STATIC WATER LEVEL
30 ft. ☐ below land surface ☐ above
Date Measured 10-19-82

10. PUMPING LEVEL (below land surface)
ft. after hrs. pumping g.p.m.
ft. after hrs. pumping g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter, manufacturer model
2☐ Basement offset 3☐ At least 12" above grade

12. WELL GROUTED?
☐ Yes X No
1☐ Neat Cement 2☐ Bentonite 3☐
Grout material from to ft. Cu. Yds.

13. NEAREST SOURCES OF POSSIBLE CONTAMINATION
feet direction type
Well disinfected upon completion? Yes X No ☐

14. PUMP
Date Installed 10-22-82 ☐ Not Installed
Manufacturer's Name Sta Rite
Model Number 8P4C025 HP ½ Volts 230
Length of drop pipe ft. capacity g.p.m.
Material of drop pipe
Type: 1X Submersible 3☐ L. S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

PETERSEN DRILLING, INC. 69183
Licensee Business Name License No.

Address Perkville, Minn. 55773

Signed [signature] Date 11/Mar 83
Authorized Representative

Dale Olson Date 10-19-82
Name of Driller

HE-01800-01

8/74 30M
7/76 50M
7/78 30M
2/82 10M

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| STUART | 57 N | 21 E | 28 | NW 1/4 SW 1/4 |

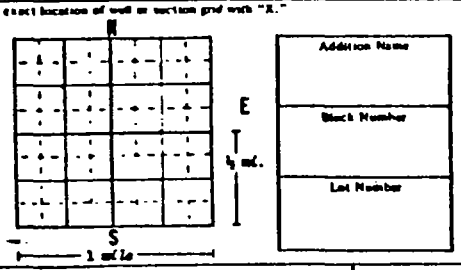
Distance and Direction from Road Intersections or Street Address and City or Rural Location

3. PROPERTY OWNER'S NAME: PETER HYDE

Address: 11 N. E 20 ST.

Show exact location of well or section grid with "X."

Sketch map of well location.




| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| CLAY & ROCKS | BROWN | Hard | 0 | 42 |
| SAND & GRAVEL | GRAY | Soft | 42 | 69 |

Use a second sheet, if needed.

4. WELL DEPTH (completed): 69 ft. Date of Completion: 1/1/1999

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☐ Air 8☐ Bored 11☐
3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING
1☒ Black 4☒ Threaded
2☐ Galv. 5☐ Welded
3☐ 6☐
HEIGHT: Above/Below
Surface 1 ft.
Drive Shoe? Yes ___ No ☒
— in. to 69 ft. Weight 14.14 lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
HOLE DIAM
___ in. to ___ ft.
___ in. to ___ ft.
___ in. to ___ ft.

8. SCREEN
Make: JOHNSON
Or open hole from ___ ft. to ___ ft.
Type: STAINLESS STEEL Dia. 5"
Slot/Gauze: .012 Length: 5'
FITTINGS:
Set between 64 ft. and 69 ft.
___ ft. and ___ ft.
___ ft. and ___ ft.

9. STATIC WATER LEVEL
1 ft. ☐ below land surface ☐ above Date Measured 1/1/1999

10. PUMPING LEVEL (below land surface)
46 ft. after 1 hrs. pumping 10 g.p.m.
___ ft. after ___ hrs. pumping ___ g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter 2☐ Basement offset 3☒ At least 12" above grade

12. Well grouted?
☐ Yes ☒ No Cu. Yds. ___
1☐ Neat Cement 2☐ Bentonite 3☐
Depth: from ___ ft. to ___ ft.
from ___ ft. to ___ ft.

13. Nearest source of possible contamination
107 feet E direction Septic type
Well disinfected upon completion? Yes ☒ No ☐

14. PUMP
Date Installed ___
☒ Not Installed
Manufacturer's Name ___
Model Number ___ HP ___ Volts ___
Length of drop pipe ___ ft. Capacity ___ g.p.m.
Material of drop pipe ___
Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NORTH STAR DRILLING INC 1435
Licensee Business Name License No.

Address: BOX 35 ISLE, MN

Signed: [signature] Authorized Representative Date 1/5/99

WALT REHWINKEL Name of Driller Date 1/4/99

18. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY

5/74 3M
7/76 3M

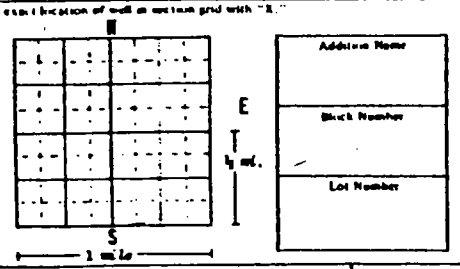
St. Louis

Minnesota Statutes 156A.01 (1)

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| | 57 N or S | 21 E or W | 28 | SW¼ NW¼ |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well on section grid with "X." Sketch map of well location




E. 200' of W. 695' of that part of SW¼ of N.W.¼ lying N. of the state

3. PROPERTY OWNER'S NAME

Address: Don Sorenson, R.R. Box 52, Hibbing, Minn. 55746

4. WELL DEPTH (completed): 73 ft. Date of Completion: 6-22-81

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug 3☐ Hollow rod 5☒ Air 8☐ Bored 11☐ ____ ☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE: ☒1 Domestic 4☐ Public Supply 7☐ Industry 2☐ Irrigation 5☐ Municipal 8☐ Commercial 3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING: ☒1 Black 4☒ Threaded 2☐ Galv. 5☒ Welded 3☐ Plastic 6☐

HEIGHT: Above/Below — Surface 1 ft.

Drive Shoe? Yes ☒ No ☐

6 in. to 73 ft. Weight 20 lbs./ft.

____ in. to ____ ft. Weight ____ lbs./ft.

____ in. to ____ ft. Weight ____ lbs./ft.

HOLE DIAM: ____ in. to ____ ft.; ____ in. to ____ ft.; ____ in. to ____ ft.

8. SCREEN: Make ____ Or open hole from ____ ft. to ____ ft.

Type ____ Dia. ____

Slot/Gauze ____ Length ____

FITTINGS:

Set between ____ ft. and ____ ft.

____ ft. and ____ ft.

____ ft. and ____ ft.

9. STATIC WATER LEVEL: 12 ft. ☒ below ☐ above land surface. Date Measured ____

10. PUMPING LEVEL (below land surface)

____ ft. after ____ hrs. pumping ____ g.p.m.

____ ft. after ____ hrs. pumping ____ g.p.m.

11. WELL HEAD COMPLETION: 1☐ Pitless adapter 2☐ Basement offset 3☐ At least 12" above grade

12. Well grouted? ☐ Yes ☒ No Cu. Yds. ____

1☐ Neat Cement 2☐ Bentonite 3☐ ____

Depth: from ____ ft. to ____ ft.

from ____ ft. to ____ ft.

13. Nearest sources of possible contamination

____ feet ____ direction ____ type

Well disinfected upon completion? Yes ☒ No ☐

14. PUMP

Date Installed ____

☐ Not Installed

Manufacturer's Name ____

Model Number ____ HP ____ Volts ____

Length of drop pipe ____ ft. capacity ____ g.p.m.

Material of drop pipe ____

Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating 2☐ Jet 4☐ Centrifugal 6☐ ____

| Formation Log | Color | Hardness of Formation | From | To |
|---|---|---|---|---|
| Sand & Gravel & Boulders | Brn. | | 0 | 17 |
| Hardpan & Boulders | Grey | | 17 | 65 |
| Sand & Gravel | Brown | | 65 | 73 |
| 10-15 GPM | | | | |

Use a second sheet, if needed

15. REMARKS, etc. Specify source of data, etc.

RECEIVED JUN 30 1981 Minn. Dept. of Health Div. of Environmental Health

MINN. GEOLOGICAL SURVEY COPY

189475

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

PETERSEN WELL DRILLING, INC. — License Business Name — License No. 69183

Address: Parkville, Mn. 55773

Signed: Jim Jones — Authorized Representative — Date 6-23-81

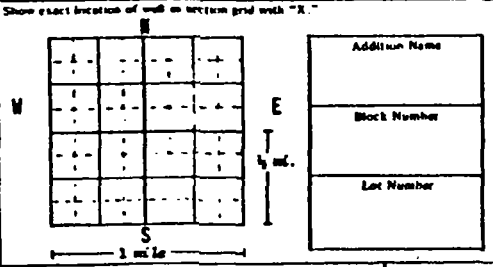
Dave Magnuson — Name of Driller — Date 6-22-81

5/74 30M
7/76 30M
7/78 30M

| Township Name | Township Number | Range Number | Section No. | Fractions |
|---|---|---|---|---|
| Stunts | 57 N or S | 21 E or W | 28 | SE NE |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well on section grid with "X." Sketch map of well location.




| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | red | | 0 | 12 |
| Hardpan | gray | | 12 | 115 |
| Quick sand | Gray | | 115 | 131 |
| Hardpan | gray | | 131 | 134 |
| Gravel | | | 134 | 140 |
| 5-6 GPM | | | | |

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY

3. PROPERTY OWNER'S NAME

Dale Walle

Address RR 2 Box 65

Hibbing, Minn 55746

4. WELL DEPTH (completed) 140 ft. Date of Completion 5/12/76

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☒ Air 8☐ Bored 11☐ _____
3☐ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING HEIGHT: Above/Below Surface
1☒ Black 4☒ Threaded
2☐ Galv. 5☐ Welded Surface 1 ft.
3☐ 6☐ Drive Shoe? Yes ☒ No ☐
6 in. to 140 ft. Weight 20 lbs./ft.
_____ in. to _____ ft. Weight _____ lbs./ft.
_____ in. to _____ ft. Weight _____ lbs./ft.

HOLE DIAM
_____ in. to _____ ft.
_____ in. to _____ ft.
_____ in. to _____ ft.

8. SCREEN Or open hole from _____ ft. to _____ ft.
Make _____
Type _____ Dia. _____
Slot/Gauze _____ Length _____
FITTINGS:
Set between _____ ft. and _____ ft.
_____ ft. and _____ ft.
_____ ft. and _____ ft.

9. STATIC WATER LEVEL
25 ft. ☒ below ☐ above land surface Date Measured 5/13/76

10. PUMPING LEVEL (below land surface)
_____ ft. after _____ hrs. pumping _____ g.p.m.
_____ ft. after _____ hrs. pumping _____ g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter 2☐ Basement offset 3☐ At least 12" above grade

12. Well grouted?
☐ Yes ☐ No Cu. Yds. _____
1☐ Neat Cement 2☐ Bentonite 3☐ _____
Depth: from _____ ft. to _____ ft.
from _____ ft. to _____ ft.

13. Nearest sources of possible contamination
_____ feet _____ direction _____ type
Well disinfected upon completion? Yes ☒ No ☐

14. PUMP
Date installed _____
☐ Not installed
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of drop pipe _____ ft. capacity _____ g.p.m.
Material of drop pipe _____
Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐ _____

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

PETERSEN WELL DRILLING, INC. # 69183
Licensee Business Name License No.

Address Pederville, Minn 55773

Signed _____ Date 2/23/78
Authorized Representative

Robert Scari Date 5/12/76
Name of Driller

5/76 30M
7/76 30M

Minnesota Statutes 1544.01-.06

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| Steele | 107 N or S | 21 E or W | 28 | ¼ ¼ ¼ |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well on section grid with "X"

Sketch map of well location.

W E S

½ mi.

1 mi.

Addition Name

Block Number

Lot Number

| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | 0 | 18 |
| [illegible] | [illegible] | [illegible] | 18 | 24 |
| [illegible] | [illegible] | [illegible] | 24 | 45 |
| [illegible] | [illegible] | [illegible] | 45 | 50 |

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY

173612

3. PROPERTY OWNER'S NAME: Ralph [illegible]

Address: [illegible]

4. WELL DEPTH (completed): 50 ft.

Date of Completion: 7 8 80

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☐ Air 8☐ Bored 11☐
3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING HEIGHT: Above/Below

1☒ Black 4☒ Threaded
2☐ Galv. 5☐ Welded
3☐ Plastic 6☐

Surface 12 ft.

Drive Shoe? Yes ___ No X

4 in. to 46 ft. Weight 11.35 lbs./ft.

___ in. to ___ ft. Weight ___ lbs./ft.

___ in. to ___ ft. Weight ___ lbs./ft.

HOLE DIAM: 6¼ in. to 50 ft.

8. SCREEN
Make [illegible]
Type [illegible] Dia. [illegible]
Slot/Gauze 20 Length 10 feet
Set between 46 ft. and 50 ft.
___ ft. and ___ ft.
___ ft. and ___ ft.

Or open hole from ___ ft. to ___ ft.

FITTINGS:

9. STATIC WATER LEVEL
21 ft. ☒ below land surface ☐ above Date Measured 7 8 80

10. PUMPING LEVEL (below land surface)
35 ft. after 1 hrs. pumping 10 g.p.m.
___ ft. after ___ hrs. pumping ___ g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter 2☐ Basement offset 3☒ At least 12" above grade

12. Well grouted?
☐ Yes ☒ No Cu. Yds. ___
1☐ Neat Cement 2☐ Bentonite 3☐
Depth: from ___ ft. to ___ ft.
from ___ ft. to ___ ft.

13. Nearest sources of possible contamination
85 feet NE direction [illegible] type
Well disinfected upon completion? Yes ☒ No ☐

14. PUMP
Date Installed ___
☐ Not Installed
Manufacturer's Name ___
Model Number ___ HP ___ Volts ___
Length of drop pipe ___ ft. capacity ___ g.p.m.
Material of drop pipe ___
Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

License Business Name License No.

Address

Signed [illegible] Date
Authorized Representative

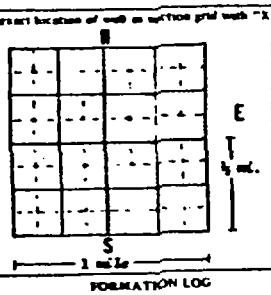
Date
Name of Driller

5/74 30M
7/76 30M
7/78 30M

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| | 7 N or S | 7 E or W | 21 | |

Distance and Direction from Rural Intersections or Street Address and City of Well Location

Show exact location of well on section grid with "X"




Sketch map of well location.

Addition Name: 1

Block Number: 5

Lot Number: 7

**2. FORMATION LOG**

| FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | Brown | Soft | 0 | 100 |
| Clay Rocks | Gray | Varied | 100 | 146 |
| Sand | Gray | Soft | 146 | 154 |

Use a second sheet, if needed.

**15. REMARKS, ELEVATION, SOURCE OF DATA, etc.**

**3. PROPERTY OWNER'S NAME**

Address: [illegible] West, [illegible] Hopkins, Minn. 55716

**4. WELL DEPTH (completed)**: 154 ft. Date of Completion: 8-3-77

**5.** 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☐ Air 8☐ Bored 11☐ _____
3☒ Rotary 6☐ Jetted 9☐ Power Auger

**6. USE**
1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

**7. CASING** HEIGHT: Above/Below —
1☒ Black 4☒ Threaded
2☐ Galv. 5☐ Welded
3☐ 6☐
Surface 1 ft.
Drive Shoe? Yes ___ No X
5 in. to 154 ft. Weight 14.71 lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.

HOLE DIAM
___ in. to ___ ft.
___ in. to ___ ft.
___ in. to ___ ft.

**8. SCREEN**
Make: Johnson
Type: Stainless Steel Dia. 4"
Slot/Gauge: [illegible] Length: 154
Or open hole from ___ ft. to ___ ft.
FITTINGS:
Set between 146 ft. and 154 ft.
___ ft. and ___ ft.
___ ft. and ___ ft.

**9. STATIC WATER LEVEL**
40 ft. ☒ below land surface ☐ above Date Measured 8-3-77

**10. PUMPING LEVEL (below land surface)**
110 ft. after 1 hrs. pumping 10 g.p.m.
___ ft. after ___ hrs. pumping ___ g.p.m.

**11. WELL HEAD COMPLETION**
1☐ Pitless adapter 2☐ Basement offset 3☒ At least 12" above grade

**12. Well grouted?** ☐ Yes ☒ No Cu. Yds. ___
1☐ Neat Cement 2☐ Bentonite 3☐ ___
Depth: from ___ ft. to ___ ft.
from ___ ft. to ___ ft.

**13. Nearest sources of possible contamination**
112 feet N direction Septic type
Well disinfected upon completion? Yes ☒ No ☐

**14. PUMP**
Date Installed ___
☒ Not Installed
Manufacturer's Name ___
Model Number ___ HP ___ Volts ___
Length of drop pipe ___ ft. capacity ___ g.p.m.
Material of drop pipe ___
Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐ ___

**16. WATER WELL CONTRACTOR'S CERTIFICATION**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Northstar Drilling Inc. License Number 45058
Address Box 23 Isle Minn
Signed [signature] Authorized Representative Date 9-11-77
Well Boring Name of Driller Date 8-3-77

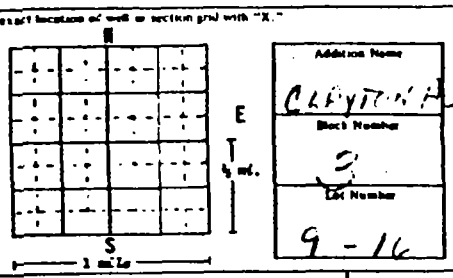
MINN. GEOLOGICAL SURVEY COPY

5/74 30M
7/76 30M

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| | 57 N | 21 E | 28 | SE ¼ NE ¼ |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well or section grid with "X." Sketch map of well location.




| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | Brn | Med | 0 | 29 |
| Clay with | Gray | Med | 29 | 87 |
| Fine Sand | Gray | Soft | 87 | 100 |

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY

3. PROPERTY OWNER'S NAME

Address: PAT SAVAGE, PO BOX 82, HILLTOP, MN 55427

4. WELL DEPTH (completed): 100 — Date of Completion: 8-18-77

5. ☐1 Cable tool ☐4 Reverse ☐7 Driven ☐10 Dug ☐2 Hollow rod ☐5 Air ☐8 Bored ☐11 ☐3 Rotary ☐6 Jetted ☐9 Power Auger

6. USE: ☒1 Domestic ☐4 Public Supply ☐7 Industry ☐2 Irrigation ☐5 Municipal ☐8 Commercial ☐3 Test Well ☐6 Air Conditioning ☐9

7. CASING: ☒1 Black ☒4 Threaded ☐2 Galv. ☐5 Welded ☐3 ☐6

HEIGHT: Above/Below — Surface 1 ft. Drive Shoe? Yes ___ No X

5 in. to 87 ft. Weight 14.81 lbs./ft.

HOLE DIAM: ___ in. to ___ ft.

8. SCREEN: Make JOHNSON — Or open hole from ___ ft. to ___ ft.

Type STAINLESS STEEL Dia. 3"

Slot/Gauge .018 Length 13'

Set between 87 ft. and 100 ft. FITTINGS:

9. STATIC WATER LEVEL: 9.1 ft. ☐ below land surface ☐ above — Date Measured ___

10. PUMPING LEVEL (below land surface): 45 ft. after 1 hrs. pumping 5 g.p.m.

11. WELL HEAD COMPLETION: ☐1 Pitless adapter ☐2 Basement offset ☒3 At least 12" above grade

12. Well grouted? ☐ Yes ☒ No — Cu. Yds. ___

☐1 Neat Cement ☐2 Bentonite ☐3

Depth: from ___ ft. to ___ ft.

13. Nearest sources of possible contamination: 711 feet W direction Septic type

Well disinfected upon completion? Yes ☒ No ☐

14. PUMP: Date Installed ___ ☒ Not Installed

Manufacturer's Name ___

Model Number ___ HP ___ Volts ___

Length of drop pipe ___ ft. capacity ___ g.p.m.

Material of drop pipe ___

Type: ☐1 Submersible ☐3 L. S. Turbine ☐5 Reciprocating ☐2 Jet ☐4 Centrifugal ☐6

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NORTH STAR DRILLING INC 48038 (Licensed Business Name) (License No.)

Address: BOX 23 ISLE

Signed: ___ (Licensed Representative) Date: 8/13/77

WALT BEHNING (Name of Driller) Date: 8-18-77

8/74 30M
7/76 30M

Minnesota Statutes 156A.01-.08

120653

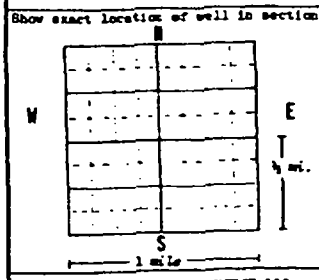
1. LOCATION OF WELL

| County Name | Fraction | Section Number | Township Number | Range Number |
|---|---|---|---|---|
| ST. LOUIS COUNTY | | 28 | 57 N. or S. | 21 E. or W. |

Distance and Direction from Road Intersections or Street Address and City of Well Location

12-13-14 Clayton Acres

Show exact location of well in section grid with "X." Sketch map of well location.




2.

| FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | | | 0 | 13 |
| Hardpan | | | 13 | 111 |
| Quick Sand | | | 111 | 135 |
| Hard Pan | | | 135 | 143 |
| Gravel | | | 143 | 158 |
| 5 - 6 G.P.M. | | | | |

Use a second sheet, if needed.

13. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY

3. PROPERTY OWNER'S NAME: ROBERT SVENKY

Address: 3130 W. 6th AVE. HIBBING, MINNESOTA 55746

4. WELL DEPTH (completed) ft. Date of Completion

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☐ Air 8☐ Bored 11☐ ____
3☐ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
1☐ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Air Conditioning 8☐ Commercial
3☐ Test Well 9☐ ____

7. CASING DIAM.
Threaded ☐1 Welded ☐3
Black ☐2 Galv. ☐4
6 in. to 158 ft. depth
____ in. to ____ ft. depth
____ in. to ____ ft. depth

HEIGHT: Above/Below
Surface ____ ft.
Weight ____ lbs./ft.
Drive Shoe? Yes ____ No ____

8. SCREEN
Or open hole from ____ ft. to ____ ft.
Make ____
Type ____ Dia. ____
Slot/Gauge ____ Length ____
FITTINGS:
Set between ____ ft. and ____ ft.
____ ft. and ____ ft.
____ ft. and ____ ft.

9. STATIC WATER LEVEL
25 ft. ☐ below ☐ above land surface Date Measured ____

10. PUMPING LEVEL (below land surface)
____ ft. after ____ hrs. pumping ____ g.p.m.
____ ft. after ____ hrs. pumping ____ g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter 2☐ Basement offset 3☐ At least 12" above grade

12. Well grouted?
☐ Yes ☐ No Cu. Yds. ____
1☐ Neat cement 2☐ Bentonite 3☐ ____
Depth: from ____ ft. to ____ ft.
from ____ ft. to ____ ft.

13. Nearest source of possible contamination
____ feet ____ direction ____ type
Well disinfected upon completion? Yes ☐ No ☐

14. PUMP
Date installed ____
☐ Not installed
Manufacturer's Name ____
Model Number ____ HP ____ Volts ____
Length of drop pipe ____ ft. capacity ____ g.p.m.
Material of drop pipe ____
Type: 1☐ Submersible 3☐ U.S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐ ____

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

PETERSEN WELL DRILLING, INC. #69183
License Business Name License No.

Address 929 - 22nd st VIRGINIA, MINN.

Signed [signature] Date ____
Authorized Representative

ROBERT SAARI
Name of Driller

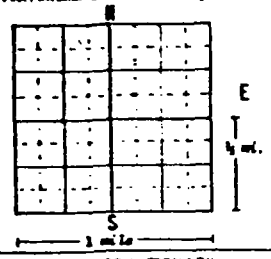
7/74 30M

Minnesota Statutes 156.04/.06 — for Water Samples

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| [illegible] | 71 N or S | 21 E or W | 4 | NE NE |

Distance and Direction from Road Intersection or Street Address and City of Well Location

Show exact location of well on section grid with "X"




Sketch map of well location

Addition Name

Block Number

Lot Number

| 3. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | Brown | 0 | 0 | 25 |
| Sand & Gravel | Brown | 0 | 25 | 60 |
| Sand | Brown | | 60 | 71 |

Use a second sheet, if needed.

RECEIVED

AUG 20 1981

Minn. Dept. of Conservation

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY

180262

2. PROPERTY OWNER'S NAME: [illegible]

Address: [illegible]

4. WELL DEPTH (completed): 71 ft. Date of Completion: 7/8/81

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☐ Air 8☐ Bored 11☐
3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING
1☒ Black 4☒ Threaded
2☐ Galv. 5☐ Welded
3☐ Plastic 6☐
HEIGHT: Above/Below
Surface ____ ft.
Drive Shoe? Yes ____ No ____
____ in. to ____ ft. Weight ____ lbs./ft.
____ in. to ____ ft. Weight ____ lbs./ft.
____ in. to ____ ft. Weight ____ lbs./ft.
HOLE DIAM
____ in. to ____ ft.
____ in. to ____ ft.
____ in. to ____ ft.

8. SCREEN
Make: Johnson
Type: Stainless steel Dia. 2"
Slot/Gauze: 15 Length: 2'
Set between 65 ft. and 71 ft.
____ ft. and ____ ft.
____ ft. and ____ ft.
Or open hole from ____ ft. to ____ ft.
FITTINGS:

9. STATIC WATER LEVEL
17 ft. ☒ below ☐ above land surface Date Measured 7/8/81

10. PUMPING LEVEL (below land surface)
70 ft. after 1 hrs. pumping 15 g.p.m.
____ ft. after ____ hrs. pumping ____ g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter 2☐ Basement offset 3☐ At least 12" above grade

12. Well grouted?
☐ Yes ☒ No Cu. Yds. ____
1☐ Neat Cement 2☐ Bentonite 3☐ ____
Depth: from ____ ft. to ____ ft.
from ____ ft. to ____ ft.

13. Nearest source of possible contamination
75 feet E direction septic type
Well disinfected upon completion? Yes ☒ No ☐

14. PUMP
Date Installed ____
☐ Not installed
Manufacturer's Name ____
Model Number ____ HP ____ Volts ____
Length of drop pipe ____ ft. capacity ____ g.p.m.
Material of drop pipe ____
Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐ ____

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Advanced Drilling Co. — 18
License Business Name — License No.

Address: [illegible]

Signed: [illegible] Date 8-18-81
Authorized Representative

Jon Cutell Date 8-18-81
Name of Driller

5/74 30M
7/76 30M
7/78 30M

St. Louis

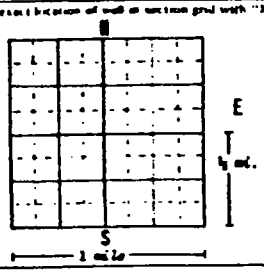
Minnesota Statutes 156.A.01 (3)

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| | 57 N (N or S) | 21 W (E or W) | 34 | SE SW |

Distance and Direction from Road Intersections or Street Address and City of Well Location

330' of the So. ¼; except the southerly 50' for hwy.

Mark exact location of well on section grid with "X."




Sketch map of well location

Addition Name

Block Number

Lot Number

| FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | Grey | | 0' | 31' |
| Hardpan | | | 31' | 57' |
| Clay | Grey | | 57' | 81' |
| Sand & Gravel | | | 81' | 90' |
| 25 gpm | | | | |

Use a second sheet, if needed

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY 170481

3. PROPERTY OWNER'S NAME: Gregg Mihelich

Address: Route 1, Box 39A, Hibbing, Mn 55746

4. WELL DEPTH (completed): 90 ft.

Date of Completion: 5-12-80

5. [1] Cable tool [4] Reverse [7] Driven [10] Dug [2] Hollow rod [5] [X] Air [8] Bored [11] [ ] [3] [X] Rotary [6] Jetted [9] Power Auger

6. USE: [1] [X] Domestic [4] Public Supply [7] Industry [2] Irrigation [5] Municipal [8] Commercial [3] Test Well [6] Air Conditioning [9] [ ]

7. CASING: [1] [X] Black [4] [X] Threaded [2] Galv. [5] [X] Welded [3] Plastic [6] [ ]

HEIGHT Above/Below Surface 1 ft.

Drive Shoe? Yes [X] No [ ]

6 in. to 90 ft. Weight 20 lbs./ft.

HOLE DIAM: ___ in. to ___ ft.

8. SCREEN: Make ___ Type ___ Dia. ___ Slot/Gauze ___ Length ___ Set between ___ ft. and ___ ft.

Or open hole from ___ ft. to ___ ft.

FITTINGS:

9. STATIC WATER LEVEL: 35 ft. [X] below land surface [ ] above

Date Measured ___

10. PUMPING LEVEL (below land surface): ___ ft. after ___ hrs. pumping ___ g.p.m.

11. WELL HEAD COMPLETION: [1] Pitless adapter [2] Basement offset [3] At least 12" above grade

12. Well grouted? [ ] Yes [ ] No Cu. Yds. ___ [1] Neat Cement [2] Bentonite [3] [ ]

Depth: from ___ ft. to ___ ft.

13. Nearest sources of possible contamination: ___ feet ___ direction ___ type

Well disinfected upon completion? Yes [X] No [ ]

14. PUMP: Date Installed ___ [ ] Not installed

Manufacturer's Name ___

Model Number ___ HP ___ Volts ___

Length of drop pipe ___ ft. capacity ___ g.p.m.

Material of drop pipe ___

Type: [1] Submersible [3] L. S. Turbine [5] Reciprocating [2] Jet [4] Centrifugal [6] [ ]

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

PETERSEN WELL DRILLING, INC. 69183

Licensee Business Name — License No.

Address: Parkville, Mn 55773

Signed: [signature] Date 5/14/80

Authorized Representative

Dale Olson Date 5-12-80

Name of Driller

5/74 30M
7/76 30M
7/78 30M

| Township Name | Township Number | Range Number | Section No. | Tract | | | |
|---|---|---|---|---|---|---|---|
| | 57 N/S | 21 E/W | 34 | | | | |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well at section grid with "X"

N / W / E / S / 1 mile / ½ mi.

Sketch map of well location.

Addition Name

Block Number

Lot Number

| 3. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | Brown | soft | 0 | 15 |
| Clay Rock | Gray | Hard | 15 | 55 |
| Sand Clay | Gray | soft | 55 | 72 |
| Sand | Gray | soft | 72 | 80 |

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY

2. PROPERTY OWNER'S NAME: Curtis & Gilbertson

Address: R 1 Box 31D Hibbing MN 55746

4. WELL DEPTH (completed): 80 ft. Date of Completion: 9-23-77

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug 2☐ Hollow rod 5☐ Air 8☐ Bored 11☐ ____ 3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE: 1☒ Domestic 4☐ Public Supply 7☐ Industry 2☐ Irrigation 5☐ Municipal 8☐ Commercial 3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING: 1☒ Black 4☒ Threaded 2☐ Galv. 5☐ Welded 3☐ 6☐

HEIGHT: Above/Below — Surface 1 ft. Drive Shoe? Yes ___ No ☒

5 in. to 72 ft. Weight 14 81 lbs./ft.

___ in. to ___ ft. Weight ___ lbs./ft.

___ in. to ___ ft. Weight ___ lbs./ft.

HOLE DIAM: ___ in. to ___ ft.; ___ in. to ___ ft.; ___ in. to ___ ft.

8. SCREEN: Make Johnson Type stainless steel Dia. 3" Slot/Gauze 012 Length 8' Set between 72 ft. and 80 ft. ___ ft. and ___ ft. ___ ft. and ___ ft.

Or open hole from ___ ft. to ___ ft.

FITTINGS:

9. STATIC WATER LEVEL: 20 ft. ☒ below land surface ☐ above Date Measured 9-23-77

10. PUMPING LEVEL (below land surface): 40 ft. after 1 hrs. pumping 10 g.p.m. ___ ft. after ___ hrs. pumping ___ g.p.m.

11. WELL HEAD COMPLETION: 1☐ Pitless adapter 2☐ Basement offset 3☐ At least 12" above grade

12. Well grouted? ☐ Yes ☒ No Cu. Yds. ___ 1☐ Neat Cement 2☐ Bentonite 3☐ ___ Depth: from ___ ft. to ___ ft. from ___ ft. to ___ ft.

13. Nearest sources of possible contamination: 106 feet E direction Septic Type

Well disinfected upon completion? Yes ☒ No ☐

14. PUMP: Date Installed ___ ☒ Not Installed

Manufacturer's Name ___

Model Number ___ HP ___ Volts ___

Length of drop pipe ___ ft. capacity ___ g.p.m.

Material of drop pipe ___

Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating 2☐ Jet 4☐ Centrifugal 6☐ ___

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

North Star Drilling, Inc. (License Business Name) 48035 (License No.)

Address: Box 23 Isle, MN

Signed: [signature] (Authorized Representative) Date 10/20/77

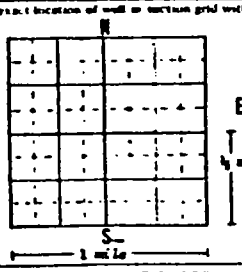
Walt Beunis (Name of Driller) Date 9-23-77

6/74 30M
7/76 30M

| Township Name | Township Number | Range Number | Section No. | Tract Ident. |
|---|---|---|---|---|
| [illegible] | 57 N or S | 31 E or W | 21 | |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well on section grid with "X."




Sketch map of well location.

Addition Name

Block Number

Lot Number

| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | Brown | Soft | 0 | 35 |
| Clay Rock | Gray | Hard | 35 | 82 |
| Sand | Brown | Soft | 82 | 90 |

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY

3. PROPERTY OWNER'S NAME: J. F. Hinon

Address: 21[illegible] F[illegible]

4. WELL DEPTH (completed): 90 ft. Date of Completion: 8-14-77

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☐ Air 8☐ Bored 11☐ ____
3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING
1☒ Black 4☒ Threaded
2☐ Galv. 5☐ Welded
3☐ 6☐
Height: Above/Below Surface 1 ft.
Drive Shoe? Yes ___ No X
5 in. to 82 ft. Weight 14.21 lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
Hole Diam: ___ in. to ___ ft.; ___ in. to ___ ft.; ___ in. to ___ ft.

8. SCREEN
Make: Johnson
Type: Stainless Steel Dia. ___
Slot/Gauge: .012 Length: 8'
Set between 82 ft. and 90 ft.
___ ft. and ___ ft.
___ ft. and ___ ft.
Or open hole from ___ ft. to ___ ft.
FITTINGS:

9. STATIC WATER LEVEL
30 ft. below land surface ☐ above Date Measured 8-14-77

10. PUMPING LEVEL (below land surface)
65 ft. after 1 hrs. pumping 8.9 g.p.m.
___ ft. after ___ hrs. pumping ___ g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter 2☐ Basement offset 3☒ At least 12" above grade

12. Well grouted?
☐ Yes ☒ No Cu. Yds. ___
1☐ Neat Cement 2☐ Bentonite 3☐ ___
Depth: from ___ ft. to ___ ft.
from ___ ft. to ___ ft.

13. Nearest sources of possible contamination
100 feet North direction Septic type
Well disinfected upon completion? Yes ☒ No ☐

14. PUMP
Date Installed ___
☒ Not Installed
Manufacturer's Name ___
Model Number ___ HP ___ Volts ___
Length of drop pipe ___ ft. capacity ___ g.p.m.
Material of drop pipe ___
Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐ ___

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NORTH STAR DRILLING INC. 41136
Licensed Business Name License No.

Address: Box 23 ISLE, MN

Signed: [illegible] Date 9/19/77
Licensed Representative

WALT [illegible] Date 8-14-77
Name of Driller

5/74 30M
7/76 30M

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| | N or S | E or W | | |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well on section grid with "X." Sketch map of well location.

N / W / E / S — 1 mile — ½ mi.

Addition Name

Block Number

Lot Number

| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | Brn | Med | 0 | 39 |
| Clay | Gray | Med | 39 | 72 |
| Fine Sand | Gray | Soft | 72 | 80 |

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY

3. PROPERTY OWNER'S NAME

T. H.

Address

H.

4. WELL DEPTH (completed) 80 ft. Date of Completion 7-3-77

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug 2☐ Hollow rod 5☐ Air 8☐ Bored 11☐ ____ 3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE 1☒ Domestic 4☐ Public Supply 7☐ Industry 2☐ Irrigation 5☐ Municipal 8☐ Commercial 3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING HEIGHT: Above/Below

1☒ Black 4☒ Threaded 2☐ Galv. 5☐ Welded 3☐ 6☐

Surface 1 ft. Drive Shoe? Yes ___ No ☒

0 in. to 72 ft. Weight 14.54 lbs./ft.

___ in. to ___ ft. Weight ___ lbs./ft.

___ in. to ___ ft. Weight ___ lbs./ft.

HOLE DIAM ___ in. to ___ ft. ___ in. to ___ ft. ___ in. to ___ ft.

8. SCREEN Or open hole from ___ ft. to ___ ft.

Make Johnson

Type Stainless Steel Dia. 2"

Slot/Gauge .012 Length 2' FITTINGS

Set between 72 ft. and 74 ft.

___ ft. and ___ ft.

___ ft. and ___ ft.

9. STATIC WATER LEVEL 21 ft. ☐ below land surface ☐ above Date Measured ___

10. PUMPING LEVEL (below land surface) 44 ft. after 1 hrs. pumping 7 g.p.m.

___ ft. after ___ hrs. pumping ___ g.p.m.

11. WELL HEAD COMPLETION 1☐ Pitless adapter 2☐ Basement offset 3☒ At least 12" above grade

12. Well grouted? ☐ Yes ☒ No Cu. Yds. ___

1☐ Neat Cement 2☐ Bentonite 3☐ ___

Depth: from ___ ft. to ___ ft.

from ___ ft. to ___ ft.

13. Nearest sources of possible contamination 40 feet E direction Septic type

Well disinfected upon completion? Yes ☒ No ☐

14. PUMP

Date Installed ___

☒ Not Installed

Manufacturer's Name ___

Model Number ___ HP ___ Volts ___

Length of drop pipe ___ ft. capacity ___ g.p.m.

Material of drop pipe ___

Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating 2☐ Jet 4☐ Centrifugal 6☐ ___

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Licensee Business Name NORTH STAR DRILLING INC License No. 11

Address Box 23 ISLE

Signed [signature] Licensed Representative Date 9/21/77

WILT Registered Date 7-3-77

5/74 30M
7/76 30M

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| Stuntz | 57 N | 21 E | 4 | |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well on section grid with "X." Sketch map of well location.

W E S — 1 mile — ¼ mi.

| Addition Name |
|---|
| Block Number |
| Lot Number |

**2. FORMATION LOG**

| FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | Brown | Soft | 0 | 17 |
| Clay | Gray | Hard | 17 | 62 |
| Sand | Gray | Soft | 62 | 76 |

Use a second sheet, if needed.

**15. REMARKS, ELEVATION, SOURCE OF DATA, etc.**

MINN. GEOLOGICAL SURVEY COPY

**3. PROPERTY OWNER'S NAME**

Ervan Brim

Address: Box 35C RR 1, Hibbing, MN 55746

**4. WELL DEPTH (completed)** 76' ft. **Date of Completion** 7/29/77

**5.** 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☐ Air 8☐ Bored 11☐ ____
3☒ Rotary 6☐ Jetted 9☐ Power Auger

**6. USE**
1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

**7. CASING** HEIGHT: Above/Below —
1☒ Black 4☒ Threaded
2☐ Galv. 5☐ Welded
3☐ 6☐
Surface 1 ft.
Drive Shoe? Yes ___ No X

| | | | | HOLE DIAM |
|---|---|---|---|---|
| 8 in. to 68 ft. | Weight 10.89 lbs./ft. | | | ___ in. to ___ ft. |
| 5 in. to 1.2 ft. | Weight ___ lbs./ft. | | | ___ in. to ___ ft. |
| ___ in. to ___ ft. | Weight ___ lbs./ft. | | | ___ in. to ___ ft. |

**8. SCREEN** Or open hole from ___ ft. to ___ ft.
Make Johnson
Type Stainless steel Dia. 5"
Slot/Gauze .012 Length 4' FITTINGS
Set between 68' ft. and 76' ft.
___ ft. and ___ ft.
68 ft. and 76 ft.

**9. STATIC WATER LEVEL** 12 ft. below land surface ☐ above Date Measured ___

**10. PUMPING LEVEL** (below land surface)
46 ft. after 1 hrs. pumping 10 g.p.m.
___ ft. after ___ hrs. pumping ___ g.p.m.

**11. WELL HEAD COMPLETION**
1☐ Pitless adapter 2☐ Basement offset 3☒ At least 12" above grade

**12. Well grouted?** ☐ Yes ☒ No Cu. Yds. ___
1☐ Neat Cement 2☐ Bentonite 3☐ ___
Depth: from ___ ft. to ___ ft.
from ___ ft. to ___ ft.

**13. Nearest sources of possible contamination**
72 feet N direction Septic
Well disinfected upon completion? Yes☒ No☐

**14. PUMP**
Date Installed ___
☒ Not Installed
Manufacturer's Name ___
Model Number ___ HP ___ Volts ___
Length of drop pipe ___ ft. capacity ___ g.p.m.
Material of drop pipe ___
Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐ ___

**16. WATER WELL CONTRACTOR'S CERTIFICATION**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

North Star Drilling Inc — Licensee Business Name — License #8038

Address: Box 23 Isle

Signed ___ Authorized Representative Date 7/29/77

Walt Beuning — Name of Driller — Date 7/29/77

RECEIVED AUG 2 1977

5/74 30M
7/76 30M

| Township Name | Township Number | Range Number | Section No. | Tract No. | |
|---|---|---|---|---|---|
| Stunts | 57N | 21 | 34 | | SE SE |

Distance and Direction from Rural Intersection or Street Address and City of Well Location

Show exact location of well on section grid with "X." Sketch map of well location.

N, W, E, S, ¼ mi., 1 mile

Addition Name

Block Number

Lot Number

| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | brown | | 0 | 15 |
| Hardpan | | | 15 | 44 |
| Hardpan & boulders | | | 44 | 73 |
| Sand & gravel | | | 73 | 78 |
| 6 GPM | | | | |

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY

3. PROPERTY OWNER'S NAME

Charles Whitney

Address 3115 2nd Ave. W.
Hibbing, Minn 55746

4. WELL DEPTH (completed): 78 ft. Date of Completion: 8/3/78

5. ☐1 Cable tool ☐4 Reverse ☐7 Driven ☐10 Dug
☐2 Hollow rod ☒3 Air ☐8 Bored ☐11 ☐
☒5 Rotary ☐6 Jetted ☐9 Power Auger

6. USE
☒1 Domestic ☐4 Public Supply ☐7 Industry
☐2 Irrigation ☐5 Municipal ☐8 Commercial
☐3 Test Well ☐6 Air Conditioning ☐9 ☐

7. CASING
☒1 Black ☒4 Threaded
☐2 Galv. ☐5 Welded
☐3 ☐6
HEIGHT: Above/Below ~~XXX~~
Surface 1 ft.
Drive Shoe? Yes ☒ No ☐
6 in. to 77 ft. Weight 20 lbs./ft.
4 in. to 78 ft. Weight ___ lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.

HOLE DIAM
___ in. to ___ ft.
___ in. to ___ ft.
___ in. to ___ ft.

8. SCREEN
Make ___ Or open hole from ___ ft. to ___ ft.
Type ___ Dia. ___
Slot/Gauze ___ Length ___
Set between ___ ft. and ___ ft.
___ ft. and ___ ft.
___ ft. and ___ ft.
FITTINGS:

9. STATIC WATER LEVEL
35 ft. ☒ below land surface ☐ above Date Measured 8/3/78

10. PUMPING LEVEL (below land surface)
___ ft. after ___ hrs. pumping ___ g.p.m.
___ ft. after ___ hrs. pumping ___ g.p.m.

11. WELL HEAD COMPLETION
☐1 Pitless adapter ☐2 Basement offset ☐3 At least 12" above grade

12. Well grouted?
☐ Yes ☐ No Cu. Yds. ___
☐1 Neat Cement ☐2 Bentonite ☐3 ☐
Depth: from ___ ft. to ___ ft.
from ___ ft. to ___ ft.

13. Nearest sources of possible contamination
___ feet ___ direction ___ type
Well disinfected upon completion? Yes ☒ No ☐

14. PUMP
Date Installed ___
☐ Not installed
Manufacturer's Name ___
Model Number ___ HP ___ Volts ___
Length of drop pipe ___ ft. capacity ___ g.p.m.
Material of drop pipe ___
Type: ☐1 Submersible ☐3 L. S. Turbine ☐5 Reciprocating
☐2 Jet ☐4 Centrifugal ☐6 ☐

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

PETERSEN WELL DRILLING, INC. # 69183
Licensee Business Name License No.

Address Parkville, Minn 55773

Signed ___ Date 9/7/78
Authorized Representative

Dale Olson Date 8/3/78
Name of Driller

5/74 30M
7/76 30M

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| Stunts | 57N | 21 W | 34 | 6X 8X |

Distance and Direction from Rural Intersections or Street Address and City of Well Location

Show exact location of well on section grid with "X"

Sketch map of well location.

N, W, E, S, ½ mi., 1 mile

Addition Name

Block Number

Lot Number

| 3. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | brown | | 0 | 12 |
| Hardpan | | | 12 | 71 |
| Sand | brown | | 71 | 81 |
| 15-20 GPM | | | | |

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY

2. PROPERTY OWNER'S NAME: Jerry Olson

Address: 3505 9th Ave. W. Apt. 106, Hibbing, Minn 55746

4. WELL DEPTH (completed): 81 ft. Date of Completion: 8/10/78

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☒ Air 8☐ Bored 11☐
3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING — HEIGHT: Above/Below XXX — HOLE DIAM
1☒ Black 4☒ Threaded
2☐ Galv 5☐ Welded Surface 1 ft.
3☐ 6☐ Drive Shoe? Yes ☒ No
6 in. to 81 ft. Weight 20 lbs./ft.
in. to ft. Weight lbs./ft.
in. to ft. Weight lbs./ft.
in. to ft.
in. to ft.
in. to ft.

8. SCREEN — Or open hole from ft. to ft.
Make
Type Dia.
Slot/Gauge Length
FITTINGS:
Set between ft. and ft.
ft. and ft.
ft. and ft.

9. STATIC WATER LEVEL: 35 ft. ☒ below ☐ above land surface — Date Measured 8/10/78

10. PUMPING LEVEL (below land surface)
ft. after hrs. pumping g.p.m.
ft. after hrs. pumping g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter 2☐ Basement offset 3☐ At least 12" above grade

12. Well grouted?
☐ Yes ☐ No Cu. Yds.
1☐ Neat Cement 2☐ Bentonite 3☐
Depth: from ft. to ft.
from ft. to ft.

13. Nearest sources of possible contamination
feet direction type
Well disinfected upon completion? Yes ☒ No ☐

14. PUMP
Date Installed
☐ Not Installed
Manufacturer's Name
Model Number HP Volts
Length of drop pipe ft. capacity g.p.m.
Material of drop pipe
Type: 1☐ Submersible 3☐ L.S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

PETERSEN WELL DRILLING, INC. # 69183
Licensee Business Name License No.

Address: Parkville, Minn 55773

Signed: Authorized Representative Date 8/22/78

Dale Olson, Name of Driller Date 8/10/78

5/74 30M
7/76 30M

St. Louis

| Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|
| 57 N or S | 21 E or W | 35 | SE ¼ NE ¼ ¼ |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well in section grid with "X"

Sketch map of well location

W E S 1 mile ½ mi.

Addition Name

Block Number

Lot Number

3. PROPERTY OWNER'S NAME

Address: James R. Wiitala
Rt. 8 Box 54
Hibbing, Minnesota 55746

4. WELL DEPTH (completed): 141 ft.

Date of Completion: June 11, 1981

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☒ Air 8☐ Bored 11☐
3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING
1☒ Black 4☒ Threaded
2☐ Galv. 5☒ Welded
3☐ Plastic 6☐

HEIGHT: Above/Below
Surface 1 ft.
Drive Shoe? Yes X No

6 in. to 141 ft. Weight 20 lbs./ft.
in. to ft. Weight lbs./ft.
in. to ft. Weight lbs./ft.

HOLE DIAM
in. to ft.
in. to ft.
in. to ft.

8. SCREEN
Make
Or open hole from ft. to ft.
Type Dia.
Slot/Gauge Length
Set between ft. and ft.
ft. and ft.
ft. and ft.
FITTINGS:

9. STATIC WATER LEVEL
ft. ☐ below ☐ above land surface Date Measured

10. PUMPING LEVEL (below land surface)
ft. after hrs. pumping g.p.m.
ft. after hrs. pumping g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter 2☐ Basement offset 3☐ At least 12" above grade

12. Well grouted?
☐ Yes ☒ No Cu. Yds.
1☐ Neat Cement 2☐ Bentonite 3☐
Depth: from ft. to ft.
from ft. to ft.

13. Nearest sources of possible contamination
feet direction type
Well disinfected upon completion? Yes☒ No☐

14. PUMP
Date Installed
☐ Not Installed
Manufacturer's Name
Model Number HP Volts
Length of drop pipe ft. capacity g.p.m.
Material of drop pipe
Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐

| 1. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | Red | | 0' | 33' |
| Hardpan & Boulders | Grey | | 33' | 75' |
| Sand and Gravel | Brown | | 75' | 92' |
| Sand | Brown | | 92' | 130' |
| Sand | Green | | 130' | 135' |
| Gravel | Green | | 135' | 141' |
| 6-7 GPM | | | | |

Use a second sheet, if needed

RECEIVED

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

SEP 03 1981

Minn. Dept. of Health
Div. of Env. Health

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

PETERSEN WELL DRILLING, INC. 69183
Licensee Business Name License No.

Address Parkville, Mn. 55773

Signed Dave Magnuson Date 8-10-81
Authorized Representative

Dave Magnuson Date 6-11-81
Name of Driller

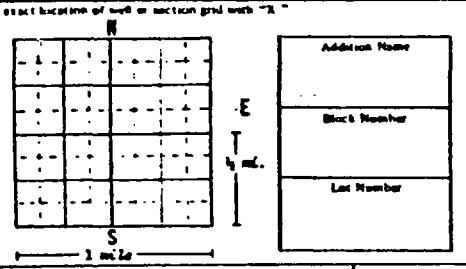
5/74 30M
7/76 30M
7/78 30M

MINN. GEOLOGICAL SURVEY COPY 189469

| Township Name | Township Number | Range Number | Section No. | Fraction | |
|---|---|---|---|---|---|
| Stunts | 57 N/S | 21 E/W | 35 | | NW SW |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well on section grid with "X" — Sketch map of well location.




| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | brown | | 0 | 11 |
| Hardpan | | | 11 | 62 |
| Sand | brown | | 62 | 67 |
| Gravel | | | 67 | 69 |
| 6-7 GPM | | | | |

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY

3. PROPERTY OWNER'S NAME: Brad Johnson

Address: Forest Heights Trailer Ct. Hibbing, Minn 55746

4. WELL DEPTH (completed): 69 ft. — Date of Completion: 8/11/78

5. [1] Cable tool [2] Hollow rod [3] Rotary [4] Rotarie [5] Air [6] Jetted [7] Driven [8] Bored [9] Power Auger [10] Dug [11] ____

6. USE: [1] Domestic [2] Irrigation [3] Test Well [4] Public Supply [5] Municipal [6] Air Conditioning [7] Industry [8] Commercial [9] ____

7. CASING — HEIGHT: Above/Below

[1] Black [2] Galv. [3] [4] Threaded [5] Welded [6]

Surface 1 ft.

Drive Shoe? Yes No

6 in. to 69 ft. Weight 20 lbs./ft.

____ in. to ____ ft. Weight ____ lbs./ft.

____ in. to ____ ft. Weight ____ lbs./ft.

HOLE DIAM: ____ in. to ____ ft.; ____ in. to ____ ft.; ____ in. to ____ ft.

8. SCREEN

Make ____ Or open hole from ____ ft. to ____ ft.

Type ____ Dia. ____

Slot/Gauze ____ Length ____

FITTINGS.

Set between ____ ft. and ____ ft.

____ ft. and ____ ft.

____ ft. and ____ ft.

9. STATIC WATER LEVEL: 40 ft. below land surface [1] above [2] — Date Measured 8/11/78

10. PUMPING LEVEL (below land surface)

____ ft. after ____ hrs. pumping ____ g.p.m.

____ ft. after ____ hrs. pumping ____ g.p.m.

11. WELL HEAD COMPLETION

[1] Pitless adapter [2] Basement offset [3] At least 12" above grade

12. Well grouted?

[1] Yes [2] No — Cu. Yds. ____

[1] Neat Cement [2] Bentonite [3] ____

Depth: from ____ ft. to ____ ft.

from ____ ft. to ____ ft.

13. Nearest sources of possible contamination

____ feet ____ direction ____ type

Well disinfected upon completion? Yes [1] No [2]

14. PUMP

Date Installed ____

[1] Not Installed

Manufacturer's Name ____

Model Number ____ HP ____ Volts ____

Length of drop pipe ____ ft. capacity ____ g.p.m.

Material of drop pipe ____

Type: [1] Submersible [2] Jet [3] L. S. Turbine [4] Centrifugal [5] Reciprocating [6] ____

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

PETERSEN WELL DRILLING, INC. # 6913
Licensee Business Name — License No.

Address: Parkville, Minn 55773

Signed: [signature] Date 9/5/78
Authorized Representative

Dale Olson — Date 8/11/78
Name of Driller

5/74 30M
7/76 30M

Minnesota Statutes 156A.01-.08

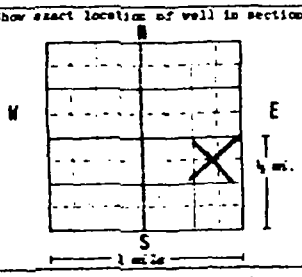
114903

**1. LOCATION OF WELL**

| County Name | Fraction | Section Number | Township Number | Range Number |
|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] N. or S. | [illegible] E. or W. |

Distance and Direction from Road Intersections or Street Address and City of Well Location: HIBBING

Show exact location of well in section grid with "X." Sketch map of well location.




**2. FORMATION LOG**

| FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Top Soil | | S | 0 | 2 |
| Clay | | M | 2 | 10 |
| [illegible] | | H | 10 | 101 |
| Sand | | S | 101 | 104 |
| Coarse Sand | | S | 104 | 112 |

Use a second sheet, if needed.

**15. REMARKS, ELEVATION, SOURCE OF DATA, etc.**

MINN. GEOLOGICAL SURVEY COPY

**3. PROPERTY OWNER'S NAME** [illegible]

Address: Mesabi E. Lot 46 Hibbing Minn.

**4. WELL DEPTH (completed)** 112 ft. **Date of Completion** 3/31/15

**5.** 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☒ Air 8☐ Bored 11☐ ____
3☐ Rotary 6☐ Jetted 9☐ Power Auger

**6. USE** 1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Air Conditioning 8☐ Commercial
3☐ Test Well 6☐ ____

**7. CASING DIAM.** Threaded ☒1 Welded ☐3 Black ☐2 Galv. ☐4

6 in. to 104 ft. depth
4 in. to 106 ft. depth
____ in. to ____ ft. depth

HEIGHT: Above/Below Surface 1 ft.
Weight 11.45 lbs./ft.
Drive Shoe? Yes X No ____

**8. SCREEN** Make Hickton S/S
Type S. S. Dia. 6"
Slot/Gauze 30 Length 6'
Set between 104 ft. and 112 ft.
____ ft. and ____ ft.
____ ft. and ____ ft.

Or open hole from ____ ft. to ____ ft.

FITTINGS:

**9. STATIC WATER LEVEL** 55 ft. ☒ below ☐ above land surface Date Measured 4/5/15

**10. PUMPING LEVEL** (below land surface)
85 ft. after 3 hrs. pumping 7 g.p.m.
____ ft. after ____ hrs. pumping ____ g.p.m.

**11. WELL HEAD COMPLETION** 1☒ Pitless adapter 2☐ Basement offset ☒ At least 12" above grade

**12. Well grouted?** ☒ Yes ☐ No Cu. Yds. ____
1☐ Neat cement ☒ Bentonite 3☐ ____
Depth: from 0 ft. to 104 ft.
from ____ ft. to ____ ft.

**13. Nearest source of possible contamination** 80 feet SE direction Septic tank
Well disinfected upon completion? Yes ☒ No ☐

**14. PUMP** Date installed 4/5/15
☐ Not installed
Manufacturer's Name A.Y. McDonald
Model Number 11D75GB HP 3/4 Volts 230
Length of drop pipe 85 ft. capacity 12 g.p.m.
Material of drop pipe GALV
Type: 1☒ Submersible 3☐ L.S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal-- 6☐ ____

**16. WATER WELL CONTRACTOR'S CERTIFICATION**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Anderson Well Drilling Inc — License Business Name — 69100 License No.

Address 4390 Miller Trunk - Duluth

Signed [illegible] Anderson — Authorized Representative — Date ____

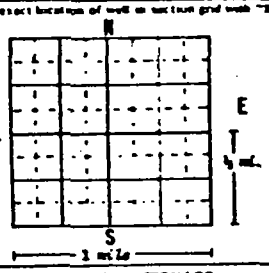
Cert Anderson — Name of Driller

7/76, 30m

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| Stuntz | 57 N/S | 21 E/W | 35 | "NW" SW |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well on section grid with "X."




Sketch map of well location.

Addition Name

Block Number

Lot Number

| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Dirt | black | | 0 | 6 |
| Clay | red | | 6 | 16 |
| Hardpan | | | 16 | 77 |
| Sand | reddish | | 77 | 97 |
| Quick sand | black | | 97 | 120 |
| Clay | green | | 120 | 126 |
| Quick sand | gray | | 126 | 130 |
| Sand & gravel | | | 130 | 135 |
| 5 GPM | | | | |

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY

3. PROPERTY OWNER'S NAME: Robert Greatsil

Address: Old Hwy # 73 (Pintar Road)
Hibbing, Minn 55746

4. WELL DEPTH (completed): 135 ft. Date of Completion: 5/20/76

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☒ Air 8☐ Bored 11☐ _____
3☐ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING HEIGHT: Above/Below
1☒ Black 4☒ Threaded
2☐ Galv. 5☐ Welded Surface 1 ft.
3☐ 6 in. to 135 ft. Weight 20 lbs./ft. 6☐ Drive Shoe? Yes ☒ No ☐
_____ in. to _____ ft. Weight _____ lbs./ft.
_____ in. to _____ ft. Weight _____ lbs./ft.

HOLE DIAM
_____ in. to _____ ft.
_____ in. to _____ ft.
_____ in. to _____ ft.

8. SCREEN Or open hole from _____ ft. to _____ ft.
Make _____
Type _____ Dia. _____
Slot/Gauze _____ Length _____
Set between _____ ft. and _____ ft.
_____ ft. and _____ ft.
_____ ft. and _____ ft.
FITTINGS:

9. STATIC WATER LEVEL
_____ ft. below land surface ☐ above ☐ Date Measured _____

10. PUMPING LEVEL (below land surface)
_____ ft. after _____ hrs. pumping _____ g.p.m.
_____ ft. after _____ hrs. pumping _____ g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter 2☐ Basement offset 3☐ At least 12" above grade

12. Well grouted? ☐ Yes ☐ No Cu. Yds. _____
1☐ Neat Cement 2☐ Bentonite 3☐ _____
Depth: from _____ ft. to _____ ft.
from _____ ft. to _____ ft.

13. Nearest sources of possible contamination
_____ feet _____ direction _____ type
Well disinfected upon completion? Yes ☐ No ☐

14. PUMP
Date Installed _____
☐ Not Installed
Manufacturer's Name _____
Model Number _____ HP _____ Volts _____
Length of drop pipe _____ ft. capacity _____ g.p.m.
Material of drop pipe _____
Type: 1☐ Submersible 3☐ L.S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐ _____

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

PETERSEN WELL DRILLING, INC. # 60183
Licensee Business Name — License No.

Address: Parkville, Minn 55792

Signed: _____ Date: 5/26/76
Authorized Representative

Robert Sneed
Name of Driller — Date: 5/20/76

5/74 30M
7/76 30M

LOCATION WELL

County Name: St. Louis

# WATER WELL RECORD

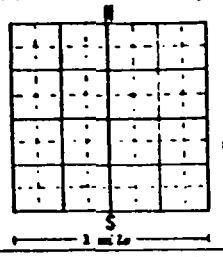
Minnesota Statutes 156.01, 04

MINNESOTA UNIQUE WELL NO. for Water Sample: 185700

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| | 57 N or S | 21 E or W | 36 | N SE SW |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well on section grid with "X."




Sketch map of well location

Addition Name

Block Number

Lot Number

| 3. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | Red Brown | Med | 0 | 37 |
| Sand | Brown | Med | 37 | 65 |
| Clay | Gray | Med | 65 | 109 |
| Sand | Brown | Med | 109 | 120 |

Use a second sheet, if needed

RECEIVED SEP 21 1982 Minn. Dept. of Health Div. of Env. Health

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

3. PROPERTY OWNER'S NAME: John Miitala

Address: RR Box 44 Hibbing, Mn. 55746

4. WELL DEPTH (completed): 120 ft. Date of Completion: 3-29-82

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☐ Air 8☐ Bored 11☐
3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING
1☒ Black 4☐ Threaded
2☐ Galv. 5☒ Welded
3☐ Plastic 6☐
HEIGHT: Above/Below Surface 2 ft.
Drive Shoe? Yes ___ No X
6 in. to 114 ft. Weight 18.97 lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
HOLE DIAM. 7 7/8 in. to 120 ft.
___ in. to ___ ft.
___ in. to ___ ft.

8. SCREEN
Make: Johnson
Type: stainless steel Dia. 2"
Slot/Gauze: 20 Length: 8' threaded FITTINGS.
Set between 112 ft. and 120 ft.
___ ft. and ___ ft.
___ ft. and ___ ft.
Or open hole from ___ ft. to ___ ft.

9. STATIC WATER LEVEL
39 ft. 1☒ below land surface ☐ above Date Measured 3-29-82

10. PUMPING LEVEL (below land surface)
___ ft. after ___ hrs. pumping ___ g.p.m.
___ ft. after ___ hrs. pumping ___ g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter 2☐ Basement offset 3☒ At least 12" above grade

12. Well grouted?
☐ Yes ☒ No Cu. Yds. ___
1☐ Neat Cement 2☐ Bentonite 3☐
Depth: from ___ ft. to ___ ft.
from ___ ft. to ___ ft.

13. Nearest sources of possible contamination
None feet ___ direction ___ type
Well disinfected upon completion? Yes☒ No☐

14. PUMP
Date Installed ___
☐ Not Installed
Manufacturer's Name ___
Model Number ___ HP ___ Volts ___
Length of drop pipe ___ ft. capacity ___ g.p.m.
Material of drop pipe ___
Type: 1☐ Submersible 3☐ L.S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Arrowhead Well & Pump
Licensee Business Name — License No.

Address: SR2 Box 76C Hibb.

Signed: Walter Bruning — Date ___
Authorized Representative

Jim Cottrell — Date ___
Name of Driller

5/74 30M
7/76 30M
7/78 30M

MINN. GEOLOGICAL SURVEY COPY 185700

County Name: St Louis

# WATER WELL RECORD

Minnesota Statutes 156A.01-.06

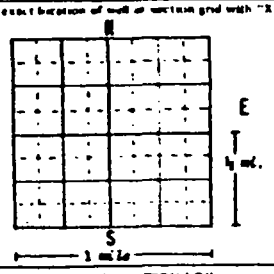
for Water Sample

172053

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| Stuntz | 57 N | 21 E | 36 | |

Distance and Direction from Named Intersections in Street Address and City of Well Location

Show exact location of well or section grid with "X"




Sketch map of well location

Addition Name

Block Number

Lot Number

3. PROPERTY OWNER'S NAME: John Walto

Address: 319 E 53rd St, Hibbing, Minn. 55746

4. WELL DEPTH (completed): 150 ft. Date of Completion: 11-6-79

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☒ Air 8☐ Bored 11☐
3☐ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING
1☒ Black 4☒ Threaded
2☐ Galv. 5☐ Welded
3☐ Plastic 6☐
HEIGHT: Above/Below Surface 1 ft.
Drive Shoe? Yes X No
6 in. to 112 ft. Weight 19.18 lbs./ft.
in. to ft. Weight lbs./ft.
in. to ft. Weight lbs./ft.

HOLE DIAM
6 in. to 150 ft.
in. to ft.
in. to ft.

8. SCREEN
Make
Or open hole from 113 ft. to 150 ft.
Type Dia.
Slot/Gauge Length
FITTINGS.
Set between ft. and ft.
ft. and ft.
ft. and ft.

9. STATIC WATER LEVEL
23 ft. below land surface ☐ above Date Measured 11-6-79

10. PUMPING LEVEL (below land surface)
ft. after hrs. pumping g.p.m.
ft. after hrs. pumping g.p.m.

11. WELL HEAD COMPLETION
1☐ Pitless adapter 2☐ Basement offset 3☒ At least 12" above grade

12. Well grouted?
☐ Yes ☒ No Cu. Yds.
1☐ Neat Cement 2☐ Bentonite 3☐
Depth: from ft. to ft.
from ft. to ft.

13. Nearest sources of possible contamination
feet NONE direction type
Well disinfected upon completion? Yes☐ No☐

14. PUMP
Date Installed
☒ Not Installed
Manufacturer's Name
Model Number HP Volts
Length of drop pipe ft. capacity g.p.m.
Material of drop pipe
Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐

| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | Brown | Med | 1' | 48' |
| Sand-Clay-Rocks | Red | Soft | 49' | 90' |
| Sand | Brown | Soft | 91' | 108' |
| Clay-Rocks-Gravel | Gray | Hard | 109' | 150' |

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

North Country Drilling (License Business Name) 6943-3 (License No.)

Address Rt #1 Box 273A Eveleth, Mn

Signed Gary S Dyer (Authorized Representative) Date 5-22-80

Ted Dyer (Name of Driller) Date 5-23-80

MINN. GEOLOGICAL SURVEY COPY 172053

5/74 30M
7/76 30M
7/78 30M

STATE OF MINNESOTA
DEPARTMENT OF HEALTH

# WATER WELL RECORD

Minnesota Statutes 156A.01-.08

MINNESOTA UNIQUE WELL NO.
for Water Sample

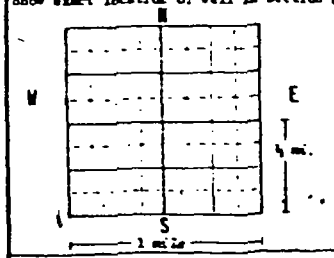
120816

**1. LOCATION OF WELL**

| County Name | Fraction | Section Number | Township Number | Range Number |
|---|---|---|---|---|
| | | | N. or S. | E. or W. |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well in section grid with "X." Sketch map of well location.




**2.**

| FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | red | | 0 | 59 |
| Hard pan & boulders | | | 59 | 86 |
| Decomposed Rock | Gray & green | | 86 | 130 |
| Slate | Black | | 130 | 158 |
| 2 GPM | | | | |

Use a second sheet, if needed.

**3. PROPERTY OWNER'S NAME** WALTER MAKI

Address Star Rt 4 Box 155A
Little Swan, Minn

**4. WELL DEPTH (completed)** 158 ft. Date of Completion 3/10/77

**5.**
1 [ ] Cable tool 4 [ ] Reverse 7 [ ] Driven 10 [ ] Dug
2 [ ] Hollow rod 5 [X] Air 8 [ ] Bored 11 [ ] ____
3 [X] Rotary 6 [ ] Jetted 9 [ ] Power Auger

**6. USE**
1 [X] Domestic 4 [ ] Public Supply 7 [ ] Industry
2 [ ] Irrigation 5 [ ] Air Conditioning 8 [ ] Commercial
3 [ ] Test Well 6 [ ] ____

**7. CASING DIAM.**
Threaded [X] 1 Welded [ ] 3
Black [X] 2 Galv. [ ] 4
6 in. to 86 ft. depth
4 in. to 158 ft. depth
____ in. to ____ ft. depth

HEIGHT: Above/Below Surface 9 ft.
Weight ____ lbs./ft.
Drive Shoe? Yes [X] No [ ]

**8. SCREEN**
Make ____
Type ____ Dia. ____
Slot/Gauze ____ Length ____
Set between ____ ft. and ____ ft.
____ ft. and ____ ft.
____ ft. and ____ ft.

Or open hole from ____ ft. to ____ ft.

FITTINGS:

**9. STATIC WATER LEVEL**
____ ft. [ ] below [ ] above land surface Date Measured ____

**10. PUMPING LEVEL (below land surface)**
____ ft. after ____ hrs. pumping ____ g.p.m.
____ ft. after ____ hrs. pumping ____ g.p.m.

**11. WELL HEAD COMPLETION**
1 [ ] Pitless adapter - 2 [ ] Basement offset 3 [ ] At least 12" above grade

**12. Well grouted?**
[ ] Yes [ ] No Cu. Yds. ____
1 [ ] Neat cement 2 [ ] Bentonite 3 [ ] ____
Depth: from ____ ft. to ____ ft.
from ____ ft. to ____ ft.

**13. Nearest source of possible contamination**
____ feet ____ direction ____ type
Well disinfected upon completion? Yes [X] No [ ]

**14. PUMP**
Date installed ____
[ ] Not installed
Manufacturer's Name ____
Model Number ____ HP ____ Volts ____
Length of drop pipe ____ ft. capacity ____ g.p.m.
Material of drop pipe ____
Type: 1 [ ] Submersible 3 [ ] L.S. Turbine 5 [ ] Reciprocating
2 [ ] Jet 4 [ ] Centrifugal 6 [ ] ____

**15. REMARKS, ELEVATION, SOURCE OF DATA, etc.**

**16. WATER WELL CONTRACTOR'S CERTIFICATION**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

PETERSEN WELL DRILLING, INC. #69183
Licensee Business Name License No.

Address Parkville, Minn 55773

Signed ____ Date ____
Authorized Representative

Dale Olson
Name of Driller

7/74 30M

MINN. GEOLOGICAL SURVEY COPY

St. Louis 57 21

Minnesota Statutes 156A.01-.08

| Township Name | Township Number | Range Number | Section No. | Fractions |
|---|---|---|---|---|
| Stuntz | 701 N or S | 540 E or W | 31/35 | |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well in section grid with "X."

Sketch map of well location.

Addition Name

Block Number

Lot Number

| 2. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | Brown | Med | 0 | 26 |
| Clay | Blue | Med | 26 | 35 |
| Sand | Gray | Soft | 35 | 48 |
| Course Rock | Gray | Hard | 48 | 60 |

Use a second sheet, if needed.

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

MINN. GEOLOGICAL SURVEY COPY

3. PROPERTY OWNER'S NAME: Harold Buchwitz

Address: Box 262, Hibbing MN 55746

4. WELL DEPTH (completed): 60 ft. Date of Completion: 6-28-75

5. 1☐ Cable tool 4☐ Reverse 7☒ Driven 10☐ Dug
2☐ Hollow rod 5☐ Air 8☐ Bored 11☐
3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE
1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING
1☒ Black 4☒ Threaded
2☐ Galv. 5☐ Welded
3☐ 6☐
Height: Above/Below Surface 1 ft.
Drive Shoe? Yes ___ No X
5 in. to 52 ft. Weight 14.81 lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
Hole Diam: ___ in. to ___ ft.

8. SCREEN
Make: Johnson
Or open hole from ___ ft. to ___ ft.
Type: Stainless Steel Dia. 2"
Slot/Gauze: .012 Length: 8'
Fittings:
Set between 52 ft. and 60 ft.
___ ft. and ___ ft.
___ ft. and ___ ft.

9. STATIC WATER LEVEL
28 ft. ☒ below land surface ☐ above Date Measured 6-28-78

10. PUMPING LEVEL (below land surface)
41 ft. after 1 hrs. pumping 10-12 g.p.m.
___ ft. after ___ hrs. pumping ___ g.p.m.

11. WELL HEAD COMPLETION
1☒ Pitless adapter 2☐ Basement offset 3☐ At least 12" above grade

12. Well grouted?
☐ Yes ☒ No Cu. Yds. ___
1☐ Neat Cement 2☐ Bentonite 3☐ ___
Depth: from ___ ft. to ___ ft.
from ___ ft. to ___ ft.

13. Nearest sources of possible contamination
1 feet W direction Septic type
Well disinfected upon completion? Yes ☒ No ☐

14. PUMP
Date Installed 9-8-78
☐ Not Installed
Manufacturer's Name: Reda
Model Number: 909P051 hp 1/2 Volts 230
Length of drop pipe: 50 ft. capacity 9 g.p.m.
Material of drop pipe: PVC
Type: 1☒ Submersible 3☐ L.S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐ ___

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NORTH STAR DRILLING, INC. 48034
Licensee Business Name License No.

Address: Box 23 Isle, MN

Signed: [signature] Authorized Representative Date 2/24/79

Don Flicker Name of Driller Date 6-28-79

5/74 30M
7/76 30M

County Name: St. Louis

# WATER WELL RECORD

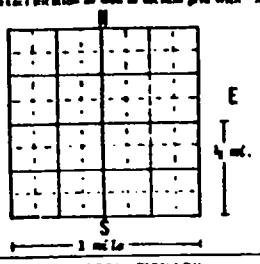
Minnesota Statutes 1964 01.08

MINNESOTA UNIQUE WELL NO. for Water Sample: 410525

Township Name: City Of Hibbing | Township Number | Range Number | Section No. 35 | Location

S/L 0035 T/B 057 Rg. 21 Acre 29.52, Ely 990 Ft. Of SW ¼ of SE ¼ EX the WLY 72 ft. of S. 295.19 ft.

Show exact location of well on section grid with "X." Sketch map of well location.




Addition Name
Block Number
Lot Number

| 3. FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| clay | brown | hard med | 0 | 22 |
| clay & sand | brown | hard | 22 | 30 |
| sand | brown/black | soft | 30 | 33 |
| clay& sand | brown | med | 33 | 40 |
| gravel w/clay | brown | med | 40 | 45 |
| rocks | black/clay | hard | 45 | 50 |
| gray w/gravel | brown | med | 50 | 57 |
| sand | brown | med | 57 | 61 |
| gray | brown | med | 61 | 62 |

Use a second sheet, if needed

12. REMARKS, ELEVATION, SOURCE OF DATA, etc.

RECEIVED SEP 9 1985 Minn. Dept. of Health GWQC

3. PROPERTY OWNER'S NAME: Steve Fairchild
Address: W. 53rd St. Hibbing, Mn. 55746

4. WELL DEPTH (completed): 61 ft. | Date of Completion: 04/02/85

5. 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug 2☐ Hollow rod 5☐ Air 8☐ Bored 11☐ ____ 3☒ Rotary 6☐ Jetted 9☐ Power Auger

6. USE: 1☒ Domestic 4☐ Public Supply 7☐ Industry 2☐ Irrigation 5☐ Municipal 8☐ Commercial 3☐ Test Well 6☐ Air Conditioning 9☐

7. CASING: 1☐ Black 4☐ Threaded 2☐ Galv. 5☐ Welded 3☒ Plastic 6☐
HEIGHT: Above/Below Surface 1½ ft. Drive Shoe? Yes ___ No X
4 in. to 57 ft. Weight ___ lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
___ in. to ___ ft. Weight ___ lbs./ft.
HOLE DIAM: 8 3/4 62 in. to ___ ft.

8. SCREEN: Make Johnson
Or open hole from ___ ft. to ___ ft.
Type Stainless Super Dia. 2"
Slot/Gauge ___ Length 4'
Set between 57 ft. and 61 ft.
___ ft. and ___ ft.
FITTINGS

9. STATIC WATER LEVEL: 28 ft. below land surface ☒ below ☐ above Date Measured 04/02/85

10. PUMPING LEVEL (below land surface): ___ ft. after ___ hrs. pumping 20 g.p.m.
___ ft. after ___ hrs. pumping ___ g.p.m.

11. WELL HEAD COMPLETION: 1☒ Pitless adapter, manufacturer MAASS model weld-on
2☐ Basement offset ☒ At least 12" above grade

12. WELL GROUTED? ☐ Yes ☒ No
1☐ Neat Cement 2☐ Bentonite 3☐ ____
Grout material ___ Depth ___ to ___ ft. Cu. Yds. ___

13. NEAREST SOURCES OF POSSIBLE CONTAMINATION: 75 feet S direction septic
Well disinfected upon completion? Yes ☒ No ☐

14. PUMP
Date Installed ___ ☐ Not Installed
Manufacturer's Name ___
Model Number ___ HP ___ Volts ___
Length of drop pipe ___ ft. capacity ___ g.p.m.
Material of drop pipe ___
Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating 2☐ Jet 4☐ Centrifugal 6☐ ____

16. WATER WELL CONTRACTOR'S CERTIFICATION
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Charwater Well & Pump Inc. License Business Name — # 540 License No.
Address 2402 1st Ave., Hibbing, Mn. 55746
Signed Jim Cottrell Authorized Representative Date July 22 1985
Jim Cottrell Name of Driller Date 04/02/85

MINN. GEOLOGICAL SURVEY COPY 410525

HE-01908-01

STATE OF MINNESOTA DEPARTMENT OF HEALTH

# WATER WELL RECORD

Minnesota Statutes 156A.01-.06

MINNESOTA UNIQUE WELL NO. for Water Sample: 162645

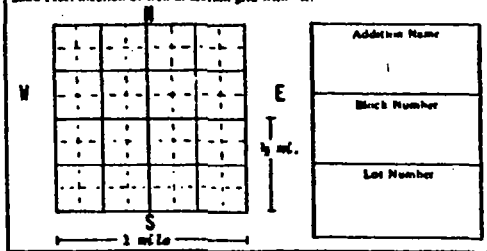
**1. LOCATION OF WELL**

County Name: St. Louis

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| | 57 N or S | 21 E or W | 26 | NW SW (¼ ¼ ¼) |

Distance and Direction from Road Intersections or Street Address and City of Well Location

Show exact location of well in section grid with "X." Sketch map of well location.




**2. FORMATION LOG**

| FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | red | | 0 | 13 |
| Hardpan | | | 13 | 65 |
| Sand & Gravel | | | 65 | 69 |

Use a second sheet, if needed

**3. PROPERTY OWNER'S NAME**

Address: Hugh Vidovac, Hibbing, Minn. 55746

**4. WELL DEPTH (completed)** 69' ft. Date of Completion 7/23/79

**5.** 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug 2☐ Hollow rod ☒ Air 8☐ Bored 11☐ ____ ☒ Rotary 6☐ Jetted 9☐ Power Auger

**6. USE** ☒ Domestic 4☐ Public Supply 7☐ Industry 2☐ Irrigation 5☐ Municipal 8☐ Commercial 3☐ Test Well 6☐ Air Conditioning 9☐

**7. CASING** HEIGHT: Above/Below

☒ Black 4☐ Threaded ☒ 2☐ Galv. 5☐ Welded 3☐ Plastic 6☐

Surface 1 ft. Drive Shoe? Yes ☒ No ☐

6 in. to 69 ft. Weight 20 lbs./ft.

____ in. to ____ ft. Weight ____ lbs./ft.

____ in. to ____ ft. Weight ____ lbs./ft.

HOLE DIAM ____ in. to ____ ft. ____ in. to ____ ft. ____ in. to ____ ft.

**8. SCREEN** Or open hole from ____ ft. to ____ ft.

Make ____ Type ____ Dia. ____

Slot/Gauge ____ Length ____

Set between ____ ft. and ____ ft.

____ ft. and ____ ft.

____ ft. and ____ ft.

FITTINGS:

**9. STATIC WATER LEVEL** 45 ft. ☒ below ☐ above land surface Date Measured 7/23/79

**10. PUMPING LEVEL** (below land surface)

____ ft. after ____ hrs. pumping ____ g.p.m.

____ ft. after ____ hrs. pumping ____ g.p.m.

**11. WELL HEAD COMPLETION**

1☐ Pitless adapter 2☐ Basement offset 3☐ At least 12" above grade

**12. Well grouted?** ☐ Yes ☒ No Cu. Yds. ____

1☐ Neat Cement 2☐ Bentonite 3☐ ____

Depth: from ____ ft. to ____ ft.

from ____ ft. to ____ ft.

**13. Nearest sources of possible contamination**

____ feet ____ direction ____ type

Well disinfected upon completion? Yes ☐ No ☒

**14. PUMP**

Date Installed ____

☐ Not Installed

Manufacturer's Name ____

Model Number ____ HP ____ Volts ____

Length of drop pipe ____ ft. capacity ____ g.p.m.

Material of drop pipe ____

Type: 1☐ Submersible 3☐ L. S. Turbine 5☐ Reciprocating 2☐ Jet 4☐ Centrifugal 6☐ ____

**15. REMARKS, ELEVATION, SOURCE OF DATA, etc.**

**16. WATER WELL CONTRACTOR'S CERTIFICATION**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

PETERSEN WELL DRILLING INC. License No. 69483

Address: Parkville, Minn. 55773

Signed: B Parker Authorized Representative Date 8/31/79

Dale Olson Name of Driller Date 7/23/79

MINN. GEOLOGICAL SURVEY COPY 162645

8/74 30M
7/76 30M

# WATER WELL RECORD

Minnesota Statutes 1344.01-.09

MINNESOTA UNIQUE WELL NO. for Water Sample: 141122

**1. LOCATION OF WELL**

County Name: St. Louis

Township Name:

Township Number: 57 N/S

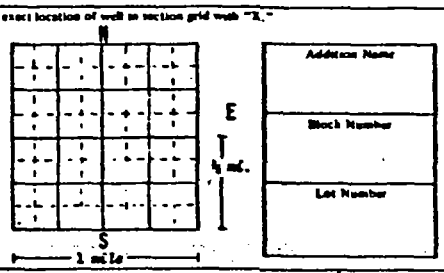
Range Number: 21 E/W

Section No.: 26

Fraction: SE

Distance and Direction from Road Intersections or Street Address and City of Well Location:

Show exact location of well in section grid with "X." Sketch map of well location.




**2. FORMATION LOG**

| FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | Brown | Soft | 0 | 30 |
| Sand Clay | Brown | Soft | 30 | 60 |
| Clay Rocks | Gray | Hard | 60 | 122 |
| Sand | Gray | Soft | 122 | 130 |

Use a second sheet, if needed.

**3. PROPERTY OWNER'S NAME**

Ivan Crandall

Address: R.1 Box 415 B, Hibbing MN 55746

**4. WELL DEPTH (completed)** 130 ft. Date of Completion: 9-28-77

**5.** 1☐ Cable tool 4☐ Reverse 7☐ Driven 10☐ Dug
2☐ Hollow rod 5☐ Air 8☐ Bored 11☐
3☒ Rotary 6☐ Jetted 9☐ Power Auger

**6. USE**

1☒ Domestic 4☐ Public Supply 7☐ Industry
2☐ Irrigation 5☐ Municipal 8☐ Commercial
3☐ Test Well 6☐ Air Conditioning 9☐

**7. CASING**

1☒ Black 4☒ Threaded
2☐ Galv. 5☐ Welded
3☐ 6☐

HEIGHT: Above/Below —

Surface 1 ft.

Drive Shoe? Yes ___ No X

5 in. to 122 ft. Weight 14.81 lbs./ft.

___ in. to ___ ft. Weight ___ lbs./ft.

___ in. to ___ ft. Weight ___ lbs./ft.

HOLE DIAM: ___ in. to ___ ft.; ___ in. to ___ ft.; ___ in. to ___ ft.

**8. SCREEN**

Make: Johnson

Type: Stainless steel Dia. 3"

Slot/Gauze: .012 Length: 8'

Set between 122 ft. and 130 ft.

___ ft. and ___ ft.

___ ft. and ___ ft.

Or open hole from ___ ft. to ___ ft.

FITTINGS:

**9. STATIC WATER LEVEL**

52 ft. ☒ below land surface ☐ above Date Measured 9-28-77

**10. PUMPING LEVEL (below land surface)**

100 ft. after 1 hrs. pumping 6 g.p.m.

___ ft. after ___ hrs. pumping ___ g.p.m.

**11. WELL HEAD COMPLETION**

1☐ Pitless adapter 2☐ Basement offset 3☒ At least 12" above grade

**12. Well grouted?**

☐ Yes ☒ No Cu. Yds. ___

1☐ Neat Cement 2☐ Bentonite 3☐

Depth: from ___ ft. to ___ ft.

from ___ ft. to ___ ft.

**13. Nearest sources of possible contamination**

100 feet 5 direction Septic type

Well disinfected upon completion? Yes ☒ No ☐

**14. PUMP**

Date Installed ___

☒ Not Installed

Manufacturer's Name ___

Model Number ___ HP ___ Volts ___

Length of drop pipe ___ ft. capacity ___ g.p.m.

Material of drop pipe ___

Type: 1☐ Submersible 3☐ L.S. Turbine 5☐ Reciprocating
2☐ Jet 4☐ Centrifugal 6☐

**15. REMARKS, ELEVATION, SOURCE OF DATA, etc.**

**16. WATER WELL CONTRACTOR'S CERTIFICATION**

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

North Star Drilling Inc (License Business Name) 48033 (License No.)

Address: Box 33 Isle, MN

Signed: [signature] (Authorized Representative) Date 10/10/77

Walt Benning (Name of Driller) Date 9-28-77

MINN. GEOLOGICAL SURVEY COPY

5/74 30M
7/76 30M

STATE OF MINNESOTA DEPARTMENT OF HEALTH

# WATER WELL RECORD

Minnesota Statutes 156A.01-.08

MINNESOTA UNIQUE WELL NO. for Water Sample: 403654

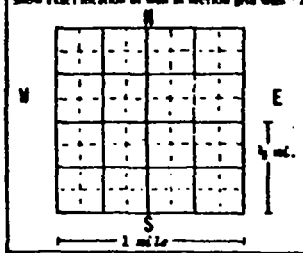
1. LOCATION OF WELL

County Name: St. Louis

| Township Name | Township Number | Range Number | Section No. | Fraction |
|---|---|---|---|---|
| Hibbing | 57 N/S | 21 E/W | 26 | SW SW |

Distance and Direction from Road Intersections or Street Address and City of Well Location: West of the 4th Principle Meridian.

Show exact location of well in section grid with "X"




Sketch map of well location.

Addition Name

Block Number

Lot Number

2. FORMATION LOG

| FORMATION LOG | COLOR | HARDNESS OF FORMATION | FROM | TO |
|---|---|---|---|---|
| Clay | red | | 0 | 20 |
| Gravel & Boulders | bra | | 20 | 78 |
| Sand, clay & boulders | grey | | 78 | 135 |
| Sand & Gravel | grey | | 135 | 148 |
| 10 - 15 GPM | | | | |

Use a second sheet, if needed

3. PROPERTY OWNER'S NAME: James Brownlee (C. Quiel)

Address: Rt. 2, Box 132, Hibbing, Mn. 55746

4. WELL DEPTH (completed): 148' ft.

Date of Completion: 10-1-84

5. [1] Cable tool [2] Hollow rod [X] Rotary [4] Reverse [X] Air [6] Jetted [7] Driven [8] Bored [9] Power Auger [10] Dug [11]

6. USE: [X] 1 Domestic [2] Irrigation [3] Test Well [4] Public Supply [5] Municipal [6] Air Conditioning [7] Industry [8] Commercial [9]

7. CASING: [X] 1 Black [2] Galv. [3] Plastic [X] Threaded [X] Welded [6]

HEIGHT: Above/Below Surface 1 ft.

Drive Shoe? Yes X No

| | | | | |
|---|---|---|---|---|
| 6 in. | to 148 ft. | Weight 20 lbs./ft. | | 6 in. to 148 ft. |
| in. | to ft. | Weight lbs./ft. | | in. to ft. |
| in. | to ft. | Weight lbs./ft. | | in. to ft. |

HOLE DIAM

8. SCREEN: Make

Or open hole from ft. to ft.

Type Dia.

Slot/Gauge Length

Set between ft. and ft.

ft. and ft.

FITTINGS

9. STATIC WATER LEVEL: 40 ft. below [X] land surface [ ] above

Date Measured 10-1-84

10. PUMPING LEVEL (below land surface)

ft. after hrs. pumping g.p.m.

ft. after hrs. pumping g.p.m.

11. WELL HEAD COMPLETION

[1] Pitless adapter, manufacturer model

[2] Basement offset [3] At least 18" above grade

12. WELL GROUTED?

[ ] Yes [X] No

[1] Neat Cement [2] Bentonite [3]

Grout material from to ft. Cu. Yds.

13. NEAREST SOURCES OF POSSIBLE CONTAMINATION

feet direction type

Well disinfected upon completion? Yes X No

14. PUMP

Date Installed [ ] Not Installed

Manufacturer's Name

Model Number HP Volts

Length of drop pipe ft. capacity g.p.m.

Material of drop pipe

Type: [1] Submersible [2] Jet [3] L. S. Turbine [4] Centrifugal [5] Reciprocating [6]

15. REMARKS, ELEVATION, SOURCE OF DATA, etc.

RECEIVED OCT 16 1984 Minn. Dept. of Health GWCS

16. WATER WELL CONTRACTOR'S CERTIFICATION

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

PETERSEN DRILLING, INC. — Licensee Business Name — License No. 69183

Address: Parkville, Mn. 55773

Signed — Authorized Representative — Date 10/14/84

Dennis Peterson — Name of Driller — Date 10-1-84

MINN. GEOLOGICAL SURVEY COPY 403654

9/74 30M
7/75 30M
7/78 30M
2/82 10M

# FIT SAMPLE PROPOSAL FORM REGION V

DATE FORM COMPLETED 3/14/90 PAN# FMN02305B TDD# F05-8910-012 EPA I.D.# MND022818306

SITE NAME (PRINT) Irathane Systems, Inc CITY Hibbing STATE MN

TEAM LEADER Ted Nehrkorn SAMPLER Nathan Russell DATE SENT TO RSCC

CASE # 13822 DRINKING WATER SAS # ORGANIC INORGANIC

ROUTINE ANALYTICAL SERVICES (RAS)

| LOW WATERS FRACTION | MONITORING WELLS NUMBER OF FIELD SAMPLES+ BLANKS+ DUPLICATE= TOTAL | EXPECTED DATE TO SAMPLE | LABORATORY NAME | NUMBER OF COOLERS SHIPPED | NUMBER OF SAMPLES SHIPPED | AIR BILL NUMBERS | DATE SHIPPED TO LAB |
|---|---|---|---|---|---|---|---|
| VOA | | | | | | | |
| ABNs | | | | | | | |
| PEST/PCB | | | | | | | |
| METALS | | | | | | | |
| CN | | | | | | | |

| LOW WATERS FRACTION | SURFACE WATERS NUMBER OF FIELD SAMPLES+ BLANKS+ DUPLICATE= TOTAL | EXPECTED DATE TO SAMPLE | LABORATORY NAME | NUMBER OF COOLERS SHIPPED | NUMBER OF SAMPLES SHIPPED | AIR BILL NUMBERS | DATE SHIPPED TO LAB |
|---|---|---|---|---|---|---|---|
| VOA | | | | | | | |
| ABNs | | | | | | | |
| PEST/PCB | | | | | | | |
| METALS | | | | | | | |
| CN | | | | | | | |

| LOW SOILS/SEDIMENTS/SLUDGES FRACTION | NUMBER OF FIELD SAMPLES+ BLANKS+ DUPLICATE= TOTAL | EXPECTED DATE TO SAMPLE | LABORATORY NAME | NUMBER OF COOLERS SHIPPED | NUMBER OF SAMPLES SHIPPED | AIR BILL NUMBERS | DATE SHIPPED TO LAB |
|---|---|---|---|---|---|---|---|
| VOA | 6 — 6 | 4/5/90 | ESECO | 1 | 5 | 1060853054 | 4/5/90 |
| ABNs | | | | | | | |
| PEST/PCB | | | | | | | |
| METALS | | | BETZ PA | 1 | | 1060853065 | |
| CN | | | | | | | |

RESIDENTIAL/ MUNICIPAL WELL WATERS (DRINKING WATER SAMPLES)

| LOW DETECTION LIMITS/FAST TURN AROUND FRACTION | NUMBER OF FIELD SAMPLES+ BLANKS+ DUPLICATE= TOTAL | EXPECTED DATE TO SAMPLE | LABORATORY NAME | NUMBER OF COOLERS SHIPPED | NUMBER OF SAMPLES SHIPPED | AIR BILL NUMBERS | DATE SHIPPED TO LAB |
|---|---|---|---|---|---|---|---|
| VOA | | | | | | | |
| ABNs | | | | | | | |
| PEST/PCB | | | | | | | |
| METALS | | | | | | | |
| CN | | | | | | | |

( ) SEE NEXT PAGE FOR SPECIAL ANALYTICAL SERVICE REQUEST FOR THIS SITE

SAS #

Complete

Confirmed ✓

SAMPLE DESCRIPTION

SITE NAME/TDD# Irathane Systems Inc. / F05-8910-012

CASE NUMBER 13822

SAMPLE #/STATION LOCATION S1

SAMPLING DATE 4/5/90 SAMPLING TIME 1010

ORGANIC TRAFFIC NUMBER EJY 42

INORGANIC TRAFFIC NUMBER MEJA 30

| BOTTLE | ANALYSIS | TAG NUMBERS | LOT NUMBER |
|---|---|---|---|
| 8 oz. | Extractables | 5081601 | F9214123 |
| 8 oz. | m/CN⁻ | 602 | " |
| 2 x 120ml | VOA | 603, 604 | W9345033 |
| | | | |
| | | | |
| | | | |
| | | | |

PHYSICAL DESCRIPTION AT TIME OF COLLECTION: Brown sand and gravel, frozen, containing paint pigment.

PHYSICAL CHANGES FROM TIME OF COLLECTION UNTIL SHIPMENT: None

INSTRUMENT READINGS N/A.

pH

CONDUCTIVITY

TEMPERATURE

SAMPLE DESCRIPTION

SITE NAME/TDD# Trathans Systems Inc. / F05-8910-012

CASE NUMBER 13822

SAMPLE #/STATION LOCATION S2

SAMPLING DATE 4/5/90 SAMPLING TIME 1025

ORGANIC TRAFFIC NUMBER EJY 43

INORGANIC TRAFFIC NUMBER MEJA 31

| BOTTLE | ANALYSIS | TAG NUMBERS | LOT NUMBER |
|---|---|---|---|
| 8oz. | Extractables | 5081 605 | F9214123 |
| 8oz | m/CN⁻ | 606 | " |
| 120 ml | VOA | 607 | W9345033 |
| 120 ml | VOA | 608 | D9220033 |
| | | | |
| | | | |
| | | | |

PHYSICAL DESCRIPTION AT TIME OF COLLECTION: Brown, sand + gravel, and frozen.

PHYSICAL CHANGES FROM TIME OF COLLECTION UNTIL SHIPMENT: None

INSTRUMENT READINGS N/A

pH

CONDUCTIVITY

TEMPERATURE

SAMPLE DESCRIPTION

SITE NAME/TDD# Irathane Systems, Inc. / F05-8910-012

CASE NUMBER 13822

SAMPLE #/STATION LOCATION S3

SAMPLING DATE 4/5/90 SAMPLING TIME 1045

ORGANIC TRAFFIC NUMBER EJY 44

INORGANIC TRAFFIC NUMBER MEJA 32

| BOTTLE | ANALYSIS | TAG NUMBERS | LOT NUMBER |
|---|---|---|---|
| 8 oz. | Extractables | 5081 609 | F9214123 |
| 8 oz. | M/CN⁻ | 610 | " |
| 2 x 120 ml | VOA | 611, 612 | D9220033 |
| | | | |
| | | | |
| | | | |
| | | | |

PHYSICAL DESCRIPTION AT TIME OF COLLECTION: Brown sand + gravel and frozen

PHYSICAL CHANGES FROM TIME OF COLLECTION UNTIL SHIPMENT: None

INSTRUMENT READINGS N/A

pH

CONDUCTIVITY

TEMPERATURE

SAMPLE DESCRIPTION

SITE NAME/TDD# Irathane Systems, Inc. / F05-8910-012

CASE NUMBER 13822

SAMPLE #/STATION LOCATION S4

SAMPLING DATE 4/5/90 SAMPLING TIME 1105

ORGANIC TRAFFIC NUMBER EJY 45

INORGANIC TRAFFIC NUMBER MEJA 33

| BOTTLE | ANALYSIS | TAG NUMBERS | LOT NUMBER |
|---|---|---|---|
| 8 oz. | Extractables | 5081613 | F9214123 |
| 8 oz. | M/CN- | 614 | " |
| 2x 120 ml | VOA | 615, 116 | D9053033 |
| | | | |
| | | | |
| | | | |
| | | | |

PHYSICAL DESCRIPTION AT TIME OF COLLECTION: Black + brown sand, brown and red clay

PHYSICAL CHANGES FROM TIME OF COLLECTION UNTIL SHIPMENT: None

INSTRUMENT READINGS N/A

pH

CONDUCTIVITY

TEMPERATURE

SAMPLE DESCRIPTION

SITE NAME/TDD# Irathane Systems, Inc. / F05-8910-012

CASE NUMBER 13822

SAMPLE #/STATION LOCATION S5

SAMPLING DATE 4/5/90 SAMPLING TIME 1200

ORGANIC TRAFFIC NUMBER EJY46

INORGANIC TRAFFIC NUMBER MEJA 34

| BOTTLE | ANALYSIS | TAG NUMBERS | LOT NUMBER |
|---|---|---|---|
| 8 oz. | Extract. | 5081617 | F9214123 |
| 8 oz. | m/CN⁻ | 618 | " |
| 2x 120 ml | VOA | 619, 620 | W9345033 |
| | | | |
| | | | |
| | | | |
| | | | |

PHYSICAL DESCRIPTION AT TIME OF COLLECTION: clayey, moist, med. to dark brown

PHYSICAL CHANGES FROM TIME OF COLLECTION UNTIL SHIPMENT: None

INSTRUMENT READINGS N/A

pH

CONDUCTIVITY

TEMPERATURE

EPA

United States Environmental Protection Agency
Contract Laboratory Program Sample Management Office
PO Box 818 Alexandria, VA 22313
703-557-2490 FTS 557-2490

# Organic Traffic Report
*(For CLP Use Only)*

Case Number: 13822
SAS No. (if applicable): N/A

1. Type of Activity (Check one)
- [ ] ENF [ ] NPLD [ ] RA [X] SI [ ] STSI
- [ ] ER [ ] O&M [ ] RD [ ] ST [ ] Other *(Specify)*
- [ ] ESI [ ] PA [ ] RIFS [ ] STPA

Non-Superfund Program

Site Name: Irathane Systems, Inc

City, State: Hibbing, MN

Site Spill ID: N/A

2. Region Number: V
Sampling Co.: FIL
Sampler (Name): Nathan W. Russell

4. Date Shipped: 4/5/90
Airbill Number: 1060853054
Carrier: F

3. Ship To:
Environ. Science and Engineering
7332 South Alton Way
Suite H
Englewood, CO 80112
Attn: Kevin McHugh

Triple volume required for matrix spike/duplicate aqueous sample.

Ship medium and high concentration samples in paint cans.

See reverse for additional instructions.

5. Sample Description *(Enter in Column A)*
1. Surface Water
2. Ground Water
3. Leachate
4. Rinsate
5. Soil/Sediment
6. Oil (SAS)
7. Waste (SAS)
8. Other (SAS) *(Specify)*

| CLP Sample Number *(From labels)* | (A) Sample Description *(From box 1)* | (B) Concentration L=low M=med H=high | (C) RAS Analysis VOA | BNA | Pest/PCB | (D) Special Handling | (E) Station Location | (F) Date/Time of Sample Collection | (G) Corresponding CLP Inorganic Sample Number |
|---|---|---|---|---|---|---|---|---|---|
| EJY 42 | 5 | L | X | X | X | | S1 | 4/5/90 1010 | MEJA 30 |
| EJY 43 | 5 | L | X | X | X | | S2 | 4/5/90 1025 | MEJA 31 |
| EJY 44 | 5 | L | X | X | X | | S3 | 4/5/90 1045 | MEJA 32 |
| EJY 45 | 5 | L | X | X | X | | S4 | 4/5/90 1105 | MEJA 33 |
| EJY 46 | 5 | L | X | X | X | | S5 | 4/5/90 1200 | MEJA 34 |
| ~~EJY 47~~ | ~~5~~ | ~~L~~ | ~~X~~ | ~~X~~ | ~~X~~ | | ~~S6~~ | ~~4/5/90~~ | ~~MEJA 35~~ NWR 4/5/90 |

Shipment is / is not complete

EPA Form 9110-2 (8-88) Replaces EPA Form 2075-7, which may be used. Blue - SMO Copy Pink - Region Copy White - Lab Copy for Return to SMO Yellow - Lab Copy

United States Environmental Protection Agency
Contract Laboratory Program Sample Management Office
PO Box 818 Alexandria, VA 22313
703-557-2490 FTS 557-2490

EPA

# Inorganic Traffic Report
(For CLP Use Only)

Case Number: 13822
SAS No. (if applicable): N/A

1. Type of Activity (Check one)
[ ] ENF [ ] NPLD [ ] RA [X] SI [ ] STSI
[ ] ER [ ] O&M [ ] RD [ ] ST [ ] Other (Specify)
[ ] ESI [ ] PA [ ] RIFS [ ] STPA

Non-Superfund Program

Site Name: Irathane Systems, Inc.

City, State: Hibbing, MN

Site Spill ID: N/A

2. Region Number: V
Sampling Co.: FIT
Sampler (Name): Nathan W. Russell

3. Ship To:
Betz Laboratories
Somerton Rd.
Trevose, PA 19047
Attn. Anne Kennelly

4. Date Shipped: 4/5/90
Airbill Number: 1060853054
Carrier: F

Double volume required for matrix spike/duplicate aqueous sample.

Ship medium and high concentration samples in paint cans.

See reverse for additional instructions.

5. Sample Description (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Rinsate
5. Soil/Sediment
6. Oil (SAS)
7. Waste (SAS)
8. Other (SAS) (Specify)

| CLP Sample Number (From labels) | (A) Sample Description (From box 1) | (B) Concentration L=low M=med H=high | (C) RAS Analysis: Total Metals | (C) RAS Analysis: Cyanide | (D) Special Handling | (E) Station Location | (F) Date/Time of Sample Collection | (G) Corresponding Organic Sample Number |
|---|---|---|---|---|---|---|---|---|
| MEJA 30 | 5 | L | X | X | | S1 | 4/5/90 1010 | EJY 42 |
| MEJA 31 | 5 | L | X | X | | S2 | 4/5/90 1025 | EJY 43 |
| MEJA 32 | 5 | L | X | X | | S3 | 4/5/90 1045 | EJY 44 |
| MEJA 33 | 5 | L | X | X | | S4 | 4/5/90 1105 | EJY 45 |
| MEJA 34 | 5 | L | X | X | | S5 | 4/5/90 1200 | EJY 46 |
| ~~MEJA 35~~ | ~~5~~ | ~~L~~ | ~~X~~ | ~~X~~ | | ~~S6~~ | ~~4/5/90~~ | ~~EJY 47~~ — NWK 4/5/90 |

Shipment is/is not complete

EPA Form 9110-1 (8-88) Replaces EPA Form 2075-6, which may be used. Green - SMO Copy Pink - Region Copy White - Lab Copy for Return to SMO Yellow - Lab Copy

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 5
230 South Dearborn Street
Chicago, Illinois 60604

# CHAIN OF CUSTODY RECORD

PROJ. NO.: FMN0230
PROJECT NAME: F05-8910-012 CASE: 13822
SAMPLERS: (Signature) Nathan Russell

Cooler # 82

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | 8 oz. Extract. | 120 ml VOA | | | | | REMARKS tag # | low conc. Matrix |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EJY42 | 4/5/90 | 1010 | X | | S1 | 3 | 1 | 2 | | | | | 5081604, 603, 604 | soil |
| EJY43 | 4/5/90 | 1025 | | X | S2 | 3 | 1 | 2 | | | | | 5081605, 607, 608 | soil |
| EJY44 | 4/5/90 | 1045 | X | | S3 | 3 | 1 | 2 | | | | | 5081609, 611, 612 | soil |
| EJY45 | 4/5/90 | 1115 | X | | S4 | 3 | 1 | 2 | | | | | 508613, 615, 616 | soil |
| EJY46 | 4/5/90 | 1200 | | X | S5 | 3 | 1 | 2 | | | | | 508617, 619, 620 | soil |
| ~~EJY47~~ | ~~4/5/90~~ | | | | ~~S6~~ | ~~3~~ | ~~1~~ | ~~2~~ | | | | | ~~508621, 623, 624~~ | ~~soil~~ |

NOT 4/5/90

8 oz. lot #: F9214123

120 ml lot #:
W9345033-S1, S2 (2 VOA), S5
D9220033-S3, S4, S2 (1 VOA)

| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
|---|---|---|---|---|---|
| Nathan Russell | 4/5/90 1500 | | | | |
| Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Relinquished by: (Signature) | Date / Time | Received by: (Signature) |
| | | | | | |
| Relinquished by: (Signature) | Date / Time | Received for Laboratory by: (Signature) | Date / Time | Remarks | |

Remarks: Shipped Fed Ex to ESLCO
airbill #: 1060853054
custody seals: 165160, 165161

Distribution: White — Accompanies Shipment; Pink — Coordinator Field Files; Yellow — Laboratory File

05-04769

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 5
230 South Dearborn Street
Chicago, Illinois 60604

# CHAIN OF CUSTODY RECORD

PROJ. NO.: FMNOL30
PROJECT NAME: 105 - 8910 - 012 CASE: 13822
SAMPLERS: (Signature) Matthew [illegible]

Cooler # 193

| STA. NO. | DATE | TIME | COMP. | GRAB | STATION LOCATION | NO. OF CONTAINERS | 8 oz. m/LN | REMARKS: tag # | low conc. matrix |
|---|---|---|---|---|---|---|---|---|---|
| MEJA 30 | 4/5/90 | 1010 | X | | S1 | 1 | 1 | 5081602 | Soil |
| MEJA 31 | 4/5/90 | 1025 | | X | S2 | 1 | 1 | 5081606 | Soil |
| MEJA 32 | 4/5/90 | 1045 | X | | S3 | 1 | 1 | 5081610 | Soil |
| MEJA 33 | 4/5/90 | 1105 | X | | S4 | 1 | 1 | 5081614 | Soil |
| MEJA 34 | 4/5/90 | 1200 | | X | S5 | 1 | 1 | 5081619 | Soil |
| MEJA 35 | 4/5/90 | | | | S6 | 1 | | 5081622 | Soil |

Relinquished by: (Signature) Matthew [illegible] — Date / Time 4/5/90 1500 — 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 Laboratory by: (Signature) — Date / Time

Relinquished by: (Signature) — Date / Time — Received by: (Signature)

Relinquished by: (Signature) — Date / Time — Received by: (Signature)

Remarks: Shipped Fed.Ex. to BETZPA
Airbill #: 1060853065
custody seals: 165162, 167951

Distribution: White — Accompanies Shipment; Pink — Coordinator Field Files; Yellow — Laboratory File

05- 04770

STATE OF MINNESOTA
HAZARDOUS WASTE DISCLOSURE FOR
PAST MANAGEMENT OF HAZARDOUS WASTE

| 1 | 3 | 7 | 4 | 6 | 2 | 3 |
|---|---|---|---|---|---|---|

A. Complete the Past Management of Hazardous Waste Form and include all present and past, suspected or known hazardous wastes.

B. Name of generator (From Items A.1. and A.2. of Disclosure Form):

IRATHANE SYSTEMS INC.

C. Waste Inventory For Past Management*

| Process, Source, Service Dept. | Waste Type | Physical State | Disposal Frequency (days, weeks, months) | Total Amt. Per Year (tons, gallons, yds. |
|---|---|---|---|---|
| 1. COATINGS * | SOLVENT | LIQUID | 4 X PER YEAR | 10 200 GALS |
| 2. COATINGS * | SOLVENT | SLUDGE/ LIQUID | 3 X PER YEAR | 5100 GALS |
| 3. COATINGS * | SOLVENT | LIQUID | 3 X PER YEAR | 500 GALS |
| 4. COATINGS * | PREPOLYMER | SOLID/ LIQUID | 2 X PER YEAR | 9050 GAL |
| 5. COATINGS | COATING | LIQUID | ONCE PER YEAR | 1055 GAL. |
| 6. RUBBER/PAINTS | OIL | LIQUID | TWICE PER YEAR | 350 GALS |
| 7. COATINGS * * | ACTIVATOR | SOLID | ONCE PER YEAR | 37 DRUMS |
| 8. PARTS CASTING * | RESIN | SOLID | ONCE PER YEAR | 2 DRUMS |
| 9. * * STAPLED ITEMS WERE SHIPPED | | | | |
| 10. TOGETHER | | | | |
| 11. | | | | |
| 12. | | | | |
| 13. | | | | |
| 14. | | | | |
| 15. | | | | |
| 16. | | | | |
| 17. | | | | |
| 18. | | | | |
| 19. | | | | |
| 20. | | | | |

*If additional space is needed, complete on a separate sheet of paper, number the attachment and attach to this form.

PO-00279-01 (612)297-2713
12/79

D. Transporters Used (name and address):

| Name | Address | Waste # from Item C. above | Years Used for Transport |
|---|---|---|---|
| SETLIQUID WASTE | 350 SUMAC; WHEELING, IL | 1,2,3,4,5 | 6 MOS |
| URETHANE SYSTEMS | INDUSTRIAL PARK HIBBING | 4,5 | 1 MOS |
| URETHANE SYSTEMS | INDUSTRIAL PARK; HIBBING | 6 | 15 YRS |
| SET LIQUID WASTE | 350 SUMAC, WHEELING, IL | 7, 8 | 6 MOS. |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

E. Disposal site, on-site facility, storage, treatment and/or recovery facility; MPCA permit number, if applicable; method or process of disposal:

| Name | Permit # or State & Co. | Waste # from C. | Years Used for Disposal | Method/Process |
|---|---|---|---|---|
| ALBERT INC. | 03160031 | 1,2,3,4,5 | 2 YRS | INCINERATION |
| URETHANE SYSTEMS | MN137A023 | | 6 MOS | NEUTRALIZATION |
| HIBBING SANITARY LANDFILL | MN/SA15IN | 4,5 | 1 YRS | BURIAL |
| US ECOLOGY | 802511 | 7, 8 | 1 MOS | BURIAL |
| URETHANE SYSTEMS | MN137A023 | 6 | 15 YRS | LAND SPREADING |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

F. Past Management of Hazardous Waste disclosed above covers the period: from 6/19/80 to 9/4/81.

G. The above referenced generator (Item B. of this form) has been operating since:

1956.
Date

Prepared by: L. PETTER

1988

WASTE GENERATION

IRATHANE SYSTEMS INC.

| WASTE NO | DESCRIPT | DEPT | HAZ CATEGORY | DISPOSAL |
|---|---|---|---|---|
| MND-1 | MISC SOLV | LAB | FLAMMABLE | RECYCLE |
| MND-2 | REACTOR MEK | 502/507 | FLAMMABLE | REUSE |
| MND-7 | CURED POLY-URETHANE | 502/507 | NON-HAZ'D | LANDFILL |
| MND-12 | USED OIL | 502/507 | ------- | RECYCLE |
| MND-17 | EQ'T FLUSH | 502/507 | ORM-A | REUSE |
| ----* | POLYURETHANE PIECES | 501 | TOXIC | REUSE |
| ----* | ETHYL ACETATE | 501 | FLAMMABLE | RECYCLE |
| ----* | SCRAPPED AMINE | 501 | TOXIC | REUSE |
| ----* | SOLVOX | 502 | TOXIC | RECYCLE |

*EACH OF THESE MATERIALS IS A ONE TIME GENERATION AND ONE TIME SHIPMENT

SITE MND022818306

CITY HIBBING STATE MN

SAMPLE S4

DATE 4/5/90

TIME 1105 AM PM

SITE MND022818306

CITY HIBBING STATE MN

SAMPLE S5

DATE 4/5/90

TIME 1200 AM PM

SITE MND022818306

CITY HIBBING STATE MN

SAMPLE S6

DATE 4/ /90

TIME _____ AM PM

SITE MND022818306

CITY HIBBING STATE MN

SAMPLE

DATE 4/ /90

TIME AM PM

SITE MND022818306

CITY HIBBING STATE MN

SAMPLE

DATE 4/ /90

TIME AM PM

SITE MND022818306

CITY HIBBING STATE MN

SAMPLE

DATE 4/ /90

TIME AM PM

SITE MND022818306

CITY HIBBING STATE MN

SAMPLE S2

DATE 4/5/90

TIME 1025 AM PM

SITE MND022818306

CITY HIBBING STATE MN

SAMPLE S1

DATE 4/5/90

TIME 1010 AM PM

SITE MND022818306

CITY HIBBING STATE MN

SAMPLE S3

DATE 4/5/90

TIME 1045 AM PM

# UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

**REGION 5**
**230 SOUTH DEARBORN ST.**
**CHICAGO, ILLINOIS 60604**

REPLY TO THE ATTENTION OF:

FIT Inspection Date: April 5, 1990

CERCLIS Site Name: Irathane Systems, Inc.

Site Address: 3516 13th Ave. East

Recipient Information: Joseph D. Barach - Irathane Systems Inc
Name

Manager - R&D and Quality Assurance
Title

4045 Sinton Rd
Street Address

Colorado Springs CO 80907
City State Zip Code

303-636-5286
Telephone Number

Ecology and Environment, Inc. has been retained by the United States Environmental Protection Agency (U.S. EPA) under contract 68-01-7347 for the purpose of evaluating sites under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), and the Superfund Amendments and Reauthorization Act (SARA).

A copy of the report regarding the inspection conducted at the above-referenced property will be forwarded by the U.S. EPA within 6 months. If a copy of the inspection report is not received within 6 months of the inspection date noted above, a written request may be sent to the U.S. EPA representative indicated below.

It is essential to include the U.S. EPA Identification Number listed below to ensure that your request is properly referenced.

U.S. EPA Identification Number MND022818306

Address requests to:

William Messenger, Chief
Pre-Remedial Unit (5HR11)
United States Environmental Protection Agency
230 South Dearborn Street
Chicago, Illinois 60604
(312) 353-1057

Distribution:
White: FIT Site File; TDD No.: F05-8910-012 ; PAN: FMN0230SB
Yellow: Recipient
Pink: U.S. EPA

403,003 + 1 Method 4/4

# RECEIPT FOR SAMPLES

U.S. EPA, 230 S. Dearborn St., Chicago, IL 60604

U. S. EPA ID NO MND022818306

PROJ. ACCT. NO. FMN02305B

TDD F05-8910-012

SPLIT SAMPLES ACCEPTED(✓) DECLINED( )

FACILITY/OCCUPANT NAME: Irathane Systems, Inc.

FACILITY/OCCUPANT ADDRESS: 3516 13th Ave East, Hibbing, MN 55746

| SAMPLE NUMBER | DATE | TIME | SPLIT SAMPLES (✓) | OTR# | ITR# | DESCRIPTION OF SAMPLE LOCATIONS | SEMIVOLATILES | PESTICIDES/PCBS | VOLATILES | METALS | CYANIDE | | | MATRIX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S1 | 4/5/90 | 1010 | ✓ | EJY 42 | MEJA 30 | Soil 1 | ✓ | ✓ | ✓ | ✓ | ✓ | | | Soil |
| S2 | 4/5/90 | 1025 | ✓ | EJY 43 | MEJA 31 | Soil 2 | ✓ | ✓ | ✓ | ✓ | ✓ | | | Soil |
| S3 | 4/5/90 | 1045 | ✓ | EJY 44 | MEJA 32 | Soil 3 | ✓ | ✓ | ✓ | ✓ | ✓ | | | Soil |
| S4 | 4/5/90 | 1105 | ✓ | EJY 45 | MEJA 33 | Soil 4 | ✓ | ✓ | ✓ | ✓ | ✓ | | | Soil |
| S5 | 4/5/90 | 1200 | ✓ | EJY 46 | MEJA 34 | Soil 5 | ✓ | ✓ | ✓ | ✓ | ✓ | | | Soil |
| ~~S6~~ | ~~4/5/90~~ | | | ~~EJY 47~~ | ~~MEJA 35~~ | ~~Soil 6~~ NWR 4/5/90 | ✓ | ✓ | ✓ | ✓ | ✓ | | | ~~Soil~~ |

NWR 4/5/90

TRANSFERRED BY: Ted Nehrkorn (Signature) 4/5/90 (Date) 1245 (Time)

RECEIVED BY: Joseph D. Bonch (Signature) 4/5/90 (Date) 12:51 (Time)

DISTRIBUTION
WHITE: FIT SITE FILE
YELLOW: FACILITY/OCCUPANT
GREEN: FIT SAMPLE MANAGEMENT
PINK: U.S. EPA

TITLE: Mgr R&D / QA

TELEPHONE: 218 262 5211 / 719 636 5286

ecology and environment, inc.
111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL. 312-663-9415
International Specialists in the Environment

CRL Receipt Date 5/11 FIT Receipt Date 5/25 Review Completed 5/25/90

TO: Del Kosy
FROM: Mary Gzyra
SUBJECT: Prothoke Sys.
PAN: UN0230SB (1 hour charged for review) Case # 13822

Sample Description

| Organics (VOA, ABN, Pest/PCB) | | Inorganics (Metals, Cyanide) | |
|---|---|---|---|
| # 5 | Low Soil | # | Low Soil |
| | Low Water | | Low Water |
| | Drinking Water | | Drinking Water |
| | Other | | Other |

Project Data Status _____ Completed!!

_____ Incomplete, awaiting See Memo

FIT Data Review Findings:

***Check Data Sheets for Transcription Errors***

_____ Compounds were detected in sample(s); see enclosed sheet.

Book No. 9 Page No. _____ Date Sampled 4/5

0759:2

recycled paper

5/25/90

Table 4-__
RESULTS OF CHEMICAL ANALYSIS OF
FIT-COLLECTED _____ SAMPLES

| Physical State* | Waste Characteristics** | Category*** | SI Memo | Sample Collection Information and Parameters | ____1 | ____2 | ____3 | ____4 | ____5 | ____6 | ____7 | ____8 | ____9 | ____10 | ____11 | ____12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Date | | | | | | | | | | | | |
| | | | | Time | | | | | | | | | | | | |
| | | | | Well Depth (Feet) | | | | | | | | | | | | |
| | | | | CRL Log Number | | | | | | | | | | | | |
| | | | | CLP Organic Traffic Report Number | EY 42 | 43 | 44 | 45 | 46 | | | | | | | |
| | | | | CLP Inorganic Traffic Report Number | | | | | | | | | | | | |
| | | | | Temperature (°C) | | | | | | | | | | | | |
| | | | | Specific Conductivity (µmhos/cm) | | | | | | | | | | | | |
| | | | | pH | | | | | | | | | | | | |
| | | | | Compound Detected (values in µg/L or µg/kg) | | | | | | | | | | | | |
| | | | | Volatile Organics | | | | | | | | | | | | |
| Gas | A,D,G,I | OCC | HH | chloromethane | | | | | | | | | | | | |
| Gas | A,D,G,I | OCC | HH | bromomethane | | | | | | | | | | | | |
| Gas | A,D,G,I | OCC | HH | vinyl chloride | | | | | | | | | | | | |
| Gas | A,D,G,I | OCC | HH | chloroethane | | | | | | | | | | | | |
| Liquid | A,D,H,I | SOL | HH,CLA | methylene chloride | 430 JBD | 75 JB | 6 J | | | | | | | | | |
| Liquid | E,H,I,A | SOL | K,CLA | acetone | 45 J | | 510 J | | 16 J | | | | | | | |
| Liquid | A,H,I | SOL | SH | carbon disulfide | | | | | | | | | | | | |
| Liquid | A,D,G,I | SOL | HH | 1,1-dichloroethene | | | | | | | | | | | | |
| Liquid | A,D,H,G | SOL | HH | 1,1-dichloroethane | | | | | | | | | | | | |
| Liquid | A,D,G | SOL | HH | 1,2-dichloroethene (total) | | | | | | | | | | | | |
| Liquid | A,D | SOL | HH | chloroform | | | | | | | | | | | | |
| Liquid | A,D,G | SOL | HH | 1,2-dichloroethane | | | | | | | | | | | | |
| Liquid | A,E,G | SOL | K,CLA | 2-butanone (MEK) | 4 J | | 140 J | | 10 J | | | | | | | |
| Liquid | A,D | SOL | HH | 1,1,1-trichloroethane | | | | | | | | | | | | |
| Liquid | A,D | SOL | HH | carbon tetrachloride | | | | | | | | | | | | |
| Liquid | A,D,G | SOL | HYD | vinyl acetate | | | | | | | | | | | | |
| Liquid | A,D | OCC | HH | bromodichloromethane | | | | | | | | | | | | |
| Liquid | A,D,G | SOL | HH | 1,2-dichloropropane | | | | | | | | | | | | |
| Liquid | A,D,G | SOL | HH | cis-1,3-dichloropropene | | | | | | | | | | | | |
| Liquid | A,D,G,B | SOL | HH | trichloroethene | 3 J | 7 | | | | | | | | | | |
| Liquid | A,D | OCC | HH | dibromochloromethane | | | | | | | | | | | | |
| Liquid | A,D | SOL | HH | 1,1,2-trichloroethane | | | | | | | | | | | | |
| Liquid | A,G | SOL | A | benzene | 5 J | 1 J | 24 J | 14 | | | | | | | | |
| Liquid | A,D,G | SOL | HH | trans-1,3-dichloropropene | | | | | | | | | | | | |
| Liquid | A,D | SOL | HH,CLA | bromoform | | | | | | | | | | | | |
| Liquid | A,E,G | SOL | K,CLA | 4-methyl-2-pentanone | | | | | | | | | | | | |
| Liquid | A,E,G | SOL | K | 2-hexanone | | | | | | | | | | | | |
| Liquid | A,D | SOL | HH | tetrachloroethene | | | | | | | | | | | | |
| Liquid | A,G,E | SOL | A,CLA | toluene | 12 | 2 J | 61 J | 40 J | | | | | | | | |
| Liquid | A,D,E | SOL | HH | 1,1,2,2-tetrachloroethane | | | | | | | | | | | | |
| Liquid | A,D,G | SOL | HA | chlorobenzene | | | | | | | | | | | | |
| Liquid | A,G | SOL | A | ethylbenzene | | | 21 J | 5 J | | | | | | | | |
| Liquid | A,D,G | OCC | A | styrene | | | 8 J | 2 J | | | | | | | | |
| Liquid | A,G | SOL | A | xylenes (total) | | | 13 J | 2 J | | | | | | | | |

Table 4- (Cont.)

| Physical State* | Waste Characteristics** | Category*** | SI Memo | Sample Collection Information and Parameters | Sample Number 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Semivolatile Organics | | | | | | | | | | | | |
| S, thick 1 | A,B,E | OCC | P | phenol | | | | | | | | | | | | |
| Liquid | A,D,B | OCC | HH | bis(2-chloroethyl)ether | | | | | | | | | | | | |
| Liquid | A,D,B | OCC | P | 2-chlorophenol | | | | | | | | | | | | |
| Liquid | A,D,H | SOL | HA | 1,3-dichlorobenzene | | | | | | | | | | | | |
| Solid | A,D,H | OCC | HA | 1,4-dichlorobenzene | | | | | | | | | | | | |
| Liquid | A,D,H | SOL | A | benzyl alcohol | | | | | | | | | | | | |
| Liquid | A,D,H | OCC | HA | 1,2-dichlorobenzene | | | | | | | | | | | | |
| Liquid | A,B | OCC | P | 2-methylphenol | | | | | | | | | | | | |
| | A,D | OCC | HH | bis(2-chloroisopropyl)ether | | | | | | | | | | | | |
| Liquid | A,B | OCC | P | 4-methylphenol | | | | | | | | | | | | |
| | A | OCC | H-Amine | n-nitroso-di-n-dipropylamine | | | | | | | | | | | | |
| Solid | A,D | OCC | HH | hexachloroethane | | | | | | | | | | | | |
| Liquid | A,D | OCC | NA | nitrobenzene | | | | | | | | | | | | |
| Liquid | A,D | OCC | H | isophorone | | | | | | | | | | | | |
| Solid | A,D | OCC | P | 2-nitrophenol | | | | | | | | | | | | |
| Solid | A,B | OCC | P | 2,4-dimethylphenol | | | | | | | | | | | | |
| Solid | A | OCC | A | benzoic acid | | | | | 9100 J | | | | | | | |
| | A,D | OCC | HH | bis(2-chloroethoxy)methane | | | | | | | | | | | | |
| Liquid | A,D | OCC | P | 2,4-dichlorophenol | | | | | | | | | | | | |
| Liquid | A,D | OCC | HA | 1,2,4-trichlorobenzene | | | | | | | | | | | | |
| Solid | A | OCC | PAH | naphthalene | | | | | | | | | | | | |
| Solid | A,D | OCC | HH | 4-chloroaniline | | | | | | | | | | | | |
| Liquid | A,D,B | OCC | HH | hexachlorobutadiene | | | | | | | | | | | | |
| Solid | A,D | OCC | P | 4-chloro-3-methylphenol | | | | | | | | | | | | |
| Liquid | A,D | OCC | PAH | 2-methylnaphthalene | | | | | | | | | | | | |
| Liquid | A,D,B | OCC | HH | hexachlorocyclopentadiene | | | | | | | | | | | | |
| Solid | A,D | OCC | P | 2,4,6-trichlorophenol | | | | | | | | | | | | |
| Solid | A,D | OCC | P | 2,4,5-trichlorophenol | | | | | | | | | | | | |
| Liquid | A,D | OCC | PAH | 2-chloronaphthalene | | | | | | | | | | | | |
| Solid | A,D | OCC | NH | 2-nitroaniline | | | | | | | | | | | | |
| Liquid | A,D | OCC | PH,CLA | dimethylphthalate | | | | | | | | | | | | |
| Solid | A,D | OCC | PAH | acenaphthylene | | | | | | | | | | | | |
| Solid | A,D | OCC | NA | 2,6-dinitrotoluene | | | | | | | | | | | | |
| Solid | A,D | OCC | NH | 3-nitroaniline | | | | | | | | | | | | |
| Solid | A,D | OCC | PAH | acenaphthene | | | | | | | | | | | | |
| Solid | A,D,G | OCC | P | 2,4-dinitrophenol | | | | | | | | | | | | |
| Solid | A,D | OCC | P | 4-nitrophenol | | | | | | | | | | | | |
| Solid | A,D | OCC | A | dibenzofuran | | | | | | | | | | | | |
| Solid | A,D | OCC | NA | 2,4-dinitrotoluene | | | | | | | | | | | | |
| Liquid | A,D | OCC | PH | diethylphthalate | | | | | | | | | | | | |
| | A,D | OCC | HH | 4-chlorophenyl-phenylether | | | | | | | | | | | | |
| Solid | A,D | OCC | PAH | fluorene | | | | | | | | | | | | |
| Solid | A,D,E | OCC | NH | 4-nitroaniline | | | | | | | | | | | | |
| Solid | A,D | OCC | P | 4,6-dinitro-2-methylphenol | | | | | | | | | | | | |
| Solid | A,D | OCC | NH | n-nitrosodiphenylamine | | | | | | | | | | | | |
| Liquid | A,D | OCC | HH | 4-bromophenyl-phenylether | | | | | | | | | | | | |
| Solid | A,D | OCC | HA | hexachlorobenzene | | | | | | | | | | | | |
| Solid | A,D | OCC | P | pentachlorophenol | | | | | | | | | | | | |
| Solid | A,D | OCC | PAH | phenanthrene | | | | | | | | | | | | |

Table 4- (Cont.)

| Physical State* | Waste Characteristics** | Category*** | SI Memo | Sample Collection Information and Parameters | Sample Number ____1 | ____2 | ____3 | ____4 | ____5 | ____6 | ____7 | ____8 | ____9 | ____10 | ____11 | ____12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Semivolatile Organics, Cont. | | | | | | | | | | | | |
| Solid | A,D | OCC | PAH | anthracene | | | | | | | | | | | | |
| Liquid | A,D | OCC | PH,CLA | di-n-butylphthalate | | | | | | | | | | | | |
| Solid | A,D | OCC | PAH | fluoranthene | | | | | | | | | | | | |
| Solid | A,D | OCC | PAH | pyrene | | | 78 J | | | | | | | | | |
| Liquid | A,D | OCC | PH,CLA | butylbenzylphthalate | | | | | | | | | | | | |
| | A,D | OCC | HA | 3,3'-dichlorobenzidine | | | | | | | | | | | | |
| Solid | A,D | OCC | PAH | benzo[a]anthracene | | | | | | | | | | | | |
| Solid | A,D | OCC | PAH | chrysene | | | | | | | | | | | | |
| Liquid | A,D | OCC | PH,CLA | bis(2-ethylhexyl)phthalate | | | | | | | | | | | | |
| Liquid | A,D | OCC | PH,CLA | di-n-octylphthalate | | | | | | | | | | | | |
| Solid | A,D | OCC | PAH | benzo[b]fluoranthene | | | | | | | | | | | | |
| Solid | A,D | OCC | PAH | benzo[k]fluoranthene | | | | | | | | | | | | |
| Solid | A,D,K,L | OCC | PAH | benzo[a]pyrene | | | | | | | | | | | | |
| Solid | A,D | OCC | PAH | indeno[1,2,3-cd]pyrene | | | | | | | | | | | | |
| Solid | A,D | OCC | PAH | dibenzo[a,h]anthracene | | | | | | | | | | | | |
| Solid | A,D | OCC | PAH | benzo[g,h,i]perylene | | | | | | | | | | | | |
| | | | | Pesticides/PCBs | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | alpha BHC | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | beta BHC | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | delta BHC | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | gamma BHC (Lindane) | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | Heptachlor | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | Aldrin | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | Heptachlor epoxide | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | Endosulfan I | | | | | | | | | | | | |
| Solid | A,D,E | PSD | PEST | Dieldrin | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | 4,4'-DDE | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | Endrin | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | Endosulfan II | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | 4,4'-DDD | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | Endosulfan sulfate | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | 4,4'-DDT | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | Methoxychlor (Mariate) | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | Endrin ketone | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | alpha Chlordane | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | gamma Chlordane | | | | | | | | | | | | |
| Solid | A,D | PSD | PEST | Toxaphene | | | | | | | | | | | | |
| Liquid | A,D | OCC | PCB | Aroclor 1016 | | | | | | | | | | | | |
| Liquid | A,D | OCC | PCB | Aroclor 1221 | | | | | | | | | | | | |
| Liquid | A,D | OCC | PCB | Aroclor 1232 | | | | | | | | | | | | |
| Liquid | A,D | OCC | PCB | Aroclor 1242 | | | | | | | | | | | | |
| Liquid | A,D | OCC | PCB | Aroclor 1248 | | | | | | | | | | | | |
| Liquid | A,D | OCC | PCB | Aroclor 1254 | | | | | | | | | | | | |
| Liquid | A,D | OCC | PCB | Aroclor 1260 | | | | | | | | | | | | |

Table 4- (Cont.)

| COMPOUND QUALIFIERS | DEFINITION | INTERPRETATION |
|---|---|---|
| U | Indicates compound was analyzed for but not detected. | Compound was not detected at or above the CRDL. |
| J | Indicates an estimated value. | Compound value may be semiquantitative. |
| UJ | Quantitation limit is estimated due to a quality control (QC) protocol. | Compound was not detected if value is at CRQL, e.g., 10U UJ. If a value is reported with a UJ above CRQL and it is <5x blank concentration (10x for common laboratory artifacts), the compound is detected but may be a laboratory artifact and not attributable to the sample. |
| C | This flag applies to pesticide results where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/µL in the final extract shall be confirmed by GC/MS. | Compound was confirmed by GC/MS and is quantitative. Use pesticide/PCB listed value. |
| B | This flag is used when the compound is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. | Compound value may be semiquantitative if it is <5x the blank concentration (<10x the blank concentrations for common laboratory artifacts: phthalates, methylene chloride, acetone, toluene, 2-butanone). |
| E | This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. This flag will not apply to pesticides/PCBs analyzed by GC/EC methods. | Compound value may be semiquantitative. There should be another analysis with a D qualifier, which is to be used. |
| D | This flag identifies all compounds identified in an analysis at a secondary dilution factor. | Alerts data user to a possible change in the CRQL. Data is quantitative. |
| A | This flag indicates that a TIC is a suspected aldol-condensation product. | Alerts data user of a laboratory artifact in the TICs only. |
| R | Results are unusable due to a major violation of QC protocol. | Compound value is not usable. |

| ANALYTE QUALIFIERS | | DEFINITION | INTERPRETATION |
|---|---|---|---|
| E | E | Estimated or not reported due to interference. See laboratory narrative. | Analyte or element was not detected, or value may be semiquantitative. |
| S | S | Analysis by Method of Standard Additions. | Value is quantitative. |
| R | N | Spike recoveries outside QC protocols, which indicates a possible matrix problem. Data may be biased high or low. See spike results and laboratory narrative. | Value may be quantitative or semi-quantitative. |
| * | * | Duplicate value outside QC protocols which indicates a possible matrix problem. | Value may be quantitative or semiquantitative. |
| + | + | Correlation coefficient for standard additions is less than 0.995. See review and laboratory narrative. | Data value may be biased. |
| [ ] | B | Value is real, but is above instrument DL and below CRDL. | Value may be quantitative or semi-quantitative. |
| UJ | | DL is estimated because of a QC protocol. DL is possibly above or below CRDL. | Compound or element was not detected. |
| J | | Value is above CRDL and is an estimated value because of a QC protocol. | Value may be semiquantitative. |
| U | U | Compound was analyzed for but not detected. | Compound was not detected at or above the CRDL. |
| | M | Duplicate injection precision not met. | Value may be semiquantitative. |
| | W | Post-digestion spike for furnace AA analysis is out of control limits (35-115%), while sample absorbance is <50% of spike absorbance. | Value may be semiquantitative. |
| | R | Results are unusable due to a major violation of QC protocols. | Analyte value is not usable. |

Source: Ecology and Environment, Inc. 1989.

| S3 | exceeded holding times | calibration exceeded QA/QC limits |
|---|---|---|
| 1) acetone | Y | Y |
| 2) 2-butanone | Y | No |
| 3) benzene | Y | No |
| 4) toluene | Y | No |
| 5) ethyl benzene | Y | No |

| S4 | EGY 45 | exceeded calibration QA/QC limits | Surrogate for d8 toluene out of limits |
|---|---|---|---|
| 1) toluene | | No | YES |

| S5 | EGY 46 | exceeded calibration QA/QC limits |
|---|---|---|
| 1) acetone | | Yes |
| 2) benzoic acid | | Yes |

DPO: [ ] ACTION [ ] FYI REGION V

## ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO. 13822 LABORATORY ESECO

SDG NO(s). EJY 42 DATA USER FIT

SOW EJY 42 REVIEW COMPLETION DATE 14 May 90

NO. OF SAMPLES Five (5) MATRIX Soil (SPECIFY WATER, SOIL, OR OTHER)

REVIEWER [ ] ESD [X] ESAT [X] OTHER, CONTRACT/CONTRACTOR Ronald J. Zanger

IS LABORATORY CERTIFICATION STATEMENT SIGNED? [ ] YES [ ] NO

IS DATA PACKAGE CONSISTENT WITH THE LABORATORY'S CERTIFIED NARRATIVE? [X] YES [ ] NO

| | VOA | BNA | PEST | OTHER |
|---|---|---|---|---|
| 1. HOLDING TIMES | M | O | O | |
| 2. GC-MS TUNE/ GC PERFORMANCE | O | O | O | |
| 3. INITIAL CALIBRATIONS | O | O | O | |
| 4. CONTINUING CALIBRATIONS | M | M | O | |
| 5. FIELD BLANKS ("F" = not applicable) | F | F | F | |
| 6. LABORATORY BLANKS | O | O | O | |
| 7. SURROGATES | O | O | O | |
| 8. MS/MSD | O | O | O | |
| 9. REGIONAL QC ("F" = not applicable) | F | F | F | |
| 10. INTERNAL STANDARDS | M | O | | |
| 11. COMPOUND IDENTIFICATION | O | O | O | |
| 12. COMPOUND QUANTITATION | O | O | O | |
| 13. SYSTEM PERFORMANCE | O | O | | |

O = No problems or minor problems that do not affect data usability.
X = No more than *about* 5% of the data points are qualified as either estimated or unusable.
M = More than *about* 5% of the data points are qualified as estimated.
Z = More than *about* 5% of the data points are qualified as unusable.
A = Used *in conjunction with* above codes to indicate that item requires DPO action.

DPO ACTION ITEMS:

AREAS OF CONCERN:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

5/25/90

DATE: 5/23/90

SUBJECT: Review of Region V CLP Data
Received for Review on May 11, 1990

FROM: Curtis Ross, Director (5SCRL) Patrick J. Chunlla for
Central Regional Laboratory

TO: Data User: Det

We have reviewed the data for the following case(s).

SITE NAME: Urethane Systems (MMI) SMO Case No. 13822

EPA Data Set No. SF 7156 No. of Samples: 5 D.U./Activity Numbers TFA/TFA102

CRL No. 90FN13598-32

SMO Traffic No. EJ442-46

CLP Laboratory: Esecco Hrs. Required for Review: 7.0+1 = 8

Following are our findings.

Five (5) soil samples were determined for low-level volatile organics, semivolatile organics, and pesticides/PCB's. Characteristic problems with soil sample matrix effects resulted in some QC outliers and qualification of data, but overall quality of results appears to be at least Average. The reviewer's comments and data qualifiers follow.

Ronald J. Ranger

Ronald J. Ranger
Roy F. Weston, Inc.
18 May 1990

( ) Data are acceptable for use.
(x) Data are acceptable for use with qualifications noted above.
( ) Data are preliminary - pending verification by Contractor Laboratory.
( ) Data are unacceptable.

cc: Dr. Alfred Haeberer/Joan Fisk/Gary Ward, EPA Support Services
Ross K. Robeson, EMSL-Las Vegas
Don Trees, CLP/Sample Management Office

DATA QUALIFIERS

Contractor: ESECO

Case/SAS number: 13822

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

(1) Holding Times:

The Organic Traffic Report lists the sampling date of all samples as 5 April 1990. All semivolatile organics samples were extracted within the fifteen-day limits for the extraction of semivolatiles in soil. All pesticide/PCB samples were extracted within the eight-day limit for the extraction of pesticides/PCB's in soil. All semivolatile organics and pesticide/PCB extracts were analyzed within the forty-day limit.

#1 All volatile organics samples were analyzed within the eight-day limit with the exception of EJY44, EJY45RE, and EJY46RE. The results for these three volatile organics samples are estimated, "J" or "UJ", for positive and negative results, respectively.

(2) GC/MS Tuning and Mass Calibration:

All GC/MS ion abundance and percent relative abundance criteria were met both in the bromofluorobenzene tunes for volatile organic analysis and in the decafluorotriphenylphosphine tunes for semivolatile organic analysis. A telephone log attached to the lab narrative refers to a problem with a volatile organics tune, but no problem with any GC/MS tune has been identified by the reviewer.

(3) Calibration:

GC/MS calibration outliers are listed on the attached forms.

(4) Method Blanks:

The volatile organics method blank VBLK3H contained methylene chloride, affecting EJY42, EJY43, EJY45, EJY46, EJY42DL, and EJY42MSD. Affected samples containing less than ten times the amount of methylene chloride found in the associated blank are qualified "U", undetected, for methylene chloride in that sample.

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Reviewed by: Ronald J. Zanger

Phone: (312) 353-2960

Date: 18 May 1990

DATA QUALIFIERS

Contractor: ESECO

Case/SAS number: 13822

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

(4) Method Blanks (continued):

The semivolatile organics method blank SBLK A contained diethylphthalate, *bis*-(2-ethylhexyl) phthalate, and four TIC compounds, affecting all samples. Those samples containing less than ten times the amount of diethylphthalate or *bis*-(2-ethylhexyl) phthalate found in the blank are qualified "U", undetected, for those two compounds in that sample. Samples containing less than five times the amount of a TIC compound found in the blank are qualified "U", undetected, for that TIC in that sample.

No interferences were reported for either pesticide/PCB method blank.

(5) Surrogate Spike Recoveries:

#3

All volatile organics surrogate recoveries met contract-required QC limits with the exception of EJY46, which had toluene-d8 high, slightly above contract-required QC limits. The sample was reanalyzed per contract requirement but sample EJY46RE had toluene-d8 high, above contract-required QC limits, and bromofluorobenzene low, below contract-required QC limits, to some extent proving a sample matrix effect. Results for both these samples are estimated, "J" or "UJ", for positive and negative results, respectively.

All semivolatile organics surrogate recoveries were within contract-required QC limits with the exception of EJY44 and RJY45, for which nitrobenzene-d5 was low, below contract-required QC limits. These were reanalyzed with the same result, except that 2,4,6-tribromophenol was also low, below contract-required QC limits, for sample EJY45RE. No qualification of samples EJY44, EJY44RE and EJY45, or EJY435RE is required, as there is only a single surrogate outlier per base-neutral or acid fraction.

All pesticide/PCB surrogate recoveries met contract-required QC limits.

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Reviewed by: Ronald J. Zanger

Phone: (312) 353-2960

Date: 18 May 1990

DATA QUALIFIERS

Contractor: ESECO

Case/SAS number: 13822

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

(6) Matrix Spike/Matrix Spike Duplicate Recoveries:

All volatile organics matrix spikes met advisory QC limits, as did all associated RPD's with the exception of that for 1,1-dichloroethene, which was high, above advisory QC limits.

All semivolatile organics and pesticide/PCB matrix spikes, and their associated RPD's, met advisory QC limits.

No qualification of the data is required on the basis of a single RPD outlier.

(7) Field Blanks and Field Duplicate Samples:

No field blanks or field duplicate samples were included in this sample set.

(8) Internal Standards:

All semivolatile organics internal standards met the -50%/+100% criterion for internal standard area counts, as well as the +/- 30-second criterion for internal standard retention time variation.

Volatile organics internal standards: chlorobenzene-d5 and 1,4-difluorobenzene were low, below contract-required QC limits, for EJY45, and chlorobenzene-d5 was low, below contract-required QC limits, for EJY46. The samples were reanalyzed per contract requirements with the same results. The internal standards are not extremely low and no excessive loss of sensitivity is indicated. Affected compounds in EJY45 and EJY46 are qualified "J" and "UJ", estimated, for positive and negative results, respectively. For lists of compounds affected by out-of-control internal standards refer to Table 4, attached.

---

Reviewed by: Ronald J. Zanger

Phone: (312) 353-2960

Date: 18 May 1990

DATA QUALIFIERS

Contractor: ESECO

Case/SAS number: 13822

Below is a summary of the out-of-control audits and the possible effect on the data for this case:

(8) Internal Standards (continued):

Pesticides/PCB's:

In the evaluation checks for linearity the %RSD was within the 10% limit for all compounds. Endrin and 4,4'-DDT degradation was within the 20% limit. Dibutylchlorendate retention time shifts were within the 0.3% limit for all injections. For the Individual Standard "A" and "B" the 15% criterion for continuing calibration factors was met for all compounds. No pesticides or PCB's were detected with the primary column. No confirmation run or GC/MS confirmation was performed, and none was required.

(9) Compound Quantitation and Reported Detection Limits:

A surver of the positive results revealed no errors in calculations in any fraction. Comparisons of chromatograms of positives with the results indicate that the positive values are at least in the correct range. Dilutions and moisture content appear to have been correctly factored into the results. No problems indicated.

(10) Other Case-Specific Problems:

The sample report forms (Form I) for a pesticide/PCB method blank and for both matrix spikes were not included in the package and were retrieved during the course of this review, possibly indicating a lack of attention to detail to the analysis as a whole.

Most of the QC problems with this sample set appear to the result of sample matrix interferences, characteristic of a large fraction of soil samples. All required reanalyses appear to have been performed, and the quality of the results appears to be at least average, given the matrix effects encountered. Whether the clean-up procedures for avoiding sample matrix effects were properly (if at all) employed is open to doubt in such cases.

---

Reviewed by: Ronald J. Zanger

Phone: (312) 353-2960

Date: 18 May 1990

# UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
## CALIBRATION OUTLIERS
## VOLATILE HSL COMPOUNDS

CASE/SAS # 13522 CONTRACTOR ESECO

| Instrument # 9602 ±2 | Init. Cal. | | | Cont. Cal. | | | Cont. Cal. | | | Cont. Cal. | | | Cont. Cal. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE/TIME: | 3/22/90 12:15 | | | 4/13/90 10:41 | | | 4/16/90 8:25 | | | | | | | | |
| | RF | %RSD | * | RF | %D | * | RF | %D | * | RF | %D | * | RF | %D | * |
| Chloromethane | | | | | | | | | | | | | | | |
| Bromomethane | 0.437 | 79.3 | J | 0.112 | 38.1 | J | 0.065 | 93.0 | J | | | | | | |
| Vinyl Chloride | | | | | | | | | | | | | | | |
| Chloroethane | | | | | | | | | | | | | | | |
| Methylene Chloride | 1.988 | | | 0.719 | 63.8 | J | 0.797 | 59.9 | J | | | | | | |
| (7). Acetone | 0.132 | 62.7 | J | 0.089 | 33.0 | J | 0.083 | 39.3 | J | | | | | | |
| Carbon Disulfide | | | | | | | | | | | | | | | |
| 1,1-Dichloroethane | | | | | | | | | | | | | | | |
| 1,1-Dichloroethene | | | | | | | | | | | | | | | |
| Trans-1,2-Dichloroethene | | | | | | | | | | | | | | | |
| Chloroform | | | | | | | | | | | | | | | |
| 2-Butanone | | | | | | | | | | | | | | | |
| 1,2-Dichloroethane | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | | | | | | | | | | | | | | | |
| Carbon Tetrachloride | | | | | | | | | | | | | | | |
| Vinyl Acetate | 0.405 | 33.5 | J | 0.398 | 27.5 | J | 0.400 | 27.7 | J | | | | | | |
| Bromodichloromethane | | | | | | | | | | | | | | | |
| 1,2-Dichloropropane | | | | | | | | | | | | | | | |
| Trans-1,3-Dichloropropene | | | | | | | | | | | | | | | |
| Trichloroethene | | | | | | | | | | | | | | | |
| Dibromochloromethane | | | | | | | | | | | | | | | |
| 1,1,2-Trichloroethane | | | | | | | | | | | | | | | |
| Benzene | | | | | | | | | | | | | | | |
| cis-1,3-Dichloropropene | | | | | | | | | | | | | | | |
| 2-Chloroethylvinylether | | | | | | | | | | | | | | | |
| Bromoform | | | | | | | | | | | | | | | |
| 4-Methyl-2-Pentanone | | | | | | | | | | | | | | | |
| 2-Hexanone | | | | | | | | | | | | | | | |
| Tetrachloroethene | | | | | | | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | | | | | | | | | | | | | | | |
| Toluene | | | | | | | | | | | | | | | |
| Chlorobenzene | | | | | | | | | | | | | | | |
| Ethylbenzene | | | | | | | | | | | | | | | |
| Styrene | | | | | | | | | | | | | | | |
| m-Xylene | | | | | | | | | | | | | | | |
| o/p-Xylene | | | | | | | | | | | | | | | |

AFFECTED SAMPLES:

| | |
|---|---|
| VBEF3H | VBLE3I |
| EJY42 | EJY42MS |
| EJY43 | EJY44 |
| EJY45 | EJY45RE |
| EJY46 | EJY46RE |
| EJY42DL | |
| EJY42MSD | |

Reviewer's Initials/Date: RJZ 5/18/90

* These flags should be applied to the analytes on the sample data sheets.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
SEMIVOLATILE HSL COMPOUNDS
(Page 1)

CASE/SAS # 13822 CONTRACTOR ESECO

| Instrument # 9601 #1 | Init. Cal. | | | Cont. Cal. | | | Cont. Cal. | | | Cont. Cal. | | | Cont. Cal. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE/TIME: | 4/13/90 10:15 | | | 4/18/90 1:35 | | | 4/18/90 13:53 | | | 4/20/90 14:51 | | | 4/23/90 16:17 | | |
| | RF | %RSD | * | RF | %D | * | RF | %D | * | RF | %D | * | RF | %D | * |
| Phenol | | | | | | | | | | | | | | | |
| bis(-2-Chloroethyl)Ether | | | | | | | | | | | | | | | |
| 2-Chlorophenol | | | | | | | | | | | | | | | |
| 1,3-Dichlorobenzene | | | | | | | | | | | | | | | |
| 1,4-Dichlorobenzene | | | | | | | | | | | | | | | |
| Benzyl Alcohol | | | | | | | | | | | | | | | |
| 1,2-Dichlorobenzene | | | | | | | | | | | | | | | |
| 2-Methylphenol | | | | | | | | | | | | | | | |
| bis(2-chloroisopropyl)Ether | 1.726 | | | 1.452 | | | 1.229 | 28.8 | J | | | | | | |
| 4-Methylphenol | | | | | | | | | | | | | | | |
| N-Nitroso-Di-n-Propylamine | | | | | | | | | | | | | | | |
| Hexachloroethane | | | | | | | | | | | | | | | |
| Nitrobenzene | | | | | | | | | | | | | | | |
| Isophorone | | | | | | | | | | | | | | | |
| 2-Nitrophenol | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | | | | | | | | | | | | | | | |
| 23 Benzoic Acid | 0.105 | 61.1 | J | 0.223 | 111.9 | J | 0.040 | 62.3 | R | 0.060 | 43.0 | J | 0.076 | 27.9 | J |
| bis(2-Chloroethoxy)Methane | | | | | | | | | | | | | | | |
| 2,4-Dichlorophenol | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | | | | | | | | | | | | | | | |
| Naphthalene | | | | | | | | | | | | | | | |
| 4-Chloroaniline | | | | | | | | | | | | | | | |
| Hexachlorobutadiene | | | | | | | | | | | | | | | |
| 4-Chloro-3-Methylphenol | | | | | | | | | | | | | | | |
| 2-Methylnaphthalene | | | | | | | | | | | | | | | |
| Hexachlorocyclopentadiene | | | | | | | | | | | | | | | |
| 2,4,6-Trichlorophenol | | | | | | | | | | | | | | | |
| 2,4,5-Trichlorophenol | | | | | | | | | | | | | | | |
| 2-Chloronaphthalene | | | | | | | | | | | | | | | |
| 2-Nitroaniline | | | | | | | | | | | | | | | |
| Dimethyl Phthalate | | | | | | | | | | | | | | | |
| Acenaphthylene | | | | | | | | | | | | | | | |
| 3-Nitroaniline | | | | | | | | | | | | | | | |
| Acenaphthene | | | | | | | | | | | | | | | |
| 2,4-Dinitrophenol | 0.176 | 45.1 | J | | | | | | | | | | | | |
| 4-Nitrophenol | | | | | | | | | | | | | | | |
| Dibenzofuran | | | | | | | | | | | | | | | |

AFFECTED SAMPLES:

| | | |
|---|---|---|
| SBLK A | EJY 44 µS | EJY 44 RE |
| EJY 44 µSD | EJY 42 | EJY 45 RE |
| EJY 43 | EJY 45 | |
| EJY 44 | EJY 46 | |

Reviewer Initials/Date: RJZ 5/18/90

* These flags should be applied to the analytes on the sample data sheets.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION V
CALIBRATION OUTLIERS
SEMIVOLATILE MSL COMPOUNDS
Page 2

CASE/SAS # 13822 CONTRACTOR ESECO

| Instrument # 9601 #1 | Init. Cal. | | | Cont. Cal. | | | Cont. Cal. | | | Cont. Cal. | | | Cont. Cal. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE/TIME: | 4/13/90 10:15 | | | 4/18/90 1:35 | | | 4/18/90 13:53 | | | 4/20/90 14:51 | | | 4/23/90 16:17 | | |
| | RF | %RSD | * | RF | %D | * | RF | %D | * | RF | %D | * | RF | %D | * |
| 2,4-Dinitrotoluene | | | | | | | | | | | | | | | |
| 2,6-Dinitrotoluene | | | | | | | | | | | | | | | |
| Diethylphthalate | | | | | | | | | | | | | | | |
| 4-Chlorophenyl-phenylether | | | | | | | | | | | | | | | |
| Fluorene | | | | | | | | | | | | | | | |
| 4-Nitroaniline | | | | | | | | | | | | | | | |
| 4,6-Dinitro-2-Methylphenol | 0.139 | 36.5 | J | 0.175 | 25.8 | J | 0.155 | | | 0.158 | | | 0.176 | 26.3 | J |
| N-Nitrosodiphenylamine | | | | | | | | | | | | | | | |
| 4-Bromophenyl-phenylether | | | | | | | | | | | | | | | |
| Hexachlorobenzene | | | | | | | | | | | | | | | |
| Pentachlorophenol | | | | | | | | | | | | | | | |
| Phenanthrene | | | | | | | | | | | | | | | |
| Anthracene | | | | | | | | | | | | | | | |
| Di-n-Butylphthalate | | | | | | | | | | | | | | | |
| Fluoranthene | | | | | | | | | | | | | | | |
| Pyrene | | | | | | | | | | | | | | | |
| Butylbenzylphthalate | | | | | | | | | | | | | | | |
| Benzo(a)Anthracene | | | | | | | | | | | | | | | |
| bis(2-Ethylhexyl)Phthalate | | | | | | | | | | | | | | | |
| Chrysene | | | | | | | | | | | | | | | |
| Di-n-Octyl Phthalate | | | | | | | | | | | | | | | |
| Benzo(b)Fluoranthene | | | | | | | | | | | | | | | |
| Benzo(k)Fluoranthene | | | | | | | | | | | | | | | |
| Benzo(a)Pyrene | | | | | | | | | | | | | | | |
| Indeno(1,2,3-cd)Pyrene | 1.048 | | | 1.049 | | | 1.123 | | | 0.759 | 29.6 | J | 0.755 | 30.0 | J |
| Dibenz(a,h)Anthracene | 0.771 | | | 0.733 | | | 0.824 | | | 0.560 | 27.3 | J | 0.567 | 26.5 | J |
| Benzo(g,h,i)Perylene | 1.075 | | | 1.061 | | | 1.069 | | | 0.660 | 38.6 | J | 0.682 | 36.6 | J |

*SEE PAGE 1 FOR AFFECTED SAMPLES.

* These flags should be applied to the analytes on the sample data sheets.

Reviewer's Initials/Date: RJZ 18 May 1990

# DATA REPORTING QUALIFIERS

For reporting results to EPA, the following result qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

VALUE - If the result is a value greater than or equal to the detection limit, report the value.

U - Indicates compound was analyzed but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture. For example, 10 U for phenol in water if the sample final volume is the protocol-specified final volume. If a 1 to 10 dilution of extract is necessary, the reported limit is 100 U. For a soil sample, the value must also be adjusted for percent moisture. For example, if the sample had 24% moisture and a 1 to 10 dilution factor, the sample quantitation limit for phenol (330 U) would be corrected to:

$$\frac{(330\ U)}{D} \times df \qquad \text{where } D = \frac{100 - \%\ \text{moisture}}{100}$$

and df = dilution factor

$$\text{at 24\% moisture, } D = \frac{100-24}{100} = 0.76$$

$$\frac{(330\ U)}{.76} \times 10 = 4300\ U$$ rounded to the appropriate number of significant figures

For soil sample subjected to GPC clean-up procedures, the CRQL is also multiplied by 2, to account for the fact that only half of the extract is recovered.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero. For example, if the sample quantitation limit is 10 ug/L, but a concentration is 3 ug/L is calculated, report it as 3J. The sample quantitation limit must be adjusted for both dilution and percent moisture as discussed for the U flag, so that if a sample with 24% moisture and a 1 to 10 dilution factor has a calculated concentration of 300 ug/L and a sample quantitation limit of 430 ug/kg, report the concentration as 300J on Form I.

C - This flag applies to pesticide results where the identification has been confirmed by GC/MS. Single component pesticides $\geq$10 ng/ul in the final extract shall be confirmed by GC/MS.

2



B - This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. This flag must be used for a TIC as well as for a positively identified TCL compound.

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. This flag will not apply to pesticides/PCBs analyzed by GC/EC methods. If one or more compounds have a response greater than full scale, the sample or extract must be diluted and re-analyzed according to the specifications. All such compounds with a response greater than full scale should have the concentration flagged with an "E" on the Form I for the original analysis. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported on separate Forms I. The Form I for the diluted sample shall have the "DL" suffix appended to the sample number.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor, as in the "E" flag above, the "DL" suffix is appended to the sample number on the Form I for the diluted sample and all concentration values reported on that Form I are flagged with the "D" flag.

A - This flag indicates that TIC is a suspected aldol-condensation product.

X - Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the Sample Data Summary Package and the Case Narrative. If more than one is required, use "Y" and "Z", as needed. If more than five qualifiers are required for a sample result, use the "X" flag to combine several flags, as needed. For instance, the "X" flag might combine the "A", "B", and "D" flags for some sample.

## * TABLE 4

### VOLATILE INTERNAL STANDARDS WITH CORRESPONING TCL ANALYTES ASSIGNED FOR QUANTITATION

| Bromochloromethane IS-1 | 1,4-Difluorobenzene IS-2 | Chlorobenzene-$d_5$ IS-3 |
|---|---|---|
| Chloromethane | 2- Butanone | 2-Hexanone |
| Bromomethane | 1,1,1-Trichloroethane | 4-Methyl-2-Pentanone |
| *Vinyl Chloride | Carbon Tetrachloride | Tetrachloroethene |
| Chloroethane | Vinyl Acetate | 1,1,2,2-Tetrachloroethane |
| Methylene Chloride | Bromodichloromethane | *Toluene |
| Acetone | *1,2-Dichloropropane | Chlorobenzene |
| Carbon Disulfide | trans-1,3-Dichloropropane | *Ethylbenzene |
| *1,1-Dichloroethene | Trichloroethene | Styrene |
| 1,1-Dichloroethane | Dibromochloromethane | Xylene (total) |
| 1,2-Dichloroethene (total) | 1,1,2-Trichloroethane | Bromofluorobenzene (surr) |
| *Chloroform | Benzene | Toluene-$d_8$ (surr) |
| 1,2-Dichloroethane | cis-1,3-Dichloropropene | |
| 1,2-Dichloroethane-$d_4$ (surr) | Bromoform | |

(SURR)- SURROGATE COMPOUND  * CALIBRATION CHECK COMPOUND

### SEMIVOLATILE INTERNAL STANDARDS WITH CORRESPONDING TCL ANALYTES ASSIGNED FOR QUANTITATION

| 1,4-Dichlorobenzene-$d_4$ IS-1 | Naphthalene-$d_8$ IS-2 | Acenaphthene-$d_{10}$ IS-3 | Phenanthrene-$d_{10}$ IS-4 | Chrysene-$d_{12}$ IS-5 | Perylene-$d_{12}$ IS-6 |
|---|---|---|---|---|---|
| Phenol | Nitrobenzene | Hexachlorocyclopentadiene | 4,6-Dinitro-2-methylphenol | Pyrene | Di-n-octyl Phthalate |
| bis(2-Chloroethyl) ether | Isophorone | 2,4,6-Trichlorophenol | N-nitrosodiphenylamine | Butylbenzyl Phthalate | Benzo(b)fluoranthene |
| 2-Chlorophenol | 2-Nitrophenol | 2,4,5-Trichlorophenol | 1,2-Diphenylhydrazine | 3,3'-Dichlorobenzidine | Benzo(k)fluoranthene |
| 1,3-Dichlorobenzene | 2,4-Dimethylphenol | 2-Chloronaphthalene | 4-Bromophenyl Phenyl Ether | Benzo(a)anthracene | Benzo(a)pyrene |
| 1,4-Dichlorobenzene | Benzoic acid | 2-Nitroaniline | Hexachlorobenzene | bis(2-ethylhe Phthalate | Indeno(1,2,3-cd) pyrene |
| Benzyl Alcohol | bis(2-Chloroethoxy)methane | Dimethyl Phthalate | Pentachlorophenol | Chrysene | Dibenz(a,h) anthracene |
| 1,2-Dichlorobenzene | 2,4-Dichlorophenol | Acenaphthylene | Phenanthrene | Terphenyl-$d_{14}$ (surr) | |
| 2-Methylphenol | 1,2,4-Trichlorobenzene | 3-Nitroaniline | Anthracene | | |
| bis(2-Chloroisopropyl)ether | Naphthalene | Acenaphthene | Di-n-butyl Phthalate | | |
| 4-Methylphenol | 4-Chloroaniline | 2,4-Dinitrophenol | Fluoranthene | | |
| N-nitroso-Di-n-propylamine | Hexachlorobutadiene | 4-Nitrophenol | | | |
| Hexachloroethane | 4-Chloro-3-methylphenol | Dibenzofuran | | | |
| 2-Fluorophenol (surr) | 2-Methylnaphthalene | 2,4-Dinitrotoluene | | | |
| Phenol-$d_6$ (surr) | Nitrobenzene-$d_5$ (surr) | 2,6-Dinitrotoluene | | | |
| | | Diethyl Phthalate | | | |
| | | 4-Chlorophenyl-phenyl ether | | | |
| | | Fluorene | | | |
| | | 4-Nitroaniline | | | |
| | | 2-Fluorobiphenyl (surr) | | | |
| | | 2,4,6-Tribromo Phenol (surr) | | | |

CENTRAL REGIONAL LABORATORY

# ORGANICS/INORGANICS

THIS FORM IS TO BE USED FOR SAMPLES SENT TO CONTRACT ONLY

SUPERFUND 7156 DUE DATE: 6/14/90 LOG IN DATE: 5/9/90 APR 11 1990

CASE NUMBER/SAS No. 13822 SITE NAME Trathane Systems, Inc. LABORATORY BESECO/BETZPA DATE SHIPPED 4/5/90

SUPERFUND DU NUMBER IFA102 EPA RPM or OSC (S.M.S.V.CES) _____ CERCLIS NUMBER MND022818306 PAGE 1 OF 1

ACTIVITY NUMBER 77

| CRL LOG NUMBER | ORGANIC TRAFFIC REPORT NUMBER | INORGANIC TRAFFIC REPORT NUMBER or SAS Packing List No. | WATER OR LIQUIDS: ACID-BASE NEUTRAL CPOS ORGANIC SCAN UG/L TOX17524 | VOLATILE ORGANIC ANALYSIS ORGANIC SCAN UG/L TOX17544 | WATER POLYCHLORINATED BIPHENYLS UG/L PCS 17144 | WATER ORGANIC PESTICIDES UG/L PCS17134 | TOTAL METALS IN WATER UG/L MET111 | WATER CYANIDE UG/L SAM7-018 | NITRATE/NITRITE UG/L SAM7264 | AMMONIA UG/L SAM7234 | RESIDUE, FILTERABLE TDS MG/L SAM7242 | RESIDUE, NON-FILT TSS MG/L SAM7272 | | | SEDIMENTS or SOILS: ACID-BASE NEUTRAL CPOS ORGANIC SCAN UG/KG TOX17522 | VOLATILE ORGANIC ANALYSIS ORGANIC SCAN UG/KG TOX17522 | SEDIMENTS POLYCHLORINATED BIPHENYLS UG/KG PCS17122 | SEDIMENT ORGANIC PESTICIDES UG/KG 211222 | TOTAL METALS UG/KG MET413 | CYANIDE UG/KG SAM4-020 | % TOXICITY METALS UG/KG | AMMONIA UG/KG SAM4-223 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 90FN13528 | EJY 42 | MEJA 30 | | | | | | | | | | | | | X | X | X | X | X | X | | | | |
| 29 | 43 | 31 | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 44 | 32 | | | | | | | | | | | | | | | | | | | | | | |
| 31 | 45 | 33 | | | | | | | | | | | | | | | | | | | | | | |
| ✓ 32 | ✓ 46 | ✓ 34 | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | |

United States Environmental Protection Agency
Contract Laboratory Program Sample Management Office
PO Box 818 Alexandria, VA 22313
703-557-2490 FTS 557-2490

EPA

# Organic Traffic Report
(For CLP Use Only)

| Case Number | SAS No. (if applicable) |
|---|---|
| 13822 | N/A |

1. Sample Description (Enter in Column A) X
1. Surface Water
2. Ground Water
3. Leachate
4. Rinsate
5. Soil/Sediment
6. Oil (SAS)
7. Waste (SAS)
8. Other (SAS) (Specify) N/A

2. Region Number: V
Sampling Co.: IL3
4. Date Shipped: 4/5/90
Airbill Number: 1060853054
5. Date Received: 4/6/90 Received by: [illegible]
Sampler (Name): Nathan W. Russell
Carrier: F
Laboratory Contract Number: 68-W8-0054
Unit Price: $750.00
3. Ship To: Environ. Science and Engineering, 7332 South Alton Way Suite H Englewood CO 80112 Attn. Kevin McHugh
Triple volume required for matrix spike/duplicate aqueous sample.
Ship medium and high concentration samples in paint cans.
See reverse for additional instructions.
6. Transfer to
Date Received
Received by
Contract Number
Price

| CLP Sample Number (From labels) | (A) Sample Description (From box 1) | (B) Concentration L=low M=med H=high | (C) RAS Analysis VOA | BNA | Pest/PCB | (D) Special Handling | (E) Station Location | (F) Date/Time of Sample Collection | (G) Corresponding CLP Inorganic Sample Number | (H) Sample Condition on Receipt | (I) High Conc. Phases (Check below) Solid | Water—MIS Liq. | Non Water—MIS Liq. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LJY 42 | 5 | L | X | X | X | | S1 | 4/5/90 1010 | LCJA 30 | GOOD | | | |
| LJY 43 | 5 | L | X | X | X | | S2 | 4/5/90 1025 | LCJA 31 | ↓ | | | |
| LJY 44 | 5 | L | X | X | X | | S3 | 4/5/90 1045 | LCJA 32 | | | | |
| LJY 45 | 5 | L | X | X | X | | S4 | 4/5/90 1105 | LCJA 33 | | | | |
| LJY 46 | 5 | L | X | X | X | | S5 | 4/5/90 1200 | LCJA 34 | | | | |
| ~~LJY 47~~ | ~~5~~ | ~~L~~ | ~~X~~ | ~~X~~ | ~~X~~ | | ~~S6~~ | ~~4/5/90~~ | ~~LCJA 35~~ | NWR 4/5/90 | | | |
| SDG-FINAL SAMPLE | | | | | | | | | | | | | |

Shipment is incomplete

200002

EPA Form 9110-2 (8-88) Replaces EPA Form 2075-7, which may be used. Blue - SMO Copy Pink - Region Copy White - Lab Copy for Return to SMO Yellow - Lab Copy

Environmental
Science &
Engineering, Inc.
A CILCORP Company

CASE NARRATIVE

For samples analyzed under contract No. 68-W8-0054

LAB NAME: ESECO

CASE NUMBER: 13822

SDG NUMBER: EJY42

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Doyce T. Blair
Laboratory Director
May 9, 1990



7330 South Alton Way, Suite N Englewood, CO 80112-2319 Phone (303) 741-0639 Fax (303) 793-0954
Formerly known as Hunter/ESE, Inc.

Environmental
Science &
Engineering, Inc.
A CILCORP Company

# CASE NARRATIVE

May 9, 1990

| | |
|---|---|
| LAB NAME: | ESECO |
| CASE NUMBER: | 13822 |
| SAS NUMBER: | N/A |
| SDG NUMBER: | EJY42 |
| SAMPLE MATRIX: | SOIL |
| CONTRACT NUMBER: | 68-W8-0054 |

The Denver office of Environmental Science and Engineering (ESECO) received 5 soil samples (Sample Numbers EJY42 through EJY46) on 04-06-90. The above samples were all analyzed for semivolatile, volatile and pesticide organic compounds according to the 2/88 revision of the "Statement of Work for Organic Analysis" (SOW). Difficulties in the sample analysis have been discussed in the sections presented below.

For all volatile samples and standards, the quantitation ion for acetone was 58 rather then the recommended 43. This was done to avoid interference in the quantitation of acetone by the large 43 ion of carbon dioxide.

## CASE NARRATIVE - VOLATILES

There were some problems with the analysis of these sample for volatile organic compounds. Sample EJY42 had to be re-analyzed at a 1:3 dilution because Methylene Chloride was outside of the method calibration range. Samples EJY45 and EJY46 both had to be re-analyzed because the internal standards were outside of the area recovery range. Upon re-analysis, both sample were still outside the QC limits, indicating a possible sample matrix interference for these internal standards. Surrogates were also outside of the specified limits for sample EJY46 and the re-analysis.

## CASE NARRATIVE - SEMIVOLATILES

There were only slight problems with the analysis of these samples for semivolatile organic compounds. Samples EJY44 and EJY45 had low surrogate recoveries for



7330 South Alton Way, Suite N Englewood, CO 80112-2319 Phone (303) 741-0639 Fax (303) 793-0954
Formerly known as Hunter/ESE, Inc.

nitrobenze-d5 and both samples were re-analyzed. Surrogates recoveries for nitrobenzene-d5 were still low for the re-analysis results.

Page 2

CASE NARRATIVE - PESTICIDES

There were a few problems associated with the analysis of these samples for pesticides and PCB's. Endrin recoveries are substantially higher than normal. Peaks are tailing significantly on the quantitation column and there may be some interference. The column has been replaced.

Randall C. Greaves Ph.D.
Laboratory Operations Manager

Enclosures

Prathane Systems

In Reference to Case No(s): 13822

Contract Laboratory Program
REGIONAL/LABORATORY COMMUNICATION SYSTEM
Telephone Record Log

RECEIVED
APR 27 1990
US EPA CENTRAL REGIONAL LAB.
536 S. CLARK ST.
CHICAGO, ILLINOIS 60605

Date of Call: 04-23-90

Laboratory Name: ESECO

Lab Contact: RANDY GREAVES

Region: V

Regional Contact: JAN PELS

Call Initiated By: X Laboratory ___ Region

In reference to data for the following sample number(s):

VOA-MS ONLY

Summary of Questions/Issues Discussed:

The VOA-MS was analyzed outside of the GC-MS Tune Time requirement by approximately 1½ hours. This was ONLY discovered after holding times for this sample had expired. I wanted to know if we should reanalyze the VOA-MS outside of holding times or report the data as is.

Summary of Resolution:

JAN indicated that the data should be reported "as is" rather than re-analyze. She indicated that analysis outside of holding times is a bigger problem than an analysis outside of tune criterion.

Signature [signature] Date 04/23/90

Distribution: (1) Lab Copy, (2) Region Copy, (3) SMO Copy

SOIL VOLATILE SURROGATE RECOVERY

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

Level:(low/med) LOW

#2

| | EPA SAMPLE NO. | S1 (TOL)# | S2 (BFB)# | S3 (DCE)# | OTHER | TOT OUT |
|---|---|---|---|---|---|---|
| 1 | VBLK3H | 98 | 99 | 94 | | 0 |
| 2 | EJY42 | 110 | 84 | 108 | | 0 |
| 3 | EJY43 | 107 | 89 | 106 | | 0 |
| 4 | EJY45 | 115 | 87 | 115 | | 0 |
| 5 | EJY46 | 118 * | 82 | 96 | | 1 |
| 6 | EJY42 DL | 116 | 82 | 94 | | 0 |
| 7 | EJY42MSD | 108 | 90 | 98 | | 0 |
| 8 | VBLK3I | 98 | 99 | 103 | | 0 |
| 9 | EJY42MS | 107 | 91 | 94 | | 0 |
| 10 | EJY44 | 103 | 94 | 110 | | 0 |
| 11 | EJY45 RE | 117 | 86 | 106 | | 0 |
| 12 | EJY46 RE | 130 * | 72 * | 93 | | 2 |
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| | | QC LIMITS |
|---|---|---|
| S1 (TOL) | = Toluene d-8 | (81-117) |
| S2 (BFB) | = Bromofluorobenzene | (74-121) |
| S3 (DCE) | = 1,2-Dichloroethane-d4 | (70-121) |

# Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out



FORM II VOA-2 1/87 Rev.

2D

# SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

Level:(low/med) LOW

| | EPA SAMPLE NO. | S1 (NBZ)# | S2 (FBP)# | S3 (TPH)# | S4 (PHL)# | S5 (2FP)# | S6 (TBP)# | OTHER | TOT OUT |
|---|---|---|---|---|---|---|---|---|---|
| 1 | SBLK_A | 96 | 101 | 91 | 89 | 87 | 73 | | 0 |
| 2 | EJY44MSD | 59 | 97 | 98 | 96 | 91 | 73 | | 0 |
| 3 | EJY43 | 33 | 73 | 87 | 71 | 51 | 67 | | 0 |
| 4 | EJY44 | 2 * | 89 | 95 | 78 | 72 | 57 | | 1 |
| 5 | EJY44MS | 55 | 103 | 98 | 96 | 65 | 53 | | 0 |
| 6 | EJY42 | 50 | 81 | 101 | 74 | 50 | 90 | | 0 |
| 7 | EJY45 | 3 * | 75 | 98 | 77 | 54 | 45 | | 1 |
| 8 | EJY46 | 61 | 74 | 97 | 63 | 55 | 80 | | 0 |
| 9 | EJY44 RE | 1 * | 91 | 94 | 74 | 48 | 23 | | 1 |
| 10 | EJY45 RE | 3 * | 73 | 93 | 69 | 46 | 18 * | | 2 |
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| | | QC LIMITS |
|---|---|---|
| S1 (NBZ) | = Nitrobenzene-d5 | (23-120) |
| S2 (FBP) | = 2-Fluorobiphenyl | (30-115) |
| S3 (TPH) | = Terphenyl-d14 | (18-137) |
| S4 (PHL) | = Phenol-d5 | (24-113) |
| S5 (2FP) | = 2-Fluorophenol | (25-121) |
| S6 (TBP) | = 2,4,6-Tribromophenol | (19-122) |

# Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

2F

# SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

Level:(low/med) LOW

| | EPA SAMPLE NO. | S1 (DBC)# | OTHER |
|---|---|---|---|
| 1 | PBLKA | 115 | |
| 2 | EJY43 | 105 | |
| 3 | EJY46 | 108 | |
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ADVISORY QC LIMITS

S1 (DBC) = Dibutylchlorendate (20-150)

# Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

500002



FORM II PEST-2 1/87 Rev.

2F

# SOIL PESTICIDE SURROGATE RECOVERY

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

Level:(low/med) LOW

| | EPA SAMPLE NO. | S1 (DBC)# | OTHER |
|---|---|---|---|
| 1 | PBLKA | 115 | |
| 2 | EJY42 | 106 | |
| 3 | ZZZZZ | 96 | |
| 4 | EJY44 | 102 | |
| 5 | ZZZZZ | 91 | |
| 6 | EJY45 | 106 | |
| 7 | EJY45MS | 97 | |
| 8 | EJY45MSD | 89 | |
| 9 | ZZZZZ | 93 | |
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ADVISORY QC LIMITS

S1 (DBC) = Dibutylchlorendate (20-150)

# Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

500001



FORM II PEST-2 1/87 Rev.

3B

# SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

Matrix Spike - EPA Sample No.: EJY42 Level:(low/med) LOW

| COMPOUND | SPIKE ADDED (UG/KG) | SAMPLE CONCENTRATION (UG/KG) | MS CONCENTRATION (UG/KG) | MS % REC # | QC LIMITS REC. |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 206. | 0. | 200. | 97 | 59-172 |
| Trichloroethene | 206. | 3. | 205. | 98 | 62-137 |
| Benzene | 206. | 5. | 217. | 103 | 66-142 |
| Toluene | 206. | 12. | 236. | 108 | 59-139 |
| Chlorobenzene | 206. | 0. | 209. | 102 | 60-133 |

| COMPOUND | SPIKE ADDED (UG/KG) | MSD CONCENTRATION (UG/KG) | MSD % REC # | % RPD # | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 210. | 162. | 77 | 23 * | 22 | 59-172 |
| Trichloroethene | 210. | 206. | 97 | 1 | 24 | 62-137 |
| Benzene | 210. | 230. | 107 | 4 | 21 | 66-142 |
| Toluene | 210. | 226. | 102 | 6 | 21 | 59-139 |
| Chlorobenzene | 210. | 214. | 102 | 1 | 21 | 60-133 |

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

* Values outside of QC limits

RPD: 1 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS:

# SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

Matrix Spike - EPA Sample No.: EJY44 Level:(low/med) LOW

| COMPOUND | SPIKE ADDED (UG/KG) | SAMPLE CONCENTRATION (UG/KG) | MS CONCENTRATION (UG/KG) | MS % REC # | QC LIMITS REC. |
|---|---|---|---|---|---|
| Phenol | 14453. | 0. | 10892. | 75 | 26- 90 |
| 2-Chlorophenol | 14453. | 0. | 10587. | 73 | 25-102 |
| 1,4-Dichlorobenzene | 7227. | 0. | 5243. | 73 | 28-104 |
| N-Nitroso-di-n-prop.(1) | 7227. | 0. | 7596. | 105 | 41-126 |
| 1,2,4-Trichlorobenzene | 7227. | 0. | 5760. | 80 | 38-107 |
| 4-Chloro-3-methylphenol | 14453. | 0. | 13082. | 91 | 26-103 |
| Acenaphthene | 7227. | 0. | 6234. | 86 | 31-137 |
| 4-Nitrophenol | 14453. | 0. | 12020. | 83 | 11-114 |
| 2,4-Dinitrotoluene | 7227. | 0. | 4091. | 57 | 28- 89 |
| Pentachlorophenol | 14453. | 0. | 10147. | 70 | 17-109 |
| Pyrene | 7227. | 0. | 5967. | 83 | 35-142 |

| COMPOUND | SPIKE ADDED (UG/KG) | MSD CONCENTRATION (UG/KG) | MSD % REC # | % RPD # | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| Phenol | 14453. | 10583. | 73 | 3 | 35 | 26- 90 |
| 2-Chlorophenol | 14453. | 11006. | 76 | 4 | 50 | 25-102 |
| 1,4-Dichlorobenzene | 7227. | 5460. | 76 | 4 | 27 | 28-104 |
| N-Nitroso-di-n-prop.(1) | 7227. | 7075. | 98 | 7 | 38 | 41-126 |
| 1,2,4-Trichlorobenzene | 7227. | 5944. | 82 | 3 | 23 | 38-107 |
| 4-Chloro-3-methylphenol | 14453. | 14015. | 97 | 7 | 33 | 26-103 |
| Acenaphthene | 7227. | 6028. | 83 | 3 | 19 | 31-137 |
| 4-Nitrophenol | 14453. | 11251. | 78 | 7 | 50 | 11-114 |
| 2,4-Dinitrotoluene | 7227. | 4068. | 56 | 1 | 47 | 28- 89 |
| Pentachlorophenol | 14453. | 12438. | 86 | 20 | 47 | 17-109 |
| Pyrene | 7227. | 5349. | 74 | 11 | 36 | 35-142 |

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

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

* Values outside of QC limits

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

COMMENTS:

3F

# SOIL PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

Matrix Spike - EPA Sample No.: EJY45 Level:(low/med) LOW

| COMPOUND | SPIKE ADDED (UG/KG) | SAMPLE CONCENTRATION (UG/KG) | MS CONCENTRATION (UG/KG) | MS % REC # | QC LIMITS REC. |
|---|---|---|---|---|---|
| gamma-BHC (Lindane) | 56.60 | .00 | 43.57 | 77. | 46-127 |
| Heptachlor | 56.60 | .00 | 44.45 | 79. | 35-130 |
| Aldrin | 56.60 | .00 | 44.24 | 78. | 34-132 |
| Dieldrin | 141.50 | .00 | 121.90 | 86. | 31-134 |
| Endrin | 141.50 | .00 | 192.88 | 136. | 42-139 |
| 4,4'-DDT | 141.50 | .00 | 123.69 | 87. | 23-134 |

| COMPOUND | SPIKE ADDED (UG/KG) | MSD CONCENTRATION (UG/KG) | MSD % REC # | % RPD # | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| gamma-BHC (Lindane) | 56.49 | 48.50 | 86. | 11. | 50 | 46-127 |
| Heptachlor | 56.49 | 44.45 | 79. | 0. | 31 | 35-130 |
| Aldrin | 56.49 | 41.70 | 74. | 6. | 43 | 34-132 |
| Dieldrin | 141.22 | 116.16 | 82. | 5. | 38 | 31-134 |
| Endrin | 141.22 | 187.16 | 133. | 3. | 45 | 42-139 |
| 4,4'-DDT | 141.22 | 120.10 | 85. | 3. | 50 | 23-134 |

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

* Values outside of QC limits

RPD: 0 out of 6 outside limits
Spike Recovery: 0 out of 12 outside limits

COMMENTS:

4A

# VOLATILE METHOD BLANK SUMMARY

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

Lab File ID: 58694 Lab Sample ID:

Date Analyzed: 4/13/90 Time Analyzed: 12:58

Matrix: (soil/water) SOIL Level:(low/med) LOW

Instrument ID: 9602#2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

| | EPA SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | TIME ANALYZED |
|---|---|---|---|---|
| 1 | EJY42 | | 58696 | 14:43 |
| 2 | EJY43 | | 58697 | 15:27 |
| 3 | EJY45 | | 58699 | 17:10 |
| 4 | EJY46 | | 58700 | 17:56 |
| 5 | EJY42 DL | | 58701 | 18:42 |
| 6 | EJY42MSD | | 58703 | 20:15 |
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COMMENTS:



FORM IV VOA 1/87 Rev.

4A

# VOLATILE METHOD BLANK SUMMARY

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

Lab File ID: 58706 Lab Sample ID:

Date Analyzed: 4/16/90 Time Analyzed: 9:39

Matrix: (soil/water) SOIL Level:(low/med) LOW

Instrument ID: 9602#2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

| | EPA SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | TIME ANALYZED |
|---|---|---|---|---|
| 1 | EJY42MS | | 58707 | 10:46 |
| 2 | EJY44 | | 58708 | 11:31 |
| 3 | EJY45 RE | | 58709 | 12:18 |
| 4 | EJY46 RE | | 58710 | 13:04 |
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COMMENTS:



FORM IV VOA 1/87 Rev.

SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

Lab File ID: 78026 Lab Sample ID:

Date Extracted: 4/11/90 Extraction:(SepF/Cont/Sonc) SONC

Date Analyzed: 4/18/90 Time Analyzed: 9:19

Matrix: (soil/water) SOIL Level:(low/med) LOW

Instrument ID: 9601#1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

| | EPA SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED |
|---|---|---|---|---|
| 1 | EJY44MSD | | 78027 | 4/18/90 |
| 2 | EJY43 | | 78028 | 4/18/90 |
| 3 | EJY44 | | 78029 | 4/18/90 |
| 4 | EJY44MS | | 78032 | 4/18/90 |
| 5 | EJY42 | | 78034 | 4/18/90 |
| 6 | EJY45 | | 78036 | 4/18/90 |
| 7 | EJY46 | | 78037 | 4/18/90 |
| 8 | EJY44 RE | | 78052 | 4/20/90 |
| 9 | EJY45 RE | | 78056 | 4/23/90 |
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COMMENTS:

4C

# PESTICIDE METHOD BLANK SUMMARY

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

Lab Sample ID: _____ Lab File ID: OPBLKA

Matrix: (soil/water) SOIL Level:(low/med) LOW

Date Extracted: 4/11/90 Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed (1): 4/22/90 Date Analyzed (2):

Time Analyzed (1): 23:02 Time Analyzed (2):

Instrument ID (1): 5300#2 Instrument ID (2):

GC Column ID (1): 22502401 GC Column ID (2):

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

| | EPA SAMPLE NO. | LAB SAMPLE ID | DATE ANALYZED 1 | DATE ANALYZED 2 |
|---|---|---|---|---|
| 1 | EJY42 | | 4/22/90 | |
| 2 | ZZZZZ | | 4/23/90 | |
| 3 | EJY44 | | 4/23/90 | |
| 4 | ZZZZZ | | 4/23/90 | |
| 5 | EJY45 | | 4/23/90 | |
| 6 | EJY45MS | | 4/23/90 | |
| 7 | EJY45MSD | | 4/23/90 | |
| 8 | ZZZZZ | | 4/23/90 | |
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Comments:

4L

# PESTICIDE METHOD BLANK SUMMARY

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

Lab Sample ID: _____ Lab File ID: QPBLKARE

Matrix: (soil/water) SOIL Level:(low/med) LOW

Date Extracted: 4/11/90 Extraction: (SepF/Cont/Sonc) SONC

Date Analyzed (1): 5/ 7/90 Date Analyzed (2):

Time Analyzed (1): 4:41 Time Analyzed (2):

Instrument ID (1): 5300#2 Instrument ID (2):

GC Column ID (1): 22502401 GC Column ID (2):

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

| | EPA SAMPLE NO. | LAB SAMPLE ID | DATE ANALYZED 1 | DATE ANALYZED 2 |
|---|---|---|---|---|
| 1 | EJY43 | | 5/ 7/90 | |
| 2 | EJY46 | | 5/ 7/90 | |
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Comments:

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK3H

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 5.000 (g/mL) G Lab File ID: 58694

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 0. Date Analyzed: 4/13/90

Column: (pack/cap) CAP Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10. | U |
| 74-83-9 | Bromomethane | 10. | U |
| 75-01-4 | Vinyl Chloride | 10. | U |
| 75-00-3 | Chloroethane | 10. | U |
| 75-09-2 | Methylene Chloride | 6. | |
| 67-64-1 | Acetone | 10. | U |
| 75-15-0 | Carbon Disulfide | 5. | U |
| 75-35-4 | 1,1-Dichloroethene | 5. | U |
| 75-34-3 | 1,1-Dichloroethane | 5. | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5. | U |
| 67-66-3 | Chloroform | 5. | U |
| 107-06-2 | 1,2-Dichloroethane | 5. | U |
| 78-93-3 | 2-Butanone | 10. | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5. | U |
| 56-23-5 | Carbon Tetrachloride | 5. | U |
| 108-05-4 | Vinyl Acetate | 10. | U |
| 75-27-4 | Bromodichloromethane | 5. | U |
| 78-87-5 | 1,2-Dichloropropane | 5. | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5. | U |
| 79-01-6 | Trichloroethene | 5. | U |
| 124-48-1 | Dibromochloromethane | 5. | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5. | U |
| 71-43-2 | Benzene | 5. | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 5. | U |
| 75-25-2 | Bromoform | 5. | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10. | U |
| 591-78-6 | 2-Hexanone | 10. | U |
| 127-18-4 | Tetrachloroethene | 5. | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5. | U |
| 108-88-3 | Toluene | 5. | U |
| 108-90-7 | Chlorobenzene | 5. | U |
| 100-41-4 | Ethylbenzene | 5. | U |
| 100-42-5 | Styrene | 5. | U |
| 1330-20-7 | Xylene (total) | 5. | U |

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

VBLK3H

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 5.000 (g/mL) G Lab File ID: 58694

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 0. Date Analyzed: 4/13/90

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
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| 1. | | | | | |
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK3I

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 5.000 (g/mL) G Lab File ID: 58706

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 0. Date Analyzed: 4/16/90

Column: (pack/cap) CAP Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10. | U |
| 74-83-9 | Bromomethane | 10. | U |
| 75-01-4 | Vinyl Chloride | 10. | U |
| 75-00-3 | Chloroethane | 10. | U |
| 75-09-2 | Methylene Chloride | 5. | U |
| 67-64-1 | Acetone | 10. | U |
| 75-15-0 | Carbon Disulfide | 5. | U |
| 75-35-4 | 1,1-Dichloroethene | 5. | U |
| 75-34-3 | 1,1-Dichloroethane | 5. | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5. | U |
| 67-66-3 | Chloroform | 5. | U |
| 107-06-2 | 1,2-Dichloroethane | 5. | U |
| 78-93-3 | 2-Butanone | 10. | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5. | U |
| 56-23-5 | Carbon Tetrachloride | 5. | U |
| 108-05-4 | Vinyl Acetate | 10. | U |
| 75-27-4 | Bromodichloromethane | 5. | U |
| 78-87-5 | 1,2-Dichloropropane | 5. | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5. | U |
| 79-01-6 | Trichloroethene | 5. | U |
| 124-48-1 | Dibromochloromethane | 5. | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5. | U |
| 71-43-2 | Benzene | 5. | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 5. | U |
| 75-25-2 | Bromoform | 5. | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10. | U |
| 591-78-6 | 2-Hexanone | 10. | U |
| 127-18-4 | Tetrachloroethene | 5. | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5. | U |
| 108-88-3 | Toluene | 5. | U |
| 108-90-7 | Chlorobenzene | 5. | U |
| 100-41-4 | Ethylbenzene | 5. | U |
| 100-42-5 | Styrene | 5. | U |
| 1330-20-7 | Xylene (total) | 5. | U |

EPA SAMPLE NO.

# VOLATILE ORGANICS ANALYSIS DATA SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

VBLK3I

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 5.000 (g/mL) G Lab File ID: 58706

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 0. Date Analyzed: 4/16/90

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
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EPA SAMPLE NO.

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SBLK_A

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78026

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 0. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/18/90

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 108-95-2 | Phenol | 660. | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 660. | U |
| 95-57-8 | 2-Chlorophenol | 660. | U |
| 541-73-1 | 1,3-Dichlorobenzene | 660. | U |
| 106-46-7 | 1,4-Dichlorobenzene | 660. | U |
| 100-51-6 | Benzyl alcohol | 660. | U |
| 95-50-1 | 1,2-Dichlorobenzene | 660. | U |
| 95-48-7 | 2-Methylphenol | 660. | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 660. | U |
| 106-44-5 | 4-Methylphenol | 660. | U |
| 621-64-7 | N-Nitroso-di-n-propylamine | 660. | U |
| 67-72-1 | Hexachloroethane | 660. | U |
| 98-95-3 | Nitrobenzene | 660. | U |
| 78-59-1 | Isophorone | 660. | U |
| 88-75-5 | 2-Nitrophenol | 660. | U |
| 105-67-9 | 2,4-Dimethylphenol | 660. | U |
| 65-85-0 | Benzoic acid | 3200. | U |
| 111-91-1 | bis(2-Chloroethoxy)methane | 660. | U |
| 120-83-2 | 2,4-Dichlorophenol | 660. | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 660. | U |
| 91-20-3 | Naphthalene | 660. | U |
| 106-47-8 | 4-Chloroaniline | 660. | U |
| 87-68-3 | Hexachlorobutadiene | 660. | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 660. | U |
| 91-57-6 | 2-Methylnaphthalene | 660. | U |
| 77-47-4 | Hexachlorocyclopentadiene | 660. | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 660. | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 3200. | U |
| 91-58-7 | 2-Chloronaphthalene | 660. | U |
| 88-74-4 | 2-Nitroaniline | 3200. | U |
| 131-11-3 | Dimethylphthalate | 660. | U |
| 208-96-8 | Acenaphthylene | 660. | U |
| 606-20-2 | 2,6-Dinitrotoluene | 660. | U |

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SBLK_A

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78026

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 0. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/18/90

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 3200. | U |
| 83-32-9 | Acenaphthene | 660. | U |
| 51-28-5 | 2,4-Dinitrophenol | 3200. | U |
| 100-02-7 | 4-Nitrophenol | 3200. | U |
| 132-64-9 | Dibenzofuran | 660. | U |
| 121-14-2 | 2,4-Dinitrotoluene | 660. | U |
| 84-66-2 | Diethylphthalate | 290. | J |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 660. | U |
| 86-73-7 | Fluorene | 660. | U |
| 100-01-6 | 4-Nitroaniline | 3200. | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 3200. | U |
| 86-30-6 | N-Nitrosodiphenylamine | 660. | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 660. | U |
| 118-74-1 | Hexachlorobenzene | 660. | U |
| 87-86-5 | Pentachlorophenol | 3200. | U |
| 85-01-8 | Phenanthrene | 660. | U |
| 120-12-7 | Anthracene | 660. | U |
| 84-74-2 | Di-n-butylphthalate | 660. | U |
| 206-44-0 | Fluoranthene | 660. | U |
| 129-00-0 | Pyrene | 660. | U |
| 85-68-7 | Butylbenzylphthalate | 660. | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 1300. | U |
| 56-55-3 | Benzo(a)anthracene | 660. | U |
| 218-01-9 | Chrysene | 660. | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 350. | J |
| 117-84-0 | Di-n-octylphthalate | 660. | U |
| 205-99-2 | Benzo(b)fluoranthene | 660. | U |
| 207-08-9 | Benzo(k)fluoranthene | 660. | U |
| 50-32-8 | Benzo(a)pyrene | 660. | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 660. | U |
| 53-70-3 | Dibenz(a,h)anthracene | 660. | U |
| 191-24-2 | Benzo(g,h,i)perylene | 660. | U |

(1) - Cannot be separated from diphenylamine

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SBLK_A

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78026

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 0. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/18/90

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

Number TICs found: 4

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

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 1. | - - | UNKNOWN | 6.36 | 700. | J |
| 2. | - - | UNKNOWN | 8.37 | 2000. | J |
| 3. | - - | UNKNOWN | 9.43 | 1000. | J |
| 4. | 17831-71-9 | 2-Propenoic acid, oxybis(2,1 | 31.10 | 4000. | J |
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1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PBLKA

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30. (g/mL) G Lab File ID: QPBLKA

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 0. dec. 0. Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/22/90

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 319-84-6 | alpha-BHC | 16. | U |
| 319-85-7 | beta-BHC | 16. | U |
| 319-86-8 | delta-BHC | 16. | U |
| 58-89-9 | gamma-BHC (Lindane) | 16. | U |
| 76-44-8 | Heptachlor | 16. | U |
| 309-00-2 | Aldrin | 16. | U |
| 1024-57-3 | Heptachlor epoxide | 16. | U |
| 959-98-8 | Endosulfan I | 16. | U |
| 60-57-1 | Dieldrin | 32. | U |
| 72-55-9 | 4,4'-DDE | 32. | U |
| 72-20-8 | Endrin | 32. | U |
| 33213-65-9 | Endosulfan II | 32. | U |
| 72-54-8 | 4,4'-DDD | 32. | U |
| 1031-07-8 | Endosulfan sulfate | 32. | U |
| 50-29-3 | 4,4'-DDT | 32. | U |
| 72-43-5 | Methoxychlor | 160. | U |
| 53494-70-5 | Endrin ketone | 32. | U |
| 5103-71-9 | alpha-Chlordane | 160. | U |
| 5103-74-2 | gamma-Chlordane | 160. | U |
| 8001-35-2 | Toxaphene | 320. | U |
| 12674-11-2 | Aroclor-1016 | 160. | U |
| 11104-28-2 | Aroclor-1221 | 160. | U |
| 11141-16-5 | Aroclor-1232 | 160. | U |
| 53469-21-9 | Aroclor-1242 | 160. | U |
| 12672-29-6 | Aroclor-1248 | 160. | U |
| 11097-69-1 | Aroclor-1254 | 320. | U |
| 11096-82-5 | Aroclor-1260 | 320. | U |

# PESTICIDE ORGANICS ANALYSIS DATA SHEET

PBLKA RE

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30. (g/mL) G Lab File ID: QFBLKARE

Level: (low/med) LOW Date Received: 0/ 0/ 0

% Moisture: not dec. 0. dec. 0. Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 5/ 7/90

GPC Cleanup: (Y/N) Y pH: 7.0 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 319-84-6 | alpha-BHC | 16. | U |
| 319-85-7 | beta-BHC | 16. | U |
| 319-86-8 | delta-BHC | 16. | U |
| 58-89-9 | gamma-BHC (Lindane) | 16. | U |
| 76-44-8 | Heptachlor | 16. | U |
| 309-00-2 | Aldrin | 16. | U |
| 1024-57-3 | Heptachlor epoxide | 16. | U |
| 959-98-8 | Endosulfan I | 16. | U |
| 60-57-1 | Dieldrin | 32. | U |
| 72-55-9 | 4,4'-DDE | 32. | U |
| 72-20-8 | Endrin | 32. | U |
| 33213-65-9 | Endosulfan II | 32. | U |
| 72-54-8 | 4,4'-DDD | 32. | U |
| 1031-07-8 | Endosulfan sulfate | 32. | U |
| 50-29-3 | 4,4'-DDT | 32. | U |
| 72-43-5 | Methoxychlor | 160. | U |
| 53494-70-5 | Endrin ketone | 32. | U |
| 5103-71-9 | alpha-Chlordane | 160. | U |
| 5103-74-2 | gamma-Chlordane | 160. | U |
| 8001-35-2 | Toxaphene | 320. | U |
| 12674-11-2 | Aroclor-1016 | 160. | U |
| 11104-28-2 | Aroclor-1221 | 160. | U |
| 11141-16-5 | Aroclor-1232 | 160. | U |
| 53469-21-9 | Aroclor-1242 | 160. | U |
| 12672-29-6 | Aroclor-1248 | 160. | U |
| 11097-69-1 | Aroclor-1254 | 320. | U |
| 11096-82-5 | Aroclor-1260 | 320. | U |



500095A

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY42

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 5.180 (g/mL) G Lab File ID: 58696

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 24. Date Analyzed: 4/13/90

Column: (pack/cap) CAP Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 13. | U |
| 74-83-9 | Bromomethane | 13. | U |
| 75-01-4 | Vinyl Chloride | 13. | U |
| 75-00-3 | Chloroethane | 13. | U |
| 75-09-2 | Methylene Chloride | 470. | B E |
| 67-64-1 | Acetone | 45. | |
| 75-15-0 | Carbon Disulfide | 6. | U |
| 75-35-4 | 1,1-Dichloroethene | 6. | U |
| 75-34-3 | 1,1-Dichloroethane | 6. | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 6. | U |
| 67-66-3 | Chloroform | 6. | U |
| 107-06-2 | 1,2-Dichloroethane | 6. | U |
| 78-93-3 | 2-Butanone | 4. | J |
| 71-55-6 | 1,1,1-Trichloroethane | 6. | U |
| 56-23-5 | Carbon Tetrachloride | 6. | U |
| 108-05-4 | Vinyl Acetate | 13. | U |
| 75-27-4 | Bromodichloromethane | 6. | U |
| 78-87-5 | 1,2-Dichloropropane | 6. | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 6. | U |
| 79-01-6 | Trichloroethene | 3. | J |
| 124-48-1 | Dibromochloromethane | 6. | U |
| 79-00-5 | 1,1,2-Trichloroethane | 6. | U |
| 71-43-2 | Benzene | 5. | J |
| 10061-02-6 | trans-1,3-Dichloropropene | 6. | U |
| 75-25-2 | Bromoform | 6. | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 13. | U |
| 591-78-6 | 2-Hexanone | 13. | U |
| 127-18-4 | Tetrachloroethene | 6. | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 6. | U |
| 108-88-3 | Toluene | 12. | |
| 108-90-7 | Chlorobenzene | 6. | U |
| 100-41-4 | Ethylbenzene | 6. | U |
| 100-42-5 | Styrene | 6. | U |
| 1330-20-7 | Xylene (total) | 6. | U |

EJZ 21 May 1990

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EJY42

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 5.180 (g/mL) G Lab File ID: 58696

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 24. Date Analyzed: 4/13/90

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
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1A

# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY42 DL

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 1.560 (g/mL) G Lab File ID: 58701

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 24. Date Analyzed: 4/13/90

Column: (pack/cap) CAP Dilution Factor: 3.21

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 42. | U |
| 74-83-9 | Bromomethane | 42. | U |
| 75-01-4 | Vinyl Chloride | 42. | U |
| 75-00-3 | Chloroethane | 42. | U |
| 75-09-2 | Methylene Chloride | 430. B ~~B~~ | D |
| 67-64-1 | Acetone | 100. | D |
| 75-15-0 | Carbon Disulfide | 21. | U |
| 75-35-4 | 1,1-Dichloroethene | 21. | U |
| 75-34-3 | 1,1-Dichloroethane | 21. | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 21. | U |
| 67-66-3 | Chloroform | 21. | U |
| 107-06-2 | 1,2-Dichloroethane | 21. | U |
| 78-93-3 | 2-Butanone | 42. | U |
| 71-55-6 | 1,1,1-Trichloroethane | 59. | D |
| 56-23-5 | Carbon Tetrachloride | 21. | U |
| 108-05-4 | Vinyl Acetate | 42. | U |
| 75-27-4 | Bromodichloromethane | 21. | U |
| 78-87-5 | 1,2-Dichloropropane | 21. | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 21. | U |
| 79-01-6 | Trichloroethene | 5. | J D |
| 124-48-1 | Dibromochloromethane | 21. | U |
| 79-00-5 | 1,1,2-Trichloroethane | 21. | U |
| 71-43-2 | Benzene | 21. | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 21. | U |
| 75-25-2 | Bromoform | 21. | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 42. | U |
| 591-78-6 | 2-Hexanone | 42. | U |
| 127-18-4 | Tetrachloroethene | 21. | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 21. | U |
| 108-88-3 | Toluene | 20. | J D |
| 108-90-7 | Chlorobenzene | 21. | U |
| 100-41-4 | Ethylbenzene | 21. | U |
| 100-42-5 | Styrene | 21. | U |
| 1330-20-7 | Xylene (total) | 21. | U |

5/25/90

RJZ 21 May 1990

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EJY42 DL

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 1.560 (g/mL) G Lab File ID: 58701

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 24. Date Analyzed: 4/13/90

Column: (pack/cap) CAP Dilution Factor: 3.21

Number TICs found: 0

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

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY43

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 5.160 (g/mL) G Lab File ID: 58697

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 8. Date Analyzed: 4/13/90

Column: (pack/cap) CAP Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10. | U |
| 74-83-9 | Bromomethane | 10. | U |
| 75-01-4 | Vinyl Chloride | 10. | U |
| 75-00-3 | Chloroethane | 10. | U |
| 75-09-2 | Methylene Chloride | 75. B | B |
| 67-64-1 | Acetone | 10. | U |
| 75-15-0 | Carbon Disulfide | 5. | U |
| 75-35-4 | 1,1-Dichloroethene | 5. | U |
| 75-34-3 | 1,1-Dichloroethane | 5. | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5. | U |
| 67-66-3 | Chloroform | 5. | U |
| 107-06-2 | 1,2-Dichloroethane | 5. | U |
| 78-93-3 | 2-Butanone | 10. | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5. | U |
| 56-23-5 | Carbon Tetrachloride | 5. | U |
| 108-05-4 | Vinyl Acetate | 10. | U |
| 75-27-4 | Bromodichloromethane | 5. | U |
| 78-87-5 | 1,2-Dichloropropane | 5. | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5. | U |
| 79-01-6 | Trichloroethene | 7. | |
| 124-48-1 | Dibromochloromethane | 5. | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5. | U |
| 71-43-2 | Benzene | 1. | J |
| 10061-02-6 | trans-1,3-Dichloropropene | 5. | U |
| 75-25-2 | Bromoform | 5. | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10. | U |
| 591-78-6 | 2-Hexanone | 10. | U |
| 127-18-4 | Tetrachloroethene | 5. | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5. | U |
| 108-88-3 | Toluene | 2. | J |
| 108-90-7 | Chlorobenzene | 5. | U |
| 100-41-4 | Ethylbenzene | 5. | U |
| 100-42-5 | Styrene | 5. | U |
| 1330-20-7 | Xylene (total) | 5. | U |

5/25/90
RJZ
21 May 90

FORM I VOA 1/87 Rev.

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EJY43

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 5.160 (g/mL) G Lab File ID: 58697

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 8. Date Analyzed: 4/13/90

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY44

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 1.950 (g/mL) G Lab File ID: 58708

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 8. Date Analyzed: 4/16/90

Column: (pack/cap) CAP Dilution Factor: 2.56

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 28. | U |
| 74-83-9 | Bromomethane | 28. | U |
| 75-01-4 | Vinyl Chloride | 28. | U |
| 75-00-3 | Chloroethane | 28. | U |
| 75-09-2 | Methylene Chloride | 6. | J |
| 67-64-1 | Acetone | 510. | |
| 75-15-0 | Carbon Disulfide | 14. | U |
| 75-35-4 | 1,1-Dichloroethene | 14. | U |
| 75-34-3 | 1,1-Dichloroethane | 14. | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 14. | U |
| 67-66-3 | Chloroform | 14. | U |
| 107-06-2 | 1,2-Dichloroethane | 14. | U |
| 78-93-3 | 2-Butanone | 140. | |
| 71-55-6 | 1,1,1-Trichloroethane | 14. | U |
| 56-23-5 | Carbon Tetrachloride | 14. | U |
| 108-05-4 | Vinyl Acetate | 28. | U |
| 75-27-4 | Bromodichloromethane | 14. | U |
| 78-87-5 | 1,2-Dichloropropane | 14. | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 14. | U |
| 79-01-6 | Trichloroethene | 14. | U |
| 124-48-1 | Dibromochloromethane | 14. | U |
| 79-00-5 | 1,1,2-Trichloroethane | 14. | U |
| 71-43-2 | Benzene | 24. | |
| 10061-02-6 | trans-1,3-Dichloropropene | 14. | U |
| 75-25-2 | Bromoform | 14. | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 28. | U |
| 591-78-6 | 2-Hexanone | 28. | U |
| 127-18-4 | Tetrachloroethene | 14. | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 14. | U |
| 108-88-3 | Toluene | 61. | |
| 108-90-7 | Chlorobenzene | 14. | U |
| 100-41-4 | Ethylbenzene | 21. | |
| 100-42-5 | Styrene | 8. | J |
| 1330-20-7 | Xylene (total) | 13. | J |

EPA SAMPLE NO.

# VOLATILE ORGANICS ANALYSIS DATA SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

EJY44

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 1.950 (g/mL) G Lab File ID: 58708

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 8. Date Analyzed: 4/16/90

Column: (pack/cap) CAP Dilution Factor: 2.56

Number TICs found: 4

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

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 1. | 592-41-6 | 1-Hexene (8CI9CI) | 9.07 | 100. | J |
| 2. | - - | UNKNOWN | 14.78 | 30. | J |
| 3. | 108-87-2 | Cyclohexane, methyl- (8CI9CI | 16.25 | 30. | J |
| 4. | - - | UNKNOWN | 17.92 | 30. | J |
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY45

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 4.970 (g/mL) G Lab File ID: 58699

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 6. Date Analyzed: 4/13/90

Column: (pack/cap) CAP Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 11. | U |
| 74-83-9 | Bromomethane | 11. | U |
| 75-01-4 | Vinyl Chloride | 11. | U |
| 75-00-3 | Chloroethane | 11. | U |
| 75-09-2 | Methylene Chloride | 36. | ~~B~~ U |
| 67-64-1 | Acetone | 11. | U |
| 75-15-0 | Carbon Disulfide | 5. | U |
| 75-35-4 | 1,1-Dichloroethene | 5. | U |
| 75-34-3 | 1,1-Dichloroethane | 5. | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5. | U |
| 67-66-3 | Chloroform | 5. | U |
| 107-06-2 | 1,2-Dichloroethane | 5. | U |
| 78-93-3 | 2-Butanone | 11. | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5. | U |
| 56-23-5 | Carbon Tetrachloride | 5. | U |
| 108-05-4 | Vinyl Acetate | 11. | U |
| 75-27-4 | Bromodichloromethane | 5. | U |
| 78-87-5 | 1,2-Dichloropropane | 5. | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5. | U |
| 79-01-6 | Trichloroethene | 5. | U |
| 124-48-1 | Dibromochloromethane | 5. | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5. | U |
| 71-43-2 | Benzene | 14. | |
| 10061-02-6 | trans-1,3-Dichloropropene | 5. | U |
| 75-25-2 | Bromoform | 5. | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 11. | U |
| 591-78-6 | 2-Hexanone | 11. | U |
| 127-18-4 | Tetrachloroethene | 5. | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5. | U |
| 108-88-3 | Toluene | 40. | |
| 108-90-7 | Chlorobenzene | 5. | U |
| 100-41-4 | Ethylbenzene | 5. | J |
| 100-42-5 | Styrene | 2. | J |
| 1330-20-7 | Xylene (total) | 2. | J |

RJZ 21 May 90

EPA SAMPLE NO.

# VOLATILE ORGANICS ANALYSIS DATA SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

EJY45

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 4.970 (g/mL) G Lab File ID: 58699

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 6. Date Analyzed: 4/13/90

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 4

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

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 1. | 79-20-9 | Acetic acid, methyl ester (8 | 7.96 | 20. | J |
| 2. | 591-76-4 | Hexane, 2-methyl- (8CI9CI) | 13.26 | 20. | J |
| 3. | 589-34-4 | Hexane, 3-methyl- (8CI9CI) | 13.72 | 30. | J |
| 4. | 108-87-2 | Cyclohexane, methyl- (8CI9CI | 16.32 | 50. | J |
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY45 RE

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 4.940 (g/mL) G Lab File ID: 58709

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 6. Date Analyzed: 4/16/90

Column: (pack/cap) CAP Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 11. | U |
| 74-83-9 | Bromomethane | 11. | U |
| 75-01-4 | Vinyl Chloride | 11. | U |
| 75-00-3 | Chloroethane | 11. | U |
| 75-09-2 | Methylene Chloride | 2. | J |
| 67-64-1 | Acetone | 11. | U |
| 75-15-0 | Carbon Disulfide | 5. | U |
| 75-35-4 | 1,1-Dichloroethene | 5. | U |
| 75-34-3 | 1,1-Dichloroethane | 5. | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 5. | U |
| 67-66-3 | Chloroform | 5. | U |
| 107-06-2 | 1,2-Dichloroethane | 5. | U |
| 78-93-3 | 2-Butanone | 11. | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5. | U |
| 56-23-5 | Carbon Tetrachloride | 5. | U |
| 108-05-4 | Vinyl Acetate | 11. | U |
| 75-27-4 | Bromodichloromethane | 5. | U |
| 78-87-5 | 1,2-Dichloropropane | 5. | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5. | U |
| 79-01-6 | Trichloroethene | 5. | U |
| 124-48-1 | Dibromochloromethane | 5. | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5. | U |
| 71-43-2 | Benzene | 6. | |
| 10061-02-6 | trans-1,3-Dichloropropene | 5. | U |
| 75-25-2 | Bromoform | 5. | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 11. | U |
| 591-78-6 | 2-Hexanone | 11. | U |
| 127-18-4 | Tetrachloroethene | 5. | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5. | U |
| 108-88-3 | Toluene | 36. | |
| 108-90-7 | Chlorobenzene | 5. | U |
| 100-41-4 | Ethylbenzene | 6. | |
| 100-42-5 | Styrene | 3. | J |
| 1330-20-7 | Xylene (total) | 3. | J |

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EJY45 RE

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 4.940 (g/mL) G Lab File ID: 58709

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 6. Date Analyzed: 4/16/90

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 2

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

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 1. | 79-20-9 | Acetic acid, methyl ester (8 | 7.88 | 30. | J |
| 2. | 108-87-2 | Cyclohexane, methyl- (8CI9CI | 16.18 | 20. | J |
| 3. | | | | | |
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY46

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 4.840 (g/mL) G Lab File ID: 58700

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 34. Date Analyzed: 4/13/90

Column: (pack/cap) CAP Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 16. | U |
| 74-83-9 | Bromomethane | 16. | U |
| 75-01-4 | Vinyl Chloride | 16. | U |
| 75-00-3 | Chloroethane | 16. | U |
| 75-09-2 | Methylene Chloride | 11. | ~~B~~ U |
| 67-64-1 | Acetone | 16. | |
| 75-15-0 | Carbon Disulfide | 8. | U |
| 75-35-4 | 1,1-Dichloroethene | 8. | U |
| 75-34-3 | 1,1-Dichloroethane | 8. | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 8. | U |
| 67-66-3 | Chloroform | 8. | U |
| 107-06-2 | 1,2-Dichloroethane | 8. | U |
| 78-93-3 | 2-Butanone | 10. | J |
| 71-55-6 | 1,1,1-Trichloroethane | 8. | U |
| 56-23-5 | Carbon Tetrachloride | 8. | U |
| 108-05-4 | Vinyl Acetate | 16. | U |
| 75-27-4 | Bromodichloromethane | 8. | U |
| 78-87-5 | 1,2-Dichloropropane | 8. | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 8. | U |
| 79-01-6 | Trichloroethene | 8. | U |
| 124-48-1 | Dibromochloromethane | 8. | U |
| 79-00-5 | 1,1,2-Trichloroethane | 8. | U |
| 71-43-2 | Benzene | 8. | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 8. | U |
| 75-25-2 | Bromoform | 8. | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 16. | U |
| 591-78-6 | 2-Hexanone | 16. | U |
| 127-18-4 | Tetrachloroethene | 8. | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 8. | U |
| 108-88-3 | Toluene | 8. | U |
| 108-90-7 | Chlorobenzene | 8. | U |
| 100-41-4 | Ethylbenzene | 8. | U |
| 100-42-5 | Styrene | 8. | U |
| 1330-20-7 | Xylene (total) | 8. | U |

RJZ
21 May 1990

EPA SAMPLE NO.

# VOLATILE ORGANICS ANALYSIS DATA SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

EJY46

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 4.840 (g/mL) G Lab File ID: 58700

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 34. Date Analyzed: 4/13/90

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 1

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

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 1. | 79-20-9 | Acetic acid, methyl ester (8 | 7.93 | 70. | J |
| 2. | | | | | |
| 3. | | | | | |
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY46 RE

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 5.140 (g/mL) G Lab File ID: 58710

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 34. Date Analyzed: 4/16/90

Column: (pack/cap) CAP Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 15. | U |
| 74-83-9 | Bromomethane | 15. | U |
| 75-01-4 | Vinyl Chloride | 15. | U |
| 75-00-3 | Chloroethane | 15. | U |
| 75-09-2 | Methylene Chloride | 5. | J |
| 67-64-1 | Acetone | 25. | |
| 75-15-0 | Carbon Disulfide | 7. | U |
| 75-35-4 | 1,1-Dichloroethene | 7. | U |
| 75-34-3 | 1,1-Dichloroethane | 7. | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 7. | U |
| 67-66-3 | Chloroform | 7. | U |
| 107-06-2 | 1,2-Dichloroethane | 7. | U |
| 78-93-3 | 2-Butanone | 15. | U |
| 71-55-6 | 1,1,1-Trichloroethane | 7. | U |
| 56-23-5 | Carbon Tetrachloride | 7. | U |
| 108-05-4 | Vinyl Acetate | 15. | U |
| 75-27-4 | Bromodichloromethane | 7. | U |
| 78-87-5 | 1,2-Dichloropropane | 7. | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 7. | U |
| 79-01-6 | Trichloroethene | 7. | U |
| 124-48-1 | Dibromochloromethane | 7. | U |
| 79-00-5 | 1,1,2-Trichloroethane | 7. | U |
| 71-43-2 | Benzene | 7. | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 7. | U |
| 75-25-2 | Bromoform | 7. | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 15. | U |
| 591-78-6 | 2-Hexanone | 15. | U |
| 127-18-4 | Tetrachloroethene | 7. | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 7. | U |
| 108-88-3 | Toluene | 7. | U |
| 108-90-7 | Chlorobenzene | 7. | U |
| 100-41-4 | Ethylbenzene | 7. | U |
| 100-42-5 | Styrene | 7. | U |
| 1330-20-7 | Xylene (total) | 7. | U |

EPA SAMPLE NO.

# VOLATILE ORGANICS ANALYSIS DATA SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

EJY46 RE

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 5.140 (g/mL) G Lab File ID: 58710

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 34. Date Analyzed: 4/16/90

Column: (pack/cap) CAP Dilution Factor: 1.00

Number TICs found: 0

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

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
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# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY42

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78034

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 24. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/18/90

GPC Cleanup: (Y/N) Y pH: 7.6 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 108-95-2 | Phenol | 870. | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 870. | U |
| 95-57-8 | 2-Chlorophenol | 870. | U |
| 541-73-1 | 1,3-Dichlorobenzene | 870. | U |
| 106-46-7 | 1,4-Dichlorobenzene | 870. | U |
| 100-51-6 | Benzyl alcohol | 870. | U |
| 95-50-1 | 1,2-Dichlorobenzene | 870. | U |
| 95-48-7 | 2-Methylphenol | 870. | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 870. | U |
| 106-44-5 | 4-Methylphenol | 870. | U |
| 621-64-7 | N-Nitroso-di-n-propylamine | 870. | U |
| 67-72-1 | Hexachloroethane | 870. | U |
| 98-95-3 | Nitrobenzene | 870. | U |
| 78-59-1 | Isophorone | 870. | U |
| 88-75-5 | 2-Nitrophenol | 870. | U |
| 105-67-9 | 2,4-Dimethylphenol | 870. | U |
| 65-85-0 | Benzoic acid | 4200. | U |
| 111-91-1 | bis(2-Chloroethoxy)methane | 870. | U |
| 120-83-2 | 2,4-Dichlorophenol | 870. | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 870. | U |
| 91-20-3 | Naphthalene | 870. | U |
| 106-47-8 | 4-Chloroaniline | 870. | U |
| 87-68-3 | Hexachlorobutadiene | 870. | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 870. | U |
| 91-57-6 | 2-Methylnaphthalene | 870. | U |
| 77-47-4 | Hexachlorocyclopentadiene | 870. | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 870. | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 4200. | U |
| 91-58-7 | 2-Chloronaphthalene | 870. | U |
| 88-74-4 | 2-Nitroaniline | 4200. | U |
| 131-11-3 | Dimethylphthalate | 870. | U |
| 208-96-8 | Acenaphthylene | 870. | U |
| 606-20-2 | 2,6-Dinitrotoluene | 870. | U |

1C

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY42

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78034

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 24. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/18/90

GPC Cleanup: (Y/N) Y pH: 7.6 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 4200. | U |
| 83-32-9 | Acenaphthene | 870. | U |
| 51-28-5 | 2,4-Dinitrophenol | 4200. | U |
| 100-02-7 | 4-Nitrophenol | 4200. | U |
| 132-64-9 | Dibenzofuran | 870. | U |
| 121-14-2 | 2,4-Dinitrotoluene | 870. | U |
| 84-66-2 | Diethylphthalate | 870. | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 870. | U |
| 86-73-7 | Fluorene | 870. | U |
| 100-01-6 | 4-Nitroaniline | 4200. | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 4200. | U |
| 86-30-6 | N-Nitrosodiphenylamine | 870. | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 870. | U |
| 118-74-1 | Hexachlorobenzene | 870. | U |
| 87-86-5 | Pentachlorophenol | 4200. | U |
| 85-01-8 | Phenanthrene | 870. | U |
| 120-12-7 | Anthracene | 870. | U |
| 84-74-2 | Di-n-butylphthalate | 870. | U |
| 206-44-0 | Fluoranthene | 870. | U |
| 129-00-0 | Pyrene | 870. | U |
| 85-68-7 | Butylbenzylphthalate | 870. | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 1700. | U |
| 56-55-3 | Benzo(a)anthracene | 870. | U |
| 218-01-9 | Chrysene | 870. | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 870. ~~850.~~ | ~~BJ~~ U |
| 117-84-0 | Di-n-octylphthalate | 870. | U |
| 205-99-2 | Benzo(b)fluoranthene | 870. | U |
| 207-08-9 | Benzo(k)fluoranthene | 870. | U |
| 50-32-8 | Benzo(a)pyrene | 870. | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 870. | U |
| 53-70-3 | Dibenz(a,h)anthracene | 870. | U |
| 191-24-2 | Benzo(g,h,i)perylene | 870. | U |

EJZ 22 May 1990

(1) - Cannot be separated from diphenylamine

EPA SAMPLE NO.

EJY42

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78034

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 24. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/18/90

GPC Cleanup: (Y/N) Y pH: 7.6 Dilution Factor: 1.00

Number TICs found: 15

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

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 1. | - - | UNKNOWN | 8.44 | 2000. | J |
| 2. | - - | UNKNOWN | 21.50 | 1000. | J |
| 3. | 24544-04-5 | Benzenamine, 2,6-bis(1-methy | 21.89 | 1000. | J |
| 4. | 719-22-2 | 2,5-Cyclohexadiene-1,4-dione | 22.58 | 2000. | J |
| 5. | 4130-42-1 | Phenol, 2,6-bis(1,1-dimethyl | 28.11 | 3000. | J |
| 6. | - - | UNKNOWN | 30.12 | 2000. | J |
| 7. | - - | UNKNOWN | 30.75 | 1000. | J |
| 8. | 17831-71-9 | 2-Propenoic acid, oxybis(2,1 | 31.13 | 5000. | ~~BJ~~ U |
| 9. | - - | UNKNOWN | 34.89 | 2000. | J |
| 10. | - - | UNKNOWN | 37.35 | 1000. | J |
| 11. | - - | UNKNOWN | 37.70 | 2000. | J |
| 12. | 2004-39-9 | 1-Heptacosanol (8CI9CI) | 39.28 | 4000. | J |
| 13. | - - | UNKNOWN | 43.84 | 900. | J |
| 14. | 83-48-7 | Stigmasterol | 46.37 | 1000. | J |
| 15. | 83-47-6 | .gamma.-Sitosterol | 47.94 | 2000. | J |
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RJZ 22 May 1990

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EJY43

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78028

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 8. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/18/90

GPC Cleanup: (Y/N) Y pH: 8.5 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 108-95-2 | Phenol | 710. | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 710. | U |
| 95-57-8 | 2-Chlorophenol | 710. | U |
| 541-73-1 | 1,3-Dichlorobenzene | 710. | U |
| 106-46-7 | 1,4-Dichlorobenzene | 710. | U |
| 100-51-6 | Benzyl alcohol | 710. | U |
| 95-50-1 | 1,2-Dichlorobenzene | 710. | U |
| 95-48-7 | 2-Methylphenol | 710. | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 710. | U |
| 106-44-5 | 4-Methylphenol | 710. | U |
| 621-64-7 | N-Nitroso-di-n-propylamine | 710. | U |
| 67-72-1 | Hexachloroethane | 710. | U |
| 98-95-3 | Nitrobenzene | 710. | U |
| 78-59-1 | Isophorone | 710. | U |
| 88-75-5 | 2-Nitrophenol | 710. | U |
| 105-67-9 | 2,4-Dimethylphenol | 710. | U |
| 65-85-0 | Benzoic acid | 3500. | U |
| 111-91-1 | bis(2-Chloroethoxy)methane | 710. | U |
| 120-83-2 | 2,4-Dichlorophenol | 710. | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 710. | U |
| 91-20-3 | Naphthalene | 710. | U |
| 106-47-8 | 4-Chloroaniline | 710. | U |
| 87-68-3 | Hexachlorobutadiene | 710. | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 710. | U |
| 91-57-6 | 2-Methylnaphthalene | 710. | U |
| 77-47-4 | Hexachlorocyclopentadiene | 710. | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 710. | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 3500. | U |
| 91-58-7 | 2-Chloronaphthalene | 710. | U |
| 88-74-4 | 2-Nitroaniline | 3500. | U |
| 131-11-3 | Dimethylphthalate | 710. | U |
| 208-96-8 | Acenaphthylene | 710. | U |
| 606-20-2 | 2,6-Dinitrotoluene | 710. | U |

EPA SAMPLE NO.

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EJY43

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78028

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 8. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/18/90

GPC Cleanup: (Y/N) Y pH: 8.5 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 3500. | U |
| 83-32-9 | Acenaphthene | 710. | U |
| 51-28-5 | 2,4-Dinitrophenol | 3500. | U |
| 100-02-7 | 4-Nitrophenol | 3500. | U |
| 132-64-9 | Dibenzofuran | 710. | U |
| 121-14-2 | 2,4-Dinitrotoluene | 710. | U |
| 84-66-2 | Diethylphthalate | 710. | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 710. | U |
| 86-73-7 | Fluorene | 710. | U |
| 100-01-6 | 4-Nitroaniline | 3500. | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 3500. | U |
| 86-30-6 | N-Nitrosodiphenylamine | 710. | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 710. | U |
| 118-74-1 | Hexachlorobenzene | 710. | U |
| 87-86-5 | Pentachlorophenol | 3500. | U |
| 85-01-8 | Phenanthrene | 710. | U |
| 120-12-7 | Anthracene | 710. | U |
| 84-74-2 | Di-n-butylphthalate | 710. | U |
| 206-44-0 | Fluoranthene | 710. | U |
| 129-00-0 | Pyrene | 710. | U |
| 85-68-7 | Butylbenzylphthalate | 710. | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 1400. | U |
| 56-55-3 | Benzo(a)anthracene | 710. | U |
| 218-01-9 | Chrysene | 710. | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 710. ~~220.~~ | ~~BJ~~ U |
| 117-84-0 | Di-n-octylphthalate | 710. | U |
| 205-99-2 | Benzo(b)fluoranthene | 710. | U |
| 207-08-9 | Benzo(k)fluoranthene | 710. | U |
| 50-32-8 | Benzo(a)pyrene | 710. | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 710. | U |
| 53-70-3 | Dibenz(a,h)anthracene | 710. | U |
| 191-24-2 | Benzo(g,h,i)perylene | 710. | U |

RJZ 22 May 1990

(1) - Cannot be separated from diphenylamine

EPA SAMPLE NO.

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

EJY43

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78028

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 8. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/18/90

GPC Cleanup: (Y/N) Y pH: 8.5 Dilution Factor: 1.00

Number TICs found: 6

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

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 1. | - - | UNKNOWN HYDROCARBON | 6.24 | 10000. | J |
| 2. | - - | UNKNOWN | 6.28 | 1000. | J |
| 3. | - - | UNKNOWN | 8.31 | 2000. | J |
| 4. | 17831-71-9 | 2-Propenoic acid, oxybis(2,1 | 31.11 | 4000. | ~~BJ~~ U |
| 5. | 115-86-6 | Phosphoric acid, triphenyl e | 34.85 | 900. | J |
| 6. | - - | UNKNOWN | 40.60 | 2000. | J |
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RJZ 22 May 1990

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EJY44

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78029

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 8. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/18/90

GPC Cleanup: (Y/N) Y pH: 8.5 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 108-95-2 | Phenol | 720. | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 720. | U |
| 95-57-8 | 2-Chlorophenol | 720. | U |
| 541-73-1 | 1,3-Dichlorobenzene | 720. | U |
| 106-46-7 | 1,4-Dichlorobenzene | 720. | U |
| 100-51-6 | Benzyl alcohol | 720. | U |
| 95-50-1 | 1,2-Dichlorobenzene | 720. | U |
| 95-48-7 | 2-Methylphenol | 720. | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 720. | U |
| 106-44-5 | 4-Methylphenol | 720. | U |
| 621-64-7 | N-Nitroso-di-n-propylamine | 720. | U |
| 67-72-1 | Hexachloroethane | 720. | U |
| 98-95-3 | Nitrobenzene | 720. | U |
| 78-59-1 | Isophorone | 720. | U |
| 88-75-5 | 2-Nitrophenol | 720. | U |
| 105-67-9 | 2,4-Dimethylphenol | 720. | U |
| 65-85-0 | Benzoic acid | 3500. | U |
| 111-91-1 | bis(2-Chloroethoxy)methane | 720. | U |
| 120-83-2 | 2,4-Dichlorophenol | 720. | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 720. | U |
| 91-20-3 | Naphthalene | 720. | U |
| 106-47-8 | 4-Chloroaniline | 720. | U |
| 87-68-3 | Hexachlorobutadiene | 720. | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 720. | U |
| 91-57-6 | 2-Methylnaphthalene | 720. | U |
| 77-47-4 | Hexachlorocyclopentadiene | 720. | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 720. | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 3500. | U |
| 91-58-7 | 2-Chloronaphthalene | 720. | U |
| 88-74-4 | 2-Nitroaniline | 3500. | U |
| 131-11-3 | Dimethylphthalate | 720. | U |
| 208-96-8 | Acenaphthylene | 720. | U |
| 606-20-2 | 2,6-Dinitrotoluene | 720. | U |

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY44

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78029

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 8. dec.____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/18/90

GPC Cleanup: (Y/N) Y pH: 8.5 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q | |
|---|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 3500. | U | |
| 83-32-9 | Acenaphthene | 720. | U | |
| 51-28-5 | 2,4-Dinitrophenol | 3500. | U | |
| 100-02-7 | 4-Nitrophenol | 3500. | U | |
| 132-64-9 | Dibenzofuran | 720. | U | |
| 121-14-2 | 2,4-Dinitrotoluene | 720. | U | |
| 84-66-2 | Diethylphthalate | 720. | U | |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 720. | U | |
| 86-73-7 | Fluorene | 720. | U | |
| 100-01-6 | 4-Nitroaniline | 3500. | U | |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 3500. | U | |
| 86-30-6 | N-Nitrosodiphenylamine | 720. | U | |
| 101-55-3 | 4-Bromophenyl-phenylether | 720. | U | |
| 118-74-1 | Hexachlorobenzene | 720. | U | |
| 87-86-5 | Pentachlorophenol | 3500. | U | |
| 85-01-8 | Phenanthrene | 720. | U | |
| 120-12-7 | Anthracene | 720. | U | |
| 84-74-2 | Di-n-butylphthalate | 720. | U | |
| 206-44-0 | Fluoranthene | 720. | U | |
| 129-00-0 | Pyrene | ~~78.~~ 78. | J | RJZ 22 May 1990 |
| 85-68-7 | Butylbenzylphthalate | 720. | U | |
| 91-94-1 | 3,3'-Dichlorobenzidine | 1400. | U | |
| 56-55-3 | Benzo(a)anthracene | 720. | U | |
| 218-01-9 | Chrysene | 720. | U | |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 960. | ~~B~~ U | RJZ 22 May 1990 |
| 117-84-0 | Di-n-octylphthalate | 720. | U | |
| 205-99-2 | Benzo(b)fluoranthene | 720. | U | |
| 207-08-9 | Benzo(k)fluoranthene | 720. | U | |
| 50-32-8 | Benzo(a)pyrene | 720. | U | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 720. | U | |
| 53-70-3 | Dibenz(a,h)anthracene | 720. | U | |
| 191-24-2 | Benzo(g,h,i)perylene | 720. | U | |

(1) - Cannot be separated from diphenylamine

EPA SAMPLE NO.

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

EJY44

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78029

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 8. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/18/90

GPC Cleanup: (Y/N) Y pH: 8.5 Dilution Factor: 1.00

Number TICs found: 2

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

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 1. | 17831-71-9 | 2-Propenoic acid, oxybis(2,1 | 31.14 | 3000. | ~~BJ~~ U |
| 2. | - - | UNKNOWN | 38.39 | 1000. | J |
| 3. | | | | | |
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RJZ
22 May 1990

1B

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY44 RE

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78052

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 8. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/20/90

GPC Cleanup: (Y/N) Y pH: 8.5 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 108-95-2 | Phenol | 720. | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 720. | U |
| 95-57-8 | 2-Chlorophenol | 720. | U |
| 541-73-1 | 1,3-Dichlorobenzene | 720. | U |
| 106-46-7 | 1,4-Dichlorobenzene | 720. | U |
| 100-51-6 | Benzyl alcohol | 720. | U |
| 95-50-1 | 1,2-Dichlorobenzene | 720. | U |
| 95-48-7 | 2-Methylphenol | 720. | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 720. | U |
| 106-44-5 | 4-Methylphenol | 720. | U |
| 621-64-7 | N-Nitroso-di-n-propylamine | 720. | U |
| 67-72-1 | Hexachloroethane | 720. | U |
| 98-95-3 | Nitrobenzene | 720. | U |
| 78-59-1 | Isophorone | 720. | U |
| 88-75-5 | 2-Nitrophenol | 720. | U |
| 105-67-9 | 2,4-Dimethylphenol | 720. | U |
| 65-85-0 | Benzoic acid | 3500. | U |
| 111-91-1 | bis(2-Chloroethoxy)methane | 720. | U |
| 120-83-2 | 2,4-Dichlorophenol | 720. | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 720. | U |
| 91-20-3 | Naphthalene | 720. | U |
| 106-47-8 | 4-Chloroaniline | 720. | U |
| 87-68-3 | Hexachlorobutadiene | 720. | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 720. | U |
| 91-57-6 | 2-Methylnaphthalene | 720. | U |
| 77-47-4 | Hexachlorocyclopentadiene | 720. | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 720. | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 3500. | U |
| 91-58-7 | 2-Chloronaphthalene | 720. | U |
| 88-74-4 | 2-Nitroaniline | 3500. | U |
| 131-11-3 | Dimethylphthalate | 720. | U |
| 208-96-8 | Acenaphthylene | 720. | U |
| 606-20-2 | 2,6-Dinitrotoluene | 720. | U |

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY44 RE

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78052

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 8. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/20/90

GPC Cleanup: (Y/N) Y pH: 8.5 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 3500. | U |
| 83-32-9 | Acenaphthene | 720. | U |
| 51-28-5 | 2,4-Dinitrophenol | 3500. | U |
| 100-02-7 | 4-Nitrophenol | 3500. | U |
| 132-64-9 | Dibenzofuran | 720. | U |
| 121-14-2 | 2,4-Dinitrotoluene | 720. | U |
| 84-66-2 | Diethylphthalate | 720. | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 720. | U |
| 86-73-7 | Fluorene | 720. | U |
| 100-01-6 | 4-Nitroaniline | 3500. | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 3500. | U |
| 86-30-6 | N-Nitrosodiphenylamine | 720. | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 720. | U |
| 118-74-1 | Hexachlorobenzene | 720. | U |
| 87-86-5 | Pentachlorophenol | 3500. | U |
| 85-01-8 | Phenanthrene | 720. | U |
| 120-12-7 | Anthracene | 720. | U |
| 84-74-2 | Di-n-butylphthalate | 120. | J |
| 206-44-0 | Fluoranthene | 720. | U |
| 129-00-0 | Pyrene | 720. | U |
| 85-68-7 | Butylbenzylphthalate | 720. | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 1400. | U |
| 56-55-3 | Benzo(a)anthracene | 720. | U |
| 218-01-9 | Chrysene | 720. | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 920. | ~~B~~ U RTR 22 May 1990 |
| 117-84-0 | Di-n-octylphthalate | 720. | U |
| 205-99-2 | Benzo(b)fluoranthene | 720. | U |
| 207-08-9 | Benzo(k)fluoranthene | 720. | U |
| 50-32-8 | Benzo(a)pyrene | 720. | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 720. | U |
| 53-70-3 | Dibenz(a,h)anthracene | 720. | U |
| 191-24-2 | Benzo(g,h,i)perylene | 720. | U |

(1) - Cannot be separated from diphenylamine

EPA SAMPLE NO.

EJY44 RE

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78052

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 8. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/20/90

GPC Cleanup: (Y/N) Y pH: 8.5 Dilution Factor: 1.00

Number TICs found: 8

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

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 1. | 3744-02-3 | 4-Penten-2-one, 4-methyl- (8 | 8.13 | 2000. | J |
| 2. | 4436-75-3 | 3-Hexene-2,5-dione (8CI9CI) | 9.21 | 1000. | J |
| 3. | 294-62-2 | Cyclododecane (8CI9CI) | 26.68 | 1000. | J |
| 4. | - - | UNKNOWN | 30.08 | 700. | J |
| 5. | 17831-71-9 | 2-Propenoic acid, oxybis(2,1 | 31.04 | 4000. | ~~BJ~~ U |
| 6. | - - | UNKNOWN | 36.23 | 700. | J |
| 7. | - - | UNKNOWN | 38.28 | 2000. | J |
| 8. | - - | UNKNOWN | 43.64 | 800. | J |
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RJZ 22 May 1990

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY45

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78036

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 6. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/18/90

GPC Cleanup: (Y/N) Y pH: 8.2 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 108-95-2 | Phenol | 700. | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 700. | U |
| 95-57-8 | 2-Chlorophenol | 700. | U |
| 541-73-1 | 1,3-Dichlorobenzene | 700. | U |
| 106-46-7 | 1,4-Dichlorobenzene | 700. | U |
| 100-51-6 | Benzyl alcohol | 700. | U |
| 95-50-1 | 1,2-Dichlorobenzene | 700. | U |
| 95-48-7 | 2-Methylphenol | 700. | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 700. | U |
| 106-44-5 | 4-Methylphenol | 700. | U |
| 621-64-7 | N-Nitroso-di-n-propylamine | 700. | U |
| 67-72-1 | Hexachloroethane | 700. | U |
| 98-95-3 | Nitrobenzene | 700. | U |
| 78-59-1 | Isophorone | 700. | U |
| 88-75-5 | 2-Nitrophenol | 700. | U |
| 105-67-9 | 2,4-Dimethylphenol | 700. | U |
| 65-85-0 | Benzoic acid | 3400. | U |
| 111-91-1 | bis(2-Chloroethoxy)methane | 700. | U |
| 120-83-2 | 2,4-Dichlorophenol | 700. | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 700. | U |
| 91-20-3 | Naphthalene | 700. | U |
| 106-47-8 | 4-Chloroaniline | 700. | U |
| 87-68-3 | Hexachlorobutadiene | 700. | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 700. | U |
| 91-57-6 | 2-Methylnaphthalene | 700. | U |
| 77-47-4 | Hexachlorocyclopentadiene | 700. | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 700. | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 3400. | U |
| 91-58-7 | 2-Chloronaphthalene | 700. | U |
| 88-74-4 | 2-Nitroaniline | 3400. | U |
| 131-11-3 | Dimethylphthalate | 700. | U |
| 208-96-8 | Acenaphthylene | 700. | U |
| 606-20-2 | 2,6-Dinitrotoluene | 700. | U |

1C

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY45

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78036

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 6. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/18/90

GPC Cleanup: (Y/N) Y pH: 8.2 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 3400. | U |
| 83-32-9 | Acenaphthene | 700. | U |
| 51-28-5 | 2,4-Dinitrophenol | 3400. | U |
| 100-02-7 | 4-Nitrophenol | 3400. | U |
| 132-64-9 | Dibenzofuran | 700. | U |
| 121-14-2 | 2,4-Dinitrotoluene | 700. | U |
| 84-66-2 | Diethylphthalate | 700. | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 700. | U |
| 86-73-7 | Fluorene | 700. | U |
| 100-01-6 | 4-Nitroaniline | 3400. | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 3400. | U |
| 86-30-6 | N-Nitrosodiphenylamine | 700. | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 700. | U |
| 118-74-1 | Hexachlorobenzene | 700. | U |
| 87-86-5 | Pentachlorophenol | 3400. | U |
| 85-01-8 | Phenanthrene | 700. | U |
| 120-12-7 | Anthracene | 700. | U |
| 84-74-2 | Di-n-butylphthalate | 700. | U |
| 206-44-0 | Fluoranthene | 700. | U |
| 129-00-0 | Pyrene | 700. | U |
| 85-68-7 | Butylbenzylphthalate | 700. | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 1400. | U |
| 56-55-3 | Benzo(a)anthracene | 700. | U |
| 218-01-9 | Chrysene | 700. | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 700. ~~210~~. | ~~BJ~~ U |
| 117-84-0 | Di-n-octylphthalate | 700. | U |
| 205-99-2 | Benzo(b)fluoranthene | 700. | U |
| 207-08-9 | Benzo(k)fluoranthene | 700. | U |
| 50-32-8 | Benzo(a)pyrene | 700. | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 700. | U |
| 53-70-3 | Dibenz(a,h)anthracene | 700. | U |
| 191-24-2 | Benzo(g,h,i)perylene | 700. | U |

RJZ 22 May 1990

(1) - Cannot be separated from diphenylamine

EPA SAMPLE NO.

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

EJY45

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78036

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 6. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/18/90

GPC Cleanup: (Y/N) Y pH: 8.2 Dilution Factor: 1.00

Number TICs found: 5

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

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 1. | - - | UNKNOWN | 6.28 | 10000. | J |
| 2. | - - | UNKNOWN | 8.44 | 2000. | J |
| 3. | 23293-50-7 | 3-Hexyn-2-ol, 5-methyl- (8CI | 9.47 | 1000. | J |
| 4. | 17831-71-9 | 2-Propenoic acid, oxybis(2,1 | 31.14 | 3000. | ~~BJ~~ U |
| 5. | - - | UNKNOWN | 41.10 | 2000. | J |
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RJZ 22 May 1990

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY45 RE

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78056

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 6. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/23/90

GPC Cleanup: (Y/N) Y pH: 8.2 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 108-95-2 | Phenol | 700. | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 700. | U |
| 95-57-8 | 2-Chlorophenol | 700. | U |
| 541-73-1 | 1,3-Dichlorobenzene | 700. | U |
| 106-46-7 | 1,4-Dichlorobenzene | 700. | U |
| 100-51-6 | Benzyl alcohol | 700. | U |
| 95-50-1 | 1,2-Dichlorobenzene | 700. | U |
| 95-48-7 | 2-Methylphenol | 700. | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 700. | U |
| 106-44-5 | 4-Methylphenol | 700. | U |
| 621-64-7 | N-Nitroso-di-n-propylamine | 700. | U |
| 67-72-1 | Hexachloroethane | 700. | U |
| 98-95-3 | Nitrobenzene | 700. | U |
| 78-59-1 | Isophorone | 700. | U |
| 88-75-5 | 2-Nitrophenol | 700. | U |
| 105-67-9 | 2,4-Dimethylphenol | 700. | U |
| 65-85-0 | Benzoic acid | 3400. | U |
| 111-91-1 | bis(2-Chloroethoxy)methane | 700. | U |
| 120-83-2 | 2,4-Dichlorophenol | 700. | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 700. | U |
| 91-20-3 | Naphthalene | 700. | U |
| 106-47-8 | 4-Chloroaniline | 700. | U |
| 87-68-3 | Hexachlorobutadiene | 700. | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 700. | U |
| 91-57-6 | 2-Methylnaphthalene | 700. | U |
| 77-47-4 | Hexachlorocyclopentadiene | 700. | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 700. | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 3400. | U |
| 91-58-7 | 2-Chloronaphthalene | 700. | U |
| 88-74-4 | 2-Nitroaniline | 3400. | U |
| 131-11-3 | Dimethylphthalate | 700. | U |
| 208-96-8 | Acenaphthylene | 700. | U |
| 606-20-2 | 2,6-Dinitrotoluene | 700. | U |

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY45 RE

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78056

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 6. dec.____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/23/90

GPC Cleanup: (Y/N) Y pH: 8.2 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 3400. | U |
| 83-32-9 | Acenaphthene | 700. | U |
| 51-28-5 | 2,4-Dinitrophenol | 3400. | U |
| 100-02-7 | 4-Nitrophenol | 3400. | U |
| 132-64-9 | Dibenzofuran | 700. | U |
| 121-14-2 | 2,4-Dinitrotoluene | 700. | U |
| 84-66-2 | Diethylphthalate | 700. | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 700. | U |
| 86-73-7 | Fluorene | 700. | U |
| 100-01-6 | 4-Nitroaniline | 3400. | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 3400. | U |
| 86-30-6 | N-Nitrosodiphenylamine | 700. | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 700. | U |
| 118-74-1 | Hexachlorobenzene | 700. | U |
| 87-86-5 | Pentachlorophenol | 3400. | U |
| 85-01-8 | Phenanthrene | 700. | U |
| 120-12-7 | Anthracene | 700. | U |
| 84-74-2 | Di-n-butylphthalate | 700. | U |
| 206-44-0 | Fluoranthene | 700. | U |
| 129-00-0 | Pyrene | 700. | U |
| 85-68-7 | Butylbenzylphthalate | 700. | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 1400. | U |
| 56-55-3 | Benzo(a)anthracene | 700. | U |
| 218-01-9 | Chrysene | 700. | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 700. ~~200~~. | ~~BJ~~ U |
| 117-84-0 | Di-n-octylphthalate | 700. | U |
| 205-99-2 | Benzo(b)fluoranthene | 700. | U |
| 207-08-9 | Benzo(k)fluoranthene | 700. | U |
| 50-32-8 | Benzo(a)pyrene | 700. | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 700. | U |
| 53-70-3 | Dibenz(a,h)anthracene | 700. | U |
| 191-24-2 | Benzo(g,h,i)perylene | 700. | U |

RJZ 22 May 1990

(1) - Cannot be separated from diphenylamine

1F

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EJY45 RE

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78056

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 6. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/23/90

GPC Cleanup: (Y/N) Y pH: 8.2 Dilution Factor: 1.00

Number TICs found: 4

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

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 1. | - - | UNKNOWN | 8.38 | 2000. | J |
| 2. | - - | UNKNOWN | 9.44 | 800. | J |
| 3. | 17831-71-9 | 2-Propenoic acid, oxybis(2,1 | 31.11 | 4000. | ~~BJ~~ U |
| 4. | - - | UNKNOWN | 42.21 | 800. | J |
| 5. | | | | | |
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# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY46

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78037

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 34. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/18/90

GPC Cleanup: (Y/N) Y pH: 6.0 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 108-95-2 | Phenol | 1000. | U |
| 111-44-4 | bis(2-Chloroethyl)ether | 1000. | U |
| 95-57-8 | 2-Chlorophenol | 1000. | U |
| 541-73-1 | 1,3-Dichlorobenzene | 1000. | U |
| 106-46-7 | 1,4-Dichlorobenzene | 1000. | U |
| 100-51-6 | Benzyl alcohol | 1000. | U |
| 95-50-1 | 1,2-Dichlorobenzene | 1000. | U |
| 95-48-7 | 2-Methylphenol | 1000. | U |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 1000. | U |
| 106-44-5 | 4-Methylphenol | 1000. | U |
| 621-64-7 | N-Nitroso-di-n-propylamine | 1000. | U |
| 67-72-1 | Hexachloroethane | 1000. | U |
| 98-95-3 | Nitrobenzene | 1000. | U |
| 78-59-1 | Isophorone | 1000. | U |
| 88-75-5 | 2-Nitrophenol | 1000. | U |
| 105-67-9 | 2,4-Dimethylphenol | 1000. | U |
| 65-85-0 | Benzoic acid | 9100. | |
| 111-91-1 | bis(2-Chloroethoxy)methane | 1000. | U |
| 120-83-2 | 2,4-Dichlorophenol | 1000. | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1000. | U |
| 91-20-3 | Naphthalene | 1000. | U |
| 106-47-8 | 4-Chloroaniline | 1000. | U |
| 87-68-3 | Hexachlorobutadiene | 1000. | U |
| 59-50-7 | 4-Chloro-3-methylphenol | 1000. | U |
| 91-57-6 | 2-Methylnaphthalene | 1000. | U |
| 77-47-4 | Hexachlorocyclopentadiene | 1000. | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 1000. | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 4800. | U |
| 91-58-7 | 2-Chloronaphthalene | 1000. | U |
| 88-74-4 | 2-Nitroaniline | 4800. | U |
| 131-11-3 | Dimethylphthalate | 1000. | U |
| 208-96-8 | Acenaphthylene | 1000. | U |
| 606-20-2 | 2,6-Dinitrotoluene | 1000. | U |

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# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY46

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78037

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 34. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/18/90

GPC Cleanup: (Y/N) Y pH: 6.0 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 99-09-2 | 3-Nitroaniline | 4800. | U |
| 83-32-9 | Acenaphthene | 1000. | U |
| 51-28-5 | 2,4-Dinitrophenol | 4800. | U |
| 100-02-7 | 4-Nitrophenol | 4800. | U |
| 132-64-9 | Dibenzofuran | 1000. | U |
| 121-14-2 | 2,4-Dinitrotoluene | 1000. | U |
| 84-66-2 | Diethylphthalate | 1000. | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 1000. | U |
| 86-73-7 | Fluorene | 1000. | U |
| 100-01-6 | 4-Nitroaniline | 4800. | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 4800. | U |
| 86-30-6 | N-Nitrosodiphenylamine | 1000. | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 1000. | U |
| 118-74-1 | Hexachlorobenzene | 1000. | U |
| 87-86-5 | Pentachlorophenol | 4800. | U |
| 85-01-8 | Phenanthrene | 1000. | U |
| 120-12-7 | Anthracene | 1000. | U |
| 84-74-2 | Di-n-butylphthalate | 1000. | U |
| 206-44-0 | Fluoranthene | 1000. | U |
| 129-00-0 | Pyrene | 1000. | U |
| 85-68-7 | Butylbenzylphthalate | 1000. | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 2000. | U |
| 56-55-3 | Benzo(a)anthracene | 1000. | U |
| 218-01-9 | Chrysene | 1000. | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 1000. ~~220.~~ | ~~BJ~~ U |
| 117-84-0 | Di-n-octylphthalate | 1000. | U |
| 205-99-2 | Benzo(b)fluoranthene | 1000. | U |
| 207-08-9 | Benzo(k)fluoranthene | 1000. | U |
| 50-32-8 | Benzo(a)pyrene | 1000. | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 1000. | U |
| 53-70-3 | Dibenz(a,h)anthracene | 1000. | U |
| 191-24-2 | Benzo(g,h,i)perylene | 1000. | U |

RJZ 22 May 1990

(1) - Cannot be separated from diphenylamine

EPA SAMPLE NO.

EJY46

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30.0 (g/mL) G Lab File ID: 78037

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 34. dec._____ Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/18/90

GPC Cleanup: (Y/N) Y pH: 6.0 Dilution Factor: 1.00

Number TICs found: 15

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

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 1. | 112-72-1 | 1-Tetradecanol (8CI9CI) | 26.78 | 2000. | J |
| 2. | 17831-71-9 | 2-Propenoic acid, oxybis(2,1 | 31.13 | 4000. | ~~BJ~~ U |
| 3. | 593-49-7 | Heptacosane (8CI9CI) | 37.12 | 3000. | J |
| 4. | - - | UNKNOWN | 37.91 | 9000. | J |
| 5. | 765-27-5 | 1-Eicosyne (8CI9CI) | 38.50 | 3000. | J |
| 6. | 40710-32-5 | Nonahexacontanoic acid (9CI) | 39.26 | 5000. | J |
| 7. | - - | UNKNOWN | 40.95 | 2000. | J |
| 8. | 629-80-1 | Hexadecanal (ACN)(9CI) | 41.27 | 2000. | J |
| 9. | 629-97-0 | Docosane (8CI9CI) | 42.27 | 2000. | J |
| 10. | 629-76-5 | 1-Pentadecanol (8CI9CI) | 42.37 | 3000. | J |
| 11. | - - | UNKNOWN | 46.79 | 2000. | J |
| 12. | 514-07-8 | D-Friedoolean-14-en-3-one (8 | 47.66 | 2000. | J |
| 13. | 14772-51-1 | Cholest-8(14)-en-3-ol, 4,4-d | 47.93 | 5000. | J |
| 14. | - - | UNKNOWN | 49.58 | 2000. | J |
| 15. | - - | UNKNOWN | 50.31 | 1000. | J |
| 16. | | | | | |
| 17. | | | | | |
| 18. | | | | | |
| 19. | | | | | |
| 20. | | | | | |
| 21. | | | | | |
| 22. | | | | | |
| 23. | | | | | |
| 24. | | | | | |
| 25. | | | | | |
| 26. | | | | | |
| 27. | | | | | |
| 28. | | | | | |
| 29. | | | | | |
| 30. | | | | | |

KJZ 22 May 1990

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY42

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30. (g/mL) G Lab File ID: QEJY42

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 24. dec. 0. Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/22/90

GPC Cleanup: (Y/N) Y pH: 7.6 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 319-84-6 | alpha-BHC | 21. | U |
| 319-85-7 | beta-BHC | 21. | U |
| 319-86-8 | delta-BHC | 21. | U |
| 58-89-9 | gamma-BHC (Lindane) | 21. | U |
| 76-44-8 | Heptachlor | 21. | U |
| 309-00-2 | Aldrin | 21. | U |
| 1024-57-3 | Heptachlor epoxide | 21. | U |
| 959-98-8 | Endosulfan I | 21. | U |
| 60-57-1 | Dieldrin | 42. | U |
| 72-55-9 | 4,4'-DDE | 42. | U |
| 72-20-8 | Endrin | 42. | U |
| 33213-65-9 | Endosulfan II | 42. | U |
| 72-54-8 | 4,4'-DDD | 42. | U |
| 1031-07-8 | Endosulfan sulfate | 42. | U |
| 50-29-3 | 4,4'-DDT | 42. | U |
| 72-43-5 | Methoxychlor | 210. | U |
| 53494-70-5 | Endrin ketone | 42. | U |
| 5103-71-9 | alpha-Chlordane | 210. | U |
| 5103-74-2 | gamma-Chlordane | 210. | U |
| 8001-35-2 | Toxaphene | 420. | U |
| 12674-11-2 | Aroclor-1016 | 210. | U |
| 11104-28-2 | Aroclor-1221 | 210. | U |
| 11141-16-5 | Aroclor-1232 | 210. | U |
| 53469-21-9 | Aroclor-1242 | 210. | U |
| 12672-29-6 | Aroclor-1248 | 210. | U |
| 11097-69-1 | Aroclor-1254 | 420. | U |
| 11096-82-5 | Aroclor-1260 | 420. | U |

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY43

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30. (g/mL) G Lab File ID: QEJY43

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 8. dec. 0. Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 5/ 7/90

GPC Cleanup: (Y/N) Y pH: 8.5 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 319-84-6 | alpha-BHC | 17. | U |
| 319-85-7 | beta-BHC | 17. | U |
| 319-86-8 | delta-BHC | 17. | U |
| 58-89-9 | gamma-BHC (Lindane) | 17. | U |
| 76-44-8 | Heptachlor | 17. | U |
| 309-00-2 | Aldrin | 17. | U |
| 1024-57-3 | Heptachlor epoxide | 17. | U |
| 959-98-8 | Endosulfan I | 17. | U |
| 60-57-1 | Dieldrin | 35. | U |
| 72-55-9 | 4,4'-DDE | 35. | U |
| 72-20-8 | Endrin | 35. | U |
| 33213-65-9 | Endosulfan II | 35. | U |
| 72-54-8 | 4,4'-DDD | 35. | U |
| 1031-07-8 | Endosulfan sulfate | 35. | U |
| 50-29-3 | 4,4'-DDT | 35. | U |
| 72-43-5 | Methoxychlor | 170. | U |
| 53494-70-5 | Endrin ketone | 35. | U |
| 5103-71-9 | alpha-Chlordane | 170. | U |
| 5103-74-2 | gamma-Chlordane | 170. | U |
| 8001-35-2 | Toxaphene | 350. | U |
| 12674-11-2 | Aroclor-1016 | 170. | U |
| 11104-28-2 | Aroclor-1221 | 170. | U |
| 11141-16-5 | Aroclor-1232 | 170. | U |
| 53469-21-9 | Aroclor-1242 | 170. | U |
| 12672-29-6 | Aroclor-1248 | 170. | U |
| 11097-69-1 | Aroclor-1254 | 350. | U |
| 11096-82-5 | Aroclor-1260 | 350. | U |

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY44

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30. (g/mL) G Lab File ID: QEJY44

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 8. dec. 0. Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/23/90

GPC Cleanup: (Y/N) Y pH: 8.5 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 319-84-6 | alpha-BHC | 17. | U |
| 319-85-7 | beta-BHC | 17. | U |
| 319-86-8 | delta-BHC | 17. | U |
| 58-89-9 | gamma-BHC (Lindane) | 17. | U |
| 76-44-8 | Heptachlor | 17. | U |
| 309-00-2 | Aldrin | 17. | U |
| 1024-57-3 | Heptachlor epoxide | 17. | U |
| 959-98-8 | Endosulfan I | 17. | U |
| 60-57-1 | Dieldrin | 35. | U |
| 72-55-9 | 4,4'-DDE | 35. | U |
| 72-20-8 | Endrin | 35. | U |
| 33213-65-9 | Endosulfan II | 35. | U |
| 72-54-8 | 4,4'-DDD | 35. | U |
| 1031-07-8 | Endosulfan sulfate | 35. | U |
| 50-29-3 | 4,4'-DDT | 35. | U |
| 72-43-5 | Methoxychlor | 170. | U |
| 53494-70-5 | Endrin ketone | 35. | U |
| 5103-71-9 | alpha-Chlordane | 170. | U |
| 5103-74-2 | gamma-Chlordane | 170. | U |
| 8001-35-2 | Toxaphene | 350. | U |
| 12674-11-2 | Aroclor-1016 | 170. | U |
| 11104-28-2 | Aroclor-1221 | 170. | U |
| 11141-16-5 | Aroclor-1232 | 170. | U |
| 53469-21-9 | Aroclor-1242 | 170. | U |
| 12672-29-6 | Aroclor-1248 | 170. | U |
| 11097-69-1 | Aroclor-1254 | 350. | U |
| 11096-82-5 | Aroclor-1260 | 350. | U |

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY45

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30. (g/mL) G Lab File ID: QEJY45

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 6. dec. 0. Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 4/23/90

GPC Cleanup: (Y/N) Y pH: 8.2 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 319-84-6 | alpha-BHC | 17. | U |
| 319-85-7 | beta-BHC | 17. | U |
| 319-86-8 | delta-BHC | 17. | U |
| 58-89-9 | gamma-BHC (Lindane) | 17. | U |
| 76-44-8 | Heptachlor | 17. | U |
| 309-00-2 | Aldrin | 17. | U |
| 1024-57-3 | Heptachlor epoxide | 17. | U |
| 959-98-8 | Endosulfan I | 17. | U |
| 60-57-1 | Dieldrin | 34. | U |
| 72-55-9 | 4,4'-DDE | 34. | U |
| 72-20-8 | Endrin | 34. | U |
| 33213-65-9 | Endosulfan II | 34. | U |
| 72-54-8 | 4,4'-DDD | 34. | U |
| 1031-07-8 | Endosulfan sulfate | 34. | U |
| 50-29-3 | 4,4'-DDT | 34. | U |
| 72-43-5 | Methoxychlor | 170. | U |
| 53494-70-5 | Endrin ketone | 34. | U |
| 5103-71-9 | alpha-Chlordane | 170. | U |
| 5103-74-2 | gamma-Chlordane | 170. | U |
| 8001-35-2 | Toxaphene | 340. | U |
| 12674-11-2 | Aroclor-1016 | 170. | U |
| 11104-28-2 | Aroclor-1221 | 170. | U |
| 11141-16-5 | Aroclor-1232 | 170. | U |
| 53469-21-9 | Aroclor-1242 | 170. | U |
| 12672-29-6 | Aroclor-1248 | 170. | U |
| 11097-69-1 | Aroclor-1254 | 340. | U |
| 11096-82-5 | Aroclor-1260 | 340. | U |

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

EJY46

Lab Name: ESECO Contract: 68-W8-0054

Lab Code: ESECO Case No.: 13822 SAS No.: SDG No.: EJY42

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

Sample wt/vol: 30. (g/mL) G Lab File ID: QEJY46

Level: (low/med) LOW Date Received: 4/ 6/90

% Moisture: not dec. 34. dec. 0. Date Extracted: 4/11/90

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 5/ 7/90

GPC Cleanup: (Y/N) Y pH: 6.0 Dilution Factor: 1.00

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG | Q |
|---|---|---|---|
| 319-84-6 | alpha-BHC | 24. | U |
| 319-85-7 | beta-BHC | 24. | U |
| 319-86-8 | delta-BHC | 24. | U |
| 58-89-9 | gamma-BHC (Lindane) | 24. | U |
| 76-44-8 | Heptachlor | 24. | U |
| 309-00-2 | Aldrin | 24. | U |
| 1024-57-3 | Heptachlor epoxide | 24. | U |
| 959-98-8 | Endosulfan I | 24. | U |
| 60-57-1 | Dieldrin | 48. | U |
| 72-55-9 | 4,4'-DDE | 48. | U |
| 72-20-8 | Endrin | 48. | U |
| 33213-65-9 | Endosulfan II | 48. | U |
| 72-54-8 | 4,4'-DDD | 48. | U |
| 1031-07-8 | Endosulfan sulfate | 48. | U |
| 50-29-3 | 4,4'-DDT | 48. | U |
| 72-43-5 | Methoxychlor | 240. | U |
| 53494-70-5 | Endrin ketone | 48. | U |
| 5103-71-9 | alpha-Chlordane | 240. | U |
| 5103-74-2 | gamma-Chlordane | 240. | U |
| 8001-35-2 | Toxaphene | 480. | U |
| 12674-11-2 | Aroclor-1016 | 240. | U |
| 11104-28-2 | Aroclor-1221 | 240. | U |
| 11141-16-5 | Aroclor-1232 | 240. | U |
| 53469-21-9 | Aroclor-1242 | 240. | U |
| 12672-29-6 | Aroclor-1248 | 240. | U |
| 11097-69-1 | Aroclor-1254 | 480. | U |
| 11096-82-5 | Aroclor-1260 | 480. | U |

# ecology and environment, inc.

111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL. 312-663-9415
International Specialists in the Environment

CRL Receipt Date 5/9/90 FIT Receipt Date 5/30/90 Review Completed 6/1/90

TO: T. Nehkour
FROM: ~~Mary Gzyra~~ C. Kouris
SUBJECT: Arathane Systems Inc
PAN: FMN0230SB (1 hour charged for review) Case # 13822

Sample Description

| Organics (VOA, ABN, Pest/PCB) | | Inorganics (Metals, Cyanide) | |
|---|---|---|---|
| # | Low Soil | # 5 | Low Soil |
| | Low Water | | Low Water |
| | Drinking Water | | Drinking Water |
| | Other | | Other |

Project Data Status X Completed!!

_____ Incomplete, awaiting _____

FIT Data Review Findings:

***Check Data Sheets for Transcription Errors***

_____ Compounds were detected in sample(s); see enclosed sheet.

Book No. 9 Page No. _____ Date Sampled 4/5/90

0759:2

recycled paper

Table 4- (Cont.)

| COMPOUND QUALIFIERS | DEFINITION | INTERPRETATION |
|---|---|---|
| U | Indicates compound was analyzed for but not detected. | Compound was not detected at or above the CRQL. |
| J | Indicates an estimated value. | Compound value may be semiquantitative. |
| UJ | Quantitation limit is estimated due to a quality control (QC) protocol. | Compound was not detected if value is at CRQL, e.g., 10U UJ. If a value is reported with a UJ above CRQL and it is <5x blank concentration (10x for common laboratory artifacts), the compound is detected but may be a laboratory artifact and not attributable to the sample. |
| C | This flag applies to pesticide results where the identification has been confirmed by GC/MS. Single component pesticides ≥10 ng/µL in the final extract shall be confirmed by GC/MS. | Compound was confirmed by GC/MS and is quantitative. Use pesticide/PCB listed value. |
| B | This flag is used when the compound is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. | Compound value may be semiquantitative if it is <5x the blank concentration (<10x the blank concentrations for common laboratory artifacts: phthalates, methylene chloride, acetone, toluene, 2-butanone). |
| E | This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis. This flag will not apply to pesticides/PCBs analyzed by GC/EC methods. | Compound value may be semiquantitative. There should be another analysis with a D qualifier, which is to be used. |
| D | This flag identifies all compounds identified in an analysis at a secondary dilution factor. | Alerts data user to a possible change in the CRQL. Data is quantitative. |
| A | This flag indicates that a TIC is a suspected aldol-condensation product. | Alerts data user of a laboratory artifact in the TICs only. |
| R | Results are unusable due to a major violation of QC protocol. | Compound value is not usable. |

| ANALYTE QUALIFIERS | | DEFINITION | INTERPRETATION |
|---|---|---|---|
| E | E | Estimated or not reported due to interference. See laboratory narrative. | Analyte or element was not detected, or value may be semiquantitative. |
| S | S | Analysis by Method of Standard Additions. | Value is quantitative. |
| R | N | Spike recoveries outside QC protocols, which indicates a possible matrix problem. Data may be biased high or low. See spike results and laboratory narrative. | Value may be quantitative or semi-quantitative. |
| * | * | Duplicate value outside QC protocols which indicates a possible matrix problem. | Value may be quantitative or semiquantitative. |
| + | + | Correlation coefficient for standard additions is less than 0.995. See review and laboratory narrative. | Data value may be biased. |
| [ ] | B | Value is real, but is above instrument DL and below CRDL. | Value may be quantitative or semi-quantitative. |
| UJ | | DL is estimated because of a QC protocol. DL is possibly above or below CRDL. | Compound or element was not detected. |
| J | | Value is above CRDL and is an estimated value because of a QC protocol. | Value may be semiquantitative. |
| U | U | Compound was analyzed for but not detected. | Compound was not detected at or above the CRDL. |
| | M | Duplicate injection precision not met. | Value may be semiquantitative. |
| | W | Post-digestion spike for furnace AA analysis is out of control limits (35-115%), while sample absorbance is <50% of spike absorbance. | Value may be semiquantitative. |
| | R | Results are unusable due to a major violation of QC protocols. | Analyte value is not usable. |

Source: Ecology and Environment, Inc. 1989.

6/1/90 CK

Table 4- (Cont.)

| Physical State* | Waste Characteristics** | Category*** | SI Memo | Sample Collection Information and Parameters | Sample Number | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | S 1 MEJA 30 | S 2 MEJA 31 | S 3 MEJA 32 | S 4 MEJA 33 | S 5 MEJA 34 | ___6 | ___7 | ___8 | ___9 | ___10 | ___11 | ___12 |
| | | | | Analyte Detected (values in mg/kg or µg/L) | | | | | | | | | | | | |
| Solid | A,D | MES | CSC/CWC | aluminum | 9180 | 7580 | 3860 | 1890 | 13000 | | | | | | | |
| Solid | A,D | MES | HM | antimony | | | 27.1 NJ | | | | | | | | | |
| Solid | A,D | MES | HM | arsenic | 2.1 BNJ | 7.3 NJ | 45.3 NJ | 20.2 NJ | 3.4 NJ | | | | | | | |
| Solid | A,D | MES | CSC/CWC | barium | 110 | 29.2 B | 31 B | 11.3 B | 91.2 | | | | | | | |
| Solid | A,D | MES | M | beryllium | 0.54 B | .2 B | | 5.5 | .3 B | | | | | | | |
| Solid | A,D | MES | HM | cadmium | 1.30 EJ | 5.2 EJ | 17.4 EJ | 52.2 EJ | | | | | | | | |
| Solid | D | MES | CSC/CWC | calcium | 4070 | 3620 | 2000 | 664 B | 2640 | | | | | | | |
| Solid | A,D | MES | HM | chromium | 201 EJ | 166 EJ | 490 EJ | 908 EJ | 33.5 EJ | | | | | | | |
| Solid | A,D | MES | HM | cobalt | 8.6 BEJ | 10.1 EJ | | 171 EJ | 11.8 BEJ | | | | | | | |
| Solid | A,D | MES | HM | copper | 44 | 149 | 1080 | 421 | 14.8 | | | | | | | |
| Solid | A,D | MES | HM,CSC;CWC | iron | 38100 | 90900 | 395000 | 618000 | 23500 | | | | | | | |
| Solid | A,D | MES | HM | lead | 1190 NJ | 13.6 NJ | 22.5 NJ | 3.9 NJ | 38.8 NJ | | | | | | | |
| Solid | A,D | MES | CSC/CWC | magnesium | 5880 | 4890 | 2320 | 968 B | 4330 | | | | | | | |
| Solid | A,D | MES | HM | manganese | 530 | 998 | 2360 | 5900 | 789 | | | | | | | |
| Liquid | A,D | MES | HM | mercury | .80 | | .27 | 411 | | | | | | | | |
| Solid | A,D | MES | HM | nickel | 35.1 | 124 | 352 | 145 B | 25.4 | | | | | | | |
| Solid | D | MES | CSC,CWC | potassium | 726 B | 465 B | 429 B | | 945 B | | | | | | | |
| Solid | A,D | MES | M | selenium | 0.32 B | .18 B | .23 B | | .33 B | | | | | | | |
| Solid | A,D | MES | HM | silver | | | | | | | | | | | | |
| Solid | D | MES | CSC,CWC | sodium | 299 B | 400 B | 246 B | | | | | | | | | |
| Solid | A,D | MES | HM | thallium | | | | | | | | | | | | |
| Solid | A,D | MES | HM | vanadium | 45.9 | 39.7 | 87.7 | 48.9 | 42.9 | | | | | | | |
| Solid | A,D | MES | CWL,CSC,HM | zinc | 104 E J | 421 E J | 232 E J | 77.5 E J | 112 E J | | | | | | | |
| Solid | A | IOC | IOC | cyanide | 5.2 | 1.1 | | | | | | | | | | |

— Not detected.

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10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: BETZ LABORATORIES TREVOSE Contract: 68-D9-0082

Lab Code: BETZPA Case No.: 13822 SAS No.: SDG No.: MEJA30

ICP ID Number: Date: 4/11/90

Flame AA ID Number: VGA-5061062

Furnace AA ID Number:

| Analyte | Wave-length (nm) | Back ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | | | 200 | | NR |
| Antimony | | | 60 | | NR |
| Arsenic | | | 10 | | NR |
| Barium | | | 200 | | NR |
| Beryllium | | | 5 | | NR |
| Cadmium | | | 5 | | NR |
| Calcium | | | 5000 | | NR |
| Chromium | | | 10 | | NR |
| Cobalt | | | 50 | | NR |
| Copper | | | 25 | | NR |
| Iron | | | 100 | | NR |
| Lead | | | 3 | | NR |
| Magnesium | | | 5000 | | NR |
| Manganese | | | 15 | | NR |
| Mercury | 253.65 | | 0.2 | .2 | CV |
| Nickel | | | 40 | | NR |
| Potassium | | | 5000 | | NR |
| Selenium | | | 5 | | NR |
| Silver | | | 10 | | NR |
| Sodium | | | 5000 | | NR |
| Thallium | | | 10 | | NR |
| Vanadium | | | 50 | | NR |
| Zinc | | | 20 | | NR |

Comments:

6/14

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

5/30/90

DATE: 5-29-90

SUBJECT: Review of Region V CLP Data Received for Review on May 9, 1990

FROM: Curtis Ross, Director (5SCRL)
Central Regional Laboratory Jay Thompson

TO: Data User: Art

We have reviewed the data for the following case(s).

SITE NAME: Chatham Syoten (MN) SMO Case No. 13822

EPA Data Set No. _____ No. of Samples: 5 D.U./Activity Numbers 1

CRL No. _____

SMO Traffic No. MCJA 30-34

CLP Laboratory: Betz Hrs. Required for Review: 8½ + 5 m F 0/2

Following are our findings.

The laboratory's portion of case 13822 contains 5 low level soil samples analyzed for total metals and cyanides.

SEE NEXT PAGE

James Rollin
5/23/90

( ) Data are acceptable for use.
(X) Data are acceptable for use with qualifications noted above.
( ) Data are preliminary - pending verification by Contractor Laboratory.
( ) Data are unacceptable.

cc: Dr. Alfred Haeberer/Joan Fisk/Gary Ward, EPA Support Services
Ross K. Robeson, EMSL-Las Vegas
Don Trees, CLP/Sample Management Office

**LABORATORY: BETZPA** **CASE: 13822**

**ICP ANALYSES:** The duplicate RPD for Zn [24.2%] was flagged [*] by the lab. The RPD for Zn did not exceed the technical criteria, 35% for soils. All Zn data are qualified below.

The matrix spike for Sb [47.2%] was flagged [N] by the lab. Sb data for MEJA32 is estimated [J] due to low bias. All remaining Sb data are estimated [UJ] due to possible elevation of the detection limit.

The serial dilution audit for Cd [35.3%], Cr [96.3%], Co [92.2%], and Zn [59.1%] were flagged [E] by the lab. All Cd, Cr, Co, and Zn data are estimated [J] due to interferences.

**GFAA ANALYSES:** The Matrix spike for As [132.9%] and Pb [156.2%] were flagged [N] by the lab. All As and Pb data are estimated [J] due to high bias.

The matrix spike for Tl [61.4%] was flagged [N] by the lab. The analytical spike for the Tl result on MEJA33 was flagged [W] by the lab. All Tl data is estimated [UJ], Tl on MEJA33 due to interferences and possible elevation of the detection limit, and the rest of the Tl data due to possible elevation of the detection limit.

**OTHER ANALYSES:** All Hg and CN data are acceptable.

Reviewed by: James Redlin

Date: 5/23/90

James Redlin

# QC EXCEPTION SUMMARY REPORT

CASE # 13822
DATA SET #
LAB Q.C.#
DATE: 5-22-90

SITE Irathane Systems (MN)
LAB BETZ
REVIEWED BY J. Rollins

MATRIX: Soil
CONC. : Low

WATER SAMPLE SPK.
WATER SAMPLE DUP.
SOIL SAMPLE SPK.
SOIL SAMPLE DUP.

| | OVERALL CASE QC mg/L ~~mg/Kg~~ | | | | | | | | | MATRIX SPECIFIC QC | | | | | | SAMPLE SPECIFIC QC | | FIELD QC | | | REGIONAL QC | | | OTHER/ COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Holding Time | Cal Blanks | Init Calver | Contin Calver | Prep Blk AQ | Prep Blk SOL | ICS %R | LCS % AQ | LCS % SOL | Sol Dup RPD | Sol Spk %R | AQ Dup RPD | AQ Spk %R | Ser Dilu AQ | Ser Dilu SOL | GFAA Dup | GFAA Spike | Blank | Dup RPD | Spike %R | Blind Blank | Blind Spike %R | Split Sample RPD | |
| Aluminum | ok | ~~50.0~~ | ok | ok | | ~~10.0~~ | ok | | ok | | | | | | | | | | | | | | | |
| Antimony | | | | | | | | | | | 47.2 | | | | | | | | | | | | | |
| Arsenic | | | | | | | | | | | 132.9 | | | | | | | | | | | | | |
| Barium | | | | | | | | | | | | | | | | | | | | | | | | |
| Beryllium | | | | | | | | | | | | | | | | | | | | | | | | |
| Cadmium | | | | | | | | | | | | | | | 35.3 | | | | | | | | | |
| Calcium | | | | | | | | | | | | | | | | | | | | | | | | |
| Chromium | | | | | | | | | | | | | | | 96.3 | | | | | | | | | |
| Cobalt | | | | | | | | | | | | | | | 92.2 | | | | | | | | | |
| Copper | | | | | | | | | | | | | | | | | | | | | | | | |
| Iron | | ~~55.0~~ | | | | ~~9.0~~ | | | | | | | | | | | | | | | | | | |
| Lead | | | | | | | | | | | 156.2 | | | | | | | | | | | | | |
| Magnesium | | | | | | | | | | | | | | | | | | | | | | | | |
| Manganese | ✓ | ~~5.0~~ | | | | | | | | | | | | | | | | | | | | | | |
| Mercury | ok | | | | | | | | | | | | | | | | | | | | | | | |
| Nickel | ok | | | | | | | | | | | | | | | | | | | | | | | |
| Potassium | | | | | | | | | | | | | | | | | | | | | | | | |
| Selenium | | | | | | | | | | | | | | | | | | | | | | | | |
| Silver | | | | | | | | | | | | | | | | | | | | | | | | |
| Sodium | | | | | | | | | | | | | | | | | | | | | | | | |
| Thallium | | | | | | | | | | | 61.4 | | | | | | | | | | | | | |
| Tin | | | | | | | | | | | | | | | | | | | | | | | | |
| Vanadium | | | | | | | | | | | | | | | | | | | | | | | | |
| Zinc | ✓ | | | | | | | | | 24.2 | | | | | 57.1 | | | | | | | | | |
| Cyanide | ok | | ✓ | ✓ | | | ✓ | | ✓ | | | | | | | | | | | | | | | |

DPO: [ ] ACTION [X] FYI Region II

# INORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO. 13822 LABORATORY BETZ

SDG NO. MEJA30 DATA USER FIT

SOW 7/88 REVIEW COMPLETION DATE 5/23/90

NO. OF SAMPLES _____ WATER 5 SOIL _____ OTHER -

REVIEWER [ ] ESD [X] ESAT [ ] OTHER, CONTRACT/CONTRACTOR _____

| | ICP | AA | Hg | CYANIDE |
|---|---|---|---|---|
| 1. HOLDING TIMES | O | O | O | O |
| 2. INITIAL CALIBRATIONS | O | O | O | O |
| 3. CONTINUING CALIBRATIONS | O | O | O | O |
| 4. FIELD BLANKS ("F" = not applicable) | F | F | F | F |
| 5. LABORATORY BLANKS | O | O | O | O |
| 6. ICS | O | | | |
| 7. LCS | O | O | | |
| 8. DUPLICATE ANALYSIS | O | O | O | O |
| 9. MATRIX SPIKE | ~~O~~ X | M | O | O |
| 10. MSA | | O | | |
| 11. SERIAL DILUTION | M | | | |
| 12. SAMPLE VERIFICATION | O | O | O | O |
| 13. REGIONAL QC ("F" = not applicable) | F | F | F | F |
| 14. OVERALL ASSESSMENT | M | M | O | O |

O = No problems or minor problems that do not affect data usability.
X = No more than *about* 5% of the data points are qualified as either estimated or unusable.
M = More than *about* 5% of the data points are qualified as estimated.
Z = More than *about* 5% of the data points are qualified as unusable.

DPO ACTION ITEMS: _____

AREAS OF CONCERN: _____

U. S. EPA - CLP
COVER PAGE - INORGANIC ANALYSIS DATA PACKAGE

Lab Name: BETZ LABORATORIES TREVOSE Contract: 68-D9-0082

Lab Code: BETZPA Case No.: 13822 SAS No.: SDG No.: MEJA30

SOW No.: 7/88

| EPA Sample No. | Lab Sample ID |
|---|---|
| MEJA30 | MEJA30 |
| MEJA31 | MEJA31 |
| MEJA32 | MEJA32 |
| MEJA33 | MEJA33 |
| MEJA33D | MEJA33D |
| MEJA33S | MEJA33S |
| MEJA34 | MEJA34 |

| | | |
|---|---|---|
| Were ICP interelement corrections applied? | Yes/No | YES |
| Were ICP background corrections applied? | Yes/No | YES |
| If yes, were raw data generated before application of background corrections? | Yes/No | YES |

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signatures.

Signature: Gary J Kralik Name: GARY J KRALIK

Date: 05/16/90 Title: PROJECT MANAGER

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEJA30

Lab Name: BETZ LABORATORIES TREVOSE Contract: 68-D9-0082

Lab Code: BETZPA Case No.: 13822 SAS No.: SDG No.: MEJA30

Matrix (soil/water): SOIL Lab Sample ID: MEJA30

Level (low/med): LOW Date Received: 4/06/90

% Solids: 71.7

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 9180.00 | | | P |
| 7440-36-0 | Antimony | 12.30 | U | N | P |
| 7440-38-2 | Arsenic | 2.10 | B | N | F |
| 7440-39-3 | Barium | 110.00 | | | P |
| 7440-41-7 | Beryllium | .54 | B | | P |
| 7440-43-9 | Cadmium | 1.30 | | E | P |
| 7440-70-2 | Calcium | 4070.00 | | | P |
| 7440-47-3 | Chromium | 201.00 | | E | P |
| 7440-48-4 | Cobalt | 8.60 | B | E | P |
| 7440-50-8 | Copper | 44.00 | | | P |
| 7439-89-6 | Iron | 38100.00 | | | P |
| 7439-92-1 | Lead | 1190.00 | | SN | F |
| 7439-95-4 | Magnesium | 5880.00 | | | P |
| 7439-96-5 | Manganese | 530.00 | | | P |
| 7439-97-6 | Mercury | .80 | | | CV |
| 7440-02-0 | Nickel | 35.10 | | | P |
| 7440-09-7 | Potassium | 726.00 | B | | P |
| 7782-49-2 | Selenium | .32 | B | | F |
| 7440-22-4 | Silver | 1.30 | U | | P |
| 7440-23-5 | Sodium | 299.00 | B | | P |
| 7440-28-0 | Thallium | .23 | U | N | F |
| 7440-62-2 | Vanadium | 45.90 | | | P |
| 7440-66-6 | Zinc | 104.00 | | E* | P |
| | Cyanide | 5.20 | | | C |

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: Artifacts: YES

Comments:
TWIGS PRESENT IN SAMPLE

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEJA31

Lab Name: BETZ LABORATORIES TREVOSE Contract: 68-D9-0082

Lab Code: BETZPA Case No.: 13822 SAS No.: SDG No.: MEJA30

Matrix (soil/water): SOIL Lab Sample ID: MEJA31

Level (low/med): LOW Date Received: 4/06/90

% Solids: 93.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 7580.00 | | | P |
| 7440-36-0 | Antimony | 9.10 | U | N | P |
| 7440-38-2 | Arsenic | 7.30 | | SN | F |
| 7440-39-3 | Barium | 29.20 | B | | P |
| 7440-41-7 | Beryllium | .20 | B | | P |
| 7440-43-9 | Cadmium | 5.20 | | E | P |
| 7440-70-2 | Calcium | 3620.00 | | | P |
| 7440-47-3 | Chromium | 166.00 | | E | P |
| 7440-48-4 | Cobalt | 10.10 | | E | P |
| 7440-50-8 | Copper | 149.00 | | | P |
| 7439-89-6 | Iron | 90900.00 | | | P |
| 7439-92-1 | Lead | 13.60 | | SN | F |
| 7439-95-4 | Magnesium | 4890.00 | | | P |
| 7439-96-5 | Manganese | 998.00 | | | P |
| 7439-97-6 | Mercury | .10 | U | | CV |
| 7440-02-0 | Nickel | 124.00 | | | P |
| 7440-09-7 | Potassium | 465.00 | B | | P |
| 7782-49-2 | Selenium | .18 | B | | F |
| 7440-22-4 | Silver | .99 | U | | P |
| 7440-23-5 | Sodium | 400.00 | B | | P |
| 7440-28-0 | Thallium | .18 | U | N | F |
| 7440-62-2 | Vanadium | 39.70 | | | P |
| 7440-66-6 | Zinc | 421.00 | | E* | P |
| | Cyanide | 1.10 | | | C |

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEJA32

Lab Name: BETZ LABORATORIES TREVOSE Contract: 68-D9-0082

Lab Code: BETZPA Case No.: 13822 SAS No.: SDG No.: MEJA30

Matrix (soil/water): SOIL Lab Sample ID: MEJA32

Level (low/med): LOW Date Received: 4/06/90

% Solids: 93.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 3860.00 | | | P |
| 7440-36-0 | Antimony | 27.10 | | N | P |
| 7440-38-2 | Arsenic | 45.30 | | N | F |
| 7440-39-3 | Barium | 31.00 | B | | P |
| 7440-41-7 | Beryllium | .21 | U | | P |
| 7440-43-9 | Cadmium | 17.40 | | E | P |
| 7440-70-2 | Calcium | 2000.00 | | | P |
| 7440-47-3 | Chromium | 490.00 | | E | P |
| 7440-48-4 | Cobalt | 2.10 | U | E | P |
| 7440-50-8 | Copper | 1080.00 | | | P |
| 7439-89-6 | Iron | 395000.00 | | | P |
| 7439-92-1 | Lead | 22.50 | | SN | F |
| 7439-95-4 | Magnesium | 2320.00 | | | P |
| 7439-96-5 | Manganese | 2360.00 | | | P |
| 7439-97-6 | Mercury | .27 | | | CV |
| 7440-02-0 | Nickel | 352.00 | | | P |
| 7440-09-7 | Potassium | 429.00 | B | | P |
| 7782-49-2 | Selenium | .23 | B | | F |
| 7440-22-4 | Silver | 1.00 | U | | P |
| 7440-23-5 | Sodium | 246.00 | B | | P |
| 7440-28-0 | Thallium | .19 | U | N | F |
| 7440-62-2 | Vanadium | 87.70 | | | P |
| 7440-66-6 | Zinc | 232.00 | | E* | P |
| | Cyanide | 1.10 | U | | C |

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEJA33

Lab Name: BETZ LABORATORIES TREVOSE Contract: 68-D9-0082

Lab Code: BETZPA Case No.: 13822 SAS No.: SDG No.: MEJA30

Matrix (soil/water): SOIL Lab Sample ID: MEJA33

Level (low/med): LOW Date Received: 4/06/90

% Solids: 94.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 1890.00 | | | P |
| 7440-36-0 | Antimony | 9.40 | U | N | P |
| 7440-38-2 | Arsenic | 20.20 | | N | F |
| 7440-39-3 | Barium | 11.30 | B | | P |
| 7440-41-7 | Beryllium | 5.50 | | | P |
| 7440-43-9 | Cadmium | 52.20 | | E | P |
| 7440-70-2 | Calcium | 664.00 | B | | P |
| 7440-47-3 | Chromium | 908.00 | | E | P |
| 7440-48-4 | Cobalt | 171.00 | | E | P |
| 7440-50-8 | Copper | 421.00 | | | P |
| 7439-89-6 | Iron | 618000.00 | | | P |
| 7439-92-1 | Lead | 3.90 | | SN | F |
| 7439-95-4 | Magnesium | 968.00 | B | | P |
| 7439-96-5 | Manganese | 5900.00 | | | P |
| 7439-97-6 | Mercury | .10 | U | | CV |
| 7440-02-0 | Nickel | 411.00 | | | P |
| 7440-09-7 | Potassium | 145.00 | B | | P |
| 7782-49-2 | Selenium | .20 | U | | F |
| 7440-22-4 | Silver | 1.00 | U | | P |
| 7440-23-5 | Sodium | 44.40 | U | | P |
| 7440-28-0 | Thallium | .20 | U | NW | F |
| 7440-62-2 | Vanadium | 48.90 | | | P |
| 7440-66-6 | Zinc | 77.50 | | E* | P |
| | Cyanide | 1.00 | U | | C |

Color Before: BLACK Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts:

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MEJA34

Lab Name: BETZ LABORATORIES TREVOSE Contract: 68-D9-0082

Lab Code: BETZPA Case No.: 13822 SAS No.: SDG No.: MEJA30

Matrix (soil/water): SOIL Lab Sample ID: MEJA34

Level (low/med): LOW Date Received: 4/06/90

% Solids: 64.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 13000.00 | | | P |
| 7440-36-0 | Antimony | 13.90 | U | N | P |
| 7440-38-2 | Arsenic | 3.40 | | N | F |
| 7440-39-3 | Barium | 91.20 | | | P |
| 7440-41-7 | Beryllium | .30 | B | | P |
| 7440-43-9 | Cadmium | .91 | U | E | P |
| 7440-70-2 | Calcium | 2640.00 | | | P |
| 7440-47-3 | Chromium | 33.50 | | E | P |
| 7440-48-4 | Cobalt | 11.80 | B | E | P |
| 7440-50-8 | Copper | 14.80 | | | P |
| 7439-89-6 | Iron | 23500.00 | | | P |
| 7439-92-1 | Lead | 38.80 | | SN | F |
| 7439-95-4 | Magnesium | 4330.00 | | | P |
| 7439-96-5 | Manganese | 789.00 | | | P |
| 7439-97-6 | Mercury | .15 | U | | CV |
| 7440-02-0 | Nickel | 25.40 | | | P |
| 7440-09-7 | Potassium | 945.00 | B | | P |
| 7782-49-2 | Selenium | .33 | B | | F |
| 7440-22-4 | Silver | 1.50 | U | | P |
| 7440-23-5 | Sodium | 65.60 | U | | P |
| 7440-28-0 | Thallium | .26 | U | N | F |
| 7440-62-2 | Vanadium | 42.90 | | | P |
| 7440-66-6 | Zinc | 112.00 | | E* | P |
| | Cyanide | 1.60 | U | | C |

Color Before: BLACK Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: Artifacts: YES

Comments:
TWIGS AND ROOTS IN SAMPLE

U.S. EPA - CLP

3
BLANKS

Lab name: BETZ LABORATORIES TREVOSE  Contract: 68-D9-0082

Lab code: BETZPA  Case No.: 13822  SAS No.:  SDG No.: MEJA30

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | 46.0 | U | 55.0 | B | 46.0 | U | 46.0 | U | 10.600 | B | P |
| Antimony | 46.0 | U | 46.0 | U | 46.0 | U | 46.0 | U | 9.200 | U | P |
| Arsenic | 1.0 | U | 1.0 | U | 1.0 | U | 1.0 | U | .200 | U | F |
| Barium | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | .400 | U | P |
| Beryllium | 1.0 | U | 1.0 | U | 1.0 | U | 1.0 | U | .200 | U | P |
| Cadmium | 3.0 | U | 3.0 | U | 3.0 | U | 3.0 | U | .600 | U | P |
| Calcium | 93.0 | U | 93.0 | U | 93.0 | U | 93.0 | U | 18.600 | U | P |
| Chromium | 5.0 | U | 5.0 | U | 5.0 | U | 5.0 | U | 1.000 | U | P |
| Cobalt | 10.0 | U | 10.0 | U | 10.0 | U | 10.0 | U | 2.000 | U | P |
| Copper | -6.0 | B | -6.0 | B | -6.0 | B | -9.0 | B | .800 | U | P |
| Iron | 22.0 | B | 33.0 | B | 10.0 | U | 55.0 | B | 9.000 | B | P |
| Lead | 2.0 | U | 2.0 | U | 2.0 | U | 2.0 | U | .400 | U | F |
| Magnesium | 120.0 | U | 120.0 | U | 120.0 | U | 120.0 | U | 24.000 | U | P |
| Manganese | 1.0 | U | 1.0 | U | 1.0 | U | 1.0 | U | .200 | U | P |
| Mercury | .2 | U | .2 | U | .2 | U | .2 | U | .100 | U | CV |
| Nickel | 17.0 | U | 17.0 | U | 17.0 | U | 17.0 | U | 3.400 | U | P |
| Potassium | 124.0 | U | 124.0 | U | 124.0 | U | 124.0 | U | 24.800 | U | P |
| Selenium | 1.0 | U | 1.0 | U | 1.0 | U | 1.0 | U | .200 | U | F |
| Silver | 5.0 | U | 5.0 | U | 5.0 | U | 5.0 | U | 1.000 | U | P |
| Sodium | 217.0 | U | 217.0 | U | 217.0 | U | 217.0 | U | 43.400 | U | P |
| Thallium | 1.0 | U | 1.0 | U | 1.0 | U | 1.0 | U | .200 | U | F |
| Vanadium | 7.0 | U | 7.0 | U | 7.0 | U | 7.0 | U | 1.400 | U | P |
| Zinc | 5.0 | U | 5.0 | U | 5.0 | U | 5.0 | U | 1.000 | U | P |
| Cyanide | 20.0 | U | 20.0 | U | 20.0 | U | | | 1.000 | U | C |

U.S. EPA - CLP

3
BLANKS

Lab name: BETZ LABORATORIES TREVOSE  Contract: 68-D9-0082

Lab code: BETZPA  Case No.: 13822  SAS No.:  SDG No.: MEJA30

Preparation Blank Matrix (soil/water): SOIL

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | 58.0 | B | | | | | | | P |
| Antimony | | | 46.0 | U | | | | | | | P |
| Arsenic | | | 1.0 | U | | | | | | | F |
| Barium | | | 2.0 | U | 2.0 | U | 2.0 | U | | | P |
| Beryllium | | | 1.0 | U | | | | | | | P |
| Cadmium | | | 3.0 | U | | | | | | | P |
| Calcium | | | 93.0 | U | 93.0 | U | 93.0 | U | | | P |
| Chromium | | | 5.0 | U | | | | | | | P |
| Cobalt | | | 10.0 | U | 10.0 | U | 10.0 | U | | | P |
| Copper | | | 4.0 | U | 4.0 | U | 4.0 | U | | | P |
| Iron | 10.0 | U | 35.0 | B | 10.0 | U | 25.0 | B | | | P |
| Lead | 2.0 | U | 2.0 | U | 2.0 | U | | | | | F |
| Magnesium | | | 120.0 | U | 120.0 | U | 120.0 | U | | | P |
| Manganese | | | 1.0 | U | 5.0 | B | 1.0 | U | | | P |
| Mercury | | | .2 | U | | | | | | | CV |
| Nickel | | | 17.0 | U | 17.0 | U | 17.0 | U | | | P |
| Potassium | | | | | | | | | | | NR |
| Selenium | | | | | | | | | | | NR |
| Silver | | | 5.0 | U | | | | | | | P |
| Sodium | | | | | | | | | | | NR |
| Thallium | | | | | | | | | | | NR |
| Vanadium | | | 7.0 | U | 7.0 | U | 7.0 | U | | | P |
| Zinc | | | 5.0 | U | 5.0 | U | 5.0 | U | | | P |
| Cyanide | | | | | | | | | 1000.000 | U | C |

U.S. EPA - CLP

3
BLANKS

Lab name: BETZ LABORATORIES TREVOSE  Contract: 68-D9-0082

Lab code: BETZPA  Case No.: 13822  SAS No.:  SDG No.: MEJA30

Preparation Blank Matrix (soil/water):

Preparation Blank Concentration Units (ug/L or mg/kg):

| Analyte | Initial Calib. Blank (ug/L) | C | Continuing Calibration Blank (ug/L) 1 | C | 2 | C | 3 | C | Prepa-ration Blank | C | M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | | | NR |
| Antimony | 46.0 | U | 46.0 | U | 46.0 | U | | | | | P |
| Arsenic | 1.0 | U | 1.0 | U | 1.0 | U | | | | | F |
| Barium | | | 2.0 | U | | | | | | | P |
| Beryllium | | | | | | | | | | | NR |
| Cadmium | | | | | | | | | | | NR |
| Calcium | | | 93.0 | U | | | | | | | P |
| Chromium | | | | | | | | | | | NR |
| Cobalt | | | 10.0 | U | | | | | | | P |
| Copper | | | 4.0 | U | | | | | | | P |
| Iron | | | 10.0 | U | | | | | | | P |
| Lead | 2.0 | U | 2.0 | U | 2.0 | U | | | | | F |
| Magnesium | | | 120.0 | U | | | | | | | P |
| Manganese | | | 2.0 | B | | | | | | | P |
| Mercury | | | | | | | | | | | NR |
| Nickel | | | 17.0 | U | | | | | | | P |
| Potassium | | | | | | | | | | | NR |
| Selenium | | | | | | | | | | | NR |
| Silver | | | | | | | | | | | NR |
| Sodium | | | | | | | | | | | NR |
| Thallium | | | | | | | | | | | NR |
| Vanadium | | | 7.0 | U | | | | | | | P |
| Zinc | | | 5.0 | U | | | | | | | P |
| Cyanide | | | | | | | | | | | NR |

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

MEJA33S

Lab Name: BETZ LABORATORIES TREVOSE Contract: 68-D9-0082

Lab Code: BETZPA Case No.: 13822 SAS No.: SDG No.: MEJA30

Matrix: SOIL Level (low/med): LOW

% Solids for Sample: 94.9

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | NR |
| Antimony | 75-125 | 48.2879 | | 9.4121 | U | 102.30 | 47.2 | N | P |
| Arsenic | 75-125 | 31.1577 | | 20.1832 | | 8.26 | 132.9 | N | F |
| Barium | 75-125 | 388.1449 | | 11.2535 | B | 409.22 | 92.1 | | P |
| Beryllium | 75-125 | 15.3457 | | 5.5245 | | 10.23 | 96.0 | | P |
| Cadmium | | 58.3138 | | 52.1755 | | 10.23 | 60.0 | | P |
| Calcium | | | | | | | | | NR |
| Chromium | | 966.1678 | | 908.4678 | | 40.92 | 141.0 | | P |
| Cobalt | 75-125 | 258.8315 | | 171.0538 | | 102.30 | 85.8 | | P |
| Copper | | 445.0264 | | 421.0871 | | 51.15 | 46.8 | | P |
| Iron | | | | | | | | | NR |
| Lead | 75-125 | 10.3515 | | 3.9009 | | 4.13 | 156.2 | N | F |
| Magnesium | | | | | | | | | NR |
| Manganese | | 6227.9149 | | 5895.2193 | | 102.30 | 325.2 | | P |
| Mercury | 75-125 | .5553 | | .0958 | U | .53 | 104.8 | | CV |
| Nickel | | 497.6112 | | 410.6520 | | 102.30 | 85.0 | | P |
| Potassium | | | | | | | | | NR |
| Selenium | 75-125 | 2.2728 | | .2026 | U | 2.07 | 109.8 | | F |
| Silver | 75-125 | 10.4351 | | 1.0230 | U | 10.23 | 102.0 | | P |
| Sodium | | | | | | | | | NR |
| Thallium | 75-125 | 6.3431 | | .2026 | U | 10.33 | 61.4 | N | F |
| Vanadium | 75-125 | 153.8666 | | 48.9018 | | 102.30 | 102.6 | | P |
| Zinc | 75-125 | 184.7627 | | 77.5471 | | 102.30 | 104.8 | | P |
| Cyanide | 75-125 | 4.3462 | | 1.0454 | U | 5.22 | 83.3 | | C |

Comments:

FORM V (Part 1) - IN

U.S. EPA - CLP

5B
POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

MEJA33A

Lab Name: BETZ LABORATORIES TREVOSE Contract: 68-D9-0082

Lab Code: BETZPA Case No.: 13822 SAS No.: SDG No.: MEJA30

Matrix: SOIL Level (low/med): LOW

Concentration Units: ug/L

| Analyte | Control Limit %R | Spiked Sample Result (SSR) | C | Sample Result (SR) | C | Spike Added (SA) | %R | Q | M |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | | | | | | | | | NR |
| Antimony | | 46.00 | U | 46.00 | U | 119.0 | 0.0 | | P |
| Arsenic | | | | | | | | | NR |
| Barium | | | | | | | | | NR |
| Beryllium | | | | | | | | | NR |
| Cadmium | | | | | | | | | NR |
| Calcium | | | | | | | | | NR |
| Chromium | | | | | | | | | NR |
| Cobalt | | | | | | | | | NR |
| Copper | | | | | | | | | NR |
| Iron | | | | | | | | | NR |
| Lead | | | | | | | | | NR |
| Magnesium | | | | | | | | | NR |
| Manganese | | | | | | | | | NR |
| Mercury | | | | | | | | | NR |
| Nickel | | | | | | | | | NR |
| Potassium | | | | | | | | | NR |
| Selenium | | | | | | | | | NR |
| Silver | | | | | | | | | NR |
| Sodium | | | | | | | | | NR |
| Thallium | | | | | | | | | NR |
| Vanadium | | | | | | | | | NR |
| Zinc | | | | | | | | | NR |
| Cyanide | | | | | | | | | |

Comments:

FORM V (Part 2) - IN

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

MEJA33D

Lab Name: BETZ LABORATORIES TREVOSE Contract: 68-D9-0082

Lab Code: BETZPA Case No.: 13822 SAS No.: SDG No.: MEJA30

Matrix (water/soil): SOIL Level (low/med): LOW

% Solids for Sample: 94.9 % Solids for Duplicate: 94.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| Analyte | Control Limit | Sample (S) | C | Duplicate (D) | C | %RPD | Q | M |
|---|---|---|---|---|---|---|---|---|
| Aluminum | | 1885.2753 | | 1826.8123 | | 3.1 | | P |
| Antimony | | 9.4121 | U | 9.0602 | U | | | P |
| Arsenic | | 20.1832 | | 20.4325 | | 1.2 | | F |
| Barium | | 11.2535 | B | 15.5599 | B | 32.1 | | P |
| Beryllium | | 5.5245 | | 6.1058 | | 10.0 | | P |
| Cadmium | | 52.1755 | | 56.1339 | | 7.3 | | P |
| Calcium | | 663.7544 | B | 699.6051 | B | 5.3 | | P |
| Chromium | | 908.4678 | | 955.6543 | | 5.1 | | P |
| Cobalt | | 171.0538 | | 175.0982 | | 2.3 | | P |
| Copper | | 421.0871 | | 438.2380 | | 4.0 | | P |
| Iron | | 617983.1606 | | 630649.0846 | | 2.0 | | P |
| Lead | | 3.9009 | | 3.2716 | | 17.5 | | F |
| Magnesium | | 967.8046 | B | 890.0663 | B | 8.4 | | P |
| Manganese | | 5895.2193 | | 6180.0420 | | 4.7 | | P |
| Mercury | | .0958 | U | .0958 | U | | | CV |
| Nickel | | 410.6520 | | 420.9054 | | 2.5 | | P |
| Potassium | | 145.4312 | B | 137.6757 | B | 5.5 | | P |
| Selenium | | .2026 | U | .2007 | U | | | F |
| Silver | | 1.0230 | U | .9848 | U | | | P |
| Sodium | | 44.4003 | U | 42.7405 | U | | | P |
| Thallium | | .2026 | U | .2007 | U | | | F |
| Vanadium | 10.2 | 48.9018 | | 50.4220 | | 3.1 | | P |
| Zinc | | 77.5471 | | 98.8744 | | 24.2 | * | P |
| Cyanide | | 1.0454 | U | 1.0211 | U | | | C |

FORM VI - IN

7/88

U.S. EPA - CLP

10

INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: BETZ LABORATORIES TREVOSE  Contract: 68-D9-0082

Lab Code: BETZPA  Case No.: 13822  SAS No.:  SDG No.: MEJA30

ICP ID Number: ICP-3410  Date: 4/09/90

Flame AA ID Number:

Furnace AA ID Number:

| Analyte | Wave-length (nm) | Back ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | 396.15 | | 200 | 46.0 | P |
| Antimony | 206.83 | | 60 | 46.0 | P |
| Arsenic | | | 10 | | NR |
| Barium | 455.40 | | 200 | 2.0 | P |
| Beryllium | 234.86 | | 5 | 1.0 | P |
| Cadmium | 214.44 | | 5 | 3.0 | P |
| Calcium | 315.89 | | 5000 | 93.0 | P |
| Chromium | 267.72 | | 10 | 5.0 | P |
| Cobalt | 238.89 | | 50 | 10.0 | P |
| Copper | 324.75 | | 25 | 4.0 | P |
| Iron | 259.94 | | 100 | 10.0 | P |
| Lead | | | 3 | | NR |
| Magnesium | 279.08 | | 5000 | 120.0 | P |
| Manganese | 257.61 | | 15 | 1.0 | P |
| Mercury | | | 0.2 | | NR |
| Nickel | 231.60 | | 40 | 17.0 | P |
| Potassium | | | 5000 | | NR |
| Selenium | | | 5 | | NR |
| Silver | 328.07 | | 10 | 5.0 | P |
| Sodium | | | 5000 | | NR |
| Thallium | | | 10 | | NR |
| Vanadium | 292.40 | | 50 | 7.0 | P |
| Zinc | 213.86 | | 20 | 5.0 | P |

Comments:

U.S. EPA - CLP

10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: BETZ LABORATORIES TREVOSE  Contract: 68-D9-0082

Lab Code: BETZPA  Case No.: 13822  SAS No.:  SDG No.: MEJA30

ICP ID Number: ICP-137000  Date: 4/19/90

Flame AA ID Number:

Furnace AA ID Number:

| Analyte | Wave-length (nm) | Back ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | | | 200 | | NR |
| Antimony | | | 60 | | NR |
| Arsenic | | | 10 | | NR |
| Barium | | | 200 | | NR |
| Beryllium | | | 5 | | NR |
| Cadmium | | | 5 | | NR |
| Calcium | | | 5000 | | NR |
| Chromium | | | 10 | | NR |
| Cobalt | | | 50 | | NR |
| Copper | | | 25 | | NR |
| Iron | | | 100 | | NR |
| Lead | | | 3 | | NR |
| Magnesium | | | 5000 | | NR |
| Manganese | | | 15 | | NR |
| Mercury | | | 0.2 | | NR |
| Nickel | | | 40 | | NR |
| Potassium | 766.49 | | 5000 | 124.0 | P |
| Selenium | | | 5 | | NR |
| Silver | | | 10 | | NR |
| Sodium | 589.00 | | 5000 | 217.0 | P |
| Thallium | | | 10 | | NR |
| Vanadium | | | 50 | | NR |
| Zinc | | | 20 | | NR |

Comments:

U.S. EPA - CLP

10
INSTRUMENT DETECTION LIMITS (QUARTERLY)

Lab Name: BETZ LABORATORIES TREVOSE Contract: 68-D9-0082

Lab Code: BETZPA Case No.: 13822 SAS No.: SDG No.: MEJA30

ICP ID Number: Date: 4/01/90

Flame AA ID Number:

Furnace AA ID Number: PE-AAS-6229

| Analyte | Wave-length (nm) | Back ground | CRDL (ug/L) | IDL (ug/L) | M |
|---|---|---|---|---|---|
| Aluminum | | | 200 | | NR |
| Antimony | | | 60 | | NR |
| Arsenic | 197.30 | BZ | 10 | 1.0 | F |
| Barium | | | 200 | | NR |
| Beryllium | | | 5 | | NR |
| Cadmium | | | 5 | | NR |
| Calcium | | | 5000 | | NR |
| Chromium | | | 10 | | NR |
| Cobalt | | | 50 | | NR |
| Copper | | | 25 | | NR |
| Iron | | | 100 | | NR |
| Lead | 283.30 | BZ | 3 | 2.0 | F |
| Magnesium | | | 5000 | | NR |
| Manganese | | | 15 | | NR |
| Mercury | | | 0.2 | | NR |
| Nickel | | | 40 | | NR |
| Potassium | | | 5000 | | NR |
| Selenium | 196.00 | BZ | 5 | 1.0 | F |
| Silver | | | 10 | | NR |
| Sodium | | | 5000 | | NR |
| Thallium | 276.80 | BZ | 10 | 1.0 | F |
| Vanadium | | | 50 | | NR |
| Zinc | | | 20 | | NR |

Comments:

ecology and environment, inc.

111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL. 312-663-9415

International Specialists in the Environment

Date: August 9, 1991

To: Jeanne Griffin

From: Charles Hall

Minnesota/F05-8912-012/FMN0230SA

Hibbing/Irathane Systems Inc.

MND022818306

While E & E/FIT has no reason to dispute the results of ESE Inc.'s TCLP tests, FIT is also aware that the TCLP is a very different procedure from the digestive procedures used to analyze FIT-collected soil samples. Comparable results should not be expected from the two methods.

recycled paper

Environmental
Science &
Engineering, Inc.
A CILCORP COMPANY

January 29, 1991

RECEIVED
FEB 1 1991
TECHNICAL SUPPORT
SECTION

USEPA Pre-Remedial Group
111 W. Jackson Blvd., 7th Floor
Chicago, IL 60604

Attn: Ms. Jeanne Griffin

Re: Irathane Systems, Inc.
ESE #590-5386

Dear Ms. Griffin:

On April 5, 1990, a Screening Site Inspection (SSI) was performed on the above referenced facility by Ecology & Environmental, Inc. (E&E). During the SSI, four (4) on-site soil samples and one (1) off-site background sample was collected for laboratory analysis. Irathane Systems, Inc. received a portion of these soil samples. The Irathane samples were provided to Environmental Science & Engineering, Inc. (ESE), under strict chain-of-custody and sample preservation procedures. These samples were analyzed for the parameters reported by E&E to be ordered on behalf of USEPA. Samples results are enclosed.

In addition to the standard parameters for the inspection, ESE also analyzed the soil samples for the eight (8) RCRA metals using EP Toxicity to identify any metals which met the hazardous waste characteristic of toxicity. The laboratory results indicated that metal concentrations were below the maximum concentration allowed for RCRA hazardous waste criteria. Only one (1) sample, identified as S1, had detectable concentrations of metals. This sampling location was selected on the basis of visual evidence of small quantities of product residue. The metals were all detected at concentrations less than three (3) percent of the maximum concentration, with the exception of lead which was detected at approximately fifty (50) percent of the maximum concentration. The laboratory results are enclosed.

Following a recommendation by ESE, three (3) drums of soil were removed for disposal from the area of sample S1. A soil sample was collected from this area and analyzed for the eight (8) RCRA metals using the Toxicity Characteristic Leaching Procedure (TCLP). The laboratory results indicated that the metals were all below detectable limits (BDL) for this procedure. The TCLP results did not identify materials in the area of the E&E sampling which meet the criteria for a RCRA hazardous waste. Results of the TCLP results are enclosed. Based on the work performed to date, no further work appears warranted.

8901 North Industrial Road Peoria, IL 61615 Phone (309) 692-4422 (800) 234-1233 Fax (309) 692-9364
Formerly known as Randolph & Associates, Inc.

E&E has recently informed our office that the SSI report has not be finalized at this time. Once the report is in final form, it is our understanding that USEPA will make a decision for either the need for further work at the facility or removal from CERCLIS. Please contact the undersigned regarding any questions.

Sincerely,

Environmental Science & Engineering, Inc.

Michael J. Hoffman, P.E.
Assoc. Vice President
Sr. Environmental Engineer

Enclosures

MJH/bkw-49

Environmental Science & Engineering, Inc.
(formerly Kandolin & Associates)
An IEPA Contract Laboratory

TO: ITW
8501 W. Higgins Road
Chicago, IL 60031
ATTN: Mr. Phil Dallosto

REPORT DATE: 5-10-90
DATE REC'D: 4-6-90
PROJECT NO.: 1-1658.001.05


| ESE SAMPLE | 900406-07 | 900406-08 | 900406-09 |
|---|---|---|---|
| SAMPLE DATE | 4-5-90 | 4-5-90 | 4-5-90 |
| DESCRIPTION | S1 / Soil | S2 / Soil | S3 / Soil |
| Aluminum | 3,750 | 5,250 | 2,830 |
| Antimony | 1.5 | 2.0 | 17.4 |
| Arsenic | 1.0 | 9.2 | 35.1 |
| Barium | 64.5 | 53.1 | 64.7 |
| Beryllium | < 0.50 | 0.65 | 0.83 |
| Cadmium | 1.7 | 10.6 | 19.3 |
| Calcium | 1,840 | 2,760 | 1,380 |
| Chromium | 100 | 294 | 328 |
| Cobalt | 7.7 | 34.8 | 51.3 |
| Copper | 18.0 | 207 | 671 |
| Iron | 16,500 | 133,000 | 238,000 |
| Lead | 169 | 23.0 | 22.9 |
| Magnesium | 2,360 | 3,510 | 1,880 |
| Mercury | 0.22 | 0.068 | 0.082 |
| Nickel | 16.8 | 190 | 308 |
| Potassium | 296 | 398 | 287 |
| Selenium | 0.059 | 0.053 | < 0.050 |
| Silver | < 1.0 | 2.1 | 2.63 |
| Sodium | 114 | 212 | 189 |
| Thallium | < 0.10 | < 0.10 | < 0.10 |
| Tin | 1,270 | 10,800 | 18,200 |
| Vanadium | 13.5 | 35.1 | 53.5 |
| Zinc | 41.1 | 708 | 140 |
| Cyanide | < 0.10 | 0.10 | 0.12 |
| VOCs | * | * | * |
| BNAs | * | * | * |
| Pesticides/PCBs | * | * | * |

*See Attached.
Results in **mg/kg**.

Report Approved By: Barbara G. Raya-Rash for
Barbara G. Raya-Rash
Manager of Laboratory Operations

Analysis in accordance with procedures itemized in 40 CFR Part 136.

Environmental
Science &
Engineering, Inc.
Formerly Landowne & Associates, Inc.
8907 N. Industrial Road
Peoria, Illinois 61615-1586
Fax (309) 692-9364

An IEPA Contract Laboratory

TO: ITW
8501 W. Higgins Road
Chicago, IL 60031
ATTN: Mr. Phil Dallosto

REPORT DATE: 5-10-90
DATE REC'D: 4-6-90
PROJECT NO.: 1-1658.001.05
PAGE 2 OF 12

| ESE SAMPLE | 900406-10 | 900406-11 |
|---|---|---|
| SAMPLE DATE | 4-5-90 | 4-5-90 |
| DESCRIPTION | S4/Soil | S5/Background Soil |
| Aluminum | 1,340 | 6,890 |
| Antimony | 1.5 | 0.010 |
| Arsenic | 15.6 | 4.2 |
| Barium | 76.8 | 50.1 |
| Beryllium | 0.55 | 0.55 |
| Cadmium | 29.5 | 1.2 |
| Calcium | 551 | 1,520 |
| Chromium | 602 | 17.6 |
| Cobalt | 74.8 | 8.6 |
| Copper | 243 | 9.2 |
| Iron | 329,000 | 12,600 |
| Lead | 21.4 | 16.8 |
| Magnesium | 1,040 | 2,170 |
| Mercury | 0.012 | 0.020 |
| Nickel | 376 | 14.5 |
| Potassium | 253 | 503 |
| Selenium | < 0.050 | 0.12 |
| Silver | 3.2 | < 1.0 |
| Sodium | < 10 | < 10 |
| Thallium | < 0.10 | < 0.10 |
| Tin | 25,900 | 996 |
| Vanadium | 25.4 | 21.1 |
| Zinc | 50.8 | 52.1 |
| Cyanide | < 0.10 | < 0.10 |
| VOCs | * | * |
| BNAs | * | * |
| Pesticides/PCBs | * | * |

*See Attached
Results in mg/kg.

Report Approved By: Melvin D. Lorchem for
Barbara G. Raya-Hash
Manager of Laboratory Operations

Analysis in accordance with procedures itemized in 40 CFR Part 136.
JMP 1:39

Environmental Science & Engineering, Inc.
(Formerly Randolph & Associates, Inc.)
8401 N. Industrial Road
Peoria, Illinois 61615-1586
(309) 692-4422
Fax (309) 692-9364

An IEPA Contract Laboratory

VOLATILE ORGANIC COMPOUNDS — Target Compound List

TO: ITW
8501 W. Higgins Road
Chicago, IL 60031
ATTN: Mr. Phil Dallosto

REPORT DATE: 5-10-90
DATE REC'D: 4-6-90
PROJECT NO.: 1-1658.001.05
PAGE 3 OF 12

| ESE SAMPLE NO.: | — | 900406-07 | 900406-08 | 900406-09 |
|---|---|---|---|---|
| SAMPLE DATE: | — | 4-5-90 | 4-5-90 | 4-5-90 |
| DESCRIPTION: | Quant. Limit (ppb) ug/kg | S1 / Soil | S2 / Soil | S3 / Soil |
| Chloromethane | 10 | < 10 | < 10 | < 10 |
| Bromomethane | 10 | < 10 | < 10 | < 10 |
| Vinyl Chloride | 10 | < 10 | < 10 | < 10 |
| Chloroethane | 10 | < 10 | < 10 | < 10 |
| Methylene Chloride | 5 | < 5 | < 5 | < 5 |
| Acetone | 10 | 25 | < 10 | 1,300 |
| Carbon Disulfide | 5 | < 5 | < 5 | < 5 |
| 1,1-Dichloroethene | 5 | < 5 | < 5 | < 5 |
| 1,1-Dichloroethane | 5 | < 5 | < 5 | < 5 |
| 1,2-Dichloroethene (total) | 5 | < 5 | < 5 | < 5 |
| Chloroform | 5 | < 5 | < 5 | < 5 |
| 1,2-Dichloroethane | 5 | < 5 | < 5 | < 5 |
| 2-Butanone | 10 | < 10 | < 10 | 110 |
| 1,1,1-Trichloroethane | 5 | < 5 | < 5 | < 5 |
| Carbon Tetrachloride | 5 | < 5 | < 5 | < 5 |
| Vinyl Acetate | 10 | < 10 | < 10 | < 10 |
| Bromodichloromethane | 5 | < 5 | < 5 | < 5 |
| 1,2-Dichloropropane | 5 | < 5 | < 5 | < 5 |
| cis-1,3-Dichloropropene | 5 | < 5 | < 5 | < 5 |
| Trichloroethene | 5 | < 5 | < 5 | < 5 |
| Dibromochloromethane | 5 | < 5 | < 5 | < 5 |
| 1,1,2-Trichloroethane | 5 | < 5 | < 5 | < 5 |
| Benzene | 5 | < 5 | < 5 | 6 |
| trans-1,3-Dichloropropene | 5 | < 5 | < 5 | < 5 |
| Bromoform | 5 | < 5 | < 5 | < 5 |
| 4-Methyl-2-Pentanone | 10 | < 10 | < 10 | 16 |
| 2-Hexanone | 10 | < 10 | < 10 | < 10 |
| Tetrachloroethene | 5 | < 5 | < 5 | < 5 |
| 1,1,2,2-Tetrachloroethane | 5 | < 5 | < 5 | < 5 |
| Toluene | 5 | < 5 | < 5 | 22 |
| Chlorobenzene | 5 | < 5 | < 5 | < 5 |
| Ethylbenzene | 5 | < 5 | < 5 | 14 |
| Styrene | 5 | < 5 | < 5 | 4J |
| Xylene (Total) | 5 | < 5 | < 5 | 46 |

J = Estimated Concentration.

Report Approved By: Melvin D. Rosebrom for
Barbara G. Raya-Hasn
Manager of Laboratory Operations

Analysis in accordance with procedures itemized in 40 CFR Part 136.
JMR 4:39

Environmental Science & Engineering, Inc.
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Fax (309) 692-9364

An IEPA Contract Laboratory

VOLATILE ORGANIC COMPOUNDS — Target Compound List

TO: ITW
8501 W. Higgins Road
Chicago, IL 60031
ATTN: Mr. Phil Dallosto

REPORT DATE: 5-10-90
DATE REC'D: 4-6-90
PROJECT NO.: 1-1658.001.05
PAGE 4 OF 12

| ESE SAMPLE NO.: | — | 900406-10 | 900406-11 |
|---|---|---|---|
| SAMPLE DATE: | — | 4-5-90 | 4-5-90 |
| DESCRIPTION: | Quant. Limit (ppb) ug/kg | S4 / Soil | S5/Background Soil |
| Chloromethane | 10 | < 10 | < 10 |
| Bromomethane | 10 | < 10 | < 10 |
| Vinyl Chloride | 10 | < 10 | < 10 |
| Chloroethane | 10 | < 10 | < 10 |
| Methylene Chloride | 5 | < 5 | < 5 |
| Acetone | 10 | 30 | 9 J |
| Carbon Disulfide | 5 | < 5 | < 5 |
| 1,1-Dichloroethene | 5 | < 5 | < 5 |
| 1,1-Dichloroethane | 5 | < 5 | < 5 |
| 1,2-Dichloroethene (total) | 5 | < 5 | < 5 |
| Chloroform | 5 | < 5 | < 5 |
| 1,2-Dichloroethane | 5 | < 5 | < 5 |
| 2-Butanone | 10 | < 10 | < 10 |
| 1,1,1-Trichloroethane | 5 | < 5 | < 5 |
| Carbon Tetrachloride | 5 | < 5 | < 5 |
| Vinyl Acetate | 10 | < 10 | < 10 |
| Bromodichloromethane | 5 | < 5 | < 5 |
| 1,2-Dichloropropane | 5 | < 5 | < 5 |
| cis-1,3-Dichloropropene | 5 | < 5 | < 5 |
| Trichloroethene | 5 | < 5 | < 5 |
| Dibromochloromethane | 5 | < 5 | < 5 |
| 1,1,2-Trichloroethane | 5 | < 5 | < 5 |
| Benzene | 5 | < 5 | < 5 |
| trans-1,3-Dichloropropene | 5 | < 5 | < 5 |
| Bromoform | 5 | < 5 | < 5 |
| 4-Methyl-2-Pentanone | 10 | < 10 | < 10 |
| 2-Hexanone | 10 | < 10 | < 10 |
| Tetrachloroethene | 5 | < 5 | < 5 |
| 1,1,2,2-Tetrachloroethane | 5 | < 5 | < 5 |
| Toluene | 5 | 5 J | < 5 |
| Chlorobenzene | 5 | < 5 | < 5 |
| Ethylbenzene | 5 | < 5 | < 5 |
| Styrene | 5 | < 5 | < 5 |
| Xylene (Total) | 5 | 10 | < 5 |

J = Estimated Concentration.

Report Approved By: Melvin D. Rozeboom for
Barbara G. Raya-Hash
Manager of Laboratory Operations

Analysis in accordance with procedures itemized in 40 CFR Part 136.
JMP/L:39

Environmental Science & Engineering, Inc.
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8901 N. Industrial Road
Peoria, Illinois 61615-1580
(309) 692-4422
Fax (309) 692-9364

An IEPA Contract Laboratory

BASE-NEUTRALS — TARGET COMPOUND LIST

TO: ITW
8501 W. Higgins Road
Chicago, IL 60631
ATTN: Mr. Phil Dallosto

REPORT DATE: 5-10-90
DATE REC'D: 4-6-90
PROJECT NO.: 1-1658.001.05


| ESE SAMPLE | — | 900406-07 | 900406-08 | 900406-09 |
|---|---|---|---|---|
| SAMPLE DATE | — | 4-5-90 | 4-5-90 | 4-5-90 |
| DESCRIPTION | Quant. Limit ug/kg (ppb) | S1 / Soil | S2 / Soil | S3 / Soil |
| bis(2-Chloroethyl)Ether | 330 | < 330 | < 330 | < 330 |
| 1,3-Dichlorobenzene | 330 | < 330 | < 330 | < 330 |
| 1,4-Dichlorobenzene | 330 | < 330 | < 330 | < 330 |
| Benzyl alcohol | 330 | < 330 | < 330 | < 330 |
| 1,2-Dichlorobenzene | 330 | < 330 | < 330 | < 330 |
| bis(2-chloroisopropyl)ether | 330 | < 330 | < 330 | 800 |
| N-Nitroso-di-n-propylamine | 330 | < 330 | < 330 | < 330 |
| Hexachloroethane | 330 | < 330 | < 330 | < 330 |
| Nitrobenzene | 330 | < 330 | < 330 | < 330 |
| Isophorone | 330 | < 330 | < 330 | < 330 |
| bis(-2-Chloroethoxy)methane | 330 | < 330 | < 330 | < 330 |
| 1,2,4-Trichlorobenzene | 330 | < 330 | < 330 | < 330 |
| Naphthalene | 330 | < 330 | < 330 | < 330 |
| 4-Chloroaniline | 330 | < 330 | < 330 | < 330 |
| Hexachlorobutadiene | 330 | < 330 | < 330 | < 330 |
| 2-Methylnaphthalene | 330 | < 330 | < 330 | < 330 |
| Hexachlorocyclopentadiene | 330 | < 330 | < 330 | < 330 |
| 2-Chloronaphthalene | 330 | < 330 | < 330 | < 330 |
| 2-Nitroaniline | 1600 | < 1600 | < 1600 | < 1600 |
| Dimethylphthalate | 330 | < 330 | < 330 | < 330 |
| Acenaphthylene | 330 | < 330 | < 330 | < 330 |
| 2,6-Dinitrotoluene | 330 | < 330 | < 330 | < 330 |
| 3-Nitroaniline | 1600 | < 1600 | < 1600 | < 1600 |
| Acenaphthene | 330 | < 330 | < 330 | < 330 |
| Dibenzofuran | 330 | < 330 | < 330 | < 330 |
| 2,4-Dinitrotoluene | 330 | < 330 | < 330 | < 330 |
| Diethylphthalate | 330 | < 330 | < 330 | < 330 |
| 4-Chlorophenyl-phenylether | 330 | < 330 | < 330 | < 330 |
| Fluorene | 330 | < 330 | < 330 | < 330 |
| 4-Nitroaniline | 1600 | < 1600 | < 1600 | < 1600 |
| N-Nitroso-diphenylamine | 330 | < 330 | < 330 | < 330 |
| 4-Bromophenyl-phenylether | 330 | < 330 | < 330 | < 330 |
| Hexachlorobenzene | 330 | < 330 | < 330 | < 330 |
| Phenanthrene | 330 | < 330 | < 330 | < 330 |
| Anthracene | 330 | < 330 | < 330 | < 330 |
| Di-n-butylphthalate | 330 | < 330 | < 330 | < 330 |

CONTINUED ON FOLLOWING PAGE

Environmental Science & Engineering, Inc.
(Formerly Randolph & Associates, Inc.)
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Fax (309) 692-9364

An IEPA Contract Laboratory

BASE-NEUTRALS — TARGET COMPOUND LIST (CONTINUED)



| ESE SAMPLE | — | 900406-07 | 900406-08 | 900406-09 |
|---|---|---|---|---|
| SAMPLE DATE | — | 4-5-90 | 4-5-90 | 4-5-90 |
| DESCRIPTION | Quant. Limit ug/kg (ppb) | S1 / Soil | S2 / Soil | S3 / Soil |
| Fluoranthene | 330 | < 330 | < 330 | < 330 |
| Pyrene | 330 | < 330 | < 330 | < 330 |
| Butylbenzylphthalate | 330 | < 330 | < 330 | < 330 |
| 3,3'-Dichlorobenzidine | 660 | < 660 | < 660 | < 660 |
| Benzo(a)anthracene | 330 | < 330 | < 330 | < 330 |
| Chrysene | 330 | < 330 | < 330 | < 330 |
| bis(2-Ethylhexyl)phthalate | 330 | 530 | < 330 | 800 |
| Di-n-octyl Phthalate | 330 | < 330 | < 330 | < 330 |
| Benzo(b)fluoranthene | 330 | < 330 | < 330 | < 330 |
| Benzo(k)fluoranthene | 330 | < 330 | < 330 | < 330 |
| Benzo(a)pyrene | 330 | < 330 | < 330 | < 330 |
| Indeno(1,2,3-cd)pyrene | 330 | < 330 | < 330 | < 330 |
| Dibenzo(a,h)anthracene | 330 | < 330 | < 330 | < 330 |
| Benzo(g,h,i)perylene | 330 | < 330 | < 330 | < 330 |

Report Approved By: Melvin D. Rozelman for
Barbara G. Raya-Hash
Manager of Laboratory Operations

Analysis in accordance with procedures itemized in 40 CFR Part 136.

JMF 4:39

Environmental Science & Engineering, Inc.
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Peoria, Illinois 61615-1588
(309) 691-4422
Fax (309) 692-9364

An IEPA Contract Laboratory

ACIDS — TARGET COMPOUND LIST

TO: ITW
8501 W. Higgins Road
Chicago, IL 60031
ATTN: Mr. Phil Dallosto

REPORT DATE: 5-10-90
DATE REC'D: 4-6-90
PROJECT NO.: 1-1658.001.05


| ESE SAMPLE | — | 900406-07 | 900406-08 | 900406-09 |
|---|---|---|---|---|
| SAMPLE DATE | — | 4-5-90 | 4-5-90 | 4-5-90 |
| DESCRIPTION | Quant. Limit ug/kg (ppb) | S1 / Soil | S2 / Soil | S3 / Soil |
| Phenol | 330 | < 330 | < 330 | < 330 |
| 2-Chlorophenol | 330 | < 330 | < 330 | < 330 |
| 2-Methylphenol | 330 | < 330 | < 330 | < 330 |
| 4-Methylphenol | 330 | < 330 | < 330 | < 330 |
| 2-Nitrophenol | 330 | < 330 | < 330 | < 330 |
| 2,4-Dimethylphenol | 330 | < 330 | < 330 | < 330 |
| Benzoic Acid | 1,600 | < 1,600 | < 1,600 | < 1,600 |
| 2,4-Dichlorophenol | 330 | < 330 | < 330 | < 330 |
| 4-Chloro-3-methylphenol | 330 | < 330 | < 330 | < 330 |
| 2,4,6-Trichlorophenol | 330 | < 330 | < 330 | < 330 |
| 2,4,5-Trichlorophenol | 330 | < 330 | < 330 | < 330 |
| 2,4-Dinitrophenol | 1,600 | < 1,600 | < 1,600 | < 1,600 |
| 4-Nitrophenol | 1,600 | < 1,600 | < 1,600 | < 1,600 |
| 4,6-Dinitro-2-methylphenol | 1,600 | < 1,600 | < 1,600 | < 1,600 |
| Pentachlorophenol | 1,600 | < 1,600 | < 1,600 | < 1,600 |

Report Approved By: Melvin D. Rozeboom for
Barbara G. Raya-Hash
Manager of Laboratory Operations

Analysis in accordance with procedures itemized in 40 CFR Part 136.
JMR/L:39

Environmental
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8601 N. Industrial Road
Peoria, Illinois 61615-1580
(309) 692-4422
Fax (309) 692-9264

An IEPA Contract Laboratory

BASE-NEUTRALS -- TARGET COMPOUND LIST

TO: ITW
8501 W. Higgins Road
Chicago, IL 60031
ATTN: Mr. Phil Dallosto

REPORT DATE: 5-10-90
DATE REC'D: 4-6-90
PROJECT NO.: 1-1658.001.05


| | | | |
|---|---|---|---|
| ESE SAMPLE | — | 900406-10 | 900406-11 |
| SAMPLE DATE | — | 4-5-90 | 4-5-90 |
| DESCRIPTION | Quant. Limit ug/kg (ppb) | S4 / Soil | S5 / Background Soil |
| bis(2-Chloroethyl)Ether | 330 | < 330 | < 330 |
| 1,3-Dichlorobenzene | 330 | < 330 | < 330 |
| 1,4-Dichlorobenzene | 330 | < 330 | < 330 |
| Benzyl alcohol | 330 | < 330 | < 330 |
| 1,2-Dichlorobenzene | 330 | < 330 | < 330 |
| bis(2-chloroisopropyl)ether | 330 | < 330 | < 330 |
| N-Nitroso-di-n-propylamine | 330 | < 330 | < 330 |
| Hexachloroethane | 330 | < 330 | < 330 |
| Nitrobenzene | 330 | < 330 | < 330 |
| Isophorone | 330 | < 330 | < 330 |
| bis(-2-Chloroethoxy)methane | 330 | < 330 | < 330 |
| 1,2,4-Trichlorobenzene | 330 | < 330 | < 330 |
| Naphthalene | 330 | < 330 | < 330 |
| 4-Chloroaniline | 330 | < 330 | < 330 |
| Hexachlorobutadiene | 330 | < 330 | < 330 |
| 2-Methylnaphthalene | 330 | < 330 | < 330 |
| Hexachlorocyclopentadiene | 330 | < 330 | < 330 |
| 2-Chloronaphthalene | 330 | < 330 | < 330 |
| 2-Nitroaniline | 1600 | < 1600 | < 1600 |
| Dimethylphthalate | 330 | < 330 | < 330 |
| Acenaphthylene | 330 | < 330 | < 330 |
| 2,6-Dinitrotoluene | 330 | < 330 | < 330 |
| 3-Nitroaniline | 1600 | < 1600 | < 1600 |
| Acenaphthene | 330 | < 330 | < 330 |
| Dibenzofuran | 330 | < 330 | < 330 |
| 2,4-Dinitrotoluene | 330 | < 330 | < 330 |
| Diethylphthalate | 330 | < 330 | < 330 |
| 4-Chlorophenyl-phenylether | 330 | < 330 | < 330 |
| Fluorene | 330 | < 330 | < 330 |
| 4-Nitroaniline | 1600 | < 1600 | < 1600 |
| N-Nitroso-diphenylamine | 330 | < 330 | < 330 |
| 4-Bromophenyl-phenylether | 330 | < 330 | < 330 |
| Hexachlorobenzene | 330 | < 330 | < 330 |
| Phenanthrene | 330 | < 330 | < 330 |
| Anthracene | 330 | < 330 | < 330 |
| Di-n-butylphthalate | 330 | < 330 | < 330 |

CONTINUED ON FOLLOWING PAGE

Environmental
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An IEPA Contract Laboratory

BASE-NEUTRALS — TARGET COMPOUND LIST (CONTINUED)



| | | | |
|---|---|---|---|
| ESE SAMPLE | — | 900406-10 | 900406-11 |
| SAMPLE DATE | — | 4-5-90 | 4-5-90 |
| DESCRIPTION | Quant. Limit ug/kg (ppb) | S4 / Soil | S5 / Soil Background |
| Fluoranthene | 330 | < 330 | < 330 |
| Pyrene | 330 | < 330 | < 330 |
| Butylbenzylphthalate | 330 | < 330 | < 330 |
| 3,3'-Dichlorobenzidine | 660 | < 660 | < 660 |
| Benzo(a)anthracene | 330 | < 330 | < 330 |
| Chrysene | 330 | < 330 | < 330 |
| bis(2-Ethylhexyl)phthalate | 330 | 330 | < 330 |
| Di-n-octyl Phthalate | 330 | < 330 | < 330 |
| Benzo(b)fluoranthene | 330 | < 330 | < 330 |
| Benzo(k)fluoranthene | 330 | < 330 | < 330 |
| Benzo(a)pyrene | 330 | < 330 | < 330 |
| Indeno(1,2,3-cd)pyrene | 330 | < 330 | < 330 |
| Dibenzo(a,h)anthracene | 330 | < 330 | < 330 |
| Benzo(g,h,i)perylene | 330 | < 330 | < 330 |

Report Approved By: Melvin D. Rozeboom Jr.
Barbara G. Raya-Hash
Manager of Laboratory Operations

Analysis in accordance with procedures itemized in 40 CFR Part 136.
JMR/L:39

Environmental Science & Engineering, Inc.
(Formerly Randolph & Associates, Inc.)
8901 N. Industrial Road
Peoria, Illinois 61615-1589
(309) 692-4422
Fax (309) 692-9364

An IEPA Contract Laboratory

ACIDS — TARGET COMPOUND LIST

TO: ITW
8501 W. Higgins Road
Chicago, IL 60031
ATTN: Mr. Phil Dallosto

REPORT DATE: 5-10-90
DATE REC'D: 4-6-90
PROJECT NO.: 1-1658.001.05
PAGE 10 OF 12

| ESE SAMPLE | — | 900406-10 | 900406-11 |
|---|---|---|---|
| SAMPLE DATE | — | 4-5-90 | 4-5-90 |
| DESCRIPTION | Quant. Limit ug/kg (ppb) | S4/Soil | S5/Background Soil |
| Phenol | 330 | < 330 | < 330 |
| 2-Chlorophenol | 330 | < 330 | < 330 |
| 2-Methylphenol | 330 | < 330 | < 330 |
| 4-Methylphenol | 330 | < 330 | < 330 |
| 2-Nitrophenol | 330 | < 330 | < 330 |
| 2,4-Dimethylphenol | 330 | < 330 | < 330 |
| Benzoic Acid | 1,600 | < 1,600 | < 1,600 |
| 2,4-Dichlorophenol | 330 | < 330 | < 330 |
| 4-Chloro-3-methylphenol | 330 | < 330 | < 330 |
| 2,4,6-Trichlorophenol | 330 | < 330 | < 330 |
| 2,4,5-Trichlorophenol | 330 | < 330 | < 330 |
| 2,4-Dinitrophenol | 1,600 | < 1,600 | < 1,600 |
| 4-Nitrophenol | 1,600 | < 1,600 | < 1,600 |
| 4,6-Dinitro-2-methylphenol | 1,600 | < 1,600 | < 1,600 |
| Pentachlorophenol | 1,600 | < 1,600 | < 1,600 |

Report Approved By: Barbara G. Raya-Hash
Barbara G. Raya-Hash
Manager of Laboratory Operations

Analysis in accordance with procedures itemized in 40 CFR Part 136.
JMB/7-39

Environmental
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Fax (309) 692-9364

An IEPA Contract Laboratory

PESTICIDE/PCB'S ANALYSIS (TARGET COMPOUND LIST)

TO: ITW
8501 W. Higgins Road
Chicago, IL 60031
ATTN: Mr. Phil Dallosto

REPORT DATE: 5-10-90
DATE REC'D: 4-6-90
PROJECT NO.: 1-1658.001.05


| ESE SAMPLE | — | 900406-07 | 900406-08 | 900406-09 |
|---|---|---|---|---|
| SAMPLE DATE | — | 4-5-90 | 4-5-90 | 4-5-90 |
| DESCRIPTION | Quant. Limit ug/kg (ppb) | S1 / Soil | S2 / Soil | S3 / Soil |
| Alpha-BHC | 8.0 | < 8.0 | < 8.0 | < 8.0 |
| Beta-BHC | 8.0 | < 8.0 | < 8.0 | < 8.0 |
| Delta-BHC | 8.0 | < 8.0 | < 8.0 | < 8.0 |
| Gamma-BHC (Lindane) | 8.0 | < 8.0 | < 8.0 | < 8.0 |
| Heptachlor | 8.0 | < 8.0 | < 8.0 | < 8.0 |
| Aldrin | 8.0 | < 8.0 | < 8.0 | < 8.0 |
| Heptachlor Epoxide | 8.0 | < 8.0 | < 8.0 | < 8.0 |
| Endosulfan I | 8.0 | < 8.0 | < 8.0 | < 8.0 |
| Dieldrin | 16.0 | < 16.0 | < 16.0 | < 16.0 |
| 4,4'-DDE | 16.0 | < 16.0 | < 16.0 | < 16.0 |
| Endrin | 16.0 | < 16.0 | < 16.0 | < 16.0 |
| Endosulfan II | 16.0 | < 16.0 | < 16.0 | < 16.0 |
| 4,4'-DDD | 16.0 | < 16.0 | < 16.0 | < 16.0 |
| Endosulfan Sulfate | 16.0 | < 16.0 | < 16.0 | < 16.0 |
| 4,4'-DDT | 16.0 | < 16.0 | < 16.0 | < 16.0 |
| Methoxychlor | 80.0 | < 80.0 | < 80.0 | < 80.0 |
| Endrin Ketone | 16.0 | < 16.0 | < 16.0 | < 16.0 |
| Alpha-Chlordane | 80.0 | < 80.0 | < 80.0 | < 80.0 |
| Gamma-Chlordane | 80.0 | < 80.0 | < 80.0 | < 80.0 |
| Toxaphene | 160.0 | < 160.0 | < 160.0 | < 160.0 |
| Aroclor-1016 | 80.0 | < 80.0 | < 80.0 | < 80.0 |
| Aroclor-1221 | 80.0 | < 80.0 | < 80.0 | < 80.0 |
| Aroclor-1232 | 80.0 | < 80.0 | < 80.0 | < 80.0 |
| Aroclor-1242 | 80.0 | < 80.0 | < 80.0 | < 80.0 |
| Aroclor-1248 | 80.0 | < 80.0 | < 80.0 | < 80.0 |
| Aroclor-1254 | 160.0 | < 160.0 | < 160.0 | < 160.0 |
| Aroclor-1260 | 160.0 | < 160.0 | < 160.0 | < 160.0 |

Report Approved By: Melvin D. Rozeboom for
Barbara G. Raya-Hash
Manager of Laboratory Operations

Analysis in accordance with procedures itemized in 40 CFR Part 136.
JMR/L:39

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Tel (309) 692-4422
Fax (309) 692-[illegible]

An IEPA Contract Laboratory

## PESTICIDE/PCB'S ANALYSIS (TARGET COMPOUND LIST)

TO: ITW
8501 W. Higgins Road
Chicago, IL 60031
ATTN: Mr. Phil Dallosto

REPORT DATE: 5-10-90
DATE REC'D: 4-6-90
PROJECT NO.: 1-1658.001.05
PAGE 12 OF 12

| ESE SAMPLE | — | 900406-10 | 900406-11 |
|---|---|---|---|
| SAMPLE DATE | — | 4-5-90 | 4-5-90 |
| DESCRIPTION | Quant. Limit ug/kg (ppb) | S4 / Soil | S5/Background Soil |
| Alpha-BHC | 8.0 | < 8.0 | < 8.0 |
| Beta-BHC | 8.0 | < 8.0 | < 8.0 |
| Delta-BHC | 8.0 | < 8.0 | < 8.0 |
| Gamma-BHC (Lindane) | 8.0 | < 8.0 | < 8.0 |
| Heptachlor | 8.0 | < 8.0 | < 8.0 |
| Aldrin | 8.0 | < 8.0 | < 8.0 |
| Heptachlor Epoxide | 8.0 | < 8.0 | < 8.0 |
| Endosulfan I | 8.0 | < 8.0 | < 8.0 |
| Dieldrin | 16.0 | < 16.0 | < 16.0 |
| 4,4'-DDE | 16.0 | < 16.0 | 12 J |
| Endrin | 16.0 | < 16.0 | < 16.0 |
| Endosulfan II | 16.0 | < 16.0 | < 16.0 |
| 4,4'-DDD | 16.0 | < 16.0 | < 16.0 |
| Endosulfan Sulfate | 16.0 | < 16.0 | < 16.0 |
| 4,4'-DDT | 16.0 | < 16.0 | 8.5 J |
| Methoxychlor | 80.0 | < 80.0 | < 80.0 |
| Endrin Ketone | 16.0 | < 16.0 | < 16.0 |
| Alpha-Chlordane | 80.0 | < 80.0 | < 80.0 |
| Gamma-Chlordane | 80.0 | < 80.0 | < 80.0 |
| Toxaphene | 160.0 | < 160.0 | < 160.0 |
| Aroclor-1016 | 80.0 | < 80.0 | < 80.0 |
| Aroclor-1221 | 80.0 | < 80.0 | < 80.0 |
| Aroclor-1232 | 80.0 | < 80.0 | < 80.0 |
| Aroclor-1242 | 80.0 | < 80.0 | < 80.0 |
| Aroclor-1248 | 80.0 | < 80.0 | < 80.0 |
| Aroclor-1254 | 160.0 | < 160.0 | < 160.0 |
| Aroclor-1260 | 160.0 | < 160.0 | < 160.0 |

Report Approved By: Melvin D. Rozeboom for
Barbara G. Raya-Hash
Manager of Laboratory Operations

Analysis in accordance with procedures itemized in 40 CFR Part 136.
JMR/L:39

Environmental
Science &
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[illegible] Industrial Road
Peoria, Illinois 61615-1596

An IEPA Contract Laboratory

FEDERAL HAZARDOUS WASTE CHARACTERISTICS ANALYSIS*

CLIENT: Illinois Tool Works
8501 W. Higgins Road
Chicago, IL 60631
ATTN: Mr. Philip Dallosto

REPORT DATE: 7-24-90
SAMPLE REC'D.: 4-6-90*
ESE SAMPLE: 900406-07
ESE JOB NO.: 1-1658.001.05

SAMPLE I.D. S-1 Irathane

| Parameter | EP Tox Metal Results (ppm) | Maximum Allowable Concentration (ppm) |
|---|---|---|
| Arsenic | < 0.050 | 5.0 |
| Barium | 1.4 | 100.0 |
| Cadmium | 0.022 | 1.0 |
| Chromium, T | 0.109 | 5.0 |
| Lead | 2.3 | 5.0 |
| Mercury | < 0.002 | 0.2 |
| Selenium | < 0.010 | 1.0 |
| Silver | < 0.050 | 5.0 |

*First report went out 5-10-90. Request for additional parameters to be analyzed 6-26-90.

REPORT APPROVED BY: Barbara G. Raya-Hash
Barbara G. Raya-Hash, Manager
Laboratory Operations

*All analyses are conducted using recommended USEPA and IEPA Methods.
sae/L:120

Environmental
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Engineering, Inc.

[illegible] Industrial Road
Peoria, Illinois [illegible]
[illegible]
Fax [illegible]

An IEPA Contract Laboratory

FEDERAL HAZARDOUS WASTE CHARACTERISTICS ANALYSIS*

CLIENT: Illinois Tool Works
8501 W. Higgins Road
Chicago, IL 60031
ATTN: Mr. Philip Dallosto

REPORT DATE: 7-24-90
SAMPLE REC'D.: 4-6-90
ESE SAMPLE: 900406-08
ESE JOB NO.: 1-1658.001.05

SAMPLE I.D. S-2 Irathane

| Parameter | EP Tox Metal Results (ppm) | Maximum Allowable Concentration (ppm) |
|---|---|---|
| Arsenic | < 0.050 | 5.0 |
| Barium | < 1.0 | 100.0 |
| Cadmium | < 0.010 | 1.0 |
| Chromium, T | < 0.050 | 5.0 |
| Lead | < 0.050 | 5.0 |
| Mercury | < 0.002 | 0.2 |
| Selenium | < 0.010 | 1.0 |
| Silver | < 0.050 | 5.0 |

REPORT APPROVED BY: Barbara G. Raya-Hash
Barbara G. Raya-Hash, Manager
Laboratory Operations

*All analyses are conducted using recommended USEPA and IEPA Methods.
sae/L:120

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8401 N. Industrial Road
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Fax (309) 692-9364

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FEDERAL HAZARDOUS WASTE CHARACTERISTICS ANALYSIS*

CLIENT: Illinois Tool Works
8501 W. Higgins Road
Chicago, IL 60031
ATTN: Mr. Philip Dallosto

REPORT DATE: 7-24-90
SAMPLE REC'D.: 4-6-90
ESE SAMPLE: 900406-09
ESE JOB NO.: 1-1658.001.05

SAMPLE I.D. S-3 Irathane

| Parameter | EP Tox Metal Results (ppm) | Maximum Allowable Concentration (ppm) |
|---|---|---|
| Arsenic | < 0.050 | 5.0 |
| Barium | < 1.0 | 100.0 |
| Cadmium | < 0.010 | 1.0 |
| Chromium, T | < 0.050 | 5.0 |
| Lead | < 0.050 | 5.0 |
| Mercury | < 0.002 | 0.2 |
| Selenium | < 0.010 | 1.0 |
| Silver | < 0.050 | 5.0 |

REPORT APPROVED BY: Barbara G. Raya-Hash
Barbara G. Raya-Hash, Manager
Laboratory Operations

*All analyses are conducted using recommended USEPA and IEPA Methods.
sae/L:120

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FEDERAL HAZARDOUS WASTE CHARACTERISTICS ANALYSIS*

CLIENT: Illinois Tool Works
8501 W. Higgins Road
Chicago, IL 60031
ATTN: Mr. Philip Dallosto

REPORT DATE: 7-24-90
SAMPLE REC'D.: 4-6-90
ESE SAMPLE: 900406-10
ESE JOB NO.: 1-1658.001.05

SAMPLE I.D. S-4 Irathane

| Parameter | EP Tox Metal Results (ppm) | Maximum Allowable Concentration (ppm) |
|---|---|---|
| Arsenic | < 0.050 | 5.0 |
| Barium | < 1.0 | 100.0 |
| Cadmium | < 0.010 | 1.0 |
| Chromium, T | < 0.050 | 5.0 |
| Lead | < 0.050 | 5.0 |
| Mercury | < 0.002 | 0.2 |
| Selenium | < 0.010 | 1.0 |
| Silver | < 0.050 | 5.0 |

REPORT APPROVED BY: Barbara G. Raya-Hash
Barbara G. Raya-Hash, Manager
Laboratory Operations

*All analyses are conducted using recommended USEPA and IEPA Methods.
sae/L:120

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FEDERAL HAZARDOUS WASTE CHARACTERISTICS ANALYSIS*

CLIENT: Illinois Tool Works
8501 W. Higgins Road
Chicago, IL 60031
ATTN: Mr. Philip Dallosto

REPORT DATE: 7-24-90
SAMPLE REC'D.: 4-6-90
ESE SAMPLE: 900406-11
ESE JOB NO.: 1-1658.001.05

SAMPLE I.D. S-5 Irathane

| Parameter | EP Tox Metal Results (ppm) | Maximum Allowable Concentration (ppm) |
|---|---|---|
| Arsenic | < 0.050 | 5.0 |
| Barium | < 1.0 | 100.0 |
| Cadmium | < 0.010 | 1.0 |
| Chromium, T | < 0.050 | 5.0 |
| Lead | < 0.050 | 5.0 |
| Mercury | < 0.002 | 0.2 |
| Selenium | < 0.010 | 1.0 |
| Silver | < 0.050 | 5.0 |

REPORT APPROVED BY: Barbara G. Raya-Hash
Barbara G. Raya-Hash, Manager
Laboratory Operations

*All analyses are conducted using recommended USEPA and IEPA Methods.
sae/L:120

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An IEPA Contract Laboratory

TO: Irathane Systems

3516 13th Ave.

Hibbing, MN 55746

ATTN: Laurie Potts

REPORT DATE: 11-26-90

DATE REC'D: 10-29-90

PROJECT NO.: 590-5A93

| | | |
|---|---|---|
| ESE SAMPLE | --- | 1586-1 |
| SAMPLE DATE | --- | 10-26-90 |

| DESCRIPTION | Quant. Limit | Sub Soil Under S-1 Sample | METHOD NO. | DATE ANALYZED | ANALYST |
|---|---|---|---|---|---|
| **TOTAL METALS (mg/l)** | | | | | |
| Arsenic | 0.50 | 4.6 | 6010 | 11-13-90 | WBG |
| Barium | 10 | 19.7 | 6010 | 11-12-90 | WBG |
| Cadmium | 0.10 | 0.29 | 6010 | 11-12-90 | WBG |
| Chromium | 0.10 | 16.6 | 6010 | 11-12-90 | WBG |
| Lead | 0.50 | 38.7 | 6010 | 11-12-90 | WBG |
| Mercury | 0.020 | 0.032 | 7471 | 11-1-90 | SMW |
| Selenium | 0.75 | < 0.75 | 7740 | 11-16-90 | VMW |
| Silver | 0.10 | 2.2 | 6010 | 11-12-90 | WBG |
| **TCLP METALS (mg/l)** | | | | | |
| Arsenic | 0.50 | < 0.50 | 6010 | 11-12-90 | WBG |
| Barium | 10 | < 10 | 6010 | 11-12-90 | WBG |
| Cadmium | 0.10 | < 0.10 | 6010 | 11-12-90 | WBG |
| Chromium | 0.50 | < 0.50 | 6010 | 11-12-90 | WBG |
| Lead | 0.50 | < 0.50 | 6010 | 11-12-90 | WBG |
| Mercury | 0.020 | < 0.020 | 7440 | 11-8-90 | ERS |
| Selenium | 0.75 | < 0.75 | 6010 | 11-12-90 | WBG |
| Silver | 0.50 | < 0.50 | 6010 | 11-12-90 | WBG |

TCLP Results Are Corrected For Spike Recoveries.

Report Approved by: Melvin D. Rozeboom
Melvin D. Rozeboom, Ph.D.
Organic Project Manager

kjs/L:158

# RECEIPT FOR SAMPLES

U.S. EPA, 230 S. Dearborn St., Chicago, IL 60604

U. S. EPA ID NO MND022818306

PROJ. ACCT. NO. FMN02305B

TDD F05-8910-012

SPLIT SAMPLES ACCEPTED(✓) DECLINED( )

FACILITY/OCCUPANT NAME: Irathane Systems, Inc.

FACILITY/OCCUPANT ADDRESS: 3516 13th Ave East, Hibbing, MN 55746

| SAMPLE NUMBER | DATE | TIME | SPLIT SAMPLES (✓) | OTR# | ITR# | DESCRIPTION OF SAMPLE LOCATIONS | SEMIVOLATILES | PESTICIDES/PCBS | VOLATILES | METALS | CYANIDE | | | MATRIX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S1 | 4/5/90 | 1010 | ✓ | CJY 42 | MEJA 30 | Soil 1 | ✓ | ✓ | ✓ | ✓ | ✓ | | | Soil |
| S2 | 4/5/90 | 1025 | ✓ | CJY 43 | MEJA 31 | Soil 2 | ✓ | ✓ | ✓ | ✓ | ✓ | | | Soil |
| S3 | 4/5/90 | 1045 | ✓ | CJY 44 | MEJA 32 | Soil 3 | ✓ | ✓ | ✓ | ✓ | ✓ | | | Soil |
| S4 | 4/5/90 | 1105 | ✓ | CJY 45 | MEJA 33 | Soil 4 | ✓ | ✓ | ✓ | ✓ | ✓ | | | Soil |
| S5 | 4/5/90 | 1200 | ✓ | CJY 46 | MEJA 34 | Soil 5 | ✓ | ✓ | ✓ | ✓ | ✓ | | | Soil |
| ~~S6~~ | ~~4/5/90~~ | | | ~~CJY 47~~ | ~~MEJA 35~~ | ~~Soil 6~~ NWR 4/5/90 | ✓ | ✓ | ✓ | ✓ | ✓ | | | ~~Soil~~ |

NWR 4/5/90

TRANSFERRED BY: Ted Nehrkorn (Signature) 4/5/90 (Date) 1245 (Time)

RECEIVED BY: (Signature) 4/5/90 (Date) 12:51 (Time)

DISTRIBUTION
WHITE: FIT SITE FILE
YELLOW: FACILITY/OCCUPANT
GREEN: FIT SAMPLE MANAGEMENT
PINK: U.S. EPA

TITLE: Mgr, FID/DA

TELEPHONE: 312 [illegible] 5221 / 516 [illegible] 5285