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RECEIVED SEP 1 1987

Organics Analysis Data Sheet
(Page 1)

Sample Number: B[illegible]677

Laboratory Name: ENVIRODYNE
Lab Sample ID No: 87003585
Sample Matrix: SOIL
Data Release Authorized By: mcw

Case No: 7351
QC Report No: 131
Contract No: 68-01-7087
Date Sample Received: 7-15-87

Volatile Compounds

Concentration: LOW
Date Extracted/Prepared:
Date Analyzed: 7-25-87
Conc/Dil Factor: 1
Percent Moisture (not decanted): 13.8

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US EPA [illegible] REGIONAL LAB.
[illegible]
CHICAGO, ILLINOIS 60605

| CAS No. | | ug/kg | CAS No: | | ug/kg |
|---|---|---|---|---|---|
| 74-87-3 | Chloromethane | 12 U | 78-87-5 | 1,2-Dichloropropane | 6 U |
| 74-83-9 | Bromomethane | 12 U | 10061-02-6 | trans-1,3-Dichloropropene | 6 U |
| 75-01-4 | Vinyl Chloride | 12 U | 79-01-6 | Trichloroethene | 6 U |
| 75-00-3 | Chloroethane | 12 U | 124-48-1 | Dibromochloromethane | 6 U |
| 75-09-2 | Methylene Chloride | 6 B (UJ) | 79-00-5 | 1,1,2-Trichloroethane | 6 U |
| 67-64-1 | Acetone | 36 | 71-43-2 | Benzene | 6 U |
| 75-15-0 | Carbon Disulfide | 6 U | 10061-01-5 | cis-1,3-Dichloropropene | 6 U |
| 75-35-4 | 1,1-Dichloroethene | 6 U | 110-75-8 | 2-Chloroethylvinylether | 12 U |
| 75-34-3 | 1,1-Dichloroethane | 6 U | 75-25-2 | Bromoform | 6 U |
| 156-60-5 | trans-1,2-Dichloroethene | 6 U | 108-10-1 | 4-Methyl-2-pentanone | 12 U |
| 67-66-3 | Chloroform | 6 U | 591-78-6 | 2-Hexanone | 12 U |
| 107-06-2 | 1,2-Dichloroethane | 6 U | 127-18-4 | Tetrachloroethene | 6 U |
| 78-93-3 | 2-Butanone | 12 U | 79-34-5 | 1,1,2,2-Tetrachloroethane | 6 U |
| 71-55-6 | 1,1,1-Trichloroethane | 6 U | 108-88-3 | Toluene | 6 U |
| 56-23-5 | Carbon Tetrachloride | 6 U | 108-90-7 | Chlorobenzene | 6 U |
| 108-05-4 | Vinyl Acetate | 12 U | 100-41-4 | Ethylbenzene | 6 U |
| 75-27-4 | Bromodichloromethane | 6 U | 100-42-5 | Styrene | 6 U |
| | | | | Total Xylenes | 6 U |

M. Terry 8/20/87

Data Reporting Qualifiers

VALUE:
If the result is a value greater than or equal to the detection limit, report the value.

U:
Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (eg,10U) based on necessary concent./dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U- Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

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 indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg, 10J). If limit of detection is 10 ug/l and a concentration of 3 ug/l is calculated, report as 3J.

B:
This flag applies to pesticide parameters where the identification was confirmed by GC/MS. Single component pesticides>=10 ng/ul in the final extract should be confirmed by GC/MS

B:
This flag is used when analyte is found in blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

OTHER:
Other flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

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Laboratory Name: ENVIRODYNE
Case No 7351

Sample Number: EM877

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: LOW
Date Extracted/Prepared: 7-22-87
Date Analyzed: 8-6-87
Conc/Dil Factor: 1
Percent Moisture (decanted): 13.8

GPC Cleanup : YES
Sep Funnel Extraction : YES NO (circle one)
Contin. Liq.-Liq. Ext : YES NO (circle one)

| CAS No: | | ug/kg | CAS No: | | ug/kg |
|---|---|---|---|---|---|
| 108-95-2 | Phenol | 770 U | 83-32-9 | Acenaphthene | 770 U |
| 111-44-4 | bis-(2-Chloroethyl)ether | 770 U | 51-28-5 | 2,4-Dinitrophenol | 3700 U |
| 95-57-8 | 2-Chlorophenol | 770 U | 100-02-7 | 4-Nitrophenol | 3700 U |
| 541-73-1 | 1,3-Dichlorobenzene | 770 U | 132-64-9 | Dibenzofuran | 770 U |
| 106-46-7 | 1,4-Dichlorobenzene | 770 U | 121-14-2 | 2,4-Dinitrotoluene | 770 U |
| 100-51-6 | Benzyl Alcohol | 770 U | 606-20-2 | 2,6-Dinitrotoluene | 770 U |
| 95-50-1 | 1,2-Dichlorobenzene | 770 U | 84-66-2 | Diethyl phthalate | 770 U |
| 95-48-7 | 2-Methylphenol | 770 U | 7005-72-3 | 4-Chlorophenyl-phenyl ether | 770 U |
| 39638-32-9 | bis-(2-Chloroisopropyl)ether | 770 U | 86-73-7 | Fluorene | 770 U |
| 106-44-5 | 4-Methylphenol | 770 U | 100-01-6 | 4-Nitroaniline | 3700 U |
| 621-64-7 | N-nitroso-Di-n-propylamine | 770 U | 534-52-1 | 4,6-Dinitro-2-Methylphenol | 3700 U |
| 67-72-1 | Hexachloroethane | 770 U | 86-30-6 | N-nitrosodiphenylamine (1) | 770 U |
| 98-95-3 | Nitrobenzene | 770 U | 101-55-3 | 4-Bromophenyl-phenyl ether | 770 U |
| 78-59-1 | Isophorone | 770 U | 118-74-1 | Hexachlorobenzene | 770 U |
| 88-75-5 | 2-Nitrophenol | 770 U | 87-86-5 | Pentachlorophenol | 3700 U |
| 105-67-9 | 2,4-Dimethylphenol | 770 U | 85-01-8 | Phenanthrene | 770 U |
| 65-85-0 | Benzoic Acid | 3700 U | 120-12-7 | Anthracene | 770 U |
| 111-91-1 | bis-(Chloroethoxy)Methane | 770 U | 84-74-2 | Di-n-butyl phthalate | 330 J |
| 120-83-2 | 2,4-Dichlorophenol | 770 U | 206-44-0 | Fluoranthene | 770 U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 770 U | 129-00-0 | Pyrene | 770 U |
| 91-20-3 | Naphthalene | 770 U | 85-68-7 | Butyl-benzyl-phthalate | 770 U |
| 106-47-8 | 4-Chloroaniline | 770 U | 91-94-1 | 3,3'-Dichlorobenzidine | 1500 U |
| 87-68-3 | Hexachlorobutadiene | 770 U | 56-55-3 | Benzo(a)anthracene | 770 U |
| 59-50-7 | 4-Chloro-3-methylphenol | 770 U | 117-81-7 | bis-(2-Ethylhexyl)phthalate | 830 ~~J~~ |
| 91-57-6 | 2-Methylnaphthalene | 770 U | 218-01-9 | Chrysene | 770 U |
| 77-47-4 | Hexachlorocyclopentadiene | 770 U | 117-84-0 | Di-n-octyl phthalate | 770 U |
| 88-06-2 | 2,4,6-Trichlorophenol | 770 U | 205-99-2 | Benzo(b)fluoranthene | 770 U |
| 95-95-4 | 2,4,5-Trichlorophenol | 3700 U | 207-08-9 | Benzo(k)fluoranthene | 770 U |
| 91-58-7 | 2-Chloronaphthalene | 770 U | 50-32-8 | Benzo(a)pyrene | 770 U |
| 88-74-4 | 2-Nitroaniline | 3700 U | 193-39-5 | Indeno(1,2,3-cd)pyrene | 770 U |
| 131-11-3 | Dimethyl phthalate | 770 U | 53-70-3 | Dibenzo(a,h)anthracene | 770 U |
| 208-96-8 | Acenapthylene | 770 U | 191-24-2 | Benzo(ghi)perylene | 770 U |
| 99-09-2 | 3-Nitroaniline | 3700 U | | | |

(1)-Cannot be separated from diphenylamine

mlerry 8/24/87

FORM 1

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Laboratory Name: ENVIRODYNE
Case No: 7351

Sample Number: EM-877

Organics Analysis Data Sheet
(Page 3)

Pesticides & PCB s

Concentration: LOW
Date Extracted/Prepared: 7-22-87
Date Analyzed: 8-12 -87
Conc/Dil Factor: 1
Percent Moisture (decanted): 14

GPC Cleanup : YES
Sep. Funnel Extraction : YES (NO) (circle one)
Contin. Liq.-Liq. Ext. : YES (NO) (circle one)

| CAS No: | | ug/kg |
|---|---|---|
| 319-84-6 | Alpha-BHC | 19 U |
| 319-85-7 | Beta-BHC | 19 U |
| 319-86-8 | Delta-BHC | 19 U |
| 58-89-9 | Gamma-BHC (Lindane) | 19 U |
| 76-44-8 | Heptachlor | 19 U |
| 309-00-2 | Aldrin | 19 U |
| 1024-57-3 | Heptachlor Epoxide | 19 U |
| 959-98-8 | Endosulfan I | 19 U |
| 60-57-1 | Dieldrin | 37 U |
| 72-55-9 | 4,4'-DDE | 37 U |
| 72-20-8 | Endrin | 37 U |
| 33213-65-9 | Endosulfan-II | 37 U |
| 72-54-8 | 4,4'-DDD | 37 U |
| 1031-07-8 | Endosulfan Sulfate | 37 U |
| 50-29-3 | 4,4'-DDT | 37 U |
| 72-43-5 | Methoxychlor | 190 U |
| 53494-70-5 | Endrin Ketone | 37 U |
| 57-74-9 | Chlordane | 190 U |
| 8001-35-2 | Toxaphene | 370 U |
| 12674-11-2 | Aroclor-1016 | 190 U |
| 11104-28-2 | Aroclor-1221 | 190 U |
| 53469-21-9 | Aroclor-1232 | 190 U |
| 53469-21-9 | Aroclor-1242 | 190 U |
| 12672-29-6 | Aroclor-1248 | 190 U |
| 11097-69-1 | Aroclor-1254 | 370 U |
| 11096-82-5 | Aroclor-1260 | 370 U |

Vi = Volume of extract injected (ul)
Ws = Weight of sample extracted (g)
Vt = Volume of total extract (ul)

Ws = 30 g  Vt = 40,000 ul  Vi = 2.0 ul

FORM 1

Laboratory Name ENVIRODYNE

Case No. 7351

Sample Number EM 877

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## Organics Analysis Data Sheet
(Page 4)

### Tentatively Identified Compounds

| CAS Number | Compound Name | Fraction | RT or Scan Number | Estimated Concentration (ug/l or ug/kg) |
|---|---|---|---|---|
| 1. | No peaks | VOA | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
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| 19. | | | | |
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| 1. | | | | |
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| 5. | | | | |
| 6. | | | | |
| 7. | | | | |
| 8. | | | | |
| 9. | | | | |
| 0. | | | | |

Laboratory Name: ENVIRODYNE

Case No: 7351

Sample Number: EM 877

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## Organics Analysis Data Sheet
(Page 4)

### Tentatively Identified Compounds

| CAS Number | Compound Name | Fraction | RT or Scan Number | Estimated Concentration (ug/l or ug/kg) |
|---|---|---|---|---|
| 1. | unknown | BNA | 6.0 | 980 J |
| 2. | unknown | " | 6.1 | 2000 J |
| 3. | unknown | " | 7.5 | 680 J |
| 4. | unknown | " | 8.5 | 930 J |
| 5. | unknown | " | 11.8 | 600 J |
| 6. | hydrocarbon | " | 12.4 | 340 J |
| 7. | unknown | " | 13.8 | 470 J |
| 8. | hydrocarbon | " | 15.1 | 430 J |
| 9. | unknown | " | 17.4 | 1400 J |
| 10. | hydrocarbon | " | 17.5 | 670 J |
| 11. | phthalate | " | 19.3 | 1200 J |
| 12. | a carboxylic acid | " | 22.3 | 1600 J |
| 13. | a carboxylic acid | " | 24.0 | 1200 J |
| 14. 123795 | hexanedioic acid, dioctyl ester | " | 24.1 | 1800 J |
| 15. | hydrocarbon | " | 24.9 | 910 J |
| 16. | hydrocarbon | " | 25.7 | 790 J |
| 17. | hydrocarbon | " | 26.5 | 1100 J |
| 18. | hydrocarbon | " | 27.2 | 870 J |
| 19. | hydrocarbon | " | 27.9 | 910 J |
| 20. 123284 | propanoic acid, 3,3'-thiobis-, didodecyl ester | " | 28.8 | 12000 J B |
| 21. | | | | |
| 22. | | | | |
| 23. | | | | |
| 24. | | | | |
| 25. | | | | |
| 26. | | | | |
| 27. | | | | |
| 28. | | | | |
| 29. | | | | |
| 30. | | | | |

23738

# Organics Analysis Data Sheet
(Page 1)

Sample Number: EM 878

Laboratory Name: ENVIRODYNE
Lab Sample ID No: 87003586
Sample Matrix: SOIL
Data Release Authorized By: MCW

Case No: 7351
QC Report No: 121
Contract No: 68-01-7087
Date Sample Received: 7-17-87

RECEIVED SEP 1 1987

## Volatile Compounds

Concentration: LOW
Date Extracted/Prepared:
Date Analyzed: 7-25-87
Conc/Dil Factor: 1
Percent Moisture (not decanted): 18.4

| CAS No: | | ug/kg | CAS No: | | ug/kg |
|---|---|---|---|---|---|
| 74-87-3 | Chloromethane | 12 U | 78-87-5 | 1,2-Dichloropropane | 6 U |
| 74-83-9 | Bromomethane | 12 U | 10061-02-6 | trans-1,3-Dichloropropene | 6 U |
| 75-01-4 | Vinyl Chloride | 12 U | 79-01-6 | Trichloroethene | 6 U |
| 75-00-3 | Chloroethane | 12 U | 124-48-1 | Dibromochloromethane | 6 U |
| 75-09-2 | Methylene Chloride | 20 ~~B~~ (UJ) | 79-00-5 | 1,1,2-Trichloroethane | 6 U |
| 67-64-1 | Acetone | 97 ~~B~~ (UJ) | 71-43-2 | Benzene | 6 U |
| 75-15-0 | Carbon Disulfide | 6 U | 10061-01-5 | cis-1,3-Dichloropropene | 6 U |
| 75-35-4 | 1,1-Dichloroethene | 6 U | 110-75-8 | 2-Chloroethylvinylether | 12 U |
| 75-34-3 | 1,1-Dichloroethane | 6 U | 75-25-2 | Bromoform | 6 U |
| 156-60-5 | trans-1,2-Dichloroethene | 6 U | 108-10-1 | 4-Methyl-2-pentanone | 12 U |
| 67-66-3 | Chloroform | 6 U | 591-78-6 | 2-Hexanone | 12 U |
| 107-06-2 | 1,2-Dichloroethane | 6 U | 127-18-4 | Tetrachloroethene | 6 U |
| 78-93-3 | 2-Butanone | 12 U | 79-34-5 | 1,1,2,2-Tetrachloroethane | 6 U |
| 71-55-6 | 1,1,1-Trichloroethane | 6 U | 108-88-3 | Toluene | 6 U |
| 56-23-5 | Carbon Tetrachloride | 6 U | 108-90-7 | Chlorobenzene | 6 U |
| 108-05-4 | Vinyl Acetate | 12 U | 100-41-4 | Ethylbenzene | 6 U |
| 75-27-4 | Bromodichloromethane | 6 U | 100-42-5 | Styrene | 6 U |
| | | | | Total Xylenes | 6 U |

M. Tang 8/20/87

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### Data Reporting Qualifiers

VALUE:
If the result is a value greater than or equal to the detection limit, report the value.

U:
Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (eg.10U) based on necessary concent./dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U- Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

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 indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg. 10J). If limit of detection is 10 ug/l and a concentration of 3 ug/l is calculated, report as 3J.

B:
This flag applies to pesticide parameters where the identification was confirmed by GC/MS. Single component pesticides>10 ng/ul in the final extract should be confirmed by GC/MS

B:
This flag is used when analyte is found in blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

OTHER:
Other flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

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Laboratory Name: ENVIRODYNE
Case No: 7351

Sample Number: [illegible]-878

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: LOW
Date Extracted/Prepared: 7-22-87
Date Analyzed: 8-6-87
Conc/Dil Factor: 1
Percent Moisture (decanted): 18.4

GPC Cleanup : YES
Sep Funnel Extraction : YES NO (circle one)
Contin. Liq.-Liq. Ext. : YES NO (circle one)

| CAS No: | | ug/g | CAS No: | | ug/g |
|---|---|---|---|---|---|
| 108-95-2 | Phenol | 810 U | 83-32-9 | Acenaphthene | 810 U |
| 111-44-4 | bis-(2-Chloroethyl)ether | 810 U | 51-28-5 | 2,4-Dinitrophenol | 3900 U |
| 95-57-8 | 2-Chlorophenol | 810 U | 100-02-7 | 4-Nitrophenol | 3900 U |
| 541-73-1 | 1,3-Dichlorobenzene | 810 U | 132-64-9 | Dibenzofuran | 810 U |
| 106-46-7 | 1,4-Dichlorobenzene | 810 U | 121-14-2 | 2,4-Dinitrotoluene | 810 U |
| 100-51-6 | Benzyl Alcohol | 810 U | 606-20-2 | 2,6-Dinitrotoluene | 810 U |
| 95-50-1 | 1,2-Dichlorobenzene | 810 U | 84-66-2 | Diethyl phthalate | 810 U |
| 95-48-7 | 2-Methylphenol | 810 U | 7005-72-3 | 4-Chlorophenyl-phenyl ether | 810 U |
| 39638-32-9 | bis-(2-Chloroisopropyl)ether | 810 U | 86-73-7 | Fluorene | 810 U |
| 106-44-5 | 4-Methylphenol | 810 U | 100-01-6 | 4-Nitroaniline | 3900 U |
| 621-64-7 | N-nitroso-Di-n-propylamine | 810 U | 534-52-1 | 4,6-Dinitro-2-Methylphenol | 3900 U |
| 67-72-1 | Hexachloroethane | 810 U | 86-30-6 | N-nitrosodiphenylamine (1) | 810 U |
| 98-95-3 | Nitrobenzene | 810 U | 101-55-3 | 4-Bromophenyl-phenyl ether | 810 U |
| 78-59-1 | Isophorone | 810 U | 118-74-1 | Hexachlorobenzene | 810 U |
| 88-75-5 | 2-Nitrophenol | 810 U | 87-86-5 | Pentachlorophenol | 3900 U |
| 105-67-9 | 2,4-Dimethylphenol | 810 U | 85-01-8 | Phenanthrene | 810 U |
| 65-85-0 | Benzoic Acid | 3900 U | 120-12-7 | Anthracene | 810 U |
| 111-91-1 | bis-(Chloroethoxy)Methane | 810 U | 84-74-2 | Di-n-butyl phthalate | 240 J |
| 120-83-2 | 2,4-Dichlorophenol | 810 U | 206-44-0 | Fluoranthene | 810 U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 810 U | 129-00-0 | Pyrene | 810 U |
| 91-20-3 | Naphthalene | 810 U | 85-68-7 | Butyl-benzyl-phthalate | 810 U |
| 106-47-8 | 4-Chloroaniline | 810 U | 91-94-1 | 3,3'-Dichlorobenzidine | 1600 U |
| 87-68-3 | Hexachlorobutadiene | 810 U | 56-55-3 | Benzo(a)anthracene | 810 U |
| 59-50-7 | 4-Chloro-3-methylphenol | 810 U | 117-81-7 | bis-(2-Ethylhexyl)phthalate | 480 J |
| 91-57-6 | 2-Methylnaphthalene | 810 U | 218-01-9 | Chrysene | 810 U |
| 77-47-4 | Hexachlorocyclopentadiene | 810 U | 117-84-0 | Di-n-octyl phthalate | 810 U |
| 88-06-2 | 2,4,6-Trichlorophenol | 810 U | 205-99-2 | Benzo(b)fluoranthene | 810 U |
| 95-95-4 | 2,4,5-Trichlorophenol | 3900 U | 207-08-9 | Benzo(k)fluoranthene | 810 U |
| 91-58-7 | 2-Chloronaphthalene | 810 U | 50-32-8 | Benzo(a)pyrene | 810 U |
| 88-74-4 | 2-Nitroaniline | 3900 U | 193-39-5 | Indeno(1,2,3-cd)pyrene | 810 U |
| 131-11-3 | Dimethyl phthalate | 810 U | 53-70-3 | Dibenzo(a,h)anthracene | 810 U |
| 208-96-8 | Acenapthylene | 810 U | 191-24-2 | Benzo(ghi)perylene | 810 U |
| 99-09-2 | 3-Nitroaniline | 3900 U | | | |

(1)-Cannot be separated from diphenylamine

M. Terr. 8/20

FORM 1

25938

RECEIVED SEP 1 1987

Laboratory Name: ENVIRODYNE
Case No: 7351

Sample Number: EM-878

Organics Analysis Data Sheet
(Page 3)

Pesticides & PCB's

Concentration: LOW
Date Extracted/Prepared: 7-22-87
Date Analyzed: 8-13-87
Conc/Dil Factor: 1
Percent Moisture (decanted): 19

GPC Cleanup : YES
Sep. Funnel Extraction : YES NO (circle one)
Contin. Liq.-Liq. Ext. : YES NO (circle one)

| CAS No: | | ug/kg |
|---|---|---|
| 319-84-6 | Alpha-BHC | 20 U |
| 319-85-7 | Beta-BHC | 20 U |
| 319-86-8 | Delta-BHC | 20 U |
| 58-89-9 | Gamma-BHC (Lindane) | 20 U |
| 76-44-8 | Heptachlor | 20 U |
| 309-00-2 | Aldrin | 20 U |
| 1024-57-3 | Heptachlor Epoxide | 20 U |
| 959-98-8 | Endosulfan I | 20 U |
| 60-57-1 | Dieldrin | 40 U |
| 72-55-9 | 4,4'-DDE | 40 U |
| 72-20-8 | Endrin | 40 U |
| 33213-65-9 | Endosulfan-II | 40 U |
| 72-54-8 | 4,4'-DDD | 40 U |
| 1031-07-8 | Endosulfan Sulfate | 40 U |
| 50-29-3 | 4,4'-DDT | 40 U |
| 72-43-5 | Methoxychlor | 200 U |
| 53494-70-5 | Endrin Ketone | 40 U |
| 57-74-9 | Chlordane | 200 U |
| 8001-35-2 | Toxaphene | 400 U |
| 12674-11-2 | Aroclor-1016 | 200 U |
| 11104-28-2 | Aroclor-1221 | 200 U |
| 53469-21-9 | Aroclor-1232 | 200 U |
| 53469-21-9 | Aroclor-1242 | 200 U |
| 12672-29-6 | Aroclor-1248 | 200 U |
| 11097-69-1 | Aroclor-1254 | 400 U |
| 11096-82-5 | Aroclor-1260 | 400 U |

Vi = Volume of extract injected (ul)
Ws = Weight of sample extracted (g)
Vt = Volume of total extract (ul)

Ws = 30 g  Vt = 40,000 ul  Vi = 2.0 ul

FORM 1

Laboratory Name: ENVIRODYNE

Case No: 7351

Sample Number: EM 8

26138

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## Organics Analysis Data Sheet
(Page 4)

### Tentatively Identified Compounds

| CAS Number | Compound Name | Fraction | RT or Scan Number | Estimated Concentration (ug/l or ug/kg) |
|---|---|---|---|---|
| 1. | No peaks | VOA | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
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| 30. | | | | |

Laboratory Name: ENVIRODYNE

Case No: 7351

Sample Number: EM 87

RECEIVED SEP 1 1987

27738

## Organics Analysis Data Sheet
(Page 4)

### Tentatively Identified Compounds

| CAS Number | Compound Name | Fraction | RT or Scan Number | Estimated Concentration (ug/l or ug/kg) |
|---|---|---|---|---|
| 1. | Unknown | BNA | 3.9 | 1400 JB |
| 2. | Unknown | " | 6.4 | 1400 J |
| 3. | Unknown | " | 9.5 | 660 JB |
| 4. | a phthalate | " | 16.7 | 1400 J |
| 5. 123795 | hexanedioic acid, dioctyl ester | " | 21.5 | 1100 J |
| 6. 123284 | Propanoic acid, 3,3'-thiobis-, didodecyl ester | " | 29.9 | 5500 JB |
| 7. | | | | |
| 8. | | | | |
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| 23. | | | | |
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| 26. | | | | |
| 27. | | | | |
| 28. | | | | |
| 29. | | | | |
| 30. | | | | |

28, 38

# Organics Analysis Data Sheet
(Page 1)

Sample Number: EM 879

RECEIVED OCT 1 1987

Laboratory Name: ENVIRODYNE
Lab Sample ID No: 87003587
Sample Matrix: SOIL
Data Release Authorized By: MCW

Case No: 7351
QC Report No: 131
Contract No: 68-01-7087
Date Sample Received: 7-17-87

## Volatile Compounds

Concentration: LOW
Date Extracted/Prepared:
Date Analyzed: 7-25-87
Conc/Dil Factor: 1
Percent Moisture (not decanted): 17.0

| CAS No: | | ug/kg | CAS No: | | ug/kg |
|---|---|---|---|---|---|
| 74-87-3 | Chloromethane | 12 U | 78-87-5 | 1,2-Dichloropropane | 6 U |
| 74-83-9 | Bromomethane | 12 U | 10061-02-6 | trans-1,3-Dichloropropene | 6 U |
| 75-01-4 | Vinyl Chloride | 12 U | 79-01-6 | Trichloroethene | 6 U |
| 75-00-3 | Chloroethane | 12 U | 124-48-1 | Dibromochloromethane | 6 U |
| 75-09-2 | Methylene Chloride | 6 B (U J) | 79-00-5 | 1,1,2-Trichloroethane | 6 U |
| 67-64-1 | Acetone | 38 | 71-43-2 | Benzene | 6 U |
| 75-15-0 | Carbon Disulfide | 6 U | 10061-01-5 | cis-1,3-Dichloropropene | 6 U |
| 75-35-4 | 1,1-Dichloroethene | 6 U | 110-75-8 | 2-Chloroethylvinylether | 12 U |
| 75-34-3 | 1,1-Dichloroethane | 6 U | 75-25-2 | Bromoform | 6 U |
| 156-60-5 | trans-1,2-Dichloroethene | 6 U | 108-10-1 | 4-Methyl-2-pentanone | 12 U |
| 67-66-3 | Chloroform | 6 U | 591-78-6 | 2-Hexanone | 12 U |
| 107-06-2 | 1,2-Dichloroethane | 6 U | 127-18-4 | Tetrachloroethene | 6 U |
| 78-93-3 | 2-Butanone | 12 U | 79-34-5 | 1,1,2,2-Tetrachloroethane | 6 U |
| 71-55-6 | 1,1,1-Trichloroethane | 6 U | 108-88-3 | Toluene | 6 U |
| 56-23-5 | Carbon Tetrachloride | 6 U | 108-90-7 | Chlorobenzene | 6 U |
| 108-05-4 | Vinyl Acetate | 12 U | 100-41-4 | Ethylbenzene | 6 U |
| 75-27-4 | Bromodichloromethane | 6 U | 100-42-5 | Styrene | 6 U |
| | | | | Total Xylenes | 6 U |

M. Terry 8/20/87

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### Data Reporting Qualifiers

VALUE:
If the result is a value greater than or equal to the detection limit, report the value.

U:
Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (eg.10U) based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U- Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

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 indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg, 10J). If limit of detection is 10 ug/l and a concentration of 3 ug/l is calculated, report as 3J.

B:
This flag applies to pesticide parameters where the identification was confirmed by GC/MS. Single component pesticides>10 ng/ul in the final extract should be confirmed by GC/MS

B:
This flag is used when analyte is found in blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

OTHER:
Other flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

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RECEIVED SEP 1 1987

Laboratory Name: ENVIRODYNE
Case No: 7351

Sample Number: [illegible]79

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: LOW
Date Extracted/Prepared: 7-22-87
Date Analyzed: 8-6-87
Conc/Dil Factor: 1
Percent Moisture (decanted): 17

GPC Cleanup: YES
Sep. Funnel Extraction: YES NO (circle one)
Contin. Liq.-Liq. Ext.: YES NO (circle one)

| CAS No: | | ug/kg | CAS No: | | ug/kg |
|---|---|---|---|---|---|
| 108-95-2 | Phenol | 800 U | 83-32-9 | Acenaphthene | 800 U |
| 111-44-4 | bis-(2-Chloroethyl)ether | 800 U | 51-28-5 | 2,4-Dinitrophenol | 3900 U |
| 95-57-8 | 2-Chlorophenol | 800 U | 100-02-7 | 4-Nitrophenol | 3900 U |
| 541-73-1 | 1,3-Dichlorobenzene | 800 U | 132-64-9 | Dibenzofuran | 800 U |
| 106-46-7 | 1,4-Dichlorobenzene | 800 U | 121-14-2 | 2,4-Dinitrotoluene | 800 U |
| 100-51-6 | Benzyl Alcohol | 800 U | 606-20-2 | 2,6-Dinitrotoluene | 800 U |
| 95-50-1 | 1,2-Dichlorobenzene | 800 U | 84-66-2 | Diethyl phthalate | 800 U |
| 95-48-7 | 2-Methylphenol | 800 U | 7005-72-3 | 4-Chlorophenyl-phenyl ether | 800 U |
| 39638-32-9 | bis-(2-Chloroisopropyl)ether | 800 U | 86-73-7 | Fluorene | 800 U |
| 106-44-5 | 4-Methylphenol | 800 U | 100-01-6 | 4-Nitroaniline | 3900 U |
| 621-64-7 | N-nitroso-Di-n-propylamine | 800 U | 534-52-1 | 4,6-Dinitro-2-Methylphenol | 3900 U |
| 67-72-1 | Hexachloroethane | 800 U | 86-30-6 | N-nitrosodiphenylamine (1) | 800 U |
| 98-95-3 | Nitrobenzene | 800 U | 101-55-3 | 4-Bromophenyl-phenyl ether | 800 U |
| 78-59-1 | Isophorone | 800 U | 118-74-1 | Hexachlorobenzene | 800 U |
| 88-75-5 | 2-Nitrophenol | 800 U | 87-86-5 | Pentachlorophenol | 3900 U |
| 105-67-9 | 2,4-Dimethylphenol | 800 U | 85-01-8 | Phenanthrene | 800 U |
| 65-85-0 | Benzoic Acid | 3900 U | 120-12-7 | Anthracene | 800 U |
| 111-91-1 | bis-(Chloroethoxy)Methane | 800 U | 84-74-2 | Di-n-butyl phthalate | 450 J |
| 120-83-2 | 2,4-Dichlorophenol | 800 U | 206-44-0 | Fluoranthene | 800 U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 800 U | 129-00-0 | Pyrene | 800 U |
| 91-20-3 | Naphthalene | 800 U | 85-68-7 | Butyl-benzyl-phthalate | 800 U |
| 106-47-8 | 4-Chloroaniline | 800 U | 91-94-1 | 3,3'-Dichlorobenzidine | 1600 U |
| 87-68-3 | Hexachlorobutadiene | 800 U | 56-55-3 | Benzo(a)anthracene | 800 U |
| 59-50-7 | 4-Chloro-3-methylphenol | 800 U | 117-81-7 | bis-(2-Ethylhexyl)phthalate | 1100 J C |
| 91-57-6 | 2-Methylnaphthalene | 800 U | 218-01-9 | Chrysene | 800 U |
| 77-47-4 | Hexachlorocyclopentadiene | 800 U | 117-84-0 | Di-n-octyl phthalate | 800 U |
| 88-06-2 | 2,4,6-Trichlorophenol | 800 U | 205-99-2 | Benzo(b)fluoranthene | 800 U |
| 95-95-4 | 2,4,5-Trichlorophenol | 3900 U | 207-08-9 | Benzo(k)fluoranthene | 800 U |
| 91-58-7 | 2-Chloronaphthalene | 800 U | 50-32-8 | Benzo(a)pyrene | 800 U |
| 88-74-4 | 2-Nitroaniline | 3900 U | 193-39-5 | Indeno(1,2,3-cd)pyrene | 800 U |
| 131-11-3 | Dimethyl phthalate | 800 U | 53-70-3 | Dibenzo(a,h)anthracene | 800 U |
| 208-96-8 | Acenapthylene | 800 U | 191-24-2 | Benzo(ghi)perylene | 800 U |
| 99-09-2 | 3-Nitroaniline | 3900 U | | | |

(1)-Cannot be separated from diphenylamine

M. Terry 8/20

FORM 1

30735

RECEIVED SEP 1 1987

Laboratory Name: ENVIRODYNE
Case No: 7351

Sample Number: EM-8

Organics Analysis Data Sheet
(Page 3)

Pesticides & PCB s

Concentration: LOW
Date Extracted/Prepared: 7-22-87
Date Analyzed: 8-13-87
Conc/Dil Factor: 1
Percent Moisture (decanted): 17

GPC Cleanup : YES
Sep. Funnel Extraction : YES NO (circle one)
Contin. Liq.-Liq. Ext. : YES NO (circle one)

| CAS No: | | ug/kg |
|---|---|---|
| 319-84-6 | Alpha-BHC | 19 U |
| 319-85-7 | Beta-BHC | 19 U |
| 319-86-8 | Delta-BHC | 19 U |
| 58-89-9 | Gamma-BHC (Lindane) | 19 U |
| 76-44-8 | Heptachlor | 19 U |
| 309-00-2 | Aldrin | 19 U |
| 1024-57-3 | Heptachlor Epoxide | 19 U |
| 959-98-8 | Endosulfan I | 19 U |
| 60-57-1 | Dieldrin | 39 U |
| 72-55-9 | 4,4'-DDE | 39 U |
| 72-20-8 | Endrin | 39 U |
| 33213-65-9 | Endosulfan-II | 39 U |
| 72-54-8 | 4,4'-DDD | 39 U |
| 1031-07-8 | Endosulfan Sulfate | 39 U |
| 50-29-3 | 4,4'-DDT | 39 U |
| 72-43-5 | Methoxychlor | 190 U |
| 53494-70-5 | Endrin Ketone | 39 U |
| 57-74-9 | Chlordane | 190 U |
| 8001-35-2 | Toxaphene | 390 U |
| 12674-11-2 | Aroclor-1016 | 190 U |
| 11104-28-2 | Aroclor-1221 | 190 U |
| 53469-21-9 | Aroclor-1232 | 190 U |
| 53469-21-9 | Aroclor-1242 | 190 U |
| 12672-29-6 | Aroclor-1248 | 190 U |
| 11097-69-1 | Aroclor-1254 | 390 U |
| 11096-82-5 | Aroclor-1260 | 390 U |

Vi = Volume of extract injected (ul)
Ws = Weight of sample extracted (g)
Vt = Volume of total extract (ul)

Ws = 30 g  Vt = 40,000 ul  Vi = 2.0 ul

FORM 1

Laboratory Name ENVIRODYNE

Case No. 7351

Sample Number GM 879

31938

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## Organics Analysis Data Sheet
(Page 4)

### Tentatively Identified Compounds

| CAS Number | Compound Name | Fraction | RT or Scan Number | Estimated Concentration (ug/l or ug/kg) |
|---|---|---|---|---|
| 1. | no peaks | VOA | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
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Laboratory Name: ENVIRODYNE

Case No: 7351

Sample Number: EM 879

32738

RECEIVED SEP 1 1987

## Organics Analysis Data Sheet
(Page 4)

### Tentatively Identified Compounds

| CAS Number | Compound Name | Fraction | RT or Scan Number | Estimated Concentration (ug/l or ug/kg) |
|---|---|---|---|---|
| 1. | unknown | BNA | 3.9 | 1900 JB |
| 2. | unknown | " | 6.4 | 2500 JB |
| 3. | unknown | " | 9.5 | 740 JB |
| 4. | unknown | " | 14.9 | 410 J |
| 5. | a phthalate | " | 16.7 | 1200 J |
| 6. 123795 | hexanedioic acid, dioctyl ester | " | 21.5 | 1100 J |
| 7. 123284 | Propanoic acid, 3,3'-thiobis-, didodecyl ester | " | 29.9 | 5467 JB |
| 8. | | | | |
| 9. | | | | |
| 10. | | | | |
| 11. | | | | |
| 12. | | | | |
| 13. | | | | |
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| 30. | | | | |

33938

RECEIVED SEP 1 1987

Organics Analysis Data Sheet
(Page 1)

Sample Number: EM 86

Laboratory Name: ENVIRODYNE
Lab Sample ID No: 87003566
Sample Matrix: SOIL
Data Release Authorized By: DCW

Case No: 7351
QC Report No: 137
Contract No: 68-01-7087
Date Sample Received: 7-17-87

Volatile Compounds

Concentration: LOW
Date Extracted/Prepared:
Date Analyzed: 7-25-87
Conc/Dil Factor: 1
Percent Moisture (not decanted): 17.5

| CAS No: | | ug/kg | CAS No: | | ug/kg |
|---|---|---|---|---|---|
| 74-87-3 | Chloromethane | 12 U | 78-87-5 | 1,2-Dichloropropane | 6 U |
| 74-83-9 | Bromomethane | 12 U | 10061-02-6 | trans-1,3-Dichloropropene | 6 U |
| 75-01-4 | Vinyl Chloride | 12 U | 79-01-6 | Trichloroethene | 6 U |
| 75-00-3 | Chloroethane | 12 U | 124-48-1 | Dibromochloromethane | 6 U |
| 75-09-2 | Methylene Chloride | 6 ~~B~~ (U J) | 79-00-5 | 1,1,2-Trichloroethane | 6 U |
| 67-64-1 | Acetone | 12 U | 71-43-2 | Benzene | 6 U |
| 75-15-0 | Carbon Disulfide | 6 U | 10061-01-5 | cis-1,3-Dichloropropene | 6 U |
| 75-35-4 | 1,1-Dichloroethene | 6 U | 110-75-8 | 2-Chloroethylvinylether | 12 U |
| 75-34-3 | 1,1-Dichloroethane | 6 U | 75-25-2 | Bromoform | 6 U |
| 156-60-5 | trans-1,2-Dichloroethene | 6 U | 108-10-1 | 4-Methyl-2-pentanone | 12 U |
| 67-66-3 | Chloroform | 6 U | 591-78-6 | 2-Hexanone | 12 U |
| 107-06-2 | 1,2-Dichloroethane | 6 U | 127-18-4 | Tetrachloroethene | 6 U |
| 78-93-3 | 2-Butanone | 12 U | 79-34-5 | 1,1,2,2-Tetrachloroethane | 6 U |
| 71-55-6 | 1,1,1-Trichloroethane | 6 U | 108-88-3 | Toluene | 6 U |
| 56-23-5 | Carbon Tetrachloride | 6 U | 108-90-7 | Chlorobenzene | 6 U |
| 108-05-4 | Vinyl Acetate | 12 U | 100-41-4 | Ethylbenzene | 6 U |
| 75-27-4 | Bromodichloromethane | 6 U | 100-42-5 | Styrene | 6 U |
| | | | | Total Xylenes | 6 U |

M. Terry 8/20/87

Data Reporting Qualifiers

VALUE:
If the result is a value greater than or equal to the detection limit, report the value.

U:
Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (eg.,10U) based on necessary concent./dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

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 indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (eg, 10J). If limit of detection is 10 ug/l and a concentration of 3 ug/l is calculated, report as 3J.

B:
This flag applies to pesticide parameters where the identification was confirmed by GC/MS. Single component pesticides>=10 ng/ul in the final extract should be confirmed by GC/MS

B:
This flag is used when analyte is found in blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

OTHER:
Other flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

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RECEIVED SEP 1 1987

Laboratory Name: ENVIRODYNE
Case No: 7351

Sample Number: EM88

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: LOW
Date Extracted/Prepared: 7-22-87
Date Analyzed: 8-6-87
Conc/Dil Factor: 1
Percent Moisture (decanted): 17.5

GPC Cleanup : YES
Sep. Funnel Extraction : YES NO (circle one)
Contin. Liq.-Liq. Ext. : YES NO (circle one)

| CAS No: | | ug/kg | CAS No: | | ug/kg |
|---|---|---|---|---|---|
| 108-95-2 | Phenol | 800 U | 83-32-9 | Acenaphthene | 800 U |
| 111-44-4 | bis-(2-Chloroethyl)ether | 800 U | 51-28-5 | 2,4-Dinitrophenol | 3900 U |
| 95-57-8 | 2-Chlorophenol | 800 U | 100-02-7 | 4-Nitrophenol | 3900 U |
| 541-73-1 | 1,3-Dichlorobenzene | 800 U | 132-64-9 | Dibenzofuran | 800 U |
| 106-46-7 | 1,4-Dichlorobenzene | 800 U | 121-14-2 | 2,4-Dinitrotoluene | 800 U |
| 100-51-6 | Benzyl Alcohol | 800 U | 606-20-2 | 2,6-Dinitrotoluene | 800 U |
| 95-50-1 | 1,2-Dichlorobenzene | 800 U | 84-66-2 | Diethyl phthalate | 800 U |
| 95-48-7 | 2-Methylphenol | 800 U | 7005-72-3 | 4-Chlorophenyl-phenyl ether | 800 U |
| 39638-32-9 | bis-(2-Chloroisopropyl)ether | 800 U | 86-73-7 | Fluorene | 800 U |
| 106-44-5 | 4-Methylphenol | 800 U | 100-01-6 | 4-Nitroaniline | 3900 U |
| 621-64-7 | N-nitroso-Di-n-propylamine | 800 U | 534-52-1 | 4,6-Dinitro-2-Methylphenol | 3900 U |
| 67-72-1 | Hexachloroethane | 800 U | 86-30-6 | N-nitrosodiphenylamine (1) | 800 U |
| 98-95-3 | Nitrobenzene | 800 U | 101-55-3 | 4-Bromophenyl-phenyl ether | 800 U |
| 78-59-1 | Isophorone | 800 U | 118-74-1 | Hexachlorobenzene | 800 U |
| 88-75-5 | 2-Nitrophenol | 800 U | 87-86-5 | Pentachlorophenol | 3900 U |
| 105-67-9 | 2,4-Dimethylphenol | 800 U | 85-01-8 | Phenanthrene | 800 U |
| 65-85-0 | Benzoic Acid | 3900 U | 120-12-7 | Anthracene | 800 U |
| 111-91-1 | bis-(Chloroethoxy)Methane | 800 U | 84-74-2 | Di-n-butyl phthalate | 290 J |
| 120-83-2 | 2,4-Dichlorophenol | 800 U | 206-44-0 | Fluoranthene | 800 U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 800 U | 129-00-0 | Pyrene | 800 U |
| 91-20-3 | Naphthalene | 800 U | 85-68-7 | Butyl-benzyl-phthalate | 800 U |
| 106-47-8 | 4-Chloroaniline | 800 U | 91-94-1 | 3,3'-Dichlorobenzidine | 1600 U |
| 87-68-3 | Hexachlorobutadiene | 800 U | 56-55-3 | Benzo(a)anthracene | 800 U |
| 59-50-7 | 4-Chloro-3-methylphenol | 800 U | 117-81-7 | bis-(2-Ethylhexyl)phthalate | 410 JBCU |
| 91-57-6 | 2-Methylnaphthalene | 800 U | 218-01-9 | Chrysene | 800 U |
| 77-47-4 | Hexachlorocyclopentadiene | 800 U | 117-84-0 | Di-n-octyl phthalate | 800 U |
| 88-06-2 | 2,4,6-Trichlorophenol | 800 U | 205-99-2 | Benzo(b)fluoranthene | 800 U |
| 95-95-4 | 2,4,5-Trichlorophenol | 3900 U | 207-08-9 | Benzo(k)fluoranthene | 800 U |
| 91-58-7 | 2-Chloronaphthalene | 800 U | 50-32-8 | Benzo(a)pyrene | 800 U |
| 88-74-4 | 2-Nitroaniline | 3900 U | 193-39-5 | Indeno(1,2,3-cd)pyrene | 800 U |
| 131-11-3 | Dimethyl phthalate | 800 U | 53-70-3 | Dibenzo(a,h)anthracene | 800 U |
| 208-96-8 | Acenaphthylene | 800 U | 191-24-2 | Benzo(ghi)perylene | 800 U |
| 99-09-2 | 3-Nitroaniline | 3900 U | | | |

(1)-Cannot be separated from diphenylamine

M. Terry
8/20/87

35138

RECEIVED SEP 1 1987

Laboratory Name: ENVIRODYNE
Case No: 7351

Sample Number: EMF850

Organics Analysis Data Sheet
(Page 3)

Pesticides & PCB's

Concentration: LOW
Date Extracted/Prepared: 7-22-87
Date Analyzed: 8-13-87
Conc/Dil Factor: 1
Percent Moisture (decanted): 16

GPC Cleanup : YES
Sep. Funnel Extraction : YES NO (circle one)
Contin. Liq.-Liq. Ext. : YES NO (circle one)

| CAS No: | | ugkg |
|---|---|---|
| 319-84-6 | Alpha-BHC | 20 U |
| 319-85-7 | Beta-BHC | 20 U |
| 319-86-8 | Delta-BHC | 20 U |
| 58-89-9 | Gamma-BHC (Lindane) | 20 U |
| 76-44-8 | Heptachlor | 20 U |
| 309-00-2 | Aldrin | 20 U |
| 1024-57-3 | Heptachlor Epoxide | 20 U |
| 959-98-8 | Endosulfan I | 20 U |
| 60-57-1 | Dieldrin | 39 U |
| 72-55-9 | 4,4'-DDE | 39 U |
| 72-20-8 | Endrin | 39 U |
| 33213-65-9 | Endosulfan-II | 39 U |
| 72-54-8 | 4,4'-DDD | 39 U |
| 1031-07-8 | Endosulfan Sulfate | 39 U |
| 50-29-3 | 4,4'-DDT | 39 U |
| 72-43-5 | Methoxychlor | 200 U |
| 53494-70-5 | Endrin Ketone | 39 U |
| 57-74-9 | Chlordane | 200 U |
| 8001-35-2 | Toxaphene | 390 U |
| 12674-11-2 | Aroclor-1016 | 200 U |
| 11104-28-2 | Aroclor-1221 | 200 U |
| 53469-21-9 | Aroclor-1232 | 200 U |
| 53469-21-9 | Aroclor-1242 | 200 U |
| 12672-29-6 | Aroclor-1248 | 200 U |
| 11097-69-1 | Aroclor-1254 | 390 U |
| 11096-82-5 | Aroclor-1260 | 390 U |

Vi = Volume of extract injected (ul)
Ws = Weight of sample extracted (g)
Vt = Volume of total extract (ul)

Ws = 30 g  Vt = 40,000 ul  Vi = 2.0 ul

FORM 1

Laboratory Name: ENVIRODYNE

Case No: 7351

Sample Number: EM 880

36 7 38

RECEIVED SEP 1 1987

## Organics Analysis Data Sheet
(Page 4)

### Tentatively Identified Compounds

| CAS Number | Compound Name | Fraction | RT or Scan Number | Estimated Concentration (ug/l or ug/kg) |
|---|---|---|---|---|
| 1. | no peaks | VOA | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| 7. | | | | |
| 8. | | | | |
| 9. | | | | |
| 10. | | | | |
| 11. | | | | |
| 12. | | | | |
| 13. | | | | |
| 14. | | | | |
| 15. | | | | |
| 16. | | | | |
| 17. | | | | |
| 18. | | | | |
| 19. | | | | |
| 20. | | | | |
| 21. | | | | |
| 22. | | | | |
| 23. | | | | |
| 24. | | | | |
| 25. | | | | |
| 26. | | | | |
| 27. | | | | |
| 28. | | | | |
| 29. | | | | |
| 30. | | | | |

Laboratory Name ENVIRODYNE

Case No: 7351

Sample Number EM 880

37, 38

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## Organics Analysis Data Sheet
(Page 4)

### Tentatively Identified Compounds

| CAS Number | Compound Name | Fraction | RT or Scan Number | Estimated Concentration (ug/l or ug/kg) |
|---|---|---|---|---|
| 1. | Unknown | BNA | 3.9 | 1700 JB |
| 2. | unknown | " | 6.4 | 2100 J |
| 3. | unknown | " | 8.7 | 320 J |
| 4. | unknown | " | 8.8 | 140 J |
| 5. | unknown | " | 9.5 | 1100 JB |
| 6. | unknown | " | 14.9 | 410 J |
| 7. | a phthalate | " | 16.7 | 1900 J |
| 8. 123795 | hexanedioic acid, dioctyl ester | " | 21.5 | 1200 J |
| 9. 123284 | Propanoic acid, 3,3'-thiobis-, didodecyl ester | " | 29.8 | 5800 JB |
| 10. | | | | |
| 11. | | | | |
| 12. | | | | |
| 13. | | | | |
| 14. | | | | |
| 15. | | | | |
| 16. | | | | |
| 17. | | | | |
| 18. | | | | |
| 19. | | | | |
| 20. | | | | |
| 21. | | | | |
| 22. | | | | |
| 23. | | | | |
| 24. | | | | |
| 25. | | | | |
| 26. | | | | |
| 27. | | | | |
| 28. | | | | |
| 29. | | | | |
| 30. | | | | |

ecology and environment, inc.
111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL. 312-663-9415
International Specialists in the Environment

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Date Received for Review 7/16 Date Review Completed 7/16

To: Tom Pachowicz

From: Zena Gold-Kaufman ZGK

Subject: HOD Landfill

PAN: ILO14/EX Case # 7351

Sample Description

| Organics (VOA, ABN, Pest/PCB) | | Inorganics (Metals, Cyanide) | |
|---|---|---|---|
| # | Low Soil | # 8 | Low Soil (1→8) |
| | Low Water | | Low Water |
| | Drinking Water | | Drinking Water |
| | Other | | Other |

Project Data Status _____ Completed!!

Incomplete, awaiting: 8 low soils - organics

FIT Data Review Findings:

✓ Compounds were detected in sample(s); see enclosed Chemical Evaluation Form.

Book No. 6 Page No. 146

sampled 5/26

recycled paper

ecology and environment, inc.
CHICAGO, ILLINOIS

# CHEMICAL EVALUATION FORM

SITE NAME: HOO Lnfl PAN# IL014 DATE: 7/16/87

CASE # 7351 UNITS- mg/Kg REVIEWER: ZGK

| TOX/ PERS | COMPOUND | CRDL | 3-5xCRDL | MEL 574 (1) | MEL 575 (2) | MEL 576 (3) | MEL 577 (4) | MEL 578 (5) | MEM 285 (6) | MEM 286 (7) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Arsenic | 2 | 6-10 | 12 | 12 | 13 | 12 | 10 | 12 | 15 |
| | Chromium | 2 | 6-10 | 18 | 18 | 17 | 17 | 15 | 16 | 24 |
| | Copper | 5 | 15-25 | 21 | 21 | 19 | 21 | 20 | 20 | 25 |
| | Lead | 1 | 3-5 | 12 | 9.4 | 10 | 10 | 11 | 11 | 11 |
| | Nickel | 8 | 24-40 | 27 | 30 | | 28 | 24 | | 34 |
| | | | | | | | | | | |
| | | | | MEM 287 (a) | | | | | | |
| | Arsenic | 2 | 6-10 | 16 | | | | | | |
| | Chromium | 2 | 6-10 | 27 | | | | | | |
| | Copper | 5 | 15-25 | 27 | | | | | | |
| | Lead | 1 | 3-5 | 13 | | | | | | |
| | Nickel | 8 | 24-40 | 37 | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
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| | | | | | | | | | | |

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

RECEIVED JUL 16 1987

DATE: 7-14-87

SUBJECT: Review of Region V CLP Data
Received for Review on 6/26/87

FROM: Curtis Ross, Director (5SCRL)
Central Regional Laboratory Joy Thompson

TO: Data User: FIT

We have reviewed the data for the following case(s).

SITE NAME: HOD Landfill SMO case No. 7351

EPA Data Set No. SF4068 No. of Samples: 8 D.U./Activity Numbers Y905/C72100

CRL No. 87FP09541-87F09548

SMO Traffic No. MEL574-MEM287

CLP Laboratory: RMAL Hrs. Required for Review: 1

Following are our findings: This review covers 8 low soil samples analyzed for metals and cyanide.
Spike recoveries for Sb (27%), Se (0%) are shown above. all Se, Sb data are unuseable.
All other QC audits are acceptable.

Ada Lesin

7.14.87.

( ) 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: Duane Geuder, Quality Assurance Officer, EPA Support Services
James Petty, Chief Quality Assurance Research, EMSL, Las Vegas

EPA FORM 1320-6 (Rev. 5/87)

00001

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U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

Date 6-25-87

COVER PAGE
INORGANIC ANALYSIS DATA PACKAGE

Lab Name ROCKY MOUNTAIN ANALYTICAL
SOW No. 784

Case No. 7351
QC Report No. 56941

Sample Numbers

| EPA No. | Lab ID No. | EPA No. | Lab ID No. |
|---|---|---|---|
| MEL574D | | MEM287 | |
| MEL574 | | [MEM999] | |
| MEL574S | | | |
| MEL575 | | | |
| MEL576 | | | |
| MEL577 | | | |
| MEL578 | | | |
| MEM285 | | | |
| MEM286 | | | |

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JUN 26 1987
U.S. EPA, CENTRAL REGIONAL LAB
536 S. CLARK STREET
CHICAGO, ILLINOIS 60605

Comments: 8 LOW SOILS FOR TOTAL METALS AND CYANIDE ANALYSIS
SERIAL DILUTION OF SAMPLE MEM287 IS IDENTIFIED AS [MEM999]

ICP Interelement and background corrections applied? Yes X No ___.
If yes, corrections applied before X or after ___ generation of raw data.

Footnotes:

NR - not required by contract at this time
Form I:
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (i.e., [10]). Indicate the method used with P (for ICP/Flame AA) or F (for furnace).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., 10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
X - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is Less than 0.995
CV - Indicates Cold Vapor
AS - Indicates Automated Spectrophotometric

00002

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Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEL574

Date 6-25-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 56941

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 9710 | P | 13. | MAGNESIUM | 35100 | P |
| 2. | ANTIMONY | 13U | P R e | 14. | MANGANESE | 479 | P |
| 3. | ARSENIC | 12 | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [47] | P | 16. | NICKEL | 27 | P |
| 5. | BERYLLIUM | 0.62U | P | 17. | POTASSIUM | [2310] | P |
| 6. | CADMIUM | 3.1U | P | 18. | SELENIUM | 31U | F R e |
| 7. | CALCIUM | 76900 | P | 19. | SILVER | 2.5U | P |
| 8. | CHROMIUM | 18 | P | 20. | SODIUM | 554U | P |
| 9. | COBALT | [9] | P | 21. | THALLIUM | 6.2U | F |
| 10. | COPPER | 21 | P | 22. | TIN | 9.9U | P |
| 11. | IRON | 20000 | P | 23. | VANADIUM | [20] | P |
| 12. | LEAD | 12 | F | 24. | ZINC | 60 | P |

Cyanide 0.62U AS Percent Solids (%) 81

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: SELENIUM VALUE IS REPORTED AT AN ADDITIONAL 10X DILUTION

Lab Manager [illegible]

00003

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Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEL575

Date 6-25-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 56941

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 9700 | P | 13. | MAGNESIUM | 33600 | P |
| 2. | ANTIMONY | 12U | P R R | 14. | MANGANESE | 464 | P |
| 3. | ARSENIC | 12 | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [47] | P | 16. | NICKEL | 30 | P |
| 5. | BERYLLIUM | [0.82] | P | 17. | POTASSIUM | [2330] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 29U | F R R |
| 7. | CALCIUM | 72700 | P | 19. | SILVER | 2.4U | P |
| 8. | CHROMIUM | 18 | P | 20. | SODIUM | 528U | P |
| 9. | COBALT | [9.5] | P | 21. | THALLIUM | 5.9U | F |
| 10. | COPPER | 21 | P | 22. | TIN | 9.4U | P |
| 11. | IRON | 19800 | P | 23. | VANADIUM | [21] | P |
| 12. | LEAD | 9.4 | F | 24. | ZINC | 50 | P |

Cyanide 0.59U AS Percent Solids (%) 85

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: SELENIUM VALUE IS REPORTED AT AN ADDITIONAL 10X DILUTION

Lab Manager

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Form I

U.S. EPA Contract Laboratory Program
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703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEL576

Date 6-25-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 56941

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 8350 | P | 13. | MAGNESIUM | 40700 | P |
| 2. | ANTIMONY | 12U | P R e | 14. | MANGANESE | 449 | P |
| 3. | ARSENIC | 13 | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [40] | P | 16. | NICKEL | [23] | P |
| 5. | BERYLLIUM | [0.68] | P | 17. | POTASSIUM | [2010] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 29U | F R e |
| 7. | CALCIUM | 84700 | P | 19. | SILVER | 2.4U | P |
| 8. | CHROMIUM | 17 | P | 20. | SODIUM | 528U | P |
| 9. | COBALT | [7.7] | P | 21. | THALLIUM | 5.9U | F |
| 10. | COPPER | 19 | P | 22. | TIN | 9.4U | P |
| 11. | IRON | 17800 | P | 23. | VANADIUM | [19] | P |
| 12. | LEAD | 10 | F | 24. | ZINC | 45 | P |

Cyanide 0.59U AS Percent Solids (%) 85

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: SELENIUM VALUE IS REPORTED AT AN ADDITIONAL 10X DILUTION

Lab Manager

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEL577

RECEIVED JUL 16 1987

Date 6-25-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 56941

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 8170 | P | | 13. | MAGNESIUM | 44000 | P | |
| 2. | ANTIMONY | 13U | P | R | 14. | MANGANESE | 526 | P | |
| 3. | ARSENIC | 12 | F | | 15. | MERCURY | 0.12U | CV | |
| 4. | BARIUM | [44] | P | | 16. | NICKEL | 28 | P | |
| 5. | BERYLLIUM | [0.69] | P | | 17. | POTASSIUM | [2080] | P | |
| 6. | CADMIUM | 3U | P | | 18. | SELENIUM | 30U | F | R |
| 7. | CALCIUM | 90100 | P | | 19. | SILVER | 2.4U | P | |
| 8. | CHROMIUM | 17 | P | | 20. | SODIUM | 541U | P | |
| 9. | COBALT | [8.5] | P | | 21. | THALLIUM | 6U | F | |
| 10. | COPPER | 21 | P | | 22. | TIN | 9.6U | P | |
| 11. | IRON | 17900 | P | | 23. | VANADIUM | [20] | P | |
| 12. | LEAD | 10 | F | | 24. | ZINC | 50 | P | |

Cyanide 0.6U AS  Percent Solids (%) 83

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: SELENIUM VALUE IS REPORTED AT AN ADDITIONAL 10X DILUTION

Lab Manager

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Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEL578

Date 6-25-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 56941

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 7360 | P | 13. | MAGNESIUM | 44600 | P |
| 2. | ANTIMONY | 12U | P R R | 14. | MANGANESE | 519 | P |
| 3. | ARSENIC | 10 | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [39] | P | 16. | NICKEL | 24 | P |
| 5. | BERYLLIUM | [0.68] | P | 17. | POTASSIUM | [1750] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 29U | F R R |
| 7. | CALCIUM | 91600 | P | 19. | SILVER | 2.4U | P |
| 8. | CHROMIUM | 15 | P | 20. | SODIUM | 528U | P |
| 9. | COBALT | [7.7] | P | 21. | THALLIUM | 5.9U | F |
| 10. | COPPER | 20 | P | 22. | TIN | 9.4U | P |
| 11. | IRON | 17200 | P | 23. | VANADIUM | [17] | P |
| 12. | LEAD | 11 | F | 24. | ZINC | 52 | P |

Cyanide 0.59U AS Percent Solids (%) 85

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: SELENIUM VALUE IS REPORTED AT AN ADDITIONAL 10X DILUTION

Lab Manager [illegible]

Form I

00007

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEM285

Date 6-25-87

RECEIVED JUL 16 1987

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 56941

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 8360 | P | 13. | MAGNESIUM | 50100 | P |
| 2. | ANTIMONY | 12U | P R R | 14. | MANGANESE | 546 | P |
| 3. | ARSENIC | 12 | F≤ | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [39] | P | 16. | NICKEL | [23] | P |
| 5. | BERYLLIUM | [0.68] | P | 17. | POTASSIUM | [2240] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 29U | F R R |
| 7. | CALCIUM | 100000 | P | 19. | SILVER | 2.4U | P |
| 8. | CHROMIUM | 16 | P | 20. | SODIUM | 528U | P |
| 9. | COBALT | [6.7] | P | 21. | THALLIUM | 5.9U | F |
| 10. | COPPER | 20 | P | 22. | TIN | 9.4U | P |
| 11. | IRON | 17700 | P | 23. | VANADIUM | [19] | P |
| 12. | LEAD | 11 | F | 24. | ZINC | 46 | P |

Cyanide 0.59U AS Percent Solids (%) 85

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ARSENIC VALUE IS DETERMINED BY MSA
SELENIUM VALUE IS REPORTED AT AN ADDITIONAL 10X DILUTION

Lab Manager [illegible]

00008

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEM286

Date 6-25-87

RECEIVED JUL 16 1987

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 56941

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 12300 | P | 13. | MAGNESIUM | 43500 | P |
| 2. | ANTIMONY | 13U | P R | 14. | MANGANESE | 530 | P |
| 3. | ARSENIC | 15 | F | 15. | MERCURY | 0.13U | CV |
| 4. | BARIUM | [57] | P | 16. | NICKEL | 34 | P |
| 5. | BERYLLIUM | [1] | P | 17. | POTASSIUM | 3250 | P |
| 6. | CADMIUM | 3.1U | P | 18. | SELENIUM | 31U | F R |
| 7. | CALCIUM | 86200 | P | 19. | SILVER | 2.5U | P |
| 8. | CHROMIUM | 24 | P | 20. | SODIUM | 561U | P |
| 9. | COBALT | [12] | P | 21. | THALLIUM | 6.3U | F |
| 10. | COPPER | 25 | P | 22. | TIN | 10U | P |
| 11. | IRON | 21200 | P | 23. | VANADIUM | [25] | P |
| 12. | LEAD | 11 | F | 24. | ZINC | 53 | P |

Cyanide 0.63U AS  Percent Solids (%) 80

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: SELENIUM VALUE IS REPORTED AT AN ADDITIONAL 10X DILUTION

Lab Manager

# QC EXCEPTION SUMMARY REPORT

CASE # 7351
DATA SET # 4068
LAB Q.C.# 56941
DATE: 7.14.87

SITE HOD LF
LAB PMAL
REVIEWED BY Ada Levine

MATRIX: SS
CONC. : SM

WATER SAMPLE SPK.
WATER SAMPLE DUP.
SOIL SAMPLE SPK. MEL574
SOIL SAMPLE DUP. MEL574

| | OVERALL CASE QC | | | | | | | | | MATRIX SPECIFIC QC | | | | | | SAMPLE SPECIFIC QC | | FIELD QC | | | REGIONAL QC | | | OTHER COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Holding Time | Cal Blanks | Inst Calcon | Contin. Calcon | Prep Blk AQ | Prep Blk SOL | ICS %R | ICS % AQ | ICS % 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 | Spike Sample RPD | |
| Aluminum | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | | | | | | | | | | | 27 | | | | | | | | | | | | | |
| Arsenic | | | | | | | | | | | | | | | | | | | | | | | | |
| Barium | | | | | | | | | | | | | | | | | | | | | | | | |
| Beryllium | | | | | | | | | | | | | | | | | | | | | | | | |
| Cadmium | | | | | | | | | | | | | | | | | | | | | | | | |
| Calcium | | | | | | | | | | | | | | | | | | | | | | | | |
| Chromium | | | | | | | | | | | | | | | | | | | | | | | | |
| Cobalt | | | | | | | | | | | | | | | | | | | | | | | | |
| Copper | | | | | | | | | | | | | | | | | | | | | | | | |
| Iron | | | | | | | | | | | | | | | | | | | | | | | | |
| Lead | | | | | | | | | | | | | | | | | | | | | | | | |
| Magnesium | | | | | | | | | | | | | | | | | | | | | | | | |
| Manganese | | | | | | | | | | | | | | | | | | | | | | | | |
| Mercury | | | | | | | | | | | | | | | | | | | | | | | | |
| Nickel | | | | | | | | | | | | | | | | | | | | | | | | |
| Potassium | | | | | | | | | | | | | | | | | | | | | | | | |
| Selenium | | | | | | | | | | | 0 | | | | | | | | | | | | | |
| Silver | | | | | | | | | | | | | | | | | | | | | | | | |
| Sodium | | | | | | | | | | | | | | | | | | | | | | | | |
| Thallium | | | | | | | | | | | | | | | | | | | | | | | | |
| Tin | | | | | | | | | | | | | | | | | | | | | | | | |
| Vanadium | | | | | | | | | | | | | | | | | | | | | | | | |
| Zinc | | | | | | | | | | | | | | | | | | | | | | | | |
| Cyanide | | | | | | | | | | | | | | | | | | | | | | | | |

RECEIVED JUL 16 1987

00013 1/2

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Form III

Q.C. Report No. 56941

BLANKS

LAB NAME ROCKY MOUNTAIN ANALYTICAL CASE NO. 7351

DATE 6-25-87 UNITS ug/L

Matrix SOIL

| Preparation Compound | Initial Calibration Blank Value | Continuing Calibration Blank Value 1 | 2 | 3 | 4 | Preparation Blank 1 | 2 |
|---|---|---|---|---|---|---|---|
| Metals: | | | | | | | |
| 1. ALUMINUM | [69] | 24U | 24U | | | 24U | |
| 2. ANTIMONY | 21U | 21U | 21U | | | 21U | |
| 3. ARSENIC | 10u | 10u | 10u | 10u | 10u | 10u | |
| 4. BARIUM | 2U | 2U | 2U | | | 2U | |
| 5. BERYLLIUM | 1U | 1U | 1U | | | 1U | |
| 6. CADMIUM | 5U | 5U | 5U | | | 5U | |
| 7. CALCIUM | [139] | [141] | 69U | | | 69U | |
| 8. CHROMIUM | 4U | 4U | 4U | | | 4U | |
| 9. COBALT | 5U | 5U | 5U | | | 5U | |
| 10. COPPER | 4U | 4U | 4U | | | 4U | |
| 11. IRON | [39] | [30] | 20U | | | 20U | |
| 12. LEAD | 5u | 5u | 5u | 5u | | 5u | |
| 13. MAGNESIUM | [69] | [55] | 51U | | | 51U | |
| 14. MANGANESE | 5U | 5U | 5U | | | 5U | |
| 15. MERCURY | 0.2u | 0.2u | 0.2u | | | 0.2u | |
| 16. NICKEL | 8U | 8U | 8U | | | 8U | |
| 17. POTASSIUM | 151U | 151U | 151U | | | 151U | |
| 18. SELENIUM | 5u | 5u | 5u | 5u | 5u | 5u | |
| 19. SILVER | 4U | 4U | 4U | | | 4U | |
| 20. SODIUM | 898U | 898U | 898U | | | 898U | |
| 21. THALLIUM | 10u | 10u | 10u | 10u | | 10u | |
| 22. TIN | 16U | 16U | 16U | | | 16U | |
| 23. VANADIUM | 4U | 4U | 4U | | | 4U | |
| 24. ZINC | 3U | 3U | 3U | | | 3U | |
| Other: | | | | | | | |
| Cyanide | 10u | 10u | 10u | 10u | | 10u | |

Form III

00014 2|2

Q.C. Report No. 56941

BLANKS

RECEIVED JUL 16 1987

LAB NAME ROCKY MOUNTAIN ANALYTICAL CASE NO. 7351

DATE 6-25-87 UNITS ug/L

Matrix Soil

| Preparation Compound | Initial Calibration Blank Value | Continuing Calibration Blank Value 1 | 2 | 3 | 4 | Preparation Blank 1 | 2 |
|---|---|---|---|---|---|---|---|
| Metals: | | | | | | | |
| 1. ALUMINUM | | | | | | | |
| 2. ANTIMONY | | | | | | | |
| 3. ARSENIC | | | | | | | |
| 4. BARIUM | | | | | | | |
| 5. BERYLLIUM | | | | | | | |
| 6. CADMIUM | | | | | | | |
| 7. CALCIUM | | | | | | | |
| 8. CHROMIUM | | | | | | | |
| 9. COBALT | | | | | | | |
| 10. COPPER | | | | | | | |
| 11. IRON | | | | | | | |
| 12. LEAD | | | | | | | |
| 13. MAGNESIUM | | | | | | | |
| 14. MANGANESE | | | | | | | |
| 15. MERCURY | | | | | | | |
| 16. NICKEL | | | | | | | |
| 17. POTASSIUM | | | | | | | |
| 18. SELENIUM | | 5u | | | | | |
| 19. SILVER | | | | | | | |
| 20. SODIUM | | | | | | | |
| 21. THALLIUM | | | | | | | |
| 22. TIN | | | | | | | |
| 23. VANADIUM | | | | | | | |
| 24. ZINC | | | | | | | |
| Other: | | | | | | | |
| | | | | | | | |
| Cyanide | | | | | | | |

Form V

Q.C. Report No. 56941

00016

RECEIVED JUL 16 1987

SPIKE SAMPLE RECOVERY

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 6-25-87

CASE NO. 7351
EPA Sample No. MEL574
Lab Sample ID No. -
Units mg/kg

MATRIX SOIL

| Compound | Control Limit %R | Spiked Sample Result (SSR) | Sample Result (SR) | Spike Added (SA) | %R[1] | |
|---|---|---|---|---|---|---|
| tals: | | | | | | |
| 1. ALUMINUM | 75-125 | 7910 | 7860 | NR | | |
| 2. ANTIMONY | 75-125 | 67 | 10U | 250 | 27 | R |
| 3. ARSENIC | 75-125 | 28 | 9.5 | 20 | 92 | |
| 4. BARIUM | 75-125 | 993 | [38] | 1000 | 96 | |
| 5. BERYLLIUM | 75-125 | 26 | 0.5U | 25 | 104 | |
| 6. CADMIUM | 75-125 | 22 | 2.5U | 25 | 88 | |
| 7. CALCIUM | 75-125 | 60700 | 62300 | NR | | |
| 8. CHROMIUM | 75-125 | 117 | 14 | 100 | 103 | |
| 9. COBALT | 75-125 | 254 | [7.3] | 250 | 99 | |
| 10. COPPER | 75-125 | 141 | 17 | 125 | 99 | |
| 11. IRON | 75-125 | 17400 | 16200 | NR | | |
| 12. LEAD | 75-125 | 18 | 10 | 10 | 80 | |
| 13. MAGNESIUM | 75-125 | 27600 | 28400 | NR | | |
| 4. MANGANESE | 75-125 | 639 | 388 | 250 | 100 | |
| 5. MERCURY | 75-125 | 0.5 | 0.1U | 0.5 | 100 | |
| 16. NICKEL | 75-125 | 271 | 22 | 250 | 100 | |
| 17. POTASSIUM | 75-125 | [1850] | [1870] | NR | | |
| 18. SELENIUM | 75-125 | 25U | 25U | 5 | 0 | R |
| 19. SILVER | 75-125 | 24 | 2U | 25 | 96 | |
| 20. SODIUM | 75-125 | 449U | 449U | NR | | |
| 21. THALLIUM | 75-125 | 19 | 5U | 25 | 76 | |
| 22. TIN | 75-125 | 222 | 8U | 250 | 89 | |
| 23. VANADIUM | 75-125 | 262 | [16] | 250 | 98 | |
| 24. ZINC | 75-125 | 300 | 48 | 250 | 101 | |
| Other: | | | | | | |
| | | | | | | |
| Cyanide | 75-125 | 3.9 | 0.5U | 5 | 78 | |

[1] %R = [(SSR - SR)/SA] x 100
"R"- out of control

Comments: SELENIUM MATRIX SPIKE & SAMPLE RESULTS ARE REPORTED AT ADDITIONAL 10X DILUTIONS

Form VI

00017

Q.C. Report No. 56941

DUPLICATES

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 6-25-87

CASE NO. 7351
EPA Sample No. MEL574
Lab Sample ID No. -
Units mg/kg

Matrix SOIL

RECEIVED JUL 16 1987

| Compound | Control Limit[1] | Sample(S) | Duplicate(D) | RPD[2] |
|---|---|---|---|---|
| Metals: | | | | |
| 1. ALUMINUM | | 7860 | 7990 | 1.6 |
| 2. ANTIMONY | | 10U | 10U | NC |
| 3. ARSENIC | | 9.5 | 9.5 | 0 |
| 4. BARIUM | | [38] | [42] | NC |
| 5. BERYLLIUM | | 0.5U | [0.57] | NC |
| 6. CADMIUM | | 2.5U | 2.5U | NC |
| 7. CALCIUM | | 62300 | 61900 | 0.64 |
| 8. CHROMIUM | | 14 | 16 | 13 |
| 9. COBALT | | [7.3] | [8.3] | NC |
| 10. COPPER | | 17 | 19 | 11 |
| 11. IRON | | 16200 | 17400 | 7.1 |
| 12. LEAD | | 10 | 8 | 22 |
| 13. MAGNESIUM | | 28400 | 28100 | 1.1 |
| 14. MANGANESE | | 388 | 402 | 3.5 |
| 5. MERCURY | | 0.1U | 0.1U | NC |
| 16. NICKEL | | 22 | 24 | 8.7 |
| 17. POTASSIUM | | [1870] | [1810] | NC |
| 18. SELENIUM | | 25U | 25U | NC |
| 19. SILVER | | 2U | 2U | NC |
| 20. SODIUM | | 449U | 449U | NC |
| 21. THALLIUM | | 5U | 5U | NC |
| 22. TIN | | 8U | 8U | NC |
| 23. VANADIUM | | [16] | [17] | NC |
| 24. ZINC | | 48 | 44 | 8.7 |
| Other: | | | | |
| % Solids | | 81 | 82 | 1.2 |
| Cyanide | | 0.5U | 0.5U | NC |

X Out of Control

[1] To be added at a later date. [2] RPD = [|S-D|/((S+D)/2)] x 100

NC - Non calculable RPD due to value(s) less than CRDL

The following elements reported unflagged due to sample and/or duplicate concentration less than 5 times the CRDL and +/- CRDL:

LEAD

Form VII

Q.C. Report No. 56941 00018

INSTRUMENT DETECTION LIMITS AND
LABORATORY CONTROL SAMPLE

RECEIVED JUL 16 1987

LAB NAME ROCKY MOUNTAIN ANALYTICAL CASE NO 7351
DATE 6-25-87 UNITS ug/L

| Compound | Required Detection Limits (CRDL)-ug/l | Instrument Detection Limits (IDL)-ug/l ICP/AA | Furnace | Lab Control Sample True | Found | %R |
|---|---|---|---|---|---|---|
| Metals: | | | | | | |
| 1. ALUMINUM | 200 | 24 | | 1980 | 2060 | 104 |
| 2. ANTIMONY | 60 | 21 | | 1090 | 1070 | 98 |
| 3. ARSENIC | 10 | 35 | 1 | 49 | 45 S | 92 |
| 4. BARIUM | 200 | 2 | | 1980 | 1990 | 101 |
| 5. BERYLLIUM | 5 | 1 | | 481 | 522 | 109 |
| 6. CADMIUM | 5 | 5 | | 489 | 474 | 97 |
| 7. CALCIUM | 5000 | 69 | | 49800 | 52600 | 106 |
| 8. CHROMIUM | 10 | 4 | | 506 | 516 | 102 |
| 9. COBALT | 50 | 5 | | 474 | 509 | 107 |
| 10. COPPER | 25 | 4 | | 542 | 565 | 104 |
| 11. IRON | 100 | 20 | | 1990 | 2170 | 109 |
| 12. LEAD | 5 | 28 | 1 | 98 | 92 S | 94 |
| 13. MAGNESIUM | 5000 | 51 | | 25000 | 25500 | 102 |
| 14. MANGANESE | 15 | 5 | | 513 | 543 | 106 |
| 15. MERCURY | 0.2 | | 0.2CV | 1.0 | 0.95 | 95 |
| 16. NICKEL | 40 | 8 | | 496 | 511 | 103 |
| 17. POTASSIUM | 5000 | 151 | | 50200 | 49900 | 99 |
| 18. SELENIUM | 5 | | 2 | 98 | 88 | 90 |
| 19. SILVER | 10 | 4 | | 509 | 473 | 93 |
| 20. SODIUM | 5000 | 898 | | 50700 | 51600 | 102 |
| 21. THALLIUM | 10 | | 1 | 97 | 96 | 99 |
| 22. TIN | 40 | 16 | | 2000 | 2060 | 103 |
| 23. VANADIUM | 50 | 4 | | 511 | 535 | 105 |
| 24. ZINC | 20 | 3 | | 3100 | 2970 | 96 |
| Other: | | | | | | |
| Cyanide | 10 | | 10AS | 58 | 60 | 103 |

CV - Cold Vapor
AS - Automated Spectrophotometric

Arsenic and Lead LCS results determined by MSA

ecology and environment, inc.
111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL. 312-663-9415
International Specialists in the Environment

Date Received for Review 24 July 87 Date Review Completed 26 July 87
To: Tom Pachowicz
From: Brenda R. Jones
Subject: HOD Landfill

PAN: IL0141 Case # 7351

Sample Description

| Organics (VOA, ABN, Pest/PCB) | | Inorganics (Metals, Cyanide) | |
|---|---|---|---|
| # | Low Soil | # 8 | Low Soil (9→16) |
| | Low Water | | Low Water |
| | Drinking Water | | Drinking Water |
| | Other | | Other |

Project Data Status _____ Completed!!

✓✓ Incomplete, awaiting: _____

FIT Data Review Findings:

✓✓ Compounds were detected in sample(s); see enclosed Chemical Evaluation Form.

Book No. 60 Page No. 153

recycled paper

ecology and environment, inc.
CHICAGO, ILLINOIS

# CHEMICAL EVALUATION FORM

SITE NAME: HOD Ld. PAN# IL 0141 DATE: 24 July 87

CASE # 7351 UNITS- mg/kg REVIEWER: BRT

| TOX/ PERS | COMPOUND | CRDL | 3-5x CRDL | MEH 255 | ME 546 | MEN 524 | 525 | 526 | 527 | 528 | 529 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Arsenic | | | 9.2 | 20 | | 6.7 | 7.6 | | | |
| | Chromium | | | 13 | 7.3 | 9.4 | 9.6 | 11 | 7.5 | | |
| | Copper | | | 16 | | | | 16 | | | |
| | Lead | | | 7.5 | 6.2 | 4.7 | 5.2 | 6.4 | 5.5 | 4.6 | |
| | Nickel | | | 23 | | | | | | | |

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

RECEIVED JUL 24 1987

DATE:

SUBJECT: Review of Region V CLP Data Received for Review on 7/6/87

FROM: Curtis Ross, Director (5SCRL)
Central Regional Laboratory

TO: Data User: FIT

We have reviewed the data for the following case(s).

SITE NAME: HOD Landfill SMO case No. 7351

EPA Data Set No. SF 4069 No. of Samples: 8 D.U./Activity Numbers Y905/C72100

CRL No. 87FP09578- 87FP09585

SMO Traffic No. MEM288- MEN529

CLP Laboratory: RMAL Hrs. Required for Review: 12

Following are our findings:

Cyanide results are biased low. All samples reported as below detection limit. Spike was only 46%. The detection limit should be twice the reported level.

Antimony results are biased low. The spike recovery was 33%. All samples were reported as below detection limit. the detection limit should be raised to three times the reported level.

Marilyn Shannon 7/22/87

( ) 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: Duane Geuder, Quality Assurance Officer, EPA Support Services
James Petty, Chief Quality Assurance Research, EMSL, Las Vegas

EPA FORM 1320-6 (Rev. 5/87)

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

RECEIVED JUL 2 4 1987

Date 7-01-87

# COVER PAGE
# INORGANIC ANALYSIS DATA PACKAGE

Lab Name ROCKY MOUNTAIN ANALYTICAL
SOW No. 784

Case No. 7351
QC Report No. 56982

## Sample Numbers

| EPA No. | Lab ID No. | EPA No. | Lab ID No. |
|---|---|---|---|
| MEM288D | | MEN529 | |
| MEM288 | | [MEN999] | / |
| MEM288S | | | |
| ME3646 | | | |
| MEN524 | | | |
| MEN525 | | | |
| MEN526 | | | |
| MEN527 | | | |
| MEN528 | | | |

RECEIVED
JUL 06 1987
U.S. EPA, CENTRAL REGIONAL LAB.
536 S. CLARK STREET
CHICAGO, ILLINOIS 60605

Comments: 8 LOW SOILS FOR TOTAL METALS AND CYANIDE ANALYSIS
SERIAL DILUTION OF SAMPLE MEN529 IS IDENTIFIED AS [MEN999]

ICP Interelement and background corrections applied? Yes X No ___.
If yes, corrections applied before X or after ___ generation of raw data.

Footnotes:

NR - not required by contract at this time
Form I:
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (i.e., [10]). Indicate the method used with P (for ICP/Flame AA) or F (for furnace).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., 10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
X - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is Less than 0.995
CV - Indicates Cold Vapor
AS - Indicates Automated Spectrophotometric

00002

Form I

RECEIVED JUL 24 1987

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEM288

Date 7-01-87

# INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 56982

## Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 6200 | P | 13. | MAGNESIUM | 40500 | P |
| 2. | ANTIMONY | 12U | P R | 14. | MANGANESE | 377 | P |
| 3. | ARSENIC | 9.2 | F | 15. | MERCURY | 0.11U | CV |
| 4. | BARIUM | [37] | P | 16. | NICKEL | 23 | P |
| 5. | BERYLLIUM | [0.75] | P | 17. | POTASSIUM | [1480] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 2.9U | F |
| 7. | CALCIUM | 83900 | P | 19. | SILVER | 2.3U | P |
| 8. | CHROMIUM | 13 | P | 20. | SODIUM | 516U | P |
| 9. | COBALT | [8] | P | 21. | THALLIUM | 5.7U | F |
| 10. | COPPER | 16 | P | 22. | TIN | 9.2U | P |
| 11. | IRON | 13000 | P | 23. | VANADIUM | [15] | P |
| 12. | LEAD | 7.5 | F | 24. | ZINC | 45 | P |

Cyanide 0.57U AS R Percent Solids (%) 87

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager

RECEIVED JUL 2 4 1987 00003

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
ME3646

Date 7-01-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 56982

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 2790 | P | 13. | MAGNESIUM | 62100 | P |
| 2. | ANTIMONY | 13U | P R | 14. | MANGANESE | 391 | P |
| 3. | ARSENIC | 20 | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [21] | P | 16. | NICKEL | [14] | P |
| 5. | BERYLLIUM | 0.62U | P | 17. | POTASSIUM | [879] | P |
| 6. | CADMIUM | 3.1U | P | 18. | SELENIUM | 3.1U | F |
| 7. | CALCIUM | 123000 | P | 19. | SILVER | 2.5U | P |
| 8. | CHROMIUM | 7.3 | P | 20. | SODIUM | 554U | P |
| 9. | COBALT | [3.2] | P | 21. | THALLIUM | 6.2U | F |
| 10. | COPPER | [11] | P | 22. | TIN | 9.9U | P |
| 11. | IRON | 8230 | P | 23. | VANADIUM | [10] | P |
| 12. | LEAD | 6.2 | F | 24. | ZINC | 30 | P |

Cyanide 0.62U AS R Percent Solids (%) 81

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager KHO

RECEIVED JUL 2 4 1987 00004

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN524

Date 7-01-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 56982

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 3260 | P | 13. | MAGNESIUM | 49900 | P |
| 2. | ANTIMONY | 12U | P R | 14. | MANGANESE | 343 | P |
| 3. | ARSENIC | 5.6U | F | 15. | MERCURY | 0.11U | CV |
| 4. | BARIUM | [22] | P | 16. | NICKEL | [16] | P |
| 5. | BERYLLIUM | 0.56U | P | 17. | POTASSIUM | [979] | P |
| 6. | CADMIUM | 2.8U | P | 18. | SELENIUM | 2.8U | F |
| 7. | CALCIUM | 102000 | P | 19. | SILVER | 2.2U | P |
| 8. | CHROMIUM | 9.4 | P | 20. | SODIUM | 505U | P |
| 9. | COBALT | [4.5] | P | 21. | THALLIUM | 5.6U | F |
| 10. | COPPER | [12] | P | 22. | TIN | 9U | P |
| 11. | IRON | 8780 | P | 23. | VANADIUM | [11] | P |
| 12. | LEAD | 4.7 | F | 24. | ZINC | 39 | P |

Cyanide 0.56U AS R Percent Solids (%) 89

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager

RECEIVED JUL 2 4 1987

00005

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN525

Date 7-01-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 56982

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 4170 | P | 13. | MAGNESIUM | 50500 | P |
| 2. | ANTIMONY | 12U | P R | 14. | MANGANESE | 375 | P |
| 3. | ARSENIC | 6.7 | F | 15. | MERCURY | 0.11U | CV |
| 4. | BARIUM | [27] | P | 16. | NICKEL | [18] | P |
| 5. | BERYLLIUM | 0.56U | P | 17. | POTASSIUM | [1090] | P |
| 6. | CADMIUM | 2.8U | P | 18. | SELENIUM | 2.8U | F |
| 7. | CALCIUM | 103000 | P | 19. | SILVER | 2.2U | P |
| 8. | CHROMIUM | 9.6 | P | 20. | SODIUM | 505U | P |
| 9. | COBALT | [3.8] | P | 21. | THALLIUM | 5.6U | F |
| 10. | COPPER | [14] | P | 22. | TIN | 9U | P |
| 11. | IRON | 9890 | P | 23. | VANADIUM | [13] | P |
| 12. | LEAD | 5.2 | F | 24. | ZINC | 34 | P |

Cyanide 0.56U AS R Percent Solids (%) 89

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager

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00006

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN526

Date 7-01-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. ———

CASE NO. 7351
QC REPORT NO. 56982

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 5710 | P | 13. | MAGNESIUM | 52200 | P |
| 2. | ANTIMONY | 12U | P R | 14. | MANGANESE | 568 | P |
| 3. | ARSENIC | 7.6 | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [37] | P | 16. | NICKEL | [21] | P |
| 5. | BERYLLIUM | 0.58U | P | 17. | POTASSIUM | [1410] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 2.9U | F |
| 7. | CALCIUM | 105000 | P | 19. | SILVER | 2.3U | P |
| 8. | CHROMIUM | 11 | P | 20. | SODIUM | 522U | P |
| 9. | COBALT | [7.3] | P | 21. | THALLIUM | 5.8U | F |
| 10. | COPPER | 16 | P | 22. | TIN | 9.3U | P |
| 11. | IRON | 13300 | P | 23. | VANADIUM | [15] | P |
| 12. | LEAD | 6.4 | F | 24. | ZINC | 37 | P |

Cyanide 0.58U AS R Percent Solids (%) 86

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager

RECEIVED JUL 2 4 1987

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN527

Date 7-01-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 56982

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 3440 | P | 13. | MAGNESIUM | 54100 | P |
| 2. | ANTIMONY | 12U | P R | 14. | MANGANESE | 406 | P |
| 3. | ARSENIC | [6] | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [19] | P | 16. | NICKEL | [18] | P |
| 5. | BERYLLIUM | 0.6U | P | 17. | POTASSIUM | [868] | P |
| 6. | CADMIUM | 3U | P | 18. | SELENIUM | 3U | F |
| 7. | CALCIUM | 117000 | P | 19. | SILVER | 2.4U | P |
| 8. | CHROMIUM | 7.5 | P | 20. | SODIUM | 535U | P |
| 9. | COBALT | [5.3] | P | 21. | THALLIUM | 6U | F |
| 10. | COPPER | [13] | P | 22. | TIN | 9.5U | P |
| 11. | IRON | 10300 | P | 23. | VANADIUM | [11] | P |
| 12. | LEAD | 5.5 | F S | 24. | ZINC | 46 | P |

Cyanide 0.6U AS R Percent Solids (%) 84

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Lead value is determined by MSA

Lab Manager [illegible]

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00006

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN528

Date 7-01-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 56982

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 1390 | P | 13. | MAGNESIUM | 67300 | P |
| 2. | ANTIMONY | 12U | P R | 14. | MANGANESE | 361 | P |
| 3. | ARSENIC | 6U | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [8] | P | 16. | NICKEL | [8.4] | P |
| 5. | BERYLLIUM | 0.6U | P | 17. | POTASSIUM | [377] | P |
| 6. | CADMIUM | 3U | P | 18. | SELENIUM | 3U | F |
| 7. | CALCIUM | 133000 | P | 19. | SILVER | 2.4U | P |
| 8. | CHROMIUM | [4.2] | P | 20. | SODIUM | 535U | P |
| 9. | COBALT | 3U | P | 21. | THALLIUM | 6U | F |
| 10. | COPPER | [8.8] | P | 22. | TIN | 9.5U | P |
| 11. | IRON | 5910 | P | 23. | VANADIUM | [6.8] | P |
| 12. | LEAD | 4.6 | FS | 24. | ZINC | 31 | P |

Cyanide 0.6U AS R Percent Solids (%) 84

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Lead Value is determined by MSA

Lab Manager [illegible]

RECEIVED JUL 2 4 1987 0000.)

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN529

Date 7-01-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 56982

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 765 | P | 13. | MAGNESIUM | 48900 | P |
| 2. | ANTIMONY | 12U | P R | 14. | MANGANESE | 168 | P |
| 3. | ARSENIC | 5.9U | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [4.4] | P | 16. | NICKEL | [5.5] | P |
| 5. | BERYLLIUM | 0.59U | P | 17. | POTASSIUM | [322] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 2.9U | F |
| 7. | CALCIUM | 97100 | P | 19. | SILVER | 2.4U | P |
| 8. | CHROMIUM | 2.4U | P | 20. | SODIUM | 528U | P |
| 9. | COBALT | 2.9U | P | 21. | THALLIUM | 5.9U | F |
| 10. | COPPER | [6.5] | P | 22. | TIN | 9.4U | P |
| 11. | IRON | 3540 | P | 23. | VANADIUM | [4.9] | P |
| 12. | LEAD | 2.9U | F | 24. | ZINC | 24 | P |

Cyanide 0.59U AS R Percent Solids (%) 85

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager

Form III

RECEIVED JUL 2 4 1987

1|2

Q.C. Report No. 56982

00013

BLANKS

LAB NAME ROCKY MOUNTAIN ANALYTICAL CASE NO. 7351

DATE 7-01-87 UNITS ug/L

Matrix SOIL

| Preparation Compound | Initial Calibration Blank Value | Continuing Calibration Blank Value 1 | 2 | 3 | 4 | Preparation Blank 1 | 2 |
|---|---|---|---|---|---|---|---|
| Metals: | | | | | | | |
| 1. ALUMINUM | | 24U | | | | | |
| 2. ANTIMONY | | 21U | | | | | |
| 3. ARSENIC | | | | | | | |
| 4. BARIUM | | [2.4] | | | | | |
| 5. BERYLLIUM | | [1.3] | | | | | |
| 6. CADMIUM | | 5U | | | | | |
| 7. CALCIUM | | [117] | | | | | |
| 8. CHROMIUM | | 4U | | | | | |
| 9. COBALT | | 5U | | | | | |
| 10. COPPER | | 4U | | | | | |
| 11. IRON | | 20U | | | | | |
| 12. LEAD | | | | | | | |
| 13. MAGNESIUM | | 51U | | | | | |
| 14. MANGANESE | | 5U | | | | | |
| 15. MERCURY | | | | | | | |
| 16. NICKEL | | 8U | | | | | |
| 17. POTASSIUM | | 151U | | | | | |
| 18. SELENIUM | | | | | | | |
| 19. SILVER | | 4U | | | | | |
| 20. SODIUM | | 898U | | | | | |
| 21. THALLIUM | | | | | | | |
| 22. TIN | | 16U | | | | | |
| 23. VANADIUM | | 4U | | | | | |
| 24. ZINC | | [5.2] | | | | | |
| Other: | | | | | | | |
| | | | | | | | |
| Cyanide | | | | | | | |

Form III RECEIVED JUL 2 4 1987 2|2

00014

Q.C. Report No. 56982

BLANKS

LAB NAME ROCKY MOUNTAIN ANALYTICAL CASE NO. 7351

DATE 7-01-87 UNITS ug/L

Matrix SOIL

| Preparation Compound | Initial Calibration Blank Value | Continuing Calibration Blank Value 1 | 2 | 3 | 4 | Preparation Blank 1 | 2 |
|---|---|---|---|---|---|---|---|
| Metals: | | | | | | | |
| 1. ALUMINUM | [71] | 24U | 24U | | | 24U | |
| 2. ANTIMONY | 21U | 21U | 21U | | | 21U | |
| 3. ARSENIC | 10U | 10U | 10U | 10U | | 10U | |
| 4. BARIUM | 2U | 2U | 2U | | | 2U | |
| 5. BERYLLIUM | 1U | 1U | 1U | | | 1U | |
| 6. CADMIUM | 5U | 5U | 5U | | | 5U | |
| 7. CALCIUM | [96] | [236] | 69U | | | 69U | |
| 8. CHROMIUM | 4U | 4U | 4U | | | 4U | |
| 9. COBALT | 5U | 5U | 5U | | | 5U | |
| 10. COPPER | 4U | 4U | 4U | | | 4U | |
| 11. IRON | [42] | 20U | 20U | | | 20U | |
| 12. LEAD | 5U | 5U | 5U | 5U | | 5U | |
| 13. MAGNESIUM | [75] | [126] | 51U | | | [63] | |
| 14. MANGANESE | 5U | 5U | 5U | | | 5U | |
| 15. MERCURY | 0.2U | 0.2U | 0.2U | | | 0.2U | |
| 16. NICKEL | 8U | 8U | 8U | | | 8U | |
| 17. POTASSIUM | 151U | 151U | 151U | | | 151U | |
| 18. SELENIUM | 5U | 5U | 5U | 5U | | 5U | |
| 19. SILVER | 4U | 4U | 4U | | | 4U | |
| 20. SODIUM | 898U | 898U | 898U | | | 898U | |
| 21. THALLIUM | 10U | 10U | 10U | 10U | | 10U | |
| 22. TIN | 16U | 16U | 16U | | | 16U | |
| 23. VANADIUM | 4U | 4U | 4U | | | 4U | |
| 24. ZINC | 3U | 3U | [3.4] | | | [3.7] | |
| Other: | | | | | | | |
| | | | | | | | |
| Cyanide | 10U | 10U | 10U | 10U | | 10U | |

RECEIVED JUL 2 4 1987 00016

Form V

Q.C. Report No. 56982

SPIKE SAMPLE RECOVERY

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 7-01-87

CASE NO. 7351
EPA Sample No. MEM288
Lab Sample ID No. -
Units mg/kg

MATRIX SOIL

| Compound | Control Limit %R | Spiked Sample Result (SSR) | Sample Result (SR) | Spike Added (SA) | %R[1] | |
|---|---|---|---|---|---|---|
| Metals: | | | | | | |
| 1. ALUMINUM | 75-125 | 6140 | 5400 | NR | | |
| 2. ANTIMONY | 75-125 | 83 | 10U | 250 | 33 | R |
| 3. ARSENIC | 75-125 | 28 | 8 | 20 | 100 | |
| 4. BARIUM | 75-125 | 945 | [32] | 1000 | 91 | |
| 5. BERYLLIUM | 75-125 | 23 | [0.65] | 25 | 89 | |
| 6. CADMIUM | 75-125 | 24 | 2.5U | 25 | 96 | |
| 7. CALCIUM | 75-125 | 67100 | 73000 | NR | | |
| 8. CHROMIUM | 75-125 | 108 | 12 | 100 | 96 | |
| 9. COBALT | 75-125 | 238 | [6.9] | 250 | 92 | |
| 10. COPPER | 75-125 | 129 | 14 | 125 | 92 | |
| 11. IRON | 75-125 | 12000 | 11300 | NR | | |
| 12. LEAD | 75-125 | 16 | 6.5 | 10 | 95 | |
| 13. MAGNESIUM | 75-125 | 32200 | 35200 | NR | | |
| 14. MANGANESE | 75-125 | 562 | 328 | 250 | 94 | |
| 15. MERCURY | 75-125 | 0.47 | 0.1U | 0.5 | 94 | |
| 16. NICKEL | 75-125 | 255 | 20 | 250 | 94 | |
| 17. POTASSIUM | 75-125 | [1550] | [1290] | NR | | |
| 18. SELENIUM | 75-125 | 5.2 S | 2.5U | 5 | 104 | |
| 19. SILVER | 75-125 | 23 | 2U | 25 | 92 | |
| 20. SODIUM | 75-125 | 449U | 449U | NR | | |
| 21. THALLIUM | 75-125 | 21 | 5U | 25 | 84 | |
| 22. TIN | 75-125 | 243 | 8U | 250 | 97 | |
| 23. VANADIUM | 75-125 | 252 | [13] | 250 | 96 | |
| 24. ZINC | 75-125 | 284 | 39 | 250 | 98 | |
| Other: | | | | | | |
| | | | | | | |
| Cyanide | 75-125 | 2.3 | 0.5U | 5 | 46 | R |

[1] %R = [(SSR - SR)/SA] x 100
"R"- out of control

Comments: Selenium matrix spike. Result is determined by MSA

Form VI

RECEIVED JUL 2 4 1987

Q.C. Report No. 56982

DUPLICATES

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 7-01-87

CASE NO. 7351
EPA Sample No. MEM288
Lab Sample ID No. -
Units mg/kg

Matrix SOIL

| Compound | Control Limit[1] | Sample(S) | Duplicate(D) | RPD[2] |
|---|---|---|---|---|
| Metals: | | | | |
| 1. ALUMINUM | | 5400 | 6420 | 17 |
| 2. ANTIMONY | | 10U | 10U | NC |
| 3. ARSENIC | | 8 | 9.5 | 17 |
| 4. BARIUM | | [32] | [36] | NC |
| 5. BERYLLIUM | | [0.65] | 0.5U | NC |
| 6. CADMIUM | | 2.5U | 2.5U | NC |
| 7. CALCIUM | | 73000 | 65700 | 11 |
| 8. CHROMIUM | | 12 | 14 | 15 |
| 9. COBALT | | [6.9] | [7.8] | NC |
| 10. COPPER | | 14 | 16 | 13 |
| 11. IRON | | 11300 | 12900 | 13 |
| 12. LEAD | | 6.5 | 7.5 | 14 |
| 13. MAGNESIUM | | 35200 | 31500 | 11 |
| 14. MANGANESE | | 328 | 337 | 2.7 |
| 15. MERCURY | | 0.1U | 0.1U | NC |
| 16. NICKEL | | 20 | 24 | NC |
| 17. POTASSIUM | | [1290] | [1480] | NC |
| 18. SELENIUM | | 2.5U | 2.5U | NC |
| 19. SILVER | | 2U | 2U | NC |
| 20. SODIUM | | 449U | 449U | NC |
| 21. THALLIUM | | 5U | 5U | NC |
| 22. TIN | | 8U | 8U | NC |
| 23. VANADIUM | | [13] | [14] | NC |
| 24. ZINC | | 39 | 38 | 2.6 |
| Other: | | | | |
| % Solids | | 87 | 84 | 3.5 |
| Cyanide | | 0.5U | 0.5U | NC |

X Out of Control

[1] To be added at a later date.

[2] RPD = [|S-D|/((S+D)/2)] x 100

NC - Non calculable RPD due to value(s) less than CRDL

RECEIVED JUL 2 4 1987 00018

Form VII

Q.C. Report No. 56982
INSTRUMENT DETECTION LIMITS AND
LABORATORY CONTROL SAMPLE

LAB NAME ROCKY MOUNTAIN ANALYTICAL
DATE 7-01-87

CASE NO 7351
UNITS ug/L

| Compound | Required Detection Limits (CRDL)-ug/l | Instrument Detection Limits (IDL)-ug/l ICP/AA | Furnace | Lab Control Sample True | Found | %R |
|---|---|---|---|---|---|---|
| Metals: | | | | | | |
| 1. ALUMINUM | 200 | 24 | | 1980 | 2030 | 102 |
| 2. ANTIMONY | 60 | 21 | | 1090 | 1060 | 97 |
| 3. ARSENIC | 10 | 35 | 1 | 49 | 42 | 86 |
| 4. BARIUM | 200 | 2 | | 1980 | 1970 | 100 |
| 5. BERYLLIUM | 5 | 1 | | 481 | 496 | 103 |
| 6. CADMIUM | 5 | 5 | | 489 | 482 | 99 |
| 7. CALCIUM | 5000 | 69 | | 49800 | 53400 | 107 |
| 8. CHROMIUM | 10 | 4 | | 506 | 509 | 101 |
| 9. COBALT | 50 | 5 | | 474 | 504 | 106 |
| 10. COPPER | 25 | 4 | | 542 | 556 | 103 |
| 11. IRON | 100 | 20 | | 1990 | 2110 | 106 |
| 12. LEAD | 5 | 28 | 1 | 98 | 88 | 90 |
| 13. MAGNESIUM | 5000 | 51 | | 25000 | 25800 | 103 |
| 14. MANGANESE | 15 | 5 | | 513 | 539 | 105 |
| . MERCURY | 0.2 | | 0.2CV | 1.0 | 0.92 | 92 |
| 16. NICKEL | 40 | 8 | | 496 | 499 | 101 |
| 17. POTASSIUM | 5000 | 151 | | 50200 | 50900 | 101 |
| 18. SELENIUM | 5 | | 2 | 98 | 94 | 96 |
| 19. SILVER | 10 | 4 | | 509 | 472 | 93 |
| 20. SODIUM | 5000 | 898 | | 50700 | 51800 | 102 |
| 21. THALLIUM | 10 | | 1 | 97 | 98 | 101 |
| 22. TIN | 40 | 16 | | 2000 | 2120 | 106 |
| 23. VANADIUM | 50 | 4 | | 511 | 530 | 104 |
| 24. ZINC | 20 | 3 | | 3100 | 3000 | 97 |
| Other: | | | | | | |
| | | | | | | |
| Cyanide | 10 | | 10AS | 58 | 69 | 119 |

CV - Cold Vapor
AS - Automated Spectrophotometric

ecology and environment, inc.
111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL. 312-663-9415
International Specialists in the Environment

RECEIVED AUG 03 1987

Date Received for Review 8/3 Date Review Completed 8/4

To: ~~Jeff~~ Pachowicz

From: Zena Gold-Kaufman ZGK

Subject: HOD

PAN: IL0141 Case # 7361

Sample Description

| Organics (VOA, ABN, Pest/PCB) | | Inorganics (Metals, Cyanide) | |
|---|---|---|---|
| # | Low Soil | # 11 | Low Soil (17 - 27) |
| | Low Water | | Low Water |
| | Drinking Water | | Drinking Water |
| | Other | | Other |

Project Data Status _____ Completed!!

_____ Incomplete, awaiting: _____

FIT Data Review Findings:

Samples seem to be consistent with respect to amounts detected.

Check IOADS forms in case of transcription errors

✓ Compounds were detected in sample(s); see enclosed Chemical Evaluation Form.

Book No. 6 Page No. 164 sampled 6/11

ecology and environment, inc.
CHICAGO, ILLINOIS

# CHEMICAL EVALUATION FORM

SITE NAME: HOD Landfill PAN# IL0141 DATE: 8/3

CASE # 7351 UNITS- mg/kg REVIEWER: ZGK

| TOX/ PERS | COMPOUND | CRDL | 3-5xCRDL | MEN 530 (17) | MEN 531 (18) | MEN 532 (19) | MEN 533 (20) | MEN 534 (21) | MEN 535 (22) | MEN 536 (23) |
|---|---|---|---|---|---|---|---|---|---|---|
| | ALUMINUM | | | | | | | | | |
| | ANTIMONY | | | | | | | | | |
| | ARSENIC | 2 | | | | 6.9 | [57] | | | |
| | BARIUM | | | | | | | | | |
| | BERYLLIUM | 1 | | | | | [0.68] | [0.72] | [0.82] | [0.67] |
| | CADMIUM | | | | | | | | | |
| | CHROMIUM | 2 | | 7.1 | [4.4] | 11 | 10 | 11 | 11 | 12 |
| | COBALT | 10 | | [3.4] | [4.8] | [7.5] | [6.2] | [7.6] | [6.3] | [5.8] |
| | COPPER | 5 | | 17 | 18 | 21 | 19 | 22 | 18 | 19 |
| | LEAD | 1 | | 8 | 5.9 | 7.6 | 9.3 | 7.9 | 8 | 7.5 |
| | MERCURY | | | | | | | | | |
| | NICKEL | 8 | | [15] | [13] | [20] | [21] | 24 | [20] | [21] |
| | SELENIUM | | | | | | | | | |
| | SILVER | | | | | | | | | |
| | THALLIUM | | | | | | | | | |
| | TIN | | | | | | | 46 | | |
| | VANADIUM | 8 | | [12] | [11] | [16] | [15] | [16] | [16] | [17] |
| | ZINC | | | | | | | | | |
| | CYANIDE | | | | | | | | | |

(2)

ecology and environment, inc.
CHICAGO, ILLINOIS

# CHEMICAL EVALUATION FORM

SITE NAME: HOD PAN# IL0141 DATE: 8/3

CASE # 7351 UNITS: mg/kg REVIEWER: ZGK

| TOX/ PERS | COMPOUND | CRDL | 3-5xCRDL | MEN 537 (24) | MEN 538 (25) | MEN 539 (26) | MEN 540 (27) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ALUMINUM | | | | | | | | | |
| | ANTIMONY | | | | | | | | | |
| | ARSENIC | | | | | | | | | |
| | BARIUM | | | | | | | | | |
| | BERYLLIUM | 1 | | [1.1] | [0.81] | | [0.83] | | | |
| | CADMIUM | | | | | | | | | |
| | CHROMIUM | 2 | | 10 | 10 | 9.8 | 14 | | | |
| | COBALT | 10 | | [7.4] | [6.1] | [6] | [9.1] | | | |
| | COPPER | 5 | | 22 | 19 | 21 | 20 | | | |
| | LEAD | 1 | | 8.1 | 8.5 | 8.6 | 9.9 | | | |
| | MERCURY | | | | | | | | | |
| | NICKEL | 8 | | [18] | [21] | [18] | 25 | | | |
| | SELENIUM | | | | | | | | | |
| | SILVER | | | | | | | | | |
| | THALLIUM | | | | | | | | | |
| | TIN | | | | | | | | | |
| | VANADIUM | 8 | | [16] | [15] | [15] | [18] | | | |
| | ZINC | | | | | | | | | |
| | CYANIDE | | | | | | | | | |

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE:

SUBJECT: Review of Region V CLP Data Received for Review on 7-22-87

FROM: Curtis Ross, Director (5SCRL) Central Regional Laboratory

TO: Data User: FIT

RECEIVED AUG 0 3 1987

We have reviewed the data for the following case(s).

SITE NAME: HOD LANDFILL SMO case No. 7351

EPA Data Set No. SF 4123 No. of Samples: 11 D.U./Activity Numbers Y905/C72100

CRL No. 87FP10S47

SMO Traffic No. MEN 530-540

CLP Laboratory: RMAL Hrs. Required for Review: 2

Following are our findings:

This review covers analysis of eleven low soils for total metals and CN. Spike recovery for Sb (66%) is below limits, and sample shows no detection. All Sb data is flagged as estimated (UJ), and spike detection limits are biased low. Mn spike (72%) is also below limits, but a positive high concentration was found in the sample. The data for Mn is flagged as estimated (J). Graphite furnace reports for Pb and Se were cut off in zeroing, that eliminated showing raw data for MEN 540 and the LCS. No other problems were observed.

7-30-87 DM

( ) 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: Duane Geuder, Quality Assurance Officer, EPA Support Services
James Petty, Chief Quality Assurance Research, EMSL, Las Vegas

EPA FORM 1320-6 (Rev. 5/87)

# QC EXCEPTION SUMMARY REPORT

CASE # 7351
DATA SET # SE4123
LAB Q.C. # 57001
DATE: July 30, 1987

SITE HOD Landfill
LAB R.M.A. Lab
REVIEWED BY Dorothy M. May

MATRIX: soil
CONC. : low

WATER SAMPLE SPK.
WATER SAMPLE DUP.
SOIL SAMPLE SPK. MEN 530
SOIL SAMPLE DUP. MEN 530

| | OVERALL CASE QC | | | | | | | | | MATRIX SPECIFIC QC | | | | | | SAMPLE SPECIFIC QC | | FIELD QC | | | REGIONAL QC | | | OTHER/ COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Holding Time | Cal Blanks | Mid Calibr | Contin Calibr | 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 | |
| luminum | | | | | | | | | | | | | | | | | | | | | | | | |
| ntimony | | | | | | | | | | | 66% | | | | | | | | | | | | | |
| rsenic | | | | | | | | | | | | | | | | | | | | | | | | |
| arium | | | | | | | | | | | | | | | | | | | | | | | | |
| eryllium | | | | | | | | | | | | | | | | | | | | | | | | |
| admium | | | | | | | | | | | | | | | | | | | | | | | | |
| alcium | | | | | | | | | | | | | | | | | | | | | | | | |
| hromium | | | | | | | | | | | | | | | | | | | | | | | | |
| obalt | | | | | | | | | | | | | | | | | | | | | | | | |
| opper | | | | | | | | | | | | | | | | | | | | | | | | |
| on | | | | | | | | | | | | | | | | | | | | | | | | |
| ad | | | | | | | | | | | | | | | | | | | | | | | | |
| agnesium | | | | | | | | | | | | | | | | | | | | | | | | |
| anganese | | | | | | | | | | | | | | | | | | | | | | | | |
| ercury | | | | | | | | | | | 72% | | | | | | | | | | | | | |
| ickel | | | | | | | | | | | | | | | | | | | | | | | | |
| otassium | | | | | | | | | | | | | | | | | | | | | | | | |
| elenium | | | | | | | | | | | | | | | | | | | | | | | | |
| ver | | | | | | | | | | | | | | | | | | | | | | | | |
| odium | | | | | | | | | | | | | | | | | | | | | | | | |
| allium | | | | | | | | | | | | | | | | | | | | | | | | |
| n | | | | | | | | | | | | | | | | | | | | | | | | |
| anadium | | | | | | | | | | | | | | | | | | | | | | | | |
| nc | | | | | | | | | | | | | | | | | | | | | | | | |
| anide | | | | | | | | | | | | | | | | | | | | | | | | |

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U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

00001

Date 7-21-87

COVER PAGE
INORGANIC ANALYSIS DATA PACKAGE

Lab Name ROCKY MOUNTAIN ANALYTICAL
SOW No. 784

Case No. 7351
QC Report No. 57001

RECEIVED AUG 03 1987

Sample Numbers

| EPA No. | Lab ID No. | EPA No. | Lab ID No. |
|---|---|---|---|
| MEN530D | | MEN537 | |
| MEN530 | | MEN538 | |
| MEN530S | | MEN539 | |
| MEN531 | | MEN540 | |
| MEN532 | | [MEN999] | |
| MEN533 | | | |
| MEN534 | | | |
| MEN535 | | | |
| MEN536 | | | |

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JUL 22 1987
U.S. EPA CENTRAL REGIONAL LAB.

Comments: 11 LOW SOILS FOR TOTAL METALS AND CYANIDE ANALYSIS
SERIAL DILUTION OF SAMPLE MEN540 IS IDENTIFIED AS [MEN999]

ICP Interelement and background corrections applied? Yes X No ___.
If yes, corrections applied before X or after ___ generation of raw data.

Footnotes:

NR - not required by contract at this time
Form I:
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (i.e., [10]). Indicate the method used with P (for ICP/Flame AA) or F (for furnace).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., 10U).
E - Indicates a value estimated or not reported due to the presence of Interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
X - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is Less than 0.995
CV - Indicates Cold Vapor
AS - Indicates Automated Spectrophotometric

Form I

00002

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EPA Sample No.
MEN530

Date 7-21-87

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INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57001

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 3370 | P | 13. | MAGNESIUM | 81100 | P |
| 2. | ANTIMONY | 12U | P R UJ | 14. | MANGANESE | 683 | P R J |
| 3. | ARSENIC | 5.9U | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [16] | P | 16. | NICKEL | [15] | P |
| 5. | BERYLLIUM | 0.59U | P | 17. | POTASSIUM | [930] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 2.9U | F |
| 7. | CALCIUM | 151000 | P | 19. | SILVER | 2.4U | P |
| 8. | CHROMIUM | 7.1 | P | 20. | SODIUM | 528U | P |
| 9. | COBALT | [3.4] | P | 21. | THALLIUM | 5.9U | F |
| 10. | COPPER | 17 | P | 22. | TIN | 9.4U | P |
| 11. | IRON | 13300 | P | 23. | VANADIUM | [12] | P |
| 12. | LEAD | 8 | F S | 24. | ZINC | 65 | P |

Cyanide 0.59U AS Percent Solids (%) 85

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Lead value determined by MSA.

Lab Manager KO

Form I

00003

U.S. EPA Contract Laboratory Program
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703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN531

Date 7-21-87

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INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57001

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 2490 | P | | 13. | MAGNESIUM | 85900 | P | |
| 2. | ANTIMONY | 12U | P | RUJ | 14. | MANGANESE | 706 | P | R J |
| 3. | ARSENIC | 5.9U | F | | 15. | MERCURY | 0.12U | CV | |
| 4. | BARIUM | [14] | P | | 16. | NICKEL | [13] | P | |
| 5. | BERYLLIUM | 0.59U | P | | 17. | POTASSIUM | [864] | P | |
| 6. | CADMIUM | 2.9U | P | | 18. | SELENIUM | 2.9U | F | |
| 7. | CALCIUM | 159000 | P | | 19. | SILVER | 2.4U | P | |
| 8. | CHROMIUM | [4.4] | P | | 20. | SODIUM | [601] | P | |
| 9. | COBALT | [4.8] | P | | 21. | THALLIUM | 5.9U | F | |
| 10. | COPPER | 18 | P | | 22. | TIN | 9.4U | P | |
| 11. | IRON | 12200 | P | | 23. | VANADIUM | [11] | P | |
| 12. | LEAD | 5.9 | F | | 24. | ZINC | 61 | P | |

Cyanide 0.59U AS Percent Solids (%) 85

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager KCO

Form I



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EPA Sample No.
MEN532

Date 7-21-87

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# INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 5700

## Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 6020 | P | 13. | MAGNESIUM | 75500 | P |
| 2. | ANTIMONY | 12U | P R UJ | 14. | MANGANESE | 682 | P R J |
| 3. | ARSENIC | 6.9 | F J | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [31] | P | 16. | NICKEL | [20] | P |
| 5. | BERYLLIUM | [0.68] | P | 17. | POTASSIUM | [1660] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 2.9U | F |
| 7. | CALCIUM | 143000 | P | 19. | SILVER | 2.3U | P |
| 8. | CHROMIUM | 11 | P | 20. | SODIUM | [539] | P |
| 9. | COBALT | [7.5] | P | 21. | THALLIUM | 5.8U | F |
| 10. | COPPER | 21 | P | 22. | TIN | 9.3U | P |
| 11. | IRON | 16400 | P | 23. | VANADIUM | [16] | P |
| 12. | LEAD | 7.6 | F | 24. | ZINC | 59 | P |

Cyanide 0.58U AS  Percent Solids (%) 86

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Arsenic value determined by MSA.

Lab Manager [illegible]

Form I

00005

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EPA Sample No.
MEN533

Date 7-21-87

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# INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57001

## Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 6280 | P | 13. | MAGNESIUM | 61100 | P |
| 2. | ANTIMONY | 12U | P R UJ | 14. | MANGANESE | 560 | P R J |
| 3. | ARSENIC | [5.7] | F | 15. | MERCURY | 0.11U | CV |
| 4. | BARIUM | [31] | P | 16. | NICKEL | [21] | P |
| 5. | BERYLLIUM | [0.68] | P | 17. | POTASSIUM | [1760] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 2.9U | F |
| 7. | CALCIUM | 119000 | P | 19. | SILVER | 2.3U | P |
| 8. | CHROMIUM | 10 | P | 20. | SODIUM | 516U | P |
| 9. | COBALT | [6.2] | P | 21. | THALLIUM | 5.7U | F |
| 10. | COPPER | 19 | P | 22. | TIN | 9.2U | P |
| 11. | IRON | 15400 | P | 23. | VANADIUM | [15] | P |
| 12. | LEAD | 9.3 | F S | 24. | ZINC | 55 | P |

Cyanide 0.57U AS Percent Solids (%) 87

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: head value determined by MSA.

Lab Manager [illegible]

Form I

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EPA Sample No.
MEN534

Date 7-21-87

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INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57001

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 6300 | P | 13. | MAGNESIUM | 74200 | P |
| 2. | ANTIMONY | 13U | P RUJ | 14. | MANGANESE | 664 | P R J |
| 3. | ARSENIC | 6.1U | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [33] | P | 16. | NICKEL | 24 | P |
| 5. | BERYLLIUM | [0.72] | P | 17. | POTASSIUM | [1520] | P |
| 6. | CADMIUM | 3U | P | 18. | SELENIUM | 3U | F |
| 7. | CALCIUM | 146000 | P | 19. | SILVER | 2.4U | P |
| 8. | CHROMIUM | 11 | P | 20. | SODIUM | [621] | P |
| 9. | COBALT | [7.6] | P | 21. | THALLIUM | 6.1U | F |
| 10. | COPPER | 22 | P | 22. | TIN | 46 | P |
| 11. | IRON | 17800 | P | 23. | VANADIUM | [16] | P |
| 12. | LEAD | 7.9 | F | 24. | ZINC | 62 | P |

Cyanide 0.61U AS Percent Solids (%) 82

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager

Form I

00007

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EPA Sample No.
MEN535

Date 7-21-87

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INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57001

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 6550 | P | 13. | MAGNESIUM | 60800 | P |
| 2. | ANTIMONY | 12U | P RUJ | 14. | MANGANESE | 546 | P R J |
| 3. | ARSENIC | 5.8U | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [31] | P | 16. | NICKEL | [20] | P |
| 5. | BERYLLIUM | [0.82] | P | 17. | POTASSIUM | [1790] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 2.9U | F |
| 7. | CALCIUM | 118000 | P | 19. | SILVER | 2.3U | P |
| 8. | CHROMIUM | 11 | P | 20. | SODIUM | [564] | P |
| 9. | COBALT | [6.3] | P | 21. | THALLIUM | 5.8U | F |
| 10. | COPPER | 18 | P | 22. | TIN | 9.3U | P |
| 11. | IRON | 15800 | P | 23. | VANADIUM | [16] | P |
| 12. | LEAD | 8 | F J | 24. | ZINC | 60 | P |

Cyanide 0.58U AS Percent Solids (%) 86

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Lead Value determined by MSA.

Lab Manager [illegible]

Form I

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EPA Sample No.
MEN536

Date 7-21-87

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# INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57001

## Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 6960 | P | 13. | MAGNESIUM | 60200 | P |
| 2. | ANTIMONY | 12U | P RUJ | 14. | MANGANESE | 555 | P R J |
| 3. | ARSENIC | 5.7U | F | 15. | MERCURY | 0.11U | CV |
| 4. | BARIUM | [33] | P | 16. | NICKEL | [21] | P |
| 5. | BERYLLIUM | [0.67] | P | 17. | POTASSIUM | [1900] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 2.9U | F |
| 7. | CALCIUM | 118000 | P | 19. | SILVER | 2.3U | P |
| 8. | CHROMIUM | 12 | P | 20. | SODIUM | 516U | P |
| 9. | COBALT | [5.8] | P | 21. | THALLIUM | 5.7U | F |
| 10. | COPPER | 19 | P | 22. | TIN | 9.2U | P |
| 11. | IRON | 16500 | P | 23. | VANADIUM | [17] | P |
| 12. | LEAD | 7.5 | F | 24. | ZINC | 173 | P |

Cyanide 0.57U AS Percent Solids (%) 87

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

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EPA Sample No.
MEN537

Date 7-21-87

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# INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 5700

## Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 5200 | P | 13. | MAGNESIUM | 63800 | P |
| 2. | ANTIMONY | 12U | P R UJ | 14. | MANGANESE | 552 | P R J |
| 3. | ARSENIC | 5.8U | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [27] | P | 16. | NICKEL | [18] | P |
| 5. | BERYLLIUM | [1.1] | P | 17. | POTASSIUM | [1780] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 2.9U | F |
| 7. | CALCIUM | 123000 | P | 19. | SILVER | 2.3U | P |
| 8. | CHROMIUM | 10 | P | 20. | SODIUM | [932] | P |
| 9. | COBALT | [7.4] | P | 21. | THALLIUM | 5.8U | F |
| 10. | COPPER | 22 | P | 22. | TIN | 9.3U | P |
| 11. | IRON | 14000 | P | 23. | VANADIUM | [16] | P |
| 12. | LEAD | 8.1 | F | 24. | ZINC | 93 | P |

Cyanide 0.58U AS Percent Solids (%) 86

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager

Form I

00010

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EPA Sample No.
MEN538

Date 7-21-87

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INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57001

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 5710 | P | 13. | MAGNESIUM | 71300 | P |
| 2. | ANTIMONY | 12U | P R UJ | 14. | MANGANESE | 642 | P R J |
| 3. | ARSENIC | 5.7U | F | 15. | MERCURY | 0.11U | CV |
| 4. | BARIUM | [28] | P | 16. | NICKEL | [21] | P |
| 5. | BERYLLIUM | [0.81] | P | 17. | POTASSIUM | [1510] | P |
| 6. | CADMIUM | 2.8U | P | 18. | SELENIUM | 2.8U | F |
| 7. | CALCIUM | 137000 | P | 19. | SILVER | 2.3U | P |
| 8. | CHROMIUM | 10 | P | 20. | SODIUM | [615] | P |
| 9. | COBALT | [6.1] | P | 21. | THALLIUM | 5.7U | F |
| 10. | COPPER | 19 | P | 22. | TIN | 9.1U | P |
| 11. | IRON | 15600 | P | 23. | VANADIUM | [15] | P |
| 12. | LEAD | 8.5 | F | 24. | ZINC | 52 | P |

Cyanide 0.57U AS Percent Solids (%) 88

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager

Form I

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703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN539

Date 7-21-87

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INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57001

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 5640 | P | 13. | MAGNESIUM | 70200 | P |
| 2. | ANTIMONY | 12U | P R UJ | 14. | MANGANESE | 658 | P R J |
| 3. | ARSENIC | 5.7U | F | 15. | MERCURY | 0.11U | CV |
| 4. | BARIUM | [28] | P | 16. | NICKEL | [18] | P |
| 5. | BERYLLIUM | 0.57U | P | 17. | POTASSIUM | [1590] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 2.9U | F |
| 7. | CALCIUM | 134000 | P | 19. | SILVER | 2.3U | P |
| 8. | CHROMIUM | 9.8 | P | 20. | SODIUM | [610] | P |
| 9. | COBALT | [6] | P | 21. | THALLIUM | 5.7U | F |
| 10. | COPPER | 21 | P | 22. | TIN | 9.2U | P |
| 11. | IRON | 15200 | P | 23. | VANADIUM | [15] | P |
| 12. | LEAD | 8.6 | F | 24. | ZINC | 56 | P |

Cyanide 0.57U AS Percent Solids (%) 87

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager

Form I

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EPA Sample No.
MEN540

Date 7-21-87

RECEIVED AUG 03 1987

# INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57001

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 8670 | P | 13. | MAGNESIUM | 50900 | P |
| 2. | ANTIMONY | 12U | P R UJ | 14. | MANGANESE | 508 | P R J |
| 3. | ARSENIC | 5.9U | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [40] | P | 16. | NICKEL | 25 | P |
| 5. | BERYLLIUM | [0.83] | P | 17. | POTASSIUM | [2240] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 2.9U | F |
| 7. | CALCIUM | 102000 | P | 19. | SILVER | 2.4U | P |
| 8. | CHROMIUM | 14 | P | 20. | SODIUM | [678] | P |
| 9. | COBALT | [9.1] | P | 21. | THALLIUM | 5.9U | F |
| 10. | COPPER | 20 | P | 22. | TIN | 9.4U | P |
| 11. | IRON | 18000 | P | 23. | VANADIUM | [18] | P |
| 12. | LEAD | 9.9 | F S | 24. | ZINC | 50 | P |

Cyanide 0.59U AS Percent Solids (%) 85

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Lead value determined by MSA.

Lab Manager [illegible]

Form III

Q.C. Report No. 57001

BLANKS

LAB NAME ROCKY MOUNTAIN ANALYTICAL
DATE 7-21-87

CASE NO. 7351
UNITS ug/L

Matrix SOIL

RECEIVED AUG 0 3 1987

| Preparation Compound | Initial Calibration Blank Value | Continuing Calibration Blank Value 1 | 2 | 3 | 4 | Preparation Blank 1 | 2 |
|---|---|---|---|---|---|---|---|
| Metals: | | | | | | | |
| 1. ALUMINUM | 24U | 24U | 24U | | | [33] | |
| 2. ANTIMONY | 21U | 21U | 21U | | | 21U | |
| 3. ARSENIC | 10U | 10U | 10U | 10U | 10U | 10U | |
| 4. BARIUM | 2U | 2U | 2U | | | 2U | |
| 5. BERYLLIUM | 1U | 1U | [1] | | | 1U | |
| 6. CADMIUM | 5U | 5U | 5U | | | 5U | |
| 7. CALCIUM | 69U | [373] | 69U | | | [91] | |
| 8. CHROMIUM | 4U | 4U | 4U | | | 4U | |
| 9. COBALT | 5U | 5U | 5U | | | 5U | |
| 10. COPPER | 4U | 4U | 4U | | | 4U | |
| 11. IRON | [63] | [50] | 20U | | | 20U | |
| 12. LEAD | 5U | 5U | 5U | 5U | 5U | 5U | |
| 13. MAGNESIUM | 51U | [219] | 51U | | | 51U | |
| 14. MANGANESE | 5U | 5U | 5U | | | 5U | |
| 15. MERCURY | 0.2U | 0.2U | 0.2U | | | 0.2U | |
| 16. NICKEL | 8U | 8U | 8U | | | 8U | |
| 17. POTASSIUM | 151U | 151U | 151U | | | 151U | |
| 18. SELENIUM | 5U | 5U | 5U | 5U | 5U | 5U | |
| 19. SILVER | 4U | 4U | 4U | | | 4U | |
| 20. SODIUM | 898U | 898U | 898U | | | [1310] | |
| 21. THALLIUM | 10U | 10U | 10U | 10U | 10U | 10U | |
| 22. TIN | 16U | 16U | 16U | | | 16U | |
| 23. VANADIUM | 4U | 4U | 4U | | | 4U | |
| 24. ZINC | 3U | 3U | 3U | | | [11] | |
| Other: | | | | | | | |
| Cyanide | 10U | 10U | 10U | 10U | | 10U | |

Form III

Q.C. Report No. 57001

BLANKS

LAB NAME ROCKY MOUNTAIN ANALYTICAL
DATE 7-21-87
Matrix Soil

CASE NO. 7351
UNITS ug/L

RECEIVED AUG 3 1987

| Preparation Compound | Initial Calibration Blank Value | Continuing Calibration Blank Value 1 | 2 | 3 | 4 | Preparation Blank 1 | 2 |
|---|---|---|---|---|---|---|---|
| Metals: | | | | | | | |
| 1. ALUMINUM | | | | | | | |
| 2. ANTIMONY | | | | | | | |
| 3. ARSENIC | 10u | 10u | | | | | |
| 4. BARIUM | | | | | | | |
| 5. BERYLLIUM | | | | | | | |
| 6. CADMIUM | | | | | | | |
| 7. CALCIUM | | | | | | | |
| 8. CHROMIUM | | | | | | | |
| 9. COBALT | | | | | | | |
| 10. COPPER | | | | | | | |
| 11. IRON | | | | | | | |
| 12. LEAD | | | | | | | |
| 13. MAGNESIUM | | | | | | | |
| 14. MANGANESE | | | | | | | |
| 15. MERCURY | | | | | | | |
| 16. NICKEL | | | | | | | |
| 17. POTASSIUM | | | | | | | |
| 18. SELENIUM | | | | | | | |
| 19. SILVER | | | | | | | |
| 20. SODIUM | | | | | | | |
| 21. THALLIUM | | | | | | | |
| 22. TIN | | | | | | | |
| 23. VANADIUM | | | | | | | |
| 24. ZINC | | | | | | | |
| Other: | | | | | | | |
| | | | | | | | |
| Cyanide | | | | | | | |

Form V

Q.C. Report No. 57001

SPIKE SAMPLE RECOVERY

00013

RECEIVED AUG 3 1987

LAB NAME ROCKY MOUNTAIN ANALYTICAL

CASE NO. 7351

EPA Sample No. MEN530

Lab Sample ID No.

Units mg/kg

DATE 7-21-87

MATRIX SOIL

| Compound | Control Limit %R | Spiked Sample Result (SSR) | Sample Result (SR) | Spike Added (SA) | %R[1] | |
|---|---|---|---|---|---|---|
| Metals: | | | | | | |
| 1. ALUMINUM | 75-125 | 1910 | 2860 | NR | | |
| 2. ANTIMONY | 75-125 | 164 | 10U | 250 | 66 | R |
| 3. ARSENIC | 75-125 | 22 S | 5U | 20 | 110 | |
| 4. BARIUM | 75-125 | 946 | [14] | 1000 | 93 | |
| 5. BERYLLIUM | 75-125 | 24 | 0.5U | 25 | 96 | |
| 6. CADMIUM | 75-125 | 25 | 2.5U | 25 | 100 | |
| 7. CALCIUM | 75-125 | 119000 | 129000 | NR | | |
| 8. CHROMIUM | 75-125 | 96 | 6 | 100 | 90 | |
| 9. COBALT | 75-125 | 241 | [2.9] | 250 | 95 | |
| 10. COPPER | 75-125 | 137 | 15 | 125 | 98 | |
| 11. IRON | 75-125 | 9400 | 11300 | NR | | |
| 12. LEAD | 75-125 | 18 S | 6.8 S | 10 | 112 | |
| 13. MAGNESIUM | 75-125 | 63600 | 68900 | NR | | |
| 14. MANGANESE | 75-125 | 761 | 580 | 250 | 72 | R |
| 15. MERCURY | 75-125 | 0.54 | 0.1U | 0.5 | 108 | |
| 16. NICKEL | 75-125 | 250 | [13] | 250 | 95 | |
| 17. POTASSIUM | 75-125 | [690] | [790] | NR | | |
| 18. SELENIUM | 75-125 | 4.3 S | 2.5U | 5 | 86 | |
| 19. SILVER | 75-125 | 24 | 2U | 25 | 96 | |
| 20. SODIUM | 75-125 | [546] | 449U | NR | | |
| 21. THALLIUM | 75-125 | 22 S | 5U | 25 | 88 | |
| 22. TIN | 75-125 | 234 | 8U | 250 | 94 | |
| 23. VANADIUM | 75-125 | 254 | [10] | 250 | 98 | |
| 24. ZINC | 75-125 | 289 | 55 | 250 | 94 | |
| Other: | | | | | | |
| | | | | | | |
| Cyanide | 75-125 | 4.3 | 0.5U | 5 | 86 | |

[1] %R = [(SSR - SR)/SA] x 100

"R"- out of control

Comments: Lead value for MEN530 and MEN530S determined by MSA. Arsenic, Selenium and Thalium values for ~~MEN530~~ SEA MEN530S determined by MSA.

Form VI

00020

Q.C. Report No. 57001

DUPLICATES

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 7-21-87

CASE NO. 7351
EPA Sample No. MEN530
Lab Sample ID No. -
Units mg/kg

Matrix SOIL

RECEIVED AUG 13 1987

| Compound | Control Limit[1] | Sample(S) | Duplicate(D) | RPD[2] |
|---|---|---|---|---|
| Metals: | | | | |
| 1. ALUMINUM | | 2860 | 2670 | 6.9 |
| 2. ANTIMONY | | 10U | 10U | NC |
| 3. ARSENIC | | 5U | 5U | NC |
| 4. BARIUM | | [14] | [14] | NC |
| 5. BERYLLIUM | | 0.5U | 0.5U | NC |
| 6. CADMIUM | | 2.5U | 2.5U | NC |
| 7. CALCIUM | | 129000 | 129000 | 0 |
| 8. CHROMIUM | | 6 | 6.2 | 3.3 |
| 9. COBALT | | [2.9] | [3.8] | NC |
| 10. COPPER | | 15 | 15 | 0 |
| 11. IRON | | 11300 | 11100 | 1.8 |
| 12. LEAD | | 6.8 S | 5 | 31 |
| 13. MAGNESIUM | | 68900 | 69200 | 0.43 |
| 14. MANGANESE | | 580 | 583 | 0.52 |
| 15. MERCURY | | 0.1U | 0.1U | NC |
| 16. NICKEL | | [13] | [11] | NC |
| 17. POTASSIUM | | [790] | [773] | NC |
| 18. SELENIUM | | 2.5U | 2.5U | NC |
| 19. SILVER | | 2U | 2U | NC |
| 20. SODIUM | | 449U | 449U | NC |
| 21. THALLIUM | | 5U | 5U | NC |
| 22. TIN | | 8U | 8U | NC |
| 23. VANADIUM | | [10] | [9.9] | NC |
| 24. ZINC | | 55 | 51 | 7.5 |
| Other: % solids | | 85 | 86 | 1.2 |
| | | | | |
| Cyanide | | 0.5U | 0.5U | NC |

X Out of Control
[1] To be added at a later date. [2] RPD = [|S-D|/((S+D)/2)] x 100
NC - Non calculable RPD due to value(s) less than CRDL

The following elements reported unflagged due to sample and/or duplicate concentration less than 5 times the CRDL and +/- CRDL:
LEAD

Form VII

Q.C. Report No. 57001
INSTRUMENT DETECTION LIMITS AND
LABORATORY CONTROL SAMPLE

00021

LAB NAME ROCKY MOUNTAIN ANALYTICAL
DATE 7-21-87

CASE NO 7351
UNITS ug/L

RECEIVED AUG 03 1987

| Compound | Required Detection Limits (CRDL)-ug/l | Instrument Detection Limits (IDL)-ug/l ICP/AA | Furnace | Lab Control Sample True | Found | % |
|---|---|---|---|---|---|---|
| Metals: | | | | | | |
| 1. ALUMINUM | 200 | 24 | | 1980 | 2000 | 101 |
| 2. ANTIMONY | 60 | 21 | | 1090 | 1020 | 94 |
| 3. ARSENIC | 10 | 35 | 1 | 49 | 44 | 90 |
| . BARIUM | 200 | 2 | | 1980 | 1920 | 97 |
| 5. BERYLLIUM | 5 | 1 | | 481 | 499 | 104 |
| 6. CADMIUM | 5 | 5 | | 489 | 471 | 96 |
| 7. CALCIUM | 5000 | 69 | | 49800 | 51200 | 103 |
| 8. CHROMIUM | 10 | 4 | | 506 | 458 | 90 |
| 9. COBALT | 50 | 5 | | 474 | 489 | 103 |
| 10. COPPER | 25 | 4 | | 542 | 550 | 102 |
| 11. IRON | 100 | 20 | | 1990 | 1980 | 100 |
| 12. LEAD | 5 | 28 | 1 | 98 | 104 | 106 |
| 13. MAGNESIUM | 5000 | 51 | | 25000 | 24800 | 99 |
| 14. MANGANESE | 15 | 5 | | 513 | 521 | 102 |
| 15. MERCURY | 0.2 | | 0.2CV | 1.0 | 1.01 | 101 |
| 16. NICKEL | 40 | 8 | | 496 | 485 | 98 |
| 17. POTASSIUM | 5000 | 151 | | 50200 | 48600 | 97 |
| . SELENIUM | 5 | | 2 | 98 | 92 | 94 |
| 19. SILVER | 10 | 4 | | 509 | 476 | 93 |
| 20. SODIUM | 5000 | 898 | | 50700 | 50600 | 100 |
| 21. THALLIUM | 10 | | 1 | 97 | 96 | 99 |
| 22. TIN | 40 | 16 | | 2000 | 1990 | 100 |
| 23. VANADIUM | 50 | 4 | | 511 | 514 | 101 |
| 24. ZINC | 20 | 3 | | 3100 | 3150 | 101 |
| Other: | | | | | | |
| Cyanide | 10 | | 10AS | 58 | 58 | 100 |

CV - Cold Vapor
AS - Automated Spectrophotometric

Entered JUN 18 1987

SUPERFUND 4123

# CENTRAL REGIONAL LABORATORY SAMPLE DATA REPORT
## ORGANICS/INORGANICS

THIS FORM IS TO BE USED FOR SAMPLES SENT TO CONTRACT ONLY

LOG IN DATE: 7/7/87
DUE DATE: 8/20/87

CASE NUMBER/SAS No. 7351 SITE NAME HOD Landfill LABORATORY Environmental Rmk DATE SHIPPED 6/11/87

SUPERFUND DU NUMBER 4905 EPA RPM or OSC (S.M.S.)/(CES) _____ CERCLIS NUMBER ILD980605836 PAGE 1 OF 1

ACTIVITY NUMBER C72100

| CRL LOG NUMBER | ORGANIC TRAFFIC REPORT NUMBER or SAS Packing List No. | INORGANIC TRAFFIC REPORT NUMBER 7/7/87 gw | WATER OR LIQUIDS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN UG/L TOX17574 | VOLATILE ORGANIC ANALYSIS ORGANIC SCAN UG/L TOX17564 | WATER POLYCHLORINATED BIPHENYLS UG/L PES 17144 | WATER CHLORINATED PESTICIDES UG/L PES17134 | TOTAL METALS IN WATER UG/L MET111 | WATER CYANIDE UG/L MIN74919 | NITRATE/NITRITE MG/L MIN7284 | AMMONIA MG/L MIN7294 | RESIDUE, FILTERABLE TDS MG/L MIN7362 | RESIDUE, NON-FILT TSS MG/L MIN7372 | | | SEDIMENTS or SOILS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN MG/KG TOX215722 | VOLATILE ORGANIC ANALYSIS ORGANIC SCAN MG/KG TOX215622 | SEDIMENTS POLYCHLORINATED BIPHENYLS MG/KG PES211422 | SEDIMENT CHLORINATED PESTICIDES MG/KG 211322 | TOTAL METALS MG/KG MET413 | CYANIDE MG/KG MIN44930 | EP TOXICITY METALS MG/KG | AMMONIA MG/KG MIN42925 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 87FP10547 | EL265 | MEN530 | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| 87FP10548 | EL269 | MEN531 | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| 87FP10549 | EL270 | MEN532 | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| 87FP10550 | EM851 | MEN533 | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| 87FP10551 | EM852 | MEN534 | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | — | ✓ | | | | | |
| 87FP10552 | EM853 | MEN535 | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| 87FP10553 | EM854 | MEN536 | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| 87FP10554 | EM855 | MEN537 | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| 87FP10555 | EM856 | MEN538 | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| 87FP10556 | EM857 | MEN539 | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |
| 87FP10557 | EM858 | MEN540 | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | |

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ecology and environment, inc.
111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL. 312-663-9415
International Specialists in the Environment

COPY

Date Received for Review 8/17/87 Date Review Completed 8/18/87

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To: Tom Pachowicz
From: Zena Gold-Kaufman
Subject: HOD Lnd fl

PAN: ILO141EX Case # 7351

Sample Description

| Organics (VOA, ABN, Pest/PCB) | | Inorganics (Metals, Cyanide) | |
|---|---|---|---|
| # | Low Soil | # 8 | Low Soil |
| | Low Water | | Low Water |
| | Drinking Water | | Drinking Water |
| | Other | | Other |

28→35

Project Data Status _____ Completed!!

_____ Incomplete, awaiting: _____

FIT Data Review Findings:

✓ Compounds were detected in sample(s); see enclosed Chemical Evaluation Form.

Book No. 6 Page No. 174

Sampled 6/18

ecology and environment, inc.
CHICAGO, ILLINOIS

# CHEMICAL EVALUATION FORM

SITE NAME: HOD Lndfl PAN#: DATE: 8/17

CASE #: 7351 UNITS: REVIEWER: ZGK

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| TOX/ PERS | COMPOUND | CRDL | 3-5xCRDL | 35 MEN 548 | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | ALUMINUM | | | | | | | | |
| | ANTIMONY | | | | | | | | |
| | ARSENIC | | | 7.6 | | | | | |
| | BARIUM | | | | | | | | |
| | BERYLLIUM | | | | | | | | |
| | CADMIUM | | | | | | | | |
| | CHROMIUM | | | [3.8] | | | | | |
| | COBALT | | | | | | | | |
| | COPPER | | | [7.3] | | | | | |
| | LEAD | | | 8.9 | | | | | |
| | MERCURY | | | | | | | | |
| | NICKEL | | | [8.7] | | | | | |
| | SELENIUM | | | | | | | | |
| | SILVER | | | | | | | | |
| | THALLIUM | | | | | | | | |
| | TIN | | | | | | | | |
| | VANADIUM | | | [4.9] | | | | | |
| | ZINC | | | 14 | | | | | |
| | CYANIDE | | | | | | | | |

ecology and environment, inc.
CHICAGO, ILLINOIS

# CHEMICAL EVALUATION FORM

SITE NAME: HOD Landfill PAN# _____ DATE: 8/17

CASE # 7351 UNITS- _____ REVIEWER: ZGK

RECEIVED AUG 17 1987

| TOX/ PERS | COMPOUND | CRDL | 3-5xCRDL | MEN 541 | MEN 542 | MEN 543 | MEN 544 | MEN 545 | MEN 546 | MEN 547 |
|---|---|---|---|---|---|---|---|---|---|---|
| | ALUMINUM | | | | | | | | | |
| | ANTIMONY | | | | | | | | | |
| | ARSENIC | | | 7.4 | 7.8 | 10 | 13 | 12 | 12 | 10 |
| | BARIUM | | | | | | | | | |
| | BERYLLIUM | | | [0.7] | [0.87] | [0.85] | [0.88] | [0.88] | [1.2] | [1.1] |
| | CADMIUM | | | | | | | | | |
| | CHROMIUM | | | 9.9 | 10 | 15 | 15 | 17 | 19 | 18 |
| | COBALT | | | [7.9] | [6.9] | [10] | [10] | [13] | [13] | [10] |
| | COPPER | | | 22 | 22 | | | 29 | 26 | 23 |
| | LEAD | | | 10 | 9.4 | 13 | 16 | 16 | 16 | 13 |
| | MERCURY | | | | | | | | | |
| | NICKEL | | | [20] | [19] | 34 | 31 | 34 | 40 | 34 |
| | SELENIUM | | | | | | | | | |
| | SILVER | | | | | | | | | |
| | THALLIUM | | | | | | | | | |
| | TIN | | | | | | | | | |
| | VANADIUM | | | [14] | [15] | [19] | [19] | [21] | [24] | [20] |
| | ZINC | | | 47 | 58 | 65 | 62 | 60 | 63 | 56 |
| | CYANIDE | | | | | | | | | |

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 8/13/87

SUBJECT: Review of Region V CLP Data
Received for Review on 7/28/87

FROM: Curtis Ross, Director (5SCRL)
Central Regional Laboratory Jay Thakker

TO: Data User: FIT

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We have reviewed the data for the following case(s).

SITE NAME: HOD Landfill SMO case No. 7351

EPA Data Set No. SF4129 No. of Samples: 8 D.U./Activity Numbers 7905/C72200

CRL No. 87FP10595 - 87FP11503

SMO Traffic No. MEN541-548

CLP Laboratory: RMAL Hrs. Required for Review: 1

Following are our findings: This review covers 8 soil samples analyzed for metals and cyanide. Spike recoveries for Sb (53%), Pb (70%), CN (66%) are low. Detection limits for Sb, CN could be elevated. All Sb, CN data are estimated (UJ). All Pb data are estimated.
All other QC audits are acceptable.

[signature]
8.13.87

( ) 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: Duane Geuder, Quality Assurance Officer, EPA Support Services
James Petty, Chief Quality Assurance Research, EMSL, Las Vegas

EPA FORM 1320-6 (Rev. 5/87)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

ESD/Central Regional Laboratory
DATA TRACKING FORM FOR CONTRACT SAMPLES

CRL Data Set No. 4129 CERCLIS No. IL0980605836

SMO Case No. 7351 Site Name and Location: HOD Landfill

Name of Contractor or EPA Laboratory: RMAL Data User: FIT

No. of Samples: 8 Date Samples or Data Received: 7/28/87

RECEIVED AUG 17 1987

1. Have chain-of-custody records been received? YES X NO ___
2. Have Traffic Reports or packing lists been received? YES X NO ___
3. If no, are Traffic Report or packing list numbers written on the chain-of-custody record? YES X NO ___
4. If no, which Traffic report or packing list numbers are missing?

Are basic data forms in? YES X NO ___

Number of samples claimed: 8 Number of samples received: 8

Checked by: Kenneth M. Jarich Date: 7/28/87

Received by Contract Project Management Section: D M M Date: 7-28-87

Review Started: 8.13.87 Reviewer Signature: [illegible]

Total time spent on review: 1 Date review completed: 8.13.87

Copied (xeroxed) by: John Date: ___

Mailed to Data User by: Daniel Sullivan Date: 8-14-87

DATA USERS:

Please fill in the blanks below and return this form to: Sylvia Griffin, Data Management Coordinator, Region V, 5SCRL

Data received by: Elna H. Kaufman Date: 8/17/87

Q.A. review received by: Elna H. Kaufman Date: 8/17/87

Inorganic Data Complete [ ], Suitable for Intended Purposes [ ] ✓ [ ] if acceptable.
Organic Data Complete [ ], Suitable for Intended Purposes [ ] List problems below.
Dioxin Data Complete [ ], Suitable for Intended Purposes [ ]
SAS Data Complete [ ], Suitable for Intended Purposes [ ]

See Attached "Missing Data Request Form" [ ]
PROBLEMS: Please indicate reasons (if any) why data are not suitable for your uses. Other problems.

Received by Data Management Coordinator, CRL for File: Date: ___

00001

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

Date 7-24-87

RECEIVED AUG 17 1987

COVER PAGE
INORGANIC ANALYSIS DATA PACKAGE

Lab Name ROCKY MOUNTAIN ANALYTICAL
SOW No. 784

Case No. 7351
QC Report No. 57023

Sample Numbers

| EPA No. | Lab ID No. | EPA No. | Lab ID No. |
|---|---|---|---|
| MEN541D | | MEN548 | |
| MEN541 | | [MEN999] | |
| MEN541S | | | |
| MEN542 | | | |
| MEN543 | | | |
| MEN544 | | | |
| MEN545 | | | |
| MEN546 | | | |
| MEN547 | | | |

Comments: 8 LOW SOILS FOR TOTAL METALS AND CYANIDE ANALYSIS
SERIAL DILUTION OF SAMPLE MEN548 IS IDENTIFIED AS [MEN999]

ICP Interelement and background corrections applied? Yes X No ___.
If yes, corrections applied before X or after ___ generation of raw data.

Footnotes:

NR - not required by contract at this time
Form I:
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (i.e., [10]). Indicate the method used with P (for ICP/Flame AA) or F (for furnace).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., 10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
X - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is Less than 0.995
CV - Indicates Cold Vapor
AS - Indicates Automated Spectrophotometric

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Narrative

RMA QC # 57023

Case # 7351

Comments: Poor cyanide matrix spike recovery (66%) confirmed by redistillation and reanalysis

Lab Manager

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN54[illegible]

Date 7-24-87

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INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57023

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 5130 | P | 13. | MAGNESIUM | 50000 | P |
| 2. | ANTIMONY | 12U | P R | 14. | MANGANESE | 475 | P |
| 3. | ARSENIC | 7.4 | F | 15. | MERCURY | 0.11U | CV |
| 4. | BARIUM | [35] | P | 16. | NICKEL | [20] | P |
| 5. | BERYLLIUM | [0.7] | P | 17. | POTASSIUM | [1170] | P |
| 6. | CADMIUM | 2.8U | P | 18. | SELENIUM | 2.8U | F |
| 7. | CALCIUM | 104000 | P | 19. | SILVER | 2.3U | P |
| 8. | CHROMIUM | 9.9 | P | 20. | SODIUM | [518] | P |
| 9. | COBALT | [7.9] | P | 21. | THALLIUM | 5.7U | F |
| 10. | COPPER | 22 | P | 22. | TIN | 9.1U | P |
| 11. | IRON | 14000 | P | 23. | VANADIUM | [14] | P |
| 12. | LEAD | 10 | F R | 24. | ZINC | 47 | P |

Cyanide 0.57U AS R Percent Solids (%) 88

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
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EPA Sample No.
MEN542

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Date 7-24-88

# INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57083

## Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 4900 | P | 13. | MAGNESIUM | 58900 | P |
| 2. | ANTIMONY | 12U | P R UJ | 14. | MANGANESE | 552 | P |
| 3. | ARSENIC | 7.8 | F S | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [31] | P | 16. | NICKEL | [19] | P |
| 5. | BERYLLIUM | [0.87] | P | 17. | POTASSIUM | [1140] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 2.9U | F |
| 7. | CALCIUM | 116000 | P | 19. | SILVER | 2.4U | P |
| 8. | CHROMIUM | 10 | P | 20. | SODIUM | [778] | P |
| 9. | COBALT | [6.9] | P | 21. | THALLIUM | 5.9U | F |
| 10. | COPPER | 22 | P | 22. | TIN | 9.4U | P |
| 11. | IRON | 14600 | P | 23. | VANADIUM | [15] | P |
| 12. | LEAD | 9.4 | F R J | 24. | ZINC | 58 | P |

Cyanide 0.59U AS R UJ Percent Solids (%) 85

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ARSENIC VALUE DETERMINED BY MSA

Lab Manager

Form I

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Sample Management Office
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703/557-2490 FTS: 8-557-2490

EPA Sample No. MEN54

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Date 7-24-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57023

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 7640 | P | 13. | MAGNESIUM | 66500 | P |
| 2. | ANTIMONY | 12U | P R W | 14. | MANGANESE | 631 | P |
| 3. | ARSENIC | 10 | F S | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [47] | P | 16. | NICKEL | 34 | P |
| 5. | BERYLLIUM | [0.85] | P | 17. | POTASSIUM | [1620] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 2.9U | F |
| 7. | CALCIUM | 135000 | P | 19. | SILVER | 2.3U | P |
| 8. | CHROMIUM | 15 | P | 20. | SODIUM | 522U | P |
| 9. | COBALT | [10] | P | 21. | THALLIUM | 5.8U | F |
| 10. | COPPER | 29 | P | 22. | TIN | 9.3U | P |
| 11. | IRON | 20200 | P | 23. | VANADIUM | [19] | P |
| 12. | LEAD | 13 | F S R J | 24. | ZINC | 65 | P |

Cyanide 0.58U AS R W Percent Solids (%) 86

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ARSENIC & LEAD VALUES DETERMINED BY MSA

Lab Manager [signature]

Form I

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703/557-2490 FTS: 8-557-2490

EPA Sample No. MEN544

Date 7-24-87

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INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57023

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 7790 | P | 13. | MAGNESIUM | 38200 | P |
| 2. | ANTIMONY | 13U | P R UJ | 14. | MANGANESE | 461 | P |
| 3. | ARSENIC | 13 | FS | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [43] | P | 16. | NICKEL | 31 | P |
| 5. | BERYLLIUM | [0.88] | P | 17. | POTASSIUM | [1750] | P |
| 6. | CADMIUM | 3U | P | 18. | SELENIUM | 3U | F |
| 7. | CALCIUM | 77800 | P | 19. | SILVER | 2.4U | P |
| 8. | CHROMIUM | 15 | P | 20. | SODIUM | [1130] | P |
| 9. | COBALT | [10] | P | 21. | THALLIUM | 6U | F |
| 10. | COPPER | 31 | P | 22. | TIN | 9.6U | P |
| 11. | IRON | 17800 | P | 23. | VANADIUM | [19] | P |
| 12. | LEAD | 16 | F R J | 24. | ZINC | 62 | P |

Cyanide 0.6U AS R UJ Percent Solids (%) 83

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ARSENIC VALUE DETERMINED BY MSA

Lab Manager [signature]

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Form I

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EPA Sample No.
MEN545

Date 7-24-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57023

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 8550 | P | 13. | MAGNESIUM | 66800 | P |
| 2. | ANTIMONY | 13U | P R UJ | 14. | MANGANESE | 713 | P |
| 3. | ARSENIC | 12 + | F S | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [46] | P | 16. | NICKEL | 34 | P |
| 5. | BERYLLIUM | [0.88] | P | 17. | POTASSIUM | [1790] | P |
| 6. | CADMIUM | 3U | P | 18. | SELENIUM | 3U | F |
| 7. | CALCIUM | 126000 | P | 19. | SILVER | 2.4U | P |
| 8. | CHROMIUM | 17 | P | 20. | SODIUM | [808] | P |
| 9. | COBALT | [13] | P | 21. | THALLIUM | 6U | F |
| 10. | COPPER | 29 | P | 22. | TIN | 9.6U | P |
| 11. | IRON | 22000 | P | 23. | VANADIUM | [21] | P |
| 12. | LEAD | 16 | F R J | 24. | ZINC | 60 | P |

Cyanide 0.6U AS R UJ Percent Solids (%) 83

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ARSENIC VALUE DETERMINED BY MSA

Lab Manager [signature]

Form I

U.S. EPA Contract Laboratory Program
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EPA Sample No.
MEN546

Date 7-24-87

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INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57023

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 10800 | P | 13. | MAGNESIUM | 32300 | P |
| 2. | ANTIMONY | 14U | P R UJ | 14. | MANGANESE | 434 | P |
| 3. | ARSENIC | 12 | F S | 15. | MERCURY | 0.14U | CV |
| 4. | BARIUM | [61] | P | 16. | NICKEL | 40 | P |
| 5. | BERYLLIUM | [1.2] | P | 17. | POTASSIUM | [2290] | P |
| 6. | CADMIUM | 3.4U | P | 18. | SELENIUM | 3.4U | F |
| 7. | CALCIUM | 64800 | P | 19. | SILVER | 2.7U | P |
| 8. | CHROMIUM | 19 | P | 20. | SODIUM | 615U | P |
| 9. | COBALT | [13] | P | 21. | THALLIUM | 6.8U | F |
| 10. | COPPER | 26 | P | 22. | TIN | 11U | P |
| 11. | IRON | 20300 | P | 23. | VANADIUM | [24] | P |
| 12. | LEAD | 16 | F S R J | 24. | ZINC | 63 | P |

Cyanide 0.68U AS R UJ Percent Solids (%) 73

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: ARSENIC & LEAD VALUES DETERMINED BY MSA

Lab Manager [signature]

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Form I

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EPA Sample No. MEN547

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Date 7-24-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57083

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 8120 | P | 13. | MAGNESIUM | 39000 | P |
| 2. | ANTIMONY | 13U | P R | 14. | MANGANESE | 438 | P |
| 3. | ARSENIC | 10 | F | 15. | MERCURY | 0.13U | CV |
| 4. | BARIUM | [50] | P | 16. | NICKEL | 34 | P |
| 5. | BERYLLIUM | [1.1] | P | 17. | POTASSIUM | [1750] | P |
| 6. | CADMIUM | 3.2U | P | 18. | SELENIUM | 3.2U | F |
| 7. | CALCIUM | 81800 | P | 19. | SILVER | 2.6U | P |
| 8. | CHROMIUM | 18 | P | 20. | SODIUM | [976] | P |
| 9. | COBALT | [10] | P | 21. | THALLIUM | 6.4U | F |
| 10. | COPPER | 23 | P | 22. | TIN | 10U | P |
| 11. | IRON | 16600 | P | 23. | VANADIUM | [20] | P |
| 12. | LEAD | 13 | FS R | 24. | ZINC | 56 | P |

Cyanide 0.64U AS R Percent Solids (%) 78

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: LEAD VALUE DETERMINED BY MSA

Lab Manager

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No. MEN548

Date 7-24-87

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INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57023

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 1520 | P | 13. | MAGNESIUM | 7340 | P |
| 2. | ANTIMONY | 15U | P R UJ | 14. | MANGANESE | 84 | P |
| 3. | ARSENIC | 7.6 | F | 15. | MERCURY | 0.14U | CV |
| 4. | BARIUM | [11] | P | 16. | NICKEL | [8.7] | P |
| 5. | BERYLLIUM | 0.69U | P | 17. | POTASSIUM | [451] | P |
| 6. | CADMIUM | 3.5U | P | 18. | SELENIUM | 3.5U | F |
| 7. | CALCIUM | 15600 | P | 19. | SILVER | 2.8U | P |
| 8. | CHROMIUM | [3.8] | P | 20. | SODIUM | [1230] | P |
| 9. | COBALT | 3.5U | P | 21. | THALLIUM | 6.9U | F |
| 10. | COPPER | [7.3] | P | 22. | TIN | 11U | P |
| 11. | IRON | 3090 | P | 23. | VANADIUM | [4.9] | P |
| 12. | LEAD | 8.9 | FS R UJ | 24. | ZINC | 14 | P |

Cyanide 0.69U AS R UJ Percent Solids (%) 72

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: LEAD VALUE DETERMINED BY MSA

Lab Manager [signature]

1|3

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Form III

Q.C. Report No. 57023

BLANKS

LAB NAME ROCKY MOUNTAIN ANALYTICAL : CASE NO. 7351

DATE 7-24-87 UNITS ug/L

Matrix Soil

| Preparation Compound | Initial Calibration Blank Value | Continuing Calibration Blank Value 1 | 2 | 3 | 4 | Preparation Blank 1 | 2 |
|---|---|---|---|---|---|---|---|
| Metals: | | | | | | | |
| 1. ALUMINUM | | 24u | | | | | |
| 2. ANTIMONY | | 21u | | | | | |
| 3. ARSENIC | | | | | | | |
| 4. BARIUM | | 2u | | | | | |
| 5. BERYLLIUM | | 1u | | | | | |
| 6. CADMIUM | | 5u | | | | | |
| 7. CALCIUM | | 69u | | | | | |
| 8. CHROMIUM | | 4u | | | | | |
| 9. COBALT | | 5u | | | | | |
| 10. COPPER | | 4u | | | | | |
| 11. IRON | | 20u | | | | | |
| 12. LEAD | | | | | | | |
| 13. MAGNESIUM | | 51u | | | | | |
| 14. MANGANESE | | 5u | | | | | |
| 15. MERCURY | | | | | | | |
| 16. NICKEL | | 8u | | | | | |
| 17. POTASSIUM | | 151u | | | | | |
| 18. SELENIUM | | | | | | | |
| 19. SILVER | | 4u | | | | | |
| 20. SODIUM | | 898u | | | | | |
| 21. THALLIUM | | | | | | | |
| 22. TIN | | 16u | | | | | |
| 23. VANADIUM | | 4u | | | | | |
| 24. ZINC | | 3u | | | | | |
| Other: | | | | | | | |
| | | | | | | | |
| Cyanide | | | | | | | |

2/3

0001

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Form III

Q.C. Report No. 57023

BLANKS

LAB NAME ROCKY MOUNTAIN ANALYTICAL

CASE NO. 7351

DATE 7-24-87

UNITS ug/L

Matrix SOIL

| Preparation Compound | Initial Calibration Blank Value | Continuing Calibration Blank Value 1 | 2 | 3 | 4 | Preparation Blank 1 | 2 |
|---|---|---|---|---|---|---|---|
| Metals: | | | | | | | |
| 1. ALUMINUM | 24U | 24U | 24U | | | [25] | |
| 2. ANTIMONY | 21U | 21U | 21U | | | 21U | |
| 3. ARSENIC | 10U | 10U | 10U | 10U | 10U | 10U | |
| 4. BARIUM | 2U | 2U | 2U | | | 2U | |
| 5. BERYLLIUM | 1U | 1U | 1U | | | 1U | |
| 6. CADMIUM | 5U | 5U | 5U | | | 5U | |
| 7. CALCIUM | 69U | 69U | 69U | | | 69U | |
| 8. CHROMIUM | 4U | 4U | 4U | | | 4U | |
| 9. COBALT | 5U | 5U | 5U | | | 5U | |
| 10. COPPER | 4U | 4U | 4U | | | 4U | |
| 11. IRON | 20U | 20U | 20U | | | [32] | |
| 12. LEAD | 5U | 5U | 5U | 5U | 5U | 5U | |
| 13. MAGNESIUM | 51U | 51U | 51U | | | [53] | |
| 14. MANGANESE | 5U | 5U | 5U | | | 5U | |
| 15. MERCURY | 0.2U | 0.2U | 0.2U | | | 0.2U | |
| 16. NICKEL | 8U | 8U | 8U | | | 8U | |
| 17. POTASSIUM | 151U | 151U | 151U | | | 151U | |
| 18. SELENIUM | 5U | 5U | 5U | 5U | | 5U | |
| 19. SILVER | 4U | 4U | 4U | | | 4U | |
| 20. SODIUM | 898U | 898U | 898U | | | 898U | |
| 21. THALLIUM | 10U | 10U | 10U | 10U | | 10U | |
| 22. TIN | 16U | 16U | 16U | | | 16U | |
| 23. VANADIUM | 4U | 4U | 4U | | | 4U | |
| 24. ZINC | 3U | 3U | 3U | | | [5.9] | |
| Other: | | | | | | | |
| Cyanide | 10U | 10U | 10U | 10U | | 10U | |

3/3

00017

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Form III

Q.C. Report No. 57023

BLANKS

LAB NAME ROCKY MOUNTAIN ANALYTICAL CASE NO. 7351

DATE 7-24-87 UNITS ug/L

Matrix Soil

| Preparation Compound | Initial Calibration Blank Value | Continuing Calibration Blank Value 1 | 2 | 3 | 4 | Preparation Blank 1 | 2 |
|---|---|---|---|---|---|---|---|
| Metals: | | | | | | | |
| 1. ALUMINUM | | | | | | | |
| 2. ANTIMONY | | | | | | | |
| 3. ARSENIC | | low | | | | | |
| 4. BARIUM | | | | | | | |
| 5. BERYLLIUM | | | | | | | |
| 6. CADMIUM | | | | | | | |
| 7. CALCIUM | | | | | | | |
| 8. CHROMIUM | | | | | | | |
| 9. COBALT | | | | | | | |
| 10. COPPER | | | | | | | |
| 11. IRON | | | | | | | |
| 12. LEAD | | | | | | | |
| 13. MAGNESIUM | | | | | | | |
| 14. MANGANESE | | | | | | | |
| 15. MERCURY | | | | | | | |
| 16. NICKEL | | | | | | | |
| 17. POTASSIUM | | | | | | | |
| 18. SELENIUM | | | | | | | |
| 19. SILVER | | | | | | | |
| 20. SODIUM | | | | | | | |
| 21. THALLIUM | | | | | | | |
| 22. TIN | | | | | | | |
| 23. VANADIUM | | | | | | | |
| 24. ZINC | | | | | | | |
| Other: | | | | | | | |
| | | | | | | | |
| Cyanide | | | | | | | |

Form V

00019

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Q.C. Report No. 57023

SPIKE SAMPLE RECOVERY

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 7-24-87

CASE NO. 7351
EPA Sample No. MEN541
Lab Sample ID No. -
Units mg/kg

MATRIX SOIL

| Compound | Control Limit %R | Spiked Sample Result (SSR) | Sample Result (SR) | Spike Added (SA) | %R[1] | |
|---|---|---|---|---|---|---|
| Metals: | | | | | | |
| 1. ALUMINUM | 75-125 | 4690 | 4520 | NR | | |
| 2. ANTIMONY | 75-125 | 132 | 10U | 250 | 53 | R |
| 3. ARSENIC | 75-125 | 27 + S | 6.5 | 20 | 102 | |
| 4. BARIUM | 75-125 | 957 | [31] | 1000 | 93 | |
| 5. BERYLLIUM | 75-125 | 24 | [0.62] | 25 | 94 | |
| 6. CADMIUM | 75-125 | 24 | 2.5U | 25 | 96 | |
| 7. CALCIUM | 75-125 | 92400 | 91100 | NR | | |
| 8. CHROMIUM | 75-125 | 100 | 8.7 | 100 | 91 | |
| 9. COBALT | 75-125 | 249 | [6.9] | 250 | 97 | |
| 10. COPPER | 75-125 | 137 | 19 | 125 | 94 | |
| 11. IRON | 75-125 | 12600 | 12300 | NR | | |
| 12. LEAD | 75-125 | 16 | 9 | 10 | 70 | R |
| 13. MAGNESIUM | 75-125 | 45900 | 44000 | NR | | |
| 14. MANGANESE | 75-125 | 670 | 418 | 250 | 101 | |
| 15. MERCURY | 75-125 | 0.48 | 0.1U | 0.5 | 96 | |
| 16. NICKEL | 75-125 | 262 | [18] | 250 | 98 | |
| 17. POTASSIUM | 75-125 | [1160] | [1030] | NR | | |
| 18. SELENIUM | 75-125 | 4.9 S | 2.5U | 5 | 98 | |
| 19. SILVER | 75-125 | 26 | 2U | 25 | 104 | |
| 20. SODIUM | 75-125 | [714] | [456] | NR | | |
| 21. THALLIUM | 75-125 | 24 S | 5U | 25 | 96 | |
| 22. TIN | 75-125 | 216 | 8U | 250 | 86 | |
| 23. VANADIUM | 75-125 | 254 | [12] | 250 | 97 | |
| 24. ZINC | 75-125 | 305 | 42 | 250 | 105 | |
| Other: | | | | | | |
| | | | | | | |
| Cyanide | 75-125 | 3.3 | 0.5U | 5 | 66 | R |

[1] %R = [(SSR - SR)/SA] x 100
"R"- out of control

Comments: ARSENIC SELENIUM & THALLIUM MATRIX SPIKE RESULTS DETERMINED BY MSA

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Form VI

Q.C. Report No. 57023

DUPLICATES

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 7-24-87

CASE NO. 7351
EPA Sample No. MEN541
Lab Sample ID No.
Units mg/kg

Matrix SOIL

| Compound | Control Limit[1] | Sample(S) | Duplicate(D) | RPD[2] |
|---|---|---|---|---|
| Metals: | | | | |
| 1. ALUMINUM | | 4520 | 4820 | 6.4 |
| 2. ANTIMONY | | 10U | 10U | NC |
| 3. ARSENIC | | 6.5 | 8.3 S | 24 |
| 4. BARIUM | | [31] | [31] | NC |
| 5. BERYLLIUM | | [0.62] | [0.85] | NC |
| 6. CADMIUM | | 2.5U | 2.5U | NC |
| 7. CALCIUM | | 91100 | 90200 | 0.99 |
| 8. CHROMIUM | | 8.7 | 9.3 | 6.7 |
| 9. COBALT | | [6.9] | [5.6] | NC |
| 10. COPPER | | 19 | 19 | 0 |
| 11. IRON | | 12300 | 12500 | 1.6 |
| 12. LEAD | | 9 | 7 | 25 |
| 13. MAGNESIUM | | 44000 | 45100 | 2.5 |
| 14. MANGANESE | | 418 | 417 | 0.24 |
| 15. MERCURY | | 0.1U | 0.1U | NC |
| 16. NICKEL | | [18] | [17] | NC |
| 17. POTASSIUM | | [1030] | [1100] | NC |
| 18. SELENIUM | | 2.5U | 2.5U | NC |
| 19. SILVER | | 2U | 2U | NC |
| 20. SODIUM | | [456] | 449U | NC |
| 21. THALLIUM | | 5U | 5U | NC |
| 22. TIN | | 8U | 8U | NC |
| 23. VANADIUM | | [12] | [12] | NC |
| 24. ZINC | | 42 | 45 | 6.9 |
| Other: | | | | |
| % Solids | | 88 | 87 | 1.1 |
| Cyanide | | 0.5U | 0.5U | NC |

X Out of Control
[1] To be added at a later date. [2] RPD = [|S-D|/((S+D)/2)] x 100
NC - Non calculable RPD due to value(s) less than CRDL

The following elements reported unflagged due to sample and/or duplicate concentration less than 5 times the CRDL and +/- CRDL:
ARSENIC, LEAD

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Form VII

Q.C. Report No. 57023
INSTRUMENT DETECTION LIMITS AND
LABORATORY CONTROL SAMPLE

LAB NAME ROCKY MOUNTAIN ANALYTICAL
DATE 7-24-87

CASE NO 7351
UNITS ug/L

| Compound | Required Detection Limits (CRDL)-ug/l | Instrument Detection Limits (IDL)-ug/l ICP/AA | Furnace | Lab Control Sample True | Found | %R |
|---|---|---|---|---|---|---|
| Metals: | | | | | | |
| 1. ALUMINUM | 200 | 24 | | 1980 | 2090 | 106 |
| 2. ANTIMONY | 60 | 21 | | 1090 | 1130 | 104 |
| 3. ARSENIC | 10 | 35 | 1 | 49 | 44 | 90 |
| 4. BARIUM | 200 | 2 | | 1980 | 2000 | 101 |
| 5. BERYLLIUM | 5 | 1 | | 481 | 495 | 103 |
| 6. CADMIUM | 5 | 5 | | 489 | 493 | 101 |
| 7. CALCIUM | 5000 | 69 | | 49800 | 53300 | 107 |
| 8. CHROMIUM | 10 | 4 | | 506 | 482 | 95 |
| 9. COBALT | 50 | 5 | | 474 | 510 | 108 |
| 10. COPPER | 25 | 4 | | 542 | 555 | 102 |
| 11. IRON | 100 | 20 | | 1990 | 2060 | 103 |
| 12. LEAD | 5 | 28 | 1 | 98 | 92 | 94 |
| 13. MAGNESIUM | 5000 | 51 | | 25000 | 26100 | 104 |
| 14. MANGANESE | 15 | 5 | | 513 | 537 | 105 |
| 15. MERCURY | 0.2 | | 0.2CV | 1.0 | 1.03 | 103 |
| 16. NICKEL | 40 | 8 | | 496 | 514 | 104 |
| 17. POTASSIUM | 5000 | 151 | | 50200 | 52200 | 104 |
| 18. SELENIUM | 5 | | 2 | 98 | 90.5 | 92 |
| 19. SILVER | 10 | 4 | | 509 | 509 | 100 |
| 20. SODIUM | 5000 | 898 | | 50700 | 54100 | 107 |
| 21. THALLIUM | 10 | | 1 | 97 | 78 | 80 |
| 22. TIN | 40 | 16 | | 2000 | 1870 | 94 |
| 23. VANADIUM | 50 | 4 | | 511 | 535 | 105 |
| 24. ZINC | 20 | 3 | | 3100 | 3100 | 100 |
| Other: | | | | | | |
| | | | | | | |
| Cyanide | 10 | | 10AS | 58 | 60 | 103 |

CV - Cold Vapor
AS - Automated Spectrophotometric

ecology and environment, inc.
111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL. 312-663-9415
International Specialists in the Environment

Date Received for Review 18 Aug 87 Date Review Completed 18 Aug 87

To: - Tom Pasiorowicz

From: Brenda R. Jones

Subject: HOD Landfill

PAN: 3F-0141 Case # 7357

Sample Description

| Organics (VOA, ABN, Pest/PCB) | | Inorganics (Metals, Cyanide) | |
|---|---|---|---|
| # | Low Soil | # 5 | Low Soil (36 → 40) |
| | Low Water | | Low Water |
| | Drinking Water | | Drinking Water |
| | Other | | Other |

Project Data Status _____ Completed!!

_____ Incomplete, awaiting: _____

FIT Data Review Findings:

✓ Compounds were detected in sample(s); see enclosed Chemical Evaluation Form.

Book No. 6 Page No. _____

recycled paper

ecology and environment, inc.
CHICAGO, ILLINOIS

# CHEMICAL EVALUATION FORM

SITE NAME: HOD Landfill PAN#: DATE: 18 Aug 1987

CASE #: 7351 UNITS: µg/kg REVIEWER: Beverly R.

| TOX/ PERS | COMPOUND | CRDL | 3-5xCRDL | MEN 549 | 550 | 551 | 552 | 553 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ALUMINUM | | | | | | | | | |
| | ANTIMONY | | | | | | | | | |
| | ARSENIC | | | | | | | | | |
| | BARIUM | | | | | | | | | |
| | BERYLLIUM | | | 0.81 | 0.67 | | 0.82 | 0.89 | | |
| | CADMIUM | | | | | | | | | |
| | CHROMIUM | | | 10 | 11 | 9 | 9.3 | 20 | | |
| | COBALT | | | 7.7 | 8 | 6.2 | 5.4 | 12 | | |
| | COPPER | | | 16 | 17 | 16 | 17 | 20 | | |
| | LEAD | | | | | | | | | |
| | MERCURY | | | | | | | | | |
| | NICKEL | | | 18 | 24 | 19 | 18 | 36 | | |
| | SELENIUM | | | | | | | | | |
| | SILVER | | | | | | | | | |
| | THALLIUM | | | | | | | | | |
| | TIN | | | | | | | | | |
| | VANADIUM | | | 15 | 15 | 14 | 13 | 22 | | |
| | ZINC | | | | | | | | | |
| | CYANIDE | | | | | | | | | |

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 8-14-87

SUBJECT: Review of Region V CLP Data Received for Review on 7-29-87

FROM: Curtis Ross, Director (5SCRL) Central Regional Laboratory Jay Thakkar

TO: Data User: FIT

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We have reviewed the data for the following case(s).

SITE NAME: HOD LANDFILL SMO case No. 7351

EPA Data Set No. SF 4136 No. of Samples: 5 D.U./Activity Numbers Y905/C72100

CRL No. 87FP11 S19 - S23

SMO Traffic No. MEN-549-553

CLP Laboratory: RMAL Hrs. Required for Review: 6 hr.

Following are our findings:

Case #7351 consists of 5 soil samples for total metals and cyanide analysis.

The duplication for zinc is within the limits of ±35% and ±CRDL. This data should not have been flagged by the lab. Flag is crossed out by data reviewer.

The duplicate result for iron is 133% RPD. The iron results are quantitatively questionable (UJ) although the qualitative presence is confirmed. The physical appearance of all 5 samples is similar. They may all be nonhomogeneous for iron.

Antimony spike recovery is very low (40%). The analyte was not detected in the samples. The detection limit for these samples may be elevated with a 60% low bias. Data is flagged.

Thallium spike recovery is 72%. The analyte was not

( ) Data are acceptable for use.
(✓) Data are acceptable for use with qualifications noted above.
( ) Data are preliminary - pending verification by Contractor Laboratory.
( ) Data are unacceptable.

cc: Duane Geuder, Quality Assurance Officer, EPA Support Services
James Petty, Chief Quality Assurance Research, EMSL, Las Vegas

EPA FORM 1320-6 (Rev. 5/87)

DATA QUALIFIERS

Contractor: RMAL

Case # 7351

Below is a summary of the out of control audits and the possible effect on the data for this case:

detected in the samples. The detection limit for these samples may be elevated with a 30% low bias. Data is flagged J.

The spike recovery for lead is 131%. The sample value was 9.9 mg/kg; The spike value is 23 mg/kg and the spike added is 10 mg/kg. The added spike is appropriate for water not soil (appendix III). Data is estimated J with a possible high bias.

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Reviewed by: Patricia Moires

Phone: 353-9071

# QC EXCEPTION SUMMARY REPORT

ASE # 7351
ATA SET # SE4136
AB Q.C.# 57038
ATE:

SITE H.O.D. Landfill
LAB RMAL
REVIEWED BY Patricia Morris

MATRIX: Soil
CONC.: Lower

WATER SAMPLE SPK.
WATER SAMPLE DUP.
SOIL SAMPLE SPK. MEN549
SOIL SAMPLE DUP. MEN549

| | OVERALL CASE QC | | | | | | | | | MATRIX SPECIFIC QC | | | | | | SAMPLE SPECIFIC QC | | FIELD QC | | | REGIONAL QC | | | OTHER/ COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Holding Time | Cal Blanks | Inst Calibr | Contin. Calibr | Prep Blk AQ | Prep Blk SOL | ICS %R | LCS % AQ | LCS % SOL | Sol Dup RPD | Sol Spk. %R | AQ Dup RPD | AQ Spk. %R | Sol Blk AQ | Sol Blk SOL | GFAA Dup | GFAA Spike | Blank | Dup RPD | Spike %R | Blind Blank | Blind Spike %R | Split Sample RPD | |
| luminum | OK | OK | OK | OK | OK | OK | OK | | OK | | | | | | OK | OK | OK | | | | | | | |
| ntimony | | | | | | | | | | | 40 | | | | | | | | | | | | | |
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JUN 29 1987 Entered ✓

SAMPLE DATE: 6/25/87
LOG IN DATE: 7/3/87
DUE DATE: 9/4/87

# CENTRAL REGION ... LABORATORY SAMPLE DA... REPORT
## ORGANICS/INORGANICS

THIS FORM IS TO BE USED FOR SAMPLES SENT TO CONTRACT ONLY

SUPERFUND 4136

CASE NUMBER/SAS No. 7351 SITE NAME HOP Landfill RH LABORATORY 27 Envirodyne/RMAL 61 DATE SHIPPED 6/26/87

SUPERFUND DU NUMBER 4905 EPA RPM or OSC (S.M.S.)/(CES) _____ CERCLIS NUMBER MD980505836 PAGE 1 OF 1

ACTIVITY NUMBER ~~A7n100~~ C72100

| CRL LOG NUMBER | ORGANIC TRAFFIC REPORT NUMBER (7/3/87 w/A) or SAS Packing List No. | INORGANIC TRAFFIC REPORT NUMBER or SAS Packing List No. | WATER OR LIQUIDS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN UG/L TOX17574 | VOLATILE ORGANIC ANALYSIS ORGANIC SCAN UG/L TOX17564 | WATER POLYCHLORINATED BIPHENYLS UG/L PES 17144 | WATER CHLORINATED PESTICIDES UG/L PES17134 | TOTAL METALS IN WATER UG/L MET1111 | WATER CYANIDE UG/L MIN74919 | NITRATE/NITRITE MG/L MIN7284 | AMMONIA MG/L MIN7294 | RESIDUE FILTERABLE TDS MG/L MIN7362 | RESIDUE NON-FILT. TSS MG/L MIN7372 | | | SEDIMENTS or SOILS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN MG/KG TOX215722 | VOLATILE ORGANIC ANALYSIS ORGANIC SCAN MG/KG TOX215622 | SEDIMENTS POLYCHLORINATED BIPHENYLS MG/KG PES211422 | SEDIMENT CHLORINATED PESTICIDES MG/KG 211322 | TOTAL METALS MG/KG MET413 | CYANIDE MG/KG MIN44930 | EP TOXICITY METALS MG/KG | AMMONIA MG/KG MIN42925 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 87FP11519 | EM867 ✓ | MEN549 ✓ | — | ✓ | ✓ | ✓ | ✓ | ✓ | — | — | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 87FP11520 | EM868 ✓ | MEN550 ✓ | — | ✓ | ✓ | ✓ | ✓ | ✓ | — | — | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 87FP11521 | EM869 ✓ | MEN551 ✓ | — | ✓ | ✓ | ✓ | ✓ | ✓ | — | — | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 87FP11522 | EM870 ✓ | MEN552 ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | — | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 87FP11523 | EM871 ✓ | MEN553 ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | — | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |

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01

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

RECEIVED AUG 18 1987

Date 7-28-87

COVER PAGE
INORGANIC ANALYSIS DATA PACKAGE

Lab Name ROCKY MOUNTAIN ANALYTICAL
SOW No. 784

Case No. 7351
QC Report No. 57038

Sample Numbers

| EPA No. | Lab ID No. | EPA No. | Lab ID No. |
|---|---|---|---|
| MEN549D | | | |
| MEN549 | | | |
| MEN549S | | | |
| MEN550 | | | |
| MEN551 | | | |
| MEN552 | | | |
| MEN553 | | | |
| [MEN999] | | | |
| | | | |

Comments: 5 LOW SOILS FOR TOTAL METALS AND CYANIDE ANALYSIS
SERIAL DILUTION OF SAMPLE MEN552 IS IDENTIFIED AS [MEN999]

ICP Interelement and background corrections applied? Yes X No ___.
If yes, corrections applied before X or after ___ generation of raw data.

Footnotes:

NR - not required by contract at this time
Form I:
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (i.e., [10]). Indicate the method used with P (for ICP/Flame AA) or F (for furnace).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., 10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
X - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is Less than 0.995
CV - Indicates Cold Vapor
AS - Indicates Automated Spectrophotometric

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Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN549

Date 7-28-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57038

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 6710 | P | 13. | MAGNESIUM | 47300 | P |
| 2. | ANTIMONY | 12U | P RJ | 14. | MANGANESE | 467 | P |
| 3. | ARSENIC | 5.8U | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [35] | P | 16. | NICKEL | [18] | P |
| 5. | BERYLLIUM | [0.81] | P | 17. | POTASSIUM | [1590] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 2.9U | F |
| 7. | CALCIUM | 92700 | P | 19. | SILVER | 2.3U | P |
| 8. | CHROMIUM | 10 | P | 20. | SODIUM | [893] | P |
| 9. | COBALT | [7.7] | P | 21. | THALLIUM | 5.8U | F RJ |
| 10. | COPPER | 16 | P | 22. | TIN | 9.3U | P |
| 11. | IRON | 15900 | P X J | 23. | VANADIUM | [15] | P |
| 12. | LEAD | 12 | F RSJ | 24. | ZINC | 46 | P X |

Cyanide 0.58U AS Percent Solids (%) 86

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: lead value determined by MSA.

Lab Manager

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Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN550

Date 7-28-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57038

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 6400 | P | 13. | MAGNESIUM | 50300 | P |
| 2. | ANTIMONY | 12U | P R J | 14. | MANGANESE | 482 | P |
| 3. | ARSENIC | 5.8U | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [34] | P | 16. | NICKEL | 24 | P |
| 5. | BERYLLIUM | [0.67] | P | 17. | POTASSIUM | [1540] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 2.9U | F |
| 7. | CALCIUM | 97600 | P | 19. | SILVER | 2.3U | P |
| 8. | CHROMIUM | 11 | P | 20. | SODIUM | [575] | P |
| 9. | COBALT | [8] | P | 21. | THALLIUM | 5.8U | F R J |
| 10. | COPPER | 17 | P | 22. | TIN | 9.3U | P |
| 11. | IRON | 15700 | P X J | 23. | VANADIUM | [15] | P |
| 12. | LEAD | 8.7 | F R J | 24. | ZINC | 47 | P X Pm |

Cyanide 0.58U AS Percent Solids (%) 86

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager

Form I

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U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN551

Date 7-28-87

# INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57038

## Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 6110 | P | 13. | MAGNESIUM | 49400 | P |
| 2. | ANTIMONY | 12U | P RJ | 14. | MANGANESE | 497 | P |
| 3. | ARSENIC | 5.8U | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [33] | P | 16. | NICKEL | [19] | P |
| 5. | BERYLLIUM | 0.58U | P | 17. | POTASSIUM | [1470] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 2.9U | F |
| 7. | CALCIUM | 96200 | P | 19. | SILVER | 2.3U | P |
| 8. | CHROMIUM | 9 | P | 20. | SODIUM | [548] | P |
| 9. | COBALT | [6.2] | P | 21. | THALLIUM | 5.8U | F RJ |
| 10. | COPPER | 16 | P | 22. | TIN | 9.3U | P |
| 11. | IRON | 15500 | P XJ | 23. | VANADIUM | [14] | P |
| 12. | LEAD | 10 | F RSJ | 24. | ZINC | 49 | P |

Cyanide 0.58U AS Percent Solids (%) 86

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Lead value determined by MSA.

Lab Manager

RECEIVED AUG 18 1987 05

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN552

Date 7-28-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57038

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 5520 | P | 13. | MAGNESIUM | 53400 | P |
| 2. | ANTIMONY | 12U | P R J | 14. | MANGANESE | 505 | P |
| 3. | ARSENIC | 5.9U | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [31] | P | 16. | NICKEL | [18] | P |
| 5. | BERYLLIUM | [0.82] | P | 17. | POTASSIUM | [1330] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 2.9U | F |
| 7. | CALCIUM | 103000 | P | 19. | SILVER | 2.4U | P |
| 8. | CHROMIUM | 9.3 | P | 20. | SODIUM | [931] | P |
| 9. | COBALT | [5.4] | P | 21. | THALLIUM | 5.9U | F R J |
| 10. | COPPER | 17 | P | 22. | TIN | 9.4U | P |
| 11. | IRON | 14600 | P X J | 23. | VANADIUM | [13] | P |
| 12. | LEAD | 9.4 | F R J | 24. | ZINC | 46 | P X PM |

Cyanide 0.59U AS Percent Solids (%) 85

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager

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Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN553

Date 7-28-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 57038

Elements Identified and Measured

Concentration: Low X Medium
Matrix: Water Soil X Sludge Other

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 12300 | P | 13. | MAGNESIUM | 30000 | P |
| 2. | ANTIMONY | 13U | P R J | 14. | MANGANESE | 396 | P |
| 3. | ARSENIC | 6.4U | F | 15. | MERCURY | 0.13U | CV |
| 4. | BARIUM | [67] | P | 16. | NICKEL | 36 | P |
| 5. | BERYLLIUM | [0.89] | P | 17. | POTASSIUM | [2740] | P |
| 6. | CADMIUM | 3.2U | P | 18. | SELENIUM | 3.2U | F |
| 7. | CALCIUM | 55700 | P | 19. | SILVER | 2.6U | P |
| 8. | CHROMIUM | 20 | P | 20. | SODIUM | [661] | P |
| 9. | COBALT | [12] | P | 21. | THALLIUM | 6.4U | F R J |
| 10. | COPPER | 20 | P | 22. | TIN | 10U | P |
| 11. | IRON | 21200 | P X J | 23. | VANADIUM | [22] | P |
| 12. | LEAD | 12 | F R J | 24. | ZINC | 57 | P X P/n |

Cyanide 0.64U AS Percent Solids (%) 78

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments:

Lab Manager

Form III

Q.C. Report No. 57038 RECEIVED AUG 18 1987 10

BLANKS

LAB NAME ROCKY MOUNTAIN ANALYTICAL CASE NO. 7351
DATE 7-28-87 UNITS ug/L
Matrix Soil

| Preparation Compound | Initial Calibration Blank Value | Continuing Calibration Blank Value 1 | 2 | 3 | 4 | Preparation Blank 1 | 2 |
|---|---|---|---|---|---|---|---|
| Metals: | | | | | | | |
| 1. ALUMINUM | | 24u | | | | | |
| 2. ANTIMONY | | 21u | | | | | |
| 3. ARSENIC | | 2.5EA | | | | | |
| 4. BARIUM | | 2u | | | | | |
| 5. BERYLLIUM | | 1u | | | | | |
| 6. CADMIUM | | 5u | | | | | |
| 7. CALCIUM | | 69u | | | | | |
| 8. CHROMIUM | | 2u | | | | | |
| 9. COBALT | | 3u | | | | | |
| 10. COPPER | | 4u | | | | | |
| 11. IRON | | [48] | | | | | |
| 12. LEAD | | | | | | | |
| 13. MAGNESIUM | | 51u | | | | | |
| 14. MANGANESE | | 3u | | | | | |
| 15. MERCURY | | | | | | | |
| 16. NICKEL | | 8u | | | | | |
| 17. POTASSIUM | | 151u | | | | | |
| 18. SELENIUM | | | | | | | |
| 19. SILVER | | 4u | | | | | |
| 20. SODIUM | | 898u | | | | | |
| 21. THALLIUM | | | | | | | |
| 22. TIN | | 16u | | | | | |
| 23. VANADIUM | | 4u | | | | | |
| 24. ZINC | | 3u | | | | | |
| Other: | | | | | | | |
| | | | | | | | |
| Cyanide | | | | | | | |

Form III



Q.C. Report No. 57038 RECEIVED AUG 1 8 1987

BLANKS

LAB NAME ROCKY MOUNTAIN ANALYTICAL CASE NO. 7351
DATE 7-28-87 UNITS ug/L
Matrix SOIL

| Preparation Compound | Initial Calibration Blank Value | Continuing Calibration Blank Value 1 | 2 | 3 | 4 | Preparation Blank 1 | 2 |
|---|---|---|---|---|---|---|---|
| Metals: | | | | | | | |
| 1. ALUMINUM | [80] | 24U | | | | [26] | |
| 2. ANTIMONY | 21U | 21U | | | | 21U | |
| 3. ARSENIC | 10u | 10u | 10u | 10u | | 10u | |
| 4. BARIUM | 2U | 2U | | | | 2U | |
| 5. BERYLLIUM | 1U | 1U | | | | 1U | |
| 6. CADMIUM | 5U | 5U | | | | 5U | |
| 7. CALCIUM | 69U | 69U | | | | [167] | |
| 8. CHROMIUM | 4U | 4U | | | | 4U | |
| 9. COBALT | 5U | 5U | | | | 5U | |
| 10. COPPER | 4U | 4U | | | | 4U | |
| 11. IRON | [45] | [57] | | | | 20U | |
| 12. LEAD | 5u ~~10u~~ SEA | 5u | 5u | 5u | | 5u | |
| 13. MAGNESIUM | 51U | 51U | | | | 51U | |
| 14. MANGANESE | 5U | 5U | | | | 5U | |
| 15. MERCURY | 0.2u | 0.2u | | | | 0.2u | |
| 16. NICKEL | 8U | 8U | | | | 8U | |
| 17. POTASSIUM | 151U | 151U | | | | 151U | |
| 18. SELENIUM | 5u | 5u | 5u | | | 5u | |
| 19. SILVER | 4U | 4U | | | | 4U | |
| 20. SODIUM | 898U | 898U | | | | 898U | |
| 21. THALLIUM | 10u | 10u | 10u | | | 10u | |
| 22. TIN | 16U | 16U | | | | 16U | |
| 23. VANADIUM | 4U | 4U | | | | 4U | |
| 24. ZINC | 3U | 3U | | | | [8.2] | |
| Other: | | | | | | | |
| Cyanide | 10u | 10u | 10u | 10u | | 10u | |

Form V RECEIVED AUG 1 8 1987 13

Q.C. Report No. 57038

SPIKE SAMPLE RECOVERY

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 7-28-87

CASE NO. 7351
EPA Sample No. MEN549
Lab Sample ID No. -
Units mg/kg

MATRIX SOIL

| Compound | Control Limit %R | Spiked Sample Result (SSR) | Sample Result (SR) | Spike Added (SA) | %R[1] | |
|---|---|---|---|---|---|---|
| Metals: | | | | | | |
| 1. ALUMINUM | 75-125 | 5380 | 5770 | NR | | |
| 2. ANTIMONY | 75-125 | 100 | 10U | 250 | 40 | R |
| 3. ARSENIC | 75-125 | 20 | 5U | 20 | 100 | |
| 4. BARIUM | 75-125 | 943 | [30] | 1000 | 91 | |
| 5. BERYLLIUM | 75-125 | 23 | [0.7] | 25 | 89 | |
| 6. CADMIUM | 75-125 | 24 | 2.5U | 25 | 96 | |
| 7. CALCIUM | 75-125 | 81300 | 79700 | NR | | |
| 8. CHROMIUM | 75-125 | 98 | 8.9 | 100 | 89 | |
| 9. COBALT | 75-125 | 235 | [6.6] | 250 | 91 | |
| 10. COPPER | 75-125 | 134 | 14 | 125 | 96 | |
| 11. IRON | 75-125 | 13300 | 13700 | NR | | |
| 12. LEAD | 75-125 | 23 S | 9.9 S | 10 | 131 | R |
| 13. MAGNESIUM | 75-125 | 41400 | 40700 | NR | | |
| 14. MANGANESE | 75-125 | 628 | 402 | 250 | 90 | |
| 15. MERCURY | 75-125 | 0.44 | 0.1U | 0.5 | 88 | |
| 16. NICKEL | 75-125 | 246 | [15] | 250 | 92 | |
| 17. POTASSIUM | 75-125 | [1370] | [1370] | NR | | |
| 18. SELENIUM | 75-125 | 4.4 S | 2.5U | 5 | 88 | |
| 19. SILVER | 75-125 | 23 | 2U | 25 | 92 | |
| 20. SODIUM | 75-125 | 449U | [768] | NR | | |
| 21. THALLIUM | 75-125 | 18 | 5U | 25 | 72 | R |
| 22. TIN | 75-125 | 230 | 8U | 250 | 92 | |
| 23. VANADIUM | 75-125 | 250 | [13] | 250 | 95 | |
| 24. ZINC | 75-125 | 287 | 40 | 250 | 99 | |
| Other: | | | | | | |
| | | | | | | |
| Cyanide | 75-125 | 4.2 | 0.5U | 5 | 84 | |

[1] %R = [(SSR - SR)/SA] x 100

"R"- out of control

Comments: Lead values for MEN549 & MEN549S determined by MSA.
Selenium value for MEN549S determined by MSA.

Form VI

RECEIVED AUG 18 1987

Q.C. Report No. 57038

DUPLICATES

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 7-28-87

CASE NO. 7351
EPA Sample No. MEN549
Lab Sample ID No. -
Units mg/kg

Matrix SOIL

| Compound | Control Limit[1] | Sample(S) | Duplicate(D) | RPD[2] | |
|---|---|---|---|---|---|
| Metals: | | | | | |
| 1. ALUMINUM | | 5770 | 4920 | 16 | |
| 2. ANTIMONY | | 10U | 10U | NC | |
| 3. ARSENIC | | 5U | 5U | NC | |
| 4. BARIUM | | [30] | [30] | NC | |
| 5. BERYLLIUM | | [0.7] | 0.5U | NC | |
| 6. CADMIUM | | 2.5U | 2.5U | NC | |
| 7. CALCIUM | | 79700 | 68100 | 16 | |
| 8. CHROMIUM | | 8.9 | 6.6 | 30 | |
| 9. COBALT | | [6.6] | [3.2] | NC | |
| 10. COPPER | | 14 | [9.3] | NC | |
| 11. IRON | | 13700 | 67800 | 133 | X |
| 12. LEAD | | 9.9 | 8.5 | 15 | |
| 13. MAGNESIUM | | 40700 | 34200 | 17 | |
| 4. MANGANESE | | 402 | 362 | 10 | |
| 15. MERCURY | | 0.1U | 0.1U | NC | |
| 16. NICKEL | | [15] | [16] | NC | |
| 17. POTASSIUM | | [1370] | [1160] | NC | |
| 18. SELENIUM | | 2.5U | 2.5U | NC | |
| 19. SILVER | | 2U | 2U | NC | |
| 20. SODIUM | | [768] | [503] | NC | |
| 21. THALLIUM | | 5U | 5U | NC | |
| 22. TIN | | 8U | 8U | NC | |
| 23. VANADIUM | | [13] | [13] | NC | |
| 24. ZINC | | 40 | 51 | 24 | X |
| Other: % Solids | | 86 | 85 | 1.2 | |
| | | | | | |
| Cyanide | | 0.5U | 0.5U | NC | |

X Out of Control

[1] To be added at a later date. [2] RPD = [|S-D|/((S+D)/2)] x 100

NC - Non calculable RPD due to value(s) less than CRDL

The following elements reported unflagged due to sample and/or duplicate concentration less than 5 times the CRDL and +/- CRDL:
CHROMIUM

RECEIVED AUG 1 8 1987



Form VII

Q.C. Report No. 57038
INSTRUMENT DETECTION LIMITS AND
LABORATORY CONTROL SAMPLE

LAB NAME ROCKY MOUNTAIN ANALYTICAL
DATE 7-28-87

CASE NO 7351
UNITS ug/L

| Compound | Required Detection Limits (CRDL)-ug/l | Instrument Detection Limits (IDL)-ug/l ICP/AA | Furnace | Lab Control Sample True | Found | %R |
|---|---|---|---|---|---|---|
| Metals: | | | | | | |
| 1. ALUMINUM | 200 | 24 | | 1980 | 1870 | 94 |
| 2. ANTIMONY | 60 | 21 | | 1090 | 966 | 89 |
| 3. ARSENIC | 10 | 35 | 1 | 49 | 43.5 | 88 |
| 4. BARIUM | 200 | 2 | | 1980 | 1760 | 89 |
| 5. BERYLLIUM | 5 | 1 | | 481 | 438 | 91 |
| 6. CADMIUM | 5 | 5 | | 489 | 446 | 91 |
| 7. CALCIUM | 5000 | 69 | | 49800 | 47300 | 95 |
| 8. CHROMIUM | 10 | 4 | | 506 | 415 | 82 |
| 9. COBALT | 50 | 5 | | 474 | 445 | 94 |
| 10. COPPER | 25 | 4 | | 542 | 502 | 93 |
| 11. IRON | 100 | 20 | | 1990 | 1840 | 92 |
| 12. LEAD | 5 | 28 | 1 | 98 | 104 | 106 |
| 13. MAGNESIUM | 5000 | 51 | | 25000 | 23700 | 95 |
| 14. MANGANESE | 15 | 5 | | 513 | 471 | 92 |
| 15. MERCURY | 0.2 | | 0.2CV | 1.0 | 0.99 | 99 |
| 16. NICKEL | 40 | 8 | | 496 | 437 | 88 |
| 17. POTASSIUM | 5000 | 151 | | 50200 | 47200 | 94 |
| 18. SELENIUM | 5 | | 2 | 98 | 88 | 90 |
| 19. SILVER | 10 | 4 | | 509 | 416 | 82 |
| 20. SODIUM | 5000 | 898 | | 50700 | 48500 | 96 |
| 21. THALLIUM | 10 | | 1 | 97 | 88 | 91 |
| 22. TIN | 40 | 16 | | 2000 | 1880 | 94 |
| 23. VANADIUM | 50 | 4 | | 511 | 465 | 91 |
| 24. ZINC | 20 | 3 | | 3100 | 2710 | 87 |
| Other: | | | | | | |
| | | | | | | |
| Cyanide | 10 | | 10AS | 58 | 63 | 109 |

CV - Cold Vapor
AS - Automated Spectrophotometric
Arsenic value determined by MSA.

SF 4136



# CONTRACT COMPLIANCE SCREENING SUMMARY FOR INORGANICS

CASE: 7351 | SAMPLES: 5 | DATE MAILED: 08/07/87

LAB NAME: RMAL | CONTRACT: 68-01-7059 | SCREENER: AC | DATE SCREENED: 08/06/87

QC NUMBER: 57038 | REGION: 5 | DATE RECEIVED: 07/29/87

| SAMPLE NO. | ID. IS. | A COVER PAGE | B DATA SHEETS | C CALIBRATION INIT. | C CALIBRATION CONT. | D BLANKS | E ICS | F MATRIX SPIKE | G DUP. | H IDL | H LCS | I MSA | J HOLD. TIME CN | J HOLD. TIME HG | K RAW DATA | L TR | M SER. DIL. | N LIN. RANGE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEN549-S1LS1 | | | | | | | | | | | | R | | | | | | |
| MEN549-11 | | | | | | | | | | | | R | | | | | | |
| MEN549-B1S | | | | | | | | | | | | R | | | | | | |
| MEN549-91D | | | | | | | | | | | | | | | | | | |
| MEN550-11 | | | | | | | | | | | | | | | | | | |
| MEN551-11 | | | | | | | | | | | | R | | | | | | |
| MEN552-11 | | | | | | | | | | | | | | | | | | |
| MEN553-11 | | | | | | | | | | | | | | | | | | |

PROBLEM CODE: E = EXPLAIN, R = RESUBMIT, S = SUBMIT, N = NONCOMPLIANT

RECEIVED AUG 18 1987

CONTRACT COMPLIANCE SCREENING FOR INORGANICS

WORKSHEET A - ICP

PAGE: 2 (A)

CASE: 7351 CONTRACT: 68-01-7059 SAMPLES: 5 QCNUM: 57038

DATE: 8/6/87

LAB NAME: RMAL REGION: 5

SCREENED BY: AC

| SAMPLE NO. | C/M | SAMP WT. | DATE RECD. | DATE ANAL. | QC TYPE | ANALYSIS TIME | PROBLEMS |
|---|---|---|---|---|---|---|---|
| MEN549-5 | ILS | 1.00 | 27JUN87 | 19:45<br>6/27/87 | STD<br>ICS<br>ICB | 16:43<br>16:54<br>16:58 | |
| MEN549-1 | ILS | 1.00 | 27JUN87 | 19:23 | ICV<br>CCB<br>CCV | 17:08<br>18:20<br>18:22 | |
| MEN549-8 | ILS | 1.00 | 27JUN87 | 19:26 | PREBLK<br>SD 1/5<br>ICSA | 19:15<br>19:45<br>19:48 | |
| MEN549-9 | ILS | 1.00 | 27JUN87 | 19:18 | CCB<br>ICV<br>ICS | 19:51<br>20:00<br>00:46 | |
| MEN550-1 | ILS | 1.00 | 27JUN87 | 19:29 | | | |
| MEN551-1 | ILS | 1.00 | 27JUN87 | 19:32 | | | |
| MEN552-1 | ILS | 1.00 | 27JUN87 | 19:36 | | | |
| MEN553-1 | ILS | 1.00 | 27JUN87 | 19:42<br>6/27/87 | | | |

RECEIVED AUG 18 1987

CONTRACT COMPLIANCE SCREENING FOR INORGANICS WORKSHEET B - AA AND CN



CASE: 7351 CONTRACT: 68-01-7059 SAMPLES: 5 QCNUM: 57038 DATE: 8/6/87

LAB NAME: RMAL REGION: 5 SCREENED BY: AC

| SAMPLE | DATE | AS F | PB FP | HG CV | BE F | TL F | CN | | | | | | PROBLEMS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MEN549-5 | 27JUN87 | 7/27 | 7/27 | 7/22 | 7/26 | 7/27 | 7/1 | | | | | | (1) Resubmit form VIII (p.16 & 17) with correct slope for all MSA calculations. For example, MEN 549, element Pb, slope = 0.803 ≠ 1.24. (R) I |
| MEN549-1 | 27JUN87 | | | | | | | | | | | | I |
| MEN549-8 | 27JUN87 | | | | | | | | | | | | I |
| MEN549-9 | 27JUN87 | | | | | | | | | | | | |
| MEN550-1 | 27JUN87 | | | | | | | | | | | | |
| MEN551-1 | 27JUN87 | | | | | | | | | | | | I |
| MEN552-1 | 27JUN87 | | | | | | | | | | | | |
| MEN553-1 | 27JUN87 | | | | | | | | | | | | |

RECEIVED AUG 18 1987

ecology and environment, inc.
111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL. 312-663-9415
International Specialists in the Environment

Date Received for Review 9/1/87 Date Review Completed 9/8/87

To: Tom Pachowicz

From: Zena Gold-Kaufman ZGK

Subject: HOD Landfill

PAN: 120141 Case # 7351

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 |

41 → 45

Project Data Status _____ Completed!!

_____ Incomplete, awaiting: _____

FIT Data Review Findings:

Samples MEN 554-558

Spike recovery for As data is 67 %, As data estimated
Se spike recovery = 0% - All Se data is unusable

_____ Compounds were detected in sample(s); see enclosed Chemical Evaluation Form.

Book No. 6 Page No. ~~203~~ 178 ~~7/6~~ 7/6/87

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 8/31/87

SUBJECT: Review of Region V CLP Data Received for Review on 8-7-87

RECEIVED SEP 1 1987

FROM: Curtis Ross, Director (5SCRL) Central Regional Laboratory Jay Thakker

TO: Data User: FIT

We have reviewed the data for the following case(s).

SITE NAME: HOD LANDFILL SMO case No. 7351

EPA Data Set No. SF 4168 No. of Samples: 5 D.U./Activity Numbers Y905/C72100

CRL No. 87FP11S24 - S28

SMO Traffic No. MEN 554 - 558

CLP Laboratory: RMAL Hrs. Required for Review: 1

Following are our findings: This review covers 5 low soil samples analyzed for metals and cyanide. Duplicate analysis gave high RPD for As (39%). Spike recovery for As is 67%. all As data are estimated. Spike recoveries for Sb (54%), Se (0%), CN (58%) are shown above. all Se data are unusable. Detection limits for Sb, CN may be elevated. all Sb, CN data are estimated. all other QC audits are acceptable.

[signature]
8.28.87

( ) 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: Duane Geuder, Quality Assurance Officer, EPA Support Services
James Petty, Chief Quality Assurance Research, EMSL, Las Vegas

EPA FORM 1320-6 (Rev. 5/87)

ecology and environment, inc.
CHICAGO, ILLINOIS

# CHEMICAL EVALUATION FORM

SITE NAME: HOD PAN# IL0141 DATE: 9/1/87

CASE # 7351 UNITS- mg/kg REVIEWER: ZCK

| TOX/ PERS | COMPOUND | CRDL | 3-5xCRDL | MEN 554 | 554 | 556 | 557 | 558 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ALUMINUM | 40 | | 7780 | 2000 | 3820 | 4520 | | | |
| | ANTIMONY | | | | | | | | | |
| | ARSENIC J | 2 | | 8.2 J | | - | | | | |
| | BARIUM | 40 | | [54] | [16] | [27] | [31] | [57] | | |
| | BERYLLIUM | 1 | | [0.86] | | | | [0.94] | | |
| | CADMIUM | | | | | | | | | |
| | CHROMIUM | 2 | | 14 | 6.4 | 8.5 | 9.8 | 16 | | |
| | COBALT | 10 | | [11] | [4.3] | [5.4] | [7.3] | [12] | | |
| | COPPER | 5 | | 25 | [14] | [15] | 14 | 25 | | |
| | LEAD | 1 | | 11 | 57 | 6.7 | 7.4 | 12 | | |
| | MERCURY | | | | | | | | | |
| | NICKEL | 8 | | 29 | [12] | [11] | [17] | 30 | | |
| | SELENIUM R | | | | | | | | | |
| | SILVER | | | | | | | | | |
| | THALLIUM | | | | | | | | | |
| | TIN | 8 | | [14] | [14] | [11] | | | | |
| | VANADIUM | 10 | | [17] | [7.6] | [11] | [12] | [19] | | |
| | ZINC | 4 | | 48 | 31 | 32 | 35 | 48 | | |
| | CYANIDE | 2 | | | | | | | | |

U.S. EPA Contract Laboratory Program
Sample Management Office
209 Madison St. - Alexandria, VA 22314
703/557-2490 FTS: 8-557-2490

00001

RECEIVED SEP 1 1987

Date 8-5-87

COVER PAGE
INORGANIC ANALYSIS DATA PACKAGE

Lab Name ROCKY MOUNTAIN ANALYTICAL
SOW No. 784

Case No. 7351
QC Report No. 87012

Sample Numbers

| EPA No. | Lab ID No. | EPA No. | Lab ID No. |
|---|---|---|---|
| MEN554D | | | |
| MEN554 | | | |
| MEN554S | | | |
| MEN555 | | | |
| MEN556 | | | |
| MEN557 | | | |
| MEN558 | | | |
| [MEN999] | | | |
| | | | |

Comments: 5 LOW SOILS FOR TOTAL METALS & CYANIDE
SERIAL DILUTION OF SAMPLE MEN558 IS IDENTIFIED AS [MEN999]

ICP Interelement and background corrections applied? Yes X No ___.
If yes, corrections applied before X or after ___ generation of raw data.

Footnotes:

NR - not required by contract at this time
Form I:
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (i.e., [10]). Indicate the method used with P (for ICP/Flame AA) or F (for furnace).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., 10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
X - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is Less than 0.995
CV - Indicates Cold Vapor
AS - Indicates Automated Spectrophotometric

Form I

000002

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN554

RECEIVED SEP 1 1987

Date 8-5-87

# INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 87012

## Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 7780 | P | 13. | MAGNESIUM | 35000 | P |
| 2. | ANTIMONY | 13U | P R UJ | 14. | MANGANESE | 427 | P |
| 3. | ARSENIC | 8.2J ~~12~~ S + | F R J | 15. | MERCURY | 0.13U | CV |
| 4. | BARIUM | [54] | P | 16. | NICKEL | 29 | P |
| 5. | BERYLLIUM | [0.86] | P | 17. | POTASSIUM | [1820] | P |
| 6. | CADMIUM | 3.1U | P | 18. | SELENIUM | 31U | F R R |
| 7. | CALCIUM | 75500 | P | 19. | SILVER | 2.5U | P |
| 8. | CHROMIUM | 14 | P | 20. | SODIUM | 561U | P |
| 9. | COBALT | [11] | P | 21. | THALLIUM | 6.3U | F |
| 10. | COPPER | 25 | P | 22. | TIN | [14] | P |
| 11. | IRON | 16700 | P | 23. | VANADIUM | [17] | P |
| 12. | LEAD | 11 | F | 24. | ZINC | 48 | P |

Cyanide 0.63U AS R UJ Percent Solids (%) 80

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Arsenic value determined by MSA
Selenium value reported at an additional 10X dilution

Lab Manager [illegible]

00003

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN552

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Date 8-5-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 87012

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 2000 | P | | 13. | MAGNESIUM | 53100 | P | |
| 2. | ANTIMONY | 12U | P | R UJ | 14. | MANGANESE | 326 | P | |
| 3. | ARSENIC | 5.6U | F | R J | 15. | MERCURY | 0.11U | CV | |
| 4. | BARIUM | [16] | P | | 16. | NICKEL | [12] | P | |
| 5. | BERYLLIUM | 0.56U | P | | 17. | POTASSIUM | [548] | P | |
| 6. | CADMIUM | 2.8U | P | | 18. | SELENIUM | 28U | F | R e |
| 7. | CALCIUM | 110000 | P | | 19. | SILVER | 2.2U | P | |
| 8. | CHROMIUM | 6.4 | P | | 20. | SODIUM | 505U | P | |
| 9. | COBALT | [4.3] | P | | 21. | THALLIUM | 5.6U | F | |
| 10. | COPPER | [14] | P | | 22. | TIN | [14] | P | |
| 11. | IRON | 8900 | P | | 23. | VANADIUM | [7.6] | P | |
| 12. | LEAD | 5.7 S | F | | 24. | ZINC | 31 | P | |

Cyanide 0.56U AS R UJ Percent Solids (%) 89

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Lead value determined by MSA.
Selenium value reported for an additional 10x dilution.

Lab Manager [illegible]

00004

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN556

RECEIVED SEP 1 1987

Date 8-5-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 87012

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 3820 | P | 13. | MAGNESIUM | 53000 | P |
| 2. | ANTIMONY | 13U | P R UJ | 14. | MANGANESE | 375 | P |
| 3. | ARSENIC | 6.2U | F R J | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [27] | P | 16. | NICKEL | [11] | P |
| 5. | BERYLLIUM | 0.62U | P | 17. | POTASSIUM | [932] | P |
| 6. | CADMIUM | 3.1U | P | 18. | SELENIUM | 31U | F R R |
| 7. | CALCIUM | 109000 | P | 19. | SILVER | 2.5U | P |
| 8. | CHROMIUM | 8.5 | P | 20. | SODIUM | 554U | P |
| 9. | COBALT | [5.4] | P | 21. | THALLIUM | 6.2U | F |
| 10. | COPPER | [15] | P | 22. | TIN | [11] | P |
| 11. | IRON | 9360 | P | 23. | VANADIUM | [11] | P |
| 12. | LEAD | 6.7 S | F | 24. | ZINC | 32 | P |

Cyanide 0.62U AS RU/Percent Solids (%) 81

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Lead value determined by MSA
Selenium value reported at an additional 10x dilution

Lab Manager [illegible]

00005

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Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN557

Date 8-5-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 87012

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 4520 | P | 13. | MAGNESIUM | 43700 | P |
| 2. | ANTIMONY | 12U | P R U | 14. | MANGANESE | 356 | P |
| 3. | ARSENIC | 5.7U | F R J | 15. | MERCURY | 0.11U | CV |
| 4. | BARIUM | [31] | P | 16. | NICKEL | [17] | P |
| 5. | BERYLLIUM | 0.57U | P | 17. | POTASSIUM | [1110] | P |
| 6. | CADMIUM | 2.9U | P | 18. | SELENIUM | 29U | F R R |
| 7. | CALCIUM | 90300 | P | 19. | SILVER | 2.3U | P |
| 8. | CHROMIUM | 9.8 | P | 20. | SODIUM | [783] | P |
| 9. | COBALT | [7.3] | P | 21. | THALLIUM | 5.7U | F |
| 10. | COPPER | 14 | P | 22. | TIN | 9.2U | P |
| 11. | IRON | 10500 | P | 23. | VANADIUM | [12] | P |
| 12. | LEAD | 7.4 S | F | 24. | ZINC | 35 | P |

Cyanide 0.57U AS R U Percent Solids (%) 87

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Lead value determined by MSA
Selenium value reported at an additional 10x dilution

Lab Manager [illegible]

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
P.O. Box 818 - Alexandria, VA 22313
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN558

RECEIVED SEP 1 1987

Date 8-5-87

INORGANIC ANALYSIS DATA SHEET

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 87012

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 8130 | P | 13. | MAGNESIUM | 32300 | P |
| 2. | ANTIMONY | 14U | P R UJ | 14. | MANGANESE | 377 | P |
| 3. | ARSENIC | 6.8U | F R J | 15. | MERCURY | 0.14U | CV |
| 4. | BARIUM | [57] | P | 16. | NICKEL | 30 | P |
| 5. | BERYLLIUM | [0.94] | P | 17. | POTASSIUM | [1940] | P |
| 6. | CADMIUM | 3.4U | P | 18. | SELENIUM | 34U | F R k |
| 7. | CALCIUM | 71600 | P | 19. | SILVER | 2.7U | P |
| 8. | CHROMIUM | 16 | P | 20. | SODIUM | [808] | P |
| 9. | COBALT | [12] | P | 21. | THALLIUM | 6.8U | F |
| 10. | COPPER | 25 | P | 22. | TIN | 11U | P |
| 11. | IRON | 15700 | P | 23. | VANADIUM | [19] | P |
| 12. | LEAD | 12 S | F | 24. | ZINC | 48 | P |

Cyanide 0.68U AS R UJ Percent Solids (%) 73

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Lead value determined by MSA
Selenium value reported at an additional 10x dilution.

Lab Manager [illegible]

# QC EXCEPTION SUMMARY REPORT

1987

CASE # 7356
DATA SET # #168
LAB Q.C. # 7012
DATE: 8 28 87

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SITE HOD LF
LAB RMAL
REVIEWED BY [illegible]

MATRIX: SS
CONC. : SL

WATER SAMPLE SPK.
WATER SAMPLE DUP.
SOIL SAMPLE SPK. MEN 554
SOIL SAMPLE DUP. MEN 554

| | OVERALL CASE QC | | | | | | | | | MATRIX SPECIFIC QC | | | | | | SAMPLE SPECIFIC QC | | FIELD QC | | | REGIONAL QC | | | OTHER COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Holding Time | Cal Blanks | Inst Calibr | Contin Calibr | 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 | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | | | | | | | | | | | 54 | | | | | | | | | | | | | |
| Arsenic | | | | | | | | | | 39 | 67 | | | | | | | | | | | | | |
| Barium | | | | | | | | | | | | | | | | | | | | | | | | |
| Beryllium | | | | | | | | | | | | | | | | | | | | | | | | |
| Cadmium | | | | | | | | | | | | | | | | | | | | | | | | |
| Calcium | | | | | | | | | | | | | | | | | | | | | | | | |
| Chromium | | | | | | | | | | | | | | | | | | | | | | | | |
| Cobalt | | | | | | | | | | | | | | | | | | | | | | | | |
| Copper | | | | | | | | | | | | | | | | | | | | | | | | |
| Iron | | | | | | | | | | | | | | | | | | | | | | | | |
| Lead | | | | | | | | | | | | | | | | | | | | | | | | |
| Magnesium | | | | | | | | | | | | | | | | | | | | | | | | |
| Manganese | | | | | | | | | | | | | | | | | | | | | | | | |
| Mercury | | | | | | | | | | | | | | | | | | | | | | | | |
| Nickel | | | | | | | | | | | | | | | | | | | | | | | | |
| Potassium | | | | | | | | | | | | | | | | | | | | | | | | |
| Selenium | | | | | | | | | | | 0 | | | | | | | | | | | | | |
| Silver | | | | | | | | | | | | | | | | | | | | | | | | |
| Sodium | | | | | | | | | | | | | | | | | | | | | | | | |
| Thallium | | | | | | | | | | | | | | | | | | | | | | | | |
| Tin | | | | | | | | | | | | | | | | | | | | | | | | |
| Vanadium | | | | | | | | | | | | | | | | | | | | | | | | |
| Zinc | | | | | | | | | | | | | | | | | | | | | | | | |
| Cyanide | | | | | | | | | | | 58 | | | | | | | | | | | | | |

1/2

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Form III

Q.C. Report No. 87012

BLANKS

LAB NAME ROCKY MOUNTAIN ANALYTICAL

CASE NO. 7351

DATE 8-5-87

UNITS ug/L

Matrix SOIL

| Preparation Compound | Initial Calibration Blank Value | Continuing Calibration Blank Value 1 | 2 | 3 | 4 | Preparation Blank 1 | 2 |
|---|---|---|---|---|---|---|---|
| Metals: | | | | | | | |
| 1. ALUMINUM | 15U | 15U | | | | 15U | |
| 2. ANTIMONY | 25U | 25U | | | | 25U | |
| 3. ARSENIC | 10u | 10u | 10u | 10u | | 10u | |
| 4. BARIUM | 3U | 3U | | | | 3U | |
| 5. BERYLLIUM | 1U | [2.8] | | | | 1U | |
| 6. CADMIUM | 4U | 4U | | | | 4U | |
| 7. CALCIUM | 179U | [226] | | | | 179U | |
| 8. CHROMIUM | 4U | 4U | | | | 4U | |
| 9. COBALT | 9U | 9U | | | | 9U | |
| 10. COPPER | 6U | 6U | | | | 6U | |
| 11. IRON | 24U | 24U | | | | 24U | |
| 12. LEAD | 5u | 5u | 5u | 5u | | 5u | |
| 13. MAGNESIUM | 153U | 153U | | | | 153U | |
| 4. MANGANESE | 4U | 4U | | | | 4U | |
| 15. MERCURY | 0.2u | 0.2u | | | | 0.2u | |
| 16. NICKEL | 8U | 8U | | | | 8U | |
| 17. POTASSIUM | 175U | [233] | | | | 175U | |
| 18. SELENIUM | 5u | 5u | 5u | 5u | 5u | 5u | |
| 19. SILVER | 4U | 4U | | | | 4U | |
| 20. SODIUM | 1090U | 1090U | | | | 1090U | |
| 21. THALLIUM | 10u | 10u | 10u | 10u | | 10u | |
| 22. TIN | 22U | 22U | | | | 22U | |
| 23. VANADIUM | 7U | 7U | | | | 7U | |
| 24. ZINC | 3U | [3.2] | | | | [5.1] | |
| Other: | | | | | | | |
| | | | | | | | |
| Cyanide | 10u | 10u | 10u | 10u | | 10u | |

Form III

212

00011

Q.C. Report No. 87012

BLANKS

LAB NAME ROCKY MOUNTAIN ANALYTICAL

CASE NO. 7351

DATE 8-5-87

UNITS ug/L

Matrix SOIL

| Preparation Compound | Initial Calibration Blank Value | Continuing Calibration Blank Value 1 | 2 | 3 | 4 | Preparation Blank 1 | 2 |
|---|---|---|---|---|---|---|---|
| Metals: | | | | | | | |
| 1. ALUMINUM | | | | | | | |
| 2. ANTIMONY | | | | | | | |
| 3. ARSENIC | 10u | 10u | | | | | |
| 4. BARIUM | | | | | | | |
| 5. BERYLLIUM | | | | | | | |
| 6. CADMIUM | | | | | | | |
| 7. CALCIUM | | | | | | | |
| 8. CHROMIUM | | | | | | | |
| 9. COBALT | | | | | | | |
| 10. COPPER | | | | | | | |
| 11. IRON | | | | | | | |
| 12. LEAD | | | | | | | |
| 13. MAGNESIUM | | | | | | | |
| 14. MANGANESE | | | | | | | |
| 15. MERCURY | | | | | | | |
| 16. NICKEL | | | | | | | |
| 17. POTASSIUM | | | | | | | |
| 18. SELENIUM | | | | | | | |
| 19. SILVER | | | | | | | |
| 20. SODIUM | | | | | | | |
| 21. THALLIUM | | | | | | | |
| 22. TIN | | | | | | | |
| 23. VANADIUM | | | | | | | |
| 24. ZINC | | | | | | | |
| Other: | | | | | | | |
| | | | | | | | |
| Cyanide | | | | | | | |

Form VI

Q.C. Report No. 87012

DUPLICATES

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 8-5-87

CASE NO. 7351
EPA Sample No. MEN554D
Lab Sample ID No. -
Units mg/kg

Matrix SOIL

| Compound | Control Limit[1] | Sample(S) | Duplicate(D) | RPD[2] |
|---|---|---|---|---|
| Metals: | | | | |
| ALUMINUM | | 6220 | 6980 | 12 |
| 2. ANTIMONY | | 10U | 10U | NC |
| 3. ARSENIC | | 106.6 S + | 159.8 S | 39 |
| 4. BARIUM | | [43] | [44] | NC |
| 5. BERYLLIUM | | [0.68] | [0.82] | NC |
| 6. CADMIUM | | 2.5U | 2.5U | NC |
| 7. CALCIUM | | 60400 | 55700 | 8.1 |
| 8. CHROMIUM | | 11 | 14 | 24 |
| 9. COBALT | | [8.6] | [9.4] | NC |
| 10. COPPER | | 20 | 18 | 11 |
| 11. IRON | | 13400 | 14000 | 4.4 |
| 12. LEAD | | 9 | 8 | 12 |
| 13. MAGNESIUM | | 28000 | 26300 | 6.3 |
| 14. MANGANESE | | 341 | 324 | 5.1 |
| MERCURY | | 0.1U | 0.1U | NC |
| 16. NICKEL | | 24 | 27 | 12 |
| 17. POTASSIUM | | [1460] | [1530] | NC |
| 18. SELENIUM | | 25U | 25U | NC |
| 19. SILVER | | 2U | 2U | NC |
| 20. SODIUM | | 449U | [575] | NC |
| 21. THALLIUM | | 5U | 5U | NC |
| 22. TIN | | [11] | [12] | NC |
| 23. VANADIUM | | [14] | [16] | NC |
| 24. ZINC | | 38 | 40 | 5.1 |
| Other: | | | | |
| % Solids | | 80 | 80 | 0 |
| Cyanide | | 0.5U | 0.5U | NC |

X Out of Control
[1] To be added at a later date. [2] RPD = [|S-D|/((S+D)/2)] x 100
NC - Non calculable RPD due to value(s) less than CRDL

The following elements reported unflagged due to sample and/or duplicate concentration less than 5 times the CRDL and +/- CRDL:
ARSENIC, CHROMIUM

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Form V

Q.C. Report No. 87012

SPIKE SAMPLE RECOVERY

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 8-5-87

CASE NO. 7351
EPA Sample No. MEN554
Lab Sample ID No. -
Units mg/kg

MATRIX SOIL

| Compound | Control Limit %R | Spiked Sample Result (SSR) | Sample Result (SR) | Spike Added (SA) | %R[1] | |
|---|---|---|---|---|---|---|
| Metals: | | | | | | |
| 1. ALUMINUM | 75-125 | 4760 | 6220 | NR | | |
| 2. ANTIMONY | 75-125 | 134 | 10U | 250 | 54 | R |
| 3. ARSENIC | 75-125 | 20 S | ~~10~~ 6.6 S+ | 20 | ~~50~~ 67 | R |
| 4. BARIUM | 75-125 | 1070 | [43] | 1000 | 103 | |
| 5. BERYLLIUM | 75-125 | 26 | [0.68] | 25 | 101 | |
| 6. CADMIUM | 75-125 | 22 | 2.5U | 25 | 88 | |
| 7. CALCIUM | 75-125 | 63700 | 60400 | NR | | |
| 8. CHROMIUM | 75-125 | 106 | 11 | 100 | 95 | |
| 9. COBALT | 75-125 | 253 | [8.6] | 250 | 98 | |
| 10. COPPER | 75-125 | 140 | 20 | 125 | 96 | |
| 11. IRON | 75-125 | 11300 | 13400 | NR | | |
| 12. LEAD | 75-125 | 17 | 9 | 10 | 80 | |
| 13. MAGNESIUM | 75-125 | 29900 | 28000 | NR | | |
| 14. MANGANESE | 75-125 | 583 | 341 | 250 | 97 | |
| 15. MERCURY | 75-125 | 0.5 | 0.1U | 0.5 | 100 | |
| 16. NICKEL | 75-125 | 267 | 24 | 250 | 97 | |
| 17. POTASSIUM | 75-125 | [1220] | [1460] | NR | | |
| 18. SELENIUM | 75-125 | 25U | 25U | 5 | 0 | R |
| 19. SILVER | 75-125 | 28 | 2U | 25 | 112 | |
| 20. SODIUM | 75-125 | [1170] | 449U | NR | | |
| 21. THALLIUM | 75-125 | 23 S | 5U | 25 | 92 | |
| 22. TIN | 75-125 | 253 | [11] | 250 | 97 | |
| 23. VANADIUM | 75-125 | 275 | [14] | 250 | 104 | |
| 24. ZINC | 75-125 | 280 | 38 | 250 | 97 | |
| Other: | | | | | | |
| | | | | | | |
| Cyanide | 75-125 | 2.9 | 0.5U | 5 | 58 | R |

[1] %R = [(SSR - SR)/SA] x 100
"R"- out of control

Comments: Arsenic values + Thallium spiked sample result determined by MSA. Selenium values reported at an additional (10X dilution).

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Form VII

Q.C. Report No. 87012
INSTRUMENT DETECTION LIMITS AND
LABORATORY CONTROL SAMPLE

LAB NAME ROCKY MOUNTAIN ANALYTICAL
DATE 8-5-87

CASE NO 7351
UNITS ug/L

| Compound | Required Detection Limits (CRDL)-ug/l | Instrument Detection Limits (IDL)-ug/l ICP/AA | Furnace | Lab Control Sample True | Found | %R |
|---|---|---|---|---|---|---|
| Metals: | | | | | | |
| 1. ALUMINUM | 200 | 24 | | 1980 | 2000 | 101 |
| 2. ANTIMONY | 60 | 21 | | 1090 | 1160 | 107 |
| 3. ARSENIC | 10 | 35 | 2 | 49 | 42 | 86 |
| 4. BARIUM | 200 | 2 | | 1980 | 1970 | 99 |
| 5. BERYLLIUM | 5 | 1 | | 481 | 504 | 105 |
| 6. CADMIUM | 5 | 5 | | 489 | 486 | 99 |
| 7. CALCIUM | 5000 | 69 | | 49800 | 52500 | 105 |
| 8. CHROMIUM | 10 | 4 | | 506 | 467 | 92 |
| 9. COBALT | 50 | 5 | | 474 | 506 | 107 |
| 10. COPPER | 25 | 4 | | 542 | 545 | 101 |
| 11. IRON | 100 | 20 | | 1990 | 2020 | 102 |
| 12. LEAD | 5 | 28 | 1 | 98 | 112 | 114 |
| 13. MAGNESIUM | 5000 | 51 | | 25000 | 25400 | 102 |
| 1 MANGANESE | 15 | 5 | | 513 | 519 | 101 |
| 15. MERCURY | 0.2 | | 0.2CV | 1.0 | 1.0 | 100 |
| 16. NICKEL | 40 | 8 | | 496 | 493 | 99 |
| 17. POTASSIUM | 5000 | 151 | | 50200 | 50300 | 100 |
| 18. SELENIUM | 5 | | 2 | 98 | 100 | 102 |
| 19. SILVER | 10 | 4 | | 509 | 486 | 96 |
| 20. SODIUM | 5000 | 898 | | 50700 | 51400 | 101 |
| 21. THALLIUM | 10 | | 2 | 97 | 88 | 91 |
| 22. TIN | 40 | 16 | | 2000 | 2090 | 105 |
| 23. VANADIUM | 50 | 4 | | 511 | 518 | 101 |
| 24. ZINC | 20 | 3 | | 3100 | 2960 | 96 |
| Other: | | | | | | |
| | | | | | | |
| Cyanide | 10 | | 10AS | 58 | 53 | 91 |

CV - Cold Vapor
AS - Automated Spectrophotometric

ecology and environment, inc.
111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL. 312-663-9415
International Specialists in the Environment

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Date Received for Review 9 Sept. 87 Date Review Completed 10 Sept. 87
To: Tom Pachowicz
From: Brenda R. Jones
Subject: HOD Landfill

PAN: IL 0141 EX Case # 7351

Sample Description

| Organics (VOA, ABN, Pest/PCB) | | Inorganics (Metals, Cyanide) | |
|---|---|---|---|
| # | Low Soil | # 4 | Low Soil (46 → 49) |
| | Low Water | | Low Water |
| | Drinking Water | | Drinking Water |
| | Other | | Other |

Project Data Status _____ Completed!!

_____ Incomplete, awaiting: _____

FIT Data Review Findings:

✓ Compounds were detected in sample(s); see enclosed Chemical Evaluation Form.

Book No. 16 Page No. 200


recycled paper

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ecology and environment, inc.
CHICAGO, ILLINOIS

# CHEMICAL EVALUATION FORM

SITE NAME: HOD Landfill PAN#: DATE: 9 Sept. 87

CASE #: 7351 UNITS: mg/kg REVIEWER: BRT

| TOX/ PERS | COMPOUND | CRDL | 3-5xCRDL | MEN 559 | 560 | 561 | 562 | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ALUMINUM | | | | | | | | | |
| | ANTIMONY | | | | | | | | | |
| | ARSENIC | | | 16 | 8.3 | 15 | 8.3 | | | |
| | BARIUM | | | | | | | | | |
| | BERYLLIUM | | | | | 0.66 | 0.66 | | | |
| | CADMIUM | | | | | | | | | |
| | CHROMIUM | | | 17 | 15 | 15 | 14 | | | |
| | COBALT | | | 12 | 8.2 | 9.8 | 9.2 | | | |
| | COPPER | | | 27 | 24 | 28 | 25 | | | |
| | LEAD | | | 10 | 11 | 12 | 12 | | | |
| | MERCURY | | | | | 0.29 | | | | |
| | NICKEL | | | 33 | 26 | 25 | 26 | | | |
| | SELENIUM | | | | | | | | | |
| | SILVER | | | | | | | | | |
| | THALLIUM | | | | | | | | | |
| | TIN | | | | | | | | | |
| | VANADIUM | | | 21 | 18 | 18 | 18 | | | |
| | ZINC | | | | | | | | | |
| | CYANIDE | | | | | | | | | |

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 9-8-87

RECEIVED SEP 9 1987

SUBJECT: Review of Region V CLP Data Received for Review on August 24, 1987

FROM: Curtis Ross, Director (5SCRL)
Central Regional Laboratory Jay Thakkar

TO: Data User: FIT

We have reviewed the data for the following case(s).

SITE NAME: HOD LANDFILL SMO case No. 7351

EPA Data Set No. SF4183 No. of Samples: 4 D.U./Activity Numbers Y905 C72100

CRL No. 87FP12566 — 87FP12569

SMO Traffic No. MEN559 — MEN562

CLP Laboratory: RMAL Hrs. Required for Review: 1

Following are our findings:

This review covers analysis of four low soils for total metals and CN. Se data is unuseable due to spike rec of 0%, and flagged as such (R). Low spikes for Sb (43%), Ag (48%), and Tl (72%) with no detection in the spike sample for any of these elements, flags their data as estimated due to low biased spikes (UJ). No other problems were noted.

9-8-87
DM

( ) 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: Duane Geuder, Quality Assurance Officer, EPA Support Services
James Petty, Chief Quality Assurance Research, EMSL, Las Vegas

ecology and environment

EPA FORM 1320-6 (Rev. 5/87)

# QC EXCEPTION SUMMARY REPORT

CASE # 7351
DATA SET # SF 4183
LAB Q.C. # 87068
DATE: September 8, 1987

SITE HOD Landfill
LAB KMOL
REVIEWED BY Dorothy M. May

MATRIX: soil
CONC. : low

WATER SAMPLE SPK.
WATER SAMPLE DUP.
SOIL SAMPLE SPK. MEN 559
SOIL SAMPLE DUP. MEN 559

| | OVERALL CASE QC | | | | | | | | | MATRIX SPECIFIC QC | | | | | | SAMPLE SPECIFIC QC | | FIELD QC | | | REGIONAL QC | | | OTHER/ COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Holding Time | Cal Blanks | Ind Calibr | Contin Calibr | Prep Blk AQ | Prep Blk SOL | ICS %R | ICS Sol AQ | ICS Sol 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 | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | | | | | | | | | | | 43% | | | | | | | | | | | | | |
| Arsenic | | | | | | | | | | | | | | | | | | | | | | | | |
| Barium | | | | | | | | | | | | | | | | | | | | | | | | |
| Beryllium | | | | | | | | | | | | | | | | | | | | | | | | |
| Cadmium | | | | | | | | | | | | | | | | | | | | | | | | |
| Calcium | | | | | | | | | | | | | | | | | | | | | | | | |
| Chromium | | | | | | | | | | | | | | | | | | | | | | | | |
| Cobalt | | | | | | | | | | | | | | | | | | | | | | | | |
| Copper | | | | | | | | | | | | | | | | | | | | | | | | |
| Iron | | | | | | | | | | | | | | | | | | | | | | | | |
| Lead | | | | | | | | | | | | | | | | | | | | | | | | |
| Magnesium | | | | | | | | | | | | | | | | | | | | | | | | |
| Manganese | | | | | | | | | | | | | | | | | | | | | | | | |
| Mercury | | | | | | | | | | | | | | | | | | | | | | | | |
| Nickel | | | | | | | | | | | | | | | | | | | | | | | | |
| Potassium | | | | | | | | | | | | | | | | | | | | | | | | |
| Selenium | | | | | | | | | | | 0% | | | | | | | | | | | | | |
| Silver | | | | | | | | | | | 48% | | | | | | | | | | | | | |
| Sodium | | | | | | | | | | | | | | | | | | | | | | | | |
| Thallium | | | | | | | | | | | 72% | | | | | | | | | | | | | |
| Tin | | | | | | | | | | | | | | | | | | | | | | | | |
| Vanadium | | | | | | | | | | | | | | | | | | | | | | | | |
| Zinc | | | | | | | | | | | | | | | | | | | | | | | | |
| Cyanide | | | | | | | | | | | | | | | | | | | | | | | | |

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U.S. EPA Contract Laboratory Program
Sample Management Office
209 Madison St. - Alexandria, VA 22314
703/557-2490 FTS: 8-557-2490

SF ~~4183~~ 4183pg 00001

Date 8-20-87

RECEIVED SEP 9 1987

COVER PAGE
INORGANIC ANALYSIS DATA PACKAGE

Lab Name ROCKY MOUNTAIN ANALYTICAL
SOW No. 784

Case No. 7351
QC Report No. 87068

Sample Numbers

| EPA No. | Lab ID No. | EPA No. | Lab ID No. |
|---|---|---|---|
| MEN559D | | | |
| MEN559 | | | |
| MEN559S | | | |
| MEN560 | | | |
| MEN561 | | | |
| MEN562 | | | |
| [MEN999] | | | |
| | | | |
| | | | |

Comments: 4 LOW SOILS FOR TOTAL METALS AND CYANIDE ANALYSIS
SERIAL DILUTION OF SAMPLE MEN562 IS IDENTIFIED AS [MEN999]

ICP Interelement and background corrections applied? Yes X No ___.
If yes, corrections applied before X or after ___ generation of raw data.

Footnotes:

NR - not required by contract at this time
Form I:
Value - If the result is a value greater than or equal to the instrument detection limit but less than the contract required detection limit, report the value in brackets (i.e., [10]). Indicate the method used with P (for ICP/Flame AA) or F (for furnace).
U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., 10U).
E - Indicates a value estimated or not reported due to the presence of interference. Explanatory note included on cover page.
S - Indicates value determined by Method of Standard Addition.
R - Indicates spike sample recovery is not within control limits.
X - Indicates duplicate analysis is not within control limits.
+ - Indicates the correlation coefficient for method of standard addition is Less than 0.995
CV - Indicates Cold Vapor
AS - Indicates Automated Spectrophotometric

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
209 Madison St. - Alexandria, VA 22314
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN559
87EP12566

Date 8-20-87

INORGANIC ANALYSIS DATA SHEET

RECEIVED SEP 9 1987

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 87068

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 8270 | P | 13. | MAGNESIUM | 45800 | P |
| 2. | ANTIMONY | 15U | P R UJ | 14. | MANGANESE | 537 | P |
| 3. | ARSENIC | 16 | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [50] | P | 16. | NICKEL | 33 | P |
| 5. | BERYLLIUM | 0.59U | P | 17. | POTASSIUM | [2310] | P |
| 6. | CADMIUM | 2.4U | P | 18. | SELENIUM | 29u ~~59U~~ | F R R |
| 7. | CALCIUM | 90000 | P | 19. | SILVER | 2.4U | P R UJ |
| 8. | CHROMIUM | 17 | P | 20. | SODIUM | 641U | P |
| 9. | COBALT | [12] | P | 21. | THALLIUM | 5.9U | F R U |
| 10. | COPPER | 27 | P | 22. | TIN | 13U | P |
| 11. | IRON | 19100 | P | 23. | VANADIUM | [21] | P |
| 12. | LEAD | 10 | F | 24. | ZINC | 59 | P |

Cyanide 0.59U AS Percent Solids (%) 85

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Selenium value is reported at an additional 10x dilution

Lab Manager [illegible]

Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
209 Madison St. - Alexandria, VA 22314
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN560
87FP12S67

Date 8-20-87

INORGANIC ANALYSIS DATA SHEET

RECEIVED SEP 9 1987

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 87068

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 8010 | P | 13. | MAGNESIUM | 46500 | P |
| 2. | ANTIMONY | 15U | P R UJ | 14. | MANGANESE | 513 | P |
| 3. | ARSENIC | 8.3 | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [47] | P | 16. | NICKEL | 26 | P |
| 5. | BERYLLIUM | 0.6U | P | 17. | POTASSIUM | [2310] | P |
| 6. | CADMIUM | 2.4U | P | 18. | SELENIUM | 30u ~~60U~~ 100 | F R R |
| 7. | CALCIUM | 93100 | P | 19. | SILVER | 2.4U | P R UJ |
| 8. | CHROMIUM | 15 | P | 20. | SODIUM | 649U | P |
| 9. | COBALT | [8.2] | P | 21. | THALLIUM | 6U | F R UJ |
| 10. | COPPER | 24 | P | 22. | TIN | 13U | P |
| 11. | IRON | 17700 | P | 23. | VANADIUM | [18] | P |
| 12. | LEAD | 11 | F | 24. | ZINC | 84 | P |

Cyanide 0.6U AS Percent Solids (%) 84

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Selenium value is reported at an additional 10X dilution

Lab Manager [illegible]

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Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
209 Madison St. - Alexandria, VA 22314
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN561
87FP12568

Date 8-20-87

INORGANIC ANALYSIS DATA SHEET

RECEIVED SEP 9 1987

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 87068

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 8170 | P | 13. | MAGNESIUM | 47200 | P |
| 2. | ANTIMONY | 15U | P R UJ | 14. | MANGANESE | 530 | P |
| 3. | ARSENIC | 15 | F | 15. | MERCURY | 0.29 | CV |
| 4. | BARIUM | [43] | P | 16. | NICKEL | 25 | P |
| 5. | BERYLLIUM | [0.66] | P | 17. | POTASSIUM | [2370] | P |
| 6. | CADMIUM | 2.4U | P | 18. | SELENIUM | 30a ~~600~~ 100 | F R R |
| 7. | CALCIUM | 95400 | P | 19. | SILVER | 2.4U | P R UJ |
| 8. | CHROMIUM | 15 | P | 20. | SODIUM | 649U | P |
| 9. | COBALT | [9.8] | P | 21. | THALLIUM | 6U | F R UJ |
| 10. | COPPER | 28 | P | 22. | TIN | 13U | P |
| 11. | IRON | 18800 | P | 23. | VANADIUM | [18] | P |
| 12. | LEAD | 12 | F | 24. | ZINC | 80 | P |

Cyanide 0.6U AS Percent Solids (%) 84

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Selenium value is reported at an additional 10x dilution

Lab Manager [illegible]

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Form I

U.S. EPA Contract Laboratory Program
Sample Management Office
209 Madison St. - Alexandria, VA 22314
703/557-2490 FTS: 8-557-2490

EPA Sample No.
MEN562
87FP12569

Date 8-20-87

INORGANIC ANALYSIS DATA SHEET

RECEIVED SEP 9 1987

LAB NAME ROCKY MOUNTAIN ANALYTICAL
SOW NO. 784
LAB SAMPLE ID. NO. -

CASE NO. 7351
QC REPORT NO. 87068

Elements Identified and Measured

Concentration: Low X Medium ____
Matrix: Water ____ Soil X Sludge ____ Other ____

mg/kg dry weight

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | ALUMINUM | 7590 | P | 13. | MAGNESIUM | 46400 | P |
| 2. | ANTIMONY | 15U | P R UJ | 14. | MANGANESE | 501 | P |
| 3. | ARSENIC | 8.3 | F | 15. | MERCURY | 0.12U | CV |
| 4. | BARIUM | [42] | P | 16. | NICKEL | 26 | P |
| 5. | BERYLLIUM | [0.66] | P | 17. | POTASSIUM | [2090] | P |
| 6. | CADMIUM | 2.4U | P | 18. | SELENIUM | 30u ~~60U~~ UO | F R R |
| 7. | CALCIUM | 91200 | P | 19. | SILVER | 2.4U | P R UJ |
| 8. | CHROMIUM | 14 | P | 20. | SODIUM | [748] | P |
| 9. | COBALT | [9.2] | P | 21. | THALLIUM | 6U | F R UJ |
| 10. | COPPER | 25 | P | 22. | TIN | 13U | P |
| 11. | IRON | 17700 | P | 23. | VANADIUM | [18] | P |
| 12. | LEAD | 12 | F | 24. | ZINC | 80 | P |

Cyanide 0.6U AS Percent Solids (%) 84

Footnotes: For reporting results to EPA, standard result qualifiers are used as defined on Cover Page. Additional flags or footnotes explaining results are encouraged. Definition of such flags must be explicit and contained on Cover Page, however.

Comments: Selenium Value is reported at an additional 10x dilution

Lab Manager UO

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Form III

Q.C. Report No. 87068

BLANKS

RECEIVED SEP 9 1987

LAB NAME ROCKY MOUNTAIN ANALYTICAL CASE NO. 7351

DATE 8-20-87 UNITS ug/L

Matrix Soil

| Preparation Compound | Initial Calibration Blank Value | Continuing Calibration Blank Value 1 | 2 | 3 | 4 | Preparation Blank 1 | 2 |
|---|---|---|---|---|---|---|---|
| Metals: | | | | | | | |
| 1. ALUMINUM | | 15u | | | | | |
| 2. ANTIMONY | | 25u | | | | | |
| 3. ARSENIC | | | | | | | |
| 4. BARIUM | | 3u | | | | | |
| 5. BERYLLIUM | | 1u | | | | | |
| 6. CADMIUM | | 4u | | | | | |
| 7. CALCIUM | | 179u | | | | | |
| 8. CHROMIUM | | 4u | | | | | |
| 9. COBALT | | 9u | | | | | |
| 10. COPPER | | 6u | | | | | |
| 11. IRON | | 24u | | | | | |
| 12. LEAD | | | | | | | |
| 13. MAGNESIUM | | 153u | | | | | |
| 14. MANGANESE | | 4u | | | | | |
| 15. MERCURY | | | | | | | |
| 16. NICKEL | | 8u | | | | | |
| 17. POTASSIUM | | 175u | | | | | |
| 18. SELENIUM | | | | | | | |
| 19. SILVER | | 4u | | | | | |
| 20. SODIUM | | 1090u | | | | | |
| 21. THALLIUM | | | | | | | |
| 22. TIN | | 22u | | | | | |
| 23. VANADIUM | | 7u | | | | | |
| 24. ZINC | | 3u | | | | | |
| Other: | | | | | | | |
| | | | | | | | |
| Cyanide | | | | | | | |

2/2

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Form III

Q.C. Report No. 87068

BLANKS

RECEIVED SEP 9 1987

LAB NAME ROCKY MOUNTAIN ANALYTICAL
DATE 8-20-87

CASE NO. 7351
UNITS ug/L

Matrix SOIL

| Preparation Compound | Initial Calibration Blank Value | Continuing Calibration Blank Value 1 | 2 | 3 | 4 | Preparation Blank 1 | 2 |
|---|---|---|---|---|---|---|---|
| Metals: | | | | | | | |
| . ALUMINUM | 15U | 15U | | | | [19] | |
| 2. ANTIMONY | 25U | 25U | | | | 25U | |
| 3. ARSENIC | 10U | 10U | 10U | | | 10U | |
| 4. BARIUM | 3U | 3U | | | | 3U | |
| 5. BERYLLIUM | 1U | 1U | | | | 1U | |
| 6. CADMIUM | 4U | 4U | | | | 4U | |
| 7. CALCIUM | 179U | 179U | | | | 179U | |
| 8. CHROMIUM | 4U | 4U | | | | 4U | |
| 9. COBALT | 9U | 9U | | | | 9U | |
| 10. COPPER | 6U | 6U | | | | 6U | |
| 11. IRON | 24U | 24U | | | | 24U | |
| 12. LEAD | 5U | 5U | 5U | | | 5U | |
| 13. MAGNESIUM | 153U | 153U | | | | 153U | |
| 14. MANGANESE | 4U | 4U | | | | [4.7] | |
| 15. MERCURY | 0.2U | 0.2U | | | | 0.2U | |
| 16. NICKEL | 8U | 8U | | | | 8U | |
| 17. POTASSIUM | 175U | 175U | | | | 175U | |
| 18. SELENIUM | 5U | 5U | 5U | 5U | | 5U | |
| 19. SILVER | 4U | 4U | | | | 4U | |
| 20. SODIUM | 1090U | 1090U | | | | 1090U | |
| 21. THALLIUM | 10U | 10U | 10U | | | 10U | |
| 22. TIN | 22U | 22U | | | | 22U | |
| 23. VANADIUM | 7U | 7U | | | | 7U | |
| 24. ZINC | 3U | 3U | | | | [5.2] | |
| Other: | | | | | | | |
| | | | | | | | |
| Cyanide | 10U | 10U | 10U | | | 10U | |

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Form V

Q.C. Report No. 87068

SPIKE SAMPLE RECOVERY

RECEIVED SEP 9 1987

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 8-20-87

CASE NO. 7351
EPA Sample No. MEN559
Lab Sample ID No. -
Units mg/kg

MATRIX SOIL

| Compound | Control Limit %R | Spiked Sample Result (SSR) | Sample Result (SR) | Spike Added (SA) | %R[1] | |
|---|---|---|---|---|---|---|
| Metals: | | | | | | |
| 1. ALUMINUM | 75-125 | 6870 | 7030 | NR | | |
| 2. ANTIMONY | 75-125 | 107 | 12U | 250 | 43 | |
| 3. ARSENIC | 75-125 | 32 | 14 | 20 | 90 | |
| 4. BARIUM | 75-125 | 1050 | [43] | 1000 | 101 | |
| 5. BERYLLIUM | 75-125 | 27 | 0.5U | 25 | 108 | |
| 6. CADMIUM | 75-125 | 24 | 2U | 25 | 96 | |
| 7. CALCIUM | 75-125 | 76600 | 76500 | NR | | |
| 8. CHROMIUM | 75-125 | 117 | 14 | 100 | 103 | |
| 9. COBALT | 75-125 | 265 | [10] | 250 | 102 | |
| 10. COPPER | 75-125 | 157 | 23 | 125 | 107 | |
| 11. IRON | 75-125 | 15800 | 16300 | NR | | |
| 12. LEAD | 75-125 | 18 | 8.5 | 10 | 95 | |
| 13. MAGNESIUM | 75-125 | 38700 | 38900 | NR | | |
| 14. MANGANESE | 75-125 | 719 | 456 | 250 | 105 | |
| 15. MERCURY | 75-125 | 0.49 | 0.1U | 0.5 | 98 | |
| 16. NICKEL | 75-125 | 284 | 28 | 250 | 102 | |
| 17. POTASSIUM | 75-125 | [1890] | [1970] | NR | | |
| 18. SELENIUM | 75-125 | ~~500~~ 25u | ~~500~~ 25u | 5 | 0 | R |
| 19. SILVER | 75-125 | 12 | 2U | 25 | 48 | R |
| 20. SODIUM | 75-125 | [995] | 545U | NR | | |
| 21. THALLIUM | 75-125 | 18 | 5U | 25 | 72 | R |
| 22. TIN | 75-125 | 247 | 11U | 250 | 99 | |
| 23. VANADIUM | 75-125 | 278 | [18] | 250 | 104 | |
| 24. ZINC | 75-125 | 315 | 50 | 250 | 106 | |
| Other: | | | | | | |
| | | | | | | |
| Cyanide | 75-125 | 4.1 | 0.5U | 5 | 82 | |

[1] %R = [(SSR - SR)/SA] x 100
"R"- out of control

Comments: Selenium matrix spike & Sample Results are reported at additional 10x dilutions

Form VI

Q.C. Report No. 87068 RECEIVED SEP 9 1987

DUPLICATES

LAB NAME ROCKY MOUNTAIN ANALYTICAL

DATE 8-20-87

CASE NO. 7351
EPA Sample No. MEN559
Lab Sample ID No. -
Units mg/kg

Matrix SOIL

| Compound | Control Limit[1] | Sample(S) | Duplicate(D) | RPD[2] |
|---|---|---|---|---|
| Metals: | | | | |
| 1. ALUMINUM | | 7030 | 6750 | 4.1 |
| 2. ANTIMONY | | 12U | 12U | NC |
| 3. ARSENIC | | 14 | 13 | 7.4 |
| 4. BARIUM | | [43] | [42] | NC |
| 5. BERYLLIUM | | 0.5U | 0.5U | NC |
| 6. CADMIUM | | 2U | 2U | NC |
| 7. CALCIUM | | 76500 | 78800 | 3 |
| 8. CHROMIUM | | 14 | 14 | 0 |
| 9. COBALT | | [10] | [9.5] | NC |
| 10. COPPER | | 23 | 22 | 4.4 |
| 11. IRON | | 16300 | 16200 | 0.62 |
| 12. LEAD | | 8.5 | 10 | 16 |
| 13. MAGNESIUM | | 38900 | 38900 | 0 |
| 14. MANGANESE | | 456 | 468 | 2.6 |
| 15. MERCURY | | 0.1U | 0.1U | NC |
| 16. NICKEL | | 28 | 25 | 11 |
| 17. POTASSIUM | | [1970] | [1590] | NC |
| 18. SELENIUM | | ~~500U~~ 25u | ~~500U~~ 25u | NC |
| 19. SILVER | | 2U | 2U | NC |
| 20. SODIUM | | 545U | 545U | NC |
| 21. THALLIUM | | 5U | 5U | NC |
| 22. TIN | | 11U | 11U | NC |
| 23. VANADIUM | | [18] | [17] | NC |
| 24. ZINC | | 50 | 47 | 6.2 |
| Other: | | | | |
| % Solids | | 85 | 85 | 0 |
| Cyanide | | 0.5U | 0.5U | NC |

X Out of Control
[1] To be added at a later date. [2] RPD = [|S-D|/((S+D)/2)] x 100
NC - Non calculable RPD due to value(s) less than CRDL

Form VII

00014

Q.C. Report No. 87068
INSTRUMENT DETECTION LIMITS AND
LABORATORY CONTROL SAMPLE

RECEIVED SEP 9 1987

LAB NAME ROCKY MOUNTAIN ANALYTICAL
DATE 8-20-87

CASE NO 7351
UNITS ug/L

| Compound | Required Detection Limits (CRDL)-ug/l | Instrument Detection Limits (IDL)-ug/l ICP/AA | Furnace | Lab Control Sample True | Found | %R |
|---|---|---|---|---|---|---|
| Metals: | | | | | | |
| 1. ALUMINUM | 200 | 15 | | 1980 | 2140 | 108 |
| 2. ANTIMONY | 60 | 25 | | ~~800~~ 1070 | 1070 | ~~134~~ 98 |
| 3. ARSENIC | 10 | 31 | 2 | 49 | 56 | 114 |
| 4. BARIUM | 200 | 3 | | 1980 | 2040 | 103 |
| 5. BERYLLIUM | 5 | 1 | | 481 | 529 | 110 |
| 6. CADMIUM | 5 | 4 | | 489 | 495 | 101 |
| 7. CALCIUM | 5000 | 179 | | 49800 | 54000 | 109 |
| 8. CHROMIUM | 10 | 4 | | 506 | 530 | 105 |
| 9. COBALT | 50 | 9 | | 474 | 517 | 109 |
| 10. COPPER | 25 | 6 | | 542 | 586 | 108 |
| 11. IRON | 100 | 24 | | 1990 | 2120 | 107 |
| 12. LEAD | 5 | 20 | 1 | 98 | 112 | 114 |
| 13. MAGNESIUM | 5000 | 153 | | 25000 | 26900 | 108 |
| 14. MANGANESE | 15 | 4 | | 513 | 544 | 106 |
| 15. MERCURY | 0.2 | | 0.2CV | 1.0 | 1.00 | 100 |
| 16. NICKEL | 40 | 8 | | 496 | 511 | 103 |
| 17. POTASSIUM | 5000 | 175 | | 50200 | 59300 | 118 |
| 18. SELENIUM | 5 | | 1 | 98 | 96.5 | 98 |
| 19. SILVER | 10 | 4 | | 509 | 496 | 97 |
| 20. SODIUM | 5000 | 1090 | | 50700 | 56300 | 111 |
| 21. THALLIUM | 10 | | 1 | 97 | 104 | 107 |
| 22. TIN | 40 | 22 | | 2000 | 2030 | 101 |
| 23. VANADIUM | 50 | 7 | | 511 | 550 | 108 |
| 24. ZINC | 20 | 3 | | 3100 | 3040 | 98 |
| Other: | | | | | | |
| Cyanide | 10 | | 10AS | 58 | 56 | 97 |

CV - Cold Vapor
AS - Automated Spectrophotometric
Selenium LCS result is determined by MSA

entered JUL 21 1987 ✓

SAMPLE DATE: 7/14/8, LOG-IN DATE: 7/24/8, DUE DATE: 9/24/87

# CENTRAL REGIONAL LABORATORY SAMPLE DATA REPORT
## ORGANICS/INORGANICS

THIS FORM IS TO BE USED FOR SAMPLES SENT TO CONTRACT ONLY

SUPERFUND 4183

CASE NUMBER/SAS No. 7351 SITE NAME HOD Landfill RH LABORATORY 27 Envirodyne/RMAL 61 DATE SHIPPED 7/16/8

SUPERFUND DU NUMBER U905 EPA RPM or OSC (S.M.S.)/(CES) _____ CERCLIS NUMBER ILD980608316 PAGE 1 OF _____

ACTIVITY NUMBER C72100

| CRL LOG NUMBER | ORGANIC TRAFFIC REPORT NUMBER or SAS Packing List No. | INORGANIC TRAFFIC REPORT NUMBER or SAS Packing List No. | WATER OR LIQUIDS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN UG/L TOX17574 | VOLATILE ORGANIC ANALYSIS ORGANIC SCAN UG/L TOX17584 | WATER POLYCHLORINATED BIPHENYLS UG/L PES 17144 | WATER CHLORINATED PESTICIDES UG/L PES17134 | TOTAL METALS IN WATER UG/L MET111 | WATER CYANIDE UG/L MIN74919 | NITRATE/NITRITE MG/L MIN7284 | AMMONIA MG/L MIN7294 | RESIDUE, FILTERABLE TDS MG/L MIN7362 | RESIDUE, NON-FILT TSS MG/L MIN7372 | | | SEDIMENTS or SOILS: ACID-BASE NEUTRAL CPDS ORGANIC SCAN MG/KG TOX215722 | VOLATILE ORGANIC ANALYSIS ORGANIC SCAN MG/KG TOX215622 | SEDIMENTS POLYCHLORINATED BIPHENYLS MG/KG PES211422 | SEDIMENT CHLORINATED PESTICIDES MG/KG 211322 | TOTAL METALS MG/KG MET413 | CYANIDE MG/KG MIN44930 | EP TOXICITY METALS MG/KG | AMMONIA MG/KG MIN42925 | MG/KG | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 87FP12566 | EM877 ✓ | MEN559 ✓ | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 87FP12567 | EM878 ✓ | MEN560 ✓ | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 87FP12568 | EM879 ✓ | MEN561 ✓ | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| 87FP12569 | EM880 ✓ | MEN562 | | | | | | | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |

RECEIVED SEP 9 1987

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