

PREPARED FOR

**Ms. Margaret Ward
City Attorney**

**Tubbs vs. City of San Angelo
Our Case No. AEC 93-1039
Client Reference No. CV 93-D522-A
Date of Incident: 6-01-84**

THE ANALYTICAL GROUP

Analytical Engineering Consultants

Analytical Medical Review

**10408 Gulfdale
San Antonio, Texas 78216
(210) 525-8183
Fax (210) 525-9335
1-800-533-6504**

THE ANALYTICAL GROUP 10408 Gulfdale • San Antonio, Texas 78216

Analytical Engineering Consultants
Analytical Medical Review

(210) 525-8183
FAX (210) 525-9335
1-800-533-6504

September 1, 1993

Ms. Margaret Ward
City Attorney
City of San Angelo
P.O. Box 1751
San Angelo, TX 76902

RE: Tubbs vs. City of San Angelo
Our Case No. AEC 93-1039
Client Reference No. CV 93-D522-A

Dear Ms. Ward:

Per your request, we have completed our file review and evaluation of the above captioned case. We were requested to review and evaluate client furnished file information, visit the site, take soil and air samples and furnish a report of our findings. The requested report is enclosed.

Respectfully submitted,



M. Curtis Franke, P.E.
Senior Vice President Engineer



David Leland, C.E., E.I.T.
Vice President Environmental Engineer

THE ANALYTICAL GROUP

Ms. Margaret Ward
City Attorney
San Angelo, TX 76902

RE: Tubbs vs. City of San Angelo
Our Case No. AEC 93-1039
Client Reference No. CV 93-D522-A

This report and any other related correspondence by Analytical Engineering Consultants is for the exclusive use of our client to whom addressed. Use of our name regarding this case must receive prior written approval.

Neither we nor any other member of our staff have any financial or other related interest with respect to any of the persons or organizations indicated in this report.

We reserve the right to amend or modify our stated opinions and conclusions if and when additional discovery materials are provided or otherwise obtained.

Respectfully submitted,



M. Curtis Franke, P.E.
Senior Vice President Engineer



David Leland, C.E., E.I.T.
Vice President Environmental Engineer

THE ANALYTICAL GROUP

Ms. Margaret Ward
City Attorney
San Angelo, TX 76902

RE: Tubbs vs. City of San Angelo
Our Case No. AEC 93-1039
Client Reference No. CV 93-D522-A

BACKGROUND

On July 2, 1993, Analytical Engineering Consultants (AEC) was retained by the City of San Angelo to perform an Environmental Assessment of the City owned Right-of-Way (ROW) extending north and south along the A.E. White Survey I plot. Based upon information provided to AEC, we understand a portion of the project site was formerly utilized by the City of San Angelo for on-site incineration of municipal waste and that the residue from this process was deposited on site. We further understand that the incinerator was taken out of operation sometime during the 1930s at which time the site may have continued to be used for solid waste landfilling until the 1960s, although these dates could not be confirmed during our investigation. AEC was requested to conduct appropriate environmental sampling along this ROW to determine if hazardous materials and/or fetid odors were present, as claimed in the Plaintiff's Original Petition.

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INSPECTION

On July 17, 1993, three AEC employees, including David Leland, C.E., E.I.T., (Case Manager), Curtis Franke, P.E., and Greg DiCaro E.T., visited the site to document site conditions at the aforementioned property. Field activities included photographing and video taping the site, conducting field head-space screening to determine if volatile organic carbons (VOCs) were present, and obtaining representative soil and vapor samples for laboratory analysis.

On arrival at the site, we were met by the Assistant City Attorney, Mr. Rick De Hoyas and the plaintiff, Mr. Ken Tubbs. Mr. Tubbs departed shortly after our arrival, at which time we verified the exact location of the City ROW with Mr. De Hoyas. An apparent discrepancy was pointed out by a member of our staff in which the survey markers did not appear to match the azimuth shown on our Brunton Compass. A representative of the City Surveying Department was called to the site to verify the

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azimuth. The surveyor informed us that at this particular location the magnetic north declination is approximately 11 degrees, which turned out to be the angle we had been off by on our compass.

We then proceeded to obtain field head-space readings along the City ROW to determine if VOCs or fetid odors were present. The head-space readings were obtained by first driving a 24 inch steel probe into the ground and then extracting it. A tube attached to a photo-ionization detector (PID) was then placed into the hole to monitor for VOCs. Seven locations along the length of the ROW were screened in this manner, with PID readings ranging from non-detect (ND) to 4 ppm (4 ppm is considered negligible and more likely due to instrument error). We also collected two vapor samples into Tedlar air bags using a battery operated vacuum pump and tygon tubing, for subsequent laboratory testing. Since head-space readings were negligible, only one of the two vapor samples was submitted for laboratory analysis of Volatile constituents (EPA Method SW846-8260).

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One representative sample of the waste residue was obtained from the north end of the ROW along an exposed cross section. The sample was labeled and stored on ice until transferred to a laboratory for testing.

A hazardous waste profile was subsequently performed on the waste residue sample according to rules promulgated under the Resource Conservation and Recovery Act (RCRA) to determine if it contained a hazardous material. Profile analysis included testing for Toxicity Characteristic Leaching Process (TCLP) Metals (EPA Method SW846-1311), Volatiles (EPA Method SW846-8260), Semi-Volatiles (EPA Method SW846-8270) and Corrosivity (EPA Method SW846-9040).

Photographs obtained during our investigation are presented in the Photographic Review section of this report. A video tape of our field activities is also included as a separate enclosure with this report.

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EVALUATION

During our investigation, no fetid odors or VOCs were detected either by sense of smell or by field head-space testing with the PID meter. Visual observations indicated that the waste residue present on the City ROW is representative of the material present on the adjacent properties immediately east and west of the ROW. Exposed cross sections located along the north end of the ROW indicate that the residue varied in thickness from 1 to 3 feet and is composed primarily of tin cans and broken glass. It is also evident that the residue was previously incinerated due to the thermal deformation observed in much of the glass residue.

Laboratory results obtained from the waste residue sample indicate a pH of 8.6 (non-corrosive), and no detectable concentrations of volatile or semi-volatile constituents. The sample had a TCLP concentration of ND for Arsenic, Cadmium, Chromium, Mercury, and Silver and a concentration of 1.1 ppm for Barium, 0.3 ppm for Lead, and 0.033 ppm for Selenium.

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According to RCRA guidelines, a substance may only be characterized as a hazardous waste if it meets one of the following criteria. It must either be a listed waste or it must be reactive, corrosive, ignitable, or toxic. The waste residue we examined is not a listed waste nor is it reactive or ignitable based upon its physical nature. Laboratory testing verified that the material is also non-corrosive and non-toxic. Additionally, there is no evidence that VOCs are present.

Prior to our field investigation, we were also informed that independent soil sampling and testing had been performed on the adjacent property to the east. Upon reviewing those laboratory results for the site, we discovered that the testing which was performed consisted of an analysis of Total Metals present, which is significantly different from TCLP Metals. The difference being that TCLP Metals analyzes the portion of the metal which could potentially leach from the soil under the right conditions. RCRA guidelines specifically state that TCLP Metal analysis is the only approved method for determining

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if a substance is hazardous for metals. Since laboratory results obtained on the adjacent property were based upon Total Metal analysis, it is not possible to determine if these levels are considered significant, particularly without considering such factors as soil type and native soil background levels.

Permissable levels for Barium, Lead and Selenium are 100, 5, and 1 ppm respectively. Laboratory results for the vapor sample were also ND for volatile constituents. The laboratory results and chain of custody documentation are shown in APPENDIX A.

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CONCLUSION

Based on the foregoing inspection and evaluation, it is the opinion of the engineering staff at AEC that the waste residue present on the City ROW is representative of that which is present on the two adjoining properties and that this material is non-hazardous as defined in RCRA guidelines.

APPENDIX A

OUR LABORATORY ANALYSIS



CHEMRON
INCORPORATED

431 Isom Road • Suite 135 • San Antonio, Texas 78216-5141 • (210) 340-8121

Client: The Analytical Group
10408 Gulfdale
San Antonio, TX 78216

Client's Job #: AEC 93-1103
COC #: 001
Report Date: 07/20/93

Date & Time Received:
07/19/93, 13:03

CHEMICAL ANALYSIS REPORT

| Chemron # | Sample Description | Sample Matrix | Date Analyzed | pH |
|--------------|---|------------------|------------------|-----|
| 29405 | City Row From A.E. White Survey I N of Row at Crosscut | Soil | 07/19/93 | 8.6 |

Approved By: _____

R. Oldham

Analytical Methods: 9040



431 Isom Road • Suite 135 • San Antonio, Texas 78216-5141 • (210) 340-8121

Client: The Analytical Group
10408 Gulfdale
San Antonio, TX 78216

Date Received: 07/19/93
Time Received: 13:03
Date Sampled: 07/17/93

Client's Job #: AEC 93-11039
Chain of Custody #: 001
Report Date: 07/28/93

TCLP - CHEMICAL ANALYSIS REPORT

| Chemron # | Sample Description | Sample Matrix | Analysis Date | Arsenic (MG/L) | Barium (MG/L) | Cadmium (MG/L) | Chromium (MG/L) | Lead (MG/L) | Mercury (MG/L) | Selenium (MG/L) | Silver (MG/L) |
|-----------|--------------------|---------------|---------------|----------------|---------------|----------------|-----------------|-------------|----------------|-----------------|---------------|
|-----------|--------------------|---------------|---------------|----------------|---------------|----------------|-----------------|-------------|----------------|-----------------|---------------|

| | | | | | | | | | | | |
|-------|---|------|----------|-------|-----|-------|-------|----|-------|------|-------|
| 29405 | City Row From A.E. White Survey I N of Row at Crosscut | Soil | 07/27/93 | <.005 | 1.1 | < .02 | < .05 | .3 | <.001 | .033 | < .02 |
|-------|---|------|----------|-------|-----|-------|-------|----|-------|------|-------|

Approved By:

R. Dickinson

Analytical Methods: TCLP - 1311, As - 7060, Ba - 6010, Cd - 7130, Cr - 7190, Pb - 7420, Hg - 7470, Se - 7740, Ag - 7760



CHEMRON INCORPORATED

431 Isom Road • Suite 135 • San Antonio, Texas 78216-5141 • (210) 340-8121

Client:

The Analytical Group
10408 Gulfdale
San Antonio, TX 78216

Report Date: 7/22/93**Chemron Sample #:** 29405**Sample Matrix:** Soil**Client's Job #:** AEC 93-11039**COC #:** 001**Date Sampled:** 7/17/93**Sample Description:**

City Row From A.E. White Survey I
N of Row at Crosscut

Date & Time Received:

7/19/93 13:03

| <u>Parameter</u> | <u>Value</u> | <u>Quant. Limit</u> | <u>Units</u> | <u>Analysis Date</u> | <u>Method</u> |
|-----------------------------|--------------|-------------------------|--------------|--------------------------|---------------|
| Acetone | <2.7 | <2.7 | mg/kg | 7/21/93 | 8260 |
| Acrolein | <0.34 | <0.34 | mg/kg | 7/21/93 | 8260 |
| Acrylonitrile | <0.14 | <0.14 | mg/kg | 7/21/93 | 8260 |
| Allyl chloride | <0.10 | <0.10 | mg/kg | 7/21/93 | 8260 |
| Benzene | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| Bromodichloromethane | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| Bromoform | <0.14 | <0.14 | mg/kg | 7/21/93 | 8260 |
| Bromomethane | <0.14 | <0.14 | mg/kg | 7/21/93 | 8260 |
| 2-Butanone (MEK) | <0.68 | <0.68 | mg/kg | 7/21/93 | 8260 |
| 2-Butylene dichloride | <0.10 | <0.10 | mg/kg | 7/21/93 | 8260 |
| Carbon tetrachloride | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| Chlorobenzene | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| Chloroethane | <0.20 | <0.20 | mg/kg | 7/21/93 | 8260 |
| 2-Chloroethyl vinyl ether | <0.34 | <0.34 | mg/kg | 7/21/93 | 8260 |
| Chloroform | <0.10 | <0.10 | mg/kg | 7/21/93 | 8260 |
| Chloromethane | <0.20 | <0.20 | mg/kg | 7/21/93 | 8260 |
| Dibromochloromethane | <0.10 | <0.10 | mg/kg | 7/21/93 | 8260 |
| Dibromomethane | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| 1,2-Dichlorobenzene | <1.7 | <1.7 | mg/kg | 7/21/93 | 8260 |
| 1,3-Dichlorobenzene | <0.20 | <0.20 | mg/kg | 7/21/93 | 8260 |
| 1,4-Dichlorobenzene | <0.41 | <0.41 | mg/kg | 7/21/93 | 8260 |
| Dichlorodifluoromethane | <0.34 | <0.34 | mg/kg | 7/21/93 | 8260 |
| 1,1-Dichloroethane | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| 1,2-Dichloroethane | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| 1,1-Dichloroethene | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| trans-1,2-Dichloroethene | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| 1,2-Dichloropropane | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| 4-Methyl-2-pentanone (MIBK) | <0.68 | <0.68 | mg/kg | 7/21/93 | 8260 |
| trans-1,3-Dichloropropene | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| Ethylbenzene | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| Ethylene dibromide | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| 2-Hexanone | <0.68 | <0.68 | mg/kg | 7/21/93 | 8260 |
| Methylene chloride | <1.0 | <1.0 | mg/kg | 7/21/93 | 8260 |
| cis-1,3-Dichloropropene | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| Styrene | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| 1,1,1,2-Tetrachloroethane | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| 1,1,2,2-Tetrachloroethane | <0.20 | <0.20 | mg/kg | 7/21/93 | 8260 |
| Tetrachloroethene | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| Toluene | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| 1,1,1-Trichloroethane | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| 1,1,2-Trichloroethane | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| Trichloroethene | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| Trichlorofluoromethane | <0.34 | <0.34 | mg/kg | 7/21/93 | 8260 |
| 1,2,3-Trichloropropane | <0.10 | <0.10 | mg/kg | 7/21/93 | 8260 |
| m/p-Xylene | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| o-Xylene | <0.068 | <0.068 | mg/kg | 7/21/93 | 8260 |
| Vinyl Chloride | <0.14 | <0.14 | mg/kg | 7/21/93 | 8260 |

Approved by:



CHEMRON INCORPORATED

431 Isom Road • Suite 135 • San Antonio, Texas 78216-5141 • (210) 340-8121

Client:

The Analytical Group
10408 Gulfdale
San Antonio, TX 78216

Report Date: 8/16/93**Chemron Sample #:** 29406**Sample Matrix:** Air**Client's Job #:** AEC 93-11039**COC #:** 001**Date Sampled:** 7/17/93**Sample Description:**

City Row From A.E. White Survey I
Station 7 & 60

Date & Time Received:

7/19/93 13:03

| <u>Parameter</u> | <u>Value</u> | <u>Quant.</u> <u>Limit</u> | <u>Units</u> | <u>Analysis</u> <u>Date</u> | <u>Method</u> |
|-----------------------------|--------------|-------------------------------|--------------|--------------------------------|---------------|
| Acetone | <0.040 | <0.040 | mg/l | 8/13/93 | 8260 |
| Acrolein | <0.005 | <0.005 | mg/l | 8/13/93 | 8260 |
| Acrylonitrile | <0.002 | <0.002 | mg/l | 8/13/93 | 8260 |
| Allyl chloride | <0.002 | <0.002 | mg/l | 8/13/93 | 8260 |
| Benzene | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| Bromodichloromethane | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| Bromoform | <0.002 | <0.002 | mg/l | 8/13/93 | 8260 |
| Bromomethane | <0.002 | <0.002 | mg/l | 8/13/93 | 8260 |
| 2-Butanone (MEK) | <0.010 | <0.010 | mg/l | 8/13/93 | 8260 |
| 2-Butylene dichloride | <0.002 | <0.002 | mg/l | 8/13/93 | 8260 |
| Carbon tetrachloride | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| Chlorobenzene | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| Chloroethane | <0.003 | <0.003 | mg/l | 8/13/93 | 8260 |
| 2-Chloroethyl vinyl ether | <0.005 | <0.005 | mg/l | 8/13/93 | 8260 |
| Chloroform | <0.002 | <0.002 | mg/l | 8/13/93 | 8260 |
| Chloromethane | <0.003 | <0.003 | mg/l | 8/13/93 | 8260 |
| Dibromochloromethane | <0.002 | <0.002 | mg/l | 8/13/93 | 8260 |
| Dibromomethane | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| 1,2-Dichlorobenzene | <0.025 | <0.025 | mg/l | 8/13/93 | 8260 |
| 1,3-Dichlorobenzene | <0.003 | <0.003 | mg/l | 8/13/93 | 8260 |
| 1,4-Dichlorobenzene | <0.006 | <0.006 | mg/l | 8/13/93 | 8260 |
| Dichlorodifluoromethane | <0.005 | <0.005 | mg/l | 8/13/93 | 8260 |
| 1,1-Dichloroethane | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| 1,2-Dichloroethane | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| 1,1-Dichloroethene | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| trans-1,2-Dichloroethene | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| 1,2-Dichloropropane | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| 4-Methyl-2-pentanone (MIBK) | <0.010 | <0.010 | mg/l | 8/13/93 | 8260 |
| trans-1,3-Dichloropropene | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| Ethylbenzene | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| Ethylene dibromide | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| 2-Hexanone | <0.010 | <0.010 | mg/l | 8/13/93 | 8260 |
| Methylene chloride | <0.015 | <0.015 | mg/l | 8/13/93 | 8260 |
| cis-1,3-Dichloropropene | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| Styrene | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| 1,1,1,2-Tetrachloroethane | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| 1,1,2,2-Tetrachloroethane | <0.003 | <0.003 | mg/l | 8/13/93 | 8260 |
| Tetrachloroethene | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| Toluene | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| 1,1,1-Trichloroethane | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| 1,1,2-Trichloroethane | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| Trichloroethene | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| Trichlorofluoromethane | <0.005 | <0.005 | mg/l | 8/13/93 | 8260 |
| 1,2,3-Trichloropropane | <0.002 | <0.002 | mg/l | 8/13/93 | 8260 |
| m/p-Xylene | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| o-Xylene | <0.001 | <0.001 | mg/l | 8/13/93 | 8260 |
| Vinyl Chloride | <0.002 | <0.002 | mg/l | 8/13/93 | 8260 |

Approved by:



Client: The Analytical Group
10408 Gulfdale
San Antonio, Texas 78216

Report Date: 7/23/93
Chemron Sample #: 29405
Sample Matrix: Soil

Sample Description:

Project No.

Project Name/Location: Environmental Sampling/City ROW from A.E White Survey

Client Sample #: 1

SEMI-VOLATILES ANALYSIS REPORT

| ANALYTE | MDL | Units | R E S U L T S | Date Analyzed | Test Method |
|-----------------------------|------|-------|---------------|------------------|----------------|
| Acenaphthene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Acenaphthylene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Acetophenone | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Aniline | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Anthracene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 4-Aminobiphenyl | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Benzidine | 1650 | UG/KG | ND | 7/19/93 | 8270 |
| Benzo(a)anthracene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Benzo(b)fluoranthene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Benzo(k)fluoranthene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Benzo(g,h,i)perylene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Benzo(a)pyrene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Benzoic Acid | 1650 | UG/KG | ND | 7/19/93 | 8270 |
| Benzyl alcohol | 660 | UG/KG | ND | 7/19/93 | 8270 |
| Bis(2-chloroethoxy)methane | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Bis(2-chloroethyl)ether | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Bis(2-chloroisopropyl)ether | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Bis(2-ethylhexyl)phthalate | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 4-Bromophenylphenyl ether | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Butylbenzyl phthalate | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 4-Chloroaniline | 660 | UG/KG | ND | 7/19/93 | 8270 |
| 1-Chloronaphthalene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 2-Chloronaphthalene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 4-Chloro-3-methylphenol | 660 | UG/KG | ND | 7/19/93 | 8270 |
| 2-Chloropenol | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 4-Chlorophenylphenyl ether | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Chrysene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Dibenz(a,h)anthracene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Dibenzofuran | 330 | UG/KG | ND | 7/19/93 | 8270 |



Chemron Sample #: 29405

SEMI-VOLATILES ANALYSIS REPORT

| ANALYTE | MDL | Units | RESULTS | Date Analyzed | Test Method |
|----------------------------|------|-------|---------|---------------|-------------|
| 1,3-Dichlorobenzene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 1,4-Dichlorobenzene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 1,2-Dichlorobenzene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 3,3'-Dichlorobenzidine | 660 | UG/KG | ND | 7/19/93 | 8270 |
| 2,4-Dichlorophenol | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 2,6-Dichlorophenol | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Diethylphthalate | 330 | UG/KG | ND | 7/19/93 | 8270 |
| a,a-Dimethylphenethylamine | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 2,4-Dimethylphenol | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Dimethylphthalate | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Di-n-butylphthalate | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 4,6-Dinitro-2-methylphenol | 1650 | UG/KG | ND | 7/19/93 | 8270 |
| 2,4-Dinitrophenol | 1650 | UG/KG | ND | 7/19/93 | 8270 |
| 2,4-Dinitrotoluene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 2,6-Dinitrotoluene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Di-n-octylphthalate | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 1,2-Diphenylhydrazine | 1650 | UG/KG | ND | 7/19/93 | 8270 |
| Fluoranthene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Fluorene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Hexachlorobenzene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Hexachlorobutadiene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Hexachlorocyclopentadiene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Hexachloroethane | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Indeno(1,2,3-cd)pyrene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Isophorone | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 3-Methylcholanthrene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 2-Methylnaphthalene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 2-Methylphenol | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 4-Methylphenol * | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Naphthalene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 1-Naphthylamine | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 2-Naphthylamine | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 2-Nitroaniline | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 3-Nitroaniline | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 4-Nitroaniline | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Nitrobenzene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 2-Nitrophenol | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 4-Nitrophenol | 1650 | UG/KG | ND | 7/19/93 | 8270 |



Chemron Sample #: 29405

SEMI-VOLATILES ANALYSIS REPORT

| ANALYTE | MDL | Units | RESULTS | Date Analyzed | Test Method |
|----------------------------|------|-------|---------|---------------|-------------|
| N-Nitroso-di-n-butylamine | 330 | UG/KG | ND | 7/19/93 | 8270 |
| N-Nitrosodimethylamine | 330 | UG/KG | ND | 7/19/93 | 8270 |
| N-Nitrosodiphenylamine ** | 330 | UG/KG | ND | 7/19/93 | 8270 |
| N-Nitroso-di-n-propylamine | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Pentachlorobenzene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Pentachloronitrobenzene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Pentachlorophenol | 1650 | UG/KG | ND | 7/19/93 | 8270 |
| Phenacetin | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Phenanthrene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Phenol | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Pyrene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| Pyridine | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 1,2,4,5-Tetrachlorobenzene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 2,3,4,6-Tetrachlorophenol | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 1,2,4-Trichlorobenzene | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 2,4,5-Trichlorophenol | 330 | UG/KG | ND | 7/19/93 | 8270 |
| 2,4,6-Trichlorophenol | 330 | UG/KG | ND | 7/19/93 | 8270 |

ND - not detected

* Co-elutes with 3-Methylphenol

** Inseparable from Diphenylamine

Approved By:

All test method numbers are references to US Environmental Protection Agency methods unless otherwise noted. MDLs shown represent the minimum detection limit for the analytical procedure used based on the amount of sample analyzed.

CLIFF OF CUSTODY NO: 001

SRC NAME: City Row from A.E. White Survey I

The Analytical Group
Analytical/Engineering Consultants
Analytical Medical Review

PROJ. ENG. DAVID LELAND

PROJECT: ENVIRONMENTAL SAMPLING

CONTACT: DAVID LELAND

SAMPLED BY: DAVID LELAND

10408 Guldale
San Antonio, TX 78216

[illegible]