# LONGHORN ARMY AMMUNITION PLANT

# KARNACK, TEXAS

# ADMINISTRATIVE RECORD

# VOLUME 8 of 10

# 1995

**Bate Stamp Numbers**
**015677 - 016226**

*Prepared for:*

**Department of the Army**
**Longhorn Army Ammunition Plant**
**Marshall, Texas 75671-1059**

**1995**

*LONGHORN ARMY AMMUNITION PLANT*
*KARNACK, TEXAS*
*ADMINISTRATIVE RECORD - CHRONOLOGICAL INDEX*

*VOLUME 8 of 10*

**1995**

**A.**

**Title:** Letter - Subject: Transmittal of Draft Project Work Plans Interim Remedial Action at Landfill Sites 12 and 16
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Mr. H. L. Jones, Texas Natural Resource Conservation Commission
**Date:** September 21, 1995
**Bate Stamp:** 015677

**B.**

**Title:** Memorandum for Commander- Subject: Review of the Group 5 Draft Work Plan for Preliminary Assessment Site Investigations for Longhorn Army Ammunition Plant, Karnack, Texas, Prepared by Sverdrup Environmental, August 1995
**Group(s):** 5
**Site(s):** LHAAP-50 Former Waste Disposal Facility
LHAAP-52 Magazine Washout Area
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-60 Former Storage Building 411 and 714
LHAAP-63 Burial Pits
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Jack M. Heller, Ph. D., Acting Program Manager, Health Risk Assessment and Risk Communication
**Recipient:** Jonna Polk, U. S. Army Corps of Engineers, Tulsa District
**Date:** September 27, 1995
**Bate Stamp:** 015678

**C.**

**Title:** Record of Decision - For Early Interim Remedial Action at Landfill Sites 12 and 16, Longhorn Army Ammunition Plant, Karnack, Texas
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** U.S. Army Corps of Engineers
**Author(s):** U.S. Army Corps of Engineers
**Recipient:** U.S. Public
**Date:** September 27, 1995
**Bate Stamp:** 015679-015857

*LONGHORN ARMY AMMUNITION PLANT*
*KARNACK, TEXAS*
*ADMINISTRATIVE RECORD - CHRONOLOGICAL INDEX*

*VOLUME 8 of 10 (Continued)*

**1995**

**D.** **Title:** **Report - Chemical Data Validation Report August and September 1995 Chemical Data at Longhorn Army Ammunition Plant Harrison Bayou**
**Site(s):** **Harrison Bayou**
**Location:** **Longhorn Army Ammunition Plant, Marshall, Texas**
**Agency:** **U.S. Army Corps of Engineers, Tulsa District**
**Author(s):** **U.S. Army Corps of Engineers, Tulsa District**
**Recipient:** **U.S. Army Corps of Engineers, Tulsa District**
**Date:** **October, 1995**
**Bate Stamp:** **015858-016226**

LONGHORN/LOUISIANA ARMY AMMUNITION PLANTS
MARSHALL, TEXAS 75671-1059

REPLY TO
ATTENTION OF

September 21, 1995

SMCLO-EN

015677

Mr. H.L. Jones
Texas Natural Resource Conservation Commission
2916 Teague Drive
Tyler, Texas 75701

SUBJECT: Draft Project Work Plans Interim Remedial Action, Landfill Sites 12 and 16, for Longhorn Army Ammunition Plant in Karnack, Texas

Dear Mr. Jones:

Enclosed are three copies of the subject document. Please provide any comments by October 21, 1995.

If you have any questions, please contact Mr. David Tolbert, at 903-679-2728.

Sincerely,

David Tolbert

for Darrell W. Chinn
Captain, U.S. Army
Executive Officer

Enclosures

DEPARTMENT OF THE ARMY
U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE (PROVISIONAL)
ABERDEEN PROVING GROUND, MARYLAND 21010-5422

REPLY TO ATTENTION OF

MCHB-DE-HR (40)

27 SEP 1995 015678

MEMORANDUM FOR Commander, U.S. Army Corps of Engineers, Tulsa District, ATTN: CESWT-PP-EA/Ms. Jonna Polk, P. O. Box 61, Tulsa, Oklahoma 74121-0061

SUBJECT: Review of the Group 5 Draft Work Plan for the Preliminary Assessment Site Investigations for Longhorn Army Ammunition Plant, Karnack, Texas, Prepared by Sverdrup Environmental, August 1995

1. The U.S. Army Center for Health Promotion and Preventive Medicine (Provisional) (USACHPPM(PROV)) has reviewed the subject document on behalf of the Office of The Surgeon General. The description of the proposed work plan adequately addresses public health concerns.

2. The scientist reviewing this document and our point of contact is Mr. Mark A. Dossey, Health Risk Assessment and Risk Communication Program, DSN 584-2953 or commercial (410) 671-2953.

FOR THE COMMANDER:

for Dennis E. Drumb
JACK M. HELLER, Ph.D.
Acting Program Manager, Health Risk Assessment and Risk Communication

CF:
HQDA (SGPS-PSP-E)
CDR, USAMEDCOM, ATTN: MCHO-CL-P
CDR, CEMRD, ATTN: CEMRD-ET-EH
CDR, USAEC, ATTN: SFIM-AEC-IRP
CDR, LHAAP, ATTN: SMCLO-EN

*Readiness thru Health*

015670

# RECORD OF DECISION

# FOR

# EARLY INTERIM REMEDIAL ACTION

# AT

# THE LHAAP 12 AND 16 LANDFILLS

# LONGHORN
# ARMY AMMUNITION PLANT

# KARNACK, TEXAS

# SEPTEMBER 1995

015680

# LHAAP 12 AND 16 LANDFILLS
# LONGHORN ARMY AMMUNITION PLANT
# RECORD OF DECISION

## EARLY INTERIM REMEDIAL ACTION

## SEPTEMBER 1995

## A. SITE NAME AND LOCATION

LHAAP 12 and 16 Landfills, Longhorn Army Ammunition Plant
Karnack, Texas

## B. STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected Early Interim Remedial Action for the LHAAP 12 and 16 landfills, Longhorn Army Ammunition Plant (LHAAP), in Karnack, Texas. This selection is made in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the administrative record for this site.

The State of Texas concurs with the selected remedy. A copy of the concurrence letter is attached.

## C. ASSESSMENT OF THE SITES

Actual or threatened releases of hazardous substances from these sites, if not addressed by implementing the response action selected in this Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare, or the environment.

## D. DESCRIPTION OF THE SELECTED REMEDY

The Record of Decision for the sites addresses an Early Interim Remedial Action. This Early Interim Remedial Action is necessary to mitigate potential risks posed by buried source material at the sites. The selected remedy addresses the risks associated with the landfill contents at the

sites by reducing further migration of contaminants into the ground water and possibly into surface water bodies.

The selected remedy consists of a multilayer landfill cap section which includes the following components:

- Foundation soil layer,
- Sodium Bentonite Geocomposite Liner,
- Geosynthetic Membrane Liner,
- Final soil cover, and
- Perimeter berms and drainage swales.

## E. STATUTORY DETERMINATION

This Early Interim Remedial Action is protective of human health and the environment, complies with Federal and State applicable or relevant and appropriate requirements for this limited-scope action, and is cost effective. This Early Interim Remedial Action is not intended to address the statutory mandate for permanence and treatment to the maximum extent practicable.

Because this action does not constitute the final remedy for these sites, the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element will be addressed by the final response action. Subsequent actions are planned to address fully the threats posed by the conditions at these sites.

Because this remedy will result in hazardous substances remaining on site above health-based levels, a review will be conducted to ensure that the remedy continues to provide adequate protection of human health and the environment within five years after initiation of this remedial action. Because this is an Early Interim Remedial Action, review of these sites and this remedy will continue. The development of final remedial alternatives for these sites will be forthcoming.

Jane N. Saginaw
Regional Administrator
EPA Region 6

9/27/95
Date

Signature sheet for the foregoing LHAAP 12 and 16 landfills Early Interim Remedial Action Record of Decision between the Department of the Army and the U.S. Environmental Protection Agency, with concurrence by the Texas Natural Resource Conservation Commission.

Raymond J. Fatz

Mr. Raymond J. Fatz
Acting Deputy Assistant Secretary
of the Army (Environment, Safety
and Occupational Health)
OASA (I, L, & E)

SEP 18 1995
Date

Darrell Chinn

Darrel Chinn
Captain, U.S. Army
Executive Officer
Longhorn Army Ammunition Plant

8/3/95
Date

Record of Decision
Early Interim Remedial Action
LHAAP 12 and 16 Landfills

Lisa Marie Price
ROD Peer Review

John Meyer
Acting Superfund Texas Section Chief (6SF-AT)

Bill Honker
AK/OK/TX Superfund Branch Chief (6SF-A)

Michael C. Barra
Litigation and Enforcement Branch (6SF-DL)

Mark Peycke
Litigation and Enforcement Branch (6SF-DL)

Myron O. Knudson
Superfund Division Director (SF)

015684

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015685

# DECISION SUMMARY

## A. Location and Description

Longhorn Army Ammunition Plant (LHAAP) is located in central east Texas in the northeast corner of Harrison County, approximately 14 miles northeast of Marshall, Texas, and approximately 40 miles west of Shreveport, Louisiana, as shown on Figure 1. The installation occupies 8,493 acres between State Highway 43 and the western shore of Caddo Lake and is accessed by State Highways 43 and 134. The LHAAP 12 and 16 landfills are in a remote location of LHAAP and access is restricted.

The LHAAP 12 landfill encompasses approximately 7 acres and is located approximately 1,700 feet east-northeast of the intersection of Avenue P and Avenue Q, as shown on Figure 2. The entrance to the site is a gravel road off Avenue Q. The site is an open area of grass bounded by heavy timber. A tributary of Central Creek flows along the eastern, northeastern, and northern edges of the landfill.

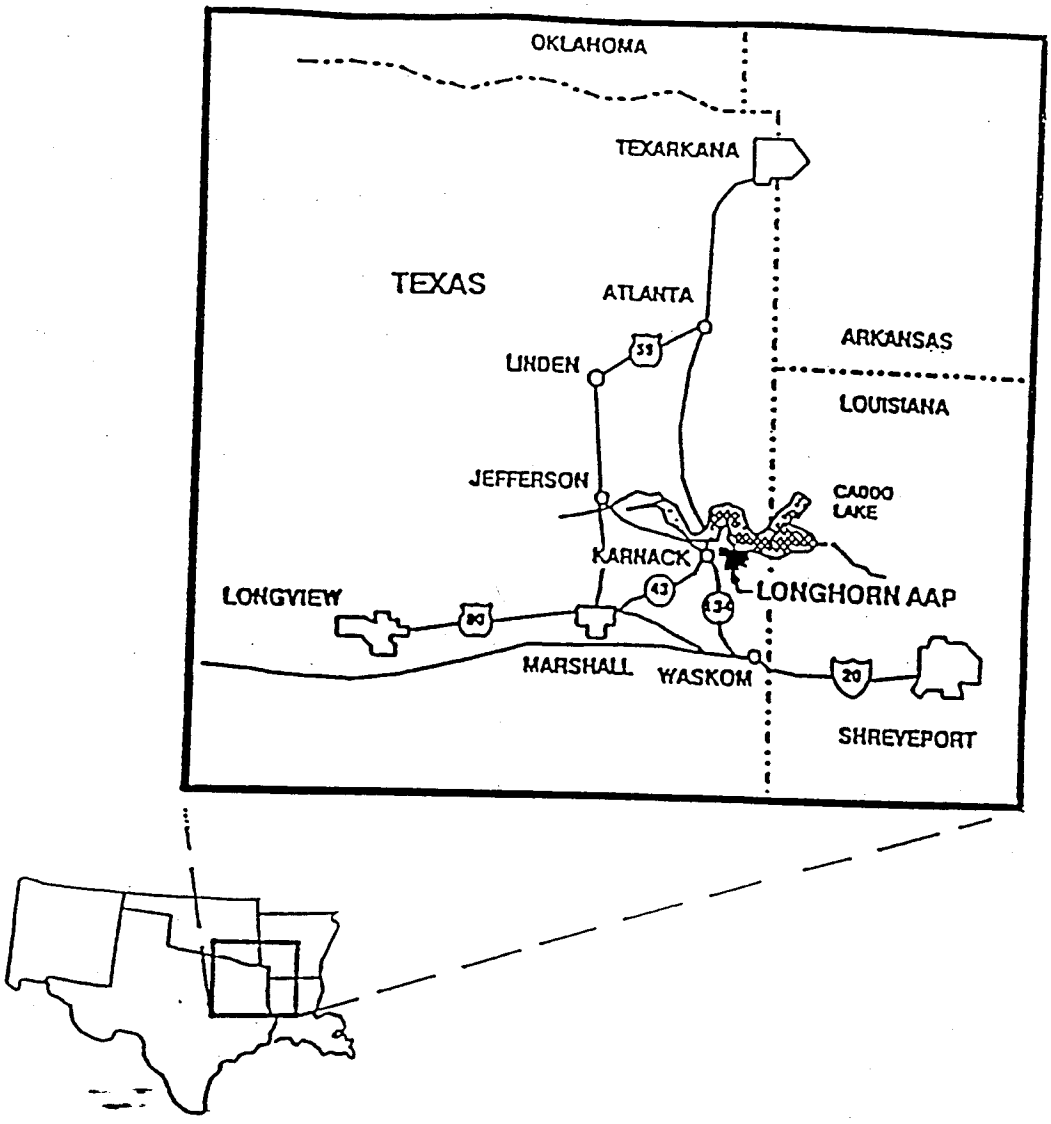
The LHAAP 16 landfill encompasses approximately 20 acres and is located in the east central quadrant of LHAAP, as shown on Figure 2. The landfill is a sloped, open area of grass bounded along the west and north by a gravel road and along the east and south edges by heavy timber. Also, the east and southeast edges of the LHAAP 16 landfill are bounded by the Harrison Bayou. The southeastern edge of the landfill is in the 100-year flood plain.

LHAAP is situated on gently rolling land with an average slope of 3 percent towards the northeast. Most of the terrain slopes 3 percent or less, but slopes as steep as 12 percent are common in the western and northwestern portions of the installation and along the Harrison Bayou floodplain. Elevations on LHAAP vary from 335 to 170 feet above mean sea level (msl).

The topography of the LHAAP 12 landfill is flat to gently sloping in the central portions of the landfill and more steeply sloping along the eastern and northern edges of the landfill. The topography of the site has been greatly altered by the construction and operation of a diversion ditch from 1954 to 1963 and the subsequent operation of the landfill for approximately 30 years.

The topography of the LHAAP 16 landfill slopes gently to the east and southeast over the central portion of the landfill and slopes more steeply along the eastern and southeastern edges of the landfill. The topography of the site was raised approximately 5 to 15 feet by the operation of the landfill over a 40-year period.

LHAAP is located in a region commonly called the Pineywoods, a deep inland extension of the Gulf Coastal Plain that extends into Texas, Louisiana, Arkansas, and Oklahoma. The area is characterized by mixed pine hardwood forests that cover gently rolling to hilly terrain. Mild temperatures and ample rainfall in east Texas provide excellent conditions to support an abundant and diverse plant community. This, in turn, provides a number of niches for a rich faunal

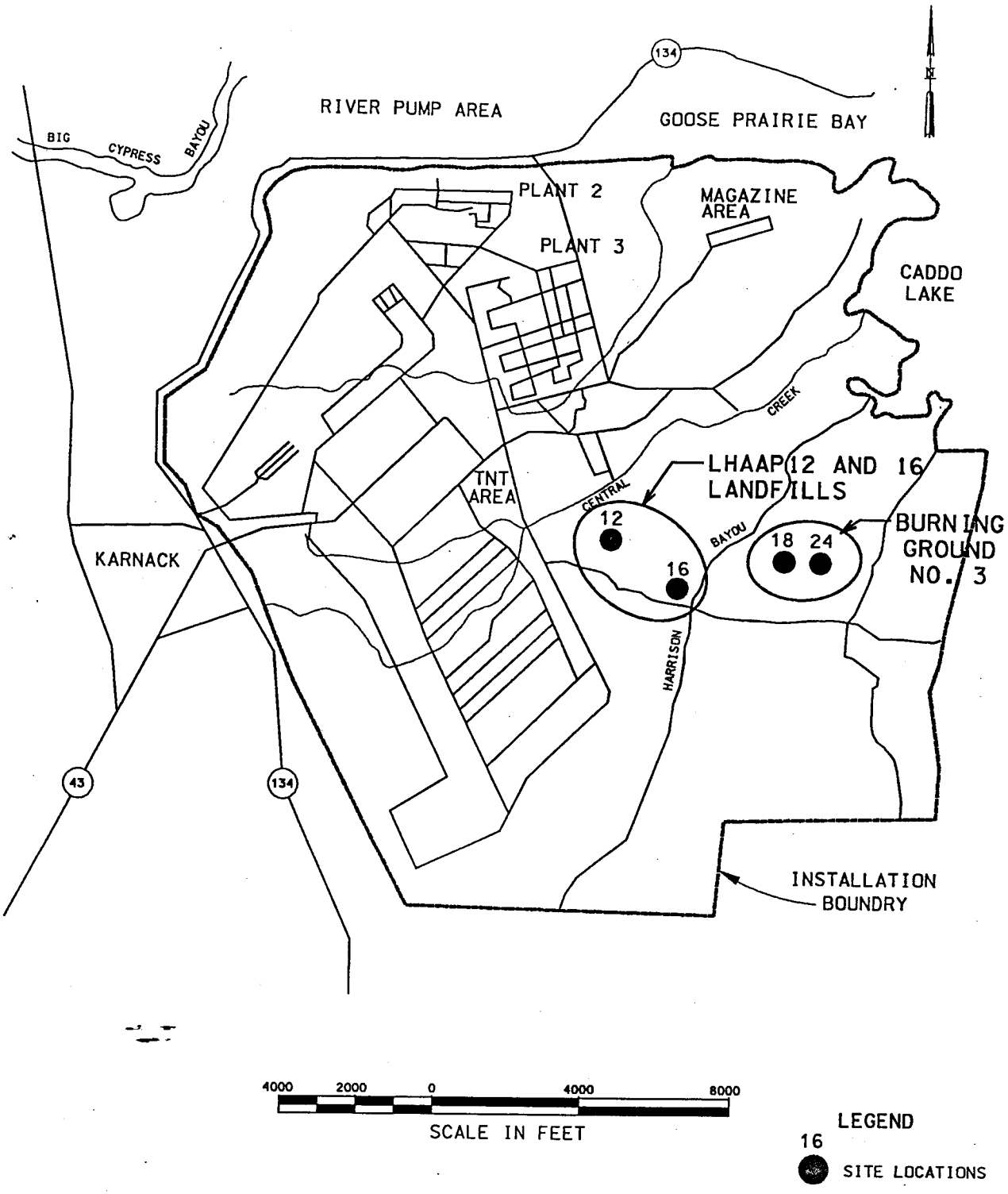



US Army Corps of Engineers
Tulsa District

REGIONAL LOCATION MAP

LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

FIGURE NUMBER 1




US Army Corps of Engineers
Tulsa District

LOCATION MAP
FOR LHAAP 12 AND LHAAP 16

LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

FIGURE NUMBER
2

community. LHAAP is forested with loblolly and shortleaf pines, a variety of oaks, sweet gum, black tupelo, ash, bald cypress, and a few scattered willows. Pines predominate throughout the installation. Both LHAAP 12 and 16 landfills are cleared areas within a heavily wooded section of LHAAP.

Caddo Lake, Caddo Lake State Park, and the small unincorporated town of Karnack border LHAAP. Other surrounding land is forested, with an oil and natural gas field located to the east of LHAAP along the Louisiana border. Caddo Lake State Park is located approximately 2.8 miles west-northwest of the installation. Other recreational facilities and nearby lake shore communities are within 5 miles. The town of Uncertain is 1.9 miles north of LHAAP.

All surface water from LHAAP drains into Caddo Lake via four drainage systems that cross portions of the installation, as shown on Figure 3. These systems are known as Saunder's Branch, Harrison Bayou, Central Creek, and Goose Prairie Bayou.

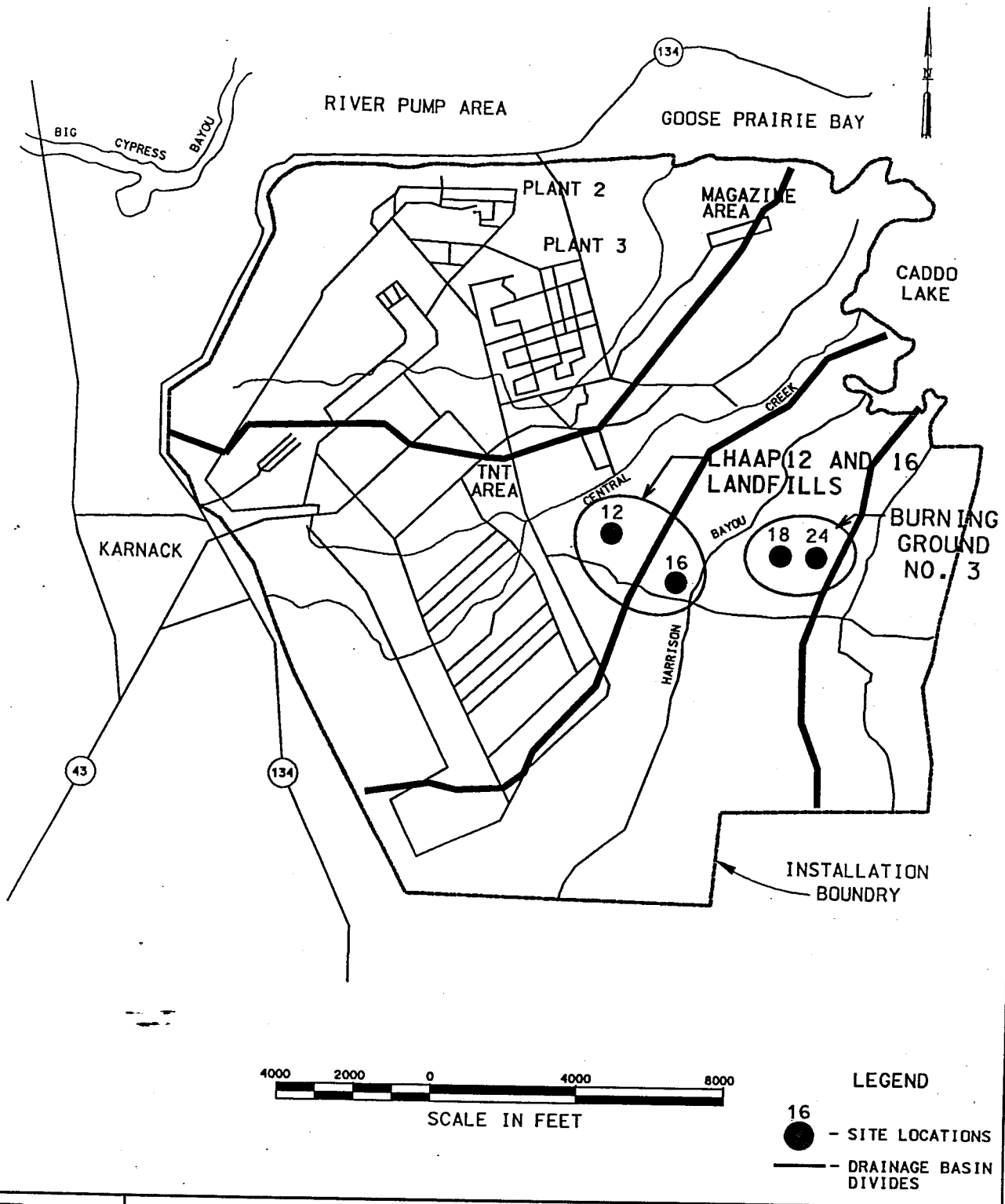
The surface drainage at the LHAAP 12 landfill flows to the north, east, and southeast. The surface drainage follows natural and manmade ditches and drainage swales which flow into a nearby tributary of Central Creek. Central Creek eventually flows into Caddo Lake which is located approximately 2 miles downstream of the site.

The surface drainage at the LHAAP 16 landfill flows to the east and southeast. The surface drainage follows the manmade surface slopes of the landfill and flows into the floodplain area of Harrison Bayou. The eastern and southeastern edges of the landfill are located within the 100-year floodplain of the bayou. Harrison Bayou eventually flows into Caddo Lake which is located approximately 1-1/3 miles downstream of the site.

LHAAP, including the Site 12 and 16 landfills, is situated on an outcrop of the Wilcox Group, which crops out over a large part of the eastern half of Harrison County. The Wilcox consists mostly of fine- to medium-grained sands interbedded with a considerable amount of clay and seams of lignite. The Wilcox Group is underlain conformably by the predominatly calcareous clay of the Midway Group. Regional dip of the Wilcox is to the northwest into the East Texas Syncline, while the ground surface generally dips to the southeast.

The Wilcox Group has been identified by the Texas Water Development Board as the basal unit of the regional Cypress aquifer, also known as the Carrizo-Wilcox aquifer. The Cypress aquifer outcrops over most of Harrison County and is comprised of, in ascending order, the Wilcox Group, the Carrizo Sand, the Reklaw Formation, and the Queen City Sand. All units are believed to be hydraulically connected. All of these units dip to the northwest into the East Texas Syncline.

The availability of ground water in Harrison County is largely dependent on the hydrologic characteristics of the units comprising the Cypress aquifer. The Wilcox Group outcropping in the area of LHAAP yields small (less than 50 gallons per minute (gpm) to moderate (50-500




US Army Corps of Engineers
Tulsa District

# DRAINAGE BASINS

LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

FIGURE NUMBER 3

gpm) quantities of fresh water to wells throughout the county. As the basal unit of the Cypress aquifer, the Wilcox is also considered as the base of fresh water in the area. The Midway Group, which does not yield usable quantities of water, tends to serve as a relatively impermeable basement to the overlying water-bearing Wilcox. The elevation of the top of the Midway Group will be determined for both sites during the Phase II investigation.

**B. Site History and Enforcement Activities**

Longhorn Army Ammunition Plant is a government-owned, contractor-operated (Longhorn Division of Thiokol Corporation) industrial facility under the jurisdiction of the U.S. Army Armaments, Munitions, and Chemical Command. Its primary mission is to load, assemble, and pack pyrotechnic and illuminating/signal ammunition and solid propellant rocket motors.

Longhorn Army Ammunition Plant was established in October 1942 with the primary mission of producing trinitrotoluene (TNT) flake in the Plant 1 area. Production of TNT continued through World War II until August 1945 when the plant went on standby status until February 1952. Pyrotechnic ammunition, such as photoflash bombs, simulators, hand signals, and tracers for 40mm ammunition were manufactured at LHAAP from 1952 until 1956. The Plant 3 area rocket motor facility began operation in November of 1955. Production of rocket motors continued to be the primary mission of LHAAP until 1965, when the production of pyrotechnic and illuminating ammunition was re-established.

Recent operations consist of compounding pyrotechnic and propellant mixtures; load, assemble and pack activities; accommodating receipt and shipment of containerized cargo; and maintenance and/or layaway of standby facilities and equipment as they apply to mobilization planning. The installation has also been responsible for the static firing and elimination of Pershing I and II rocket motors in compliance with the Intermediate-Range Nuclear Force Treaty in effect between the United States and the former Soviet Union.

Disposal in the LHAAP 12 landfill was started prior to April 1963. The landfill was used intermittently for the disposal of industrial solid waste, possibly containing hazardous constituents, generated at LHAAP. This was standard landfill practice among public and private industry at the time. Disposal began in a diversion ditch from Central Creek and one of its principal tributaries and continued until 1978 when disposal was moved onto a hillside in the northeast portion of the site. In the early 1980's, areas southeast of the diversion ditch were cleared and used for disposal. Disposal in the LHAAP 12 landfill ceased in April 1994. The waste buried in the diversion ditch is suspected to be the primary source of contamination in the LHAAP 12 landfill.

The LHAAP 16 landfill was originally used from 1942 to 1944 for the disposal of TNT red water ash generated from the TNT Waste Disposal Plant. In the mid to late 1950's, three rocket motor casings were reportedly burned and possibly buried on the eastern side of the site. Additionally,

a large bermed depression encompassing the central section of the site was reportedly used for the disposal of a variety of materials, such as substandard TNT, barrels of chemicals, oil, paint, scrap iron, and wood. This area was eventually filled in and landfilling operations continued moving eastward, eventually raising the ground surface to its current elevation of approximately 190 feet msl. Burn pits and waste storage were common at the site, but little is known about the nature of the wastes involved. The site continued to be used for disposal of a variety of wastes until disposal activities ceased in the early 1980's.

As part of the U.S. Army Installation Restoration Program, the LHAAP began an environmental investigation of current and previously used waste disposal sites in 1976. The LHAAP installation was added to the National Priorities List (NPL) on August 30, 1990 (54 Federal Register (FR) 35509). After being listed on the NPL, The U.S. Army, U.S. Environmental Protection Agency (EPA), and Texas Natural Resource Conservation Commission (TNRCC) - formerly known as the Texas Water Commission (TWC) - entered into a Comprehensive Environmental Response Compensation, and Liability Act (CERCLA) Section 120 Agreement for remedial activities at the facility. The CERCLA Section 120 Agreement, referred to as the Federal Facility Agreement (FFA), became effective on December 30, 1991.

## C. Highlights of Community Participation

The U.S. Army, EPA, and TNRCC have provided public outreach to the community surrounding LHAAP concerning the LHAAP 12 and 16 landfills and other sites on the facility. The outreach program has included fact sheets, media interviews, site visits, invitations to attend quarterly technical and regulatory review meetings, and public meetings.

Copies of the Administrative Record documents have been made available to the public at several information repository locations, including LHAAP, EPA Region VI Library, TNRCC, and Marshall Public Library. On August 1, 1995, the Administrative Record at LHAAP was moved to the Karnack High School Library to facilitate and encourage public review. Notice of this change was published in the Marshall Messenger. The Proposed Plan for the Early Interim Remedial Action was released to the public on March 16, 1995. Copies of the Proposed Plan were placed at the Karnack Post Office, Marshall Library, Uncertain City Hall, and LHAAP. In addition, copies of the Proposed Plan were sent to members of the community that have shown interest in activities at LHAAP and attended other public meetings. Approximately 1,500 Fact Sheets identifying the sites under review, the preferred alternative, and the date of the public meeting were mailed to people living near LHAAP. A public comment period was designated from March 21, 1995, to April 21, 1995, and a public meeting was held on March 23, 1995, at the Karnack High School. The purpose of the meeting was to discuss the proposed plan and to solicit public comments on the Early Interim Remedial Action for the LHAAP 12 and 16 landfills.

Representatives of the U.S. Army, EPA, and TNRCC answered several questions at the public meeting. Twenty written comments were received during the public comment period. These

comments and those expressed at the public meeting are addressed in the Responsiveness Summary which is attached to the Record of Decision (ROD) as Appendix B.

## D. Scope and Role of Response Action

The investigations at the LHAAP 12 and 16 landfills have indicated the presence of low to moderate concentrations of chlorinated solvents, explosives, and heavy metals in the shallow ground water and buried waste. The close proximity of the LHAAP 12 landfill to Central Creek and the LHAAP 16 landfill to Harrison Bayou, tributaries of Caddo Lake, creates conditions conducive to the introduction of contaminants to these aquatic systems via groundwater transport. Consequences of this scenario could potentially include contaminant exposure to human and ecological receptors associated with these important aquatic resources.

The surfaces of the landfills are scarred with depressions, areas of erosion, weeds, and various sizes of trees. A scarred surface is very conducive to the infiltration of rainwater into the contents of the landfills. Typically, when water comes into contact with waste, it removes the soluble components of the waste producing a liquid called leachate, which may contaminate the underlying soils and ground water. Because the landfills are known disposal sites and since the ground water beneath the landfills is contaminated with organic and inorganic contaminants, it must be assumed that the landfills are serving as a source from which contaminants may be leaching into the ground water.

Based on these findings, the U.S. Army, EPA and TNRCC have determined that an Early Interim Remedial Action for the known extent of the LHAAP 12 and 16 landfills is warranted.

The Early Interim Remedial Action will be implemented prior to completion of the site Risk Assessment. The ongoing Final Remedial Investigation/Feasibility Study (RI/FS) for the landfills will continue, and the final ROD will be prepared following the completion of the RI/FS. This ROD addresses only the Early Interim Remedial Action which will be implemented to reduce the potential for further contaminant transport. The objectives of the Early Interim Remedial Action are to:

- minimize long-term vertical infiltration of water through the landfills; and
- minimize contaminant transport.

In landfills, the preferred remediation technology is containment of the waste to reduce the spread of contaminants. Containment is the most widely accepted technology when dealing with landfills containing unknown quantities and types of contaminants, especially when the location of the contaminant sources within the landfill cannot be readily defined. Excavation of the landfill contents would be required to properly identify and treat the contents of the landfills. Excavation of the landfills may allow the ecosystems around the landfills to be exposed to contaminants. This

possible exposure could endanger the ecosystems of Harrison Bayou, Central Creek, and Caddo Lake.

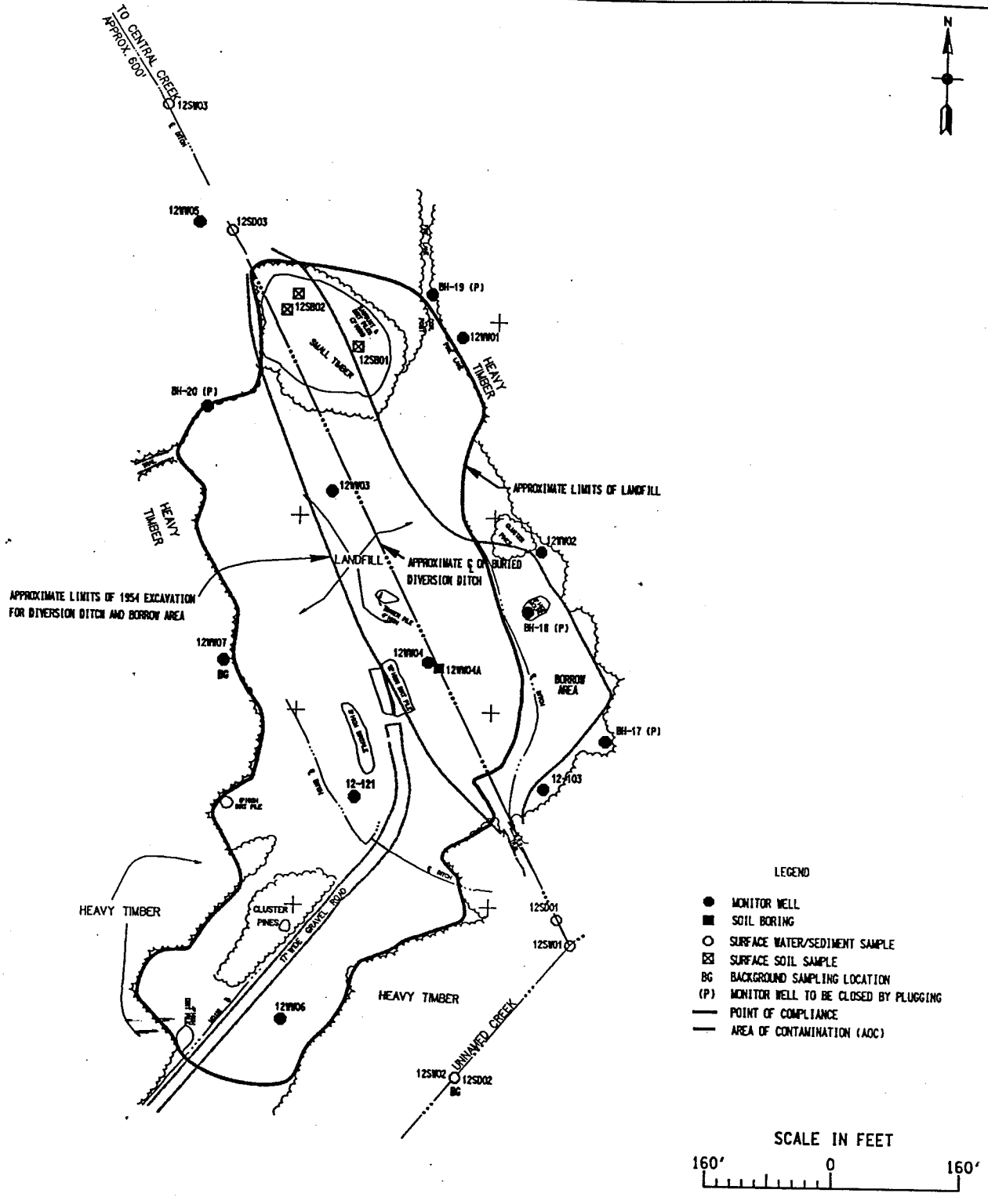
A landfill cap and cover system is the preferred technology for containment of hazardous waste in landfills. A landfill cap consists of a very low permeability layer constructed of materials such as compacted clay, geomembrane, and/or geocomposite clay liners. The purpose of the cap is to limit water infiltration and vertical migration of contaminants through the landfill. The landfill cover is placed on top of the cap and usually consists of vegetation and topsoil placed over lightly-compacted soil. The purpose of the cover is to protect the cap. The document, Presumptive Remedy for CERCLA Municipal Landfill Sites (EPA Directive 9355.0-49FS, PB 93-963339, September 1993) indicates cap and cover systems to be the most effective method to contain and prevent the spread of contaminants at most landfill sites. Also, the U.S. Army has an extensive history of successful containment of landfills using cap and cover systems.

## E. Summary of Site Characteristics

The LHAAP 12 landfill is situated on an outcrop of the Wilcox Group. The LHAAP 16 landfill is situated on an outcrop of the Wilcox Group, with a contact between the primary materials of the Wilcox and recent alluvium running along the eastern and southeastern edges of the site. This contact approximates the 100-year floodplain elevation of 180 feet msl. Although several borings have been drilled at both landfills, stratigraphic correlation is difficult due to the lateral and vertical heterogeneity of the materials comprising the Wilcox Group. Subsurface data from soil borings and monitoring wells drilled and constructed as part of past investigations of the landfills show very few strata to be continuous across the landfills. These strata are typical of the Wilcox Group, consisting of clayey silt and sandy clay underlain by silty sand with silt and clay lenses generally underlain by clays and silts. The locations of on-site monitoring wells and previous soil borings at the LHAAP 12 landfill are shown on Figure 4 and the locations of the wells and borings at the LHAAP 16 landfill are shown on Figure 5.

Ground water at both landfills generally occurs under unconfined conditions. The elevation of the ground water at both landfills fluctuates with seasonal variations in rainfall. The ground water is encountered at depths of 20 to 25 feet beneath the LHAAP 12 landfill surface and flows generally to the east and northeast, as shown in Figure 6. The ground water is encountered at depths of 5 to 10 feet beneath the surface of the LHAAP 16 landfill and flows generally to the east and southeast, as shown in Figure 7.

Both landfills were originally investigated by the U.S. Army Environmental Hygiene Agency in 1980. The discovery of contaminated soil and ground water led to further investigations in the area around the landfills. Since then, several investigations have been performed and reports generated regarding the LHAAP 12 and 16 landfills. Investigation results are provided in the Administrative Record.

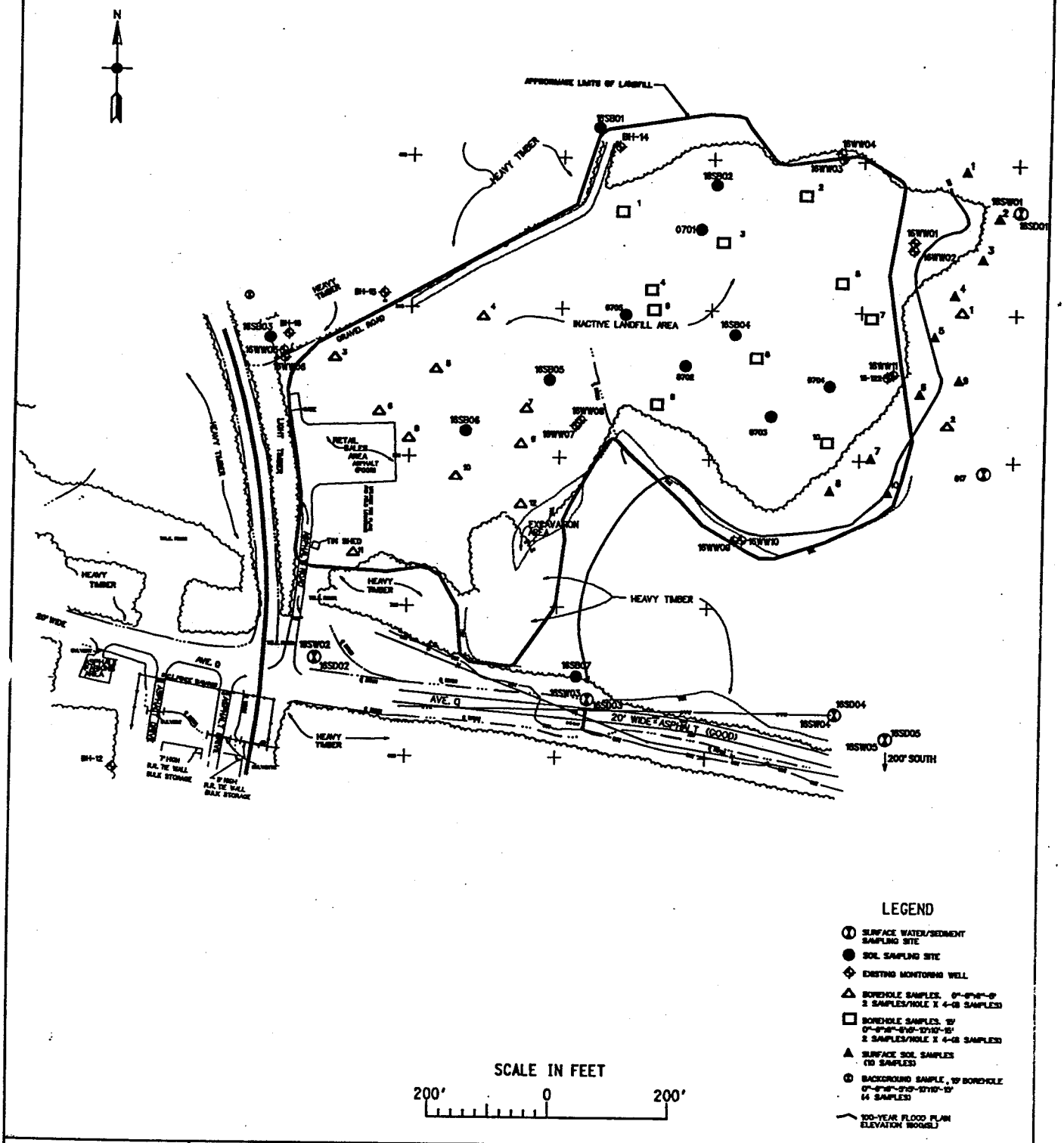



US Army Corps of Engineers
Tulsa District

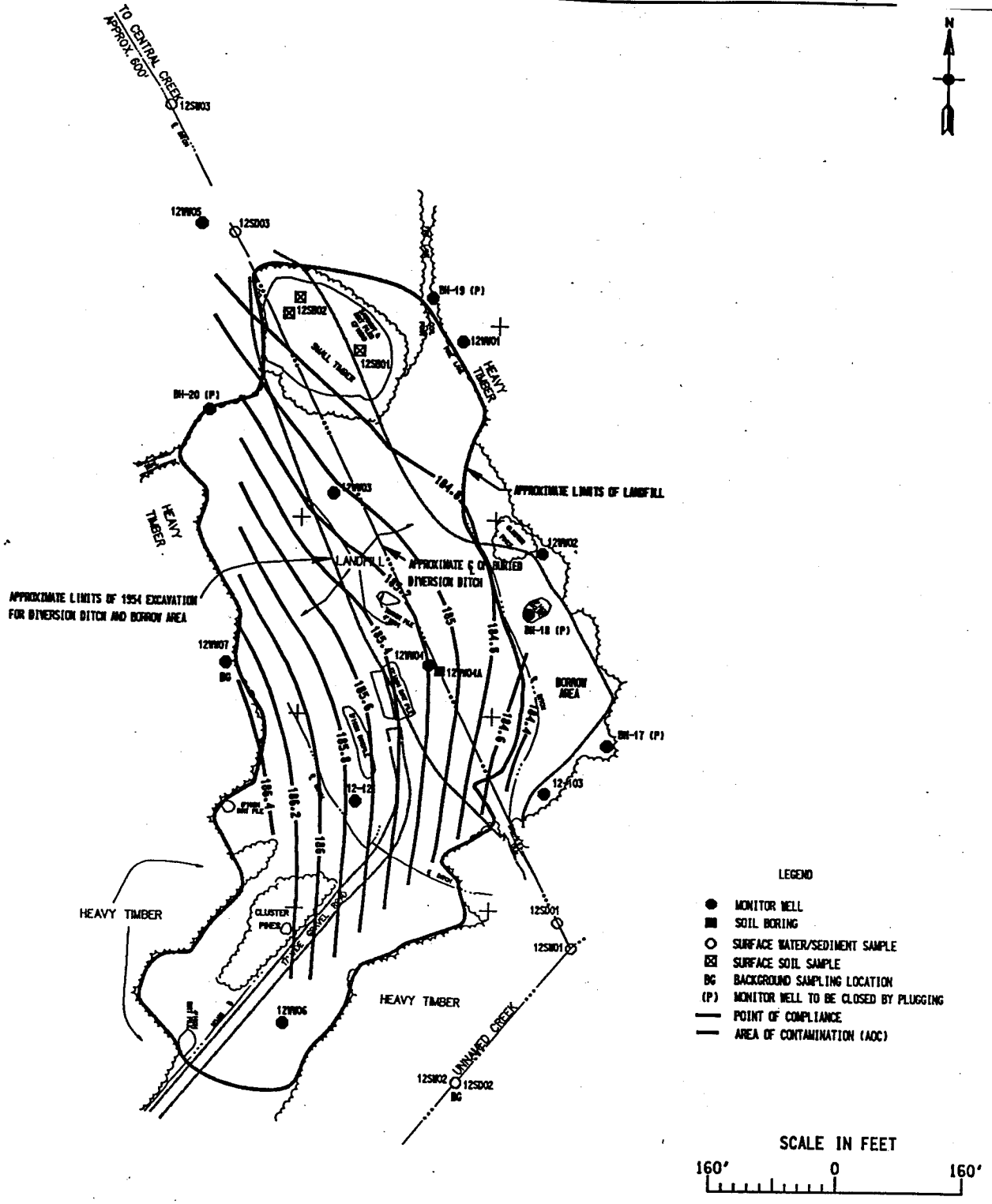
# MONITORING WELL AND SOIL INVESTIGATIONS MAP FOR LHAAP 12

LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

FIGURE NUMBER 4




| | | |
|---|---|---|
| US Army Corps of Engineers Tulsa District | MONITORING WELL AND SOIL INVESTIGATIONS MAP FOR LHAAP 16<br>LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS | FIGURE NUMBER<br>5 |

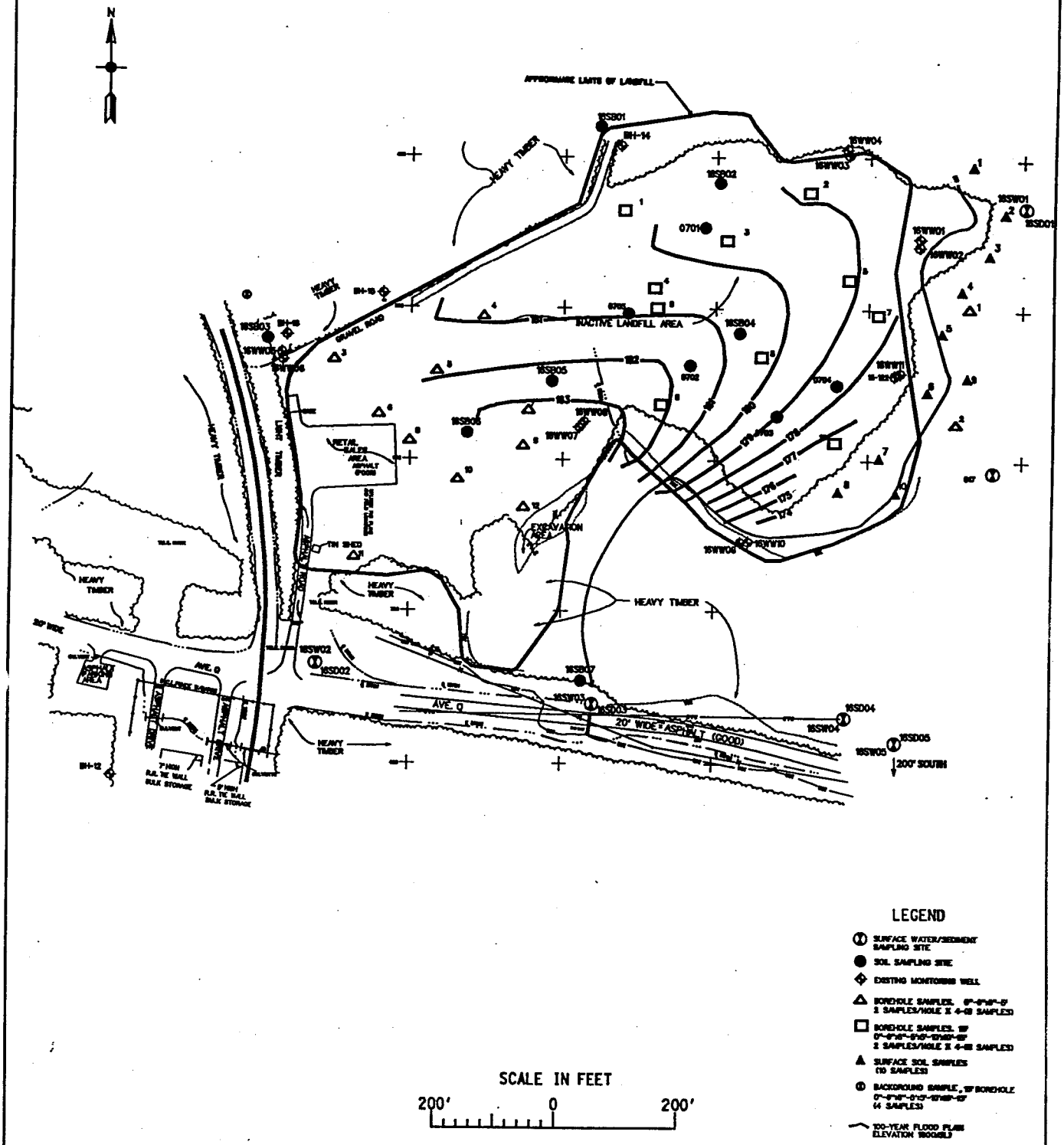



US Army Corps of Engineers
Tulsa District

# SHALLOW GROUNDWATER CONTOUR MAP FOR LHAAP 12

LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

FIGURE NUMBER 6




US Army Corps of Engineers
Tulsa District

# SHALLOW GROUNDWATER CONTOUR MAP FOR LHAAP 16

LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

**FIGURE NUMBER**

7

The following contaminants were found in the ground water at the LHAAP 12 landfill (the maximum concentrations found are shown in parentheses): trichloroethylene (27 micrograms per liter (µg/l), 1,1,1-trichloroethane (66 µg/l), bis(2-ethylhexyl) phthalate (15 µg/l), 1,3,5-trinitrobenzene (17 µg/l), lead (58 µg/l), chromium (162 µg/l), and nickel (207 µg/l). The highest concentrations of contaminants were found in the western and northeastern portions of the LHAAP 12 landfill. The following soil and source material contaminants were found: tetrachloroethylene (9.8 micrograms per kilogram (µg/kg)) and acetone (140 µg/kg) in the waste piles; and trace concentrations of acetone, toluene, ethylbenzene and xylene in the landfill materials. The soil contained bis(2-ethylhexyl) phthalate at a maximum concentration of 5000 µg/kg.

The following contaminants were found in the ground water at the LHAAP 16 landfill (the maximum concentrations found are shown in parentheses): trichloroethylene (6400 µg/l), methylene chloride (520 µg/l), nitrobenzene (1.5 µg/l), 2,6-dinitrobenzene (8.6 µg/l), cadmium (5.5 µg/l) and nickel (142 µg/l). The highest concentrations of contaminants were found in the northeast corner of the LHAAP 16 landfill. The following contaminants were found in the soil at the landfill: trichloroethylene (10,000 µg/kg), cis-1,2-dichloroethylene (2600 µg/kg) and methylene chloride (1400 µg/kg).

Past waste management practices at the landfills were reflective of standard practices prior to institution of formal environmental regulations. A variety of wastes that resulted from plant activities at LHAAP were buried in many locations throughout the landfills. Therefore, it would not be feasible to locate and identify all areas of concentrated waste without physically digging through the waste which would pose a greater risk to human health and the environment.

## F. Summary of Site Risks

A risk assessment is a scientific procedure which uses facts and assumptions to estimate the potential for adverse effects on human health and the environment from exposure to site contaminants. An environmental or ecological risk assessment determines the present and future impacts on ecological receptors attributable to the site in its current condition. Human health risks are determined by evaluating known chemical exposure limits and actual concentrations at the site as identified during sampling activities. The actual contaminant concentrations are compared to the exposure concentration known to have an adverse impact. In the risk assessment, carcinogenic and non-carcinogenic health risks are calculated. Conservative assumptions that weigh in favor of protecting human health are made in these calculations.

A risk assessment has not been completed for the LHAAP 12 and 16 landfills since the true nature and extent of contamination has not been determined. A risk assessment will be conducted concurrently with the completion of the ongoing RI/FS work. The conclusions and recommendations of the risk assessment will be used during the development of the final response action for the sites. However, past investigations have indicated the presence of VOCs, explosives, and heavy metals in the shallow ground water, soil, and source material at both

landfills. Therefore, the Early Interim Remedial Action is warranted to mitigate the potential risks posed by the low to moderate concentrations of contaminants detected at the sites.

The low to moderate concentration of contaminants in ground water at the landfills and their close proximity to Central Creek (LHAAP 12 landfill) and Harrison Bayou (LHAAP 16 landfill), tributaries of Caddo Lake, creates conditions conducive to the introduction of contaminants to these aquatic systems via groundwater transport. Consequences of this scenario could include contaminant exposure to human and ecological receptors associated with these important aquatic resources. The magnitude of human and ecological exposure and associated risk estimates are dependent upon further site characterization, and will be addressed in the site risk assessment.

## G. Description of the Alternatives

Seven alternatives were evaluated for this Early Interim Remedial Action. The alternatives were evaluated to determine the most effective method of reducing the potential for an increase in contaminant transport caused by rainwater infiltrating through the contents of the LHAAP 12 and 16 landfills. The alternatives consist of Alternative 1 - No Action; Alternative 2 - Limited Action; and Alternatives 3 thru 7 - Various Types of Cap and Cover Systems. Various types of landfill caps were the only alternatives evaluated because removal and treatment or disposal of landfill contents is not feasible and is inconsistent with EPA presumptive remedy guidance. Also, the U.S. Army has an extensive history of successful containment of landfills using cap and cover systems. In addition, excavating and removing the contaminants could unnecessarily endanger the ecosystems of Harrison Bayou, Central Creek, and Caddo Lake.

Alternatives 3 thru 7 involve capping approximately 440,000 cubic yards of contaminated soil and landfill material. The LHAAP 12 landfill contains approximately 115,000 cubic yards of contaminated soil and landfill material and the LHAAP 16 landfill contains approximately 325,000 cubic yards of contaminated soil and landfill material.

Common elements of Alternatives 3 thru 7 (cap and cover systems) are:

- Clearing and grubbing of the landfill surface,
- A foundation layer placed on the landfills to provide proper grading for drainage,
- One (Alternatives 3 thru 5) or two (Alternatives 6 thru 7) low permeability layers,
- A final soil cover with adequate slopes and vegetation, and
- Perimeter berms and drainage swales to control surface runoff.

Alternatives 3, 4, and 5 use one low permeability layer consisting of a compacted clay liner, a sodium bentonite geocomposite liner, and a geomembrane liner, respectively. Alternatives 6 and 7 use two low permeability layers. Alternative 6 uses a geomembrane placed over a compacted clay layer and Alternative 7 uses a geomembrane placed over a sodium bentonite geocomposite liner.

The effectiveness of the each landfill cap alternative was evaluated using the Hydrologic Evaluation of Landfill Performance (HELP) Model developed by the U.S. Army Corps of Engineers for the EPA. See Table 1 for a description of the alternatives considered in this Early Interim Remedial Action and the HELP Model results.

Table 1. Summary Description of the Alternatives Considered

| | Description | Cost | Time |
|---|---|---|---|
| **Alternative 1** No Action | The No Action alternative is required by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) for consideration. No Action assumes that nothing would be done to:<br>• restrict site access;<br>• address contamination; or<br>• monitor the contaminant migration. | Estimated Capital Cost: $0.00<br><br>Annual Operation and Maintenance: $0.00<br><br>Estimated Total Costs (present worth): $0.00 | Estimated Time of Implementation: Design/Remedial Action: 0 months |
| **Alternative 2** Limited Action | This alternative would not take any actions to address the source material. No action would be taken to restrict the groundwater contaminant plumes from migrating horizontally or vertically. This alternative would consist of long-term monitoring of the groundwater contaminant plumes. The site would be fenced and institutional controls, in the form of deed notices and signs, would be used to advise future property owners and potential trespassers of the potential health risks from exposure to any of the contaminated media. | Estimated Capital Cost: $60,000<br><br>Annual Operation and Maintenance: $50,000<br><br>Estimated Total Costs (present worth): $612,000 | Time of Implementation: Design/Remedial Action: 3 months<br><br>Ground Water/ Surface Water Monitoring: 30 years |
| **Alternative 3** Single barrier cap and cover system using off-site clay | This alternative involves the construction of a multilayer cap and cover system using a single, low permeability barrier consisting of off-site clay. The low permeability clay barrier would be compacted to a maximum permeability of $1x10^{-7}$ centimeters/second (cm/s). The HELP Model predicts this system will allow 2.4% of rainfall to infiltrate into the landfill. | Estimated Capital Cost: $2,737,000<br><br>Annual Operation and Maintenance: $75,000<br><br>Estimated Total Costs (present worth): $2,811,000 | Time of Implementation: Design/Remedial Action: 3 years |

| | Description | Cost | Time |
|---|---|---|---|
| **Alternative 4** Single barrier cap and cover system using a geosynthetic membrane liner | This alternative involves the construction of a multilayer cap and cover system using a single, low permeability barrier consisting of a geosynthetic membrane liner. The HELP Model predicts this system will allow 6.1% of rainfall to infiltrate into the landfill. | Estimated Capital Cost: $2,599,000<br><br>Annual Operation and Maintenance: $75,000<br><br>Estimated Total Costs (present worth): $2,678,000 | Time of Implementation: Design/Remedial Action: 3 years |
| **Alternative 5** Single barrier cap and cover system using a sodium bentonite geocomposite liner | This alternative involves the construction of a multilayer cap and cover system using a single, low permeability barrier consisting of a sodium bentonite geocomposite liner. The HELP Model predicts this system will allow 2.5% of rainfall to infiltrate into the landfill. | Estimated Capital Cost: $2,994,000<br><br>Annual Operation and Maintenance: $75,000<br><br>Estimated Total Costs (present worth): $3,058,000 | Time of Implementation: Design/Remedial Action: 3 years |
| **Alternative 6** Double barrier cap and cover system using a geosynthetic membrane liner and off-site clay | This alternative involves the construction of a multilayer cap and cover system using two low permeability barriers consisting of a geosynthetic membrane liner placed over a layer of compacted clay. The compacted clay layer would consist of off-site clay compacted to a maximum permeability of $1x10^{-7}$ centimeters/second (cm/s). The HELP Model predicts this system will allow 0.16% of rainfall to infiltrate into the landfill. | Estimated Capital Cost: $3,056,000<br><br>Annual Operation and Maintenance: $75,000<br><br>Estimated Total Costs (present worth): $3,118,000 | Time of Implementation: Design/Remedial Action: 3 years |
| **Alternative 7** Double barrier cap and cover system using a geosynthetic membrane liner and a sodium bentonite geocomposite liner | This alternative involves the construction of a multilayer cap and cover system using two low permeability barriers consisting of a geosynthetic membrane liner placed over a sodium bentonite geocomposite liner. The HELP Model predicts this system will allow 0.059% of rainfall to infiltrate into the landfill. | Estimated Capital Cost: $3,338,000<br><br>Annual Operation and Maintenance: $75,000<br><br>Estimated Total Costs (present worth): $3,390,000 | Time of Implementation: Design/Remedial Action: 3 year |

## H. Summary of The Comparative Analysis of Alternatives

CERCLA regulations require that remedial alternatives be evaluated against 9 criteria to determine which alternative(s) provide the best balance between the criteria and, therefore, should be implemented at the site. The following presents an explanation of the criteria:

**1. Overall Protection of Public Health and the Environment**
This criteria addresses the way in which a potential remedy would reduce, eliminate, or control the risks posed by the site to human health and the environment. The methods used to achieve an adequate level of protection may be through engineering controls, treatment, techniques, or other controls such as restrictions on the future use of the site.

**2. Compliance with ARARs**
Compliance with applicable or relevant and appropriate requirements (ARARs) assures that a selected remedy will meet all related Federal, State, and local requirements. The requirements may specify maximum concentrations of chemicals that can remain at a site; design or performance requirements for treatment technologies; and restrictions that may limit potential remedial activities at a site because of its location.

**3. Long-term Effectiveness or Permanence**
This criteria addresses the ability of a potential option to reliably protect human health and the environment over time, after the cleanup goals have been accomplished.

**4. Reduction of Toxicity, Mobility, or Volume of Contaminants**
This criteria assesses how effectively a proposed remedy will address the contamination problem. Factors considered include: the nature of the treatment process; the amount of hazardous materials that will be destroyed by the treatment process; how effectively the process reduces the toxicity, mobility, and volume of waste; and the type and quantity of contamination that will remain after treatment.

**5. Short-term Effectiveness**
This criteria assesses short-term risks to the workers, the community, and the time factor. Cleanup technologies often require several years for implementation. A potential remedy is evaluated for the length of time required for implementation and the potential impact on human health and the environment during the remedial action.

**6. Implementability**
Implementability addresses the ease with which a potential remedy can be put in place. Factors such as technical feasibility and availability of materials and services are considered.

**7. Cost**
Costs (including estimated capital costs required for design and construction and projected long-term maintenance costs) are considered and compared to the benefit that will result from implementing the remedy.

**8. State Acceptance**
The State has an opportunity to review the documents in the Administrative Record and the Proposed Plan and offer comments. The State may agree with, oppose, or have no comment on the preferred alternatives.

**9. Community Acceptance**
During the public comment period, interested persons or organizations may comment on the alternatives. These comments are considered in making the final remedy selection. The comments are addressed in a document called Responsiveness Summary which is part of the Record of Decision.

The following is a narrative analysis for the alternatives considered:

Overall Protection of Public Health and the Environment:

The No Action Alternative and the Limited Action Alternative involve no remediation or containment. They do not minimize infiltration of water into the landfills and consequently may allow continued contaminant transport. Because the No Action and Limited Action Alternatives are not protective of human health and the environment, they will not be considered further.

Alternatives 3, 4, and 5 each provide a moderate degree of reliable long- and short-term protection of human health and the environment by minimizing the infiltration of water into the landfills. However, these alternatives only provide one barrier layer to reduce infiltration of water into the landfills. Infiltration of water would resume if this single layer was damaged by differential settlement, desiccation cracking, or construction activities.

Alternatives 6 and 7 provide a very high degree of reliable long- and short-term protection of human health and the environment by minimizing the infiltration of water into the landfills. The amounts of rainwater which are predicted to infiltrate through the cap and cover systems for Alternatives 6 and 7 are 0.16 and 0.059 percent, respectively. The infiltration for Alternatives 3, 4, and 5 is 2.4, 6.2, and 2.5 percent, respectively. Therefore, the predicted infiltration for Alternatives 6 and 7 is an order of magnitude less than the infiltration for the other alternatives. The Hydrologic Evaluation of Landfill Performance (HELP) computer model was used to determine these infiltration rates.

Compliance with Applicable or Relevant and Appropriate Requirements:

The Applicable or Relevant and Appropriate Requirements (ARARs) for the LHAAP 12 and 16 landfills include:

- Location of the sites within a 100-year floodplain;
- Discharge of rainfall runoff into a surface water body;
- Occupational Safety and Health Act; and
- Requirements for closure of a landfill and construction of a landfill cap.

All the landfill cap alternatives can be designed and constructed to comply with the ARARs. Alternatives 1 and 2 were not considered because they are not protective of human health and the environment.

Long-Term Effectiveness or Permanence:

The removal of the landfill contents is not feasible and is inconsistent with EPA presumptive remedy guidance and U.S. Army policy. Therefore, none of the alternatives evaluated in this ROD address the issue of a permanent solution. All of the alternatives, however, provide varying

degrees of long-term effectiveness assuming proper maintenance and frequent inspections to ensure integrity has not been compromised.

Alternative 3 would provide a moderate to high degree of reliable long-term protection to human health and the environment. It would reduce the long-term risk due to migration of contaminants into ground water or runoff into surface water. A potential for migration of contaminants would still exist with this alternative because waste material would remain in place and because the clay liner is not totally impervious and would permit approximately 2.4 percent of the rainfall to infiltrate the landfill.

Alternative 4 provides a moderate to high degree of reliable long-term protection to human health and the environment. Geosynthetic membrane liners are thin sheets of material very susceptible to punctures. Therefore, a geosynthetic membrane liner (used without additional barriers) usually has higher infiltration rates than other types of liners. The geosynthetic membrane liner permits approximately 6.2 percent or three times the infiltration of rainfall permitted by a compacted clay liner. A small risk of contaminants migrating from the landfill would remain.

Alternative 5 would provide a moderate to high degree of reliable long-term protection to human health and the environment. The sodium bentonite geocomposite liner allows approximately 2.5 percent of the rainfall to infiltrate the landfill. Therefore, Alternative 5 provides approximately the same protection as Alternative 3. However, the bentonite liner is less susceptible to damage from differential settlement and desiccation cracking. A low potential for migration of contaminants would exist with this alternative because the waste material would remain in place.

Alternatives 6 and 7 provide a very high degree of reliable long-term protection to human health and the environment. Two impervious layers would provide maximum protection since Alternatives 6 and 7 permit less than 0.16 percent and 0.059 percent, respectively, of rainwater to infiltrate into the waste. Cap and cover systems which require more clay will cause additional weight to be placed on the landfill contents. This extra weight will cause the landfill contents to densify and increase the possibility of settlement in the landfill resulting in an increased risk of settlement cracks developing in the clay liner. The sodium bentonite geocomposite liner is less susceptible than compacted clay to damage from desiccation and differential settlement cracking. Also, the sodium bentonite geocomposite liner is placed under the geomembrane and any water infiltrating into holes in the geomembrane will cause the sodium bentonite to swell and seal the hole quickly. Therefore, Alternative 7 will provide the best long-term protection.

Proper maintenance and routine inspection are required under all alternatives to ensure the integrity of the cap and cover system. Consequently, the U.S. Army is required, under all alternatives, to perform long-term maintenance of the cap and cover system.

Reduction of Toxicity, Mobility, or Volume of Contaminants:

None of the alternatives meet the intent of these criteria since treatment of the contents of the landfills is not feasible and was not evaluated.

Short-Term Effectiveness:

Implementation of Alternatives 3, 4, 5, 6, and 7 could be initiated within a year and construction activities completed within 1 to 2 years. Alternatives 4, 5, and 7 could be completed quicker than Alternatives 3 and 6, since it is more difficult and time consuming to construct and compact a clay liner than it is to roll out and install either bentonite liners or geosynthetic membranes. Alternatives 4 and 5 could be completed quicker than Alternative 7, since each of these alternatives only requires the installation of a single liner, while Alternative 7 requires the installation of two liners.

Construction-related impacts on human health are expected to mainly affect workers at the landfills since all alternatives are expected to generate dust and noise. However, plant personnel driving by the sites could be slightly impacted by dust blowing across the road. Dust emissions would be minimized with proper on-site control procedures and protective clothing. Every effort would be made to minimize short-term impacts through appropriate control measures. Worker exposure via dermal contact and/or inhalation of contaminants is not anticipated, since any potential impacts could be controlled through the use of protective clothing, spraying of work areas with water to limit dust generation, and appropriate training of workers. Air monitoring would be performed to protect workers and other personnel from exposure to contaminants.

Implementability:

Alternatives 3, 4, 5, 6, and 7 have few associated technical or administrative difficulties that could prohibit or delay implementation. Capping is a well developed technique that has been used at many hazardous waste sites. The required labor, equipment, and materials to implement all of these alternatives are readily available. Conventional construction equipment and techniques would be used to implement these alternatives along with appropriate health and safety precautions. Extreme weather conditions might delay implementation of Alternatives 3 and 6 because clay liners are difficult to install during hot, dry weather. Extreme weather conditions should not affect the implementation of Alternatives 4, 5, and 7 since sodium bentonite geocomposite liners and geosynthetic liners can be installed during hot, dry weather. Sodium bentonite geocomposite liners and geosynthetic liners are quickly and easily installed since they are delivered in rolls for ease of storage, handling, and installation. The final cap and cover systems described in Alternatives 3 and 6 would require greater volumes of clay resulting in a longer construction period. Cap and cover systems described in Alternatives 4, 5, and 7 require less clay resulting in shorter construction times.

Cost:

A summary of the cost estimates of Alternatives 3 thru 7 are located in Appendix B of the Focused Feasibility Study for the landfill caps. Alternative 4 is the least expensive with a capital cost of approximately $2.6 million; however, Alternative 4 has the highest infiltration rate. Alternative 7 is the most expensive with a capital cost of approximately $3.3 million, but is less than 10 percent more expensive than Alternative 6. Since the sodium bentonite geocomposite liner has many advantages over a compacted clay liner, Alternative 7 was determined to be the most cost effective alternative.

State Acceptance:

The Texas Natural Resource Conservation Commission has reviewed the investigation results and the Proposed Plan. The preferred alternatives for the Early Interim Remedial Action were fully evaluated during the public comment period, and support for the alternatives has been indicated.

Community Acceptance:

Community acceptance is an important consideration in the final evaluation of the remedial alternative. All comments received during the 30-day public comment period and at the March 23, 1995, public meeting have been specifically addressed in the Responsiveness Summary included as Appendix B. These comments have dealt with site and technology specific concerns. Based on the comments received during the public comment period, the community appears to support the Early Interim Remedial Action as detailed in the Proposed Plan.

## I. The Selected Remedy

The preferred alternative for minimizing the infiltration of water into the landfills and minimizing contaminant transport is Alternative 7. In recommending this alternative, the performance of all the alternatives was evaluated against nine criteria outlined in the CERCLA regulation. Based on consideration of CERCLA requirements, the detailed analysis of the alternatives, and public comments the U.S. Army, EPA, and TNRCC believe the preferred alternative provides the best balance of trade-offs among the other alternatives with respect to the evaluation criteria. Alternative 7 is a multilayer cap and cover system consisting of the following components:

- Clearing and grubbing of the landfill surface,
- A foundation layer placed on the landfills to provide proper grading for drainage,
- A low permeability sodium bentonite geocomposite liner,
- A low permeability geosynthetic membrane liner,
- A final soil cover with adequate slopes and vegetation, and
- Perimeter berms and drainage swales to control surface runoff.

The foundation layer for the LHAAP 12 landfill will consist of treated soil from Burning Ground No. 3 (ROD May 1995). If all of the treated soil cannot be placed on the LHAAP 12 landfill, the remaining treated soil will be placed on the LHAAP 16 landfill and used as part of the foundation layer.

The estimated present worth, capital costs, and operation and maintenance costs over 5 years for the selected remedy are as follows:

| | |
|---|---|
| • Capital Costs: | $3,338,000 |
| • Annual Operation and Maintenance Costs: | 75,000 |
| • Total Costs (Present Worth): | $3,390,000 |

The U.S. Army would be required to maintain the cap and cover system. The landfill caps would be inspected at regular intervals to check for erosion, settlement and deep-rooted vegetation. Repairs would be implemented as needed. This alternative has future use restrictions associated with it which would be placed on installation maps. Also, warning signs would be placed at the landfills. This alternative will be reviewed every 5 years, at which time the effectiveness of this remedial action will be assessed and further remedial actions taken if the remedy is not protective of human health and the environment. Additional investigations of the ground water in the area of the LHAAP 12 and LHAAP 16 landfills are being conducted. Remedial actions may be considered and a final ROD issued when the current investigations are complete.

## J. Statutory Determination

The primary responsibility at CERCLA sites is to select remedial actions that are protective of human health and the environment. Section 121 of CERCLA requires that the selected remedial action for the site comply with applicable or relevant and appropriate environmental standards established under Federal and State environmental laws, unless a waiver is granted. The selected remedy must also be cost effective and utilize permanent treatment technologies or resource recovery technologies to the maximum extent practicable. The statute also contains a preference for remedies that include treatment as a principal element. The following sections discuss how the selected remedy for the LHAAP 12 and 16 landfills meets the statutory requirements even though this remedy is not designed or expected to be the final remedial action:

Protection of Human Health and the Environment:

The selected remedy provides a high degree of reliable long-term protection by minimizing the infiltration of water into the landfills resulting in reduced contaminant transport. This action would reduce the risk of contaminants reaching the nearby aquatic systems and would consequently reduce contaminant exposure to human and ecological receptors associated with these systems. Also, the multilayer landfill cap will minimize the risk of humans and ecological receptors coming into physical contact with any contaminant sources. A groundwater monitoring

program will be maintained during and after the placement of the landfill caps. By maintaining such a program, prevention of exposure can be assured. No short-term risks are associated with the selected remedy that cannot be readily controlled. In addition, no adverse cross-media impacts are expected from the remedy.

Compliance with Applicable or Relevant and Appropriate Requirements:

The selected remedy will comply with all applicable or relevant and appropriate action-, closure-, and location-specific requirements. The U.S. Army, EPA, and TNRCC have agreed the ARARs presented below represent a complete list of ARARs required for the implementation of this interim remedial action.

**Action-Specific ARARs:**

The National Pollution Discharge Elimination System program, 40 CFR Part 125; and Texas Water Quality Standards, Title 30, Part IX - Chapter 307 are applicable to water discharges into a surface water body.

Occupational Safety and Health Administration requirements (29 CFR) are applicable to the work conducted during the Early Interim Remedial Action.

The substantive requirements of Section 404 of the Clean Water Act, 40 CFR Parts 133 and 230 and 33 CFR Parts 320-330, are applicable to construction of a fill in a wetlands.

30 Texas Administrative Code Sections 335.112, 335.118, 335.119, and 335.174 and 40 CFR Sections 264.228, and 264.310 are applicable to closure and post-closure care of landfills or surface impoundments storing hazardous waste.

**Chemical-Specific ARARs:**

No chemical-specific ARARs apply to this alternative because the concentrations of contaminants will not be altered and no contaminants will be discharged into the air or water.

**Location-Specific ARARs:**

RCRA requirements concerning location of a treatment, storage, or disposal facility within a 100-year floodplain will be relevant and appropriate as part of the LHAAP 16 landfill is within a 100-year floodplain (40 CFR Part 264.18).

While no historic or archeological points of interest are known to be present at the sites, should they be discovered the procedures of the National Historic Preservation Act of 1966 (36 CFR Part 800) will be adhered to.

Cost Effectiveness:

The selected remedy is cost-effective while achieving the objectives of the Early Interim Remedial Action. The cost of placing a multi-layer cap and cover section over the landfills range from $2,678,000 for Alternative 4 to $3,390,000 for Alternative 7. Alternative 7 is approximately 26 percent more expensive then Alternative 4. However, Alternative 7 is two orders of magnitude more effective than Alternative 4 in reducing infiltration and subsequent contaminant transport. Alternative 7 is the most resistant to damage from differential settlement and desiccation cracking. Therefore, the selected landfill cap section provides the greatest overall protection while remaining cost effective.

Utilization of Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable:

The Early Interim Remedial Action does not address the issue of a permanent solution through treatment or recovery of contaminants. Removal and treatment or disposal of landfill contents is not feasible and is inconsistent with EPA presumptive remedy guidance. Also, the U.S. Army has an extensive history of successful containment of landfills using cap and cover systems. In addition, excavating and removing the contaminants would unnecessarily endanger the ecosystems of Harrison Bayou, Central Creek, and Caddo Lake.

Preference for Treatment as a Principal Element:

This selected remedy does not employ the use of treatment as a principal element. Treatment of the landfill contaminants is not feasible for reasons stated in the above paragraph. Also, this is an Early Interim Remedial Action and treatment of the soil, ground water, or landfill contents is beyond the scope of this remedial action. Groundwater investigations are ongoing and a final ROD will be issued when the ongoing investigations and subsequent risk assessment are complete. The preference for remedies that employ treatment as a principal element will be addressed in the final ROD.

## K. Documentation of Significant Changes

The Proposed Plan for the Early Interim Remedial Action at the site was released for public comments on March 16, 1995. The Proposed Plan identified the preferred alternative to be Alternative 7: placement of a multi-layer cap and cover section over the LHAAP 12 and 16 landfills. The cap and cover section utilizes two low permeability layers consisting of a geosynthetic membrane liner placed over a sodium bentonite geocomposite liner. The geocomposite liner is placed on a foundation layer. The foundation layer is used to provide proper grading of the landfill surface. Treated soil from Burning Ground No. 3 (ROD May, 1995) was planned to be used as the foundation layer for the LHAAP 12 landfill. Clay was to be used as the foundation layer for the LHAAP 16 landfill.

Subsequent evaluation of the Proposed Plan identified a need to make a significant, but not fundamental, change to the proposed remedy.

Due to the size and layout of the LHAAP 12 landfill and the amount of treated soil to be generated at Burning Ground No. 3, the LHAAP 12 landfill may not be able to accommodate all of the treated soil produced by the interim action at Burning Ground No. 3. Therefore, the treated soil from Burning Ground No. 3 will be used to construct the foundation layer for the LHAAP 12 landfill and the remaining treated soil will be used to partially construct the foundation layer for the LHAAP 16 landfill. No treated soil will be placed on the LHAAP 16 landfill below the 100-year floodplain elevation (180 feet msl).

015711

# APPENDIX A

## THE STATE OF TEXAS
## LETTER OF CONCURRENCE

John Hall, *Chairman*
Pam Reed, *Commissioner*
R. B. "Ralph" Marquez, *Commissioner*
Dan Pearson, *Executive Director*

015712

# TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

*Protecting Texas by Reducing and Preventing Pollution*

August 14, 1995

Mr. Myron O. Knudson, P.E., Director
Superfund Division
U. S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Dallas, TX 75202-2733

RE: Longhorn Army Ammunition Plant
Record of Decision

Dear Mr. Knudson:

We have reviewed the proposed Record of Decision (ROD) for the Early Interim Remedial Action, Landfill Sites 12 and 16, Longhorn Army Ammunition Plant. We concur that the remedy described in the August 1995 ROD is the most appropriate for these sites. The selected remedy consists of a multi-layer cap section which includes: a foundation soil layer; a sodium bentonite geocomposite liner; a geosynthetic membrane liner; a final soil cover; and perimeter berms and drainage swales.

We have provided information regarding the State's requirements for wastewater discharge, and closure and post closure care of landfills, which have been incorporated into the ROD. We anticipate that adequate funding and personnel resources will be provided through the Department of Defense/State Memorandum of Agreement and the Federal Facility Agreement to allow our continued participation in the remedial action.

Sincerely,

William R Campbell

for Dan Pearson
Executive Director

DP/MM/mm

cc: David Tolbert, LHAAP (SIOLH-OR)
Jonna Polk, COE Tulsa District (CESWT-PP-EA)
Lisa Price, EPA Region 6 (6SF-AT)

015713

# APPENDIX B

# RESPONSIVENESS SUMMARY

# EARLY INTERIM REMEDIAL ACTION
# LANDFILL SITES 12 AND 16
# LONGHORN ARMY AMMUNITION PLANT

# EARLY INTERIM REMEDIAL ACTION 015714
# LANDFILL SITE 12 AND 16
# LONGHORN ARMY AMMUNITION PLANT

This Community Relations Responsiveness Summary provides written responses to public comments submitted regarding the Proposed Plan of Action for Landfill Sites 12 and 16. The Summary is divided into two sections:

Section I: Background of Community Involvement and Concerns. This section provides a brief history of community interest and concerns raised during the remedial planning activities at the sites.

Section II: Summary of Major Comments Received. The comments (both oral and written) are summarized. The U.S. Army responses are provided.

## I. Background of Community Involvement and Concerns

The community surrounding the Longhorn Army Ammunition Plant (LHAAP) is aware of the problems associated with Landfill Sites 12 and 16. This awareness is evident by the community participation in the public meeting held at Karnack High School on March 23, 1995, and by the participation of local officials and community activists in the Technical Review Committee meetings held quarterly at LHAAP since 1992. The community has not expressed any opposition to the interim action at the site. However, the community has raised some concerns through comments made during the public meeting and written comments provided during the public comment period. The comments received from the community concentrated mainly on past and future exposure to site contaminants, as well as questions related to technical aspects of the proposed interim action.

## II. Summary of Major Comments Received

Public notice announcing the public comment period and invitation to the public meeting was given from March 16 to March 23, 1995, in the Marshall News Messenger, a widely circulated local newspaper. Approximately 1,500 invitation letters and fact sheets were mailed to local citizens on March 17, 1995. The Proposed Plan of Action was released to the general public on March 16, 1995. The public comment period began on March 21, 1995, and ended on April 21, 1995. A public meeting was held on March 23, 1995, at the Karnack High School. The purpose of the meeting was to discuss the proposed plan and to solicit public comments on the interim action for Landfill sites 12 and 16. Representatives of the U.S. Army made presentations about the interim action and answered public comments during the public meeting. Representatives of the Environmental Protection Agency (EPA) and the Texas Natural Resource Conservation Commission (TNRCC) attended the meeting and assisted in the responses to public comments.

Several people attended the public meeting and at least six asked questions or made comments. One set of written comments and questions was received during the public comment period.

The following comments and questions were received during the public meeting. A full account of the public meeting can be found in the public meeting transcripts that are documented in the LHAAP Administrative Record.

1. Comment by Mr. Kornegay:
What's the maximum length of time on the cap and cover, before it starts disintegrating or whatever it does? I notice $75,000 for the operation and maintenance costs on the highest one, versus number 4 or whatever it is there, or number 3 which is $75,000 also.

   Response:
It's really difficult to estimate the length of how long these things will last. There have been durations estimated to be 30 to 50 years. The nice thing about the bentonite liner is that the membranes eventually, although it may be 50 or 100 years, will break down. Bentonite is a very low permeability clay. It will not break down. It will always be there. So even if its membrane breaks down, there is another barrier layer to prevent infiltration. The reason for the five-year operation and maintenance cost is because we know there is going to be an evaluation of the interim action after five years. We don't know what the outcome of the evaluation will be or how the project will be affected. The operation and maintenance cost was included so that we could compare the alternatives. The operation of the maintenance of the cap will be the same for each alternative - mowing, controlling any erosion, and just simple operational maintenance.

2. Comment by Mr. Kornegay:
Well, I knew it would be estimated, anyway.

   Response:
It's going to be an estimate, and will vary based on how much rain, and the type of erosion. The cap would be well maintained, because operational maintenance costs are low compared to replacement costs.

3. Comment by Mr. Michaels:
Are the contaminant levels in the ground water around the landfills anywhere close to that around Burning Ground 3 where the Army will be pumping and treating groundwater? Are they much lower than that?

   Response:
Yes, they are.

4. Comment by Mr. Michaels:
Have there been any separate trenches or anything dug around the landfill itself or any of those to see what exactly is leaking from that?

Response:
The investigation of the groundwater is continuing. We did not have enough information at this time to make a decision on what kind of remedy we may need for the groundwater. We knew what was needed for the landfill. No, we have not seen a concentration anywhere near what we have at Burning Ground No. 3.

5. Comment by Mr. Michaels:
So how long do you think it's going to be before you actually go back and remediate the site? Five years? Ten years? You don't actually know?

Response:
I would estimate about three years.

6. Comment by Mr. Michaels:
Three years?

Response:
Yes. The Interim Remedial Action is a just a phase in the process. The Remedial Investigation phase is continuing at the same time. The process is refined as data is gathered, and more information is available. We're at the point in the process where we are trying to cap the landfills to reduce migration. When the investigation phase is complete, another remedial action may be implemented. A lot of people may ask does it bring any jobs into the community, spending three and a half million dollars out there. Our intent will be to award this three to four months from now. It will be awarded to a prime contractor, who would hire subcontractors. We would anticipate that subcontractor would hire people for the movement of clay or for vehicular drivers or for any type of support equipment that might be needed for this construction on the site. So to answer your question, "Is it possible I could get a job out of this?", it's possible. I won't know until about three to four months when we select the contractor, and then that contractor goes out and subcontracts work.

7. Comment by Mr. Michaels:
Is there ever any real effort made at each locale, like around Longhorn at the Army Ammunition plant to actually try to hire a prime from a close geographic area? I know it's very hard to find someone with the talents that you need for this type of project locally. But is there an effort made to do that, or is it one of those deals that starts like in Maryland and those folds, or in Washington or wherever, and those folks are pretty much on top of it here and getting the stuff all around the country, rather than those folks in one specific geographic area like around here?

Response:
We have a tool box that we've assembled, prime contractors who have proven expertise and who have competed for those contracts, have shown they can perform in a cost-effective manner, have shown they can get the job done, and we select from that set of tools. However, much of the funds that go into those contracts is going to go to subcontractors and the vendors, many of which may be local. It just depends on who's available and who can deliver.

8. Comment by Mr. Michaels:
I think that will be a real plus for -- you know, a lot of people don't understand, you know. I think if people really understood the economic impact of the clean-up that's going on at Longhorn can have in this area, this place would be -- you couldn't find a parking place in this area of the country. You know, it would cover up the entire City of Karnack. I was just wondering if there was ever any effort that went along with, you know, actually trying to get some local folks.

Response:
All of these contracts that we're using for this type of work have as a part of the goals for subcontractors, using both disadvantaged businesses and small businesses. Local business is less the defined goal, perhaps, because the federal government hasn't, you know, made that a priority. But clearly, a local small business is going to have a better chance. So I would say yes, there is some effort in that way. The contractors that have been here so far, have made a very specific effort to hire locally and they have hired several people, and that will continue to be a priority for them.

9. Comment by Mr. Michaels:
The only reason I'm bringing that up is that every time somebody talks about this, it seems to be a big minus. And it's really not a minus. It could be a big plus. That's what I'm saying.

Response:
Actually one of the contracts that we did select was selected based on their locality and their familiarity with this area. So, yes, we do see it as a plus. Further questions? This is a family in here, so if you've got questions, bring them up, and we'll try and answer them if we can.

10. Comment by Ms. Weekly:
The seepage there, does that have anything to do with the mercury that is showing up at our Caddo Lake?

Response:
No, ma'am. We don't use mercury for any of our production processes short of switches which may have been used in the early days. We're talking about small pieces. We have

monitored for mercury. When the articles came out in the newspapers, believe me, we were dedicated to the request to monitor by the State of Texas and everyone else and we did that. We're going to comply with the State. Mr. H.L. Jones (TNRCC): Maybe I can give a little input into that since I coordinate Army TNRCC issues on a regional level. I'm with TNRCC, Region 5. We have a stream monitoring individual in our office who just completed an independent study on several of the lakes, including Caddo. The end result of his study was that he could not pinpoint a mercury source. It was an independent study. And, of course, he wasn't looking specifically at Longhorn or any other entity as a possible point source. Of course, he has some ideas and I have some ideas, but at this point, there is not justification for people pointing an accusing finger at Longhorn. Let me make a few statements about that. One is that the State of Louisiana also ran a study where they didn't find a problem. Mercury is pretty widely disseminated within the lake, and not in any certain location. There are some other locations. I won't get into it, but I did a research project a number of years ago, and I have some ideas about it.

11. Comment by Mr. Michaels:
The contaminant levels of mercury are actually higher as you go east. And again, mercury levels in the areas surrounding Monroe and Ruston are much higher than they are here.

Response:
Any other questions?

12. Comment by Mr. Thomas:
When you are speaking of capping the landfill, when you say "cap" is that just laying something over the top? What about the seepage from the side?

Response:
The cap will extend from the top of the landfill to the bottom of the side slopes. Therefore, no water will be able to seep in from the sides.

13. Comment by Mr. Thomas:
Do you have anything in the bottom of it in the landfill? You know, capping it, is it feasible? Is it going to stop it?

Response:
The capping action will slow the migration problem while we finish the studies. The intent is not to dig out the entire landfill, and put a liner at the base of it. The intent right now is not to take all of the soil 20 feet deep in the landfill out and remediate the soil. We're still in the study process right now. Right now, the interim intent is to keep water from migrating through. So to answer your questions, we're not putting a layer beneath it to keep water from migrating through. As an analogy, I'm trying to put something hard on top of it, so it doesn't seep through in the groundwater. I'm taking the first stage step to reduce contaminant migration.

14. Comment by Mr. Thomas:
Not even the side of it?

Response:
Not at this time.. That will be examined later in the final remedial investigation, but right now, we don't have complete information. This is an interim action to cap the landfills and reduce migration that we know is occurring right now.

15. Comment by Mr. Thomas:
Are we wasting $4 million, what I'm saying is, to just wait three years and we're still dying from it?

Response:
We're not dying from it.

16. Comment by Mr. Thomas:
We're not?

Response:
I think what we're doing is taking a prudent step as a protective measure to limit what could be a clean-up problem at a later date. The State and Federal government feel that this is a proper way to protect the environment and the public. We want to cap the landfills while we continue to study, and then develop a final remediation plan.

17. Comment by Mr. Thomas:
Well, the reason I asked the question is, we're looking at 45 years already.

Response:
On the initial use of the site?

18. Comment by Mr. Thomas:
Right.

Response:
One of the sites started in the 40's.

19. Comment by Mr. Thomas:
So we got 45 years of drainage already.

Response:
Well, there's no evidence of migration of that drainage into the waterfills. We know that it is there. We know that we're trying to capsulate it. That's not to say that things that were put in there in 1945 aren't still there. I can't tell you what was put in there on

December 7, 1945. We have an idea through historical searches what we think was put in there, and we have monitored the landfills with wells and borings, and we are attempting to identify exactly how big the source is there and how we can protect ourselves. One of the initial processes that we think is a safe thing to do is to protect further migration, as you would a landfill in Karnack or a landfill anywhere. It's a standard practice. We think it's worth the investment. Easy solution would be for a manager to say, "Don't spend a dime until you get all of the statistical data out to the ninth decimal point and gradually remediate site by site by site." That whole process could take 20 years, 30 years.

20. Comment by Mr. Thomas:
I'm only speaking -- I have family here. My wife has gotten suddenly sick within the last 10 years we moved back here, and I'm growing up a family here. I don't want my kids to get 20, and all of the sudden they start dropping out with illnesses and stuff from drinking the water. So we spend $4 million and work with it four more years, or do we spend $20 million and get it cleaned up now?

Response:
We don't have the data, first of all, to make the final assessment. We've got the initial data that says we need to cap it now.

21. Comment by Mr. Thomas:
I agree. That sounds good.

Response:
I drink the water too.

22. Comment by Mr. Thomas:
Well, I don't Colonel. I don't drink it. I buy mine.

Response:
Okay. I drink it. And I work out there and I'm as concerned about it as you are, and I think that this is the right thing. Believe me, I am concerned about the health and welfare of others, okay. Anymore questions? We have boards in the back set up, and we would be glad, if you didn't have time when you came in, to go through some of the boards that lay out the site and tell you what's going on at the site. We'd also be glad to stay around and let you discuss the specifics about the plan with the engineering staffs here. Again, if you have an issue that you would like to make a written comment on that you're not prepared to bring up in open conversation, please do that, and that will be incorporated into this plan. We've got 30 days, I believe, for the record to remain open for comment. So if you go home and you think of something, take a plan with you, and on the back side of it, there is a form to fill it out. Get it to us, and we'll incorporate your question into the record. Are there any other questions?

23. Comment by Mr. Kornegay:
How did they arrive at the extensive history of the successful containment of landfills? Did the Army do this? Have they tried all these other things and found that this would be the best one? Because if it is, why not go with it? Why go through all of the studies if it's already been done?

Response:
You're referring to this specific capping as the best alternative, and asking why we didn't just go with the best alternative in round one?

24. Comment by Mr Kornegay:
Right. If you knew that the landfills required a cap, why did you go through the study process?

Response:
One of the requirements when you work with the government is that you go through a series of logical steps where you can fix the problem at the most economical and logical step, and you work your way down. And it is our opinion that we need to be at the safest level, which is the $3 million level that you're looking at right now and offers the most protection.

25. Comment by Mr. Kornegay:
I was just going by the paragraph. It says that an extensive history of successful containments using this method have already been done. It's like going back over the same ground again to prove that something works. Why not use it?

Response:
In the EPA's history with Superfund environmental clean-up work, we've found that the most logical step for a landfill is to put a cap on it. When you've got a landfill and you know there is potential for migration, you put a cap on it. That's what the Army does. That's what the EPA does. We're trying to show that we're consistently approaching remedial actions throughout the entire United States.

26. Comment by Mr. Kornegay:
Well I'm just speaking from my point of view as a taxpayer. If something already works, use it, if it's going to cost $3 million, use it now and get it over with, rather than go through all of the steps here and the money that it's going to take to find out that this works.

Response:
Unfortunately, we are working within a law that requires us to have enough information to make an informed decision, and then we bring that decision to the public to ask for their input. I think most of the people on the technical staff knew that they we were going to

be in a capping situation, but they still have to consider alternatives, which didn't take very long, and then get to the capping.

27. Comment by Mr. Corrigan:
No matter what method of remediation is chosen, whether you build a wall around the landfill or whatever, you still have to have a cap on it, don't you? So really, this $3 and a half million or whatever that's spent, is going to have to be spent no matter what.

Response:
That's correct. Other questions? Well, again, I want to thank you for being here. We're interested in your comments. You are a part of the community and part of the team. I want to introduce you again to some of the players, and ask you to take the opportunity to meet these folks. They work for you and you pay their salaries; the State of Texas and the EPA. If you've got a few minutes, please, go over to meet them, talk to them, get their opinions. They are independent and are not working for the Army. Their function is to regulate and make sure that we're complying with the law. I encourage you to talk to them and solicit their input. With that, thank you very much.

The following include the comments and questions received in writing during the public comment period and the U. S. Army response. A full account of the public comments can be found in the LHAAP Administrative Record. The following comments were submitted by the Uncertain Audubon Society.

1. Comment:
The description of Alternative #7 in the Proposed Plan on page 10, has a flaw. The third dash should read "a second low permeability layer consisting of a geosynthetic membrane liner over the sodium bentonite geocomposite liner" rather than as is now reads "over the compacted clay layer." The composite clay layer is for Alternative #6.

Response:
Agree. The geosynthetic membrane liner will be placed over a sodium bentonite geocomposite liner not a compacted clay liner.

2. Comment:
The selection of Alternative #7 is the appropriate action if the only alternatives are 1 through 7. Alternative #7 is the best alternative. However the alternatives as proposed are lacking in scope appropriate to address the contamination issues at the sites and in meeting all of the CERCLA Criteria for a remedy. The details of these issues are presented below.

Response:
This is a limited scope Early Interim Remedial Action intended to address a known problem, infiltration of water into the landfills causing increased contaminant transport. The full nature and extent of the groundwater contamination at the landfills is not known. The investigation of groundwater contamination resulting from operation of the landfills is ongoing. A risk assessment will be completed when the ongoing investigations are finished. A final Record of Decision will be issued when the risk assessment is finalized, and it will address all of the CERCLA criteria applicable to the final remedy.

3. Comment:
In order to evaluate the proposed alternatives for LHAAP 12 and 16 landfills, the agencies utilized the CERCLA Criteria for selecting a remedy. The agencies made a determination that the removal of the landfill contents was not feasible. Thus none of the alternatives evaluated were a permanent solution. In addition none of the alternative in any way addressed the treatment or reduction or toxicity of the waste. Therefore the proposed plan is merely evaluating what type of cap is to be placed over the landfill. The agencies must evaluate alternatives that in some way lessen the toxicity of the waste through methods of waste treatment. The landfills appear to be hydrologically connected to Caddo Lake which is drinking water source and deserves to be protected. Reduction of waste toxicity should have been considered as an alternative to provide environmental protection.

Response:
Treatment or the reduction of toxicity of the landfill waste is not feasible due to the contents, location, and volume of waste placed in the landfill. Therefore, the only method of treatment or reduction of toxicity of the waste would be to remove and treat the entire contents of the landfills. Removing the waste would require opening the landfills and excavating the contents. This would unnecessarily endanger the delicate ecosystems of Central Creek, Harrison Bayou, and Caddo Lake by exposing the contents of the landfill to direct physical contact with rainwater. Placing a cap on landfills is the accepted policy of the U.S. Army, and EPA when addressing concerns related to contamination resulting from the operation of landfills. EPA's "Presumptive Remedy" for landfills is containment of the waste by capping the landfill. Groundwater concerns will be addressed when the ongoing investigations and risk assessment are completed.

4. Comment:
The alternatives were evaluated to determine compliance with applicable, relevant and appropriate requirements (ARAR's). The ARAR's evaluated were only those applicable to the construction of landfill caps. In other Proposed Plans for Superfund Sites, the ARAR's also define the levels to which waste will be treated or remediated. In the case of LHAAP 12 and 16 landfills, the waste will in no way be treated or stabilized. Only a cap will be placed over the waste. Thus a restricted set of ARAR's were evaluated for compliance of the alternatives. A complete set of ARAR's should be utilized to evaluate the alternatives.

Response:
This is a limited scope interim remedial action and may not be the final solution. The U.S. Army, EPA, and TNRCC agree that a full set of ARARs was evaluated for this limited action. A complete set of all ARARs will be examined in the final ROD for these sites.

5. Comment:
The alternatives were evaluated for long term effectiveness and permanence. Since none of the alternatives were designed to address a permanent solution only the long-term effectiveness was evaluated. Even with two layers of protection in the landfill caps, if the U.S. Army does not regularly inspect the integrity of the cap and perform long-term (forever) maintenance, the effectiveness of the cap will be destroyed and infiltration of rainwater will occur. Thus the long-term effectiveness is only as good as the efforts provided by the U.S. Army. A program of assurance, financial security and citizens input must be implemented in order to insure that financial resources are available forever in order to maintain the integrity of the cap.

Response:
Agree, this interim remedial action does not address the issue of a permanent solution. The Federal Government (U.S. Army) is not required to provide assurance of financial

security for CERCLA sites. CERCLA requires an evaluation of the remedial action to ensure the integrity and performance of the landfill cap and to determine if the remedy is protective of human health and the environment. The public can provide input for the five-year reviews. If the landfill caps are not providing protection of human health and the environment, additional regulatory action could be pursued. The U.S. Army will supply the necessary resources to provide long-term maintenance of the landfill cap.

6. Comment:
The fourth criteria for evaluation of the alternatives is the reduction of toxicity, mobility or volume or contaminants. The proposed plan indicates that none of the alternatives even attempt to meet these criteria. The agencies state that removal is not feasible. However, they did not even propose any alternatives that would have reduced the toxicity or mobility of the waste. These issues must be addressed by the agencies.

Response:
The intent of the criteria is reduction of toxicity, mobility, or volume of contaminants through treatment. The alternative does not meet the intent of the criteria; however, the cap will reduce mobility by eliminating infiltration of water through contaminants and subsequent release of contaminants. The treatment of landfill contents is not a feasible option and was not considered. See the response to Comment 3 for a discussion of the feasibility of reducing the toxicity of landfill contents.

7. Comment:
The alternatives were evaluated for short term effectiveness. The short term impacts have been determined to be dust and noise which impact workers on site and plant personnel. Safeguards are proposed to minimize the short term impacts. Uncertain Audubon should request that we be allowed to review and comment on the proposed measures to be utilized to reduce risk. We would also like to request the opportunity to comment during the construction phase in order to address issues that arise during this phase.

Response:
The public will not be exposed to short-term risks because LHAAP is a controlled facility and the public will not be allowed on site. The safety of the workers is the responsibility of the contractor and will be addressed in the Site Safety and Health Plan which will follow the appropriate OSHA regulations. Issues that arise during the construction phase of this remedial action can be addressed during the Technical Review Committee (TRC) meetings. The intent of the criteria is to assess short-term risks to the workers, the community, and the time factor. Cleanup technologies often require several years for implementation. A potential remedy is evaluated for the length of time required for implementation and the potential impact on human health and the environment during the remedial action.

8. Comment:
The criteria for implementability deals with the issues of labor and heavy equipment operating conditions. Requirements should be placed on heavy equipment contractors, etc. allowed to perform the work. Those companies that profited from the improper waste disposal that created the site should not be allowed to bid on contracts or subcontracts to remedy the site.

Response:
The contracting actions for this remedial action will follow all U.S. Government contracting guidelines. The waste disposal activities at these landfills were not considered "improper waste disposal" at the time. LHAAP followed the standard government and private industry waste disposal practices during operation of the landfills.

9. Comment:
The criteria for community acceptance should be expanded by the environmental group. In addition to the other issues pointed out, Uncertain Audubon should request that we be allowed to review and comment on the design and implementation phases of the project. The level of detail is totally inadequate for our group to accept the alternative and never again have input into the process during the design and implementation phases. The review and comment mechanism we are requesting must be in addition to the process set forth in the Community Relations Plan.

Response:
The standard Corps of Engineers review process will be used during the design. Following this process is necessary to complete reviews and contracting actions on time and within budget. The standard review process includes internal reviews by the Corps of Engineers, reviews by the customer (LHAAP), and regulatory review (EPA and TNRCC). Plans can be provided to interested persons within the community and comments can be made during the TRC meetings.

10. Comment:
The proposed plan contains a description of the site history. The history section describing LHAAP 12 indicates that disposal ceased in April 1994. The history continues with a section that describes the treated soil from the Early Interim Remedial action at Burning Ground No. 3 that will be placed on the LHAAP 12 landfill. In addition it is stated that the Early Interim Remedial Action for the LHAAP 12 landfill will not begin until the Burning Ground No. 3 Early Interim Remedial Action is complete.

Response:
The Early Interim Remedial Action at the LHAAP 12 Landfill could begin concurrently with the Early Interim Remedial Action for Burning Ground No. 3. The sentence should read: The Early Interim Remedial Action for the LHAAP 12 Landfill will not be completed until the Burning Ground No. 3 Early Interim Remedial Action is complete.

The LHAAP 12 landfill surface could be cleared and prepared for placement of the treated soil from Burning Ground No. 3. The treated soil could be hauled to the LHAAP 12 Landfill and placed as the treated soil is produced at Burning Ground No. 3.

11. Comment:
What is the time frame for the generation of the treated soil from the Burning Ground No. 3?

Response:
The soil identified in the Early Interim Remedial Action for Burning Ground No. 3 will be excavated and treated over an 18-month period.

12. Comment:
What contaminants at what concentrations will be contained in the treated material?

Response:
The excavated soil and source material will be treated according to the requirements of the Land Disposal Restrictions (40 CFR Part 268) under RCRA, pursuant to the Treatability Variance (40 CFR 268.44) granted in the May 1995 ROD. The treatment level range that was established for the Treatability Variance is a 90 to 99.9 percent reduction in the concentration of the contaminants upon the completion of the treatment process. The primary contaminants of concern are trichloroethylene and methylene chloride.

13. Comment:
Is the LHAAP 12 landfill an appropriate location to dispose of the treated material? Can the landfill properly contain the waste? The landfill is not lined and has already caused ground water contamination and has the potential for contamination of surface water resources.

Response:
Yes, the U.S. Army, EPA, and TNRCC have agreed the LHAAP 12 Landfill is an appropriate location to dispose of treated soil from Burning Ground No. 3. The LHAAP 12 Landfill can properly contain the waste. However, the LHAAP 12 Landfill may be too small to handle all of the treated soil; therefore, the U.S. Army, EPA, and TNRCC have agreed to place some of the treated soil on the LHAAP 16 Landfill, if necessary. The mobility of contaminants within the treated soil will be reduced by the treatment process. Also, the cap will prevent water from infiltrating and coming into contact with the treated soil; therefore, the potential for additional contamination of the surface water does not exist.

14. Comment:
Will the contaminants in the waste further threaten the ground water and surface water resources in the area?

Response:
No, the contaminants in the treated soil from Burning Ground No. 3 will not further threaten the groundwater or surface water resources in the area. See the response to Comment 13 for additional explanation.

15. Comment:
What specific area(s) of LHAAP 12 will be utilized to dispose of the treated soil? Will any special protective measure and isolation techniques be employed to prevent migration of the contaminants remaining in the treated soil?

Response:
The treated soil from Burning Ground No. 3 will be placed across the entire surface of the LHAAP 12 Landfill. Any remaining treated soil that cannot be placed at the LHAAP 12 Landfill will be placed on the LHAAP 16 Landfill. No treated soil will be placed below the 100-year floodplain elevation for Harrison Bayou. No special measures and isolation techniques, other than placement of the landfill cap, will be used to prevent migration of contaminants from the treated soil.

16. Comment:
The ground water beneath the landfills is very near the surface. At landfill LHAAP 12 the ground water is 20 to 25 feet below the landfill surface and at LHAAP 16, 5 to 10 feet below the landfill surface. The ground surface elevation at landfill LHAAP 16 is 15 feet above original grade. Thus waste in the landfills has the potential to be in contact with the ground water. The alternatives as proposed do not take into account the shallow ground water levels or the potential problems the ground water level may have on the integrity of the proposed caps. Will the ground water cause heave in the cap and disrupt the integrity of the cap? Will the ground water flow patterns be altered by the caps and cause additional leaching of contaminants by being in longer contact with the waste?

Response:
The groundwater investigations at both sites are ongoing. Issues concerning groundwater will be addressed in the final ROD upon completion of the risk assessments for the sites. However, the landfill caps will virtually eliminate the recharge of the groundwater over the landfill areas. Therefore, the groundwater elevations may be lowered thereby decreasing the chances of groundwater coming into contact with the waste. The integrity of the cap will not be compromised by the groundwater. The groundwater flow patterns will change because the caps will lower the groundwater by decreasing the recharge of groundwater beneath the caps. The caps will reduce the leaching of contaminants.

17. Comment:
The ground water at each of the landfill sites has been impacted by waste from the landfills. The migration of the contaminated ground water has the potential to impact ground water wells as well as surface water resources which are utilized as a source of

drinking water. The proposed alternatives did not address the need to investigate methods of isolating the contaminated ground water plumes. If after the completion of the Remedial Investigation phase such structures as slurry walls and/or under drains or recovery wells are determined to be necessary to prevent further contamination of ground water and surface water resources, it is possible that these structures may be impaired by the currently proposed cap system. It would seem appropriate that the issues of remedies to address the ground water contamination should have been included in the proposed alternative. At a minimum, during the design phase of the landfill caps, the available ground water data and associated risks should be elevated in order to plan for future appropriate remedial structures necessary to address the ground water problems.

Response:
The groundwater investigation is ongoing; however, the landfill caps will not impair the placement of slurry walls, collection trenches, recovery wells, or other plume containment methods that may be required by a final remedial action. These plume containment structures could be constructed with minimal disturbance of the landfill caps at the edges of the landfills.

18. Comment:
The ground water contaminated by the landfill sites is in contact with surface water resources. Thus there is a high potential for the contaminated ground water to enter the surface water system. The proposed alternatives completely failed to address this issue. No mechanism was proposed to interrupt the flow of contaminated ground water into the surface waters.

Response:
Refer to the response to Comment 2 regarding groundwater contamination concerns.

19. Comment:
The eastern end of the LHAAP 16 landfill is in the flood plain of Harrison Bayou and the toe of the landfill is adjacent to a tributary of Harrison Bayou. the proposed plan did not address the construction of a landfill cap in a flood plain. No provisions were made to isolate the landfill cap from the bayou flood waters. The flood waters could disrupt the integrity of the cap during every rainfall event that caused the bayou waters to come in contact with the landfill cap. No provision was made to isolate the contaminated ground water in the area of the flood plain from the surface water resources of Harrison Bayou.

Response:
The LHAAP 16 Landfill slopes that may come into contact with flood waters from Harrison Bayou will be designed to ensure the integrity of the slopes during periods of high water. The ARARs concerning construction of a fill in a floodplain were cited in the Proposed Plan. Refer to the response to Comment 2 regarding groundwater contamination concerns.

20. Comment:

The sediments of Harrison Bayou adjacent to and downslope of LHAAP 16 landfill are contaminated by explosives. The proposed alternatives failed to address the continued discharge of contaminated ground water into the surface water resources of Harrison Bayou and Central Creek.

Response:

The full nature and extent of contamination has not been defined at the LHAAP 12 and 16 landfills. Yes, explosives were detected in Harrison Bayou. See document LHAAP contamination survey (EPS, 1984). Phase I RI activities included sampling for explosives in the bayou; however, no explosives were found. Investigations to define the nature and extent of contamination at the landfills are ongoing. These investigations include additional sampling of soil, sediments, and groundwater. A risk assessment for the sites will be completed when the nature and extent of contamination is known. The final ROD will address any soil, sediment, or groundwater contamination.

# APPENDIX C

# INDEX OF ADMINISTRATIVE RECORD

*LONGHORN ARMY AMMUNITION PLANT*
*KARNACK, TEXAS*
*ADMINISTRATIVE RECORD - CHRONOLOGICAL INDEX*

*VOLUME 1 of 1*

*1976*

A. **Title:** Final Report - AEHA Water Quality Special Study No. 24-0586-77
**Group(s):** 2 (Partial), 4
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** U.S. Army Environmental Hygiene Agency, Aberdeen Proving Ground
**Author(s):** U.S. Army Environmental Hygiene Agency, Aberdeen Proving Ground
**Recipient:** Commander, USA Material Development And Readiness Command
**Date:** August 2 - 10, 1976
**Bate Stamp:** 000001 - 000032

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*VOLUME 1 of 1*

*1978*

A. **Title:** Final Report - AEHA Air And Water Pollution Survey
**Group(s):** All
**Site(s):** LHAAP-3 Building 72 - Paint Shop
LHAAP-8 Sewage Treatment Plant
LHAAP-12 Active Landfill
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-46 Plant 2 / Pyrotechnic Operation
LHAAP-47 Plant 3 / Produces Motor Assemblies
LHAAP-48 Y Area / Produces Hand Signal Assemblies
LHAAP-51 Photographic Laboratory / Building 60B
LHAAP-53 Static Test Area
LHAAP-58 Maintenance Complex
LHAAP-Main Power Plant & Water Supply
LHAAP-Storage of Solvents and Chemicals
LHAAP-Salvage Yard for Cardboard & Paper
LHAAP-Heating Plant and Sanitary Sewage for Administration Area
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Company:** Horacek, Smith, Painter & Spitz, Incorporated
**Author(s):** Horacek, Smith, Painter & Spitz, Incorporated
**Recipient:** U.S. Army Corps Of Engineer, Fort Worth Division
**Date:** April 20, 1978
**Bate Stamp:** 000033 - 000077

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*VOLUME 1 of 1*

*1980*

A. **Title:** Final Report - AEHA Land Disposal Study
No. 38-26-0104-81-82
**Group(s):** 2 (Partial), 3 (Partial)
**Site(s):** LHAAP-12 Active Landfill
LHAAP-14 54 Burial Ground
LHAAP-16 Old Landfill
LHAAP-18 & LHAAP-24 Burning ground / Washout Pond & Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** U.S. Army Environmental Hygiene Agency, Aberdeen Proving Ground
**Author(s):** U.S. Army Environmental Hygiene Agency, Aberdeen Proving Ground
**Recipient:** Commander, USA Material Development and Readiness Command
**Date:** January 23 - February 8, 1980
**Bate Stamp:** 000078 - 000196

# *LONGHORN ARMY AMMUNITION PLANT*
# *KARNACK, TEXAS*
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*1984*

A. Title: Final Analysis Report - Contamination Analysis Report for Environmental Contamination Survey of the Longhorn Army Ammunition Plant, Marshall, Texas
Group(s): 1 (Partial), 2 (Partial)
Site(s): LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-16 Old Land Fill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Environmental Protection Systems, Inc
Author(s): Environmental Protection Systems, Inc
Recipient: Thiokol Corporation / Longhorn Division For Submission To U.S. Army Toxic and Hazardous Materials Agency, Aberdeen Proving Grounds, MD. 21010
Date: March 14, 1983 - Revised May 3, 1984
Bate Stamp: 000197 - 000505

B. Title: Closure Documents - Closure Of Unlined Evaporation Pond
Group(s): 2 (Partial)
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Kindle, Stone & Associates, Inc.
Author(s): Kindle, Stone & Associates, Inc.
Recipient: U.S. Army Corps Of Engineers, Huntsville Division
Date: July 15, 1984
Bate Stamp: 000506 - 000880

# *LONGHORN ARMY AMMUNITION PLANT*
# *KARNACK, TEXAS*
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*1985*

A.
Title: Newspaper Article - Despite Caddo Protest, Panel Oks Waste Discharge Permit
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Marshall News Messenger
Author(s): Jim Davis
Recipient: U. S. Public
Date: February 28, 1985
Bate Stamp: 000881

B.
Title: Scope of Work - Specifications For Closure Of Unlined Evaporation Pond
Project No. DACA 87-84-C-0039
Group(s): 2 (Partial)
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers
Author(s): Kindle, Stone & Associates, Inc
Recipient: Bidders
Date: August, 1985
Bate Stamp: 000882 - 001178

C.
Title: Memorandum - AEHA Solid Waste Consultation
Sanitary Landfill Closure Plan
No. 38-26-0498-86
Group(s): 2 (Partial)
Site(s): LHAAP-12 Active Landfill
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Environmental Hygiene Agency, Aberdeen Proving Ground
Author(s): U.S. Army Environmental Hygiene Agency
Recipient: Commander, USA Material Development And Readiness Command
Date: December 28, 1985
Bate Stamp: 001179 - 001189

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*1986*

A. **Title:** Letter of Receipt - Certification Of Closure Of Unlined Evaporation Pond
**Group(s):** 2 (Partial)
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond And Unlined Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Texas Water Commission
**Author(s):** Merton J. Coloton, P.E., Chief
**Recipient:** U.S. Army, Longhorn Army Ammunition Plant
**Date:** June 13, 1986
**Bate Stamp:** 004327

**Note:** Bate Stamp Number 004327 Is Out of Sequence From Volume 1 of 1990, C.

*LONGHORN ARMY AMMUNITION PLANT*
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*VOLUME 1 of 2*

*1988*

A. **Title:** Final Analytical Data - Analytical Results, As Defined In The Contamination Study At Longhorn Army Ammunition Plant
**Group(s):** 2 (Partial)
**Site(s):** LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Company:** Environmental Protection Systems, Inc.
**Author(s):** Environmental Protection Systems, Inc.
**Recipient:** Mr. Bruce Childress, Jr., Morton Thiokol Corporation
**Date:** March 31, 1988
**Bate Stamp:** 001190 - 001251

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*1988*

**B.**

**Title:** Final Report - RCRA Facility Assessment (RFA)
**Group(s):** All
**Site(s):** LHAAP-1 through LHAAP-34
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Texas Water Commission
**Author(s):** Texas Water Commission
**Recipient:** U.S. Army, Longhorn Army Ammunition Plant
**Date:** April 8, 1988
**Bate Stamp:** 001252 - 001909

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*VOLUME 1 of 5*

*1989*

A. Title: Final Report - Phase I RCRA Facility Investigation (RFI)
Active Burning Ground and Unlined Evaporation Pond
Volume 1 - Text
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Fort Worth District
Author(s): U.S. Army Corps Of Engineers, Fort Worth District
Recipient: U.S. Army Corps Of Engineers, Huntsville Division
Date: July, 1989
Bate Stamp: 001910 - 002056

B. Title: Final Report - Phase I RCRA Facility Investigation (RFI)
Active Burning Ground and Unlined Evaporation Pond
Volume 2 - Sheet Drawings
Group(s): 2 (Partial)
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Fort Worth District
Author(s): U.S. Army Corps Of Engineers, Fort Worth District
Recipient: U.S. Army Corps Of Engineers, Huntsville Division
Date: July, 1989
Bate Stamp: 002057 - 002088

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*1989*

C. **Title:** **Final Report- Phase I Groundwater Quality Assessment Active Burning Ground and Unlined Evaporation Pond Volume 3 - (Appendices A Through K)**
**Site(s):** **LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond**
**Location:** **Longhorn Army Ammunition Plant, Marshall, Texas**
**Agency:** **U.S. Army Corps Of Engineers, Fort Worth District**
**Author(s):** **U.S. Army Corps Of Engineers, Fort Worth District**
**Recipient:** **U.S. Army Corps Of Engineers, Huntsville Division**
**Date:** **February, 1989**
**Bate Stamp:** **002089 - 002569**

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*1989*

D. **Title:** **Final Report - Phase I RCRA Facility Investigation (RFI)**
**Active Burning Ground and Unlined Evaporation Pond**
**Volume 4 - Appendixes L through BB**

**Group(s):** 2 (Partial)
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** U.S. Army Corps Of Engineers, Fort Worth District
**Author(s):** U.S. Army Corps Of Engineers, Fort Worth District
**Recipient:** U.S. Army Corps Of Engineers, Huntsville Division
**Date:** July, 1989
**Bate Stamp:** 002570 - 003041

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*1989*

E. **Title:** **Final Report - Phase I RCRA Facility Investigation (RFI)**
**Active Burning Ground and Unlined Evaporation Pond**
**Volume 5 - Quality Assurance / Quality Control (QA / QC)**

**Group(s):** 2 (Partial)
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** U.S. Army Corps Of Engineers, Fort Worth District
**Author(s):** U.S. Army Corps Of Engineers, Fort Worth District
**Recipient:** U.S. Army Engineer Division, Huntsville Corps Of Engineers
**Date:** July, 1989
**Bate Stamp:** 003042 - 003504

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*1989*

F.
Title: Newspaper Article - EPA Targets Longhorn Plant
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Longview Newspaper
Author(s): Lee Cole
Recipient: U.S. Public
Date: July 14, 1989
Bate Stamp: 003505
Note: Bate Stamp Number 003506 Is A Blank Page

G.
Title: Newspaper Article - East Texas Ammunition Plant is Superfund Candidate, Dated Friday, July 14, 1989
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: The Dallas Morning Star
Author(s): Jennifer Dixon
Recipient: U. S. Public
Date: July 14, 1989
Bate Stamp: 003507

H.
Title: Final Analytical Data - Phase II Field Data RCRA Facility Investigation (RFI)
Group(s): 2 (Partial)
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Fort Worth District
Author(s): U.S. Army Corps Of Engineers, Fort Worth District
Recipient: U.S. Army Engineer Division, Huntsville Corps Of Engineer
Date: September, 1989
Bate Stamp: 003508 - 004034

I.
Title: Letter - Subject: LHAAP, Karnack, Texas
Proposed Permit No. HW-50195
Industrial Solid Waste Registration No. 30090
Attach(s): Texas Water Commission - Permit for Industrial Solid Waste Management Site
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Minor Brooks Hibbs, Chief Permits Section

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**1989**

**Recipient:** Mr Don Maley, Longhorn Army Ammunition Plant
**Date:** November 30, 1989
**Bate Stamp:** 004035 - 004126

**J.** **Title:** Brochure - Welcome To Longhorn Army Ammunition Plant
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Company:** Thiokol Corporation And U.S.Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Hal Cornish, General Manager, Thiokol, Corporation, Operating Contractor
Ltc. Jeffrey W. Russell, Commanding Officer Longhorn Army Ammunition Plant.
**Recipient:** U.S. Public
**Date:** December, 1989

**Bate Stamp:** 004127, 006640 - 006666

**Note:** Bate Stamp Numbers 006640 - 006666 Are Out of Sequence From Volume 3 of 1993, O.

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*1990*

A. Title: Army Regulation 200-1 - Environmental Quality Environmental Protection and Enhancement
Group(s): All
Site(s): General
Location: Washington D.C.
Agency: Department Of the Army
Author(s): Department of the Army
Recipient: Department of the Army
Date: April 23, 1990
Bate Stamp: 004128 - 004219

B. Title: Letter - Subject: LHAAP Interagency Agreement
Group(s): All
Site(s): General
Location: Marshall, Texas
Agency: U.S. Environmental Protection Agency
Author(s): Allyn M. Davis, Director, Hazardous Waste Management Division
Recipient: Jeffrey W. Russell, Lieutenant Colonel, U.S. Army
Date: September 11, 1990
Bate Stamp: 004220

C. Title: Document - Final Guidance On Administrative Records For Selecting CERCLA Response Action
Group(s): All
Site(s): General
Location: Washington D.C.
Agency: Environmental Protection Agency, Region 6 And The Department Of The Army
Author(s): U.S. Army
Recipient: Regional Administrator
Date: December 3, 1990
Bate Stamp: 004221 - 004326

Note: 004327 Used in Volume 1 of 1986, A.

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*1991*

A. Title: Letter - Subject: LHAAP National Priority List (NPL) Superfund Site Notice of Negotiation Period for Federal Facility Agreement (FFA)
Group(s): All
Site(s): General
Location: Marshall, Texas
Agency: U.S. Environmental Protection Agency
Author(s): Allyn M. Davis, Director, Hazardous Waste Management Division
Recipient: Lieutenant Colonel Jeffery Russell
Date: January 2, 1991
Bate Stamp: 004328

B. Title: Letter - Subject: Confirmation of Willingness to Negotiate Federal Facility Agreement (FFA)
Group(s): All
Site(s): General
Location: Dallas, Texas
Agency: U.S. Navy
Author(s): Jeffrey W. Russell, Lieutenant Colonel, U.S. Navy
Recipient: Renee Holmes, U.S. Environmental Protection Agency
Date: January 16, 1991
Bate Stamp: 004329 - 004330

C. Title: Newspaper Article - Pentagon lists 938 toxic sites across Texas
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: The Dallas Morning News
Author(s): Associated Press
Recipient: U.S. Public
Date: April 3, 1991
Bate Stamp: 004331

D. Title: Final Agreement - Federal Facility Agreement Under CERCLA Section 120, U.S. Department Of The Army, Longhorn Army Ammunition Plant, Marshall, Texas
Group(s): All
Site(s): General
Location: Washington D.C.
Agency: Environmental Protection Agency, Region 6 And The Department Of The Army
Author(s): U.S. Army
Recipient: U.S. Government
Date: September, 1991

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*1991*

**Bate Stamp: 004332 - 004400**

**E.** **Title:** Public Notice - Proof Of Publication From Marshall News Messenger Titled Public Notice Of Longhorn Army Ammunition Plant Interagency Agreement
**Group(s):** Early Interim Action At Burning Ground No. 3
**Site(s):** Longhorn Army Ammunition Plant
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** U.S. Army and Texas Water Commission
**Author(s):** U.S. Army and Texas Water Commission
**Recipient:** U.S. Public
**Date:** October 23, 1991
**Bate Stamp:** 004401

**F.** **Title:** Letter - LHAAP Proof of Publication -IAG
**Attach(s):** Proof of Publication from Marshall News Messenger, Marshall, Texas
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department of the Army
**Author(s):** Michael K. Cobb, Sr., Contract Operations Officer
**Recipient:** U.S. Public
**Date:** November 6, 1991
**Bate Stamp:** 004402

**G.** **Title:** Letter - Subject: Public Announcement of Federal Facility Agreement for LHAAP - No Comments Were Received
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department of the Army, LHAAP
**Author(s):** Lt. Colonel Robert W. Bringman, Commanding Officer, LHAAP
**Recipient:** Lisa Marie Price, USEPA
**Date:** December 16, 1991
**Bate Stamp:** 004403

**H.** **Title:** Letter - Subject: Notice Of Effective Date Of Federal Agreement
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** U.S. Environmental Protection Agency
**Author(s):** Robert E. Layton Jr. P.E., Regional Director

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*1991*

**Recipient:** **Lt. Colonel Robert W. Bringman, Commanding Officer, LHAAP**
**Date:** **December 18, 1991**
**Bate Stamp:** **004404 - 004405**

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*1992*

A. Title: Letter - Subject: Draft Schedules
Attach(s): Schedules
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U. S. Army Corps Of Engineers, Tulsa District
Author(s): Frank W. Parker, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: January 17, 1992
Bate Stamp: 004406 - 004435

B. Title: Letter - Subject: Meeting On ARARs
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Randall J. Miller, Captain, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: January 27, 1992
Bate Stamp: 004436

C. Title: Letter - Subject: EPA's Comments On Draft Schedule
Attach(s): Schedules
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Ms. Lisa M. Price, Environmental Protection Agency
Recipient: Lynn Muckelrath, Longhorn Army Ammunition Plant
Date: February 5, 1992
Bate Stamp: 004437 - 004442

D. Title: Letter - Subject: TWC's Comments On Draft Schedule
Attach(s): Schedules
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Michael A. Moore, Texas Water Commission
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: February 6, 1992
Bate Stamp: 004443 - 004446

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*1992*

E. Title: Letter - Subject: Revised Draft Schedules
Attach(s): Schedules
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U. S. Army Corps Of Engineers, Tulsa District
Author(s): Frank W. Parker, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: February 19, 1992
Bate Stamp: 004447 - 004455

F. Title: Letter - Subject: Approval Of Revised Draft Schedules
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Michael A. Moore, Texas Water Commission
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: February 24, 1992
Bate Stamp: 004456

G. Title: Letter - Subject: Submission Of Community Relations Plan
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): R. Terry Coomes, Chief, Engineering Division, U.S. Army
Recipient: Ms. Lisa Marie Price, Environmental Protection Agency
Date: February 24, 1992
Bate Stamp: 004457 - 004459

H. Title: Letter - Subject: Submission of Draft Remedial Investigation / Feasibility Study (RI / FS)
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps of Engineers, Fort Worth District
Author(s): R. Terry Coomes, P.E., Chief, Engineering Division

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1992

Recipient: Ms. Lisa M. Price, U.S. Environmental Protection Agency
Date: February 27, 1992
Bate Stamp: 004460

I. Title: Letter - Subject: Scheduling Of First TRC Meeting
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Robert W. Bringman, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: March 3, 1992
Bate Stamp: 004461 - 004463

J. Title: Progress Report - Technical Review Committee, Longhorn Army Ammunition Plant
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Environmental Protection Agency
Author(s): Environmental Protection Agency
Recipient: U.S. Army
Texas Water Commission
Local Government Agencies
Date: March 10, 1992
Bate Stamp: 004464 - 004493

K. Title: Letter - Draft Initial Remedial Action / Data Quality Objectives
Group(s): 1,2, and 3
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Active Landfill
LHAAP-13 Suspected TNT Burial Between Active Landfill & Old Landfill
LHAAP-14 Area 54 Burial Ground
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-27 South Test Area
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Waste Disposal Plant
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers

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*1992*

Author(s): Robert W. Bringman, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa Marie Price, Environmental Protection Agency
Date: March 13, 1992
Bate Stamp: 004494

L. Title: Response To Comments - Longhorn Army Ammunition Plant Remedial Investigation / Feasibility Study (RI / FS) Draft Work Plan
Group(s): 1,2, and 3
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Active Landfill
LHAAP-13 Suspected TNT Burial Between Active Landfill & Old Landfill
LHAAP-14 Area 54 Burial Ground
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-27 South Test Area
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Waste Disposal Plant
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement
Recipient: Lynn Muckelrath, Project Manager, Longhorn Army Ammunition Plant
Date: March 27, 1992
Bate Stamp: 004495 - 004543

M. Title: Response To Comments - Longhorn Army Ammunition Plant Community Relations Plan
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement
Recipient: Lynn Muckelrath, Project Manager, Longhorn Army Ammunition Plant
Date: March 27, 1992
Bate Stamp: 004544 - 004548

N. Title: Letter - TWC's Comments On Draft Remedial Investigation / Feasibility Study Work Plan

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Initial Remedial Action / Data Quality Objectives, And Community Relations Plan
Group(s): 1,2, & 3
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Active Landfill
LHAAP-13 Suspected TNT Burial Site Between Old & Active Landfills
LHAAP-16 Old Landfill
LHAAP-17 Burning Ground No. 2 / Flashing Area,
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-27 South Test Area
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Disposal Plant
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Michael A. Moore, Texas Water Commission
Recipient: Lynn Muckelrath, Project Manager, Longhorn Army Ammunition Plant
Date: April 1, 1992
Bate Stamp: 004549 - 004578

O. Title: Letter - EPA's Comments On Draft Initial Remedial Action / Data Quality Objectives
Group(s): 1,2, & 3
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Active Landfill
LHAAP-13 Suspected TNT Burial Site Between Old & Active Landfills
LHAAP-14 Area 54 Burial Ground
LHAAP-16 Old Landfill
LHAAP-17 Burning Ground No. 2 / Flashing Area
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-27 South Test Area
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Disposal Plant
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforce
Recipient: Lynn Muckelrath, Project Manager, Longhorn Army Ammunition Plant
Date: April 14, 1992
Bate Stamp: 004579 - 004584

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P.
Title: Final Plan - Longhorn Army Ammunition Plant Community Relations Plan
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Tulsa District
Author(s): U.S. Army Corps Of Engineers, Tulsa District
Recipient: U.S. Army, Longhorn Army Ammunition Plant
Date: May, 1992
Bate Stamp: 004585 - 004652

Q.
Title: Letter - Response To Request For Extension Remedial Investigation / Feasibility Study
Group(s): 1,2, & 3
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Active Landfill
LHAAP-13 Suspected TNT Burial Site Between Old & Active Landfills
LHAAP-14 Area 54 Burial Ground
LHAAP-16 Old Landfill
LHAAP-17 Burning Ground No. 2 / Flashing Area
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-27 South Test Area
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Disposal Plant
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Michael A. Moore, Texas Water Commission
Recipient: Lynn Muckelrath, Project Manager, Longhorn Army Ammunition Plant
Date: May 13, 1992
Bate Stamp: 004653

R.
Title: Letter - Army's Response To Comments Remedial Investigation / Feasibility Study
Group(s): 1,2, & 3
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Active Landfill
LHAAP-13 Suspected TNT Burial Site Between Old & Active Landfills
LHAAP-14 Area 54 Burial Ground
LHAAP-16 Old Landfill

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LHAAP-17 Burnin Ground No. 2 / Flashing Area
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-27 South Test Area
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Disposal Plant
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers
Author(s): Robert W. Bringman, Lieutenant Colonel, U.S. Army
Recipient: Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforce
Date: May 14, 1992
Bate Stamp: 004654 - 004659

S. Title: Letter - Subject: Army's Response To Comments Revised Community Relations Plan
Attach(s) Comments
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U. S. Army, Longhorn Army Ammunition Plant
Author(s): Robert W. Bringman, Lieutenant Colonel, U. S. Army
Recipient: Ms. Lisa Marie Price, Environmental Protection Agency
Date: May 18, 1992
Bate Stamp: 004660 - 004662

T. Title: Letter - Subject: Draft Revised Schedules
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Robert W. Bringman, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: May 19, 1992
Bate Stamp: 004663 - 004665

U. Title: Letter - Subject: EPA's Comments On Draft Revised Schedule
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Ms. Lisa M. Price, Environmental Protection Agency
Recipient: Lynn Muckelrath, Longhorn Army Ammunition Plant

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**Date:** **May 29, 1992**
**Bate Stamp:** **004666 - 004667**

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V. **Title:** Final Workplan - Phase I Remedial Investigation / Feasibility Study (RI / FS) Work Plan
Volume 1 - General
**Group(s):** 1,2, and 3
**Site(s):** LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Active Landfill
LHAAP-13 Suspected TNT Burial Site Between Old & Active Landfills
LHAAP-14 Area 54 Burial Ground
LHAAP-16 Old Landfill
LHAAP-17 Burning Ground No. 2 / Flashing Area
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-27 South Test Area
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Disposal Plant
LHAAP-54 or LHAAP-XX Ground Signal Test Area
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** U.S. Army Corps Of Engineers, Tulsa District
**Author(s):** U.S. Army Corps Of Engineers, Tulsa District
**Recipient:** U.S. Army, Longhorn Army Ammunition Plant
**Date:** June, 1992
**Bate Stamp:** 004668 - 005119

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W. Title: Final Workplan - Phase I Remedial Investigation / Feasibility Study (RI / FS) Work Plan
Volume 2 - Chemical Data Acquisition
Group(s): 1,2, and 3
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Active Landfill
LHAAP-13 Suspected TNT Burial Site Between Old & Active Landfills
LHAAP-14 Area 54 Burial Ground
LHAAP-16 Old Landfill
LHAAP-17 Burning Ground No. 2 / Flashing Area
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-27 South Test Area
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Disposal Plant
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Tulsa District
Author(s): U.S. Army Corps Of Engineers, Tulsa District
Recipient: U.S. Army, Longhorn Army Ammunition Plant
Date: June, 1992
Bate Stamp: 005120 - 005319

X. Title: Final Work Plan - Phase I Remedial Investigation / Feasibility Study (RI / FS) Work Plan
Volume 3 - Site Safety And Health Plan
Group(s): 1,2, and 3
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Active Landfill
LHAAP-13 Suspected TNT Burial Site Between Old & Active Landfills
LHAAP-14 Area 54 Burial Ground
LHAAP-16 Old Landfill
LHAAP-17 Burning Ground No. 2 / Flashing Area
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-27 South Test Area
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Disposal Plant
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Tulsa District

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Author(s): U.S. Army Corps Of Engineers, Tulsa District
Recipient: U.S. Army, Longhorn Army Ammunition Plant
Date: June, 1992
Bate Stamp: 005320 - 005390

Y. Title: Letter - Subject: Scheduling Of June 1992 TRC Meeting
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Robert W. Bringman, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: June 1, 1992
Bate Stamp: 005391 - 005393

Z. Title: Letter - Revised Draft Remedial Investigation / Feasibility Study (RI/FS) Work Plan
Attach(s) Response Comments
Group(s): 1,2, & 3
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Active Landfill
LHAAP-13 Suspected TNT Burial Site Between Old & Active Landfills
LHAAP-14 Area 54 Burial Ground
LHAAP-16 Old Landfill
LHAAP-17 Burning Ground No. 2 / Flashing Area
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-27 South Test Area
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Disposal Plant
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers
Author(s): Robert W. Bringman, Lieutenant Colonel, U.S. Army
Recipient: Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforce
Date: June 11, 1992
Bate Stamp: 005394 - 005544

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A. Title: Letter - TWC's Response to Comments on Draft Phase I Remedial Investigation / Feasibility Study (RI/FS) Work Plan Budget And Schedule
Group(s): 1,2, & 3
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Activ Landfill
LHAAP-13 Suspected TNT Burial Site Between Old &ActiveLandfills
LHAAP-14 Area 54 Burial Ground
LHAAP-16 Old Landfill
LHAAP-17 Burning Ground No. 2 / Flashing Area
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond &Evaporation Pond
LHAAP-27 South Test Area
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Disposal Plant
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Michael A. Moore, Texas Water Commission
Recipient: Lynn Muckelrath, Project Manager, Longhorn Army Ammunition Plant
Date: July 10, 1992
Bate Stamp: 005545 - 005548

B. Title: Letter - Subject: Response To Comments Revised Community Relations Plan
Attach(s) Comments
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U. S. Army, Longhorn Army Ammunition Plant
Author(s): Michael K. Cobb, Contract Operations Officer
Recipient: Ms. Lisa Marie Price, Environmental Protection Agency
Date: July 14, 1992
Bate Stamp: 005549 - 005567

C. Title: Letter - Subject: LHAAP Remedial Investigation / Feasibility Study (RI / FS) Work Plan
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission

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Author(s): Michael A. Moore, RI/FS II Unit, Superfund Investigation Section, Pollution Cleanup Division
Recipient: Lynn Mucklerath, Project Manager, LHAAP
Date: July 17, 1992
Bate Stamp: 005568

D. Title: Memorandum - Response to Comments on Draft Phase I Remedial Investigation / Feasibility Study (RI/FS) Work Plan
Group(s): 1,2, & 3
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Active Landfill
LHAAP-13 Suspected TNT Burial Site Between Old & Active Landfills
LHAAP-14 Area 54 Burial Ground
LHAAP-16 Old Landfill
LHAAP-17 Burning Ground No. 2 / Flashing Area
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-27 South Test Area
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Disposal Plant
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers
Author(s): R. Terry Coomes, Chief, Engineering Division, U.S. Army Corps Of Engineers, Fort Worth District
Recipient: Commander, U.S. Army, Longhorn Army Ammunition Plant
Date: August 12, 1992
Bate Stamp: 005569 - 005598

E. Title: FAX - Subject: DERPMIS List
Attach(s): List
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lynn Muckelrath, Longhorn Army Ammunition Plant
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: August 13, 1992
Bate Stamp: 005599 - 005601

F. Title: Letter - Subject: Meeting, LHAAP, for Technical Review Committee - December 8,

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Attach(s): Meeting Agenda
Attendance Lists
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Robert W. Bringman, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: September 3, 1992
Bate Stamp: 005602 - 005605

G. Title: Letter - TWC 's Approval Of Remedial Investigation / Feasibility Study (RI/FS) Work Plan
Group(s): 1,2, & 3
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Active Landfill
LHAAP-13 Suspected TNT Burial Site Between Old & Active Landfills
LHAAP-14 Area 54 Burial Ground
LHAAP-16 Old Landfill
LHAAP-17 Burning Ground No. 2 / Flashing Area
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-27 South Test Area
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Disposal Plant
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Michael A. Moore, Texas Water Commission
Recipient: Lynn Muckelrath, Project Manager, Longhorn Army Ammunition Plant
Date: September 14, 1992
Bate Stamp: 005606 - 005607

H. Title: Letter - EPA's Approval Of Remedial Investigation / Feasibility Study (RI/FS) Work Plan
Group(s): 1,2, & 3
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Active Landfill

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**LHAAP-13 Suspected TNT Burial Site Between Old & Active Landfills**
**LHAAP-14 Area 54 Burial Ground**
**LHAAP-16 Old Landfill**
**LHAAP-17 Burning Ground No. 2 / Flashing Area,**
**LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond**
**LHAAP-27 South Test Area**
**LHAAP-29 Former TNT Production Area**
**LHAAP-32 Former TNT Disposal Plant**
**LHAAP-54 or LHAAP-XX Ground Signal Test Area**

**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Environmental Protection Agency
**Author(s):** Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforce
**Recipient:** Lynn Muckelrath, Project Manager, Longhorn Army Ammunition Plant
**Date:** September 14, 1992
**Bate Stamp:** 005608

I. **Title:** Letter - Subject: Need For Interim Action At Unlined Evaporation Pond & Burning Ground No. 3
**Group(s):** Early Interim Action At Burning Ground No. 3
**Site(s):** LHAAP - 18 LHAAP - 24 Burning Ground / Washout Pond & Unlined Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Environmental Protection Agency
**Author(s):** Ms. Lisa Marie Price, Environmental Protection Agency
**Recipient:** Lynn Muckelrath, Longhorn Army Ammunition Plant
**Date:** October 6, 1992
**Bate Stamp:** 005609 - 005610

J. **Title:** Letter - Subject: Comments On DERPMIS List
**Attach(s):** List
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Environmental Protection Agency
**Author(s):** Ms. Lisa Marie Price, Environmental Protection Agency
**Recipient:** Lynn Muckelrath, Longhorn Army Ammunition Plant
**Date:** October 13, 1992
**Bate Stamp:** 005611 - 005612

K. **Title:** Letter - Subject: Meeting, LHAAP, for Technical Review Committee - December 8, 1993

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**Attach(s):** Meeting Agenda
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Robert W. Bringman, Lieutenant Colonel, U.S. Army
**Recipient:** Ms. Lisa M. Price, Environmental Protection Agency
**Date:** December 1, 1992
**Bate Stamp:** 005613 - 005614

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A.
Title: Letter - Subject: Meeting, LHAAP, for Technical Review Committee - December 8, 1993
Attach(s): Meeting Agenda
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Robert W. Bringman, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: March 2, 1993
Bate Stamp: 005615 - 005616

B.
Title: Letter - Subject: Draft RI / FS Work Plan Addendum To Include Site 1A
Group(s): 1 (Partial)
Site(s): LHAAP - 1A Inert Burning Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, U.S. Corps Of Engineers
Author(s): Robert W. Bringman, Lieutenant Colonel, U.S. Army
Recipient: Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement
Date: March 10, 1993
Bate Stamp: 005617

C.
Title: Final Report - Waste Sump Inventory Remedial Investigation (RI)
Group(s): 4
Site(s): LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Tulsa District
Author(s): U.S. Army Corps Of Engineers, Tulsa District
Recipient: U.S. Army, Longhorn Army Ammunition Plant
Date: April, 1993
Bate Stamp: 005618 - 005763

D.
Title: Letter - Subject: Requested Change In Quantification Limits For Detection Of Explosives in Ground Water Samples
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, U.S. Corps Of Engineers
Author(s): Robert W. Bringman

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**Recipient:** **Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement**
**Date:** **April 1, 1993**
**Bate Stamp:** **005764 - 005765**

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E. **Title:** Final Analytical Data - Data Summary Report Of Investigation Results From 1976 Through 1992 For Burning Ground 3 & The Unlined Evaporation Pond
**Group(s):** 2 (Partial)
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** U.S. Army Corps Of Engineer, Tulsa District
**Author(s):** U.S. Army Corps Of Engineers
**Recipient:** U.S. Army, Longhorn Army Ammunition Plant
**Date:** May, 1993
**Bate Stamp:** 005766 - 006305

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F. Title: Letter - Subject: Draft Workplan For Phase I Investigations OF 125 Waste Process Sumps And 20 Waste Rack Sumps, May 1993
Attach(s): Comments - EPA Comments Of Workplan For Phase I
Group(s): 4
Site(s): LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, U.S. Corps Of Engineers
Author(s): Robert W. Bringman
Recipient: Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement
Date: May 13, 1993
Bate Stamp: 006306

G. Title: Final Workplan - Phase I Investigations Of 125 Waste Process Sumps And 20 Waste Rack Sumps for Remedial Investigation
Soil And Groundwater Background Concentration Study
Attach(s): Chain Of Custody Field Data Forms
Group(s): 4
Site(s): LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Tulsa District
Author(s): U.S. Army Corps Of Engineers, Tulsa District
Recipient: U.S. Army, Longhorn Army Ammunition Plant
Date: June, 1993
Bate Stamp: 006307 - 006402

H. Title: Memorandum - Subject: Summary Data Report For Unlined Evaporation Pond / Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP - 18 & LHAAP - 24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Robert W. Bringman
Recipient: Distribution
Date: June 4, 1993
Bate Stamp: 006403

I. Title: Letter - Subject: Draft Workplan For Phase I Investigations OF 125 Waste Process Sumps And 20 Waste Rack Sumps, May 1993

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Attach(s): Comments - EPA Comments Of Workplan For Phase I
Group(s): 4
Site(s): LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement
Recipient: Lynn Muckelrath, Project Manager, Longhorn Army Ammunition Plant
Date: June 14, 1993
Bate Stamp: 006404 - 006405

J. Title: Letter - Subject: Remedial Investigation / Feasibility Study (RI / FS) Work Plan For Sumps
Attach(s): EPA Comments Of Phase I Draft Workplan
Group(s): 4
Site(s): LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Michael A. Moore, Texas Water Commission
Recipient: Lynn Muckelrath, Project Manager, Longhorn Army Ammunition Plant
Date: June 15, 1993
Bate Stamp: 006406 - 006409

K. Title: Letter - Subject: Additional TWC Comments On Draft RI / FS For 125 Waste Rack Sumps And 20 Waste Rack Sum,ps
Group(s): 4
Site(s): LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Michael A. Moore, Texas Water Commission
Recipient: Lynn Muckelrath, Project Manager, Longhorn Army Ammunition Plant
Date: June 17, 1993
Bate Stamp: 006410 - 006411

L. Title: Meeting Agenda - LHAAP Technical Review Committee Meeting, March 10, 1994
Attach(s): Attendance List
Schedule - Phase I Investigations
Group(s): All
Site(s): General

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Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army
Author(s): U.S. Army Corps of Engineers, Tulsa District
Recipient: Meeting Participants
Date: June 22, 1993
Bate Stamp: 006412 - 006417

M. Title: Letter - Subject: EPA And TWC Approval Of RI / FS Work Plan Addendum For Site 1
Group(s): 1 (Partial)
Site(s): LHAAP - 1 Inert Burning Grounds
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Lisa Marie Price, Environmental Protection Agency
Recipient: Lynn Muckelrath, Longhorn Army Ammunition Plant
Date: August 18, 1993
Bate Stamp: 006418

N. Title: Letter - Subject: Draft Work Plan For Additional Investigation At Unlined Evaporation Pond / Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Lisa Marie Price, Environmental Protection Agency
Date: August 31, 1993
Bate Stamp: 006419

O. Title: Final Workplan - Phase I Remedial Investigation / Feasibility Study (RI / FS) Work Plan Addendum
Group(s): 1
Site(s): LHAAP-1 Inert Burning Grounds
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Roy F. Weston, Inc.
Author(s): Roy F. Weston, Inc.
Recipient: U.S. Corps Of Engineers, Tulsa District
Date: September, 1993
Bate Stamp: 006420 - 006639

Note: 006640 - 006666 Used in Volume 5 of 1989, J.

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P. Title: Final Workplan - Remedial Investigation (RI) Site Health & Safety Plan
Group(s): 1 (Partial)
Site(s): LHAAP-1 Inert Burning Grounds
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Roy F. Weston, Inc.
Author(s): Roy F. Weston, Inc.
Recipient: U.S. Army Corps of Engineers, Tulsa District
Date: September, 1993
Bate Stamp: 006667 - 006882

Q. Title: Final Workplan - Remedial Investigation (RI) Chemical Data Acquisition Plan Addendum For LHAAP-1
Group(s): 1 (Partial)
Site(s): LHAAP-1 Inert Burning Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Roy F.Weston, Inc.
Author(s): Roy F. Weston, Inc.
Recipient: U.S. Army Corps of Engineers, Tulsa District
Date: September, 1993
Bate Stamp: 006883 - 007207

R. Title: Final Workplan - Remedial Investigation / Feasibility Study (RI / FS) Final Work Plan Addendum
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Roy F. Weston, Inc.
Author(s): Roy F. Weston, Inc.
Recipient: U.S. Army, Longhorn Army Ammunition Plant
Date: September, 1993
Bate Stamp: 007208 - 007246

S. Title: Letter - Subject: Approval Of Final Work Plan For Additional Investigation At Unlined Evaporation Pond / Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lisa Marie Price, Environmental Protection Agency
Recipient: Lynn Muckelrath, Longhorn Army Ammunition Plant

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Date: September 9, 1993
Bate Stamp: 007247

T. Title: Letter - Subject: Approval Of Final Work Plan For Additional Investigation At Unlined Evaporation Pond / Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Michael A. Moore, Superfund Investigation Section
Recipient: Lynn Muckelrath, Longhorn Army Ammunition Plant
Date: September 13, 1993
Bate Stamp: 007248 - 007250

U. Title: Meeting Agenda - LHAAP Technical Review Committee Meeting, March 10, 1994
Attach(s): Attendance List
Summary Of Events During Phase I Sumps Investigation
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army
Author(s): U.S. Army Corps of Engineers, Tulsa District
Recipient: Meeting Participants
Date: September 14, 1993
Bate Stamp: 007251 - 007253

V. Title: Letter - Subject: Final Work Plan For Additional Investigation At Unlined Evaporation Pond / Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Lisa Marie Price, Environmental Protection Agency
Date: October 6, 1993
Bate Stamp: 007254 - 007275

W. Title: Public Notice - Finding Of No Significant Impact - Environmental Assessment For The Proposed Treatment Area For Burning Ground No. 3 Longhorn Army Ammunition

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Plant
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Thiokol Corporation
Author(s): William A. Sniffen, Environmental Engineer
Recipient: U.S. Public
Date: December, 1993
Bate Stamp: 007276 - 007287

X. Title: Letter - Subject: Meeting, LHAAP, for Technical Review Committee - December 8, 1993
Attach(s): Meeting Agenda
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: December 1, 1993
Bate Stamp: 007288 - 007289

Y. Title: Letter - Draft Revised Schedule Federal Facility Agreement
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: December 2, 1993
Bate Stamp: 007290 - 007313

Z. Title: Meeting Agenda - LHAAP Technical Review Committee Meeting, December 8, 1993
Attach(s): Attendance List
Overhead Slide - RI Phase I Accomplishment
Overhead Slide - Environmental Activities Since 16 Nov 93
Overhead Slide - Phase I RI at Area LHAAP-1A
Overhead Slide - Preliminary results from RMIS 35 (Sumps) RI

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**Overhead Slide - Phase I IRA at Burning Ground #3 & UEP**
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** U.S. Army
**Author(s):** U.S. Army Corps of Engineers, Tulsa District
**Recipient:** Meeting Participants
**Date:** December 8, 1993
**Bate Stamp:** 007314 - 007322

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A. Title: Letter - Subject: Draft Pilot Study Work Plan For Unlined Evaporation Pond At Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Tulsa District
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa Marie Price, Environmental Protection Agency
Date: December 13, 1993
Bate Stamp: 007323

B. Title: Letter - Subject: EPA's Comments On Draft Field Summary Report For Group No. 1
Group(s): 1
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-27 South Test Area
LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Recipient: Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Author(s): Lisa Marie Price, Environmental Protection Agency
Date: December 15, 1993
Bate Stamp: 007324 - 007326

C. Title: Letter - Subject: EPA's Comments To Draft Pilot Study Work Plan For Unlined Evaporation Pond At Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Tulsa District
Author(s): Ms. Lisa Marie Price, Environmental Protection Agency
Recipient: Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Date: December 28, 1993
Bate Stamp: 007327 - 007334

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Plant
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Thiokol Corporation
Author(s): William A. Sniffen, Environmental Engineer
Recipient: U.S. Public
Date: December, 1993
Bate Stamp: 007276 - 007287

X. Title: Letter - Subject: Meeting, LHAAP, for Technical Review Committee - December 8, 1993
Attach(s): Meeting Agenda
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: December 1, 1993
Bate Stamp: 007288 - 007289

Y. Title: Letter - Draft Revised Schedule Federal Facility Agreement
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: December 2, 1993
Bate Stamp: 007290 - 007313

Z. Title: Meeting Agenda - LHAAP Technical Review Committee Meeting, December 8, 1993
Attach(s): Attendance List
Overhead Slide - RI Phase I Accomplishment
Overhead Slide - Environmental Activities Since 16 Nov 93
Overhead Slide - Phase I RI at Area LHAAP-1A
Overhead Slide - Preliminary results from RMIS 35 (Sumps) RI

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**Overhead Slide - Phase I IRA at Burning Ground #3 & UEP**

**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** U.S. Army
**Author(s):** U.S. Army Corps of Engineers, Tulsa District
**Recipient:** Meeting Participants
**Date:** December 8, 1993
**Bate Stamp:** 007314 - 007322

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A. Title: Letter - Subject: Draft Pilot Study Work Plan For Unlined Evaporation Pond At Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Tulsa District
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa Marie Price, Environmental Protection Agency
Date: December 13, 1993
Bate Stamp: 007323

B. Title: Letter - Subject: EPA's Comments On Draft Field Summary Report For Group No. 1
Group(s): 1
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-27 South Test Area
LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Recipient: Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Author(s): Lisa Marie Price, Environmental Protection Agency
Date: December 15, 1993
Bate Stamp: 007324 - 007326

C. Title: Letter - Subject: EPA's Comments To Draft Pilot Study Work Plan For Unlined Evaporation Pond At Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Tulsa District
Author(s): Ms. Lisa Marie Price, Environmental Protection Agency
Recipient: Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Date: December 28, 1993
Bate Stamp: 007327 - 007334

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A. Title: Final Workplan - Phase II Pilot Study For Interim Remedial Action (IRA) For Burning Ground 3 & The Unlined Evaporation Pond
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Tulsa District
Author(s): U.S. Army Corps Of Engineers, Tulsa District
Recipient: U.S. Army, Longhorn Army Ammunition Plant
Date: January, 1994
Bate Stamp: 007335 - 007473

B. Title: Letter - Subject: TWC's Comments On Draft Field Summary Report For Group No. 1
Group(s): 1
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-27 South Test Area
LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Michael A. Moore, Superfund Investigation Section
Recipient: Lynn Muckelrath, Longhorn Army Ammunition Plant
Date: January 11, 1994
Bate Stamp: 007474 - 007478

C. Title: Letter - Subject: Draft Final Interim Risk Assessment For Unlined Evaporation Pond / Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Lisa Marie Price, Environmental Protection Agency
Date: January 19, 1994
Bate Stamp: 007479

D. Title: Letter - Subject: EPA's Comments On Draft Revised Schedule
Group(s): 1,2,&3
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Active Landfill

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**LHAAP-13 Suspected TNT Burial Site Between Old & Active Landfills**
**LHAAP-14 Area 54 Burial Ground**
**LHAAP-16 Old Landfill**
**LHAAP-17 Burning Ground No. 2 / Flashing Area**
**LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond**
**LHAAP-27 South Test Area**
**LHAAP-29 Former TNT Production Area**
**LHAAP-32 Former TNT Disposal Plant**
**LHAAP-54 or LHAAP-XX Ground Signal Test Area**

Location: **Longhorn Army Ammunition Plant, Marshall, Texas**
Agency: **Environmental Protection Agency**
Author(s): **Ms. Lisa M. Price, Environmental Protection Agency**
Recipient: **Lawrence J. Sowa, Lieutenant Colonel, U.S. Army**
Date: **January 19, 1994**
Bate Stamp: **007480 - 007482**

E. Title: **Letter - Subject: Final Pilot Study Work Plan For Unlined Evaporation Pond At Burning Ground No. 3**
Group(s): **Early Interim Action At Burning Ground No. 3**
Site(s): **LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond**
Location: **Longhorn Army Ammunition Plant, Marshall, Texas**
Agency: **U.S. Army Corps Of Engineers, Tulsa District**
Author(s): **Lawrence J. Sowa, Lieutenant Colonel, U.S. Army**
Recipient: **Ms. Lisa Marie Price, Environmental Protection Agency**
Date: **January 25, 1994**
Bate Stamp: **007483**

F. Title: **Letter - Subject: Submission Of Document Statistical Methods Used For Calculation Of Background Levels**
Group(s): **All**
Site(s): **General**
Location: **Longhorn Army Ammunition Plant, Marshall, Texas**
Agency: **Environmental Protection Agency**
Author(s): **Ms. Lisa M. Price, Environmental Protection Agency**
Recipient: **Lawrence J. Sowa, Lieutenant Colonel, U.S. Army**
Date: **January 27, 1994**
Bate Stamp: **007484**

G. Title: **Letter - Subject: TWC 's Comments On Pilot Study Work Plan For Unlined Evaporation Pond At Burning Ground No. 3**

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| | | |
|---|---|---|
| | Group(s): | Early Interim Action At Burning Ground No. 3 |
| | Site(s): | LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond |
| | Location: | Longhorn Army Ammunition Plant, Marshall, Texas |
| | Agency: | U.S. Army Corps Of Engineers, Tulsa District |
| | Author(s): | Michael A. Moore, Texas Water Commission |
| | Recipient: | Lynn Muckelrath, Longhorn Army Ammunition Plant |
| | Date: | February 2, 1994 |
| | Bate Stamp: | 007485 - 007486 |
| H. | Title: | Final Report - Phase I Interim Remedial Action Stabilization Treatment Study |
| | Group(s): | Early Interim Action At Burning Ground No. 3 |
| | Site(s): | LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond |
| | Location: | Longhorn Army Ammunition Plant, Marshall, Texas |
| | Company: | Recra Environmental, Inc. |
| | Author(s): | Recra Environmental, Inc. |
| | Recipient: | AWD Laboratories, Inc. |
| | Date: | February 4, 1994 |
| | Bate Stamp: | 007487 - 007563 |
| I. | Title: | Final Report - Carbon Adsorption And Ion Exchange Treatability Study |
| | Group(s): | Early Interim Action At Burning Ground No. 3 |
| | Site(s): | LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond |
| | Location: | Longhorn Army Ammunition Plant, Marshall, Texas |
| | Company: | AWD Technologies, Inc., Rockville, Md. |
| | Author(s): | AWD Technologies, Inc., Rockville, Md. |
| | Recipient: | U.S. Army Corps of Engineers, Tulsa District |
| | Date: | February 7, 1994 |
| | Bate Stamp: | 007564 - 007842 |

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J.
Title: Final Report - Ultrox Technology (O3, H2O2, & UV Light) Treatability Study
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Ultrox, Division of Zimpro Environmental, Inc.
Author(s): William, S. Himebaugh
Recipient: AWD Technologies, Rockville, Md.
Date: February 8, 1994
Bate Stamp: 007843 - 007869

K.
Title: Draft Report - Phase I Interim Remedial Action
Evaluation Of Thermal Treatment Of On-Site Contaminated Soils And Buried Waste
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: AWD Technologies, Inc.
Author(s): AWD Technologies, Inc.
Recipient: U.S. Army Corps Of Engineers, Tulsa District
Date: February 9, 1994
Bate Stamp: 007870 - 007896

L.
Title: Letter - Subject: Physical, Surveying And Other Field Data
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: AWD Technologies, Inc.
Author(s): Amine Bou Onk, P.E. Project Manager
Recipient: Mr. Clif B. Warren, P.E. Resident Officer, U.S. Army Corps Of Engineers
Date: February 17, 1994
Bate Stamp: 007897 - 007985

M.
Title: Letter - Subject: Meeting, LHAAP, for Technical Review Committee - March 10, 1994
Attach(s): Meeting Agenda
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: February 22, 1994
Bate Stamp: 007986

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N. Title: Letter - Subject: Phase I Field Investigation Summary Report For Group No. 2
Group(s): 2
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Formal TNT Waste Disposal Plant
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Lisa Marie Price, Environmental Protection Agency
Date: February 22, 1994
Bate Stamp: 007987

O. Title: Final Report - Phase I TerraMet Metals Extraction Treatability Study
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Cognis, Inc.
Author(s): Cognis, Inc.
Recipient: AWD Laboratories, Inc.
Date: February 22, 1994
Bate Stamp: 007988 - 007998

P. Title: Draft Report - Treatability Verification Of Air Stripping On Contaminated Ground Water
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: IC Technologies, Inc.
Author(s): John E. Litz
Recipient: AWD Technologies, Inc.
Date: February 24, 1994
Bate Stamp: 007999 - 008022

Q. Title: Letter - Subject: EPA's Request For Extension To Submission Of Comments On Several Documents
Group(s): 2, 3, Early Interim Action At Burning Ground No. 3,
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill

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LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Formal TNT Waste Disposal Plant
LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Lisa Marie Price, Environmental Protection Agency
Recipient: Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Lynn Muckelrath, Longhorn Army Ammunition Plant
Date: March 4, 1994
Bate Stamp: 008023 - 008024

R. Title: Meeting Agenda - LHAAP Technical Review Committee Meeting, March 10, 1994
Attach(s): Attendance List
Overhead Slide - IR Accomplishment Since Dec 93
Overhead Slide - IR Activities in the Next 3 Months
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army
Author(s): U.S. Army Corps of Engineers, Tulsa District
Recipient: Meeting Participants
Date: March 10, 1994
Bate Stamp: 008025 - 008029

S. Title: Letter - Subject: EPA's Comments On Draft Interim Risk Assessment For Unlined Evaporation Pond / Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Lisa Marie Price, Environmental Protection Agency
Recipient: Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Lynn Muckelrath, Longhorn Army Ammunition Plant
Date: March 22, 1994
Bate Stamp: 008030 - 008051

T. Title: Letter - Subject:EPA's Comments On Statistical Methods Used For Calculation Of

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1994

Background Levels
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Ms. Lisa M. Price, Environmental Protection Agency
Recipient: Mr. David Tolbert, Longhorn Army Ammunition Plant
Date: April 12, 1994
Bate Stamp: 008052 - 008053

U. Title: Letter - Subject: Draft DERPMIS Resolution Document
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: April 14, 1994
Bate Stamp: 008054

V. Title: Letter - Subject: EPA's Comments On Draft Phase I Investigation For 125 Waste Rack Sumps And 20 Waste Rack Sum,ps
Group(s): 3
Site(s): LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Lisa Marie Price, Environmental Protection Agency
Recipient: David Tolbert, Longhorn Army Ammunition Plant
Date: April 19, 1994
Bate Stamp: 008055 - 008057

W. Title: Letter - Subject: EPS's Comments On Draft Field Investigation Summary For group #2
Group(s): 2
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area

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LHAAP-32 Formal TNT Waste Disposal Plant
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lisa Marie Price, Environmental Protection Agency
Recipient: David Tolbert, U.S. Army, LHAAP
Date: April 19, 1994
Bate Stamp: 008058 - 008061

X. Title: Memorandum - Subject: EPA's Comments On Interim Risk Assessment For Unlined Evaporation Pond / Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Allison Jenkins Toxicologist, Superfund Investigation Section
Recipient: Michael A. Moore, Superfund Investigation Section
Date: April 19, 1994
Bate Stamp: 008062

Y. Title: Letter - Subject: Revised Schedule For Groups #4 IRAs At Unlined Evaporation Pond / Burning Ground #3 And Landfills
Attach(s): Schedule
Group(s): 4, Early Interim Action At Burning Ground # 3
Site(s): LHAAP - 12 Active Landfill
LHAAP - 16 Area 54 Burial Ground
LHAAP - 18 & LHAAP - 24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: April 21, 1994
Bate Stamp: 008063 - 008066

Z. Title: Letter - Subject: Revised Schedule For Groups #4 IRAs At Unlined Evaporation Pond / Burning Ground #3 And Landfills
Attach(s): Schedule
Group(s): 1,2,& 3
Site(s): LHAAP-1 Inert Burning Grounds

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**LHAAP-11 Suspected TNT Burial Site At Avenues P & Q**
**LHAAP-12 Active Landfill**
**LHAAP-13 Suspected TNT Burial Site Between Old & Active Landfills**
**LHAAP-14 Area 54 Burial Ground**
**LHAAP-16 Old Landfill**
**LHAAP-17 Burning Ground No. 2 / Flashing Area**
**LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond**
**LHAAP-27 South Test Area**
**LHAAP-29 Former TNT Production Area**
**LHAAP-32 Former TNT Disposal Plant**
**LHAAP-54 or LHAAP-XX Ground Signal Test Area**

**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Ms. Lisa M. Price, Environmental Protection Agency
**Date:** April 21, 1994
**Bate Stamp:** 008067 - 008070

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A. Title: Letter - Subject: Draft Field Investigation Summary For Site 1A
Group(s): 1
Site(s): LHAAP-1 Inert Burning Grounds
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Lisa Marie Price, Environmental Protection Agency
Date: May 11, 1994
Bate Stamp: 008071

B. Title: Letter - Subject: EPA's Comments On Draft DERMIS Resolution Document
Attach(s): Comments
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Ms. Lisa M. Price, Environmental Protection Agency
Recipient: Mr. David Tolbert, Longhorn Army Ammunition Plant
Date: May 17, 1994
Bate Stamp: 008072 - 008074

C. Title: Letter - Subject: EPA's Response To Separate Schedules For Groups #,2,3 and For Group # 4 IRAs At Unlined Evaporation Pond / Burning Ground #3 And Landfills
Group(s): 1,2,3 And 4
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Active Landfill
LHAAP-13 Suspected TNT Burial Site Between Old & Active Landfills
LHAAP-14 Area 54 Burial Ground
LHAAP-16 Old Landfill
LHAAP-17 Burning Ground No. 2 / Flashing Area,
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-27 South Test Area
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Disposal Plant
LHAAP-54 or LHAAP-XX Ground Signal Test Area
LHAAP-35 Process Wastewater Sumps
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Ms. Lisa M. Price, Environmental Protection Agency
Recipient: Mr. David Tolbert, Longhorn Army Ammunition Plant

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Date: May 23, 1994
Bate Stamp: 008075 - 008076

D. Title: Letter - Subject: DERMIS List / RMIS Cross-Reference Table
Attach(s): Comments
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: May 31, 1994
Bate Stamp: 008077 - 008080

E. Title: Conference Call - Contact: Kathleen Buci, Major John German, Joe Kang
Subject: Ask AEC Legal Whether Or Not EPA Should Get Two Separate Packages; One For FFA And The Other For Planning Purpose Only
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): W. C. Nathan
Recipient: File
Date: June 1, 1994
Bate Stamp: 008081

F. Title: Final Report - Biotreatability Study
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Bioscience, Inc.
Author(s): Bioscience, Inc.
Recipient: AWD Laboratories, Inc.
Date: June 3, 1994
Bate Stamp: 008082 - 008130

G. Title: Letter - Subject: Draft Initial Screening Of Alternatives
Group(s): 1,2,&3
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Active Landfill

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LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burning Ground
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-27 South Test Area
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Disposal Plant
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa Marie Price, Environmental Protection Agency
Date: June 6, 1994
Bate Stamp: 008131

H. Title: Letter - Subject: EPA's Comments On Monitoring Well Survey At Unlined Evaporation Pond At Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lisa Marie Price, Environmental Protection Agency
Recipient: David Tolbert, Longhorn Army Ammunition Plant
Date: June 7 1994
Bate Stamp: 008132 - 008133

I. Title: Letter - Subject: EPA's Comments On Draft Field Investigation Summary For Site 1A
Group(s): 1
Site(s): LHAAP-1 Inert Burning Grounds
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Lisa Marie Price, Environmental Protection Agency
Recipient: David Tolbert, Longhorn Army Ammunition Plant
Date: June 8, 1994
Bate Stamp: 008134 - 008135

J. Title: Letter - Subject: Meeting, LHAAP, for Technical Review Committee - June 22, 1994
Attach(s): Meeting Agenda
Group(s): All

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Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: June 13, 1994
Bate Stamp: 008136 - 008137

K. Title: Letter - Subject: EPA's Comments On Draft DERMIS Resolution Document
Attach(s): Comments
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Ms. Lisa M. Price, Environmental Protection Agency
Recipient: Mr. David Tolbert, Longhorn Army Ammunition Plant
Date: June 14, 1994
Bate Stamp: 008138 - 008144

L. Title: Letter - Subject: Draft Remedial Design Investigations Work Plan For Landfills
Group(s): Landfill Caps Interim Action
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Tulsa District
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa Marie Price, Environmental Protection Agency
Date: June 16, 1994
Bate Stamp: 008145

M. Title: Meeting Agenda - LHAAP Technical Review Committee Meeting, June 22, 1994
Attach(s): Status Report - LHAAP Environmental Projects Status (as of June 17, 1994)
Status Report - Regulators' Milestones Status Update
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army
Author(s): U.S. Army Corps of Engineers, Tulsa District
Recipient: Meeting Participants
Date: June 22, 1994
Bate Stamp: 008146 - 008170

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N. Title: Letter - Subject: Draft Work Plan And Chemical Acquisition Plan Addendum For Phase II Group #1
Group(s): 1
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-54 Or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa Marie Price, Environmental Protection Agency
Date: June 28, 1994
Bate Stamp: 008171

O. Title: Letter - Subject: Draft Work Plan For Soil And Ground Water Background Concentration Study
Group(s): 1
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-27 South Test Area
LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Lisa Marie Price, Environmental Protection Agency
Date: June 29, 1994
Bate Stamp: 008172

P. Title: Final Report - Biotreatability Report
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Bioscience, Inc.
Author(s): Bioscience, Inc.
Recipient: AWD Laboratories, Inc.
Date: July 1, 1994
Bate Stamp: 008173 - 008366

Q. Title: Letter - Subject: Natural Resource Trustee Responsibilities
Attach(s): Letter - From Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Group(s): All
Site(s): General

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1994

Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Ms. Lisa M. Price, Environmental Protection Agency
Recipient: Mr. David Tolbert, Longhorn Army Ammunition Plant
Date: July 11, 1994
Bate Stamp: 008367 - 008371

R. Title: Letter - Subject: EPA's Comments On Draft Remedial Design Investigations Work Plan For Landfills
Group(s): Landfill Caps Interim Action
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Tulsa District
Author(s): Ms. Lisa Marie Price, Environmental Protection Agency
Recipient: David Tolbert, Longhorn Army Ammunition Plant
Date: July 13, 1994
Bate Stamp: 008372 - 008374

S. Title: Letter - Subject: Request For Extension On Submission Of Draft RI / FS For Sites No. 13 & 14 And Proposed Plan For IRA At Unlined Evaporation Pond / Burning Ground # 3
Group(s): 3
Site(s): LHAAP-13 Suspected TNT Burial Site Between Active And Old Landfills
LHAAP-14 Area 54 Burial Ground
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa Marie Price, Environmental Protection Agency
Date: July 27, 1994
Bate Stamp: 008375 - 008377

T. Title: Letter - Subject: Draft Proposed Plan For Interim Remedial Action At Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas

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Agency: Department of the Army
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa Marie Price, Environmental Protection Agency
Date: July 29, 1994
Bate Stamp: 008378

U. Title: Letter - Subject: EPA's Comments And Conditional Approval Of Draft Work Plan For Soil And Ground Water Background Concentration Study
Attach(s): Comments
Group(s): 1
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-27 South Test Area
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Lisa Marie Price, Environmental Protection Agency
Recipient: David Tolbert, Longhorn Army Ammunition Plant
Date: July 29, 1994
Bate Stamp: 008379 - 008381

V. Title: Letter - Subject: EPA's Comments And Conditional Approval Of Draft Work Plan Addendum For Phase II Group #1 Sites 11,1,xx,27 ( Group #1)
Attach(s): Comments
Group(s): 1
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-27 South Test Area
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Lisa Marie Price, Environmental Protection Agency
Recipient: David Tolbert, Longhorn Army Ammunition Plant
Date: July 29, 1994
Bate Stamp: 008382 - 008384

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W. Title: Letter - Subject: EPA's Comments On Chemical Data Acquisition Plan Addendum For The RI Sites 11,1,xx,27 ( Group #1)
Attach(s): Comments
Group(s): 1
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-27 South Test Area
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Lisa Marie Price, Environmental Protection Agency
Recipient: David Tolbert, Longhorn Army Ammunition Plant
Date: July 29, 1994
Bate Stamp: 008385 - 008388

X. Title: Final Workplan Addendum - Phase I Investigation Of 125 Waste Process Sumps And 20 Waste Rack Sumps for Remedial Investigation (RI)
Soil and Groundwater Background Concentration Study
Group(s): 4
Site(s): LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Tulsa District
Author(s): U.S. Army Corps Of Engineers, Tulsa District
Recipient: U.S. Army, Longhorn Army Ammunition Plant
Date: August, 1994
Bate Stamp: 008389 - 008409

Y. Title: Final Workplan - Phase II Investigations Of 125 Waste Process Sumps and 20 Waste Rack Sumps for Remedial Investigation (RI)
Group(s): 4
Site(s): LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Tulsa District
Author(s): U.S. Army Corps Of Engineers, Tulsa District
Recipient: U.S. Army, Longhorn Army Ammunition Plant
Date: August, 1994
Bate Stamp: 008410 - 008593

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Z. Title: Final Workplan - Phase II Workplan Addendum For Remedial Investigation (RI)
Group(s): 1
Site(s): LHAAP-1 Inert Burning Ground
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-27 South Test Area
LHAAP-54 Or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Sverdrup Environmental, Inc.
Author(s): Sverdrup Environmental, Inc.
Recipient: U.S. Corps Of Engineers, Tulsa District
Date: August, 1994
Bate Stamp: 008594 - 008663

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A. Title: Final Workplan - Phase II A-E Field Workplan For Remedial Investigation (RI)
Group(s): 1
Site(s): LHAAP-1 Inert Burning Ground
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-27 South Test Area
LHAAP-54 Or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Sverdrup Environmental, Inc.
Author(s): Sverdrup Environmental, Inc.
Recipient: U.S. Corps Of Engineers, Tulsa District
Date: August, 1994
Bate Stamp: 008664 - 008685

B. Title: Final Workplan - Phase II A-E Site Safety & Health Plan For The Remedial Investigation (RI)
Group(s): 1
Site(s): LHAAP-1 Inert Burning Ground
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-27 South Test Area
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Sverdrup Environmental, Inc.
Author(s): Sverdrup Environmental, Inc.
Recipient: U.S. Corps Of Engineers, Tulsa District
Date: August, 1994
Bate Stamp: 008686 - 008814

C. Title: Final Workplan - Phase II A-E Chemical Data Acquisition Plan For Remedial Investigation (RI)
Group(s): 1
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-27 South Test Area
LHAAP-54 Or LHAAP - XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Sverdrup Environmental, Inc.
Author(s): Sverdrup Environmental, Inc.
Recipient: Longhorn Army Ammunition Plant, Karnack, Texas
Date: August, 1994
Bate Stamp: 008815 - 009002

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D. Title: Final Workplan - Phase II A-E Chemical Data Acquisition Plan For Remedial Investigation (RI Addendum)
Group(s): 1
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-27 South Test Area
LHAAP-54 Or LHAAP - XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Sverdrup Environmental, Inc.
Author(s): Sverdrup Environmental, Inc.
Recipient: Longhorn Army Ammunition Plant, Karnack, Texas
Date: August, 1994
Bate Stamp: 009003 - 009250

E. Title: Final Work Plan - Landfill Caps for Remedial Design Investigations
Group(s): Landfill Caps Interim Action
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps Of Engineers, Tulsa District
Author(s): U.S. Army Corps Of Engineers, Tulsa District
Recipient: U.S. Army, Longhorn Army Ammunition Plant
Date: August, 1994
Bate Stamp: 009251 - 009302

F. Title: Letter - Subject: Draft RI / FS For Sites No. 13 & 14
Group(s): 3
Site(s): LHAAP-13 Suspected TNT Burial Site Between Active And Old Landfills
LHAAP-14 Area 54 Burial Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa Marie Price, Environmental Protection Agency
Date: August 1, 1994
Bate Stamp: 009303

G. Title: Letter - Subject: Letter Of Intent For Application Of Technical Assistance Grant
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Uncertain Audubon Society

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Author(s): Ruth Culver
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: August 5, 1994
Bate Stamp: 009304 - 009305

H. Title: Letter - Subject: EPA's Comments On Draft Phase II Work Plan For Sumps
Group(s): 4
Site(s): LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Lisa Marie Price, Environmental Protection Agency
Recipient: David Tolbert, Longhorn Army Ammunition Plant
Date: August 10, 1994
Bate Stamp: 009306 - 009326

I. Title: Letter - Subject: Final Remedial Design Investigations Work Plan For Landfills
Group(s): Interim Remedial Action
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Lisa Marie Price, Environmental Protection Agency
Date: August 16, 1994
Bate Stamp: 009327

J. Title: Letter - Subject: Final Deadlines For Primary And Secondary Document
Attach(s): Document - Primary and Secondary Document Of The Installation Restoration Program
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Mr. Michael Moore Texas National Resource Conservation Commission
Ms. Lisa Marie Price, Environmental Protection Agency
Date: August 16, 1994
Bate Stamp: 009328 - 009342

K. Title: Letter - Subject: Draft Proposed Plan For Interim Remedial Action At Burning

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| | | |
|---|---|---|
| | | Ground No. 3 - Comments Offered After Review |
| | Group(s): | Early Interim Action At Burning Ground No. 3 |
| | Site(s): | LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond |
| | Location: | Longhorn Army Ammunition Plant, Marshall, Texas |
| | Agency: | Texas Natural Resource Conservation Commission (TNRCC) |
| | Author(s): | Michael A. Moore , Texas Water Commission |
| | Recipient: | Mr. Dave Tolbert, U.S. Army, Longhorn Army Ammunition Plant |
| | Date: | August 16, 1994 |
| | Bate Stamp: | 009343 - 009347 |
| L. | Title: | Letter - Subject: Final Phase II Workplan For 125 Waste Rack Sumps And 20 Waste Rack Sumps |
| | Group(s): | 4 |
| | Site(s): | LHAAP-35 Process Wastewater Sumps - Various<br>LHAAP-36 Explosive Waste Pads |
| | Location: | Longhorn Army Ammunition Plant, Marshall, Texas |
| | Agency: | Department Of The Army, Longhorn Army Ammunition Plant |
| | Author(s): | Lawrence J. Sowa, Lieutenant Colonel, U.S. Army |
| | Recipient: | Lisa Marie Price, Environmental Protection Agency |
| | Date: | August 26, 1994 |
| | Bate Stamp: | 009348 |

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M. Title: Final Analytical Data - Interim Remedial Action (RFI) Burning Ground 3 & Unlined Evaporation Pond
Volume 1 of 4 - Chemical Data QA / QC Validation Summary Reports
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: AWD Technologies, Inc.
Author(s): AWD Technologies, Inc.
Recipient: U.S. Army Corps Of Engineers, Tulsa District
Date: September 6, 1994
Bate Stamp: 009349 - 009724

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N. **Title:** Final Analytical Data - Interim Remedial Action (RFI) Burning Ground 3 & Unlined Evaporation Pond
Volume 2 of 4 - Chemical Data QA / QC Validation Summary Reports
**Group(s):** Early Interim Action At Burning Ground No. 3
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Company:** AWD Technologies, Inc.
**Author(s):** AWD Technologies, Inc.
**Recipient:** U.S. Army Corps Of Engineers, Tulsa District
**Date:** September 6, 1994
**Bate Stamp:** 009725 - 010284

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O. **Title:** Final Analytical Data - Interim Remedial Action (RFI) Burning Ground 3 & Unlined Evaporation Pond
Volume 3 of 4 - Chemical Data QA / QC Validation Summary Reports
**Group(s):** Early Interim Action At Burning Ground No. 3
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Company:** AWD Technologies, Inc.
**Author(s):** AWD Technologies, Inc.
**Recipient:** U.S. Army Corps Of Engineers, Tulsa District
**Date:** September 6, 1994
**Bate Stamp:** 010285 - 010908

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P. **Title:** Final Analytical Data - Interim Remedial Action (RFI) Burning Ground 3 & Unlined Evaporation Pond
Volume 4 of 4 - Chemical Data QA / QC Validation Summary Reports
**Group(s):** Early Interim Action At Burning Ground No. 3
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Company:** AWD Technologies, Inc.
**Author(s):** AWD Technologies, Inc.
**Recipient:** U.S. Army Corps Of Engineers, Tulsa District
**Date:** September 6, 1994
**Bate Stamp:** 010909 - 011465

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Q. Title: Brochure - Overview Of The Installation Restoration Program At Longhorn Army Ammunition Plant
Group(s): 1, 2, and 3
Site(s): LHAAP-1 Inert Burning Ground
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Active Landfill
LHAAP-13 Suspected TNT Burial Site Between Old And Active Landfill
LHAAP-14 Area 54 Burial Ground
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-27 South Test Area
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Waste Disposal Plant
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army Commander
Recipient: U.S. Public
Date: September 11, 1994
Bate Stamp: 011466 - 011496

R. Title: Fact Sheet - Longhorn Army Ammunition Plant Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U. S. Army Corps Of Engineers
Author(s): Mr. David Tolbert, Environmental Protection Specialist.
Recipient: U.S. Public
Date: September 11, 1994
Bate Stamp: 011497 - 011504

S. Title: Proposed Plan Of Action - Longhorn Army Ammunition Plant Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U. S. Army Corps Of Engineers
Author(s): Mr. David Tolbert, Environmental Protection Specialist.
Recipient: U.S. Public
Date: September 11, 1994
Bate Stamp: 011505 - 011537

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T. Title: Letter - Subject: Final Chemical Data Acquisition Plan Addendum For The RI Sites 11, 1, xx, 27 ( Group #1)
Group(s): 1
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-27 South Test Area
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Lisa Marie Price, Environmental Protection Agency
Date: September 12, 1994
Bate Stamp: 011538

U. Title: Letter - Subject: Final Phase II Workplan For 125 Waste Rack Sumps And 20 Waste Rack Sumps
Group(s): 4
Site(s): LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Lisa Marie Price, Environmental Protection Agency
Date: September 12, 1994
Bate Stamp: 011539

V. Title: Letter - Subject:EPA's Comments On Draft RI / FS For Sites No. 13 & 14
Group(s): 3
Site(s): LHAAP-13 Suspected TNT Burial Site Between Active And Old Landfills
LHAAP-14 Area 54 Burial Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Lisa Marie Price, Environmental Protection Agency
Recipient: David Tolbert, Longhorn Army Ammunition Plant
Date: September 12, 1994
Bate Stamp: 011540 - 011545

W. Title: Public Notice - Longhorn Army Ammunition Plant Notice Of Public Meeting On Proposed Treatment Area For Burning Ground No. 3 Longhorn Army Ammunition

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| | | |
|---|---|---|
| | | **Plant Notice Published In News Messenger** |
| | **Group(s):** | **Early Interim Action At Burning Ground No. 3** |
| | **Site(s):** | **LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond** |
| | **Location:** | **Karnack High School** |
| | **Agency:** | **U. S. Army Corps Of Engineers** |
| | **Author(s):** | **U. S. Army Corps Of Engineers** |
| | **Recipient:** | **U.S. Public** |
| | **Date:** | **September 15, 1994** |
| | **Bate Stamp:** | **011546 - 011553** |
| **X.** | **Title:** | **Letter - Subject: TNRCC's Comments On Draft RI / FS For Sites No. 13 & 14** |
| | **Group(s):** | **3** |
| | **Site(s):** | **LHAAP-13 Suspected TNT Burial Site Between Active And Old Landfills**<br>**LHAAP-14 Area 54 Burial Ground** |
| | **Location:** | **Longhorn Army Ammunition Plant, Marshall, Texas** |
| | **Agency:** | **Texas Water Commission** |
| | **Author(s):** | **Michael A. Moore, Superfund Investigation Section** |
| | **Recipient:** | **David Tolbert, Longhorn Army Ammunition Plant** |
| | **Date:** | **September 19, 1994** |
| | **Bate Stamp:** | **011554 - 011557** |
| **Y.** | **Title:** | **Letter - Subject: TNRCC's Approval Of Work Plan Addendum For Soil And Ground water Background Concentration Study** |
| | **Group(s):** | **1,2, And 4** |
| | **Site(s):** | **LHAAP-1 Inert Burning Grounds**<br>**LHAAP-11 Suspected TNT Burial Site At Avenues P & Q**<br>**LHAAP-12 Activ e Landfill**<br>**LHAAP-16 Old Landfill**<br>**LHAAP-17 No. 2 Flashing Area /Burning Ground**<br>**LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond**<br>**LHAAP-27 South Test Area**<br>**LHAAP-29 Former TNT Production Area**<br>**LHAAP-32 Former TNT Disposal Plant**<br>**LHAAP-54 or LHAAP-XX Ground Signal Test Area**<br>**LHAAP-35 Process Wastewater Sumps** |
| | **Location:** | **Longhorn Army Ammunition Plant, Marshall, Texas** |
| | **Agency:** | **Environmental Protection Agency** |
| | **Author(s):** | **Ms. Lisa M. Price, Environmental Protection Agency** |
| | **Recipient:** | **Mr. David Tolbert, Longhorn Army Ammunition Plant** |

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**Date:** September 20, 1994
**Bate Stamp:** 011558 - 011560

**Z.** **Title:** Letter - Subject: TNRCC's Approval Of Work Plan Addendum For Soil And Ground Water Background Concentration Study
**Group(s):** 4
**Site(s):** LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Texas Water Commission
**Author(s):** Mr Michael Moore, Superfund Investigation Section Pollution Cleanup Division
**Recipient:** Mr David Tolbert, Longhorn Army Ammunition Plant
**Date:** September 20, 1994
**Bate Stamp:** 011561

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A. Title: Letter - Subject: EPA's Comments On Schedule
Group(s): 1, 2 & 4
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site At Avenues P & Q
LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 Burning Ground No. 2 / Flashing Area
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
LHAAP-27 South Test Area
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Disposal Area
LHAAP-35 Process Wastewater Sumps
LHAAP-54 & LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Ms. Lisa Marie Price, Environmental Protection Agency
Recipient: Mr David Tolbert, Longhorn Army Ammunition Plant
Date: September 20, 1994
Bate Stamp: 011562 - 011564

B. Title: Newspaper Article - Explosive Issue, Army, environmentalists debate cleanup of munitions plant
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: The Dallas Morning News
Author(s): Randy Lee Loftis
Recipient: U.S. Public
Date: September 26, 1994
Bate Stamp: 011565 - 011566

C. Title: Letter - Subject: TNRCC's Comments On Interim Risk Assessment For Burning Ground No. 3 and Unlined Evaporation Pond (Sites 18 & 24)
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Mr Michael Moore, Superfund Investigation Section Pollution Cleanup Division
Recipient: Mr David Tolbert, Longhorn Army Ammunition Plant

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Date: September 27, 1994
Bate Stamp: 011567

D. Title: Letter - Subject: TNRCC's Comments On Draft Field Investigation Summary Report For Group No. 2 Sites
Group(s): 2
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP 24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Formal TNT Waste Disposal Plant
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Michael A. Moore, Superfund Investigation Section
Recipient: David Tolbert, Longhorn Army Ammunition Plant
Date: October 5, 1994
Bate Stamp: 011568 - 011570

E. Title: Letter - Subject: Army Requested Establishment Of Effluent Standards For Treated Ground Water From Interim Remedial Action At Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa Lieutenant Colonel, U.S. Army Commanding Officer
Recipient: Mr. Michael Moore, Superfund Investigation Section
Date: October 6, 1994
Bate Stamp: 011571 - 011572

F. Title: Letter - Subject: Draft Record Of Decision Document For Interim Remedial Action For Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa Lieutenant Colonel, U.S. Army Commanding Officer
Recipient: Ms. Lisa Price, Environmental Protection Agency

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Date: October 13, 1994
Bate Stamp: 011573

G. Title: Letter - Subject: TNRCC's Comments On Phase I Investigations For 125 Waste Rack Sumps And 20 Waste Rack Sum,ps, And Approval Of Phase II - Workplans Of 125 Waste Process Sumps And 20 Waste Rack Sumps
Group(s): 4
Site(s): LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Mr Michael Moore, Superfund Investigation Section Pollution Cleanup Division
Recipient: Mr David Tolbert, Longhorn Army Ammunition Plant
Date: October 17, 1994
Bate Stamp: 011574

H. Title: Letter - Subject: TNRCC's Comments On Remedial Design Investigation For Landfills
Group(s): 2 (Partial)
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Michael A. Moore, Superfund Investigation Section
Recipient: Mr. David Tolbert, Longhorn Army Ammunition Plant
Date: October 18, 1994
Bate Stamp: 011575 - 011576

I. Title: Letter - Subject: Draft Phase II Group No. 2 Work Plans
Group(s): 2
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP 24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Formal TNT Waste Disposal Plant
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa Lieutenant Colonel, U.S. Army Commanding Officer
Recipient: Ms. Lisa Marie Price, Environmental Protection Agency
Date: October 24, 1994
Bate Stamp: 011577

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J. Title: Letter - Subject: Request For Clarification Regarding A TNRCC Comment on Draft RI / FS For Sites #13 & #14
Group(s): 3
Site(s): LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Mr. Michael Moore, Superfund Investigation Section
Date: October 31, 1994
Bate Stamp: 011578

K. Title: Letter - Subject: Army's Response To A TNRCC Comment Will Cause Delay In Finalization Of RI / FS For Sites #13 & #14
Group(s): 3
Site(s): LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa Marie Price, Environmental Protection Agency
Date: October 31, 1994
Bate Stamp: 011579 - 011580

L. Title: Letter - Subject: TNRCC's Response to Army's Request For Clarification On Comments Regarding RI / FS For Sites #13 & #14
Group(s): 3
Site(s): LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Mr Michael Moore, Superfund Investigation Section Pollution Cleanup Division
Recipient: Mr David Tolbert, Longhorn Army Ammunition Plant
Date: November 1, 1994
Bate Stamp: 011581 - 011582

M. Title: Letter - Subject: Submission Of The Draft Responsiveness Summary of Public Comments On The Longhorn Army Ammunition Plant Burning Ground No. 3
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning ground / Washout Pond & Unlined Evaporation Pond

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Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa Lieutenant Colonel, U.S. Army Commanding Officer
Recipient: Ms. Lisa Price, Environmental Protection Agency
Date: November 1, 1994
Bate Stamp: 011583

N. Title: Letter - Subject: EPA's Response To Delay In RI / FS For Sites 13 & 14p
Group(s): 3
Site(s): LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Ms. Lisa Marie Price, Environmental Protection Agency
Recipient: Mr David Tolbert, Longhorn Army Ammunition Plant
Date: November 3, 1994
Bate Stamp: 011584 - 011585

O. Title: Letter - Subject:Draft Proposed Plan For Interim Action At Landfills
Group(s): 2 (Partial)
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa Lieutenant Colonel, U.S. Army Commanding Officer
Recipient: Ms. Lisa Price, Environmental Protection Agency
Date: November 28, 1994
Bate Stamp: 011586

P. Title: Letter - Subject:EPA's Comments On Work Plan For Interim Action At Landfills Phase II Group 2
Group(s): 2 (Partial)
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Ms. Lisa Price, Environmental Protection Agency
Recipient: Me David Tolbert Longhorn Army Ammunition Plant
Date: November 28, 1994
Bate Stamp: 011587 - 011591

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Q. Title: Letter - Subject:TNRCC's Comments On Work Plan For RI / FS Phase II Group #2
Group(s): 2
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP 24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Formal TNT Waste Disposal Plant
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Michael A. Moore Superfund Investigation Unit
Recipient: David Tolbert, Project Manager Longhorn Army Ammunition Plant
Date: November 29, 1994
Bate Stamp: 011592 - 011593

R. Title: Final Workplan - Phase 2 Workplan For The Remedial Investigation ( RI)
Group(s): 2
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Waste Disposal Plant
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Sverdrup Environmental, Inc.
Author(s): Sverdrup Environmental, Inc.
Recipient: U.S. Army Corps of Engineers, Tulsa District
Date: December, 1994
Bate Stamp: 011594 - 011687

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S. Title: Final Workplan - Phase 2 - Chemical Data Acquisition Plan For The Remedial Investigation (RI)
Group(s): 2
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Former TNT Waste Disposal Plant
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Company: Sverdrup Environmental, Inc.
Author(s): Sverdrup Environmental, Inc.
Recipient: U.S. Army Corps of Engineers, Tulsa District
Date: December, 1994
Bate Stamp: 011688 - 012052

T. Title: Letter - Subject: Draft Soil Background Concentration Study
Group(s): 3
Site(s): LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa Marie Price, Environmental Protection Agency
Date: December 14, 1994
Bate Stamp: 012053

U. Title: Memorandum - Subject: Formula For Calculating Discharge Limits For Chlorides And Sulfates
Attach(s): Comments From Steve Ligon Regarding Formula
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army
Author(s): Texas Natural Resource Conservation Commission
Recipient: Lisa Marie Price, Environmental Protection Agency
Date: December 19, 1994
Bate Stamp: 012054 - 012061

V. Title: Letter - Subject:Draft Proposed Plan For Interim Action At Landfills
Group(s): 2 (Partial)
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant

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**Author(s):** **Lawrence J. Sowa Lieutenant Colonel, U.S. Army Commanding Officer**
**Recipient:** **Ms. Lisa Price, Environmental Protection Agency**
**Date:** **December 19, 1994**
**Bate Stamp:** **012062**

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A. Title: Letter - Subject: Soil And Ground Water Background Concentration Reports
Group(s): 3
Site(s): LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
Recipient: Ms. Lisa Marie Price, Environmental Protection Agency
Date: January 3, 1995
Bate Stamp: 012063

B. Title: Letter - Subject: Longhorn Army Ammunition Plant Review Of Documents
Attach(s): Status Of Documents Review Report
Group(s): 2
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP 24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Formal TNT Waste Disposal Plant
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Michael A. Moore Superfund Investigation Unit
Recipient: David Tolbert, Project Manager Longhorn Army Ammunition Plant
Date: January 3, 1995
Bate Stamp: 012064 - 012066

C. Title: Letter - Subject: Phase II Workplan For Remedial Investigation For Group #2 Sites
Longhorn Army Ammunition Plant
Attach(s): Comments
Group(s): 2
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP 24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Formal TNT Waste Disposal Plant
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant

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Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa Marie Price, Environmental Protection Agency
Date: January 4, 1995
Bate Stamp: 012067 - 012079

D. Title: Letter - Subject: Submission Of The Final Remedial Investigation / Feasibility Study Report For Sites 13 And 14 (Group 3) Longhorn Army Ammunition Plant
Group(s): 3
Site(s): LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
Recipient: Ms Lisa Marie Price, Environmental Protection Agency
Date: January 5, 1995
Bate Stamp: 012080 - 012082

E. Title: Letter - Subject: Army's January 5, 1995 Letter Regarding Remedial Investigation / Feasibility Study For Sites 13 And 14
Longhorn Army Ammunition Plant
Group(s): 3
Site(s): LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Ms. Lisa M. Price, Environmental Protection Agency
Recipient: Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
Date: January 10, 1995
Bate Stamp: 012083 - 012084

F. Title: Letter - Subject: Longhorn Army Ammunition Plant Remedial Investigation Work Plan for Group 2 Sites
Group(s): 2
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP 24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Formal TNT Waste Disposal Plant
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Water Commission
Author(s): Mr. Michael A. Moore RI / FS II Unit, Superfumd Investigation Section
Recipient: Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant

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Date: January 10, 1995
Bate Stamp: 012085

G. Title: Letter - Subject: Phase II Workplan For Remedial Investigation For Group #2 Sites Longhorn Army Ammunition Plant
Group(s): 2
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP 24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Formal TNT Waste Disposal Plant
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Ms. Lisa Marie Price, Remedial Project Manager Superfund Texas Enforcement
Recipient: Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
Date: January 10, 1995
Bate Stamp: 012086

H. Title: Letter - Subject: Soil And Ground Water Background Concentration Reports
Group(s): 3
Site(s): LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Ms. Lisa M. Price, Environmental Protection Agency
Recipient: Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
Date: January 23, 1995
Bate Stamp: 012087 - 012088

I. Title: Letter - Subject: Draft Final Remedial Investigations Feasibility Study Report Sites 13 And 14 (Group 3)
Group(s): 3
Site(s): LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: January 30, 1995
Bate Stamp: 012089

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J.
Title: Letter - Subject: Hydrogeological Assessment for LHAAP
Group(s): All - Hydrogeological Assessment, Soil and Groundwater Background Studies
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas

Agency: Environmental Protection Agency
Author(s): Lisa Price, Remedial Project Manager, Superfund Texas Enforcement
Recipient: David Tolbert, Project Manager, LHAAP
Date: February 16, 1995
Bate Stamp: 012090 - 012092

K.
Title: Letter - Subject: Soil Background Concentration Report for LHAAP
Group(s): All - Hydrogeological Assessment, Soli and Groundwater Background Studies
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency
Author(s): Lisa Price, Remedial Project Manager, Superfund Texas Enforcement
Recipient: David Tolbert, Project Manager, LHAAP
Date: February 16, 1995
Bate Stamp: 012093 - 012095

L.
Title: Letter - Subject: Sampling and Data Results Report for the Remedial Investigation at Group 1 Sites for LHAAP in Karnack, Texas
Group(s): 1
Site(s): LHAAP-1 Inert Burning Grounds
LHAAP-11 Suspected TNT Burial Site at Avenues P and Q
LHAAP-27 South Test Area
LHAAP-54 or LHAAP-XX Ground Signal Test Area
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department of the Army, LHAAP
Author(s): Lieutenant Colonel Lawrence J. Sowa, Commanding Officer
Recipient: Ms. Lisa Price, Superfund Enforcement, USEPA
Date: February 21, 1995
Bate Stamp: 012096

M.
Title: Letter - Subject: Meeting, LHAAP, for Technical Review Committee - March 1, 1995
Attach(s): Meeting Agenda
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant

1995

Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Ms. Lisa M. Price, Environmental Protection Agency
Date: February 21, 1995
Bate Stamp: 012097

N. Title: Letter - LHAAP, Record of Decision for Early Interim remedial Action at Burning Ground No. 3
Group(s): Early Interim Action at Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Natural Resource Conservation Commission
Author(s): Michael A. Moore, RI / FS II Unit, Superfund Investigation Section, Pollution Cleanup Division
Recipient: David Tolbert, Project Manager, U.S. Army, Longhorn Army Ammunition Plant
Date: February 21, 1995
Bate Stamp: 012098 - 012099

O. Title: Letter - LHAAP, Draft Record of Decision
Group(s): Early Interim Action at Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Evaporation Pond
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Texas Natural Resource Conservation Commission
Author(s): Dan Pearson, Executive Director
Recipient: Allyn M. Davis, Ph.D., Director, Hazardous Waste Management Division, USEPA
Date: February 28, 1995
Bate Stamp: 012100

P. Title: Final Report - LHAAP Installation Restoration Program
Sites 12 And 16 Interim Remedial Action Focused Feasibility Study
Group(s): Landfill Caps Interim Action
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps of Engineers
Author(s): U.S. Army Corps of Engineers, Tulsa District
Recipient: U.S. Army, Longhorn Army Ammunition Plant
Date: March, 1995
Bate Stamp: 012101 - 012344

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Q.
Title: Fact Sheet - LHAAP Sites 12 and 16, Landfill Caps Interim Action
Group(s): Interim Remedial Action
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U. S. Army Corps Of Engineers
Author(s): Mr. David Tolbert, Environmental Protection Specialist.
Recipient: U.S. Public
Date: March, 1995
Bate Stamp: 012345

R.
Title: Proposed Plan Of Action - LHAAP Sites 12 and 16, Landfill Caps Interim Action
Group(s): Interim Remedial Action
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U. S. Army Corps Of Engineers
Author(s): Mr. David Tolbert, Environmental Protection Specialist.
Recipient: U.S. Public
Date: March, 1995
Bate Stamp: 012346 - 012366

S.
Title: Meeting Agenda - LHAAP Technical Review Committee Meeting, March 1, 1995
Attach(s): Status Report - LHAAP Environmental Projects Status (as of February 27, 1995)
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army
Author(s): U.S. Army Corps of Engineers, Tulsa District
Recipient: Meeting Participants
Date: March 1, 1995
Bate Stamp: 012367 - 012369

T.
Title: Superfund Site Update - LHAAP Technical Assistance Grant Awarded
Group(s): All
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Environmental Protection Agency
Author(s): U.S. Environmental Protection Agency, Region 6
Recipient: U.S. Public
Date: March 1, 1995
Bate Stamp: 012370 - 012371

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U.
Title: Letter - Subject: March 23, 1995 Public Meeting Invitation
Group(s): Interim Remedial Action
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
Location: Karnack High School
Agency: Department of the Army
Author(s): Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: 75661 Zip Code Resident
Date: March 14, 1995
Bate Stamp: 012372

V.
Title: Public Notice - Longhorn Army Ammunition Plant Notice Of Public Meeting On Proposed Treatment Area For Burning Ground No. 3 Longhorn Army Ammunition Plant
Notice Published In News Messenger
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Karnack High School
Agency: U. S. Army Corps Of Engineers
Author(s): U. S. Army Corps Of Engineers
Recipient: U.S. Public
Date: March 23, 1995
Bate Stamp: 012373

W.
Title: Final Report - Soil Background Concentration Report
Group(s): All - Hydrogeological Assessment, Soil and Groundwater Background Studies
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: U.S. Army Corps of Engineers
Author(s): U.S. Army Corps of Engineers, Tulsa District
Recipient: U.S. Army, Longhorn Army Ammunition Plant
Date: March, 1995
Bate Stamp: 012374 - 012590

X.
Title: Letter - Subject: Draft Remedial Investigations Feasibility Study Report Sites 13 And 14
Group(s): 3
Site(s): LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Environmental Protection Agency

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**1995**

**Author(s):** Ms. Lisa M. Price, Environmental Protection Agency
**Recipient:** Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Date:** March 14, 1995
**Bate Stamp:** 012591 - 012594

**Y.** **Title:** Report - Public Meeting In Re: LHAAP 12 and LHAAP 16 Landfills, Interim Remedial Action Proposal
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP 16 Old Landfill
**Location:** Karnack High School
**Agency:** U. S. Army Corps Of Engineers
**Author(s):** U. S. Army Corps Of Engineers
**Recipient:** U.S. Public
**Date:** March 23, 1995
**Bate Stamp:** 012595 - 012633

**Z.** **Title:** Letter - Subject: Transmission of Proposed Plan of Action, for Group 3 Sites (13 And 14 )
**Group(s):** 3
**Site(s):** LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Ms. Lisa M. Price, Environmental Protection Agency
**Date:** March 27, 1995
**Bate Stamp:** 012634

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**1995**

**A.** **Title:** Letter - Subject: Transmission of Proposed Plan of Action for Group 3 Sites (13 And 14)
**Group(s):** 3
**Site(s):** LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** March 27, 1995
**Bate Stamp:** 012635

**B.** **Title:** Letter - Subject: Addendum to the Phase 2 Work Plan for Wasteline Sampling and the Associated Chemical Data Acquisition Plan for Longhorn Army Ammunition Plant
**Group(s):** 2
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP 24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Formal TNT Waste Disposal Plant
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Ms. Lisa M. Price, Environmental Protection Agency
**Date:** March 30, 1995
**Bate Stamp:** 012636

**C.** **Title:** Letter - Subject: Addendum to the Phase 2 Work Plan for Wasteline Sampling and the Associated Chemical Data Acquisition Plan for Longhorn Army Ammunition Plant
**Group(s):** 2
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP 24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Formal TNT Waste Disposal Plant
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Mr. H. L. Jones, Texas Natural Resource Conservation Commission
**Date:** March 30, 1995
**Bate Stamp:** 012637

**1995**

**D.** **Title:** Letter - Subject: Addendum to the Phase 2 Work Plan for Wasteline Sampling and the Associated Chemical Data Acquisition Plan for Longhorn Army Ammunition Plant
**Group(s):** 2
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP 24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Formal TNT Waste Disposal Plant
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** March 30, 1995
**Bate Stamp:** 012638

**E.** **Title:** Letter - Subject: Transmission of Final Soil Background Concentration Report for LHAAP
**Group(s):** All - Hydrogeological Assessment, Soil and Groundwater Background Studies
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Lisa Price, Remedial Project Manager, Superfund Texas Enforcement
**Date:** March 30, 1995
**Bate Stamp:** 012639

**F.** **Title:** Letter - Subject: Transmission of Final Soil Background Concentration Report for LHAAP
**Group(s):** All - Hydrogeological Assessment, Soil and Groundwater Background Studies
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Mr. H. L. Jones, Texas Natural Resource Conservation Commission
**Date:** March 30, 1995
**Bate Stamp:** 012640

**G.** **Title:** Letter - Subject: Transmission of Final Soil Background Concentration Report for LHAAP
**Group(s):** All - Hydrogeological Assessment, Soil and Groundwater Background Studies
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army

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**1995**

**Recipient:** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** March 30, 1995
**Bate Stamp:** 012641

**H.** **Title:** Report - Final Addendum to Phase 2 Work Plan for Wasteline Sampling Group 2 Sites at Longhorn Army Ammunition Plant
**Group(s):** 2
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP 24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Formal TNT Waste Disposal Plant
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Sverdrup Environmental, Inc.
**Recipient:** U.S. Army Corps of Engineers
**Date:** April, 1995
**Bate Stamp:** 012642 - 012663

**I.** **Title:** Report - Final Addendum to Phase 2 Chemical Data Acquisition Plan for Wasteline Sampling Group 2 Sites at Longhorn Army Ammunition Plant
**Group(s):** 2
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP 24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Formal TNT Waste Disposal Plant
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Sverdrup Environmental, Inc.
**Recipient:** U.S. Army Corps of Engineers
**Date:** April, 1995
**Bate Stamp:** 012664 - 012674

**J.** **Title:** Letter - Subject: Changes to Final Soil Background Concentration Report for LHAAP
**Group(s):** All - Hydrogeological Assessment, Soil and Groundwater Background Studies
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant

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**1995**

Author(s): Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Lisa Price, Remedial Project Manager, Superfund Texas Enforcement
Date: April 4, 1995
Bate Stamp: 012675

K. Title: Letter - Subject: Changes to Final Soil Background Concentration Report for LHAAP
Group(s): All - Hydrogeological Assessment, Soil and Groundwater Background Studies
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
Date: April 4, 1995
Bate Stamp: 012676

L. Title: Letter - Subject: Changes to Final Soil Background Concentration Report for LHAAP
Group(s): All - Hydrogeological Assessment, Soil and Groundwater Background Studies
Site(s): General
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Mr. H. L. Jones, Texas Natural Resource Conservation Commission
Date: April 4, 1995
Bate Stamp: 012677

M. Title: Letter - Subject: Sites 12 and 16, Landfill Caps Interim Action Comments and Questions
Group(s): Landfill Caps Interim Action
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Ruth Culver, Conservation Chairman, Uncertain Audubon
Recipient: David Tolbert, Project Manager, Longhorn Army Ammunition Plant
Date: April 20, 1995
Bate Stamp: 012678 - 012680

N. Title: Record of Decision For Burning Ground No. 3 Longhorn Army Ammunition Plant
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Karnack, Texas
Agency: U. S. Army Corps Of Engineer
Author(s): U. S. Army Corps Of Engineers

**1995**

**Recipient:** U.S. Public
**Date:** May, 1995
**Bate Stamp:** 012681 - 012751

O.
**Title:** Letter - Subject: Soil Background Concentration Report for LHAAP
**Group(s):** All - Hydrogeological Assessment, Soil and Groundwater Background Studies
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Recipient:** David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Date:** May 1, 1995
**Bate Stamp:** 012752 - 012753

P.
**Title:** Letter - Subject: Remedial Investigation / Feasibility Study - Sites 13 And 14 (Group 3)
**Group(s):** 3
**Site(s):** LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Recipient:** Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Date:** May 3, 1995
**Bate Stamp:** 012754 - 012756

Q.
**Title:** Letter - Subject: Proposed Plan - Sites 13 And 14 (Group 3)
**Group(s):** 3
**Site(s):** LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Recipient:** Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Date:** May 4, 1995
**Bate Stamp:** 012757 - 012759

R.
**Title:** Letter - Subject: Final Groundwater Background Concentration Report for LHAAP
**Group(s):** All - Hydrogeological Assessment, Soil and Groundwater Background Studies
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Lisa Price, Remedial Project Manager, Superfund Texas Enforcement
**Date:** May 9, 1995
**Bate Stamp:** 012760

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**S.**
**Title:** Letter - Subject: Final Groundwater Background Concentration Report for LHAAP
**Group(s):** All - Hydrogeological Assessment, Soil and Groundwater Background Studies
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Mr. H. L. Jones, Texas Natural Resource Conservation Commission
**Date:** May 9, 1995
**Bate Stamp:** 012761

**T.**
**Title:** Letter - Subject: Final Groundwater Background Concentration Report for LHAAP
**Group(s):** All - Hydrogeological Assessment, Soil and Groundwater Background Studies
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** May 9, 1995
**Bate Stamp:** 012762

**U.**
**Title:** Letter - Subject: Final Hydrogeological Assessment Report for LHAAP
**Group(s):** All - Hydrogeological Assessment, Soil and Groundwater Background Studies
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Lisa Price, Remedial Project Manager, Superfund Texas Enforcement
**Date:** May 11, 1995
**Bate Stamp:** 012763

**V.**
**Title:** Letter - Subject: Final Hydrogeological Assessment Report for LHAAP
**Group(s):** All - Hydrogeological Assessment, Soil and Groundwater Background Studies
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Mr. H. L. Jones, Texas Natural Resource Conservation Commission
**Date:** May 11, 1995
**Bate Stamp:** 012764

**W.**
**Title:** Letter - Subject: Final Hydrogeological Assessment Report for LHAAP
**Group(s):** All - Hydrogeological Assessment, Soil and Groundwater Background Studies
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas

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**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** May 11, 1995
**Bate Stamp:** 012765

X. **Title:** Letter - Subject: Draft Record of Decision for Early Interim Remedial Action at Landfill Sites 12 and 16,
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Lisa Price, Remedial Project Manager, Superfund Texas Enforcement
**Date:** May 23, 1995
**Bate Stamp:** 012766

Y. **Title:** Letter - Subject: Draft Record of Decision for Early Interim Remedial Action at Landfill Sites 12 and 16,
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** May 23, 1995
**Bate Stamp:** 012767

Z. **Title:** Letter - Subject: Draft Record of Decision for Early Interim Remedial Action at Landfill Sites 12 and 16,
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Mr. H. L. Jones, Texas Natural Resource Conservation Commission
**Date:** May 23, 1995
**Bate Stamp:** 012768

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**1995**

A.
**Title:** Letter - Subject: Point of Contact for Longhorn Army Ammunition Plant
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Lisa Price, Remedial Project Manager, Superfund Texas Enforcement
**Date:** May 24, 1995
**Bate Stamp:** 012769

B.
**Title:** Letter - Subject: Point of Contact for Longhorn Army Ammunition Plant
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** May 24, 1995
**Bate Stamp:** 012770

C.
**Title:** Letter - Subject: Final Soil Background Concentration Report for LHAAP
**Group(s):** All - Hydrogeological Assessment, Soil and Groundwater Background Studies
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Lisa Price, Remedial Project Manager, Superfund Texas Enforcement
**Date:** May 25, 1995
**Bate Stamp:** 012771

D.
**Title:** Letter - Subject: Final Soil Background Concentration Report for LHAAP
**Group(s):** All - Hydrogeological Assessment, Soil and Groundwater Background Studies
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** May 25, 1995
**Bate Stamp:** 012772

E.
**Title:** Letter - Subject: Final Soil Background Concentration Report for LHAAP
**Group(s):** All - Hydrogeological Assessment, Soil and Groundwater Background Studies
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas

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Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
Recipient: Mr. H. L. Jones, Texas Natural Resource Conservation Commission
Date: May 25, 1995
Bate Stamp: 012773

F. Title: Proposed Plan of Action - Sites 13 And 14 (Group 3), Longhorn Army Ammunition Plant
Group(s): 3
Site(s): LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): U. S. Army Corps of Engineers
Recipient: U. S. Public
Date: June, 1995
Bate Stamp: 012774 - 012785

G. Title: Final Report - Remedial Investigation / Feasibility Study Sites 13 and 14 Volume I, Longhorn Army Ammunition Plant
Group(s): 3
Site(s): LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): U.S. Army Corps of Engineers, Tulsa District
Recipient: U.S. Army Corps of Engineers, Tulsa District
Date: June, 1995
Bate Stamp: 012786 - 012864

H. Title: Final Report - Remedial Investigation / Feasibility Study Sites 13 and 14 Volume II, Longhorn Army Ammunition Plant
Group(s): 3
Site(s): LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): U.S. Army Corps of Engineers, Tulsa District
Recipient: U.S. Army Corps of Engineers, Tulsa District
Date: June, 1995
Bate Stamp: 013175 - 014195

Note: Bate Stamp Numbers Are Out of Sequence From Volume 5 of 5 1995 After the Letter W.

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**I.** **Title:** Final Report - Remedial Investigation / Feasibility Study Sites 13 and 14 Volume III, Longhorn Army Ammunition Plant
**Group(s):** 3
**Site(s):** LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** U.S. Army Corps of Engineers, Tulsa District
**Recipient:** U.S. Army Corps of Engineers, Tulsa District
**Date:** June, 1995
**Bate Stamp:** 014196 - 015320

**Note:** Bate Stamp Numbers Are Out of Sequence Continuing From Volume 3 of 5 1995 After the Letter H.

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**J.** **Title:** Final Report - DERPMIS / RMIS Resolution Document for Longhorn Army Ammunition Plant
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** U.S. Army Corps of Engineers, Tulsa District
**Recipient:** U.S. Army Corps of Engineers
**Date:** June, 1995
**Bate Stamp:** 012865 - 012934

**K.** **Title:** Final Report - Groundwater Background Concentration Report
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** U.S. Army Corps of Engineers
**Author(s):** U.S. Army Corps of Engineers, Tulsa District
**Recipient:** U.S. Army, Longhorn Army Ammunition Plant
**Date:** June, 1995
**Bate Stamp:** 012935 - 013162

**L.** **Title:** Letter - Subject: Request for Approval of Final Disposition of CERCLA Investigative - Derived Solid Material at the Old Landfill, Site 16
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** June 6, 1995
**Bate Stamp:** 013163

**M.** **Title:** Letter - Subject: Management of Investigation Derived Waste
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Recipient:** Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Date:** June 7, 1995
**Bate Stamp:** 013164

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**N.**
**Title:** Letter - Subject: Volume I Final Hydrogeological Assessment Report for LHAAP
**Group(s):** All - Hydrogeological Assessment, Soil and Groundwater Background Studies
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Lisa Price, Remedial Project Manager, Superfund Texas Enforcement
**Date:** June 13, 1995
**Bate Stamp:** 013165

**O.**
**Title:** Letter - Subject: Volume I Final Hydrogeological Assessment Report for LHAAP
**Group(s):** All - Hydrogeological Assessment, Soil and Groundwater Background Studies
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** June 13, 1995
**Bate Stamp:** 013166

**P.**
**Title:** Letter - DERPMIS / RMIS Resolution Document for Longhorn Army Ammunition Plant
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Lisa Price, Remedial Project Manager, Superfund Texas Enforcement
**Date:** June 13, 1995
**Bate Stamp:** 013167

**Q.**
**Title:** Letter - DERPMIS / RMIS Resolution Document for Longhorn Army Ammunition Plant
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** June 13, 1995
**Bate Stamp:** 013168

**R.**
**Title:** Letter - Subject: Schedules for Longhorn Army Ammunition Plant
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas

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**1995**

**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Lisa Price, Remedial Project Manager, Superfund Texas Enforcement
**Date:** June 15, 1995
**Bate Stamp:** 013169

S. **Title:** Letter - Subject: Schedules for Longhorn Army Ammunition Plant
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** June 15, 1995
**Bate Stamp:** 013170

T. **Title:** Letter - Subject: Schedules for Longhorn Army Ammunition Plant
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Lawrence J. Sowa, Lieutenant Colonel, U.S. Army
**Recipient:** Mr. H. L. Jones, Texas Natural Resource Conservation Commission
**Date:** June 15, 1995
**Bate Stamp:** 013171

U. **Title:** Memorandum - Subject: Review of the Draft Record of Decision for Early Interim Remedial Action at Landfill Sites 12 and 16
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Arthur P. Lee, P.E. Program Manager, Health, Risk Assessment and Risk Communication
**Recipient:** Commander, U.S. Army Corps of Engineers, Tulsa District, Attention: Jonna Polk
**Date:** June 21, 1995
**Bate Stamp:** 013172

V. **Title:** Memorandum - Subject: Review of Schedules for Longhorn Army Ammunition Plant
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant

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**1995**

**Author(s):** Arthur P. Lee, P.E. Program Manager, Health Risk Assessment and Risk Communication
**Recipient:** Jonna Polk, U.S. Army Corps of Engineers, Tulsa District
**Date:** June 22, 1995
**Bate Stamp:** 013173

**W.** **Title:** Letter- Subject: Approval of Schedules for Longhorn Army Ammunition Plant
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Recipient:** Lisa Price, Remedial Project Manager, Superfund Texas Enforcement
**Author(s):** Darrell W. Chinn, Captain, U.S. Army Executive Officer
**Date:** June 29, 1995
**Bate Stamp:** 013174

**X.** **Title:** Letter- Subject: Approval of Schedules for Longhorn Army Ammunition Plant
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Recipient:** Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Author(s):** Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** June 28, 1995
**Bate Stamp:** 015321

**Y.** **Title:** Letter - Subject: Draft Work Plan For Phase III of Interim Remedial Action at Burning Ground No. 3 and UEP, LHAAP 18 & 24 for Longhorn Army Ammunition Plant - Transmittal of Full-Size Drawings
**Group(s):** Early Interim Action At Burning Ground No. 3
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Karnack, Texas
**Recipient:** Lisa Price, Remedial Project Manager, Superfund Texas Enforcement
**Agency:** U. S. Army Corps Of Engineer
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Date:** June 29, 1995
**Bate Stamp:** 015322

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**Z.** **Title:** Letter - Subject: Draft Work Plan For Phase III of Interim Remedial Action at Burning Ground No. 3 and UEP, LHAAP 18 & 24 for Longhorn Army Ammunition Plant - Transmittal of Full-Size Drawings
**Group(s):** Early Interim Action At Burning Ground No. 3
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Karnack, Texas
**Recipient:** Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Agency:** U. S. Army Corps Of Engineer
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Date:** June 29, 1995
**Bate Stamp:** 015323

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**A.** **Title:** Letter - Subject: Draft Work Plan For Phase III of Interim Remedial Action at Burning Ground No. 3 and UEP, LHAAP 18 & 24 for Longhorn Army Ammunition Plant - Transmittal of Full-Size Drawings
**Group(s):** Early Interim Action At Burning Ground No. 3
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Karnack, Texas
**Recipient:** Mr. H. L. Jones, Texas Natural Resource Conservation Commission
**Agency:** U. S. Army Corps Of Engineer
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Date:** June 29, 1995
**Bate Stamp:** 015324

**B.** **Title:** Letter - Subject: Final Record of Decision for Early Interim Remedial Action at Landfill Sites 12 and 16
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement
**Date:** July 10, 1995
**Bate Stamp:** 015325

**C.** **Title:** Letter - Subject: Final Record of Decision for Early Interim Remedial Action at Landfill Sites 12 and 16
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** July 10, 1995
**Bate Stamp:** 015326

**D.** **Title:** Letter - Subject: Final Record of Decision for Early Interim Remedial Action at Landfill Sites 12 and 16
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas

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**1995**

**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army Investigation Section
**Recipient:** Mr. H. L. Jones, Texas Natural Resource Conservation Commission
**Date:** July 10, 1995
**Bate Stamp:** 015327

**E.** **Title:** Public Meeting - Subject: No Further Action Proposal for Sites 13 & 14 for Longhorn Army Ammunition Plant
**Group(s):** 3
**Site(s):** LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** U.S. Army Corps of Engineers
**Recipient:** U.S. Public
**Date:** July 18, 1995
**Bate Stamp:** 015328-015352

**F.** **Title:** Letter - Subject: Transmittal of Revised Air Monitoring Plan, Appendix C to Draft Chemical Data Acquisition Plan, Phase III of Interim Remedial Action at Burning Ground No. 3 Longhorn Army Ammunition Plant
**Group(s):** Early Interim Action At Burning Ground No. 3
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Karnack, Texas
**Recipient:** Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Agency:** U. S. Army Corps Of Engineer
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Date:** July 25, 1995
**Bate Stamp:** 015353

**G.** **Title:** Letter - Subject: Request for 20-day Extension for Reviewing and Commenting on General Work Plan Interim Remedial Action at Burning Ground No. 3 Longhorn Army Ammunition Plant
**Group(s):** Early Interim Action At Burning Ground No. 3
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Karnack, Texas
**Recipient:** Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** July 25, 1995
**Bate Stamp:** 015354

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**H.** **Title:** Letter - Subject: Transmittal of Final Record of Decision for Early Interim Remedial Action at Landfill Sites 12 and 16,
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement
**Date:** July 27, 1995
**Bate Stamp:** 015355

**I.** **Title:** Letter - Subject: Preliminary Design for Interim Remedial Action at Landfill Sites 12 and 16
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement
**Date:** July 27, 1995
**Bate Stamp:** 015356

**J.** **Title:** Letter - Subject: Preliminary Design for Interim Remedial Action at Landfill Sites 12 and 16
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** July 27, 1995
**Bate Stamp:** 015357

**K.** **Title:** Letter - Subject: Preliminary Design for Interim Remedial Action at Landfill Sites 12 and 16
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department of The Army, Longhorn Army Ammunition Plant

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**1995**

**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Mr. H. L. Jones, Texas Natural Resource Conservation Commission
**Date:** July 27, 1995
**Bate Stamp:** 015358

**L.** **Title:** Memorandum for Commander - Subject: Review of Draft Work Plan for Phase III Interim Remedial Action at Burning Ground No. 3 and UEP, LHAAP 18 & 24, Volumes 1-5 , Longhorn Army Ammunition Plant, Prepared by Dow Environmental, 23 June 1995
**Group(s):** Early Interim Action At Burning Ground No. 3
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Karnack, Texas
**Recipient:** Jonna Polk, U.S. Army Corps of Engineers, Tulsa District
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Arthur P. Lee, P.E., Program Manager, Health Risk Assessment and Risk Communication, Department of the Army
**Date:** July 28, 1995
**Bate Stamp:** 015359

**M.** **Title:** Letter - Subject: Comments on General Work Plan Interim Remedial Action at Burning Ground No. 3 Longhorn Army Ammunition Plant, Section 3: Soil and Source Material Excavation, Treatment and Disposal Plan
**Group(s):** Early Interim Action At Burning Ground No. 3
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Karnack, Texas
**Recipient:** Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** July 31, 1995
**Bate Stamp:** 015360-015361

**N.** **Title:** Letter - Subject: Request for Extension for Reviewing Preliminary Design for Interim Remedial Action at Landfill Sites 12 and 16
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** August 1, 1995
**Bate Stamp:** 015362

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**O.** **Title:** Letter - Subject: Preliminary Design for Interim Remedial Action at Landfill Sites 12 and 16
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** August 1, 1995
**Bate Stamp:** 015363

**P.** **Title:** Letter - Subject: Design Work Plan Interim Remedial Action at Burning Ground No. 3 Longhorn Army Ammunition Plant
**Group(s):** Early Interim Action At Burning Ground No. 3
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Karnack, Texas
**Recipient:** Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement
**Date:** August 1, 1995
**Bate Stamp:** 015364

**Q.** **Title:** Letter - Subject: Final Hydrogeological Assessment Report for LHAAP
**Group(s):** All - Hydrogeological Assessment, Soil and Groundwater Background Studies
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Recipient:** Mr David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Date:** August 1, 1995
**Bate Stamp:** 015365

**R.** **Title:** Letter - Subject: Change in Address
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement
**Recipient:** Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Date:** August 1, 1995
**Bate Stamp:** 015366

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**1995**

**S.** **Title:** Memorandum - Subject: Early Interim Remedial Action Record of Decision (ROD) at Landfill Sites 12 and 16, Longhorn Army Ammunition Plant
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Mr. Robert Radkiewicz, U.S. Army Industrial Operations
COL M. Potter, U.S. Army Material Command
Mr. M. Vogt, 600 Army Pentagon
**Date:** August 2, 1995
**Bate Stamp:** 015367

**T.** **Title:** Letter - Subject:Transmittal of Draft Phase II Sumps Investigation Sample and Data Report Volumes 1-5 for Longhorn Army Ammunition Plant
**Group(s):** 4
**Site(s):** LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Lisa Marie Price, Environmental Protection Agency
**Date:** August 9, 1995
**Bate Stamp:** 015368

**U.** **Title:** Letter - Subject: Transmittal of Draft Phase II Sumps Investigation Sample and Data Report Volumes 1-5 for Longhorn Army Ammunition Plant
**Group(s):** 4
**Site(s):** LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** August 9, 1995
**Bate Stamp:** 015369

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**V.** **Title:** Letter - Transmittal of Groups 2 & 4 Baseline Risk Assessment Work Plans, Minutes for July 19, 1995 Risk Assessment Concept Scoping Meeting for Longhorn Army Ammunition Plant
**Group(s):** 2 & 4
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP 24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Formal TNT Waste Disposal Plant
LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Lisa Marie Price, Environmental Protection Agency
**Date:** August 9, 1995
**Bate Stamp:** 015370

**W.** **Title:** Letter - Groups 2 & 4 Baseline Risk Assessment Work Plans, Minutes for July 19, 1995 Risk Assessment Concept Scoping Meeting for Longhorn Army Ammunition Plant
**Group(s):** 2 & 4
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP 24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Formal TNT Waste Disposal Plant
LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Mr. Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** August 9, 1995
**Bate Stamp:** 015371

**X.** **Title:** Letter - Groups 2 & 4 Baseline Risk Assessment Work Plans, Minutes for July 19, 1995 Risk Assessment Concept Scoping Meeting for Longhorn Army Ammunition Plant
**Group(s):** 2 & 4
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP 24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area

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**LHAAP-32 Formal TNT Waste Disposal Plant**
**LHAAP-35 Process Wastewater Sumps - Various**
**LHAAP-36 Explosive Waste Pads**
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Mr. H. L. Jones, Texas Natural Resource Conservation Commission
**Date:** August 9, 1995
**Bate Stamp:** 015372

Y. **Title:** Letter - Subject: Comments on General Work Plan Interim Remedial Action at Burning Ground No. 3 Longhorn Army Ammunition Plant, Section 3: Soil and Source Material Excavation, Treatment and Disposal Plan
**Group(s):** Early Interim Action At Burning Ground No. 3
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Karnack, Texas
**Recipient:** Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** August 10, 1995
**Bate Stamp:** 015373-015374

Z. **Title:** Letter - Subject: Proposed Record of Decision (ROD) at Landfill Sites 12 and 16, Longhorn Army Ammunition Plant
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Dan Pearson, Executive Director, Texas Natural Resource Conservation Commission
**Recipient:** Mr. Myron O. Knudson, P.E. , Director Superfund Division, U.S. Environmental Protection Agency
**Date:** August 14, 1995
**Bate Stamp:** 015375

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**A.** **Title:** Letter - Subject: Design Work Plan Interim Remedial Action at Burning Ground No. 3 Longhorn Army Ammunition Plant Request for 14 Day Extension to Complete Review
**Group(s):** Early Interim Action At Burning Ground No. 3
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Karnack, Texas
**Recipient:** Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Lisa Price, Remedial Project Manager, Superfund Texas Enforcement
**Date:** August 17, 1995
**Bate Stamp:** 015376

**B.** **Title:** Letter - Subject: TNRCC's Comments on General Work Plan Interim Remedial Action at Burning Ground No. 3 Longhorn Army Ammunition Plant
**Group(s):** Early Interim Action At Burning Ground No. 3
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Karnack, Texas
**Recipient:** Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** August 17, 1995
**Bate Stamp:** 015377-015396

**C.** **Title:** Letter - Subject: Preliminary Design for Interim Remedial Action at Landfill Sites 12 and 16
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement
**Recipient:** Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Date:** August 25, 1995
**Bate Stamp:** 015397

**D.** **Title:** Letter - Group 5 Draft Chemical Data Acquisition Plan for the Preliminary Assessment Site Investigations for Longhorn Army Ammunition Plant
**Group(s):** 5
**Site(s):** LHAAP-50 Former Waste Disposal Facility
LHAAP-52 Magazine Washout Area
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-60 Former Storage Building 411 and 714
LHAAP-63 Burial Pits
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas

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**1995**

**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement
**Date:** August 28, 1995
**Bate Stamp:** 015398

E. **Title:** Letter - Group 5 Draft Chemical Data Acquisition Plan for the Preliminary Assessment Site Investigations for Longhorn Army Ammunition Plant
**Group(s):** 5
**Site(s):** LHAAP-50 Former Waste Disposal Facility
LHAAP-52 Magazine Washout Area
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-60 Former Storage Building 411 and 714
LHAAP-63 Burial Pits
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** August 28, 1995
**Bate Stamp:** 015399

F. **Title:** Letter - Group 5 Draft Chemical Data Acquisition Plan for the Preliminary Assessment Site Investigations for Longhorn Army Ammunition Plant
**Group(s):** 5
**Site(s):** LHAAP-50 Former Waste Disposal Facility
LHAAP-52 Magazine Washout Area
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-60 Former Storage Building 411 and 714
LHAAP-63 Burial Pits
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Mr. H. L. Jones, Texas Natural Resource Conservation Commission
**Date:** August 28, 1995
**Bate Stamp:** 015400

G. **Title:** Letter - Subject: Proposed Permit HW - 50195 Longhorn Army Ammunition Plant Interim Remedial Action Modeling
**Group(s):** Early Interim Action At Burning Ground No. 3
**Site(s):** LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
**Location:** Longhorn Army Ammunition Plant, Karnack, Texas
**Recipient:** Mr. James A. McPherson Commander Representative, Longhorn Army Ammunition Plant

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**1995**

Agency: Department of The Army, Longhorn Army Ammunition Plant
Author(s): John C. Gott, Chemical Section New Source Review Division, Texas Natural Resource Conservation Commission
Date: August 28, 1995
Bate Stamp: 015401-015402

H. Title: Letter - Groups 2 & 4 Baseline Risk Assessment Work Plans, Minutes for July 19, 1995 Risk Assessment Concept Scoping Meeting for Longhorn Army Ammunition Plant
Group(s): 2 & 4
Site(s): LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-18 & LHAAP 24 Burning Ground / Washout Pond & Evaporation Pond
LHAAP-29 Former TNT Production Area
LHAAP-32 Formal TNT Waste Disposal Plant
LHAAP-35 Process Wastewater Sumps - Various
LHAAP-36 Explosive Waste Pads
Location: Longhorn Army Ammunition Plant, Marshall, Texas
Agency: Department Of The Army, Longhorn Army Ammunition Plant
Author(s): Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
Recipient: Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
Date: August 29, 1995
Bate Stamp: 015403

I. Title: Letter - Subject: Transmittal of TNRCC's Revised Comments on General Work Plan Interim Remedial Action at Burning Ground No. 3 Longhorn Army Ammunition Plant
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Karnack, Texas
Recipient: Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
Agency: Department of The Army, Longhorn Army Ammunition Plant
Author(s): Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
Date: August 29, 1995
Bate Stamp: 015404-015419

J. Title: Letter - Subject: EPA's Comments on Design Work Plan Interim Remedial Action at Burning Ground No. 3 Longhorn Army Ammunition Plant
Group(s): Early Interim Action At Burning Ground No. 3
Site(s): LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond
Location: Longhorn Army Ammunition Plant, Karnack, Texas
Recipient: Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
Agency: Department of The Army, Longhorn Army Ammunition Plan

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**1995**

**Author(s):** Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement
**Date:** August 30, 1995
**Bate Stamp:** 015420-015428

**K.** **Title:** Letter - Subject: Preliminary Design for Interim Remedial Action at Landfill Sites 12 and 16
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Recipient:** Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Date:** August 30, 1995
**Bate Stamp:** 015429-015430

**L.** **Title:** Final Plan - Chemical Data Acquisition Plan for the Preliminary Assessment Site Investigations Group V at Longhorn Army Ammunition Plant, Karnack, Texas
**Group(s):** 5
**Site(s):** LHAAP-50 Former Waste Disposal Facility
LHAAP-52 Magazine Washout Area
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-60 Former Storage Building 411 and 714
LHAAP-63 Burial Pits
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Sverdrup Environmental, Inc.
**Recipient:** U.S. Army Corps of Engineers, Tulsa District
**Date:** September, 1995
**Bate Stamp:** 015431-015527

**M.** **Title:** Final Plan - Final Work Plan for the Preliminary Assessment Site Investigations Group No. V at Longhorn Army Ammunition Plant, Karnack, Texas
**Group(s):** 5
**Site(s):** LHAAP-50 Former Waste Disposal Facility
LHAAP-52 Magazine Washout Area
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-60 Former Storage Building 411 and 714
LHAAP-63 Burial Pits
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant

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**1995**

**Author(s):** Sverdrup Environmental, Inc.
**Recipient:** U.S. Army Corps of Engineers, Tulsa District
**Date:** September, 1995
**Bate Stamp:** 015528-015547

**N.** **Title:** Letter - Subject: EPA's Comments on Preliminary Assessment Site Investigations Group No. V Work Plan and Chemical Data Acquisition Plan at Longhorn Army Ammunition Plant, Karnack, Texas
**Group(s):** 5
**Site(s):** LHAAP-50 Former Waste Disposal Facility
LHAAP-52 Magazine Washout Area
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-60 Former Storage Building 411 and 714
LHAAP-63 Burial Pits
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement
**Recipient:** Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Date:** September 5, 1995
**Bate Stamp:** 015548-015550

**O.** **Title:** Letter - Subject: Transmittal of Record of Decision for No Further Action at LHAAP 13 & 14 for Longhorn Army Ammunition Plant
**Group(s):** 3
**Site(s):** LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement
**Date:** September 6, 1995
**Bate Stamp:** 015551

**P.** **Title:** Letter - Subject: Transmittal of Record of Decision for No Further Action at LHAAP 13 & 14 for Longhorn Army Ammunition Plant
**Group(s):** 3
**Site(s):** LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army

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**1995**

**Recipient:** Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** September 6, 1995
**Bate Stamp:** 015552

**Q.** **Title:** Letter - Subject: Transmittal of Record of Decision for No Further Action at LHAAP 13 & 14 for Longhorn Army Ammunition Plant
**Group(s):** 3
**Site(s):** LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Mr. H. L. Jones, Texas Natural Resource Conservation Commission
**Date:** September 6, 1995
**Bate Stamp:** 015553

**R.** **Title:** Letter -Subject: EPA's Comments on DERPMIS / RMIS Resolution Document for Longhorn Army Ammunition Plant
**Group(s):** All
**Site(s):** General
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement
**Recipient:** Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Date:** September 6, 1995
**Bate Stamp:** 015554-015571

**S.** **Title:** Letter - Subject: Review Comments on Preliminary Assessment Site Investigations Group No. 5 Work Plan and Draft Chemical Data Acquisition Plan at Longhorn Army Ammunition Plant, Karnack, Texas
**Group(s):** 5
**Site(s):** LHAAP-50 Former Waste Disposal Facility
LHAAP-52 Magazine Washout Area
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-60 Former Storage Building 411 and 714
LHAAP-63 Burial Pits
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Recipient:** Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant
**Date:** September 7, 1995
**Bate Stamp:** 015572-015600

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**1995**

| | | |
|---|---|---|
| **T** | **Title:** | **Minutes - Technical Review Committee, Longhorn Army Ammunition Plant** |
| | **Attach (s)** | **Executive Summary** |
| | **Site(s):** | **General** |
| | **Location:** | **Longhorn Army Ammunition Plant, Marshall, Texas** |
| | **Company:** | **Environmental Protection Agency** |
| | **Author(s):** | **Mr. David Tolbert, Project Manager, Longhorn Army Ammunition Plant** |
| | **Recipient:** | **Jonna Polk, U.S. Army Corps of Engineers, Tulsa District** |
| | **Date:** | **September 12, 1995** |
| | **Bate Stamp:** | **015601-015605** |
| **U.** | **Title:** | **Letter - Subject: Response to EPA's & TNRCC's Comments of Draft Work Plan for Phase III of Interim Remedial Action at Burning Ground No. 3 Longhorn Army Ammunition Plant** |
| | **Group(s):** | **Early Interim Action At Burning Ground No. 3** |
| | **Site(s):** | **LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond** |
| | **Location:** | **Longhorn Army Ammunition Plant, Karnack, Texas** |
| | **Recipient:** | **Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement** |
| | **Agency:** | **U. S. Army Corps Of Engineer** |
| | **Author(s):** | **Darrell W. Chinn, Captain, U.S. Army** |
| | **Date:** | **September 12, 1995** |
| | **Bate Stamp:** | **015606-015638** |
| **V.** | **Title:** | **Letter - Subject: Response to EPA's & TNRCC's Comments of Draft Work Plan For Phase III of Interim Remedial Action at Burning Ground No. 3 Longhorn Army Ammunition Plant** |
| | **Group(s):** | **Early Interim Action At Burning Ground No. 3** |
| | **Site(s):** | **LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond** |
| | **Location:** | **Longhorn Army Ammunition Plant, Karnack, Texas** |
| | **Recipient:** | **Michael A. Moore, RI / FS II Unit, Superfund Investigation Section** |
| | **Agency:** | **U. S. Army Corps Of Engineer** |
| | **Author(s):** | **Darrell W. Chinn, Captain, U.S. Army** |
| | **Date:** | **September 12, 1995** |
| | **Bate Stamp:** | **015639-015671** |
| **W.** | **Title:** | **Letter - Subject: Response to EPA's & TNRCC's Comments of Draft Work Plan For Phase III of Interim Remedial Action at Burning Ground No. 3 Longhorn Army Ammunition Plant** |
| | **Group(s):** | **Early Interim Action At Burning Ground No. 3** |
| | **Site(s):** | **LHAAP-18 & LHAAP-24 Burning Ground / Washout Pond & Unlined Evaporation Pond** |
| | **Location:** | **Longhorn Army Ammunition Plant, Karnack, Texas** |
| | **Recipient:** | **Mr. H. L. Jones, Texas Natural Resource Conservation Commission** |

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**1995**

**Agency:** U. S. Army Corps Of Engineer
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Date:** September 12, 1995
**Bate Stamp** 015672

**X.** **Title:** Memorandum For Commander - Subject: Review of Record of Decision for No Further Action at LHAAP 13 & 14 for Longhorn Army Ammunition Plant
**Group(s):** 3
**Site(s):** LHAAP-13 Suspected TNT Burial Between Active Landfill And Old Landfill
LHAAP-14 Area 54 Burial Ground
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Jack M. Heller, Ph. D. Acting Program Manager, Health Risk Assessment and Risk Communication
**Recipient:** Jonna Polk, U.S. Army Corps of Engineers, Tulsa District
**Date:** September 20, 1995
**Bate Stamp:** 015673-015674

**Y.** **Title:** Letter - Subject: Transmittal of Draft Project Work Plans Interim Remedial Action at Landfill Sites 12 and 16,
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Lisa Marie Price, Remedial Project Manager, Superfund Texas Enforcement
**Date:** September 21, 1995
**Bate Stamp:** 015675

**Z.** **Title:** Letter - Subject: Transmittal of Draft Project Work Plans Interim Remedial Action at Landfill Sites 12 and 16
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Michael A. Moore, RI / FS II Unit, Superfund Investigation Section
**Date:** September 21, 1995
**Bate Stamp:** 015676

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**A.** **Title:** Letter - Subject: Transmittal of Draft Project Work Plans Interim Remedial Action at Landfill Sites 12 and 16
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department of The Army, Longhorn Army Ammunition Plant
**Author(s):** Darrell W. Chinn, Captain, U.S. Army
**Recipient:** Mr. H. L. Jones, Texas Natural Resource Conservation Commission
**Date:** September 21, 1995
**Bate Stamp:** 015677

**B.** **Title:** Memorandum for Commander- Subject: Review of the Group 5 Draft Work Plan for Preliminary Assessment Site Investigations for Longhorn Army Ammunition Plant, Karnack, Texas, Prepared by Sverdrup Environmental, August 1995
**Group(s):** 5
**Site(s):** LHAAP-50 Former Waste Disposal Facility
LHAAP-52 Magazine Washout Area
LHAAP-17 No. 2 Flashing Area / Burning Ground
LHAAP-60 Former Storage Building 411 and 714
LHAAP-63 Burial Pits
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** Department Of The Army, Longhorn Army Ammunition Plant
**Author(s):** Jack M. Heller, Ph. D., Acting Program Manager, Health Risk Assessment and Risk Communication
**Recipient:** Jonna Polk, U. S. Army Corps of Engineers, Tulsa District
**Date:** September 27, 1995
**Bate Stamp:** 015678

**C.** **Title:** Record of Decision - For Early Interim Remedial Action at Landfill Sites 12 and 16, Longhorn Army Ammunition Plant, Karnack, Texas
**Group(s):** Landfill Caps Interim Action
**Site(s):** LHAAP-12 Active Landfill
LHAAP-16 Old Landfill
**Location:** Longhorn Army Ammunition Plant, Marshall, Texas
**Agency:** U.S. Army Corps of Engineers
**Author(s):** U.S. Army Corps of Engineers
**Recipient:** U.S. Public
**Date:** September 27, 1995
**Bate Stamp:** 015679-015857

# LONGHORN ARMY AMMUNITION PLANT

# HARRISON BAYOU

U.S. Army Corps of Engineers

Chemical Data Validation Report

August and September 1995 Chemical Data

Prepared by: Tulsa District U.S. Army Corps of Engineers

October 1995

## 1.0 INTRODUCTION.

Harrison Bayou located adjacent to Longhorn Army Ammunition Plant had field samples collected by the U.S. Army Corps of Engineers' environmental sampling crew. Water and soil samples were collected during the month of August and September 1995 and sent to the U.S. Army Corps of Engineers' Southwestern Division Laboratory (SWD) for dispersal and analysis.

Field samples collected consisted of ten water samples, ten soil samples, two travel blanks, ten quality assurance duplicate water samples, and ten quality assurance duplicate soil samples. Results of the chemical analyses for this sampling event can be found in SWD Laboratory Report No. 16330-9. A synopsis of the samples collected, travel blanks, dates, and the various chemical analyses performed are provided in Table 1.

Details of this data validation including actual holding times, recoveries of spikes and surrogates, relative percent differences (RPDs), chromatograms, GC/MS performance standards, and blank summaries are available on data validation check sheets, or other sources, from the Tulsa District COE, Chemistry & Industrial Hygiene section upon request.

## 2.0 VOLATILE ORGANIC ANALYSIS.

A volatile organic analysis was requested for the samples using SW-846 Method 8260.

2.1 Accuracy. Matrix spike, surrogate, and laboratory control spike recoveries were acceptable and within laboratory quality control limits with the following exceptions. Two surrogate recoveries were outside quality control limits for the matrix spike on 5 September 1995. The matrix spike recoveries were outside of laboratory quality control limits for trichloroethene on 5 September 1995 due to non-homogeneous sample matrix. One internal standard was outside quality control limits for HBS-4/QA HBS-6/QA. Four internal standards were outside quality control limits for HBS-2/QA.

2.2 Precision. Matrix spike duplicate recoveries were acceptable and within laboratory quality control limits.

2.3 Representativeness. All analyses were performed within the required holding time. Method blanks were generally free of contamination and within acceptable laboratory quality control limits except for the following:

a) Two method blanks reported trace level contamination due to methylene chloride (0.80j and 0.4j ug/L).

b) One method blank reported low level contamination due to methylene chloride (7.84 ug/L).

c) The trip blank associated with samples collected on 31 August 1995 reported low level contamination due to methylene chloride (7.62 ug/L).

Methylene chloride was not detected in any field sample so there was no impact to data quality.

2.4 Comparability. The units used were consistent. A comparison between field samples and their quality assurance duplicate samples was performed. The following reflects where differences occurred (units in ug/L and ug/kg):

| | | |
|---|---|---|
| | HBW-1 | HBW-1/QA |
| cis-1,2-dichloroethene | 38.2 | 32 |
| trichloroethene | 113 | 123 |
| | HBS-1 | HBS-1/QA |
| cis-1,2-dichloroethene | 182 | 102 |
| trichloroethene | < 5 | 23.2 |
| | HBW-1B | HBW-1B/QA |
| cis-1,2-dichloroethene | < 5 | 2 |
| trichloroethene | 9.27 | 8 |
| | HBW-5 | HBW-5/QA |
| cis-1,2-dichloroethene | < 5 | 1 |
| | HBS-1B | HBS-1B/QA |
| cis-1,2-dichloroethene | 128 | 16.8 |
| trichloroethene | 183 | 220 |
| | HBS-9 | HBS-9/QA |
| trichloroethene | 5.06 | < 1 |

There is disagreement in the cis-1,2-dichloroethene values between sample HBS-1B and its quality assurance duplicate sample HBS-1B/QA. The other differences are not significant.

**3.0 FORMS.**

The forms used during this sampling event were generally complete except the chain of custodies for the soil samples collected on 31 August 1995 requested TCLP volatiles (1311/8260), but sample labels requested total volatiles (8260). The discrepancy was resolved with no impact to data quality. The forms provided adequate custody record.

**4.0 CONCLUSION.**

The data meet the general requirements of data validation and are valid and useable.

Yolane Hartsfield, Chemist

Rex Ostrander, Chief
Chemistry and Industrial
Hygiene Section

**TABLE 1.0**

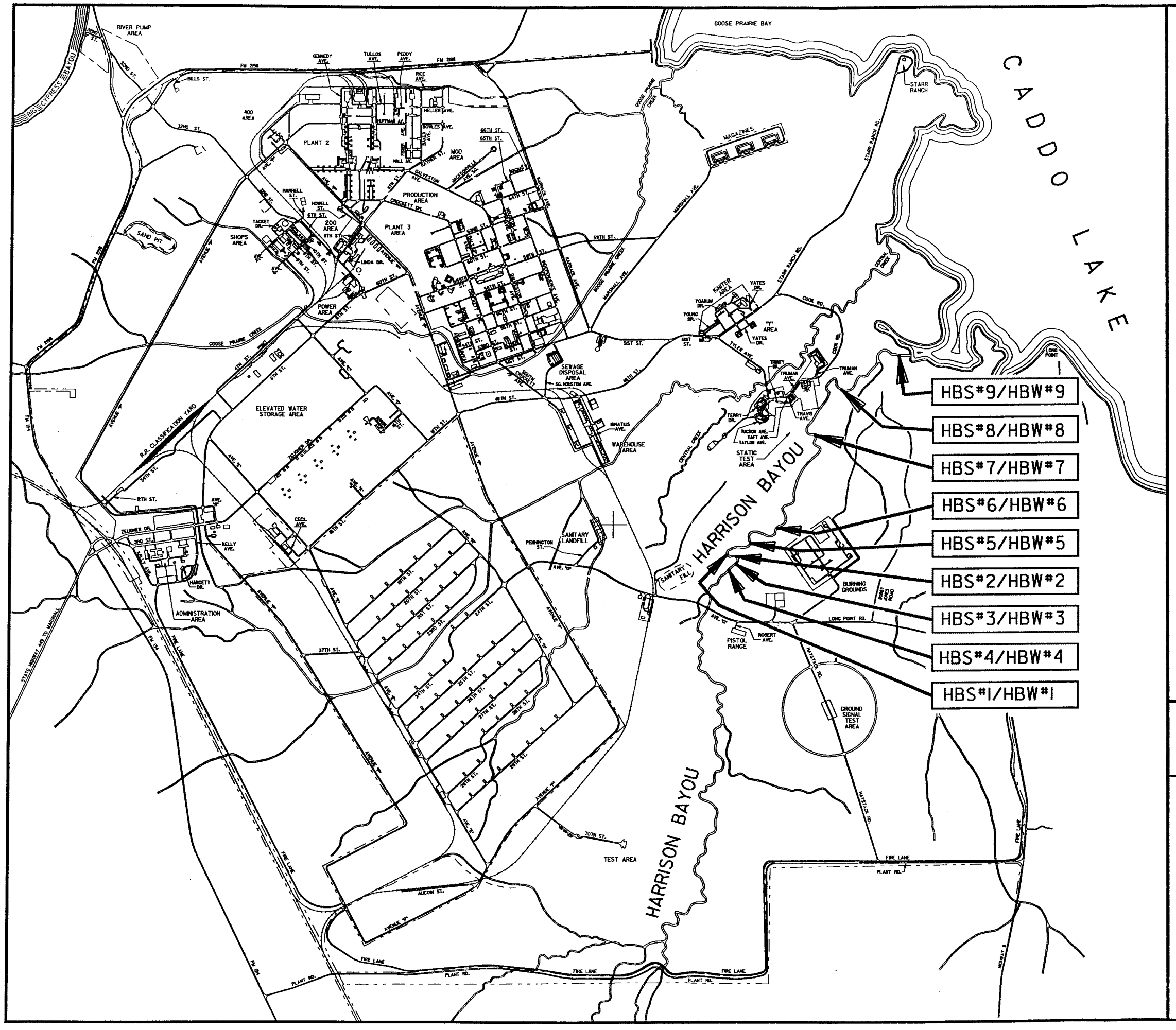
| Date and Field ID # | Matrix | Volatiles (8260) |
|---|---|---|
| 31 August 1995 | | |
| HBW-1 | TB | 1 |
| HBW-2 | WATER | 1 |
| HBW-2 | QA | 2 |
| HBW-3 | WATER | 1 |
| HBW-3 | QA | 2 |
| HBW-4 | WATER | 1 |
| HBW-4 | QA | 2 |
| HBS-1 | SOIL | 1 |
| HBS-1 | QA | 3 |
| HBS-2 | SOIL | 1 |
| HBS-2 | QA | 3 |
| HBS-3 | SOIL | 1 |
| HBS-3 | QA | 3 |
| HBS-4 | SOIL | 1 |
| HBS-4 | QA | 3 |
| 11 September 1995 | | |
| HBW-9 | TB | 1 |
| HBW-1B | WATER | 1 |
| HBW-1 | QA | 2 |
| HBW-5 | WATER | 1 |
| HBW-5 | QA | 2 |
| HBW-6 | WATER | 1 |
| HBW-6 | QA | 2 |
| HBW-7 | WATER | 1 |
| HBW-7 | QA | 2 |
| HBW-8 | WATER | 1 |

| DATE AND SAMPLE ID # | MATRIX | VOLATILES (8260) |
|---|---|---|
| HBW-8 | QA | 2 |
| HBW-9 | WATER | 1 |
| HBW-9 | QA | 2 |
| HBS-1B | SOIL | 1 |
| HBS-1B | QA | 3 |
| HBS-5 | SOIL | 1 |
| HBS-5 | QA | 3 |
| HBS-6 | SOIL | 1 |
| HBS-6 | QA | 3 |
| HBS-7 | SOIL | 1 |
| HBS-7 | QA | 3 |
| HBS-8 | SOIL | 1 |
| HBS-8 | QA | 3 |
| HBS-9 | SOIL | 1 |
| HBS-9 | QA | 3 |

Note: 1--Inchcape Testing Services, Inc.
2--Southwestern Division Laboratory
3--Environmental Testing and Consulting, Inc.

Matrix
QA--quality assurance duplicate sample

015863




November 1995

US Army Corps of Engineers
TULSA DISTRICT

Longhorn Army Ammunition Plant
Karnack, Texas

APPROXIMATE LOCATIONS FOR SURFACE WATER AND SEDIMENT SAMPLES TAKEN FROM HARRISON BAYOU
31 AUGUST'95
AND
11 SEPTEMBER'95

File Name: mcmbayou.dgn / 9NOV'95 - rbp

CESWT-EC-GC

14 November 1995

MEMORANDUM THROUGH CESWT-EC-G (MR. PAUL W. ERDNER)

MEMORANDUM FOR CESWT-PP-EA (Ms. Jonna Polk)

SUBJECT: SWD Laboratory Report No. 16330-9, September 1995 Water and Soil Sampling, Harrison Bayou, Longhorn Army Ammunition Plant, Karnack, Texas

1. Pursuant to a request from Ms. Jonna Polk I have reviewed the chemical data with respect to sample number HBS-9, a soil sample collected on 11 September 1995. The chemical data results indicate a trichloroethene concentration value of 5.06 ug/kg (detection limit of 5.0 ug/kg). The associated quality assurance duplicate sample, HBS-9/QA, reported a concentration value of <1.0 ug/kg. Since the field sample reported concentration value is at the calibrated detection limit of the analytical instrument and is not supported by its associated quality assurance duplicate sample, the result may well indicate the influence of instrument noise rather than the presence of the analyte.

2. The concentration value for the field sample is to be considered as instrument noise and not used for any decision making purpose.

3. The point of contact is Ms. Yolane Hartsfield, ext. 7072.

Rex Ostrander

Rex Ostrander
Chief, Chemistry and Industrial Hygiene

CF
CESWT-EC-G
CESWT-EC-GC

SWDED-GL REPORT NO. 16330-9

# RESULTS OF CHEMICAL ANALYSES OF WATER AND SOIL SAMPLES

## HARRISON BAYOU

## LONGHORN AAP - TULSA DISTRICT

CORPS OF ENGINEERS

U. S. ARMY

SOUTHWESTERN DIVISION LABORATORY

DALLAS, TEXAS

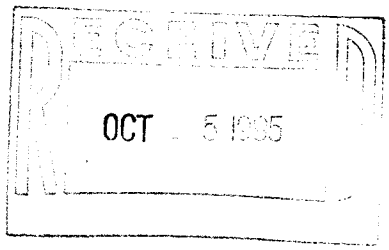
SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS
4815 Cass Street
Dallas, Texas 75235

SUBMITTAL OF SWDETE-GL REPORT 16330-9

| | |
|---|---|
| PROJECT: LONGHORN AAP<br>FEATURE: HARRISON BAYOU | Contract No. |
| TEST REQUEST NO.: MIL 95-139<br>Dated: 22 MAY 95<br>Received: 31 MAY 1995 | From: CHIEF, GEOTECH BRANCH, TULSA DISTRICT |

MATERIAL: Ten water samples, ten soil samples, two trip blanks, ten water quality assurance samples and ten soil quality assurance samples.

S50193, S50212




Date Received: 01 & 11 September 1995

Remarks:

| | |
|---|---|
| Report sent to:<br>TULSA DISTRICT<br>ATTN: CESWT-EC-GC | Copy furnished: |

| Date: | Name and title: | Signature |
|---|---|---|
| 10-3-95 | Brian J. Condike<br>Quality Assurance Officer<br>SWD Laboratory | BJ Condike |

| Date: | Name and title: | Signature |
|---|---|---|
| 10-3-95 | STEPHEN L. BROOKS<br>Director<br>SWD Laboratory | Stephen Brooks |

015867

SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS
4815 Cass Street
Dallas, Texas 75235

SUBMITTAL OF SWDED-GL REPORT 16330-9

| | |
|---|---|
| PROJECT: LONGHORN AAP<br>FEATURE: HARRISON BAYOU | Report submitted for payment<br>OCTOBER 1995 |
| TEST REQUEST NO.: MIL 95-139<br>Dated: 22 MAY 95<br>Received: 31 MAY 1995 | COST CODE: |

| | | COST |
|---|---|---|
| OUTSIDE TESTING | $ | 5814.00 |
| PLUS 15% | $ | 872.10 |
| TOTAL | $ | 6686.10 |
| INHOUSE | $ | 3000.00 |
| TRANSPORTATION | $ | 275.97 |
| CHEMICAL DATA VALIDATION | $ | 100.00 |
| BALANCE DUE THIS REPORT | $ | 10062.07 |
| AMOUNT BILLED TO DATE | $ | 36,096.49 |
| AMOUNT REMAINING ON DA 2544 | $ | 33,903.51 |
| ADDITIONAL FUNDS NEEDED | $ | 00.00 |

U.S. ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
Environmental Services Section
4815 Cass Street
Dallas, Texas 75235
214/905-9130

# CASE NARRATIVE

Ten water samples, ten soil samples, two trip blanks, ten water quality assurance samples and ten soil quality assurance samples arrived at Southwestern Division Laboratory on 01 and 11 September 1995 from Longhorn - Harrison Bayou. The samples arrived in good condition and with complete chains of custody. The COCs for the soil samples received on 01 September requested TCLP volatiles (1311/8260); but the sample labels requested volatiles by 8260. After calling the client, the client requested total volatiles. SWD kept the volatile analyses for the water quality assurance samples. The remaining quality assurance analyses were contracted out to a Corps of Engineers' validated laboratory, Environmental Testing & Consulting, Inc. The field analyses were contracted out to a Corps of Engineers' validated laboratory, Inchcape Testing Services.

Preliminary results for the water samples received on 01 September were faxed to the client on 06 September 1995. Preliminary results for the soil samples received on 01 September were faxed to the client on 08 September 1995. Preliminary results for the samples received on 11 September were faxed to the client on 14 September 1995.

The data package from Southwestern Division Laboratory was received complete with all required internal quality control information. All analyses were performed using the specified methods within proper holding times. All matrix spike, surrogate, laboratory control recoveries, and RPDs were within control limits. All method blanks were free of contamination.

The data package from Inchcape Testing Services was received complete with all required internal quality control information. All analyses were performed using the specified methods within the proper holding times. All of the matrix spike, surrogate, laboratory control recoveries, and RPDs were within control limits. The majority of the method blanks were free of contamination. The volatile method blank for batch ITS2-523 was contaminated with 7.84 µg/Kg methylene chloride. None of the associated samples were similarly contaminated.

The data package from Environmental Testing & Consulting, Inc was received complete with all required internal quality control information. All analyses were performed using the specified methods within proper holding times. The majority of the matrix spike, surrogate, laboratory control recoveries, and RPDs were within control limits with the following exceptions noted.
Two volatile surrogates were outside quality control limits for the matrix spike on 09/05/95.

The MS recovery and the MS/MSD RPD were outside quality control limits for trichloroethene for the volatile analyses performed on 09/05/95 due to a non-homogeneous sample matrix.

One volatile internal standard was outside quality control limits for HBS-4-QA, HBS-6-QA, and the matrix spike performed on 09/05/95.

Four volatile internal standards were outside quality control limits for HBS-2-QA and the matrix spike duplicate performed on 09/05/95.

Methylene chloride was detected with a result below the detection limit in both of the method blanks for the volatile analyses. This compound was not found in any of the samples.

One of the trip blanks, HBW-1-TB, was contaminated with 7.62 µg/L methylene chloride. This compound was not detected in any of the associated samples.

# Comparision of Field Samples and QA samples

HBW-1 (S50193-2) and HBW-1-QA (S50193-3)

| Analyte | HBW-1 Concentration (µg/L) | HBW-1-QA Concentration (µg/L) |
|---|---|---|
| cis-1,2-Dichloroethene | 38.2 | 32 |
| Trichloroethane | 113 | 123 |
| TICs | None | None |

HBW-2 (S50193-4) and HBW-2-QA (S50193-5)

| Analyte | HBW-2 Concentration (µg/L) | HBW-2-QA Concentration (µg/L) |
|---|---|---|
| | No Hits | No Hits |
| TICs | None | None |

HBW-3 (S50193-6) and HBW-3-QA (S50193-7)

| Analyte | HBW-3 Concentration (µg/L) | HBW-3-QA Concentration (µg/L) |
|---|---|---|
| | No Hits | No Hits |
| TICs | None | None |

HBW-4 (S50193-8) and HBW-4-QA (S50193-9)

| Analyte | HBW-4 Concentration (µg/L) | HBW-4-QA Concentration (µg/L) |
|---|---|---|
| | No Hits | No Hits |
| TICs | None | None |

HBS-1 (S50193-10) and HBS-1-QA (S50193-11)

| Analyte | HBS-1 Concentration (µg/Kg) | HBS-1-QA Concentration (µg/Kg) |
|---|---|---|
| Trichloroethene | 182 | 102 |
| cis-1,2-Dichloroethylene | < 5.0 | 23.2 |
| TICs | None | None |

# Comparision of Field Samples and QA samples

HBS-2 (S50193-12) and HBS-2-QA (S50193-13)

| Analyte | HBS-2 Concentration (µg/Kg) | HBS-2-QA Concentration (µg/Kg) |
|---|---|---|
| | No Hits | No Hits |
| TICs | None | None |

HBS-3 (S50193-14) and HBS-3-QA (S50193-15)

| Analyte | HBS-3 Concentration (µg/Kg) | HBS-3-QA Concentration (µg/Kg) |
|---|---|---|
| | No Hits | No Hits |
| TICs | None | None |

HBS-4 (S50193-16) and HBS-4-QA (S50193-17)

| Analyte | HBS-4 Concentration (µg/Kg) | HBS-4-QA Concentration (µg/Kg) |
|---|---|---|
| | No Hits | No Hits |
| TICs | None | None |

HBW-1B (S50212-2) and HBW-1B-QA (S50212-3)

| Analyte | HBW-1B Concentration (µg/L) | HBW-1B-QA Concentration (µg/L) |
|---|---|---|
| Trichloroethene | 9.27 | 8 |
| cis-1,2-Dichloroethene | < 5 | 2 |
| TICs | None | None |

HBW-5 (S50212-4) and HBW-5-QA (S50212-5)

| Analyte | HBW-5 Concentration (µg/L) | HBW-5-QA Concentration (µg/L) |
|---|---|---|
| cis-1,2-Dichloroethene | < 5 | 1 |
| TICs | None | None |

# Comparision of Field Samples and QA samples

HBW-6 (S50212-6) and HBW-6-QA (S50212-7)

| Analyte | HBW-6 Concentration (µg/L) | HBW-6-QA Concentration (µg/L) |
|---|---|---|
| | No Hits | No Hits |
| TICs | None | None |

HBW-7 (S50212-8) and HBW-7-QA (S50212-9)

| Analyte | HBW-7 Concentration (µg/L) | HBW-7-QA Concentration (µg/L) |
|---|---|---|
| | No Hits | No Hits |
| TICs | None | None |

HBW-8 (S50212-10) and HBW-8-QA (S50212-11)

| Analyte | HBW-8 Concentration (µg/L) | HBW-8-QA Concentration (µg/L) |
|---|---|---|
| | No Hits | No Hits |
| TICs | None | None |

HBW-9 (S50212-12) and HBW-8-QA (S50212-13)

| Analyte | HBW-9 Concentration (µg/L) | HBW-9-QA Concentration (µg/L) |
|---|---|---|
| | No Hits | No Hits |
| TICs | None | None |

HBS-1B (S50212-14) and HBS-1B-QA (S50212-20)

| Analyte | HBW-1B Concentration (µg/Kg) | HBW-1B-QA Concentration (µg/Kg) |
|---|---|---|
| cis-1,2-Dichloroethene | 128 | 16.8 |
| Trichloroethene | 183 | 220 |
| TICs | None | None |

# Comparison of Field Samples and QA Samples

HBS-5 (S50212-15) and HBS-5-QA (S50212-21)

| Analyte | HBW-5 Concentration (µg/Kg) | HBW-5-QA Concentration (µg/Kg) |
|---|---|---|
| | No Hits | No Hits |
| TICs | None | None |

HBS-6 (S50212-16) and HBS-6-QA (S50212-22)

| Analyte | HBW-6 Concentration (µg/Kg) | HBW-6-QA Concentration (µg/Kg) |
|---|---|---|
| | No Hits | No Hits |
| TICs | None | None |

HBS-7 (S50212-17) and HBS-7-QA (S50212-23)

| Analyte | HBW-7 Concentration (µg/Kg) | HBW-7-QA Concentration (µg/Kg) |
|---|---|---|
| | No Hits | No Hits |
| TICs | None | None |

HBS-8 (S50212-18) and HBS-8-QA (S50212-24)

| Analyte | HBW-8 Concentration (µg/Kg) | HBW-8-QA Concentration (µg/Kg) |
|---|---|---|
| | No Hits | No Hits |
| TICs | None | None |

HBS-9 (S50212-19) and HBS-9-QA (S50212-25)

| Analyte | HBW-9 Concentration (µg/Kg) | HBW-9-QA Concentration (µg/Kg) |
|---|---|---|
| Trichloroethene | 5.06 | < 1.0 |
| TICs | None | None |

015874

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-3591
Fax. 214-238-3592

DATE RECEIVED : 1-SEP-1995

REPORT NUMBER : D95-8338-1
REPORT DATE : 8-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-1-TB
: S5 0193-1
PROJECT : Longhorn AAP
DATE SAMPLED : 31-AUG-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : MGD
ANALYZED ON : 5-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS7-788

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/L | < 100 µg/L |
| Acrylonitrile | 5.00 µg/L | < 5.00 µg/L |
| Benzene | 5.00 µg/L | < 5.00 µg/L |
| Bromobenzene | 5.00 µg/L | < 5.00 µg/L |
| Bromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromodichloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromoform | 5.00 µg/L | < 5.00 µg/L |
| Carbon disulfide | 5.00 µg/L | < 5.00 µg/L |
| Carbon tetrachloride | 5.00 µg/L | < 5.00 µg/L |
| Chlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| Chloroethane | 5.00 µg/L | < 5.00 µg/L |
| Chloroform | 5.00 µg/L | < 5.00 µg/L |
| 2-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| 4-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| Dibromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/L | < 25.0 µg/L |

**Inchcape Testing Services**
Environmental Laboratories

1050 E. Collins Blvd.
Richardson, TX 75081
Tel: 214 238 5501
Fax: 214 238 5502

REPORT NUMBER : D95-8338-1
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,4-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,4-Dichloro-2-butene | 100 µg/L | < 100 µg/L |
| 1,1-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| cis-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 2,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| cis-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| Ethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 2-Hexanone | 50.0 µg/L | < 50.0 µg/L |
| Bromomethane | 5.00 µg/L | < 5.00 µg/L |
| Chloromethane | 5.00 µg/L | < 5.00 µg/L |
| Dibromomethane | 5.00 µg/L | < 5.00 µg/L |
| 2-Butanone | 100 µg/L | < 100 µg/L |
| Iodomethane | 5.00 µg/L | < 5.00 µg/L |
| Methylene chloride | 5.00 µg/l | 7.62 µg/l |
| 4-Methyl-2-pentanone | 100 µg/L | < 100 µg/L |
| Styrene | 5.00 µg/L | < 5.00 µg/L |

015876


# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel: 214 238 3591
Fax: 214 238 3592


REPORT NUMBER : D95-8338-1
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| Tetrachloroethene | 5.00 µg/L | < 5.00 µg/L |
| Toluene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,1,1-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| Trichloroethene | 5.00 µg/L | < 5.00 µg/L |
| Trichlorofluoromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,3,5-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| Vinyl acetate | 50.0 µg/L | < 50.0 µg/L |
| Vinyl chloride | 5.00 µg/L | < 5.00 µg/L |
| m,p-Xylene | 5.00 µg/L | < 5.00 µg/L |
| o-Xylene | 5.00 µg/L | < 5.00 µg/L |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 110 % |
| Toluene-d8 (SS) | 50.0 µg/L | 101 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 114 % |

Applicable results are reported on Dry Weight basis.

# SUMMARY REPORT

CLIENT : US Army Corps of Engineers
PROJECT : Longhorn AAP

JOB NUMBER : D95-8338
REPORT DATE : 2-OCT-1995

| SAMPLE NO. | ID MARKS | MATRIX | DATE SAMPLED |
|---|---|---|---|
| 1 | HBW-1-TB S5 0193-1 | Liquid | 31-AUG-1995 |
| 2 | HBW-1 S5 0193-2 | Liquid | 31-AUG-1995 |
| 3 | HBW-2 S5 0193-4 | Liquid | 31-AUG-1995 |
| 4 | HBW-3 S5 0193-6 | Liquid | 31-AUG-1995 |

| TENTATIVELY IDENTIFIED COMPOUNDS - VOA | | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| No compounds detected above | ug/L | 10 | 10 | 10 | 10 |

Preliminary report based upon incomplete data. Applicable results are reported on Dry Weight basis.

015878

# Inchcape Testing Services
## Environmental Laboratories

10800 [illegible] Blvd.
[illegible], TX 75[illegible]
Tel: [illegible]
Fax: [illegible]

DATE RECEIVED : 1-SEP-1995

REPORT NUMBER : D95-8338-2
REPORT DATE : 8-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-1
: S5 0193-2
PROJECT : Longhorn AAP
DATE SAMPLED : 31-AUG-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : MGD
ANALYZED ON : 5-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS7-788

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/L | < 100 µg/L |
| Acrylonitrile | 5.00 µg/L | < 5.00 µg/L |
| Benzene | 5.00 µg/L | < 5.00 µg/L |
| Bromobenzene | 5.00 µg/L | < 5.00 µg/L |
| Bromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromodichloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromoform | 5.00 µg/L | < 5.00 µg/L |
| Carbon disulfide | 5.00 µg/L | < 5.00 µg/L |
| Carbon tetrachloride | 5.00 µg/L | < 5.00 µg/L |
| Chlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| Chloroethane | 5.00 µg/L | < 5.00 µg/L |
| Chloroform | 5.00 µg/L | < 5.00 µg/L |
| 2-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| 4-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| Dibromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/L | < 25.0 µg/L |

**Inchcape Testing Services**
Environmental Laboratories

1089 L[illegible]
Bi[illegible]
Tel: 21[illegible]
Fax: 21[illegible]

REPORT NUMBER : D95-8338-2
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,4-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,4-Dichloro-2-butene | 100 µg/L | < 100 µg/L |
| 1,1-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| cis-1,2-Dichloroethene | 5.00 µg/L | 38.2 µg/L |
| trans-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 2,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| cis-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| Ethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 2-Hexanone | 50.0 µg/L | < 50.0 µg/L |
| Bromomethane | 5.00 µg/L | < 5.00 µg/L |
| Chloromethane | 5.00 µg/L | < 5.00 µg/L |
| Dibromomethane | 5.00 µg/L | < 5.00 µg/L |
| 2-Butanone | 100 µg/L | < 100 µg/L |
| Iodomethane | 5.00 µg/L | < 5.00 µg/L |
| Methylene chloride | 5.00 µg/l | < 5.00 µg/l |
| 4-Methyl-2-pentanone | 100 µg/L | < 100 µg/L |
| Styrene | 5.00 µg/L | < 5.00 µg/L |

**Inchcape Testing Services**
Environmental Laboratories

1059 [illegible]
Richards[illegible]
Tel: 21[illegible]
Fax: 21[illegible]

REPORT NUMBER : D95-8338-2
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| Tetrachloroethene | 5.00 µg/L | < 5.00 µg/L |
| Toluene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,1,1-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| Trichloroethene | 5.00 µg/L | 113 µg/L |
| Trichlorofluoromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,3,5-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| Vinyl acetate | 50.0 µg/L | < 50.0 µg/L |
| Vinyl chloride | 5.00 µg/L | < 5.00 µg/L |
| m,p-Xylene | 5.00 µg/L | < 5.00 µg/L |
| o-Xylene | 5.00 µg/L | < 5.00 µg/L |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 109 % |
| Toluene-d8 (SS) | 50.0 µg/L | 100 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 114 % |

Applicable results are reported on Dry Weight basis.

015881

# SUMMARY REPORT

CLIENT : US Army Corps of Engineers
PROJECT : Longhorn AAP

JOB NUMBER : D95-8338
REPORT DATE : 2-OCT-1995

| SAMPLE NO. | ID MARKS | MATRIX | DATE SAMPLED |
|---|---|---|---|
| 1 | HBW-1-TB S5 0193-1 | Liquid | 31-AUG-1995 |
| 2 | HBW-1 S5 0193-2 | Liquid | 31-AUG-1995 |
| 3 | HBW-2 S5 0193-4 | Liquid | 31-AUG-1995 |
| 4 | HBW-3 S5 0193-6 | Liquid | 31-AUG-1995 |

| TENTATIVELY IDENTIFIED COMPOUNDS - VOA | | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| No compounds detected above | ug/L | 10 | 10 | 10 | 10 |

Preliminary report based upon incomplete data. Applicable results are reported on dry weight basis.

015882

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

District : Tulsa
Project : Longhorn AAP
Site : Harrison Bayou
Date Received : September 01 1995
Sample Matrix : Water
Method No : 8260
QC Batch No : 950905W1

Date Reported : September 06 1995
Field ID : HBW-1-QA
Date Sampled : August 31 1995
Date Analyzed : September 05 1995
SWD Number : S50193-3
Dilution Factor : 5
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Benzene | 5 | < 5 |
| Bromobenzene | 5 | < 5 |
| Bromochloromethane | 5 | < 5 |
| Bromodichloromethane | 5 | < 5 |
| Bromoform | 5 | < 5 |
| Bromomethane | 5 | < 5 |
| n-Butylbenzene | 5 | < 5 |
| sec- Butylbenzene | 5 | < 5 |
| tert-Butylbenzene | 5 | < 5 |
| Carbon tetrachloride | 5 | < 5 |
| Chlorobenzene | 5 | < 5 |
| Chloroethane | 5 | < 5 |
| Chloroform | 5 | < 5 |
| Chloromethane | 5 | < 5 |
| 2-Chlorotoluene | 5 | < 5 |
| 4-Chlorotoluene | 5 | < 5 |
| Dibromochloromethane | 5 | < 5 |
| 1,2-Dibromo-3-chloropropane | 5 | < 5 |
| 1,2-Dibromoethane | 5 | < 5 |
| Dibromomethane | 5 | < 5 |
| 1,2-Dichlorobenzene | 5 | < 5 |
| 1,3-Dichlorobenzene | 5 | < 5 |
| 1,4-Dichlorobenzene | 5 | < 5 |
| Dichlorodifluoromethane | 5 | < 5 |
| 1,1-Dichloroethane | 5 | < 5 |
| 1,2-Dichloroethane | 5 | < 5 |
| 1,1-Dichloroethene | 5 | < 5 |
| cis-1,2-Dichloroethene | 5 | 32 |
| trans-1,2-Dichloroethene | 5 | < 5 |
| 1,2-Dichloropropane | 5 | < 5 |
| 1,3-Dichloropropane | 5 | < 5 |
| 2,2-Dichloropropane | 5 | < 5 |

015883

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

District : Tulsa
Project : Longhorn AAP
Site : Harrison Bayou
Date Received : September 01 1995
Sample Matrix : Water
Method No : 8260
QC Batch No : 950905W1

Date Reported : September 06 1995
Field ID : HBW-1-QA
Date Sampled : August 31 1995
Date Analyzed : September 05 1995
SWD Number : S50193-3
Dilution Factor : 5
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| 1,1-Dichloropropene | 5 | < 5 |
| Ethylbenzene | 5 | < 5 |
| Hexachlorobutadiene | 5 | < 5 |
| Isopropylbenzene | 5 | < 5 |
| p-Isopropyltoluene | 5 | < 5 |
| Methylene chloride | 5 | < 5 |
| Naphthalene | 5 | < 5 |
| n-Propylbenzene | 5 | < 5 |
| Styrene | 5 | < 5 |
| 1,1,1,2-Tetrachloroethane | 5 | < 5 |
| 1,1,2,2-Tetrachloroethane | 5 | < 5 |
| Tetrachloroethene | 5 | < 5 |
| Toluene | 5 | < 5 |
| 1,2,3-Trichlorobenzene | 5 | < 5 |
| 1,2,4-Trichlorobenzene | 5 | < 5 |
| 1,1,1-Trichloroethane | 5 | < 5 |
| 1,1,2-Trichloroethane | 5 | < 5 |
| Trichloroethene | 5 | 123 |
| Trichlorofluoromethane | 5 | < 5 |
| 1,2,3-Trichloropropane | 5 | < 5 |
| 1,2,4-Trimethylbenzene | 5 | < 5 |
| 1,3,5-Trimethylbenzene | 5 | < 5 |
| Vinyl chloride | 5 | < 5 |
| o-Xylene | 5 | < 5 |
| m & p-Xylene | 10 | < 10 |

| Surrogates | Concentration of Surrogate (ug/l) | % Recovered |
|---|---|---|
| Dibromofluoromethane | 10 | 94 % |
| 1,2-Dichloroethane-d4 | 10 | 106 % |
| Toluene-d8 | 10 | 92 % |
| 4-Bromofluorobenzene | 10 | 96 % |

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.
S50193-3

015884

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ Longhorn Site: _____ Location: _____

Matrix: (soil/water) WATER Lab Sample ID: S50193-3

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: 0101085.D

Level: (low/med) _____ Date Received: 9/1/95

% Moisture: not dec. 100 Date Analyzed: 9/5/95

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 5.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: __ (uL)

Number TICs found: 0 Concentration Units: (ug/L or ug/Kg) ug/L

| CAS Number | | Compound Name | RT | Est. Conc. | Q |
|---|---|---|---|---|---|
| 1. | | | | | |
| 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. | | | | | |

015885

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel: 214-238-5591
Fax: 214-238-5592

DATE RECEIVED : 1-SEP-1995

REPORT NUMBER : D95-8338-3
REPORT DATE : 8-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-2
: S5 0193-4
PROJECT : Longhorn AAP
DATE SAMPLED : 31-AUG-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : MGD
ANALYZED ON : 5-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS7-788

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/L | < 100 µg/L |
| Acrylonitrile | 5.00 µg/L | < 5.00 µg/L |
| Benzene | 5.00 µg/L | < 5.00 µg/L |
| Bromobenzene | 5.00 µg/L | < 5.00 µg/L |
| Bromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromodichloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromoform | 5.00 µg/L | < 5.00 µg/L |
| Carbon disulfide | 5.00 µg/L | < 5.00 µg/L |
| Carbon tetrachloride | 5.00 µg/L | < 5.00 µg/L |
| Chlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| Chloroethane | 5.00 µg/L | < 5.00 µg/L |
| Chloroform | 5.00 µg/L | < 5.00 µg/L |
| 2-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| 4-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| Dibromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/L | < 25.0 µg/L |

**Inchcape Testing Services**
Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238 5591
Fax. 214-238 5592

REPORT NUMBER : D95-8338-3
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,4-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,4-Dichloro-2-butene | 100 µg/L | < 100 µg/L |
| 1,1-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| cis-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 2,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| cis-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| Ethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 2-Hexanone | 50.0 µg/L | < 50.0 µg/L |
| Bromomethane | 5.00 µg/L | < 5.00 µg/L |
| Chloromethane | 5.00 µg/L | < 5.00 µg/L |
| Dibromomethane | 5.00 µg/L | < 5.00 µg/L |
| 2-Butanone | 100 µg/L | < 100 µg/L |
| Iodomethane | 5.00 µg/L | < 5.00 µg/L |
| Methylene chloride | 5.00 µg/l | < 5.00 µg/l |
| 4-Methyl-2-pentanone | 100 µg/L | < 100 µg/L |
| Styrene | 5.00 µg/L | < 5.00 µg/L |

# Inchcape Testing Services
## Environmental Laboratories

1089 [illegible]
Richardson, TX 75081
Tel. 214-238-3591
Fax. 214-238-3592


015887

REPORT NUMBER : D95-8338-3
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| Tetrachloroethene | 5.00 µg/L | < 5.00 µg/L |
| Toluene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,1,1-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| Trichloroethene | 5.00 µg/L | < 5.00 µg/L |
| Trichlorofluoromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,3,5-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| Vinyl acetate | 50.0 µg/L | < 50.0 µg/L |
| Vinyl chloride | 5.00 µg/L | < 5.00 µg/L |
| m,p-Xylene | 5.00 µg/L | < 5.00 µg/L |
| o-Xylene | 5.00 µg/L | < 5.00 µg/L |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 113 % |
| Toluene-d8 (SS) | 50.0 µg/L | 99.9 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 115 % |

Applicable results are reported on Dry Weight basis.

015888

# SUMMARY REPORT

CLIENT : US Army Corps of Engineers
PROJECT : Longhorn AAP

JOB NUMBER : D95-8338
REPORT DATE : 2-OCT-1995

| SAMPLE NO. | ID MARKS | MATRIX | DATE SAMPLED |
|---|---|---|---|
| 1 | HBW-1-TB S5 0193-1 | Liquid | 31-AUG-1995 |
| 2 | HBW-1 S5 0193-2 | Liquid | 31-AUG-1995 |
| 3 | HBW-2 S5 0193-4 | Liquid | 31-AUG-1995 |
| 4 | HBW-3 S5 0193-6 | Liquid | 31-AUG-1995 |

| TENTATIVELY IDENTIFIED COMPOUNDS - VOA | | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| No compounds detected above | ug/L | 10 | 10 | 10 | 10 |

Preliminary report based upon incomplete data. Applicable results are reported on Dry Weight basis.

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

015889

District : Tulsa
Project : Longhorn AAP
Site : Harrison Bayou
Date Received : September 01 1995
Sample Matrix : Water
Method No : 8260
QC Batch No : 950905W1

Date Reported : September 06 1995
Field ID : HBW-2-QA
Date Sampled : August 31 1995
Date Analyzed : September 05 1995
SWD Number : S50193-5
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Benzene | 1 | < 1 |
| Bromobenzene | 1 | < 1 |
| Bromochloromethane | 1 | < 1 |
| Bromodichloromethane | 1 | < 1 |
| Bromoform | 1 | < 1 |
| Bromomethane | 1 | < 1 |
| n-Butylbenzene | 1 | < 1 |
| sec- Butylbenzene | 1 | < 1 |
| tert-Butylbenzene | 1 | < 1 |
| Carbon tetrachloride | 1 | < 1 |
| Chlorobenzene | 1 | < 1 |
| Chloroethane | 1 | < 1 |
| Chloroform | 1 | < 1 |
| Chloromethane | 1 | < 1 |
| 2-Chlorotoluene | 1 | < 1 |
| 4-Chlorotoluene | 1 | < 1 |
| Dibromochloromethane | 1 | < 1 |
| 1,2-Dibromo-3-chloropropane | 1 | < 1 |
| 1,2-Dibromoethane | 1 | < 1 |
| Dibromomethane | 1 | < 1 |
| 1,2-Dichlorobenzene | 1 | < 1 |
| 1,3-Dichlorobenzene | 1 | < 1 |
| 1,4-Dichlorobenzene | 1 | < 1 |
| Dichlorodifluoromethane | 1 | < 1 |
| 1,1-Dichloroethane | 1 | < 1 |
| 1,2-Dichloroethane | 1 | < 1 |
| 1,1-Dichloroethene | 1 | < 1 |
| cis-1,2-Dichloroethene | 1 | < 1 |
| trans-1,2-Dichloroetnene | 1 | < 1 |
| 1,2-Dichloropropane | 1 | < 1 |
| 1,3-Dichloropropane | 1 | < 1 |
| 2,2-Dichloropropane | 1 | < 1 |

015890

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

District : Tulsa
Project : Longhorn AAP
Site : Harrison Bayou
Date Received : September 01 1995
Sample Matrix : Water
Method No : 8260
QC Batch No : 950905W1

Date Reported : September 06 1995
Field ID : HBW-2-QA
Date Sampled : August 31 1995
Date Analyzed : September 05 1995
SWD Number : S50193-5
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| 1,1-Dichloropropene | 1 | < 1 |
| Ethylbenzene | 1 | < 1 |
| Hexachlorobutadiene | 1 | < 1 |
| Isopropylbenzene | 1 | < 1 |
| p-Isopropyltoluene | 1 | < 1 |
| Methylene chloride | 1 | < 1 |
| Naphthalene | 1 | < 1 |
| n-Propylbenzene | 1 | < 1 |
| Styrene | 1 | < 1 |
| 1,1,1,2-Tetrachloroethane | 1 | < 1 |
| 1,1,2,2-Tetrachloroethane | 1 | < 1 |
| Tetrachloroethene | 1 | < 1 |
| Toluene | 1 | < 1 |
| 1,2,3-Trichlorobenzene | 1 | < 1 |
| 1,2,4-Trichlorobenzene | 1 | < 1 |
| 1,1,1-Trichloroethane | 1 | < 1 |
| 1,1,2-Trichloroethane | 1 | < 1 |
| Trichloroethene | 1 | < 1 |
| Trichlorofluoromethane | 1 | < 1 |
| 1,2,3-Trichloropropane | 1 | < 1 |
| 1,2,4-Trimethylbenzene | 1 | < 1 |
| 1,3,5-Trimethylbenzene | 1 | < 1 |
| Vinyl chloride | 1 | < 1 |
| o-Xylene | 1 | < 1 |
| m & p-Xylene | 2 | < 2 |

| Surrogates | Concentration of Surrogate (ug/l) | % Recovered |
|---|---|---|
| Dibromofluoromethane | 10 | 100 % |
| 1,2-Dichloroethane-d4 | 10 | 104 % |
| Toluene-d8 | 10 | 95 % |
| 4-Bromofluorobenzene | 10 | 95 % |

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.
S50193-5
015891

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ Longhorn Site: _____ Location: _____

Matrix: (soil/water) WATER Lab Sample ID: S50193-5

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: 0101084.D

Level: (low/med) _____ Date Received: 9/1/95

% Moisture: not dec. 100 Date Analyzed: 9/5/95

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: __ (uL)

Number TICs found: 0 Concentration Units: (ug/L or ug/Kg) ug/L

| CAS Number | Compound Name | RT | Est. Conc. | Q |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
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| 29. | | | | |
| 30. | | | | |

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

015892

DATE RECEIVED : 1-SEP-1995

REPORT NUMBER : D95-8338-4
REPORT DATE : 8-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-3
: S5 0193-6
PROJECT : Longhorn AAP
DATE SAMPLED : 31-AUG-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : MGD
ANALYZED ON : 5-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS7-788

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/L | < 100 µg/L |
| Acrylonitrile | 5.00 µg/L | < 5.00 µg/L |
| Benzene | 5.00 µg/L | < 5.00 µg/L |
| Bromobenzene | 5.00 µg/L | < 5.00 µg/L |
| Bromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromodichloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromoform | 5.00 µg/L | < 5.00 µg/L |
| Carbon disulfide | 5.00 µg/L | < 5.00 µg/L |
| Carbon tetrachloride | 5.00 µg/L | < 5.00 µg/L |
| Chlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| Chloroethane | 5.00 µg/L | < 5.00 µg/L |
| Chloroform | 5.00 µg/L | < 5.00 µg/L |
| 2-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| 4-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| Dibromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/L | < 25.0 µg/L |

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592


015893

REPORT NUMBER : D95-8338-4
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,4-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,4-Dichloro-2-butene | 100 µg/L | < 100 µg/L |
| 1,1-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| cis-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 2,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| cis-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| Ethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 2-Hexanone | 50.0 µg/L | < 50.0 µg/L |
| Bromomethane | 5.00 µg/L | < 5.00 µg/L |
| Chloromethane | 5.00 µg/L | < 5.00 µg/L |
| Dibromomethane | 5.00 µg/L | < 5.00 µg/L |
| 2-Butanone | 100 µg/L | < 100 µg/L |
| Iodomethane | 5.00 µg/L | < 5.00 µg/L |
| Methylene chloride | 5.00 µg/l | < 5.00 µg/l |
| 4-Methyl-2-pentanone | 100 µg/L | < 100 µg/L |
| Styrene | 5.00 µg/L | < 5.00 µg/L |

# Inchcape Testing Services
Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592


015894

REPORT NUMBER : D95-8338-4
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| Tetrachloroethene | 5.00 µg/L | < 5.00 µg/L |
| Toluene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,1,1-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| Trichloroethene | 5.00 µg/L | < 5.00 µg/L |
| Trichlorofluoromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,3,5-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| Vinyl acetate | 50.0 µg/L | < 50.0 µg/L |
| Vinyl chloride | 5.00 µg/L | < 5.00 µg/L |
| m,p-Xylene | 5.00 µg/L | < 5.00 µg/L |
| o-Xylene | 5.00 µg/L | < 5.00 µg/L |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 112 % |
| Toluene-d8 (SS) | 50.0 µg/L | 100 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 115 % |

Applicable results are reported on Dry Weight basis.

015895

# SUMMARY REPORT

CLIENT : US Army Corps of Engineers
PROJECT : Longhorn AAP

JOB NUMBER : D95-8338
REPORT DATE : 2-OCT-1995

| SAMPLE NO. | ID MARKS | MATRIX | DATE SAMPLED |
|---|---|---|---|
| 1 | HBW-1-TB S5 0193-1 | Liquid | 31-AUG-1995 |
| 2 | HBW-1 S5 0193-2 | Liquid | 31-AUG-1995 |
| 3 | HBW-2 S5 0193-4 | Liquid | 31-AUG-1995 |
| 4 | HBW-3 S5 0193-6 | Liquid | 31-AUG-1995 |

| TENTATIVELY IDENTIFIED COMPOUNDS - VOA | | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| No compounds detected above | ug/L | 10 | 10 | 10 | 10 |

Preliminary report based upon incomplete data. Applicable results are reported on Dry Weight basis.

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

015896

District : Tulsa
Project : Longhorn AAP
Site : Harrison Bayou
Date Received : September 01 1995
Sample Matrix : Water
Method No : 8260
QC Batch No : 950905W1

Date Reported : September 06 1995
Field ID : HBW-3-QA
Date Sampled : August 31 1995
Date Analyzed : September 05 1995
SWD Number : S50193-7
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Benzene | 1 | < 1 |
| Bromobenzene | 1 | < 1 |
| Bromochloromethane | 1 | < 1 |
| Bromodichloromethane | 1 | < 1 |
| Bromoform | 1 | < 1 |
| Bromomethane | 1 | < 1 |
| n-Butylbenzene | 1 | < 1 |
| sec- Butylbenzene | 1 | < 1 |
| tert-Butylbenzene | 1 | < 1 |
| Carbon tetrachloride | 1 | < 1 |
| Chlorobenzene | 1 | < 1 |
| Chloroethane | 1 | < 1 |
| Chloroform | 1 | < 1 |
| Chloromethane | 1 | < 1 |
| 2-Chlorotoluene | 1 | < 1 |
| 4-Chlorotoluene | 1 | < 1 |
| Dibromochloromethane | 1 | < 1 |
| 1,2-Dibromo-3-chloropropane | 1 | < 1 |
| 1,2-Dibromoethane | 1 | < 1 |
| Dibromomethane | 1 | < 1 |
| 1,2-Dichlorobenzene | 1 | < 1 |
| 1,3-Dichlorobenzene | 1 | < 1 |
| 1,4-Dichlorobenzene | 1 | < 1 |
| Dichlorodifluoromethane | 1 | < 1 |
| 1,1-Dichloroethane | 1 | < 1 |
| 1,2-Dichloroethane | 1 | < 1 |
| 1,1-Dichloroethene | 1 | < 1 |
| cis-1,2-Dichloroethene | 1 | < 1 |
| trans-1,2-Dichloroethene | 1 | < 1 |
| 1,2-Dichloropropane | 1 | < 1 |
| 1,3-Dichloropropane | 1 | < 1 |
| 2,2-Dichloropropane | 1 | < 1 |

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

015897

District : Tulsa
Project : Longhorn AAP
Site : Harrison Bayou
Date Received : September 01 1995
Sample Matrix : Water
Method No : 8260
QC Batch No : 950905W1

Date Reported : September 06 1995
Field ID : HBW-3-QA
Date Sampled : August 31 1995
Date Analyzed : September 05 1995
SWD Number : S50193-7
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| 1,1-Dichloropropene | 1 | < 1 |
| Ethylbenzene | 1 | < 1 |
| Hexachlorobutadiene | 1 | < 1 |
| Isopropylbenzene | 1 | < 1 |
| p-Isopropyltoluene | 1 | < 1 |
| Methylene chloride | 1 | < 1 |
| Naphthalene | 1 | < 1 |
| n-Propylbenzene | 1 | < 1 |
| Styrene | 1 | < 1 |
| 1,1,1,2-Tetrachloroethane | 1 | < 1 |
| 1,1,2,2-Tetrachloroethane | 1 | < 1 |
| Tetrachloroethene | 1 | < 1 |
| Toluene | 1 | < 1 |
| 1,2,3-Trichlorobenzene | 1 | < 1 |
| 1,2,4-Trichlorobenzene | 1 | < 1 |
| 1,1,1-Trichloroethane | 1 | < 1 |
| 1,1,2-Trichloroethane | 1 | < 1 |
| Trichloroethene | 1 | < 1 |
| Trichlorofluoromethane | 1 | < 1 |
| 1,2,3-Trichloropropane | 1 | < 1 |
| 1,2,4-Trimethylbenzene | 1 | < 1 |
| 1,3,5-Trimethylbenzene | 1 | < 1 |
| Vinyl chloride | 1 | < 1 |
| o-Xylene | 1 | < 1 |
| m & p-Xylene | 2 | < 2 |

| Surrogates | Concentration of Surrogate (ug/l) | % Recovered |
|---|---|---|
| Dibromofluoromethane | 10 | 100 % |
| 1,2-Dichloroethane-d4 | 10 | 105 % |
| Toluene-d8 | 10 | 99 % |
| 4-Bromofluorobenzene | 10 | 97 % |

1E

SAMPLE NO.

S50193-7

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ Longhorn Site: _____ Location: _____

Matrix: (soil/water) WATER Lab Sample ID: 015898 S50193-7

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: 0101083.D

Level: (low/med) _____ Date Received: 9/1/95

% Moisture: not dec. 100 Date Analyzed: 9/5/95

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: __ (uL)

Number TICs found: 0 Concentration Units: (ug/L or ug/Kg) ug/L

| CAS Number | Compound Name | RT | Est. Conc. | Q |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
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| 30. | | | | |

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-
Fax. 214-258-

015899

DATE RECEIVED : 1-SEP-1995

REPORT NUMBER : D95-8338-5
REPORT DATE : 8-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-4
: S5 0193-8
PROJECT : Longhorn AAP
DATE SAMPLED : 31-AUG-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : MGD
ANALYZED ON : 5-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS7-788

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/L | < 100 µg/L |
| Acrylonitrile | 5.00 µg/L | < 5.00 µg/L |
| Benzene | 5.00 µg/L | < 5.00 µg/L |
| Bromobenzene | 5.00 µg/L | < 5.00 µg/L |
| Bromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromodichloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromoform | 5.00 µg/L | < 5.00 µg/L |
| Carbon disulfide | 5.00 µg/L | < 5.00 µg/L |
| Carbon tetrachloride | 5.00 µg/L | < 5.00 µg/L |
| Chlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| Chloroethane | 5.00 µg/L | < 5.00 µg/L |
| Chloroform | 5.00 µg/L | < 5.00 µg/L |
| 2-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| 4-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| Dibromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/L | < 25.0 µg/L |

**Inchcape Testing Services**
Environmental Laboratories

1089 E. Collins Blvd
Richardson, TX 75081
Tel: 214-238-3591
Fax: 214-238-3592

015900

REPORT NUMBER : D95-8338-5
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,4-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,4-Dichloro-2-butene | 100 µg/L | < 100 µg/L |
| 1,1-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| cis-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 2,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| cis-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| Ethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 2-Hexanone | 50.0 µg/L | < 50.0 µg/L |
| Bromomethane | 5.00 µg/L | < 5.00 µg/L |
| Chloromethane | 5.00 µg/L | < 5.00 µg/L |
| Dibromomethane | 5.00 µg/L | < 5.00 µg/L |
| 2-Butanone | 100 µg/L | < 100 µg/L |
| Iodomethane | 5.00 µg/L | < 5.00 µg/L |
| Methylene chloride | 5.00 µg/l | < 5.00 µg/l |
| 4-Methyl-2-pentanone | 100 µg/L | < 100 µg/L |
| Styrene | 5.00 µg/L | < 5.00 µg/L |

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel: 214-238-3501
Fax: 214-238-3503


015901

REPORT NUMBER : D95-8338-5
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| Tetrachloroethene | 5.00 µg/L | < 5.00 µg/L |
| Toluene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,1,1-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| Trichloroethene | 5.00 µg/L | < 5.00 µg/L |
| Trichlorofluoromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,3,5-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| Vinyl acetate | 50.0 µg/L | < 50.0 µg/L |
| Vinyl chloride | 5.00 µg/L | < 5.00 µg/L |
| m,p-Xylene | 5.00 µg/L | < 5.00 µg/L |
| o-Xylene | 5.00 µg/L | < 5.00 µg/L |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 112 % |
| Toluene-d8 (SS) | 50.0 µg/L | 100.0 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 112 % |

Applicable results are reported on Dry Weight basis.

015902

# SUMMARY REPORT

CLIENT : US Army Corps of Engineers
PROJECT : Longhorn AAP

JOB NUMBER : D95-8338
REPORT DATE : 2-OCT-1995

| SAMPLE NO. | ID MARKS | MATRIX | DATE SAMPLED |
|---|---|---|---|
| 5 | HBW-4 S5 0193-8 | Liquid | 31-AUG-1995 |
| 10 | Method Blank (Liquid) | Liquid | 1-SEP-1995 |
| | | | |
| | | | |

| TENTATIVELY IDENTIFIED COMPOUNDS - VOA | | 5 | 10 | | |
|---|---|---|---|---|---|
| No compounds detected above | ug/L | 10 | 10 | | |

Preliminary report based upon incomplete data. Applicable results are reported on Dry Weight basis.

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

015903

**District** : Tulsa
**Project** : Longhorn AAP
**Site** : Harrison Bayou
**Date Received** : September 01 1995
**Sample Matrix** : Water
**Method No** : 8260
**QC Batch No** : 950905W1

**Date Reported** : September 06 1995
**Field ID** : HBW-4-QA
**Date Sampled** : August 31 1995
**Date Analyzed** : September 05 1995
**SWD Number** : S50193-9
**Dilution Factor** : 1
**Analyst** : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Benzene | 1 | < 1 |
| Bromobenzene | 1 | < 1 |
| Bromochloromethane | 1 | < 1 |
| Bromodichloromethane | 1 | < 1 |
| Bromoform | 1 | < 1 |
| Bromomethane | 1 | < 1 |
| n-Butylbenzene | 1 | < 1 |
| sec- Butylbenzene | 1 | < 1 |
| tert-Butylbenzene | 1 | < 1 |
| Carbon tetrachloride | 1 | < 1 |
| Chlorobenzene | 1 | < 1 |
| Chloroethane | 1 | < 1 |
| Chloroform | 1 | < 1 |
| Chloromethane | 1 | < 1 |
| 2-Chlorotoluene | 1 | < 1 |
| 4-Chlorotoluene | 1 | < 1 |
| Dibromochloromethane | 1 | < 1 |
| 1,2-Dibromo-3-chloropropane | 1 | < 1 |
| 1,2-Dibromoethane | 1 | < 1 |
| Dibromomethane | 1 | < 1 |
| 1,2-Dichlorobenzene | 1 | < 1 |
| 1,3-Dichlorobenzene | 1 | < 1 |
| 1,4-Dichlorobenzene | 1 | < 1 |
| Dichlorodifluoromethane | 1 | < 1 |
| 1,1-Dichloroethane | 1 | < 1 |
| 1,2-Dichloroethane | 1 | < 1 |
| 1,1-Dichloroethene | 1 | < 1 |
| cis-1,2-Dichloroethene | 1 | < 1 |
| trans-1,2-Dichloroethene | 1 | < 1 |
| 1,2-Dichloropropane | 1 | < 1 |
| 1,3-Dichloropropane | 1 | < 1 |
| 2,2-Dichloropropane | 1 | < 1 |

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
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015904

District : Tulsa
Project : Longhorn AAP
Site : Harrison Bayou
Date Received : September 01 1995
Sample Matrix : Water
Method No : 8260
QC Batch No : 950905W1

Date Reported : September 06 1995
Field ID : HBW-4-QA
Date Sampled : August 31 1995
Date Analyzed : September 05 1995
SWD Number : S50193-9
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| 1,1-Dichloropropene | 1 | < 1 |
| Ethylbenzene | 1 | < 1 |
| Hexachlorobutadiene | 1 | < 1 |
| Isopropylbenzene | 1 | < 1 |
| p-Isopropyltoluene | 1 | < 1 |
| Methylene chloride | 1 | < 1 |
| Naphthalene | 1 | < 1 |
| n-Propylbenzene | 1 | < 1 |
| Styrene | 1 | < 1 |
| 1,1,1,2-Tetrachloroethane | 1 | < 1 |
| 1,1,2,2-Tetrachloroethane | 1 | < 1 |
| Tetrachloroethene | 1 | < 1 |
| Toluene | 1 | < 1 |
| 1,2,3-Trichlorobenzene | 1 | < 1 |
| 1,2,4-Trichlorobenzene | 1 | < 1 |
| 1,1,1-Trichloroethane | 1 | < 1 |
| 1,1,2-Trichloroethane | 1 | < 1 |
| Trichloroethene | 1 | < 1 |
| Trichlorofluoromethane | 1 | < 1 |
| 1,2,3-Trichloropropane | 1 | < 1 |
| 1,2,4-Trimethylbenzene | 1 | < 1 |
| 1,3,5-Trimethylbenzene | 1 | < 1 |
| Vinyl chloride | 1 | < 1 |
| o-Xylene | 1 | < 1 |
| m & p-Xylene | 2 | < 2 |

| Surrogates | Concentration of Surrogate (ug/l) | % Recovered |
|---|---|---|
| Dibromofluoromethane | 10 | 99 % |
| 1,2-Dichloroethane-d4 | 10 | 108 % |
| Toluene-d8 | 10 | 100 % |
| 4-Bromofluorobenzene | 10 | 95 % |

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.
S50193-9

015905

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ Longhorn Site: _____ Location: _____

Matrix: (soil/water) WATER Lab Sample ID: S50193-9

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: 0101079.D

Level: (low/med) _____ Date Received: 9/1/95

% Moisture: not dec. 100 Date Analyzed: 9/5/95

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0 1

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: __ (uL)

Number TICs found: 0 Concentration Units: (ug/L or ug/Kg) ug/L

| CAS Number | Compound Name | RT | Est. Conc. | Q |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| 7. | | | | |
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| 24. | | | | |
| 25. | | | | |
| 26. | | | | |
| 27. | | | | |
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| 29. | | | | |
| 30. | | | | |

015906

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District : Tulsa
Project : Longhorn AAP
Date Analyzed : September 05 1995
Method No : 8260
QC Batch No : 950905W1
Date Reported : September 06 1995
QC Identifier : Method Blank
Sample Matrix : Water
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Benzene | 1 | < 1 |
| Bromobenzene | 1 | < 1 |
| Bromochloromethane | 1 | < 1 |
| Bromodichloromethane | 1 | < 1 |
| Bromoform | 1 | < 1 |
| Bromomethane | 1 | < 1 |
| n-Butylbenzene | 1 | < 1 |
| sec- Butylbenzene | 1 | < 1 |
| tert-Butylbenzene | 1 | < 1 |
| Carbon tetrachloride | 1 | < 1 |
| Chlorobenzene | 1 | < 1 |
| Chloroethane | 1 | < 1 |
| Chloroform | 1 | < 1 |
| Chloromethane | 1 | < 1 |
| 2-Chlorotoluene | 1 | < 1 |
| 4-Chlorotoluene | 1 | < 1 |
| Dibromochloromethane | 1 | < 1 |
| 1,2-Dibromo-3-chloropropane | 1 | < 1 |
| 1,2-Dibromoethane | 1 | < 1 |
| Dibromomethane | 1 | < 1 |
| 1,2-Dichlorobenzene | 1 | < 1 |
| 1,3-Dichlorobenzene | 1 | < 1 |
| 1,4-Dichlorobenzene | 1 | < 1 |
| Dichlorodifluoromethane | 1 | < 1 |
| 1,1-Dichloroethane | 1 | < 1 |
| 1,2-Dichloroethane | 1 | < 1 |
| 1,1-Dichloroethene | 1 | < 1 |
| cis-1,2-Dichloroethene | 1 | < 1 |
| trans-1,2-Dichloroethene | 1 | < 1 |
| 1,2-Dichloropropane | 1 | < 1 |
| 1,3-Dichloropropane | 1 | < 1 |

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015907

**District** : Tulsa
**Project** : Longhorn AAP
**Date Analyzed** : September 05 1995
**Method No** : 8260
**QC Batch No** : 950905W1

**Date Reported** : September 06 1995
**QC Identifier** : Method Blank
**Sample Matrix** : Water
**Dilution Factor** : 1
**Analyst** : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| 1,3-Dichloropropane | 1 | < 1 |
| 2,2-Dichloropropane | 1 | < 1 |
| 1,1-Dichloropropene | 1 | < 1 |
| Ethylbenzene | 1 | < 1 |
| Hexachlorobutadiene | 1 | < 1 |
| Isopropylbenzene | 1 | < 1 |
| p-Isopropyltoluene | 1 | < 1 |
| Methylene chloride | 1 | < 1 |
| Naphthalene | 1 | < 1 |
| n-Propylbenzene | 1 | < 1 |
| Styrene | 1 | < 1 |
| 1,1,1,2-Tetrachloroethane | 1 | < 1 |
| 1,1,2,2-Tetrachloroethane | 1 | < 1 |
| Tetrachloroethene | 1 | < 1 |
| Toluene | 1 | < 1 |
| 1,2,3-Trichlorobenzene | 1 | < 1 |
| 1,2,4-Trichlorobenzene | 1 | < 1 |
| 1,1,1-Trichloroethane | 1 | < 1 |
| 1,1,2-Trichloroethane | 1 | < 1 |
| Trichloroethene | 1 | < 1 |
| Trichlorofluoromethane | 1 | < 1 |
| 1,2,3-Trichloropropane | 1 | < 1 |
| 1,2,4-Trimethylbenzene | 1 | < 1 |
| 1,3,5-Trimethylbenzene | 1 | < 1 |
| Vinyl chloride | 1 | < 1 |
| o-Xylene | 1 | < 1 |
| m & p-Xylene | 2 | < 2 |

| Surrogates | Concentration of Surrogate (ug/l) | Amount Recovered |
|---|---|---|
| Dibromofluoromethane | 10 | 97 % |
| 1,2-Dichloroethane-d4 | 10 | 98 % |
| Toluene-d8 | 10 | 96 % |
| 4-Bromofluorobenzene | 10 | 101 % |

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

VBLK01

015906

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ Site: _____ Location: _____

Matrix: (soil/water) WATER Lab Sample ID: MB01

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: 0101077.

Level: (low/med) _____ Date Received: 9/1/95

% Moisture: not dec. 100 Date Analyzed: 9/5/95

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0 Concentration Units: (ug/L or ug/Kg) ug/L

| CAS Number | Compound Name | RT | Est. Conc. | Q |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
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| 30. | | | | |

015909

US ARMY CORPS OF ENGINEERS
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**District** : Tulsa
Sample No : S50193-9
**Date Analyzed** : September 05 1995
**Method No** : 8260
**QC Batch No** : 950905W1

**Date Reported** : September 06 1995
**QC Identifier** : Matrix Spike
**Sample Matrix** : Water
**Dilution Factor** : 1
**Analyst** : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Benzene | 1 | 18 |
| Bromobenzene | 1 | < 1 |
| Bromochloromethane | 1 | < 1 |
| Bromodichloromethane | 1 | < 1 |
| Bromoform | 1 | < 1 |
| Bromomethane | 1 | < 1 |
| n-Butylbenzene | 1 | < 1 |
| sec- Butylbenzene | 1 | < 1 |
| tert-Butylbenzene | 1 | < 1 |
| Carbon tetrachloride | 1 | < 1 |
| Chlorobenzene | 1 | 20 |
| Chloroethane | 1 | < 1 |
| Chloroform | 1 | < 1 |
| Chloromethane | 1 | < 1 |
| 2-Chlorotoluene | 1 | < 1 |
| 4-Chlorotoluene | 1 | < 1 |
| Dibromochloromethane | 1 | < 1 |
| 1,2-Dibromo-3-chloropropane | 1 | < 1 |
| 1,2-Dibromoethane | 1 | < 1 |
| Dibromomethane | 1 | < 1 |
| 1,2-Dichlorobenzene | 1 | < 1 |
| 1,3-Dichlorobenzene | 1 | < 1 |
| 1,4-Dichlorobenzene | 1 | < 1 |
| Dichlorodifluoromethane | 1 | < 1 |
| 1,1-Dichloroethane | 1 | < 1 |
| 1,2-Dichloroethane | 1 | < 1 |
| 1,1-Dichloroethene | 1 | 16 |
| cis-1,2-Dichloroethene | 1 | < 1 |
| trans-1,2-Dichloroethene | 1 | < 1 |
| 1,2-Dichloropropane | 1 | < 1 |
| 1,3-Dichloropropane | 1 | < 1 |
| 2,2-Dichloropropane | 1 | < 1 |
| 1,1-Dichloropropene | 1 | < 1 |

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015910

**District** : Tulsa
Sample No : S50193-9
**Date Analyzed** : September 05 1995
**Method No** : 8260
**QC Batch No** : 950905W1

**Date Reported** : September 06 1995
**QC Identifier** : Matrix Spike
**Sample Matrix** : Water
**Dilution Factor** : 1
**Analyst** : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Ethylbenzene | 1 | < 1 |
| Hexachlorobutadiene | 1 | < 1 |
| Isopropylbenzene | 1 | < 1 |
| p-Isopropyltoluene | 1 | < 1 |
| Methylene chloride | 1 | < 1 |
| Naphthalene | 1 | < 1 |
| n-Propylbenzene | 1 | < 1 |
| Styrene | 1 | < 1 |
| 1,1,1,2-Tetrachloroethane | 1 | < 1 |
| 1,1,2,2-Tetrachloroethane | 1 | < 1 |
| Tetrachloroethene | 1 | < 1 |
| Toluene | 1 | 19 |
| 1,2,3-Trichlorobenzene | 1 | < 1 |
| 1,2,4-Trichlorobenzene | 1 | < 1 |
| 1,1,1-Trichloroethane | 1 | < 1 |
| 1,1,2-Trichloroethane | 1 | < 1 |
| Trichloroethene | 1 | 19 |
| Trichlorofluoromethane | 1 | < 1 |
| 1,2,3-Trichloropropane | 1 | < 1 |
| 1,2,4-Trimethylbenzene | 1 | < 1 |
| 1,3,5-Trimethylbenzene | 1 | < 1 |
| Vinyl chloride | 1 | < 1 |
| o-Xylene | 1 | < 1 |
| m & p-Xylene | 2 | < 2 |

| Surrogates | Concentration of Surrogate (ug/l) | Amount Recovered |
|---|---|---|
| Dibromofluoromethane | 10 | 94 % |
| 1,2-Dichloroethane-d4 | 10 | 96 % |
| Toluene-d8 | 10 | 95 % |
| 4-Bromofluorobenzene | 10 | 96 % |

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015911

**District** : Tulsa
Sample No : S50193-9
**Date Analyzed** : September 05 1995
**Method No** : 8260
**QC Batch No** : 950905W1

**Date Reported** : September 06 1995
**QC Identifier** : Matrix Spike Dup
**Sample Matrix** : Water
**Dilution Factor** : 1
**Analyst** : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Benzene | 1 | 19 |
| Bromobenzene | 1 | < 1 |
| Bromochloromethane | 1 | < 1 |
| Bromodichloromethane | 1 | < 1 |
| Bromoform | 1 | < 1 |
| Bromomethane | 1 | < 1 |
| n-Butylbenzene | 1 | < 1 |
| sec- Butylbenzene | 1 | < 1 |
| tert-Butylbenzene | 1 | < 1 |
| Carbon tetrachloride | 1 | < 1 |
| Chlorobenzene | 1 | 20 |
| Chloroethane | 1 | < 1 |
| Chloroform | 1 | < 1 |
| Chloromethane | 1 | < 1 |
| 2-Chlorotoluene | 1 | < 1 |
| 4-Chlorotoluene | 1 | < 1 |
| Dibromochloromethane | 1 | < 1 |
| 1,2-Dibromo-3-chloropropane | 1 | < 1 |
| 1,2-Dibromoethane | 1 | < 1 |
| Dibromomethane | 1 | < 1 |
| 1,2-Dichlorobenzene | 1 | < 1 |
| 1,3-Dichlorobenzene | 1 | < 1 |
| 1,4-Dichlorobenzene | 1 | < 1 |
| Dichlorodifluoromethane | 1 | < 1 |
| 1,1-Dichloroethane | 1 | < 1 |
| 1,2-Dichloroethane | 1 | < 1 |
| 1,1-Dichloroethene | 1 | 16 |
| cis-1,2-Dichloroethene | 1 | < 1 |
| trans-1,2-Dichloroethene | 1 | < 1 |
| 1,2-Dichloropropane | 1 | < 1 |
| 1,3-Dichloropropane | 1 | < 1 |
| 2,2-Dichloropropane | 1 | < 1 |
| 1,1-Dichloropropene | 1 | < 1 |

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015912

District : Tulsa
Sample No : S50193-9
Date Analyzed : September 05 1995
Method No : 8260
QC Batch No : 950905W1

Date Reported : September 06 1995
QC Identifier : Matrix Spike Dup
Sample Matrix : Water
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Ethylbenzene | 1 | < 1 |
| Hexachlorobutadiene | 1 | < 1 |
| Isopropylbenzene | 1 | < 1 |
| p-Isopropyltoluene | 1 | < 1 |
| Methylene chloride | 1 | < 1 |
| Naphthalene | 1 | < 1 |
| n-Propylbenzene | 1 | < 1 |
| Styrene | 1 | < 1 |
| 1,1,1,2-Tetrachloroethane | 1 | < 1 |
| 1,1,2,2-Tetrachloroethane | 1 | < 1 |
| Tetrachloroethene | 1 | < 1 |
| Toluene | 1 | 19 |
| 1,2,3-Trichlorobenzene | 1 | < 1 |
| 1,2,4-Trichloropenzene | 1 | < 1 |
| 1,1,1-Trichloroethane | 1 | < 1 |
| 1,1,2-Trichloroethane | 1 | < 1 |
| Trichloroethene | 1 | 20 |
| Trichlorofluoromethane | 1 | < 1 |
| 1,2,3-Trichloropropane | 1 | < 1 |
| 1,2,4-Trimethylbenzene | 1 | < 1 |
| 1,3,5-Trimethylbenzene | 1 | < 1 |
| Vinyl chloride | 1 | < 1 |
| o-Xylene | 1 | < 1 |
| m & p-Xylene | 2 | < 2 |

| Surrogates | Concentration of Surrogate (ug/l) | Amount Recovered |
|---|---|---|
| Dibromofluoromethane | 10 | 93 % |
| 1,2-Dichloroethane-d4 | 10 | 100 % |
| Toluene-d8 | 10 | 99 % |
| 4-Bromofluorobenzene | 10 | 96 % |

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015913

District : Tulsa
QC Identifier : Sample Duplicate
SWD No : S50193-9
Method No : 8260
QC Batch No : 950905W1

Date Reported : September 06 1995
Date Analyzed : September 05 1995
Sample Matrix : Water
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Sample Result (ug/l) | Dup Result (ug/l) | RPD |
|---|---|---|---|---|
| Benzene | 1 | < 1 | < 1 | NA |
| Bromobenzene | 1 | < 1 | < 1 | NA |
| Bromochloromethane | 1 | < 1 | < 1 | NA |
| Bromodichloromethane | 1 | < 1 | < 1 | NA |
| Bromoform | 1 | < 1 | < 1 | NA |
| Bromomethane | 1 | < 1 | < 1 | NA |
| n-Butylbenzene | 1 | < 1 | < 1 | NA |
| sec- Butylbenzene | 1 | < 1 | < 1 | NA |
| tert-Butylbenzene | 1 | < 1 | < 1 | NA |
| Carbon tetrachloride | 1 | < 1 | < 1 | NA |
| Chlorobenzene | 1 | < 1 | < 1 | NA |
| Chloroethane | 1 | < 1 | < 1 | NA |
| Chloroform | 1 | < 1 | < 1 | NA |
| Chloromethane | 1 | < 1 | < 1 | NA |
| 2-Chlorotoluene | 1 | < 1 | < 1 | NA |
| 4-Chlorotoluene | 1 | < 1 | < 1 | NA |
| Dibromochloromethane | 1 | < 1 | < 1 | NA |
| 1,2-Dibromo-3-chloropropane | 1 | < 1 | < 1 | NA |
| 1,2-Dibromoethane | 1 | < 1 | < 1 | NA |
| Dibromomethane | 1 | < 1 | < 1 | NA |
| 1,2-Dichlorobenzene | 1 | < 1 | < 1 | NA |
| 1,3-Dichlorobenzene | 1 | < 1 | < 1 | NA |
| 1,4-Dichlorobenzene | 1 | < 1 | < 1 | NA |
| Dichlorodifluoromethane | 1 | < 1 | < 1 | NA |
| 1,1-Dichloroethane | 1 | < 1 | < 1 | NA |
| 1,2-Dichloroethane | 1 | < 1 | < 1 | NA |
| 1,1-Dichloroethene | 1 | < 1 | < 1 | NA |
| cis-1,2-Dichloroethene | 1 | < 1 | < 1 | NA |
| trans-1,2-Dichloroethene | 1 | < 1 | < 1 | NA |
| 1,2-Dichloropropane | 1 | < 1 | < 1 | NA |
| 1,3-Dichloropropane | 1 | < 1 | < 1 | NA |
| 2,2-Dichloropropane | 1 | < 1 | < 1 | NA |

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015914

District : Tulsa
QC Identifier : Sample Duplicate
SWD No : S50193-9
Method No : 8260
QC Batch No : 950905W1

Date Reported : September 06 1995
Date Analyzed : September 05 1995
Sample Matrix : Water
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Sample Result (ug/l) | Dup Result (ug/l) | RPD |
|---|---|---|---|---|
| 1,1-Dichloropropene | 1 | < 1 | < 1 | NA |
| Ethylbenzene | 1 | < 1 | < 1 | NA |
| Hexachlorobutadiene | 1 | < 1 | < 1 | NA |
| Isopropylbenzene | 1 | < 1 | < 1 | NA |
| p-Isopropyltoluene | 1 | < 1 | < 1 | NA |
| Methylene chloride | 1 | < 1 | < 1 | NA |
| Naphthalene | 1 | < 1 | < 1 | NA |
| n-Propylbenzene | 1 | < 1 | < 1 | NA |
| Styrene | 1 | < 1 | < 1 | NA |
| 1,1,1,2-Tetrachloroethane | 1 | < 1 | < 1 | NA |
| 1,1,2,2-Tetrachloroethane | 1 | < 1 | < 1 | NA |
| Tetrachloroethene | 1 | < 1 | < 1 | NA |
| Toluene | 1 | < 1 | < 1 | NA |
| 1,2,3-Trichlorobenzene | 1 | < 1 | < 1 | NA |
| 1,2,4-Trichlorobenzene | 1 | < 1 | < 1 | NA |
| 1,1,1-Trichloroethane | 1 | < 1 | < 1 | NA |
| 1,1,2-Trichloroethane | 1 | < 1 | < 1 | NA |
| Trichloroethene | 1 | < 1 | < 1 | NA |
| Trichlorofluoromethane | 1 | < 1 | < 1 | NA |
| 1,2,3-Trichloropropane | 1 | < 1 | < 1 | NA |
| 1,2,4-Trimethylbenzene | 1 | < 1 | < 1 | NA |
| 1,3,5-Trimethylbenzene | 1 | < 1 | < 1 | NA |
| Vinyl chloride | 1 | < 1 | < 1 | NA |
| o-Xylene | 1 | < 1 | < 1 | NA |
| m & p-Xylene | 2 | < 2 | < 2 | NA |
| **Surrogates** | **Concentration of Surrogate (ug/l)** | **% Recovered** | **% Recovered** | |
| Dibromofluoromethane | 10 | 99 % | 97 % | |
| 1,2-Dichloroethane-d4 | 10 | 108 % | 106 % | |
| Toluene-d8 | 10 | 100 % | 99 % | |
| 4-Bromofluorobenzene | 10 | 95 % | 99 % | |

*NA %RPD Cannot be calculated.

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
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**District** : Tulsa
**Date Reported** : September 06 1995
**Project** : LonghornAAP
**Date Analyzed** : September 05 1995
**Sample Matrix** : Water
**Method No** : 8260
**Dilution Factor** : 1
**QC Batch No** : 950905W1
**Analyst** : JS
**QC Identifier** : Laboratory Control sample

| Analyte | Detection Limit | % Rec | Acceptance Limit |
|---|---|---|---|
| Benzene | 1 | 100 | 80 - 120 |
| Bromobenzene | 1 | 108 | 80 - 120 |
| Bromochloromethane | 1 | 93 | 80 - 120 |
| Bromodichloromethane | 1 | 114 | 80 - 120 |
| Bromoform | 1 | 93 | 80 - 120 |
| Bromomethane | 1 | 111 | 80 - 120 |
| n-Butylbenzene | 1 | 97 | 80 - 120 |
| sec- Butylbenzene | 1 | 98 | 80 - 120 |
| tert-Butylbenzene | 1 | 101 | 80 - 120 |
| Carbon tetrachloride | 1 | 108 | 80 - 120 |
| Chlorobenzene | 1 | 99 | 80 - 120 |
| Chloroethane | 1 | 100 | 80 - 120 |
| Chloroform | 1 | 111 | 80 - 120 |
| Chloromethane | 1 | 105 | 80 - 120 |
| 2-Chlorotoluene | 1 | 115 | 80 - 120 |
| 4-Chlorotoluene | 1 | 107 | 80 - 120 |
| Dibromochloromethane | 1 | 107 | 80 - 120 |
| 1,2-Dibromo-3-chloropropane | 1 | 84 | 80 - 120 |
| 1,2-Dibromoethane | 1 | 96 | 80 - 120 |
| Dibromomethane | 1 | 92 | 80 - 120 |
| 1,2-Dichlorobenzene | 1 | 94 | 80 - 120 |
| 1,3-Dichlorobenzene | 1 | 104 | 80 - 120 |
| 1,4-Dichlorobenzene | 1 | 103 | 80 - 120 |
| Dichlorodifluoromethane | 1 | 89 | 80 - 120 |
| 1,1-Dichloroethane | 1 | 115 | 80 - 120 |
| 1,2-Dichloroethane | 1 | 105 | 80 - 120 |
| 1,1-Dichloroethene | 1 | 109 | 80 - 120 |
| cis-1,2-Dichloroethene | 1 | 99 | 80 - 120 |

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

**District** : Tulsa
**Date Reported** : September 06 1995
**Project** : LonghornAAP
**Date Analyzed** : September 05 1995
**Sample Matrix** : Water
**Method No** : 8260
**Dilution Factor** : 1
**QC Batch No** : 950905W1
**Analyst** : JS
**QC Identifier** : Laboratory Control sample

| Analyte | Detection Limit | % Rec | Acceptance Limit |
|---|---|---|---|
| trans-1,2-Dichloroethene | 1 | 107 | 80 - 120 |
| 1,2-Dichloropropane | 1 | 95 | 80 - 120 |
| 1,3-Dichloropropane | 1 | 97 | 80 - 120 |
| 2,2-Dichloropropane | 1 | 116 | 80 - 120 |
| 1,1-Dichloropropene | 1 | 105 | 80 - 120 |
| Ethylbenzene | 1 | 105 | 80 - 120 |
| Hexachlorobutadiene | 1 | 110 | 80 - 120 |
| Isopropylbenzene | 1 | 102 | 80 - 120 |
| p-Isopropyltoluene | 1 | 93 | 80 - 120 |
| Methylene chloride | 1 | 117 | 80 - 120 |
| Naphthalene | 1 | 97 | 80 - 120 |
| n-Propylbenzene | 1 | 114 | 80 - 120 |
| Styrene | 1 | 100 | 80 - 120 |
| 1,1,1,2-Tetrachloroethane | 1 | 110 | 80 - 120 |
| 1,1,2,2-Tetrachloroethane | 1 | 99 | 80 - 120 |
| Tetrachloroethene | 1 | 105 | 80 - 120 |
| Toluene | 1 | 94 | 80 - 120 |
| 1,2,3-Trichlorobenzene | 1 | 116 | 80 - 120 |
| 1,2,4-Trichlorobenzene | 1 | 114 | 80 - 120 |
| 1,1,1-Trichloroethane | 1 | 112 | 80 - 120 |
| 1,1,2-Trichloroethane | 1 | 91 | 80 - 120 |
| Trichloroethene | 1 | 100 | 80 - 120 |
| Trichlorofluoromethane | 1 | 108 | 80 - 120 |
| 1,2,3-Trichloropropane | 1 | 104 | 80 - 120 |
| 1,2,4-Trimethylbenzene | 1 | 97 | 80 - 120 |
| 1,3,5-Trimethylbenzene | 1 | 101 | 80 - 120 |
| Vinyl chloride | 1 | 88 | 80 - 120 |
| o-Xylene | 1 | 99 | 80 - 120 |

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

**District** : Tulsa
**Date Reported** : September 06 1995
**Project** : LonghornAAP
**Date Analyzed** : September 05 1995
**Sample Matrix** : Water
**Method No** : 8260
**Dilution Factor** : 1
**QC Batch No** : 950905W1
**Analyst** : JS
**QC Identifier** : Laboratory Control sample

| Analyte | Detection Limit | % Rec | Acceptance Limit |
|---|---|---|---|
| m & p-Xylene | 2 | 102 | 80 - 120 |
| **Surrogates** | **Concentration of Surrogate (ug/l)** | **Amount Recovered** | |
| Dibromofluoromethane | 10 | 102 % | |
| 1,2-Dichloroethane-d4 | 10 | 101 % | |
| Toluene-d8 | 10 | 96 % | |
| 4-Bromofluorobenzene | 10 | 94 % | |

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ Site: _____ Location: _____

015918

| | SAMPLE NO. | SMC1 # | SMC2 # | SMC3 # | SMC4 # | TOT OUT |
|---|---|---|---|---|---|---|
| 01 | VBLK01 | 97 | 98 | 98 | 101 | |
| 02 | LCS01 | 102 | 101 | 96 | 94 | |
| 03 | S50193-9 | 99 | 108 | 100 | 95 | |
| 04 | S50193-9 DUP | 97 | 106 | 99 | 99 | |
| 05 | S50193-9 MS | 94 | 96 | 95 | 96 | |
| 06 | S50193-9 MSD | 93 | 100 | 99 | 96 | |
| 07 | S50193-7 | 100 | 106 | 99 | 97 | |
| 08 | S50193-5 | 100 | 104 | 95 | 95 | |
| 09 | S50193-3 | 94 | 106 | 92 | 96 | |
| 10 | S50184-3 | 99 | 104 | 97 | 94 | |
| 11 | | | | | | |
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| 29 | | | | | | |
| 30 | | | | | | |

| | | QC LIMITS |
|---|---|---|
| SMC1 | = Dibromofluoromethane | (86-118) |
| SMC2 | = 1,2-Dichloroethane-d4 | (80-120) |
| SMC3 | = Toluene-d8 | (88-110) |
| SMC4 | = 4-Bromofluorobenzene | (86-115) |

# Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out



FORM II VOA-1

# Spike Recovery and RPD Summary Report - WATER

Method : C:\HPCHEM\1\METHODS\8260A15.M
Title : EPA METHOD 8260A 5 CAL 080495
Last Update : Tue Sep 05 18:41:58 1995
Response via : Initial Calibration

Non-Spiked Sample: 0101079.D

015919

| | Spike Sample | Spike Duplicate Sample |
|---|---|---|
| File ID : | 0101081.D | 0101082.D |
| Sample : | S50193-9 MS 8260 LONGHORN | S50193-9 MSD 8260 LONGHORN |
| Acq Time: | 5 Sep 95 3:27 pm | 5 Sep 95 4:16 pm |

| Compound | Sample Conc | Spike Added | Spike Res | Dup Res | Spike %Rec | Dup %Rec | RPD | QC Limits RPD | QC Limits % Rec |
|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 0.0 | 20 | 16 | 16 | 82 | 82 | 0 | 14 | 70-130 |
| Benzene | 0.0 | 20 | 18 | 19 | 90 | 97 | 7 | 11 | 76-127 |
| Trichloroethene | 0.0 | 20 | 19 | 20 | 97 | 101 | 4 | 14 | 71-120 |
| Toluene | 0.0 | 20 | 19 | 19 | 93 | 95 | 2 | 13 | 76-125 |
| Chlorobenzene | 0.0 | 20 | 20 | 20 | 98 | 99 | 1 | 13 | 75-130 |

8260A15.M Wed Sep 06 14:19:30 1995

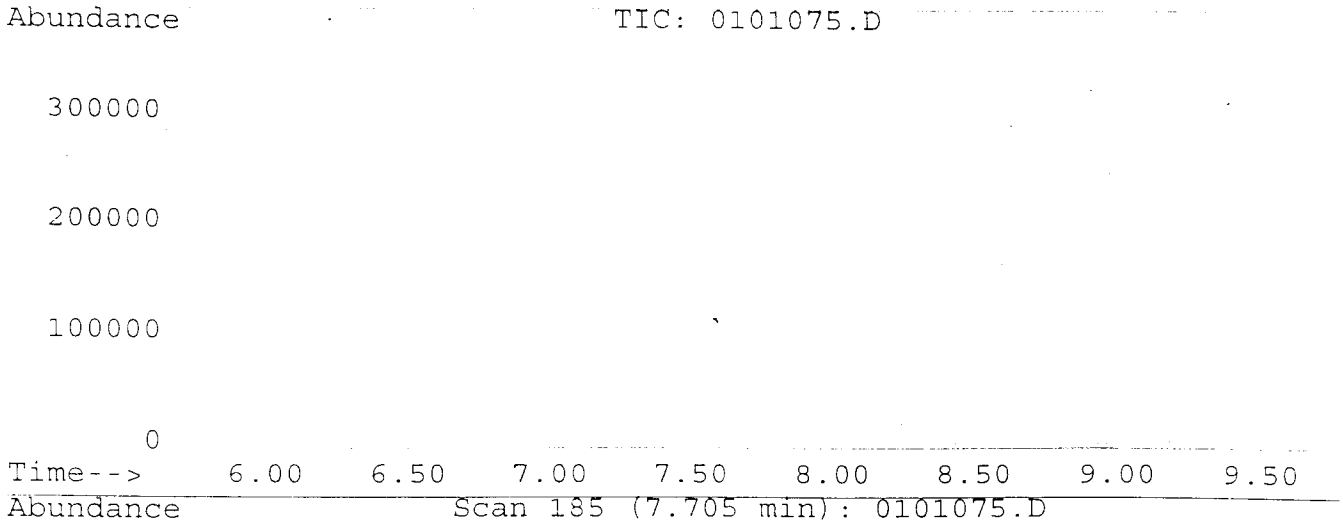
BFB

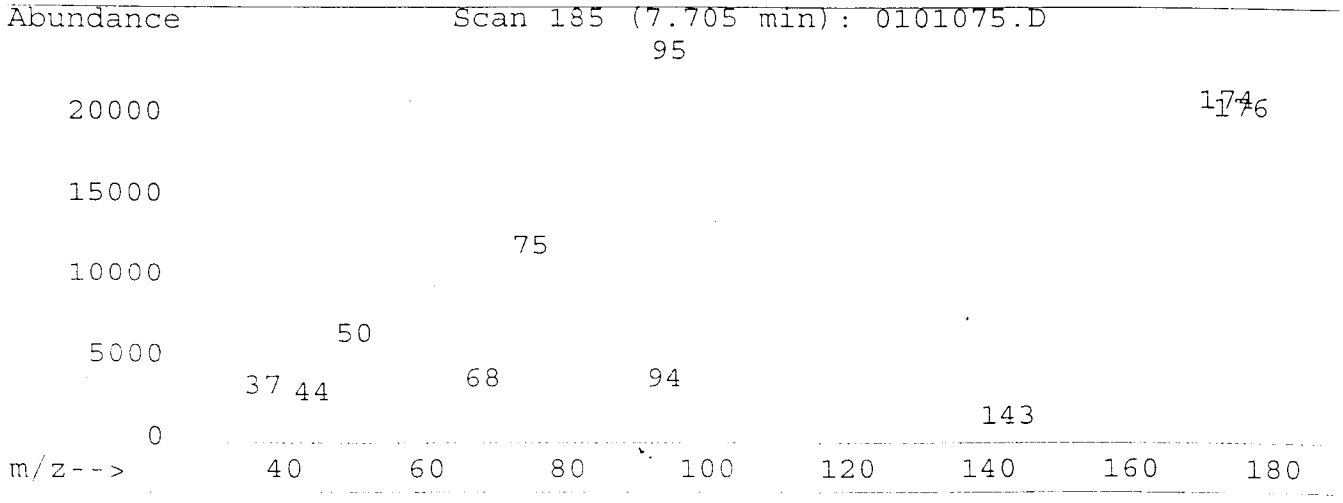
Data File : C:\HPCHEM\1\DATA\8-10-95\0101075.D
Acq On : 5 Sep 95 11:01 am
Sample : VTUN01 50 NG BFB
Misc :

Vial:
Operator: JAYASREE
Inst : 5970 - In
Multiplr: 1.00

015920

Method : C:\HPCHEM\1\METHODS\8260A15.M
Title : EPA METHOD 8260A 5 CAL 080495




Peak Apex is scan: 185

| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 50 | 95 | 15 | 40 | 22.5 | 5300 | PASS |
| 75 | 95 | 30 | 60 | 45.7 | 10785 | PASS |
| 95 | 95 | 100 | 100 | 100.0 | 23576 | PASS |
| 96 | 95 | 5 | 9 | 5.7 | 1352 | PASS |
| 173 | 174 | 0 | 2 | 1.0 | 203 | PASS |
| 174 | 95 | 50 | 100 | 83.9 | 19792 | PASS |
| 175 | 174 | 5 | 9 | 8.6 | 1694 | PASS |
| 176 | 174 | 95 | 101 | 97.6 | 19312 | PASS |
| 177 | 176 | 5 | 9 | 6.0 | 1168 | PASS |

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ Site: _____ Location: _____

Instrument ID: HP5970 Calibration Date(s): 8/4/95 8/4/95

Heated Purge: (Y/N) N Calibration Times: 1038 1358

015921

GC Column: DB-624 ID: 0.53 (mm)

Lab File ID: RRF10 = 0101078.D RRF20 = 0101079.D
RRF50 = 0101080.D RRF100 = 0101081.D RRF200 = 0101082.D

| COMPOUND | RRF10 | RRF20 | RRF50 | RRF100 | RRF200 | $\overline{RRF}$ | % RSD |
|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | 0.340 | 0.413 | 0.375 | 0.394 | 0.393 | 0.383 | 7.1 |
| Chloromethane * | 0.217 | 0.279 | 0.236 | 0.214 | 0.211 | 0.231 | 12.3 |
| Vinylchloride ** | 0.207 | 0.174 | 0.163 | 0.167 | 0.163 | 0.175 | 10.8 |
| Bromomethane | 0.043 | 0.056 | 0.054 | 0.052 | 0.063 | 0.054 | 13.7 |
| Chloroethane | 0.085 | 0.084 | 0.090 | 0.090 | 0.099 | 0.090 | 6.8 |
| Trichlorofluoromethane | 0.955 | 0.781 | 0.780 | 0.795 | 0.837 | 0.829 | 8.9 |
| 1,1-Dichloroethene ** | 0.338 | 0.368 | 0.344 | 0.327 | 0.323 | 0.340 | 5.2 |
| Acetone | 0.051 | 0.044 | 0.042 | 0.041 | 0.041 | 0.044 | 9.0 |
| Methylene chloride | 0.233 | 0.257 | 0.239 | 0.236 | 0.242 | 0.242 | 3.9 |
| trans-1,2-Dichloroethene | 0.336 | 0.332 | 0.332 | 0.344 | 0.347 | 0.338 | 2.1 |
| 1,1-Dichloroethane * | 0.698 | 0.632 | 0.673 | 0.695 | 0.739 | 0.687 | 5.7 |
| cis-1,2-Dichloroethene | 0.364 | 0.344 | 0.350 | 0.360 | 0.372 | 0.358 | 3.1 |
| 2,2-Dichloropropane | 0.101 | 0.088 | 0.079 | 0.078 | 0.080 | 0.085 | 11.2 |
| 2-Butanone | 0.045 | 0.046 | 0.046 | 0.046 | 0.048 | 0.046 | 2.3 |
| Bromochloromethane | 0.209 | 0.217 | 0.220 | 0.230 | 0.239 | 0.223 | 5.2 |
| Chloroform ** | 0.947 | 0.923 | 0.968 | 1.020 | 1.045 | 0.981 | 5.2 |
| 1,1,1-Trichloroethane | 0.279 | 0.271 | 0.268 | 0.294 | 0.315 | 0.286 | 6.8 |
| Carbon tetrachloride | 0.109 | 0.116 | 0.134 | 0.142 | 0.157 | 0.132 | 14.9 |
| 1,1-Dichloropropene | 0.652 | 0.587 | 0.595 | 0.586 | 0.592 | 0.602 | 4.7 |
| Benzene | 0.799 | 0.717 | 0.726 | 0.729 | 0.737 | 0.742 | 4.4 |
| 1,2-Dichloroethane | 0.561 | 0.594 | 0.623 | 0.640 | 0.639 | 0.611 | 5.5 |
| Trichloroethene | 0.513 | 0.504 | 0.515 | 0.501 | 0.512 | 0.509 | 1.2 |
| 1,2-Dichloropropane ** | 0.292 | 0.270 | 0.296 | 0.293 | 0.299 | 0.290 | 4.0 |
| Dibromomethane | 0.245 | 0.253 | 0.278 | 0.283 | 0.289 | 0.269 | 7.2 |
| Bromodichloromethane | 0.426 | 0.493 | 0.574 | 0.595 | 0.634 | 0.544 | 15.4 |
| 4-Methyl -2-pentanone | 0.100 | 0.112 | 0.121 | 0.115 | 0.118 | 0.100 | 7.1 |
| Toluene ** | 0.568 | 0.500 | 0.506 | 0.490 | 0.498 | 0.512 | 6.2 |
| 1,1,2-Trichloroethane | 0.170 | 0.167 | 0.181 | 0.178 | 0.184 | 0.176 | 4.1 |
| 1,3-Dichloropropane | 0.474 | 0.469 | 0.488 | 0.506 | 0.525 | 0.493 | 4.7 |
| Tetrachloroethene | 0.802 | 0.770 | 0.763 | 0.756 | 0.761 | 0.770 | 2.4 |
| Dibromochloromethane | 0.404 | 0.498 | 0.564 | 0.580 | 0.582 | 0.526 | 14.5 |
| 2-Hexanone | 0.093 | 0.102 | 0.110 | 0.109 | 0.121 | 0.107 | 9.5 |
| 1,2-Dibromoethane | 0.371 | 0.422 | 0.440 | 0.475 | 0.476 | 0.437 | 10.0 |
| Chlorobenzene * | 1.027 | 0.988 | 0.993 | 1.002 | 1.010 | 1.004 | 1.6 |
| 1,1,1,2-Tetrachloroethane | 0.312 | 0.344 | 0.381 | 0.391 | 0.395 | 0.364 | 9.8 |
| Ethyl benzene ** | 1.716 | 1.720 | 1.729 | 1.718 | 1.696 | 1.716 | 0.7 |

* Compounds requires minimum RRF of 0.1, >0.1 for bromoform,0.3 for chlorobenzene and 1,1,2,2-Tetrachloroethane. ** Compounds allows maximum %RSD of 30%.

VOLATILE ORGANICS INITIAL CALIBRATION DATA 015922

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ Site: _____ Location: _____

Instrument ID: HP5970 Calibration Date(s): 8/4/95 8/4/95

Heated Purge: (Y/N) N Calibration Times: 1038 1358

GC Column: DB-624 ID: 0.53 (mm)

Lab File ID: RRF10 = 0101078.D RRF20 = 0101079.D
RRF50 = 0101080.D RRF100 = 0101081.D RRF200 = 0101082.D

| COMPOUND | RRF10 | RRF20 | RRF50 | RRF100 | RRF200 | $\overline{RRF}$ | % RSD |
|---|---|---|---|---|---|---|---|
| M&P Xylene | 0.559 | 0.529 | 0.529 | 0.519 | 0.507 | 0.529 | 3.6 |
| o- Xylene | 0.475 | 0.483 | 0.480 | 0.444 | 0.431 | 0.463 | 5.1 |
| Styrene | 0.684 | 0.758 | 0.761 | 0.728 | 0.718 | 0.730 | 4.3 |
| Bromoform * | 0.241 | 0.251 | 0.293 | 0.298 | 0.310 | 0.279 | 11.0 |
| Isopropyl benzene | 1.672 | 1.535 | 1.482 | 1.317 | 1.231 | 1.447 | 12.1 |
| 1,1,2,2-Tetrachloroethane * | 0.582 | 0.640 | 0.770 | 0.800 | 0.748 | 0.708 | 13.1 |
| Bromobenzene | 1.283 | 1.369 | 1.633 | 1.724 | 1.562 | 1.514 | 12.1 |
| 1,2,3-Trichloropropane | 0.606 | 0.537 | 0.652 | 0.652 | 0.635 | 0.617 | 7.8 |
| n-Propyl benzene | 4.549 | 4.330 | 5.037 | 5.105 | 4.623 | 4.729 | 7.0 |
| 2-Chloro toluene | 3.563 | 3.253 | 3.677 | 3.791 | 3.405 | 3.538 | 6.0 |
| 1,3,5-Trimethyl benzene | 3.192 | 2.923 | 3.071 | 2.840 | 2.513 | 2.908 | 8.9 |
| 4-Chloro toluene | 3.677 | 3.696 | 4.151 | 4.198 | 3.769 | 3.898 | 6.5 |
| t-Butyl benzene | 2.638 | 2.552 | 2.639 | 2.306 | 2.060 | 2.439 | 10.3 |
| 1,2,4-Trimethyl benzene | 3.043 | 2.594 | 2.765 | 2.578 | 2.360 | 2.668 | 9.5 |
| sec-Butyl benzene | 3.550 | 3.101 | 3.184 | 2.911 | 2.661 | 3.081 | 10.7 |
| 1,3-Dichlorobenzene | 1.540 | 1.636 | 1.712 | 1.671 | 1.600 | 1.632 | 4.1 |
| p-Isopropyl toluene | 2.493 | 2.159 | 2.223 | 2.132 | 2.069 | 2.215 | 7.4 |
| 1,4-Dichlorobenzene | 1.838 | 1.560 | 1.633 | 1.621 | 1.551 | 1.640 | 7.1 |
| n-Butyl benzene | 2.065 | 1.840 | 1.945 | 2.139 | 2.156 | 2.029 | 6.6 |
| 1,2-Dichlorobenzene | 1.137 | 1.116 | 1.153 | 1.221 | 1.221 | 1.169 | 4.2 |
| 1,2-Dibromo-3-chloro-propane | 0.115 | 0.099 | 0.100 | .0.116 | 0.124 | 0.111 | 9.7 |
| 1,2,4-Trichloro benzene | 0.751 | 0.812 | 1.001 | 1.043 | 1.056 | 0.932 | 15.1 |
| Hexachlorobutadiene | 0.989 | 1.022 | 1.193 | 1.306 | 1.400 | 1.182 | 15.0 |
| Naphthalene | 0.643 | 0.566 | 0.687 | 0.809 | 0.781 | 0.697 | 14.3 |
| 1,2,3-Trichloro benzene | 0.615 | 0.682 | 0.782 | 0.842 | 0.882 | 0.761 | 14.6 |
| | | | | | | | |
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| | | | | | | | |
| Dibromofluoromethane | 0.760 | 0.797 | 0.817 | 0.852 | 0.878 | 0.821 | 5.6 |
| 1,2-Dichloroethane-d4 | 0.505 | 0.579 | 0.554 | 0.564 | 0.572 | 0.555 | 5.3 |
| Toluene-d8 | 0.920 | 0.960 | 0.955 | 0.941 | 0.921 | 0.940 | 2.0 |
| 4-Bromofluorobenzene | 1.072 | 1.084 | 1.061 | 1.124 | 1.160 | 1.100 | 3.7 |

* Compounds requires minimum RRF of 0.1, >0.1 for bromoform, 0.3 for chlorobenzene and 1,1,2,2-Tetrachloroethane. ** Compounds allows maximum %RSD of 30%.

7A

VOLATILE CONTINUING CALIBRATION CHECK 015923

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ Site: _____ Location: _____

Instrument ID: HP5970 Calibration Date: 9/5/95 Time: 1114

Lab File ID: 0101076.D Init. Calib. Date(s): 8/4/95 8/4/95

Heated Purge: (Y/N) N Init. Calib. Times: 1038 1358

GC Column: DB-624 ID: 0.53 (mm)

| COMPOUND | | $\overline{RRF}$ | RRF50 | MIN RRF | %D | MAX %D |
|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 0.383 | 0.357 | 0.100 | 6.8 | 20.0 |
| Chloromethane | * | 0.231 | 0.226 | 0.100 | 2.2 | 20.0 |
| Vinylchloride | ** | 0.175 | 0.149 | 0.100 | 14.9 | 20.0 |
| Bromomethane | | 0.054 | 0.062 | 0.100 | -14.8 | 20.0 |
| Chloroethane | | 0.090 | 0.081 | 0.100 | 10.0 | 20.0 |
| Trichlorofluoromethane | | 0.829 | 0.987 | 0.100 | -19.1 | 20.0 |
| 1,1-Dichloroethene | ** | 0.340 | 0.381 | 0.100 | -12.1 | 20.0 |
| Acetone | | 0.044 | 0.048 | 0.100 | -9.1 | 20.0 |
| Methylene chloride | | 0.242 | 0.274 | 0.100 | -13.2 | 20.0 |
| trans-1,2-Dichloroethene | | 0.338 | 0.369 | 0.100 | -9.2 | 20.0 |
| 1,1-Dichloroethane | * | 0.687 | 0.655 | 0.100 | 4.7 | 20.0 |
| 2,2-Dichloropropane | | 0.085 | 0.084 | 0.100 | 1.2 | 20.0 |
| Cis-1,2-Dichloroethene | | 0.358 | 0.357 | 0.100 | 0.3 | 20.0 |
| 2-Butanone | | 0.046 | 0.041 | 0.010 | 10.9 | 20.0 |
| Bromochloromethane | | 0.223 | 0.217 | 0.100 | 2.7 | 20.0 |
| Chloroform | ** | 0.981 | 1.105 | 0.100 | -12.6 | 20.0 |
| Pentafluorobenzene | | 1.470 | 1.498 | 0.100 | -1.9 | 20.0 |
| 1,1,1-Trichloroethane | | 0.286 | 0.335 | 0.100 | -17.1 | 20.0 |
| Carbon tetrachloride | | 0.131 | 0.152 | 0.100 | -16.0 | 20.0 |
| 1,1-Dichloropropene | | 0.602 | 0.627 | 0.100 | -4.2 | 20.0 |
| Benzene | | 0.742 | 0.737 | 0.100 | 0.7 | 20.0 |
| 1,2-Dichloroethane | | 0.611 | 0.600 | 0.100 | 1.8 | 20.0 |
| Trichloroethene | | 0.509 | 0.534 | 0.100 | -4.9 | 20.0 |
| 1,2-Dichloropropane | ** | 0.290 | 0.265 | 0.100 | 8.6 | 20.0 |
| Dibromomethane | | 0.270 | 0.250 | 0.100 | 7.4 | 20.0 |
| Bromodichloromethane | | 0.544 | 0.642 | 0.100 | -18.0 | 20.0 |
| cis-1,3-Dichloropropene | | 0.345 | 0.372 | 0.100 | -7.8 | 20.0 |
| 4-Methyl-2-pentanone | | 0.113 | 0.098 | 0.010 | 13.3 | 20.0 |
| Toluene | ** | 0.512 | 0.517 | 0.100 | -1.0 | 20.0 |
| trans-1,3-Dichloropropene | | 0.295 | 0.303 | 0.100 | -2.7 | 20.0 |
| 1,1,2-Trichloroethane | | 0.176 | 0.163 | 0.100 | 7.4 | 20.0 |
| 1,3-Dichloropropane | | 0.493 | 0.464 | 0.100 | 5.9 | 20.0 |
| Tetrachloroethene | | 0.770 | 0.869 | 0.100 | -12.9 | 20.0 |
| 2-Hexanone | | 0.107 | 0.094 | 0.010 | 12.1 | 20.0 |
| Dibromochloromethane | | 0.526 | 0.630 | 0.100 | -19.8 | 20.0 |
| 1,2-Dibromoethane | | 0.437 | 0.433 | 0.100 | 0.9 | 20.0 |

* Compounds requires minimum RF of 0.1 , >0.1 for bromoform,0.3 for chlorobenzene & 1,1,2,2-Tetrachloroethane. ** Compounds allows maximum deviation of 20%.

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ Site: _____ Location: _____

015924

Instrument ID: HP5970 Calibration Date: 9/5/95 Time: 1114

Lab File ID: 0101076.D Init. Calib. Date(s): 8/4/95 8/4/95

Heated Purge: (Y/N) N Init. Calib. Times: 1038 1358

GC Column: DB-624 ID: 0.53 (mm)

| COMPOUND | RRF | RRF50 | MIN RRF | %D | MAX %D |
|---|---|---|---|---|---|
| Chlorobenzene * | 1.004 | 1.068 | 0.300 | -6.4 | 20.0 |
| 1,1,1,2-Tetrachloroethane | 0.364 | 0.384 | 0.100 | -5.5 | 20.0 |
| Ethyl benzene ** | 1.716 | 1.852 | 0.100 | -7.9 | 20.0 |
| M&P Xylene | 0.529 | 0.560 | 0.100 | -5.9 | 20.0 |
| o- Xylene | 0.463 | 0.497 | 0.100 | -7.3 | 20.0 |
| Styrene | 0.730 | 0.791 | 0.100 | -8.4 | 20.0 |
| Bromoform * | 0.279 | 0.306 | 0.110 | -9.7 | 20.0 |
| Isopropyl benzene | 1.447 | 1.595 | 0.100 | -10.2 | 20.0 |
| 1,1,2,2-Tetrachloroethan * | 0.708 | 0.662 | 0.300 | 6.5 | 20.0 |
| Bromobenzene | 1.514 | 1.703 | 0.100 | -12.5 | 20.0 |
| 1,2,3-Trichloropropane | 0.617 | 0.586 | 0.100 | 5.0 | 20.0 |
| n-Propyl benzene | 4.729 | 5.396 | 0.100 | -14.1 | 20.0 |
| 2-Chloro toluene | 3.538 | 3.902 | 0.100 | -10.3 | 20.0 |
| 1,3,5-Trimethyl benzene | 2.908 | 3.183 | 0.100 | -9.5 | 20.0 |
| 4-Chloro toluene | 3.898 | 4.335 | 0.100 | -11.2 | 20.0 |
| t-Butyl benzene | 2.439 | 2.492 | 0.100 | -2.2 | 20.0 |
| 1,2,4-Trimethyl benzene | 2.668 | 2.854 | 0.100 | -7.0 | 20.0 |
| sec-Butyl benzene | 3.081 | 3.299 | 0.100 | -7.1 | 20.0 |
| 1,3-Dichlorobenzene | 1.632 | 1.737 | 0.100 | -6.4 | 20.0 |
| p-Isopropyl toluene | 2.215 | 2.289 | 0.100 | -3.3 | 20.0 |
| 1,4-Dichlorobenzene | 1.640 | 1.684 | 0.100 | -2.7 | 20.0 |
| n-Butyl benzene | 2.029 | 1.990 | 0.100 | 1.9 | 20.0 |
| 1,2-Dichlorobenzene | 1.169 | 1.117 | 0.100 | 4.4 | 20.0 |
| 1,2-Dibromo-3-chloro-propane | 0.111 | 0.093 | 0.100 | 16.2 | 20.0 |
| 1,2,4-Trichloro benzene | 0.932 | 1.026 | 0.100 | -10.1 | 20.0 |
| Hexachlorobutadiene | 1.182 | 1.354 | 0.100 | -14.6 | 20.0 |
| Naphthalene | 0.697 | 0.633 | 0.100 | 9.2 | 20.0 |
| 1,2,3-Trichloro benzene | 0.761 | 0.825 | 0.100 | -8.4 | 20.0 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Dibromofluoromethane | 0.820 | 0.845 | 0.100 | -3.0 | 20.0 |
| 1,2-Dichloroethane-d4 | 0.555 | 0.554 | 0.100 | 0.2 | |
| Toluene-d8 | 0.940 | 0.930 | 0.100 | 1.1 | 20.0 |
| 4-Bromofluorobenzene | 1.100 | 1.054 | 0.100 | 4.2 | 20.0 |

* Compounds requires minimum RF of 0.1 , >0.1 for bromoform,0.3 for chlorobenzene & 1,1,2,2-Tetrachloroethane. ** Compounds allows maximum deviation of 20%.

8A

# VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

015925

Project No.: _____ Site: _____ Location: _____

Lab File ID (Standard): 0101076.D Date Analyzed: 9/5/95

Instrument ID: HP5970 Time Analyzed: 1114

GC Column: DB-624 ID: 0.53 (mm) Heated Purg (Y/N) N

| | | IS1 AREA # | RT # | IS2 AREA # | RT # | IS3 AREA # | RT # |
|---|---|---|---|---|---|---|---|
| | 12 HOUR STD | 180309 | 14.55 | 210211 | 14.90 | 125706 | 22.68 |
| | UPPER LIMIT | 360618 | 15.05 | 420422 | 15.40 | 251412 | 23.18 |
| | LOWER LIMIT | 90155 | 14.05 | 105106 | 14.40 | 62853 | 22.18 |
| | SAMPLE NO. | | | | | | |
| 01 | VBLK01 | 144842 | 14.60 | 173271 | 14.92 | 111893 | 22.70 |
| 02 | LCS01 | 170227 | 14.67 | 198387 | 14.99 | 126994 | 22.71 |
| 03 | S50193-9 | 163414 | 14.57 | 196710 | 14.91 | 129066 | 22.70 |
| 04 | S50193-9 DUP | 136472 | 14.57 | 158553 | 14.92 | 100903 | 22.68 |
| 05 | S50193-9 MS | 144500 | 14.60 | 171012 | 14.92 | 111321 | 22.70 |
| 06 | S50193-9 MSD | 155320 | 14.57 | 180724 | 14.91 | 119813 | 22.69 |
| 07 | S50193-7 | 124787 | 14.58 | 144952 | 14.92 | 94442 | 22.69 |
| 08 | S50193-5 | 118839 | 14.60 | 142929 | 14.93 | 93526 | 22.69 |
| 09 | S50193-3 | 134744 | 14.67 | 156512 | 14.99 | 97440 | 22.71 |
| 10 | S50184-3 | 125940 | 14.58 | 150230 | 14.92 | 97753 | 22.69 |
| 11 | | | | | | | |
| 12 | | | | | | | |
| 13 | | | | | | | |
| 14 | | | | | | | |
| 15 | | | | | | | |
| 16 | | | | | | | |
| 17 | | | | | | | |
| 18 | | | | | | | |
| 19 | | | | | | | |
| 20 | | | | | | | |
| 21 | | | | | | | |
| 22 | | | | | | | |

IS1 = Fluorobenzene
IS2 = 1,4-Difluorobenzene
IS3 = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ Site: _____ Location: _____

Lab File ID (Standard): 0101076.D Date Analyzed: 9/5/95

Instrument ID: HP5970 Time Analyzed: 1114

GC Column: DB-624 ID: 0.53 (mm) Heated Purg (Y/N) N

| | | IS4 AREA # | RT # | AREA # | RT # | AREA # | RT # |
|---|---|---|---|---|---|---|---|
| | 12 HOUR STD | 42104 | 29.23 | | | | |
| | UPPER LIMIT | 84208 | 29.73 | | | | |
| | LOWER LIMIT | 21052 | 28.73 | | | | |
| | SAMPLE NO. | | | | | | |
| 01 | VBLK01 | 48378 | 29.24 | | | | |
| 02 | LCS01 | 38711 | 29.25 | | | | |
| 03 | S50193-9 | 49361 | 29.24 | | | | |
| 04 | S50193-9 DUP | 37362 | 29.24 | | | | |
| 05 | S50193-9 MS | 43666 | 29.23 | | | | |
| 06 | S50193-9 MSD | 47278 | 29.23 | | | | |
| 07 | S50193-7 | 36904 | 29.25 | | | | |
| 08 | S50193-5 | 32771 | 29.25 | | | | |
| 09 | S50193-3 | 38164 | 29.24 | | | | |
| 10 | S50184-3 | 38125 | 29.25 | | | | |
| 11 | | | | | | | |
| 12 | | | | | | | |
| 13 | | | | | | | |
| 14 | | | | | | | |
| 15 | | | | | | | |
| 16 | | | | | | | |
| 17 | | | | | | | |
| 18 | | | | | | | |
| 19 | | | | | | | |
| 20 | | | | | | | |
| 21 | | | | | | | |
| 22 | | | | | | | |

IS4 = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel: 214-238-5591
Fax: 214-238-5592


DATE RECEIVED : 1-SEP-1995

REPORT NUMBER : D95-8338-6
REPORT DATE : 8-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-1
: S5 0193-10
PROJECT : Longhorn AAP
DATE SAMPLED : 31-AUG-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : SAP
ANALYZED ON : 7-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS2-515

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/Kg | < 100 µg/Kg |
| Acrylonitrile | 5.00 µg/Kg | < 5.00 µg/Kg |
| Benzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromodichloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromoform | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon disulfide | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon tetrachloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroform | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/Kg | < 25.0 µg/Kg |

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-[illegible]
Fax. 214-238-3592


015928

REPORT NUMBER : D95-8338-6
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,4-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,4-Dichloro-2-butene | 100 µg/Kg | < 100 µg/Kg |
| 1,1-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Ethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Hexanone | 50.0 µg/Kg | < 50.0 µg/Kg |
| Bromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Butanone | 100 µg/Kg | < 100 µg/Kg |
| Iodomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Methylene chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Methyl-2-pentanone | 100 µg/Kg | < 100 µg/Kg |
| Styrene | 5.00 µg/Kg | < 5.00 µg/Kg |

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592


015929

REPORT NUMBER : D95-8338-6
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Tetrachloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Toluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,3-Trichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,4-Trichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,1-Trichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,2-Trichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Trichloroethene | 5.00 µg/Kg | 182 µg/Kg |
| Trichlorofluoromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,3-Trichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3,5-Trimethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,4-Trimethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Vinyl acetate | 50.0 µg/Kg | < 50.0 µg/Kg |
| Vinyl chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| m,p-Xylene | 5.00 µg/Kg | < 5.00 µg/Kg |
| o-Xylene | 5.00 µg/Kg | < 5.00 µg/Kg |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 91.2 % |
| Toluene-d8 (SS) | 50.0 µg/L | 101 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 104 % |

Applicable results are reported on Dry Weight basis.

015930

# Inchcape Testing Services
## Environmental Laboratories

1059 E. Collins Blvd.
Richardson, TX 75081
Tel: 214 238 5500
Fax: 214 238 5501

DATE RECEIVED : 1-SEP-1995

REPORT NUMBER : D95-8338-6
REPORT DATE : 8-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-1
: S5 0193-10
PROJECT : Longhorn AAP
DATE SAMPLED : 31-AUG-1995

| MISCELLANEOUS ANALYSES | | | |
|---|---|---|---|
| TEST REQUESTED | | DETECTION LIMIT | RESULTS |
| Total Solids | /1 | 0.01 % | 68.3 % |
| Analyzed using ASTM D2216 mod. on 5-SEP-1995 by RRP<br>QC Batch No : 536026Z | | | |

Applicable results are reported on Dry Weight basis.

# SUMMARY REPORT

CLIENT : US Army Corps of Engineers
PROJECT : Longhorn AAP

JOB NUMBER : D95-8338
REPORT DATE : 2-OCT-1995

| SAMPLE NO. | ID MARKS | MATRIX | DATE SAMPLED |
|---|---|---|---|
| 6 | HBS-1 S5 0193-10 | Soil | 31-AUG-1995 |
| 7 | HBS-2 S5 0193-12 | Soil | 31-AUG-1995 |
| 8 | HBS-3 S5 0193-14 | Soil | 31-AUG-1995 |
| 9 | HBS-4 S5 0193-16 | Soil | 31-AUG-1995 |

| TENTATIVELY IDENTIFIED COMPOUNDS - VOA | | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| No compounds detected above | ug/Kg | 15 | 17 | 15 | 37 |

Preliminary report based upon incomplete data. Applicable results are reported on Dry Weight basis.

# ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

Project Name :Longhorn AAP

Field Sample Number :HBS-1-QA Matrix :SOIL
SWD Sample Number :S5 0193-11

Date Sample Collected :08/31/95
Date Sample Received :09/05/95

Contract Laboratory Sample Number :9509-042-01

**Dilution Factor:1**

| TEST | RESULT | | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | | | 8260A |
| | | | | | | 09/05/95 | LS | |
| Benzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromochloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromodichloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromoform | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| n-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| sec-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| ert-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Carbon Tetrachloride | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chlorodibromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloroform | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| o-Chlorotoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Chlorotoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dibromo-3-Chloropropane | < | 5.00 | ug/Kg | 5.00 | | | | |
| Dibromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| o-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| m-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Dichlorodifluormethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| cis-1,2-Dichloroethylene | | 23.2 | ug/Kg | 1.00 | | | | |
| trans-1,2-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Dichloromethane | < | 20.0 | ug/Kg | 20.0 | | | | |
| 1,2-Dichloropropane | < | 5.00 | ug/Kg | 5.00 | | | | |
| 1,3-Dichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 2,2-Dichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloropropene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,3-Dichloropropene | < | 5.00 | ug/Kg | 5.00 | | | | |
| Ethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Ethylene dibromide | < | 1.00 | ug/Kg | 1.00 | | | | |
| Fluorotrichloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Hexachlorobutadiene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Isopropylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| -Isopropyltoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Naphthalene | < | 1.00 | ug/Kg | 1.00 | | | | |
| n-Propylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |

ND - Not Detected

LABORATORY MANAGER

# ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

Project Name :Longhorn AAP

Field Sample Number :HBS-1-QA
SWD Sample Number :S5 0193-11

Matrix :SOIL

Date Sample Collected :08/31/95
Date Sample Received :09/05/95

Contract Laboratory Sample Number :9509-042-01

**Dilution Factor:1**

| TEST | RESULT | | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | | | 8260A |
| Styrene | < | 1.00 | ug/Kg | 1.00 | | 09/05/95 | LS | |
| 1,1,1,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,2,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Tetrachloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Toluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,1-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,2-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Trichloroethylene | | 102 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,3,5-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Vinyl Chloride | < | 1.00 | ug/Kg | 1.00 | | | | |
| Xylenes (total) | < | 1.00 | ug/Kg | 1.00 | | | | |

| Surrogate Standard | % Recovery | QC Limits | |
|---|---|---|---|
| S1 - Dibromofluoromethane | 110 | 70 | 121 |
| S2 - Toluene-d8 | 101 | 81 | 117 |
| S3 - 4-Bromofluorobenzene | 113 | 74 | 121 |

ND - Not Detected

LABORATORY MANAGER

015934

# Inchcape Testing Services
## Environmental Laboratories

1089 [illegible] Blvd.
Richardson, TX 75081
Tel: 214-278-5591
Fax: 214-278-5592

DATE RECEIVED : 1-SEP-1995

REPORT NUMBER : D95-8338-7
REPORT DATE : 8-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-2
: S5 0193-12
PROJECT : Longhorn AAP
DATE SAMPLED : 31-AUG-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : SAP
ANALYZED ON : 7-SEP-1995
DILUTION FACTOR : 1
QC BATCH NO : ITS2-515

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/Kg | < 100 µg/Kg |
| Acrylonitrile | 5.00 µg/Kg | < 5.00 µg/Kg |
| Benzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromodichloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromoform | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon disulfide | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon tetrachloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroform | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/Kg | < 25.0 µg/Kg |

015935


# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd
Richardson, TX 75081
Tel: 214 238 5591
Fax: 214 238 5592


REPORT NUMBER : D95-8338-7
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,4-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,4-Dichloro-2-butene | 100 µg/Kg | < 100 µg/Kg |
| 1,1-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Ethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Hexanone | 50.0 µg/Kg | < 50.0 µg/Kg |
| Bromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Butanone | 100 µg/Kg | < 100 µg/Kg |
| Iodomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Methylene chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Methyl-2-pentanone | 100 µg/Kg | < 100 µg/Kg |
| Styrene | 5.00 µg/Kg | < 5.00 µg/Kg |

**Inchcape Testing Services**
Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel: 214-238-5591
Fax: 214-238-5592

REPORT NUMBER : D95-8338-7
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Tetrachloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Toluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,3-Trichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,4-Trichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,1-Trichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,2-Trichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Trichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Trichlorofluoromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,3-Trichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3,5-Trimethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,4-Trimethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Vinyl acetate | 50.0 µg/Kg | < 50.0 µg/Kg |
| Vinyl chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| m,p-Xylene | 5.00 µg/Kg | < 5.00 µg/Kg |
| o-Xylene | 5.00 µg/Kg | < 5.00 µg/Kg |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 81.8 % |
| Toluene-d8 (SS) | 50.0 µg/L | 94.9 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 91.1 % |

Applicable results are reported on Dry Weight basis.

015937

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel: 214-238-5591
Fax: 214-238-5592

DATE RECEIVED : 1-SEP-1995

REPORT NUMBER : D95-8338-7
REPORT DATE : 8-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-2
: S5 0193-12
PROJECT : Longhorn AAP
DATE SAMPLED : 31-AUG-1995

| MISCELLANEOUS ANALYSES | | | |
|---|---|---|---|
| TEST REQUESTED | | DETECTION LIMIT | RESULTS |
| Total Solids | /1 | 0.01 % | 58.3 % |
| Analyzed using ASTM D2216 mod. on 5-SEP-1995 by RRP<br>QC Batch No : 536026Z | | | |

Applicable results are reported on Dry Weight basis.

015938

# SUMMARY REPORT

CLIENT : US Army Corps of Engineers
PROJECT : Longhorn AAP

JOB NUMBER : D95-8338
REPORT DATE : 2-OCT-1995

| SAMPLE NO. | ID MARKS | MATRIX | DATE SAMPLED |
|---|---|---|---|
| 6 | HBS-1 S5 0193-10 | Soil | 31-AUG-1995 |
| 7 | HBS-2 S5 0193-12 | Soil | 31-AUG-1995 |
| 8 | HBS-3 S5 0193-14 | Soil | 31-AUG-1995 |
| 9 | HBS-4 S5 0193-16 | Soil | 31-AUG-1995 |

| TENTATIVELY IDENTIFIED COMPOUNDS - VOA | | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| No compounds detected above | ug/Kg | 15 | 17 | 15 | 37 |

Preliminary report based upon incomplete data. Applicable results are reported on Dry Weight basis.

# ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

Project Name :Longhorn AAP

Field Sample Number :HBS-2-QA
SWD Sample Number :S5 0193-13

Matrix :SOIL

Date Sample Collected :08/31/95
Date Sample Received :09/05/95

Contract Laboratory Sample Number :9509-042-02

**Dilution Factor:1**

| TEST | RESULT | | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | | | 8260A |
| Benzene | < | 1.00 | ug/Kg | 1.00 | | 09/05/95 | LS | |
| Bromobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromochloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromodichloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromoform | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| n-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| sec-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| ert-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Carbon Tetrachloride | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chlorodibromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloroform | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| o-Chlorotoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Chlorotoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dibromo-3-Chloropropane | < | 5.00 | ug/Kg | 5.00 | | | | |
| Dibromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| o-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| m-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Dichlorodifluormethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| cis-1,2-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| trans-1,2-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Dichloromethane | < | 20.0 | ug/Kg | 20.0 | | | | |
| 1,2-Dichloropropane | < | 5.00 | ug/Kg | 5.00 | | | | |
| 1,3-Dichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 2,2-Dichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloropropene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,3-Dichloropropene | < | 5.00 | ug/Kg | 5.00 | | | | |
| Ethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Ethylene dibromide | < | 1.00 | ug/Kg | 1.00 | | | | |
| Fluorotrichloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Hexachlorobutadiene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Isopropylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Isopropyltoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Naphthalene | < | 1.00 | ug/Kg | 1.00 | | | | |
| n-Propylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |

ND - Not Detected

LABORATORY MANAGER

015940

# ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

Project Name :Longhorn AAP

Field Sample Number :HBS-2-QA Matrix :SOIL
SWD Sample Number :S5 0193-13

Date Sample Collected :08/31/95
Date Sample Received :09/05/95

Contract Laboratory Sample Number :9509-042-02

**Dilution Factor:1**

| TEST | RESULT | | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | 09/05/95 | LS | 8260A |
| Styrene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,1,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,2,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Tetrachloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Toluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,1-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,2-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Trichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,3,5-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Vinyl Chloride | < | 1.00 | ug/Kg | 1.00 | | | | |
| Xylenes (total) | < | 1.00 | ug/Kg | 1.00 | | | | |

| Surrogate Standard | % Recovery | QC Limits | |
|---|---|---|---|
| S1 - Dibromofluoromethane | 110 | 70 | 121 |
| S2 - Toluene-d8 | 102 | 81 | 117 |
| S3 - 4-Bromofluorobenzene | 118 | 74 | 121 |

ND - Not Detected

LABORATORY MANAGER

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

015941
CLIENT SAMPLE NO.
9509-042-2

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-042

Matrix: (soil/water) SOIL Lab Sample ID:

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 0501005

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/05/95

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 1. | | | | | |
| 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. | | | | | |

015942

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 1-SEP-1995

REPORT NUMBER : D95-8338-8
REPORT DATE : 8-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-3
: S5 0193-14
PROJECT : Longhorn AAP
DATE SAMPLED : 31-AUG-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : SAP
ANALYZED ON : 7-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS2-515

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/Kg | < 100 µg/Kg |
| Acrylonitrile | 5.00 µg/Kg | < 5.00 µg/Kg |
| Benzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromodichloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromoform | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon disulfide | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon tetrachloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroform | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/Kg | < 25.0 µg/Kg |

015943

# Inchcape Testing Services
## Environmental Laboratories

1050 E. Collins Blvd.
Richardson, TX 75081
Tel: 214 238 5501
Fax: 214 238 5502

REPORT NUMBER : D95-8338-8
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | | | |
|---|---|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | | RESULTS | |
| 1,1,1,2-Tetrachloroethane | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,1,2,2-Tetrachloroethane | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| Tetrachloroethene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| Toluene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,2,3-Trichlorobenzene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,2,4-Trichlorobenzene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,1,1-Trichloroethane | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,1,2-Trichloroethane | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| Trichloroethene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| Trichlorofluoromethane | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,2,3-Trichloropropane | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,3,5-Trimethylbenzene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,2,4-Trimethylbenzene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| Vinyl acetate | 50.0 | µg/Kg | < 50.0 | µg/Kg |
| Vinyl chloride | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| m,p-Xylene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| o-Xylene | 5.00 | µg/Kg | < 5.00 | µg/Kg |

| QUALITY CONTROL DATA | | | | |
|---|---|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | | SPIKE RECOVERED | |
| Dibromofluoromethane (SS) | 50.0 | µg/L | 87.0 | % |
| Toluene-d8 (SS) | 50.0 | µg/L | 97.1 | % |
| 4-Bromofluorobenzene (SS) | 50.0 | µg/L | 92.6 | % |

Applicable results are reported on Dry Weight basis.

015944

# Inchcape Testing Services
## Environmental Laboratories

1050 E. Collins Blvd.
Richardson, TX 75081
Tel: 214-238-5591
Fax: 214-238-5592

DATE RECEIVED : 1-SEP-1995

REPORT NUMBER : D95-8338-8
REPORT DATE : 8-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-3
: S5 0193-14
PROJECT : Longhorn AAP
DATE SAMPLED : 31-AUG-1995

| MISCELLANEOUS ANALYSES | | | |
|---|---|---|---|
| TEST REQUESTED | | DETECTION LIMIT | RESULTS |
| Total Solids | /1 | 0.01 % | 66.4 % |
| Analyzed using ASTM D2216 mod. on 5-SEP-1995 by RRP<br>QC Batch No : 536026Z | | | |

Applicable results are reported on Dry Weight basis.

# SUMMARY REPORT

CLIENT : US Army Corps of Engineers
PROJECT : Longhorn AAP

JOB NUMBER : D95-8338
REPORT DATE : 2-OCT-1995

| SAMPLE NO. | ID MARKS | MATRIX | DATE SAMPLED |
|---|---|---|---|
| 6 | HBS-1 S5 0193-10 | Soil | 31-AUG-1995 |
| 7 | HBS-2 S5 0193-12 | Soil | 31-AUG-1995 |
| 8 | HBS-3 S5 0193-14 | Soil | 31-AUG-1995 |
| 9 | HBS-4 S5 0193-16 | Soil | 31-AUG-1995 |

| TENTATIVELY IDENTIFIED COMPOUNDS - VOA | | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| No compounds detected above | ug/Kg | 15 | 17 | 15 | 37 |

Preliminary report based upon incomplete data. Applicable results are reported on Dry Weight basis.

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

015946

ORGANIC ANALYSIS DATA SHEET

Project Name :Longhorn AAP

Field Sample Number :HBS-3-QA
SWD Sample Number :S5 0193-15

Matrix :SOIL

Date Sample Collected :08/31/95
Date Sample Received :09/05/95

Contract Laboratory Sample Number :9509-042-03

**Dilution Factor:1**

| TEST | RESULT | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | | 8260A |
| | | | | | 09/05/95 | LS | |
| Benzene | < 1.00 | ug/Kg | 1.00 | | | | |
| Bromobenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| Bromochloromethane | < 1.00 | ug/Kg | 1.00 | | | | |
| Bromodichloromethane | < 1.00 | ug/Kg | 1.00 | | | | |
| Bromoform | < 1.00 | ug/Kg | 1.00 | | | | |
| Bromomethane | < 1.00 | ug/Kg | 1.00 | | | | |
| n-Butylbenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| sec-Butylbenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| tert-Butylbenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| Carbon Tetrachloride | < 1.00 | ug/Kg | 1.00 | | | | |
| Chlorobenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| Chlorodibromomethane | < 1.00 | ug/Kg | 1.00 | | | | |
| Chloroethane | < 1.00 | ug/Kg | 1.00 | | | | |
| Chloroform | < 1.00 | ug/Kg | 1.00 | | | | |
| Chloromethane | < 1.00 | ug/Kg | 1.00 | | | | |
| o-Chlorotoluene | < 1.00 | ug/Kg | 1.00 | | | | |
| p-Chlorotoluene | < 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dibromo-3-Chloropropane | < 5.00 | ug/Kg | 5.00 | | | | |
| Dibromomethane | < 1.00 | ug/Kg | 1.00 | | | | |
| o-Dichlorobenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| m-Dichlorobenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| p-Dichlorobenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| Dichlorodifluormethane | < 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethane | < 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dichloroethane | < 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethylene | < 1.00 | ug/Kg | 1.00 | | | | |
| cis-1,2-Dichloroethylene | < 1.00 | ug/Kg | 1.00 | | | | |
| trans-1,2-Dichloroethylene | < 1.00 | ug/Kg | 1.00 | | | | |
| Dichloromethane | < 20.0 | ug/Kg | 20.0 | | | | |
| 1,2-Dichloropropane | < 5.00 | ug/Kg | 5.00 | | | | |
| 1,3-Dichloropropane | < 1.00 | ug/Kg | 1.00 | | | | |
| 2,2-Dichloropropane | < 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloropropene | < 1.00 | ug/Kg | 1.00 | | | | |
| 1,3-Dichloropropene | < 5.00 | ug/Kg | 5.00 | | | | |
| Ethylbenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| Ethylene dibromide | < 1.00 | ug/Kg | 1.00 | | | | |
| Fluorotrichloromethane | < 1.00 | ug/Kg | 1.00 | | | | |
| Hexachlorobutadiene | < 1.00 | ug/Kg | 1.00 | | | | |
| Isopropylbenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| p-Isopropyltoluene | < 1.00 | ug/Kg | 1.00 | | | | |
| Naphthalene | < 1.00 | ug/Kg | 1.00 | | | | |
| n-Propylbenzene | < 1.00 | ug/Kg | 1.00 | | | | |

ND - Not Detected

LABORATORY MANAGER

# ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

Project Name :Longhorn AAP

Field Sample Number :HBS-3-QA
SWD Sample Number :S5 0193-15

Matrix :SOIL

Date Sample Collected :08/31/95
Date Sample Received :09/05/95

Contract Laboratory Sample Number :9509-042-03

**Dilution Factor:1**

| TEST | RESULT | | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | | | 8260A |
| | | | | | | 09/05/95 | LS | |
| Styrene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,1,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,2,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Tetrachloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Toluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,1-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| ,1,2-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Trichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,3,5-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Vinyl Chloride | < | 1.00 | ug/Kg | 1.00 | | | | |
| Xylenes (total) | < | 1.00 | ug/Kg | 1.00 | | | | |

| Surrogate Standard | % Recovery | QC Limits | |
|---|---|---|---|
| S1 - Dibromofluoromethane | 99 | 70 | 121 |
| S2 - Toluene-d8 | 99 | 81 | 117 |
| S3 - 4-Bromofluorobenzene | 105 | 74 | 121 |

ND - Not Detected

LABORATORY MANAGER

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE

9509-042-3

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-042

Matrix: (soil/water) SOIL Lab Sample ID:

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 0601003

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/05/95

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 1. | | | | | |
| 2. | | | | | |
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015949

# Inchcape Testing Services
## Environmental Laboratories

1089 E. [illegible]
Richards[illegible]
Tel: 214-258-[illegible]
Fax: 214-258-[illegible]

DATE RECEIVED : 1-SEP-1995

REPORT NUMBER : D95-8338-9
REPORT DATE : 8-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-4
: S5 0193-16
PROJECT : Longhorn AAP
DATE SAMPLED : 31-AUG-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : SAP
ANALYZED ON : 7-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS2-515

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/Kg | < 100 µg/Kg |
| Acrylonitrile | 5.00 µg/Kg | < 5.00 µg/Kg |
| Benzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromodichloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromoform | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon disulfide | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon tetrachloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroform | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/Kg | < 25.0 µg/Kg |

015950

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Co.....
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

REPORT NUMBER : D95-8338-9
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,4-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,4-Dichloro-2-butene | 100 µg/Kg | < 100 µg/Kg |
| 1,1-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Ethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Hexanone | 50.0 µg/Kg | < 50.0 µg/Kg |
| Bromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Butanone | 100 µg/Kg | < 100 µg/Kg |
| Iodomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Methylene chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Methyl-2-pentanone | 100 µg/Kg | < 100 µg/Kg |
| Styrene | 5.00 µg/Kg | < 5.00 µg/Kg |

**Inchcape Testing Services**
Environmental Laboratories

10501 [illegible]
Richardson, TX [illegible]
Tel: 214 [illegible]
Fax: 214 [illegible]

REPORT NUMBER : D95-8338-9
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Tetrachloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Toluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,3-Trichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,4-Trichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,1-Trichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,2-Trichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Trichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Trichlorofluoromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,3-Trichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3,5-Trimethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,4-Trimethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Vinyl acetate | 50.0 µg/Kg | < 50.0 µg/Kg |
| Vinyl chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| m,p-Xylene | 5.00 µg/Kg | < 5.00 µg/Kg |
| o-Xylene | 5.00 µg/Kg | < 5.00 µg/Kg |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 86.4 % |
| Toluene-d8 (SS) | 50.0 µg/L | 87.1 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 70.6 % |

Applicable results are reported on Dry Weight basis.

015952

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5501
Fax. 214-258-5502

DATE RECEIVED : 1-SEP-1995

REPORT NUMBER : D95-8338-9
REPORT DATE : 8-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-4
: S5 0193-16
PROJECT : Longhorn AAP
DATE SAMPLED : 31-AUG-1995

| MISCELLANEOUS ANALYSES | | | |
|---|---|---|---|
| TEST REQUESTED | | DETECTION LIMIT | RESULTS |
| Total Solids | /1 | 0.01 % | 26.8 % |
| Analyzed using ASTM D2216 mod. on 5-SEP-1995 by RRP<br>QC Batch No : 536026Z | | | |

Applicable results are reported on Dry Weight basis.

015953

# SUMMARY REPORT

CLIENT : US Army Corps of Engineers
PROJECT : Longhorn AAP

JOB NUMBER : D95-8338
REPORT DATE : 2-OCT-1995

| SAMPLE NO. | ID MARKS | MATRIX | DATE SAMPLED |
|---|---|---|---|
| 6 | HBS-1 S5 0193-10 | Soil | 31-AUG-1995 |
| 7 | HBS-2 S5 0193-12 | Soil | 31-AUG-1995 |
| 8 | HBS-3 S5 0193-14 | Soil | 31-AUG-1995 |
| 9 | HBS-4 S5 0193-16 | Soil | 31-AUG-1995 |

| TENTATIVELY IDENTIFIED COMPOUNDS - VOA | | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|
| No compounds detected above | ug/Kg | 15 | 17 | 15 | 37 |

Preliminary report based upon incomplete data. Applicable results are reported on Dry Weight basis.

015954

# ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

Project Name :Longhorn AAP

'ield Sample Number :HBS-4-QA
SWD Sample Number :S5 0193-17

Matrix :SOIL

)ate Sample Collected :08/31/95
Date Sample Received :09/05/95

:ontract Laboratory Sample Number :9509-042-04

**Dilution Factor:1**

| TEST | RESULT | | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|
| olatile Organics | | | | | | | | |
| Benzene | < | 1.00 | ug/Kg | 1.00 | | 09/05/95 | LS | 8260A |
| Bromobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromochloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromodichloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromoform | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| n-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| sec-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| ert-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| arbon Tetrachloride | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chlorodibromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloroform | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| o-Chlorotoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Chlorotoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dibromo-3-Chloropropane | < | 5.00 | ug/Kg | 5.00 | | | | |
| Dibromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| o-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| m-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Dichlorodifluormethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| cis-1,2-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| trans-1,2-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Dichloromethane | < | 20.0 | ug/Kg | 20.0 | | | | |
| 1,2-Dichloropropane | < | 5.00 | ug/Kg | 5.00 | | | | |
| 1,3-Dichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 2,2-Dichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloropropene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,3-Dichloropropene | < | 5.00 | ug/Kg | 5.00 | | | | |
| Ethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Ethylene dibromide | < | 1.00 | ug/Kg | 1.00 | | | | |
| Fluorotrichloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Hexachlorobutadiene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Isopropylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| -Isopropyltoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Naphthalene | < | 1.00 | ug/Kg | 1.00 | | | | |
| n-Propylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |

ND - Not Detected

LABORATORY MANAGER

000316

015955

# ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

Project Name :Longhorn AAP

Field Sample Number :HBS-4-QA
SWD Sample Number :S5 0193-17

Matrix :SOIL

Date Sample Collected :08/31/95
Date Sample Received :09/05/95

Contract Laboratory Sample Number :9509-042-04

**Dilution Factor:1**

| TEST | RESULT | | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | | | 8260A |
| Styrene | < | 1.00 | ug/Kg | 1.00 | | 09/05/95 | LS | |
| 1,1,1,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,2,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Tetrachloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Toluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,1-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| ,1,2-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| richloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,3,5-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Vinyl Chloride | < | 1.00 | ug/Kg | 1.00 | | | | |
| Xylenes (total) | < | 1.00 | ug/Kg | 1.00 | | | | |

| Surrogate Standard | % Recovery | QC Limits | |
|---|---|---|---|
| S1 - Dibromofluoromethane | 98 | 70 | 121 |
| S2 - Toluene-d8 | 96 | 81 | 117 |
| S3 - 4-Bromofluorobenzene | 90 | 74 | 121 |

ND - Not Detected

LABORATORY MANAGER

000017

015956

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT [illegible]

9509-042-4

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-042

Matrix: (soil/water) SOIL Lab Sample ID:

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 0702004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/05/95

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 1. | | | | | |
| 2. | | | | | |
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000918

# Quality Control Data
# GC/MS VOCs

- [x] Case Narrative
- [x] Surrogate Recovery FORM 2
- [x] Laboratory Control Sample FORM 3
- [x] Matrix Spike/Matrix Spike Duplicate FORM 3
- [x] Method Blank Summary FORM 4
- [x] GC/MS Instrument Tune Report FORM 5
- [x] Initial Calibration Data FORM 6
- [x] Continuing Calibration Data FORM 7
- [x] Internal Standard Summary FORM 8
- [x] Analytical Sequence FORM 8

LB 9/6/95
QC Coordinator

ENVIRONMENTAL TESTING AND CONSULTING, INC 015958
MEMPHIS, TN
CASE NARRATIVE
VOLATILE COMPOUNDS

Project Name : Longhorn AAP
Delivery Order # : 0308

ETC Order # : 9509-042
Method (SW-846) : 8240

**HOLDING TIMES**

Sample Analysis : All samples analyzed within 14 days of collection.

**QUALITY CONTROL**

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.
Sample 9508-042-2 was originally analyzed on 09/05/95 with surrogate S2 outside QC Limits (high). This sample was re-analyzed on 09/05/95 with all surrogates within QC Limits. Data was reported from the second analysis.

Sample 9508-042-1MS showed surrogates S1 and S2 outside QC Limits. Due to the fact the 9508-042-1/1MSD all showed surrogates within QC Limits, this sample was not re-analyzed.

Laboratory Control Sample FORM 3
All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
9509-042-1 RPD : All analytes within QC limits.*
Spike Recovery : All analytes within QC limits.*
*
Trichloroethene RPD outside QC Limits due to high recovery in the MS possible due to a "hot spot" hit during sample preparation.

See Laboratory Control Samples for system verification.

Method Blank FORM 4
No Target Analytes detected above Practical Quantitation Limit.
Methylene Chloride identified in Method Blank for 0905-BLANK at 0.80j ug/L.

**CALIBRATION**

BFB Daily 12 Hour Tune : All criteria met. FORM 5
Initial Calibration : All criteria met. FORM 6
Daily Calibration : All criteria met. FORM 7A

Volatile Analytical Sequence FORM 8

| Date Analyzed | BFB Injection Time |
|---|---|
| 09/05/95 | 1232 |

Volatile Internal Standard Area and RT FORM 8
Daily Check Standard(s) Internal Standard Areas and Retention Times within QC limits.

ENVIRONMENTAL TESTING AND CONSULTING, IN0.15959
MEMPHIS, TN
CASE NARRATIVE
VOLATILE COMPOUNDS

Project Name : _Longhorn AAP
Delivery Order # : _0308

ETC Order # : _9509-042
Method (SW-846) : _8240

**SAMPLE ANALYSIS**

Instrumentation : HP 5890 Series II GC, 5970MSD
Dilutions Required : No dilutions required.

Laboratory Manager

# FORM 2
## WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

ab Name: ENVIRONMENTAL TESTING AND  Contract:

Lab Code: ETC  Case No.:  SAS No.:  SDG No.: 9509-042

| | CLIENT SAMPLE NO. | SMC1 (TOL) # | SMC2 (BFB) # | SMC3 # | OTHER | TOT OUT |
|---|---|---|---|---|---|---|
| 01 | 0905-BLANKBS | 94 | 89 | 105 | | 0 |
| 02 | 0905-BLANK | 95 | 94 | 101 | | 0 |
| 03 | MEOHBLANK | 94 | 89 | 92 | | 0 |
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| | | QC LIMITS |
|---|---|---|
| SMC1 (TOL) | = Toluene-d8 | (88-110) |
| SMC2 (BFB) | = Bromofluorobenzene | (86-115) |
| SMC3 | = Dibromofluromethane | (86-118) |

# Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM 2
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-042

Level: (low/med) LOW

| | CLIENT SAMPLE NO. | SMC1 (TOL) # | SMC2 (BFB) # | SMC3 # | OTHER | TOT OUT |
|---|---|---|---|---|---|---|
| 01 | 9509-042-1 | 95 | 101 | 115 | | 0 |
| 02 | 9509-042-2 | 104 | 156* | 110 | | 1 |
| 03 | 9509-042-3 | 93 | 94 | 104 | | 0 |
| 04 | 9509-042-4 | 111 | 103 | 104 | | 0 |
| 05 | 9509-042-4 | 90 | 80 | 102 | | 0 |
| 06 | 9509-042-2 | 96 | 105 | 114 | | 0 |
| 07 | 9509-042-1MS | 126* | 127* | 112 | | 2 |
| 08 | 9509-042-1MS | 112 | 106 | 113 | | 0 |
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| | | QC LIMITS |
|---|---|---|
| SMC1 (TOL) | = Toluene-d8 | (81-117) |
| SMC2 (BFB) | = Bromofluorobenzene | (74-121) |
| SMC3 | = Dibromofluromethane | (80-120) |

# Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out



FORM II VOA

# FORM 3
# WATER VOLATILE BLANK SPIKE RECOVERY

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-042

Matrix Spike - Sample No.: 0905-BLANK

| COMPOUND | SPIKE ADDED (ug/L) | BLANK CONCENTRATION (ug/L) | BS CONCENTRATION (ug/L) | BS % REC # | QC. LIMITS REC. |
|---|---|---|---|---|---|
| Chloromethane | 20.0 | 0.00 | 16.8 | 84 | 0-273 |
| Bromomethane | 20.0 | 0.00 | 18.3 | 92 | 0-242 |
| Vinyl Chloride | 20.0 | 0.00 | 20.0 | 100 | 0-251 |
| Chloroethane | 20.0 | 0.00 | 21.3 | 106 | 14-230 |
| Methylene Chloride | 20.0 | 0.80 | 21.9 | 106 | 0-221 |
| Trichlorofluoromethane | 20.0 | 0.00 | 19.4 | 97 | 17-181 |
| 1,1-Dichloroethene | 20.0 | 0.00 | 20.5 | 102 | 0-234 |
| trans-1,2-Dichloroethen | 20.0 | 0.00 | 19.6 | 98 | 54-156 |
| 1,1-Dichloroethane | 20.0 | 0.00 | 19.4 | 97 | 59-155 |
| 1,2-Dichloroethane | 20.0 | 0.00 | 17.3 | 86 | 49-155 |
| Chloroform | 20.0 | 0.00 | 19.8 | 99 | 51-138 |
| 1,1,1-Trichloroethane | 20.0 | 0.00 | 21.0 | 105 | 52-162 |
| Carbon Tetrachloride | 20.0 | 0.00 | 22.4 | 112 | 70-140 |
| Bromodichloromethane | 20.0 | 0.00 | 18.8 | 94 | 35-155 |
| 1,2-Dichloropropane | 20.0 | 0.00 | 18.5 | 92 | 0-210 |
| cis-1,3-Dichloropropene | 20.0 | 0.00 | 17.8 | 89 | 0-227 |
| Trichloroethene | 20.0 | 0.00 | 19.2 | 96 | 71-157 |
| Benzene | 20.0 | 0.00 | 18.8 | 94 | 37-151 |
| trans-1,3-Dichloroprope | 20.0 | 0.00 | 18.0 | 90 | 17-183 |
| 1,1,2-Trichloroethane | 20.0 | 0.00 | 18.1 | 90 | 52-150 |
| Chlorodibromomethane | 20.0 | 0.00 | 19.5 | 98 | 53-149 |
| Bromoform | 20.0 | 0.00 | 17.7 | 88 | 45-169 |
| 1,1,2,2-Tetrachloroetha | 20.0 | 0.00 | 18.4 | 92 | 46-157 |
| Tetrachloroethene | 20.0 | 0.00 | 20.1 | 100 | 64-148 |
| Toluene | 20.0 | 0.00 | 18.8 | 94 | 47-150 |
| Chlorobenzene | 40.0 | 0.00 | 20.3 | 51 | 37-160 |
| Ethylbenzene | 20.0 | 0.00 | 19.6 | 98 | 37-162 |
| 1,3-Dichlorobenzene | 20.0 | 0.00 | 20.6 | 103 | 59-156 |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-042

Matrix Spike - Sample No.: 9509-042-1 Level: (low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONCENTRATION (ug/Kg) | MS CONCENTRATION (ug/Kg) | MS % REC # | QC. LIMITS REC. |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 100 | 0.00 | 102 | 102 | 59-172 |
| Trichloroethene | 100 | 71.7 | 230 | 158* | 62-137 |
| Benzene | 100 | 0.00 | 111 | 111 | 66-142 |
| Toluene | 100 | 0.00 | 136 | 136 | 59-139 |
| Chlorobenzene | 100 | 0.00 | 106 | 106 | 60-133 |

| COMPOUND | SPIKE ADDED (ug/Kg) | MSD CONCENTRATION (ug/Kg) | MSD % REC # | % RPD # | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 100 | 106 | 106 | 4 | 20 | 59-172 |
| Trichloroethene | 100 | 180 | 108 | 38* | 20 | 62-137 |
| Benzene | 100 | 110 | 110 | 1 | 20 | 66-142 |
| Toluene | 100 | 123 | 123 | 10 | 20 | 59-139 |
| Chlorobenzene | 100 | 112 | 112 | 6 | 20 | 60-133 |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 1 out of 5 outside limits
Spike Recovery: 1 out of 10 outside limits

COMMENTS: _____

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIENT SAMPLE NO

015964 | 0905-BLANK

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-042

Lab File ID: 0301003 Lab Sample ID:

Date Analyzed: 09/05/95 Time Analyzed: 1354

GC Column: ID: 2 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOC1

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

| | SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | TIME ANALYZED |
|---|---|---|---|---|
| 01 | 9509-042-1 | | 0401003 | 1433 |
| 02 | 9509-042-2 | | 0501003 | 1512 |
| 03 | 9509-042-3 | | 0601003 | 1554 |
| 04 | 9509-042-4 | | 0701003 | 1633 |
| 05 | 9509-042-4 | | 0702004 | 1718 |
| 06 | 9509-042-2 | | 0501005 | 1802 |
| 07 | 9509-042-1MS | | 0801006 | 1846 |
| 08 | 9509-042-1MS | | 0901007 | 1929 |
| 09 | 9508-714-11 | | 1001008 | 2012 |
| 10 | 9508-714-13 | | 1101009 | 2055 |
| 11 | 9508-714-10 | | 1201010 | 2137 |
| 12 | 9508-714-9 | | 1301011 | 2219 |
| 13 | 9508-714-6 | | 1501013 | 2344 |
| 14 | 9508-714-6 | | 1601014 | 0026 |
| 15 | 9508-714-9 | | 1701015 | 0108 |
| 16 | 9508-714-11 | | 1801016 | 0150 |
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COMMENTS:

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.
0905-BLANK

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-042

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 20.00 (g/mL) ML Lab File ID: 0301003

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/05/95

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 1.0 | U |
| 74-83-9 | Bromomethane | 1.0 | U |
| 75-01-4 | Vinyl Chloride | 1.0 | U |
| 75-00-3 | Chloroethane | 1.0 | U |
| 75-09-2 | Methylene Chloride | 0.80 | J |
| 75-69-4 | Trichlorofluoromethane | 1.0 | U |
| 75-35-4 | 1,1-Dichloroethene | 1.0 | U |
| 74-97-5 | Bromochloromethane | 1.0 | U |
| 156-60-5 | trans-1,2-Dichloroethene | 1.0 | U |
| 75-34-3 | 1,1-Dichloroethane | 1.0 | U |
| 107-06-2 | 1,2-Dichloroethane | 1.0 | U |
| 67-66-3 | Chloroform | 1.0 | U |
| 75-71-8 | Dichlorodifluoromethane | 1.0 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 1.0 | U |
| 56-23-5 | Carbon Tetrachloride | 1.0 | U |
| 75-27-4 | Bromodichloromethane | 1.0 | U |
| 78-87-5 | 1,2-Dichloropropane | 1.0 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 1.0 | U |
| 79-01-6 | Trichloroethene | 1.0 | U |
| 71-43-2 | Benzene | 1.0 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 1.0 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 1.0 | U |
| 74-95-3 | Dibromomethane | 1.0 | U |
| 124-48-1 | Chlorodibromomethane | 1.0 | U |
| 75-25-2 | Bromoform | 1.0 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.0 | U |
| 127-18-4 | Tetrachloroethene | 1.0 | U |
| 108-88-3 | Toluene | 1.0 | U |
| 108-90-7 | Chlorobenzene | 1.0 | U |
| 100-41-4 | Ethylbenzene | 1.0 | U |
| 100-42-5 | Styrene | 1.0 | U |
| 96-18-4 | 1,2,3-Trichloropropane | 1.0 | U |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 1.0 | U |

FORM 1 015966 CLIEI
VOLATILE ORGANICS ANALYSIS DATA SHEET

0905-BLANK

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-042

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 20.00 (g/mL) ML Lab File ID: 0301003

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/05/95

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 1330-20-7 | Xylene-mp | 1.0 | U |
| 95-47-6 | Xylene-o | 1.0 | U |
| 156-59-4 | cis-1,2-Dichloroethene | 1.0 | U |
| 106-93-4 | 1,2-Dibromoethane | 1.0 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 1.0 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 1.0 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 1.0 | U |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 1.0 | U |
| 590-20-7 | 2,2-Dichloropropane | 1.0 | U |
| 563-58-6 | 1,1-Dichloropropene | 1.0 | U |
| 142-28-9 | 1,3-Dichloropropane | 1.0 | U |
| 98-82-8 | Isopropylbenzene | 1.0 | U |
| 108-86-1 | Bromobenzene | 1.0 | U |
| 103-65-1 | n-Propylbenzene | 1.0 | U |
| 95-49-8 | 2-Chlorotoluene | 1.0 | U |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.0 | U |
| 106-43-4 | 4-Chlorotoluene | 1.0 | U |
| 98-06-6 | tert-Butylbenzene | 1.0 | U |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.0 | U |
| 135-98-8 | sec-Butylbenzene | 1.0 | U |
| 99-87-6 | 4-Isopropyltoluene | 1.0 | U |
| 104-51-8 | n-Butylbenzene | 1.0 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1.0 | U |
| 87-63-3 | Hexachlorobutadiene | 1.0 | U |
| 91-20-3 | Naphthalene | 1.0 | U |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1.0 | U |

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

0905-BLANK

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-042

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 20.00 (g/mL) ML Lab File ID: 0301003

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/05/95

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
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FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK 015968
BROMOFLUOROBENZENE (BFB)

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-042

Lab File ID: 0101001 BFB Injection Date: 09/05/95

Instrument ID: VOC1 BFB Injection Time: 1232

GC Column: ID: 2.00 (mm) Heated Purge: (Y/N) N

| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 50 | 15.0 - 40.0% of mass 95 | 24.2 |
| 75 | 30.0 - 60.0% of mass 95 | 57.8 |
| 95 | Base Peak, 100% relative abundance | 100.0 |
| 96 | 5.0 - 9.0% of mass 95 | 8.1 |
| 173 | Less than 2.0% of mass 174 | 0.0 ( 0.0)1 |
| 174 | Greater than 50.0% of mass 95 | 54.0 |
| 175 | 4.0 - 9.0% of mass 174 | 3.2 ( 5.9)1 |
| 176 | 95.0 - 101.0% of mass 174 | 54.0 (100.0)1 |
| 177 | 5.0 - 9.0% of mass 176 | 4.2 ( 7.8)2 |

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

| | EPA SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED | TIME ANALYZED |
|---|---|---|---|---|---|
| 01 | DCS-20 | | 0201002 | 09/05/95 | 1258 |
| 02 | 0905-BLANKBS | | 0201002LCS | 09/05/95 | 1258 |
| 03 | 0905-BLANK | | 0301003 | 09/05/95 | 1354 |
| 04 | 9509-042-1 | | 0401003 | 09/05/95 | 1433 |
| 05 | 9509-042-2 | | 0501003 | 09/05/95 | 1512 |
| 06 | 9509-042-3 | | 0601003 | 09/05/95 | 1554 |
| 07 | 9509-042-4 | | 0701003 | 09/05/95 | 1633 |
| 08 | 9509-042-4 | | 0702004 | 09/05/95 | 1718 |
| 09 | 9509-042-2 | | 0501005 | 09/05/95 | 1802 |
| 10 | 9509-042-1MS | | 0801006 | 09/05/95 | 1846 |
| 11 | 9509-042-1MS | | 0901007 | 09/05/95 | 1929 |
| 12 | 9508-714-11 | | 1001008 | 09/05/95 | 2012 |
| 13 | 9508-714-13 | | 1101009 | 09/05/95 | 2055 |
| 14 | 9508-714-10 | | 1201010 | 09/05/95 | 2137 |
| 15 | 9508-714-9 | | 1301011 | 09/05/95 | 2219 |
| 16 | MEOHBLANK | | 1401012 | 09/05/95 | 2302 |
| 17 | 9508-714-6 | | 1501013 | 09/05/95 | 2344 |
| 18 | 9508-714-6 | | 1601014 | 09/06/95 | 0026 |
| 19 | 9508-714-9 | | 1701015 | 09/06/95 | 0108 |
| 20 | 9508-714-11 | | 1801016 | 09/06/95 | 0150 |
| 21 | | | | | |
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Report Date : 06-Sep-1995 11:45

Environmental Testing & Consulting, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 30-AUG-95 18:01
End Cal Date : 30-AUG-1995 21:00
Quant Method : ISTD
Target Version : 3.12
Integrator : HP RTE
Method file : /chem/voc1.i/v1090501.b/v3083101.8260.m
Cal Date : 06-Sep-1995 09:49 mike
Curve Type : Average

Calibration File Names:
Level 1: /chem/voc1.i/v1083101.b/0401004.d
Level 2: /chem/voc1.i/v1083101.b/0501005.d
Level 3: /chem/voc1.i/v1083101.b/0601006.d
Level 4: /chem/voc1.i/v1083101.b/0701007.d
Level 5: /chem/voc1.i/v1083101.b/0801008.d
Level 6: /chem/voc1.i/v1083101.b/0901009.d
Level 7: /chem/voc1.i/v1083101.b/1001010.d

| Compound | 5 Level 1 | 10 Level 2 | 20 Level 3 | 50 Level 4 | 100 Level 5 | 150 Level 6 | RRF | % RSD |
|---|---|---|---|---|---|---|---|---|
| | 200 Level 7 | | | | | | | |
| 1 Dichlorodifluoromethane | 2.61059 | 2.65187 | 2.15075 | 2.08910 | 1.83939 | 1.73088 | | |
| | 1.55900 | | | | | | 2.09023 | 20.148 |
| 2 Chloromethane | 0.90541 | 1.06972 | 0.95107 | 0.94687 | 0.89242 | 0.86532 | | |
| | 0.82613 | | | | | | 0.92242 | 8.495 |
| 3 Vinyl Chloride | 1.22274 | 1.17621 | 0.98087 | 0.92354 | 0.84284 | 0.81825 | | |
| | 0.77563 | | | | | | 0.96287 | 18.251 |
| 4 Bromomethane | 1.51464 | 1.56437 | 1.31424 | 1.32441 | 1.19265 | 1.19168 | | |
| | 1.10046 | | | | | | 1.31464 | 13.114 |
| 5 Chloroethane | 0.79065 | 0.76825 | 0.65467 | 0.65722 | 0.57441 | 0.54177 | | |
| | 0.44218 | | | | | | 0.63273 | 19.609 |
| 6 Trichlorofluoromethane | 5.07628 | 4.71652 | 3.86971 | 4.21589 | 3.84765 | 3.68537 | | |
| | 3.28271 | | | | | | 4.09916 | 15.115 |
| 7 1,1-Dichloroethene | 1.75392 | 1.66922 | 1.55129 | 1.55303 | 1.39890 | 1.36986 | | |
| | 1.25898 | | | | | | 1.50789 | 11.593 |
| 8 Acetone | +++++ | 0.31003 | 0.28573 | 0.28096 | 0.25910 | 0.20415 | | |
| | 0.21580 | | | | | | 0.25930 | 16.064 |

Report Date : 06-Sep-1995 11:45

Environmental Testing & Consulting, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 30-AUG-95 18:01
End Cal Date : 30-AUG-1995 21:00
Quant Method : ISTD
Target Version : 3.12
Integrator : HP RTE
Method file : /chem/voc1.i/v1090501.b/v3083101.8260.m
Cal Date : 06-Sep-1995 09:49 mike
Curve Type : Average

| Compound | 5 Level 1 | 10 Level 2 | 20 Level 3 | 50 Level 4 | 100 Level 5 | 150 Level 6 | RRF | % RSD |
|---|---|---|---|---|---|---|---|---|
| | 200 Level 7 | | | | | | | |
| 9 Iodomethane | 4.00353 | 3.85813 | 3.16669 | 3.67190 | 3.13373 | 2.95300 | | |
| | 2.72146 | | | | | | 3.35835 | 14.493 |
| 10 Carbon Disulfide | +++++ | 4.61452 | 4.32982 | 4.48130 | 3.93122 | 3.75564 | | |
| | 3.86531 | | | | | | 4.16297 | 8.603 |
| Acrylonitrile | +++++ | 0.24276 | 0.22537 | 0.21732 | 0.19163 | 0.16443 | | |
| | 0.18174 | | | | | | 0.20388 | 14.468 |
| 12 Methylene Chloride | 2.20924 | 0.97373 | 1.65194 | 1.60730 | 1.44445 | 1.34530 | | |
| | 1.30259 | | | | | | 1.50494 | 25.453 |
| 13 trans-1,2-Dichloroethene | 2.06857 | 1.94977 | 1.74303 | 1.74689 | 1.58352 | 1.56387 | | |
| | 1.54322 | | | | | | 1.74270 | 11.624 |
| 14 1,1-Dichloroethane | 3.89210 | 3.87724 | 3.57076 | 3.55471 | 3.26967 | 3.16235 | | |
| | 3.09440 | | | | | | 3.48875 | 9.323 |
| 15 Vinyl Acetate | +++++ | 2.91025 | 2.76942 | 2.60355 | 2.39778 | 2.06846 | | |
| | 2.39652 | | | | | | 2.52433 | 11.956 |
| 16 2,2-Dichloropropane | 3.66367 | 3.30462 | 3.18034 | 2.85641 | 2.81127 | 2.75520 | | |
| | 2.74564 | | | | | | 3.04531 | 11.472 |
| 17 2-Butanone | +++++ | 0.11339 | 0.10781 | 0.09399 | 0.08900 | 0.07186 | | |
| | 0.07902 | | | | | | 0.09251 | 17.385 |
| 18 cis-1,2-Dichloroethene | 2.02435 | 1.85040 | 1.89973 | 1.78802 | 1.70701 | 1.62050 | | |
| | 1.66665 | | | | | | 1.79381 | 7.928 |
| 19 Chloroform | 4.99975 | 5.00463 | 4.91428 | 4.57343 | 4.48478 | 4.31633 | | |
| | 4.29738 | | | | | | 4.65580 | 6.715 |

Environmental Testing & Consulting, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 30-AUG-95 18:01
End Cal Date : 30-AUG-1995 21:00
Quant Method : ISTD
Target Version : 3.12
Integrator : HP RTE
Method file : /chem/voc1.i/v1090501.b/v3083101.8260.m
Cal Date. : 06-Sep-1995 09:49 mike
Curve Type : Average

| Compound | 5 Level 1 | 10 Level 2 | 20 Level 3 | 50 Level 4 | 100 Level 5 | 150 Level 6 | RRF | % RSD |
|---|---|---|---|---|---|---|---|---|
| | 200 Level 7 | | | | | | | |
| 20 Bromochloromethane | 1.24986 | 1.27101 | 1.20278 | 1.12329 | 1.07633 | 0.99829 | | |
| | 1.04723 | | | | | | 1.13840 | 9.226 |
| 24 1,1,1-Trichloroethane | 4.35511 | 4.30332 | 4.65494 | 4.02568 | 4.36249 | 4.25252 | | |
| | 4.18903 | | | | | | 4.30615 | 4.472 |
| 25 1,1-Dichloropropene | 0.75473 | 0.68061 | 0.63052 | 0.60239 | 0.57249 | 0.55117 | | |
| | 0.53868 | | | | | | 0.61866 | 12.493 |
| 26 Carbon Tetrachloride | 0.77717 | 0.69978 | 0.64836 | 0.71175 | 0.70314 | 0.71703 | | |
| | 0.69969 | | | | | | 0.70813 | 5.346 |
| 27 1,2-Dichloroethane | 0.66869 | 0.70798 | 0.66553 | 0.62611 | 0.57536 | 0.51639 | | |
| | 0.53121 | | | | | | 0.61304 | 12.004 |
| 28 Benzene | 0.99685 | 0.93254 | 0.87420 | 0.82308 | 0.79761 | 0.76335 | | |
| | 0.73953 | | | | | | 0.84674 | 11.002 |
| 29 Trichloroethene | 0.57148 | 0.55695 | 0.55265 | 0.49428 | 0.49407 | 0.47058 | | |
| | 0.46677 | | | | | | 0.51525 | 8.509 |
| 30 1,2-Dichloropropane | 0.48789 | 0.42068 | 0.45213 | 0.37338 | 0.39449 | 0.37778 | | |
| | 0.37549 | | | | | | 0.41169 | 10.748 |
| 31 Bromodichloromethane | 0.98285 | 1.06747 | 0.85774 | 0.96145 | 0.81468 | 0.77709 | | |
| | 0.79714 | | | | | | 0.89406 | 12.354 |
| 32 Dibromomethane | 0.56614 | 0.62904 | 0.49939 | 0.54832 | 0.42616 | 0.37882 | | |
| | 0.39421 | | | | | | 0.49172 | 19.330 |
| 33 4-Methyl-2-Pentanone | +++++ | 0.39407 | 0.30993 | 0.34154 | 0.24904 | 0.19634 | | |
| | 0.23602 | | | | | | 0.28782 | 25.635 |

Environmental Testing & Consulting, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 30-AUG-95 18:01
End Cal Date : 30-AUG-1995 21:00
Quant Method : ISTD
Target Version : 3.12
Integrator : HP RTE
Method file : /chem/voc1.i/v1090501.b/v3083101.8260.m
Cal Date : 06-Sep-1995 09:49 mike
Curve Type : Average

| Compound | 5 Level 1 | 10 Level 2 | 20 Level 3 | 50 Level 4 | 100 Level 5 | 150 Level 6 | 200 Level 7 | RRF | % RSD |
|---|---|---|---|---|---|---|---|---|---|
| 34 cis-1,3-Dichloropropene | 0.68850 | 0.77576 | 0.62799 | 0.71084 | 0.55462 | 0.52013 | 0.52416 | 0.62886 | 15.922 |
| 36 Toluene | 0.60241 | 0.72223 | 0.58299 | 0.64381 | 0.51599 | 0.49295 | 0.47612 | 0.57664 | 15.381 |
| 7 trans-1,3-Dichloropropene | 0.52893 | 0.69796 | 0.54871 | 0.62170 | 0.47710 | 0.43845 | 0.45813 | 0.53871 | 17.411 |
| 38 1,1,2-Trichloroethane | 0.30948 | 0.41731 | 0.32055 | 0.34638 | 0.25887 | 0.23005 | 0.24602 | 0.30410 | 21.567 |
| 39 2-Hexanone | +++++ | 0.26638 | 0.27306 | 0.24728 | 0.23240 | 0.18410 | 0.22756 | 0.23846 | 13.477 |
| 40 1,3-Dichloropropane | 0.72994 | 0.71847 | 0.73385 | 0.65601 | 0.63756 | 0.57726 | 0.60827 | 0.66591 | 9.410 |
| 41 Tetrachloroethene | 0.53851 | 0.53409 | 0.53402 | 0.48656 | 0.49916 | 0.49912 | 0.48232 | 0.51054 | 4.744 |
| 42 Chlorodibromomethane | 0.77796 | 0.83166 | 0.85835 | 0.80547 | 0.82491 | 0.76760 | 0.82468 | 0.81295 | 3.899 |
| 43 1,2-Dibromoethane | 0.62126 | 0.65719 | 0.67216 | 0.60334 | 0.59942 | 0.53346 | 0.55944 | 0.60661 | 8.162 |
| 45 Chlorobenzene | 1.02204 | 0.96290 | 0.97434 | 0.90013 | 0.90359 | 0.87288 | 0.86360 | 0.92850 | 6.336 |
| 46 1,1,1,2-Tetrachloroethane | 0.64491 | 0.60571 | 0.60736 | 0.56330 | 0.57232 | 0.53662 | 0.53202 | 0.58032 | 7.085 |

Environmental Testing & Consulting, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 30-AUG-95 18:01
End Cal Date : 30-AUG-1995 21:00
Quant Method : ISTD
Target Version : 3.12
Integrator : HP RTE
Method file : /chem/voc1.i/v1090501.b/v3083101.8260.m
Cal Date : 06-Sep-1995 09:49 mike
Curve Type : Average

| Compound | 5 Level 1 | 10 Level 2 | 20 Level 3 | 50 Level 4 | 100 Level 5 | 150 Level 6 | RRF | % RSD |
|---|---|---|---|---|---|---|---|---|
| | 200 Level 7 | | | | | | | |
| 47 Ethylbenzene | 1.64992 | 1.50425 | 1.52492 | 1.38038 | 1.39266 | 1.35526 | | |
| | 1.26062 | | | | | | 1.43829 | 9.000 |
| 48 Xylene-mp | 0.61239 | 0.49098 | 0.51943 | 0.47656 | 0.47779 | 0.44754 | | |
| | 0.42800 | | | | | | 0.49320 | 12.207 |
| 9 Xylene-o | 0.62708 | 0.48274 | 0.49977 | 0.44784 | 0.46172 | 0.44205 | | |
| | 0.42718 | | | | | | 0.48405 | 13.990 |
| 50 Styrene | 0.91026 | 0.77454 | 0.81246 | 0.75819 | 0.77602 | 0.74225 | | |
| | 0.72628 | | | | | | 0.78572 | 7.816 |
| 51 Bromoform | 0.53957 | 0.43846 | 0.47713 | 0.46995 | 0.48526 | 0.43129 | | |
| | 0.48055 | | | | | | 0.47460 | 7.489 |
| 52 Isopropylbenzene | 2.92620 | 2.84480 | 2.87162 | 2.55528 | 2.57234 | 2.51958 | | |
| | 2.35843 | | | | | | 2.66404 | 8.094 |
| 53 1,1,2,2-Tetrachloroethane | 1.15563 | 1.12736 | 1.12005 | 0.96187 | 0.95024 | 0.80053 | | |
| | 0.88047 | | | | | | 0.99945 | 13.722 |
| 55 1,2,3-Trichloropropane | 0.29555 | 0.30413 | 0.30740 | 0.26124 | 0.26186 | 0.23094 | | |
| | 0.24688 | | | | | | 0.27257 | 10.979 |
| 56 Bromobenzene | 1.01590 | 0.93368 | 0.93946 | 0.83683 | 0.83321 | 0.79484 | | |
| | 0.78886 | | | | | | 0.87754 | 9.809 |
| 57 n-Propylbenzene | 3.80491 | 3.42031 | 3.55133 | 3.16131 | 3.15534 | 3.05884 | | |
| | 2.81608 | | | | | | 3.28116 | 10.128 |
| 58 trans-1,4-Dichloro-2-butene | 0.13869 | 0.26350 | 0.26910 | 0.24522 | 0.24091 | 0.21823 | | |
| | 0.22761 | | | | | | 0.22904 | 19.095 |

Environmental Testing & Consulting, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 30-AUG-95 18:01
End Cal Date : 30-AUG-1995 21:00
Quant Method : ISTD
Target Version : 3.12
Integrator : HP RTE
Method file : /chem/voc1.i/v1090501.b/v3083101.8260.m
Cal Date : 06-Sep-1995 09:49 mike
Curve Type : Average

| Compound | 5 Level 1 | 10 Level 2 | 20 Level 3 | 50 Level 4 | 100 Level 5 | 150 Level 6 | RRF | % RSD |
|---|---|---|---|---|---|---|---|---|
| | 200 Level 7 | | | | | | | |
| 59 2-Chlorotoluene | 2.72277 | 2.44838 | 2.64160 | 2.30089 | 2.28115 | 2.07099 | | |
| | 1.96887 | | | | | | 2.34781 | 11.843 |
| 60 1,3,5-Trimethylbenzene | 2.28800 | 2.22998 | 2.29097 | 2.09723 | 2.11076 | 2.06718 | | |
| | 1.94545 | | | | | | 2.14708 | 5.961 |
| 61 4-Chlorotoluene | 2.95583 | 2.77789 | 2.82825 | 2.50605 | 2.41838 | 2.37247 | | |
| | 2.24942 | | | | | | 2.58690 | 10.296 |
| 62 tert-Butylbenzene | 2.39275 | 2.30878 | 2.37895 | 2.13861 | 2.17857 | 2.13914 | | |
| | 1.99028 | | | | | | 2.21815 | 6.652 |
| 63 1,2,4-Trimethylbenzene | 2.26698 | 2.31306 | 2.42630 | 2.15408 | 2.16551 | 2.12058 | | |
| | 2.00093 | | | | | | 2.20678 | 6.339 |
| 64 sec-Butylbenzene | 3.25074 | 3.15540 | 3.27184 | 2.97580 | 3.02213 | 2.97787 | | |
| | 2.78341 | | | | | | 3.06246 | 5.689 |
| 65 4-Isopropyltoluene | 2.49687 | 2.44052 | 2.55855 | 2.32127 | 2.31479 | 2.31909 | | |
| | 2.16101 | | | | | | 2.37316 | 5.660 |
| 66 1,3-Dichlorobenzene | 1.56336 | 1.50335 | 1.55611 | 1.37342 | 1.37409 | 1.35025 | | |
| | 1.31052 | | | | | | 1.43301 | 7.317 |
| 68 1,4-Dichlorobenzene | 1.54938 | 1.49103 | 1.52633 | 1.40734 | 1.41690 | 1.38836 | | |
| | 1.34092 | | | | | | 1.44575 | 5.348 |
| 69 n-Butylbenzene | 2.69998 | 2.67901 | 2.75663 | 2.63621 | 2.55994 | 2.53254 | | |
| | 2.37167 | | | | | | 2.60514 | 4.960 |
| 70 1,2-Dichlorobenzene | 1.42125 | 1.40859 | 1.48501 | 1.29808 | 1.28208 | 1.22339 | | |
| | 1.22168 | | | | | | 1.33430 | 7.790 |

Environmental Testing & Consulting, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 30-AUG-95 18:01
End Cal Date : 30-AUG-1995 21:00
Quant Method : ISTD
Target Version : 3.12
Integrator : HP RTE
Method file : /chem/voc1.i/v1090501.b/v3083101.8260.m
Cal Date. : 06-Sep-1995 09:49 mike
Curve Type : Average

| Compound | 5 Level 1 | 10 Level 2 | 20 Level 3 | 50 Level 4 | 100 Level 5 | 150 Level 6 | RRF | % RSD |
|---|---|---|---|---|---|---|---|---|
| | 200 Level 7 | | | | | | | |
| 71 1,2-Dibromo-3-chloropropane | 0.27584 | 0.30267 | 0.33817 | 0.29656 | 0.29221 | 0.25020 | | |
| | 0.27798 | | | | | | 0.29052 | 9.380 |
| 72 1,2,4-Trichlorobenzene | 1.12371 | 1.17568 | 1.22648 | 1.13012 | 1.11956 | 1.08042 | | |
| | 1.12068 | | | | | | 1.13952 | 4.156 |
| 3 Hexachlorobutadiene | 1.09282 | 1.04699 | 1.05357 | 1.00002 | 0.98537 | 0.99660 | | |
| | 0.95506 | | | | | | 1.01863 | 4.658 |
| 74 Naphthalene | 1.35095 | 1.51608 | 1.57696 | 1.45089 | 1.39700 | 1.22261 | | |
| | 1.32000 | | | | | | 1.40493 | 8.595 |
| 75 1,2,3-Trichlorobenzene | 0.99022 | 1.05868 | 1.08661 | 0.99695 | 0.98731 | +++++ | | |
| | +++++ | | | | | | 1.02395 | 4.460 |
| 21 Dibromofluromethane | 3.55747 | 3.64473 | 3.54823 | 3.69776 | 3.53105 | 3.52329 | | |
| | 3.68601 | | | | | | 3.59836 | 2.094 |
| $ 35 Toluene-d8 | 0.93578 | 1.17475 | 0.94967 | 1.16842 | 0.92756 | 0.91839 | | |
| | 0.92737 | | | | | | 1.00028 | 11.740 |
| $ 54 Bromofluorobenzene | 0.73081 | 0.71856 | 0.58879 | 0.73162 | 0.56215 | 0.54164 | | |
| | 0.53871 | | | | | | 0.63033 | 14.594 |

015978

7A

# VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-042

Instrument ID: VOC1 Calibration Date: 09/05/95 Time: 1258

Lab File ID: 0201002 Init. Calib. Date(s): 08/30/95

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform) Max %D for CCC(*) = 25.0%

| COMPOUND | | $\overline{RRF}$ | RRF20 | %D |
|---|---|---|---|---|
| Chloromethane | | 0.922 | 0.769 | 16.594# |
| Bromomethane | # | 1.314 | 1.198 | 8.8280 |
| Vinyl Chloride | | 0.963 | 0.959 | 0.4154* |
| Chloroethane | * | 0.633 | 0.669 | 5.6872 |
| Methylene Chloride | | 1.505 | 1.642 | 9.1030 |
| Trichlorofluoromethane | | 4.099 | 3.963 | 3.3179 |
| 1,1-Dichloroethene | | 1.508 | 1.541 | 2.1883* |
| Bromochloromethane | * | 1.138 | 1.144 | 0.5272 |
| trans-1,2-Dichloroethene | | 1.743 | 1.701 | 2.4096 |
| 1,1-Dichloroethane | | 3.489 | 3.343 | 4.1846# |
| 1,2-Dichloroethane | # | 0.613 | 0.531 | 13.377 |
| Chloroform | | 4.656 | 4.576 | 1.7182* |
| Dichlorodifluoromethane | * | 2.090 | 1.563 | 25.215 |
| 1,1,1-Trichloroethane | | 4.306 | 4.433 | 2.9494 |
| Carbon Tetrachloride | | 0.708 | 0.790 | 11.582 |
| Bromodichloromethane | | 0.894 | 0.842 | 5.8166 |
| 1,2-Dichloropropane | | 0.412 | 0.390 | 5.3398* |
| cis-1,3-Dichloropropene | * | 0.629 | 0.562 | 10.652 |
| Trichloroethene | | 0.515 | 0.495 | 3.8835 |
| Benzene | | 0.847 | 0.796 | 6.0213 |
| trans-1,3-Dichloropropene | | 0.539 | 0.485 | 10.019 |
| 1,1,2-Trichloroethane | | 0.304 | 0.274 | 9.8684 |
| Dibromomethane | | 0.492 | 0.418 | 15.041 |
| Chlorodibromomethane | | 0.813 | 0.779 | 4.1820 |
| Bromoform | # | 0.474 | 0.421 | 11.181# |
| 1,1,2,2-Tetrachloroethane | # | 0.999 | 0.922 | 7.7077# |
| Tetrachloroethene | | 0.510 | 0.511 | 0.1961 |
| Toluene | * | 0.576 | 0.542 | 5.9028* |
| Chlorobenzene | # | 0.928 | 0.933 | 0.5388# |
| Ethylbenzene | * | 1.438 | 1.410 | 1.9471* |
| Styrene | | 0.785 | 0.760 | 3.1847 |
| 1,2,3-Trichloropropane | | 0.272 | 0.250 | 8.0882 |
| 1,1,1,2-Tetrachloroethane | | 0.580 | 0.564 | 2.7586 |
| Xylene-mp | | 0.493 | 0.494 | 0.2028 |
| Xylene-o | | 0.484 | 0.465 | 3.9256 |
| cis-1,2-Dichloroethene | | 1.794 | 1.818 | 1.3378 |
| 1,2-Dibromoethane | | 0.606 | 0.562 | 7.2607 |
| 1,3-Dichlorobenzene | | 1.433 | 1.474 | 2.8611 |

7A

# VOLATILE CONTINUING CALIBRATION CHECK 015977

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-042

Instrument ID: VOC1 Calibration Date: 09/05/95 Time: 1258

Lab File ID: 0201002 Init. Calib. Date(s): 08/30/95

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform) Max %D for CCC(*) = 25.0%

| COMPOUND | $\overline{RRF}$ | RRF20 | %D |
|---|---|---|---|
| 1,4-Dichlorobenzene | 1.446 | 1.473 | 1.8672 |
| 1,2-Dichlorobenzene | 1.334 | 1.330 | 0.2999 |
| 1,2-Dibromo-3-chloropropane | 0.290 | 0.226 | 22.069 |
| 2,2-Dichloropropane | 3.045 | 3.523 | 15.698 |
| 1,1-Dichloropropene | 0.618 | 0.551 | 10.841 |
| 1,3-Dichloropropane | 0.666 | 0.601 | 9.7598 |
| Isopropylbenzene | 2.664 | 2.729 | 2.4399 |
| Bromobenzene | 0.878 | 0.906 | 3.1891 |
| n-Propylbenzene | 3.281 | 3.297 | 0.4877 |
| 2-Chlorotoluene | 2.348 | 2.316 | 1.3629 |
| 1,3,5-Trimethylbenzene | 2.147 | 2.153 | 0.2795 |
| 4-Chlorotoluene | 2.587 | 2.532 | 2.1260 |
| tert-Butylbenzene | 2.218 | 2.251 | 1.4878 |
| 1,2,4-Trimethylbenzene | 2.207 | 2.209 | 0.0906 |
| sec-Butylbenzene | 3.062 | 3.111 | 1.6003 |
| 4-Isopropyltoluene | 2.373 | 2.404 | 1.3064 |
| n-Butylbenzene | 2.605 | 2.627 | 0.8445 |
| 1,2,4-Trichlorobenzene | 1.140 | 1.141 | 0.0877 |
| Hexachlorobutadiene | 1.019 | 0.986 | 3.2385 |
| Naphthalene | 1.405 | 1.207 | 14.093 |
| 1,2,3-Trichlorobenzene | 1.024 | 0.957 | 6.5430 |
| Toluene-d8 | 1.000 | 0.940 | 6.0000 |
| Bromofluorobenzene | 0.630 | 0.563 | 10.635 |
| Dibromofluromethane | 3.598 | 3.764 | 4.6137 |



FORM VII VOA

# FORM 8
## VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-042

Lab File ID (Standard): 0201002 Date Analyzed: 09/05/95

Instrument ID: VOC1 Time Analyzed: 1258

GC Column: ID: 2.00 (mm) Heated Purge: (Y/N) Y

| | | IS1(CBZ) AREA # | RT # | IS2 AREA # | RT # | IS3(DCB) AREA # | RT # |
|---|---|---|---|---|---|---|---|
| | 12 HOUR STD | 1931085 | 16.02 | 462688 | 7.23 | 980699 | 22.06 |
| | UPPER LIMIT | 3862170 | 16.52 | 925376 | 7.73 | 1961398 | 22.56 |
| | LOWER LIMIT | 965542 | 15.52 | 231344 | 6.73 | 490350 | 21.56 |
| | CLIENT SAMPLE NO. | | | | | | |
| 01 | 0905-BLANKBS | 1931085 | 16.02 | 460324 | 7.23 | 980699 | 22.06 |
| 02 | 0905-BLANK | 1847107 | 16.04 | 433991 | 7.25 | 917060 | 22.07 |
| 03 | 9509-042-1 | 1337975 | 16.06 | 286879 | 7.28 | 678442 | 22.09 |
| 04 | 9509-042-2 | 1261822 | 16.13 | 288524 | 7.32 | 758274 | 22.15 |
| 05 | 9509-042-3 | 1318837 | 16.13 | 325147 | 7.35 | 648414 | 22.16 |
| 06 | 9509-042-4 | 1135485 | 16.11 | 288388 | 7.32 | 471710* | 22.18 |
| 07 | 9509-042-4 | 1004204 | 16.13 | 265905 | 7.35 | 386121* | 22.16 |
| 08 | 9509-042-2 | 666870* | 16.11 | 151027* | 7.34 | 328134* | 22.13 |
| 09 | 9509-042-1MS | 1038312 | 16.13 | 241894 | 7.29 | 528271 | 22.15 |
| 10 | 9509-042-1MS | 956223* | 16.13 | 229784* | 7.34 | 423721* | 22.17 |
| 11 | 9508-714-11 | 480463* | 16.12 | 174407* | 7.35 | 178574* | 22.18 |
| 12 | 9508-714-13 | 471940* | 16.12 | 148403* | 7.35 | 155215* | 22.14 |
| 13 | 9508-714-10 | 930705* | 16.09 | 218382* | 7.32 | 441990* | 22.13 |
| 14 | 9508-714-9 | 624376* | 16.08 | 167795* | 7.31 | 248074* | 22.11 |
| 15 | MEOHBLANK | 1037771 | 16.07 | 270177 | 7.28 | 510530 | 22.10 |
| 16 | 9508-714-6 | 1086109 | 16.07 | 263225 | 7.30 | 525631 | 22.09 |
| 17 | 9508-714-6 | 1110663 | 16.07 | 271868 | 7.30 | 532595 | 22.08 |
| 18 | 9508-714-9 | 782331* | 16.06 | 201867* | 7.28 | 319333* | 22.09 |
| 19 | 9508-714-11 | 554899* | 16.07 | 162496* | 7.30 | 183857* | 22.09 |
| 20 | | | | | | | |
| 21 | | | | | | | |
| 22 | | | | | | | |

IS1 (CBZ) = Chlorobenzene-d5
IS2 = Pentaflurobenzene
IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

# FORM 8
# VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-042

Lab File ID (Standard): 0201002 Date Analyzed: 09/05/95

Instrument ID: VOC1 Time Analyzed: 1258

GC Column: ID: 2.00 (mm) Heated Purge: (Y/N) Y

| | | IS4 (DFB) AREA # | RT # | AREA # | RT # | AREA # | RT # |
|---|---|---|---|---|---|---|---|
| | 12 HOUR STD | 2516974 | 9.22 | | | | |
| | UPPER LIMIT | 5033948 | 9.72 | | | | |
| | LOWER LIMIT | 1258487 | 8.72 | | | | |
| | CLIENT SAMPLE NO. | | | | | | |
| 01 | 0905-BLANKBS | 2516974 | 9.22 | | | | |
| 02 | 0905-BLANK | 2315057 | 9.23 | | | | |
| 03 | 9509-042-1 | 1609095 | 9.27 | | | | |
| 04 | 9509-042-2 | 1198938* | 9.26 | | | | |
| 05 | 9509-042-3 | 1735801 | 9.32 | | | | |
| 06 | 9509-042-4 | 1277097 | 9.29 | | | | |
| 07 | 9509-042-4 | 1372876 | 9.33 | | | | |
| 08 | 9509-042-2 | 815320* | 9.30 | | | | |
| 09 | 9509-042-1MS | 1021266* | 9.23 | | | | |
| 10 | 9509-042-1MS | 1076153* | 9.29 | | | | |
| 11 | 9508-714-11 | 822717* | 9.29 | | | | |
| 12 | 9508-714-13 | 848094* | 9.34 | | | | |
| 13 | 9508-714-10 | 1233477* | 9.30 | | | | |
| 14 | 9508-714-9 | 941746* | 9.29 | | | | |
| 15 | MEOHBLANK | 1400767 | 9.26 | | | | |
| 16 | 9508-714-6 | 1395607 | 9.26 | | | | |
| 17 | 9508-714-6 | 1450429 | 9.28 | | | | |
| 18 | 9508-714-9 | 1134969* | 9.27 | | | | |
| 19 | 9508-714-11 | 915884* | 9.25 | | | | |
| 20 | | | | | | | |
| 21 | | | | | | | |
| 22 | | | | | | | |

IS4 (DFB) = 1,4-Difluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

015980

# FORM 8
## VOLATILE ANALYTICAL SEQUENCE

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-042

GC Column: ID: 2.00 (mm) Init. Calib. Date(s): 08/30/95 08/30/95

Instrument ID: VOC1

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 12.51 S2 : 19.06

| | CLIENT SAMPLE NO. | LAB SAMPLE ID | DATE ANALYZED | TIME ANALYZED | S1 RT # | S2 RT # |
|---|---|---|---|---|---|---|
| 01 | DCS-20 | | 09/05/95 | 1258 | 12.51 | 19.06 |
| 02 | ZZZZZ | ZZZZZ | 09/05/95 | 1258 | 12.51 | 19.06 |
| 03 | ZZZZZ | ZZZZZ | 09/05/95 | 1354 | 12.52 | 19.07 |
| 04 | 9509-042-1 | | 09/05/95 | 1433 | 12.54 | 19.09 |
| 05 | 9509-042-2 | | 09/05/95 | 1512 | 12.60 | 19.15 |
| 06 | 9509-042-3 | | 09/05/95 | 1554 | 12.62 | 19.16 |
| 07 | 9509-042-4 | | 09/05/95 | 1633 | 12.56 | 19.16 |
| 08 | 9509-042-4 | | 09/05/95 | 1718 | 12.62 | 19.18 |
| 09 | 9509-042-2 | | 09/05/95 | 1802 | 12.58 | 19.14 |
| 10 | 9509-042-1MS | | 09/05/95 | 1846 | 12.60 | 19.15 |
| 11 | 9509-042-1MS | | 09/05/95 | 1929 | 12.59 | 19.17 |
| 12 | ZZZZZ | ZZZZZ | 09/05/95 | 2012 | 12.58 | 19.18 |
| 13 | ZZZZZ | ZZZZZ | 09/05/95 | 2055 | 12.61 | 19.14 |
| 14 | ZZZZZ | ZZZZZ | 09/05/95 | 2137 | 12.58 | 19.13 |
| 15 | ZZZZZ | ZZZZZ | 09/05/95 | 2219 | 12.57 | 19.12 |
| 16 | ZZZZZ | ZZZZZ | 09/05/95 | 2302 | 12.56 | 19.10 |
| 17 | ZZZZZ | ZZZZZ | 09/05/95 | 2344 | 12.56 | 19.11 |
| 18 | ZZZZZ | ZZZZZ | 09/06/95 | 0026 | 12.54 | 19.10 |
| 19 | ZZZZZ | ZZZZZ | 09/06/95 | 0108 | 12.55 | 19.09 |
| 20 | ZZZZZ | ZZZZZ | 09/06/95 | 0150 | 12.53 | 19.09 |
| 21 | | | | | | |
| 22 | | | | | | |
| 23 | | | | | | |
| 24 | | | | | | |
| 25 | | | | | | |
| 26 | | | | | | |
| 27 | | | | | | |
| 28 | | | | | | |
| 29 | | | | | | |
| 30 | | | | | | |
| 31 | | | | | | |
| 32 | | | | | | |

QC LIMITS

S1 = Toluene-d8 (+/- 0.50 MINUTES)
S2 = Bromofluorobenzene (+/- 0.50 MINUTES)

# Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
VOLATILE ANALYTICAL SEQUENCE

015981

ab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-042

GC Column: ID: 2.00 (mm) Init. Calib. Date(s): 08/30/95 08/30/95

Instrument ID: VOC1

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 7.33

| | CLIENT SAMPLE NO. | LAB SAMPLE ID | DATE ANALYZED | TIME ANALYZED | S3 RT # | RT # |
|---|---|---|---|---|---|---|
| 01 | DCS-20 | | 09/05/95 | 1258 | 7.33 | |
| 02 | ZZZZZ | ZZZZZ | 09/05/95 | 1258 | 7.33 | |
| 03 | ZZZZZ | ZZZZZ | 09/05/95 | 1354 | 7.35 | |
| 04 | 9509-042-1 | | 09/05/95 | 1433 | 7.38 | |
| 05 | 9509-042-2 | | 09/05/95 | 1512 | 7.43 | |
| 06 | 9509-042-3 | | 09/05/95 | 1554 | 7.45 | |
| 07 | 9509-042-4 | | 09/05/95 | 1633 | 7.44 | |
| 08 | 9509-042-4 | | 09/05/95 | 1718 | 7.45 | |
| 09 | 9509-042-2 | | 09/05/95 | 1802 | 7.43 | |
| 10 | 9509-042-1MS | | 09/05/95 | 1846 | 7.40 | |
| 11 | 9509-042-1MS | | 09/05/95 | 1929 | 7.45 | |
| 12 | ZZZZZ | ZZZZZ | 09/05/95 | 2012 | 7.44 | |
| 13 | ZZZZZ | ZZZZZ | 09/05/95 | 2055 | 7.43 | |
| 14 | ZZZZZ | ZZZZZ | 09/05/95 | 2137 | 7.42 | |
| 15 | ZZZZZ | ZZZZZ | 09/05/95 | 2219 | 7.40 | |
| 16 | ZZZZZ | ZZZZZ | 09/05/95 | 2302 | 7.40 | |
| 17 | ZZZZZ | ZZZZZ | 09/05/95 | 2344 | 7.39 | |
| 18 | ZZZZZ | ZZZZZ | 09/06/95 | 0026 | 7.40 | |
| 19 | ZZZZZ | ZZZZZ | 09/06/95 | 0108 | 7.38 | |
| 20 | ZZZZZ | ZZZZZ | 09/06/95 | 0150 | 7.39 | |
| 21 | | | | | | |
| 22 | | | | | | |
| 23 | | | | | | |
| 24 | | | | | | |
| 25 | | | | | | |
| 26 | | | | | | |
| 27 | | | | | | |
| 28 | | | | | | |
| 29 | | | | | | |
| 30 | | | | | | |
| 31 | | | | | | |
| 32 | | | | | | |

QC LIMITS
S3 = Dibromofluromethane (+/- 0.50 MINUTES)

# Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

015982

# LOGIN
# CHAIN-OF-CUSTODY

015983

COOLER RECEIPT FORM

LIMS #: 9509042 / 9509043 / 9509044 Number of Coolers: 1
Date Received: 9/2/95

PROJECT: LONGHORN AAP / FT. BLISS / RED RIVER ARMY DEPOT - 1313 LONGFILL

USE OTHER SIDE OF THIS FORM TO NOTE DETAILS CONCERNING CHECK-IN PROBLEMS

A. PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 9/2/95
by (print): R. THOMAS (sign): [signature]

1. Did cooler come with a shipping slip (airbill,etc.)? ..... (YES) NO
If YES, enter carrier name & airbill number: Greyhound # 149-040-970-3

2. Were custody seals on outside of cooler? ..... (YES) NO
How many & where: 2/FRONT & BACK, seal date: 9/1/95, seal name: ?

3. Were custody seals unbroken and intact at the date and time of arrival? ..... (YES) NO

4. Did you screen samples for radioactivity using a Geiger Counter? ..... YES (NO)

5. Were custody papers sealed in a plastic bag & taped inside to the lid? ..... (YES) NO

6. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO

7. Did you sign custody papers in the appropriate place? ..... (YES) NO

8. Was project identifiable from custody papers? If YES, enter project name at top of this form ..... (YES) NO

9. If required, was enough ice used? cooler temp: 4° c, Type of ice: BAGGED (CUBES) (YES) NO

10. Have designated person initial here to acknowledge receipt of cooler: HJ date: 9/2/95

B. LOG-IN PHASE: Date samples were logged-in: 9/5/95
by (print): S. HERRMANN (sign): S. Herrmann

11. Describe type of packing in cooler: FOAM INSERT / BAGLESS / BAGGED ICE

12. Were all bottles sealed in separate plastic bags? ..... (YES) NO

13. Did all bottles arrive unbroken and were labels in good condition? ..... (YES) NO

14. Were all bottle labels complete (ID, date, time, signature, preserved, etc.)? ..... (YES) NO

15. Did all bottle labels agree with custody papers? ..... (YES) NO

16. Were correct containers used for the tests indicated? ..... (YES) NO

17. Were correct preservatives added to samples? ..... (YES) NO

18. Was a sufficient amount of sample sent for tests indicated? ..... (YES) NO

19. Were bubbles absent in VOA samples? If NO, list by sample#: N/A YES NO

20. Was the project manager called and status discussed? If YES, give details on the back of this form.... YES (NO)

21. Who was called? _____ By whom ? _____ (date) _____

000003

015984

# SAMPLE REPORTS

Environmental Testing and Consulting, Inc.
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

015985

# Cross Reference Table

Project : Longhorn AAP

| Field ID | SWD NO. | Laboratory ID |
|---|---|---|
| HBS-1-QA | S5 0193-11 | 9509-042-01 |
| HBS-2-QA | S5 0193-13 | 9509-042-02 |
| HBS-3-QA | S5 0193-15 | 9509-042-03 |
| HBS-4-QA | S5 0193-17 | 9509-042-04 |

015986

ENVIRONMENTAL TESTING & CONSULTING, INC.
**Memphis, TN**
**INORGANIC ANALYSIS DATA SHEET**
**PERCENT SOLIDS**

Project Name :Longhorn AAP

Matrix :SOIL

Date Sample Received :09/05/95

Contract Laboratory Order Number :9509-042

| Contract Lab Sample No | SWD Sample Number | Date Sampled | Result Units :(%) | Date Analyzed | Method | Analyst |
|---|---|---|---|---|---|---|
| 9509-042-01 | S5 0193-11 | 08/31/95 | 73.3 | 09/05/95 | 160.3 | PM |
| 9509-042-02 | S5 0193-13 | 08/31/95 | 74.5 | 09/06/95 | 160.3 | PM |
| 9509-042-03 | S5 0193-15 | 08/31/95 | 76.4 | 09/06/95 | 160.3 | PM |
| 9509-042-04 | S5 0193-17 | 08/31/95 | 49.5 | 09/05/95 | 160.3 | PM |

LABORATORY MANAGER

000006

015987

# Inchcape Testing Services
## Environmental Laboratories

.s Blvd.
R[illegible] , TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-1
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-9-TB S50212-1
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : MGD
ANALYZED ON : 13-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS7-798

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/L | < 100 µg/L |
| Acrylonitrile | 5.00 µg/L | < 5.00 µg/L |
| Benzene | 5.00 µg/L | < 5.00 µg/L |
| Bromobenzene | 5.00 µg/L | < 5.00 µg/L |
| Bromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromodichloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromoform | 5.00 µg/L | < 5.00 µg/L |
| Carbon disulfide | 5.00 µg/L | < 5.00 µg/L |
| Carbon tetrachloride | 5.00 µg/L | < 5.00 µg/L |
| Chlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| Chloroethane | 5.00 µg/L | < 5.00 µg/L |
| Chloroform | 5.00 µg/L | < 5.00 µg/L |
| 2-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| 4-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| Dibromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/L | < 25.0 µg/L |

015988

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road • Memphis, TN 38111 • (901) 327-2750 • FAX (901)
*Founded 1972*

September 6, 1995

Ms. Anhmai P. Tran
US Army Corps of Engineers
4815 Cass Street
Dallas, TX 75235

Ref: Analytical Testing
ETC Order # 9509042
Project Description Longhorn AAP

The above referenced project has been analyzed per your instructions. The analyses were performed in our laboratory in accordance with Standard Methods 17th Edition; The Solid Waste Manual SW-846; EPA Methods for the Analysis of Water and Wastes and/or 40 CFR part 136. The results are shown on the attached analysis sheet(s).

Within the attached report, some analyte data may be reported as "Qualified" data indicated by a "Data Flag" next to the result. The following summarizes the possible "Data Flags" that may be associated with this data :

Q - Surrogate recovery outside QC Limits.
j - Estimated Value. Presence of the compound was confirmed but less than the sample quanititation limit but greater than zero.
E - Concentration exceeds the established method calibration range but is within the working range of the instrument.
B - Analyte detected in blank.
S - Associated Surrogate Recovery outside QC Limits
N - Non-Compliance Report associated with this sample or project indicating standard protocol was not followed. Please refer to attached report.

Please do not hesitate to contact our office if you have any questions.

Sincerely,

Nathan A. Pera, IV
Vice-President
Chief Operations Officer

lb

Attachment

# Inchcape Testing Services
## Environmental Laboratories

015989

1089 E. Collins Blvd.
81
FAX: 214-258-5392


REPORT NUMBER : D95-8690-1
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,4-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,4-Dichloro-2-butene | 100 µg/L | < 100 µg/L |
| 1,1-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| cis-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 2,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| cis-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| Ethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 2-Hexanone | 50.0 µg/L | < 50.0 µg/L |
| Bromomethane | 5.00 µg/L | < 5.00 µg/L |
| Chloromethane | 5.00 µg/L | < 5.00 µg/L |
| Dibromomethane | 5.00 µg/L | < 5.00 µg/L |
| 2-Butanone | 100 µg/L | < 100 µg/L |
| Iodomethane | 5.00 µg/L | < 5.00 µg/L |
| Methylene chloride | 5.00 µg/l | < 5.00 µg/l |
| 4-Methyl-2-pentanone | 100 µg/L | < 100 µg/L |
| Styrene | 5.00 µg/L | < 5.00 µg/L |

015990

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-3591
Fax. 214-238-3592

REPORT NUMBER : D95-8690-1
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| Tetrachloroethene | 5.00 µg/L | < 5.00 µg/L |
| Toluene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,1,1-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| Trichloroethene | 5.00 µg/L | < 5.00 µg/L |
| Trichlorofluoromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,3,5-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| Vinyl acetate | 50.0 µg/L | < 50.0 µg/L |
| Vinyl chloride | 5.00 µg/L | < 5.00 µg/L |
| m,p-Xylene | 5.00 µg/L | < 5.00 µg/L |
| o-Xylene | 5.00 µg/L | < 5.00 µg/L |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 103 % |
| Toluene-d8 (SS) | 50.0 µg/L | 99.5 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 96.6 % |

Applicable results are reported on Dry Weight basis.

015991

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-1
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-9-TB S50212-1
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYZED BY : MGD
ANALYZED ON : 13-SEP-1995
ANALYSIS METHOD : /1
QC BATCH NO : ITS7-798

| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
|---|---|---|---|
| COMPOUND | RETENTION TIME | FRACTION | RESULT |
| No compounds detected above | | VOA | 10 ug/L |

Applicable results are reported on Dry Weight basis.

015992

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-2
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-1B S50212-2
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : MGD
ANALYZED ON : 13-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS7-798

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/L | < 100 µg/L |
| Acrylonitrile | 5.00 µg/L | < 5.00 µg/L |
| Benzene | 5.00 µg/L | < 5.00 µg/L |
| Bromobenzene | 5.00 µg/L | < 5.00 µg/L |
| Bromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromodichloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromoform | 5.00 µg/L | < 5.00 µg/L |
| Carbon disulfide | 5.00 µg/L | < 5.00 µg/L |
| Carbon tetrachloride | 5.00 µg/L | < 5.00 µg/L |
| Chlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| Chloroethane | 5.00 µg/L | < 5.00 µg/L |
| Chloroform | 5.00 µg/L | < 5.00 µg/L |
| 2-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| 4-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| Dibromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/L | < 25.0 µg/L |

015993


# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592


REPORT NUMBER : D95-8690-2
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,4-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,4-Dichloro-2-butene | 100 µg/L | < 100 µg/L |
| 1,1-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| cis-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 2,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| cis-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| Ethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 2-Hexanone | 50.0 µg/L | < 50.0 µg/L |
| Bromomethane | 5.00 µg/L | < 5.00 µg/L |
| Chloromethane | 5.00 µg/L | < 5.00 µg/L |
| Dibromomethane | 5.00 µg/L | < 5.00 µg/L |
| 2-Butanone | 100 µg/L | < 100 µg/L |
| Iodomethane | 5.00 µg/L | < 5.00 µg/L |
| Methylene chloride | 5.00 µg/l | < 5.00 µg/l |
| 4-Methyl-2-pentanone | 100 µg/L | < 100 µg/L |
| Styrene | 5.00 µg/L | < 5.00 µg/L |

015994

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Coll ... .....
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

REPORT NUMBER : D95-8690-2
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| Tetrachloroethene | 5.00 µg/L | < 5.00 µg/L |
| Toluene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,1,1-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| Trichloroethene | 5.00 µg/L | 9.27 µg/L |
| Trichlorofluoromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,3,5-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| Vinyl acetate | 50.0 µg/L | < 50.0 µg/L |
| Vinyl chloride | 5.00 µg/L | < 5.00 µg/L |
| m,p-Xylene | 5.00 µg/L | < 5.00 µg/L |
| o-Xylene | 5.00 µg/L | < 5.00 µg/L |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 108 % |
| Toluene-d8 (SS) | 50.0 µg/L | 97.8 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 93.2 % |

Applicable results are reported on Dry Weight basis.

015995

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-2
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-1B S50212-2
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYZED BY : MGD
ANALYZED ON : 13-SEP-1995
ANALYSIS METHOD : /1
QC BATCH NO : ITS7-798

| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
|---|---|---|---|
| COMPOUND | RETENTION TIME | FRACTION | RESULT |
| No compounds detected above | | VOA | 10 ug/L |

Applicable results are reported on Dry Weight basis.

015996

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

District : Tulsa
Project : Longhorn AAP
Site : Harrison Bayou
Date Received : September 11 1995
Sample Matrix : Water
Method No : 8260
QC Batch No : 950913W1

Date Reported : September 14 1995
Field ID : HBW-1B-QA
Date Sampled : September 11 1995
Date Analyzed : September 13 1995
SWD Number : S50212-3
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Benzene | 1 | < 1 |
| Bromobenzene | 1 | < 1 |
| Bromochloromethane | 1 | < 1 |
| Bromodichloromethane | 1 | < 1 |
| Bromoform | 1 | < 1 |
| Bromomethane | 1 | < 1 |
| n-Butylbenzene | 1 | < 1 |
| sec- Butylbenzene | 1 | < 1 |
| tert-Butylbenzene | 1 | < 1 |
| Carbon tetrachloride | 1 | < 1 |
| Chlorobenzene | 1 | < 1 |
| Chloroethane | 1 | < 1 |
| Chloroform | 1 | < 1 |
| Chloromethane | 1 | < 1 |
| 2-Chlorotoluene | 1 | < 1 |
| 4-Chlorotoluene | 1 | < 1 |
| Dibromochloromethane | 1 | < 1 |
| 1,2-Dibromo-3-chloropropane | 1 | < 1 |
| 1,2-Dibromoethane | 1 | < 1 |
| Dibromomethane | 1 | < 1 |
| 1,2-Dichlorobenzene | 1 | < 1 |
| 1,3-Dichlorobenzene | 1 | < 1 |
| 1,4-Dichlorobenzene | 1 | < 1 |
| Dichlorodifluoromethane | 1 | < 1 |
| 1,1-Dichloroethane | 1 | < 1 |
| 1,2-Dichloroethane | 1 | < 1 |
| 1,1-Dichloroethene | 1 | < 1 |
| cis-1,2-Dichloroethene | 1 | 2 |
| trans-1,2-Dichloroethene | 1 | < 1 |
| 1,2-Dichloropropane | 1 | < 1 |
| 1,3-Dichloropropane | 1 | < 1 |
| 2,2-Dichloropropane | 1 | < 1 |

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

District : Tulsa
Project : Longhorn AAP
Site : Harrison Bayou
Date Received : September 11 1995
Sample Matrix : Water
Method No : 8260
QC Batch No : 950913W1

Date Reported : September 14 1995
Field ID : HBW-1B-QA
Date Sampled : September 11 1995
Date Analyzed : September 13 1995
SWD Number : S50212-3
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| 1,1-Dichloropropene | 1 | < 1 |
| Ethylbenzene | 1 | < 1 |
| Hexachlorobutadiene | 1 | < 1 |
| Isopropylbenzene | 1 | < 1 |
| p-Isopropyltoluene | 1 | < 1 |
| Methylene chloride | 1 | < 1 |
| Naphthalene | 1 | < 1 |
| n-Propylbenzene | 1 | < 1 |
| Styrene | 1 | < 1 |
| 1,1,1,2-Tetrachloroethane | 1 | < 1 |
| 1,1,2,2-Tetrachloroethane | 1 | < 1 |
| Tetrachloroethene | 1 | < 1 |
| Toluene | 1 | < 1 |
| 1,2,3-Trichlorobenzene | 1 | < 1 |
| 1,2,4-Trichlorobenzene | 1 | < 1 |
| 1,1,1-Trichloroethane | 1 | < 1 |
| 1,1,2-Trichloroethane | 1 | < 1 |
| Trichloroethene | 1 | 8 |
| Trichlorofluoromethane | 1 | < 1 |
| 1,2,3-Trichloropropane | 1 | < 1 |
| 1,2,4-Trimethylbenzene | 1 | < 1 |
| 1,3,5-Trimethylbenzene | 1 | < 1 |
| Vinyl chloride | 1 | < 1 |
| o-Xylene | 1 | < 1 |
| m & p-Xylene | 2 | < 2 |

| Surrogates | Concentration of Surrogate (ug/l) | % Recovered |
|---|---|---|
| Dibromofluoromethane | 10 | 92 % |
| 1,2-Dichloroethane-d4 | 10 | 97 % |
| Toluene-d8 | 10 | 97 % |
| 4-Bromofluorobenzene | 10 | 111 % |

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.
S50212-3

015998

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: LONGHORN Site: Location:

Matrix: (soil/water) WATER Lab Sample ID: S50212-3

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: 0101005.D

Level: (low/med) Date Received: 9/11/95

% Moisture: not dec. 100 Date Analyzed: 9/13/95

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Number TICs found: 0 Concentration Units: (ug/L or ug/Kg) ug/L

| CAS Number | Compound Name | RT | Est. Conc. | Q |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
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015999

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-3
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-5 S50212-4
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : MGD
ANALYZED ON : 13-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS7-798

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/L | < 100 µg/L |
| Acrylonitrile | 5.00 µg/L | < 5.00 µg/L |
| Benzene | 5.00 µg/L | < 5.00 µg/L |
| Bromobenzene | 5.00 µg/L | < 5.00 µg/L |
| Bromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromodichloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromoform | 5.00 µg/L | < 5.00 µg/L |
| Carbon disulfide | 5.00 µg/L | < 5.00 µg/L |
| Carbon tetrachloride | 5.00 µg/L | < 5.00 µg/L |
| Chlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| Chloroethane | 5.00 µg/L | < 5.00 µg/L |
| Chloroform | 5.00 µg/L | < 5.00 µg/L |
| 2-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| 4-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| Dibromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/L | < 25.0 µg/L |

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592


REPORT NUMBER : D95-8690-3
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,4-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,4-Dichloro-2-butene | 100 µg/L | < 100 µg/L |
| 1,1-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| cis-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 2,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| cis-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| Ethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 2-Hexanone | 50.0 µg/L | < 50.0 µg/L |
| Bromomethane | 5.00 µg/L | < 5.00 µg/L |
| Chloromethane | 5.00 µg/L | < 5.00 µg/L |
| Dibromomethane | 5.00 µg/L | < 5.00 µg/L |
| 2-Butanone | 100 µg/L | < 100 µg/L |
| Iodomethane | 5.00 µg/L | < 5.00 µg/L |
| Methylene chloride | 5.00 µg/l | < 5.00 µg/l |
| 4-Methyl-2-pentanone | 100 µg/L | < 100 µg/L |
| Styrene | 5.00 µg/L | < 5.00 µg/L |

016001

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

REPORT NUMBER : D95-8690-3
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| Tetrachloroethene | 5.00 µg/L | < 5.00 µg/L |
| Toluene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,1,1-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| Trichloroethene | 5.00 µg/L | < 5.00 µg/L |
| Trichlorofluoromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,3,5-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| Vinyl acetate | 50.0 µg/L | < 50.0 µg/L |
| Vinyl chloride | 5.00 µg/L | < 5.00 µg/L |
| m,p-Xylene | 5.00 µg/L | < 5.00 µg/L |
| o-Xylene | 5.00 µg/L | < 5.00 µg/L |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 107 % |
| Toluene-d8 (SS) | 50.0 µg/L | 97.5 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 94.4 % |

Applicable results are reported on Dry Weight basis.

# Inchcape Testing Services
## Environmental Laboratories

016002

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-3
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-5 S50212-4
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYZED BY : MGD
ANALYZED ON : 13-SEP-1995
ANALYSIS METHOD : /1
QC BATCH NO : ITS7-798

| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
|---|---|---|---|
| COMPOUND | RETENTION TIME | FRACTION | RESULT |
| No compounds detected above | | VOA | 10 ug/L |

Applicable results are reported on Dry Weight basis.

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

016003

District : Tulsa
Project : Longhorn AAP
Site : Harrison Bayou
Date Received : September 11 1995
Sample Matrix : Water
Method No : 8260
QC Batch No : 950913W1

Date Reported : September 14 1995
Field ID : HBW-5-QA
Date Sampled : September 11 1995
Date Analyzed : September 13 1995
SWD Number : S50212-5
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Benzene | 1 | < 1 |
| Bromobenzene | 1 | < 1 |
| Bromochloromethane | 1 | < 1 |
| Bromodichloromethane | 1 | < 1 |
| Bromoform | 1 | < 1 |
| Bromomethane | 1 | < 1 |
| n-Butylbenzene | 1 | < 1 |
| sec- Butylbenzene | 1 | < 1 |
| tert-Butylbenzene | 1 | < 1 |
| Carbon tetrachloride | 1 | < 1 |
| Chlorobenzene | 1 | < 1 |
| Chloroethane | 1 | < 1 |
| Chloroform | 1 | < 1 |
| Chloromethane | 1 | < 1 |
| 2-Chlorotoluene | 1 | < 1 |
| 4-Chlorotoluene | 1 | < 1 |
| Dibromochloromethane | 1 | < 1 |
| 1,2-Dibromo-3-chloropropane | 1 | < 1 |
| 1,2-Dibromoethane | 1 | < 1 |
| Dibromomethane | 1 | < 1 |
| 1,2-Dichlorobenzene | 1 | < 1 |
| 1,3-Dichlorobenzene | 1 | < 1 |
| 1,4-Dichlorobenzene | 1 | < 1 |
| Dichlorodifluoromethane | 1 | < 1 |
| 1,1-Dichloroethane | 1 | < 1 |
| 1,2-Dichloroethane | 1 | < 1 |
| 1,1-Dichloroethene | 1 | < 1 |
| cis-1,2-Dichloroethene | 1 | 1 |
| trans-1,2-Dichloroethene | 1 | < 1 |
| 1,2-Dichloropropane | 1 | < 1 |
| 1,3-Dichloropropane | 1 | < 1 |
| 2,2-Dichloropropane | 1 | < 1 |

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

District : Tulsa
Project : Longhorn AAP
Site : Harrison Bayou
Date Received : September 11 1995
Sample Matrix : Water
Method No : 8260
QC Batch No : 950913W1

Date Reported : September 14 1995
Field ID : HBW-5-QA
Date Sampled : September 11 1995
Date Analyzed : September 13 1995
SWD Number : S50212-5
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| 1,1-Dichloropropene | 1 | < 1 |
| Ethylbenzene | 1 | < 1 |
| Hexachlorobutadiene | 1 | < 1 |
| Isopropylbenzene | 1 | < 1 |
| p-Isopropyltoluene | 1 | < 1 |
| Methylene chloride | 1 | < 1 |
| Naphthalene | 1 | < 1 |
| n-Propylbenzene | 1 | < 1 |
| Styrene | 1 | < 1 |
| 1,1,1,2-Tetrachloroethane | 1 | < 1 |
| 1,1,2,2-Tetrachloroethane | 1 | < 1 |
| Tetrachloroethene | 1 | < 1 |
| Toluene | 1 | < 1 |
| 1,2,3-Trichlorobenzene | 1 | < 1 |
| 1,2,4-Trichlorobenzene | 1 | < 1 |
| 1,1,1-Trichloroethane | 1 | < 1 |
| 1,1,2-Trichloroethane | 1 | < 1 |
| Trichloroethene | 1 | < 1 |
| Trichlorofluoromethane | 1 | < 1 |
| 1,2,3-Trichloropropane | 1 | < 1 |
| 1,2,4-Trimethylbenzene | 1 | < 1 |
| 1,3,5-Trimethylbenzene | 1 | < 1 |
| Vinyl chloride | 1 | < 1 |
| o-Xylene | 1 | < 1 |
| m & p-Xylene | 2 | < 2 |

| Surrogates | Concentration of Surrogate (ug/l) | % Recovered |
|---|---|---|
| Dibromofluoromethane | 10 | 99 % |
| 1,2-Dichloroethane-d4 | 10 | 111 % |
| Toluene-d8 | 10 | 104 % |
| 4-Bromofluorobenzene | 10 | 110 % |

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.

S50212-5

016005

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ LONGHORN Site: _____ Location: _____

Matrix: (soil/water) WATER Lab Sample ID: S50212-5

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: 0101009.D

Level: (low/med) _____ Date Received: 9/11/95

% Moisture: not dec. 100 Date Analyzed: 9/13/95

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: __ (uL)

Number TICs found: 0 Concentration Units: (ug/L or ug/Kg) ug/L

| CAS Number | Compound Name | RT | Est. Conc. | Q |
|---|---|---|---|---|
| 1. | | | | |
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# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592


DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-4
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-6 S50212-6
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : MGD
ANALYZED ON : 13-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS7-798

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/L | < 100 µg/L |
| Acrylonitrile | 5.00 µg/L | < 5.00 µg/L |
| Benzene | 5.00 µg/L | < 5.00 µg/L |
| Bromobenzene | 5.00 µg/L | < 5.00 µg/L |
| Bromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromodichloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromoform | 5.00 µg/L | < 5.00 µg/L |
| Carbon disulfide | 5.00 µg/L | < 5.00 µg/L |
| Carbon tetrachloride | 5.00 µg/L | < 5.00 µg/L |
| Chlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| Chloroethane | 5.00 µg/L | < 5.00 µg/L |
| Chloroform | 5.00 µg/L | < 5.00 µg/L |
| 2-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| 4-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| Dibromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/L | < 25.0 µg/L |

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5502


01600

REPORT NUMBER : D95-8690-4
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,4-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,4-Dichloro-2-butene | 100 µg/L | < 100 µg/L |
| 1,1-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| cis-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 2,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| cis-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| Ethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 2-Hexanone | 50.0 µg/L | < 50.0 µg/L |
| Bromomethane | 5.00 µg/L | < 5.00 µg/L |
| Chloromethane | 5.00 µg/L | < 5.00 µg/L |
| Dibromomethane | 5.00 µg/L | < 5.00 µg/L |
| 2-Butanone | 100 µg/L | < 100 µg/L |
| Iodomethane | 5.00 µg/L | < 5.00 µg/L |
| Methylene chloride | 5.00 µg/l | < 5.00 µg/l |
| 4-Methyl-2-pentanone | 100 µg/L | < 100 µg/L |
| Styrene | 5.00 µg/L | < 5.00 µg/L |

# Inchcape Testing Services
## Environmental Laboratories

016008

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

REPORT NUMBER : D95-8690-4
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| Tetrachloroethene | 5.00 µg/L | < 5.00 µg/L |
| Toluene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,1,1-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| Trichloroethene | 5.00 µg/L | < 5.00 µg/L |
| Trichlorofluoromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,3,5-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| Vinyl acetate | 50.0 µg/L | < 50.0 µg/L |
| Vinyl chloride | 5.00 µg/L | < 5.00 µg/L |
| m,p-Xylene | 5.00 µg/L | < 5.00 µg/L |
| o-Xylene | 5.00 µg/L | < 5.00 µg/L |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 109 % |
| Toluene-d8 (SS) | 50.0 µg/L | 98.5 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 94.8 % |

Applicable results are reported on Dry Weight basis.

016009

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-4
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-6 S50212-6
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYZED BY : MGD
ANALYZED ON : 13-SEP-1995
ANALYSIS METHOD : /1
QC BATCH NO : ITS7-798

| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
|---|---|---|---|
| COMPOUND | RETENTION TIME | FRACTION | RESULT |
| No compounds detected above | | VOA | 10 ug/L |

Applicable results are reported on Dry Weight basis.

016019

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

District : Tulsa
Project : Longhorn AAP
Site : Harrison Bayou
Date Received : September 11 1995
Sample Matrix : Water
Method No : 8260
QC Batch No : 950913W1

Date Reported : September 14 1995
Field ID : HBW-6-QA
Date Sampled : September 11 1995
Date Analyzed : September 13 1995
SWD Number : S50212-7
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Benzene | 1 | < 1 |
| Bromobenzene | 1 | < 1 |
| Bromochloromethane | 1 | < 1 |
| Bromodichloromethane | 1 | < 1 |
| Bromoform | 1 | < 1 |
| Bromomethane | 1 | < 1 |
| n-Butylbenzene | 1 | < 1 |
| sec- Butylbenzene | 1 | < 1 |
| tert-Butylbenzene | 1 | < 1 |
| Carbon tetrachloride | 1 | < 1 |
| Chlorobenzene | 1 | < 1 |
| Chloroethane | 1 | < 1 |
| Chloroform | 1 | < 1 |
| Chloromethane | 1 | < 1 |
| 2-Chlorotoluene | 1 | < 1 |
| 4-Chlorotoluene | 1 | < 1 |
| Dibromochloromethane | 1 | < 1 |
| 1,2-Dibromo-3-chloropropane | 1 | < 1 |
| 1,2-Dibromoethane | 1 | < 1 |
| Dibromomethane | 1 | < 1 |
| 1,2-Dichlorobenzene | 1 | < 1 |
| 1,3-Dichlorobenzene | 1 | < 1 |
| 1,4-Dichlorobenzene | 1 | < 1 |
| Dichlorodifluoromethane | 1 | < 1 |
| 1,1-Dichloroethane | 1 | < 1 |
| 1,2-Dichloroethane | 1 | < 1 |
| 1,1-Dichloroethene | 1 | < 1 |
| cis-1,2-Dichloroethene | 1 | < 1 |
| trans-1,2-Dichloroethene | 1 | < 1 |
| 1,2-Dichloropropane | 1 | < 1 |
| 1,3-Dichloropropane | 1 | < 1 |
| 2,2-Dichloropropane | 1 | < 1 |

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

District : Tulsa
Project : Longhorn AAP
Site : Harrison Bayou
Date Received : September 11 1995
Sample Matrix : Water
Method No : 8260
QC Batch No : 950913W1

Date Reported : September 14 1995
Field ID : HBW-6-QA
Date Sampled : September 11 1995
Date Analyzed : September 13 1995
SWD Number : S50212-7
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| 1,1-Dichloropropene | 1 | < 1 |
| Ethylbenzene | 1 | < 1 |
| Hexachlorobutadiene | 1 | < 1 |
| Isopropylbenzene | 1 | < 1 |
| p-Isopropyltoluene | 1 | < 1 |
| Methylene chloride | 1 | < 1 |
| Naphthalene | 1 | < 1 |
| n-Propylbenzene | 1 | < 1 |
| Styrene | 1 | < 1 |
| 1,1,1,2-Tetrachloroethane | 1 | < 1 |
| 1,1,2,2-Tetrachloroethane | 1 | < 1 |
| Tetrachloroethene | 1 | < 1 |
| Toluene | 1 | < 1 |
| 1,2,3-Trichlorobenzene | 1 | < 1 |
| 1,2,4-Trichlorobenzene | 1 | < 1 |
| 1,1,1-Trichloroethane | 1 | < 1 |
| 1,1,2-Trichloroethane | 1 | < 1 |
| Trichloroethene | 1 | < 1 |
| Trichlorofluoromethane | 1 | < 1 |
| 1,2,3-Trichloropropane | 1 | < 1 |
| 1,2,4-Trimethylbenzene | 1 | < 1 |
| 1,3,5-Trimethylbenzene | 1 | < 1 |
| Vinyl chloride | 1 | < 1 |
| o-Xylene | 1 | < 1 |
| m & p-Xylene | 2 | < 2 |

| Surrogates | Concentration of Surrogate (ug/l) | % Recovered |
|---|---|---|
| Dibromofluoromethane | 10 | 98 % |
| 1,2-Dichloroethane-d4 | 10 | 109 % |
| Toluene-d8 | 10 | 101 % |
| 4-Bromofluorobenzene | 10 | 109 % |

1E

SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

016012 S50212-7

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: LONGHORN Site: Location:

Matrix: (soil/water) WATER Lab Sample ID: S50212-7

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: 0101010.D

Level: (low/med) Date Received: 9/11/95

% Moisture: not dec. 100 Date Analyzed: 9/13/95

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Number TICs found: 0 Concentration Units: (ug/L or ug/Kg) ug/L

| CAS Number | Compound Name | RT | Est. Conc. | Q |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
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| 29. | | | | |
| 30. | | | | |

016013

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-7
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-9 S50212-12
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYZED BY : MGD
ANALYZED ON : 13-SEP-1995
ANALYSIS METHOD : /1
QC BATCH NO : ITS7-798

| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
|---|---|---|---|
| COMPOUND | RETENTION TIME | FRACTION | RESULT |
| No compounds detected above | | VOA | 10 ug/L |

Applicable results are reported on Dry Weight basis.

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

**District** : Tulsa
**Project** : Longhorn AAP
**Site** : Harrison Bayou
**Date Received** : September 11 1995
**Sample Matrix** : Water
**Method No** : 8260
**QC Batch No** : 950913W1

**Date Reported** : September 14 1995
**Field ID** : HBW-8-QA
**Date Sampled** : September 11 1995
**Date Analyzed** : September 13 1995
**SWD Number** : S50212-11
**Dilution Factor** : 1
**Analyst** : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| 1,1-Dichloropropene | 1 | < 1 |
| Ethylbenzene | 1 | < 1 |
| Hexachlorobutadiene | 1 | < 1 |
| Isopropylbenzene | 1 | < 1 |
| p-Isopropyltoluene | 1 | < 1 |
| Methylene chloride | 1 | < 1 |
| Naphthalene | 1 | < 1 |
| n-Propylbenzene | 1 | < 1 |
| Styrene | 1 | < 1 |
| 1,1,1,2-Tetrachloroethane | 1 | < 1 |
| 1,1,2,2-Tetrachloroethane | 1 | < 1 |
| Tetrachloroethene | 1 | < 1 |
| Toluene | 1 | < 1 |
| 1,2,3-Trichlorobenzene | 1 | < 1 |
| 1,2,4-Trichlorobenzene | 1 | < 1 |
| 1,1,1-Trichloroethane | 1 | < 1 |
| 1,1,2-Trichloroethane | 1 | < 1 |
| Trichloroethene | 1 | < 1 |
| Trichlorofluoromethane | 1 | < 1 |
| 1,2,3-Trichloropropane | 1 | < 1 |
| 1,2,4-Trimethylbenzene | 1 | < 1 |
| 1,3,5-Trimethylbenzene | 1 | < 1 |
| Vinyl chloride | 1 | < 1 |
| o-Xylene | 1 | < 1 |
| m & p-Xylene | 2 | < 2 |

| Surrogates | Concentration of Surrogate (ug/l) | % Recovered |
|---|---|---|
| Dibromofluoromethane | 10 | 99 % |
| 1,2-Dichloroethane-d4 | 10 | 110 % |
| Toluene-d8 | 10 | 101 % |
| 4-Bromofluorobenzene | 10 | 103 % |

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.
S50212-11

01601

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ LONGHORN Site: _____ Location: _____

Matrix: (soil/water) WATER Lab Sample ID: 50212-11

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: 0101012.D

Level: (low/med) _____ Date Received: 9/11/95

% Moisture: not dec. 100 Date Analyzed: 9/13/95

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _ (uL)

Number TICs found: 0 Concentration Units: (ug/L or ug/Kg) ug/L

| CAS Number | Compound Name | RT | Est. Conc. | Q |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
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| 30. | | | | |

016016

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-7
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-9 S50212-12
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : MGD
ANALYZED ON : 13-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS7-798

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/L | < 100 µg/L |
| Acrylonitrile | 5.00 µg/L | < 5.00 µg/L |
| Benzene | 5.00 µg/L | < 5.00 µg/L |
| Bromobenzene | 5.00 µg/L | < 5.00 µg/L |
| Bromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromodichloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromoform | 5.00 µg/L | < 5.00 µg/L |
| Carbon disulfide | 5.00 µg/L | < 5.00 µg/L |
| Carbon tetrachloride | 5.00 µg/L | < 5.00 µg/L |
| Chlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| Chloroethane | 5.00 µg/L | < 5.00 µg/L |
| Chloroform | 5.00 µg/L | < 5.00 µg/L |
| 2-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| 4-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| Dibromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/L | < 25.0 µg/L |

016017


# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592


REPORT NUMBER : D95-8690-7
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,4-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,4-Dichloro-2-butene | 100 µg/L | < 100 µg/L |
| 1,1-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| cis-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 2,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| cis-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| Ethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 2-Hexanone | 50.0 µg/L | < 50.0 µg/L |
| Bromomethane | 5.00 µg/L | < 5.00 µg/L |
| Chloromethane | 5.00 µg/L | < 5.00 µg/L |
| Dibromomethane | 5.00 µg/L | < 5.00 µg/L |
| 2-Butanone | 100 µg/L | < 100 µg/L |
| Iodomethane | 5.00 µg/L | < 5.00 µg/L |
| Methylene chloride | 5.00 µg/l | < 5.00 µg/l |
| 4-Methyl-2-pentanone | 100 µg/L | < 100 µg/L |
| Styrene | 5.00 µg/L | < 5.00 µg/L |

016018

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

REPORT NUMBER : D95-8690-7
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| Tetrachloroethene | 5.00 µg/L | < 5.00 µg/L |
| Toluene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,1,1-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| Trichloroethene | 5.00 µg/L | < 5.00 µg/L |
| Trichlorofluoromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,3,5-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| Vinyl acetate | 50.0 µg/L | < 50.0 µg/L |
| Vinyl chloride | 5.00 µg/L | < 5.00 µg/L |
| m,p-Xylene | 5.00 µg/L | < 5.00 µg/L |
| o-Xylene | 5.00 µg/L | < 5.00 µg/L |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 110 % |
| Toluene-d8 (SS) | 50.0 µg/L | 96.3 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 95.1 % |

Applicable results are reported on Dry Weight basis.

016019

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

District : Tulsa
Project : Longhorn AAP
Site : Harrison Bayou
Date Received : September 11 1995
Sample Matrix : Water
Method No : 8260
QC Batch No : 950913W1

Date Reported : September 14 1995
Field ID : HBW-9-QA
Date Sampled : September 11 1995
Date Analyzed : September 13 1995
SWD Number : S50212-13
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Benzene | 1 | < 1 |
| Bromobenzene | 1 | < 1 |
| Bromochloromethane | 1 | < 1 |
| Bromodichloromethane | 1 | < 1 |
| Bromoform | 1 | < 1 |
| Bromomethane | 1 | < 1 |
| n-Butylbenzene | 1 | < 1 |
| sec- Butylbenzene | 1 | < 1 |
| tert-Butylbenzene | 1 | < 1 |
| Carbon tetrachloride | 1 | < 1 |
| Chlorobenzene | 1 | < 1 |
| Chloroethane | 1 | < 1 |
| Chloroform | 1 | < 1 |
| Chloromethane | 1 | < 1 |
| 2-Chlorotoluene | 1 | < 1 |
| 4-Chlorotoluene | 1 | < 1 |
| Dibromochloromethane | 1 | < 1 |
| 1,2-Dibromo-3-chloropropane | 1 | < 1 |
| 1,2-Dibromoethane | 1 | < 1 |
| Dibromomethane | 1 | < 1 |
| 1,2-Dichlorobenzene | 1 | < 1 |
| 1,3-Dichlorobenzene | 1 | < 1 |
| 1,4-Dichlorobenzene | 1 | < 1 |
| Dichlorodifluoromethane | 1 | < 1 |
| 1,1-Dichloroethane | 1 | < 1 |
| 1,2-Dichloroethane | 1 | < 1 |
| 1,1-Dichloroethene | 1 | < 1 |
| cis-1,2-Dichloroethene | 1 | < 1 |
| trans-1,2-Dichloroethene | 1 | < 1 |
| 1,2-Dichloropropane | 1 | < 1 |
| 1,3-Dichloropropane | 1 | < 1 |
| 2,2-Dichloropropane | 1 | < 1 |

016020

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

District : Tulsa
Project : Longhorn AAP
Site : Harrison Bayou
Date Received : September 11 1995
Sample Matrix : Water
Method No : 8260
QC Batch No : 950913W1

Date Reported : September 14 1995
Field ID : HBW-9-QA
Date Sampled : September 11 1995
Date Analyzed : September 13 1995
SWD Number : S50212-13
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| 1,1-Dichloropropene | 1 | < 1 |
| Ethylbenzene | 1 | < 1 |
| Hexachlorobutadiene | 1 | < 1 |
| Isopropylbenzene | 1 | < 1 |
| p-Isopropyltoluene | 1 | < 1 |
| Methylene chloride | 1 | < 1 |
| Naphthalene | 1 | < 1 |
| n-Propylbenzene | 1 | < 1 |
| Styrene | 1 | < 1 |
| 1,1,1,2-Tetrachloroethane | 1 | < 1 |
| 1,1,2,2-Tetrachloroethane | 1 | < 1 |
| Tetrachloroethene | 1 | < 1 |
| Toluene | 1 | < 1 |
| 1,2,3-Trichlorobenzene | 1 | < 1 |
| 1,2,4-Trichlorobenzene | 1 | < 1 |
| 1,1,1-Trichloroethane | 1 | < 1 |
| 1,1,2-Trichloroethane | 1 | < 1 |
| Trichloroethene | 1 | < 1 |
| Trichlorofluoromethane | 1 | < 1 |
| 1,2,3-Trichloropropane | 1 | < 1 |
| 1,2,4-Trimethylbenzene | 1 | < 1 |
| 1,3,5-Trimethylbenzene | 1 | < 1 |
| Vinyl chloride | 1 | < 1 |
| o-Xylene | 1 | < 1 |
| m & p-Xylene | 2 | < 2 |

| Surrogates | Concentration of Surrogate (ug/l) | % Recovered |
|---|---|---|
| Dibromofluoromethane | 10 | 97 % |
| 1,2-Dichloroethane-d4 | 10 | 110 % |
| Toluene-d8 | 10 | 99 % |
| 4-Bromofluorobenzene | 10 | 103 % |

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-5
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-7 S50212-8
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : MGD
ANALYZED ON : 13-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS7-798

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/L | < 100 µg/L |
| Acrylonitrile | 5.00 µg/L | < 5.00 µg/L |
| Benzene | 5.00 µg/L | < 5.00 µg/L |
| Bromobenzene | 5.00 µg/L | < 5.00 µg/L |
| Bromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromodichloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromoform | 5.00 µg/L | < 5.00 µg/L |
| Carbon disulfide | 5.00 µg/L | < 5.00 µg/L |
| Carbon tetrachloride | 5.00 µg/L | < 5.00 µg/L |
| Chlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| Chloroethane | 5.00 µg/L | < 5.00 µg/L |
| Chloroform | 5.00 µg/L | < 5.00 µg/L |
| 2-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| 4-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| Dibromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/L | < 25.0 µg/L |

**Inchcape Testing Services**
Environmental Laboratories

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Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

REPORT NUMBER : D95-8690-5
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,4-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,4-Dichloro-2-butene | 100 µg/L | < 100 µg/L |
| 1,1-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| cis-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 2,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| cis-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| Ethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 2-Hexanone | 50.0 µg/L | < 50.0 µg/L |
| Bromomethane | 5.00 µg/L | < 5.00 µg/L |
| Chloromethane | 5.00 µg/L | < 5.00 µg/L |
| Dibromomethane | 5.00 µg/L | < 5.00 µg/L |
| 2-Butanone | 100 µg/L | < 100 µg/L |
| Iodomethane | 5.00 µg/L | < 5.00 µg/L |
| Methylene chloride | 5.00 µg/l | < 5.00 µg/l |
| 4-Methyl-2-pentanone | 100 µg/L | < 100 µg/L |
| Styrene | 5.00 µg/L | < 5.00 µg/L |

016023

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

REPORT NUMBER : D95-8690-5
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| Tetrachloroethene | 5.00 µg/L | < 5.00 µg/L |
| Toluene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,1,1-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| Trichloroethene | 5.00 µg/L | < 5.00 µg/L |
| Trichlorofluoromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,3,5-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| Vinyl acetate | 50.0 µg/L | < 50.0 µg/L |
| Vinyl chloride | 5.00 µg/L | < 5.00 µg/L |
| m,p-Xylene | 5.00 µg/L | < 5.00 µg/L |
| o-Xylene | 5.00 µg/L | < 5.00 µg/L |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 108 % |
| Toluene-d8 (SS) | 50.0 µg/L | 96.7 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 93.4 % |

Applicable results are reported on Dry Weight basis.

016024

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-5
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-7 S50212-8
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYZED BY : MGD
ANALYZED ON : 13-SEP-1995
ANALYSIS METHOD : /1
QC BATCH NO : ITS7-798

| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
|---|---|---|---|
| COMPOUND | RETENTION TIME | FRACTION | RESULT |
| No compounds detected above | | VOA | 10 ug/L |

Applicable results are reported on Dry Weight basis.

016025

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

**District** : Tulsa
**Project** : Longhorn AAP
**Site** : Harrison Bayou
**Date Received** : September 11 1995
**Sample Matrix** : Water
**Method No** : 8260
**QC Batch No** : 950913W1

**Date Reported** : September 14 1995
**Field ID** : HBW-7-QA
**Date Sampled** : September 11 1995
**Date Analyzed** : September 13 1995
**SWD Number** : S50212-9
**Dilution Factor** : 1
**Analyst** : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Benzene | 1 | < 1 |
| Bromobenzene | 1 | < 1 |
| Bromochloromethane | 1 | < 1 |
| Bromodichloromethane | 1 | < 1 |
| Bromoform | 1 | < 1 |
| Bromomethane | 1 | < 1 |
| n-Butylbenzene | 1 | < 1 |
| sec- Butylbenzene | 1 | < 1 |
| tert-Butylbenzene | 1 | < 1 |
| Carbon tetrachloride | 1 | < 1 |
| Chlorobenzene | 1 | < 1 |
| Chloroethane | 1 | < 1 |
| Chloroform | 1 | < 1 |
| Chloromethane | 1 | < 1 |
| 2-Chlorotoluene | 1 | < 1 |
| 4-Chlorotoluene | 1 | < 1 |
| Dibromochloromethane | 1 | < 1 |
| 1,2-Dibromo-3-chloropropane | 1 | < 1 |
| 1,2-Dibromoethane | 1 | < 1 |
| Dibromomethane | 1 | < 1 |
| 1,2-Dichlorobenzene | 1 | < 1 |
| 1,3-Dichlorobenzene | 1 | < 1 |
| 1,4-Dichlorobenzene | 1 | < 1 |
| Dichlorodifluoromethane | 1 | < 1 |
| 1,1-Dichloroethane | 1 | < 1 |
| 1,2-Dichloroethane | 1 | < 1 |
| 1,1-Dichloroethene | 1 | < 1 |
| cis-1,2-Dichloroethene | 1 | < 1 |
| trans-1,2-Dichloroethene | 1 | < 1 |
| 1,2-Dichloropropane | 1 | < 1 |
| 1,3-Dichloropropane | 1 | < 1 |
| 2,2-Dichloropropane | 1 | < 1 |

016023

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

District : Tulsa
Project : Longhorn AAP
Site : Harrison Bayou
Date Received : September 11 1995
Sample Matrix : Water
Method No : 8260
QC Batch No : 950913W1

Date Reported : September 14 1995
Field ID : HBW-7-QA
Date Sampled : September 11 1995
Date Analyzed : September 13 1995
SWD Number : S50212-9
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| 1,1-Dichloropropene | 1 | < 1 |
| Ethylbenzene | 1 | < 1 |
| Hexachlorobutadiene | 1 | < 1 |
| Isopropylbenzene | 1 | < 1 |
| p-Isopropyltoluene | 1 | < 1 |
| Methylene chloride | 1 | < 1 |
| Naphthalene | 1 | < 1 |
| n-Propylbenzene | 1 | < 1 |
| Styrene | 1 | < 1 |
| 1,1,1,2-Tetrachloroethane | 1 | < 1 |
| 1,1,2,2-Tetrachloroethane | 1 | < 1 |
| Tetrachloroethene | 1 | < 1 |
| Toluene | 1 | < 1 |
| 1,2,3-Trichlorobenzene | 1 | < 1 |
| 1,2,4-Trichlorobenzene | 1 | < 1 |
| 1,1,1-Trichloroethane | 1 | < 1 |
| 1,1,2-Trichloroethane | 1 | < 1 |
| Trichloroethene | 1 | < 1 |
| Trichlorofluoromethane | 1 | < 1 |
| 1,2,3-Trichloropropane | 1 | < 1 |
| 1,2,4-Trimethylbenzene | 1 | < 1 |
| 1,3,5-Trimethylbenzene | 1 | < 1 |
| Vinyl chloride | 1 | < 1 |
| o-Xylene | 1 | < 1 |
| m & p-Xylene | 2 | < 2 |

| Surrogates | Concentration of Surrogate (ug/l) | % Recovered |
|---|---|---|
| Dibromofluoromethane | 10 | 94 % |
| 1,2-Dichloroethane-d4 | 10 | 111 % |
| Toluene-d8 | 10 | 101 % |
| 4-Bromofluorobenzene | 10 | 102 % |

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

016027

SAMPLE NO.

S50212-9

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ LONGHORN Site: _____ Location: _____

Matrix: (soil/water) WATER Lab Sample ID: S50212-9

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: 0101011.D

Level: (low/med) _____ Date Received: 9/11/95

% Moisture: not dec. 100 Date Analyzed: 9/13/95

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: __ (uL)

Number TICs found: 0 Concentration Units: (ug/L or ug/Kg) ug/L

| CAS Number | Compound Name | RT | Est. Conc. | Q |
|---|---|---|---|---|
| 1. | | | | |
| 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. | | | | |

016025

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-6
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-8 S50212-10
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : MGD
ANALYZED ON : 13-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS7-798

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/L | < 100 µg/L |
| Acrylonitrile | 5.00 µg/L | < 5.00 µg/L |
| Benzene | 5.00 µg/L | < 5.00 µg/L |
| Bromobenzene | 5.00 µg/L | < 5.00 µg/L |
| Bromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromodichloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromoform | 5.00 µg/L | < 5.00 µg/L |
| Carbon disulfide | 5.00 µg/L | < 5.00 µg/L |
| Carbon tetrachloride | 5.00 µg/L | < 5.00 µg/L |
| Chlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| Chloroethane | 5.00 µg/L | < 5.00 µg/L |
| Chloroform | 5.00 µg/L | < 5.00 µg/L |
| 2-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| 4-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| Dibromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/L | < 25.0 µg/L |

**Inchcape Testing Services**
Environmental Laboratories

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Richardson, TX 75081
Tel. 214-238-3591
Fax. 214-238-3592

REPORT NUMBER : D95-8690-6
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,4-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,4-Dichloro-2-butene | 100 µg/L | < 100 µg/L |
| 1,1-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| cis-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 2,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| cis-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| Ethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 2-Hexanone | 50.0 µg/L | < 50.0 µg/L |
| Bromomethane | 5.00 µg/L | < 5.00 µg/L |
| Chloromethane | 5.00 µg/L | < 5.00 µg/L |
| Dibromomethane | 5.00 µg/L | < 5.00 µg/L |
| 2-Butanone | 100 µg/L | < 100 µg/L |
| Iodomethane | 5.00 µg/L | < 5.00 µg/L |
| Methylene chloride | 5.00 µg/l | < 5.00 µg/l |
| 4-Methyl-2-pentanone | 100 µg/L | < 100 µg/L |
| Styrene | 5.00 µg/L | < 5.00 µg/L |

**Inchcape Testing Services**
Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

REPORT NUMBER : D95-8690-6
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| Tetrachloroethene | 5.00 µg/L | < 5.00 µg/L |
| Toluene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,1,1-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| Trichloroethene | 5.00 µg/L | < 5.00 µg/L |
| Trichlorofluoromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,3,5-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| Vinyl acetate | 50.0 µg/L | < 50.0 µg/L |
| Vinyl chloride | 5.00 µg/L | < 5.00 µg/L |
| m,p-Xylene | 5.00 µg/L | < 5.00 µg/L |
| o-Xylene | 5.00 µg/L | < 5.00 µg/L |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 108 % |
| Toluene-d8 (SS) | 50.0 µg/L | 96.8 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 92.9 % |

Applicable results are reported on Dry Weight basis.

# Inchcape Testing Services
## Environmental Laboratories

016031

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-6
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-8 S50212-10
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYZED BY : MGD
ANALYZED ON : 13-SEP-1995
ANALYSIS METHOD : /1
QC BATCH NO : ITS7-798

| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
|---|---|---|---|
| COMPOUND | RETENTION TIME | FRACTION | RESULT |
| No compounds detected above | | VOA | 10 ug/L |

Applicable results are reported on Dry Weight basis.

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

| | | | |
|---|---|---|---|
| **District** | : Tulsa | **Date Reported** | : September 14 1995 |
| **Project** | : Longhorn AAP | **Field ID** | : HBW-8-QA |
| **Site** | : Harrison Bayou | **Date Sampled** | : September 11 1995 |
| **Date Received** | : September 11 1995 | **Date Analyzed** | : September 13 1995 |
| **Sample Matrix** | : Water | **SWD Number** | : S50212-11 |
| **Method No** | : 8260 | **Dilution Factor** | : 1 |
| **QC Batch No** | : 950913W1 | **Analyst** | : JS |

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Benzene | 1 | < 1 |
| Bromobenzene | 1 | < 1 |
| Bromochloromethane | 1 | < 1 |
| Bromodichloromethane | 1 | < 1 |
| Bromoform | 1 | < 1 |
| Bromomethane | 1 | < 1 |
| n-Butylbenzene | 1 | < 1 |
| sec- Butylbenzene | 1 | < 1 |
| tert-Butylbenzene | 1 | < 1 |
| Carbon tetrachloride | 1 | < 1 |
| Chlorobenzene | 1 | < 1 |
| Chloroethane | 1 | < 1 |
| Chloroform | 1 | < 1 |
| Chloromethane | 1 | < 1 |
| 2-Chlorotoluene | 1 | < 1 |
| 4-Chlorotoluene | 1 | < 1 |
| Dibromochloromethane | 1 | < 1 |
| 1,2-Dibromo-3-chloropropane | 1 | < 1 |
| 1,2-Dibromoethane | 1 | < 1 |
| Dibromomethane | 1 | < 1 |
| 1,2-Dichlorobenzene | 1 | < 1 |
| 1,3-Dichlorobenzene | 1 | < 1 |
| 1,4-Dichlorobenzene | 1 | < 1 |
| Dichlorodifluoromethane | 1 | < 1 |
| 1,1-Dichloroethane | 1 | < 1 |
| 1,2-Dichloroethane | 1 | < 1 |
| 1,1-Dichloroethene | 1 | < 1 |
| cis-1,2-Dichloroethene | 1 | < 1 |
| trans-1,2-Dichloroethene | 1 | < 1 |
| 1,2-Dichloropropane | 1 | < 1 |
| 1,3-Dichloropropane | 1 | < 1 |
| 2,2-Dichloropropane | 1 | < 1 |

016033

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-7
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-9 S50212-12
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : MGD
ANALYZED ON : 13-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS7-798

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/L | < 100 µg/L |
| Acrylonitrile | 5.00 µg/L | < 5.00 µg/L |
| Benzene | 5.00 µg/L | < 5.00 µg/L |
| Bromobenzene | 5.00 µg/L | < 5.00 µg/L |
| Bromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromodichloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromoform | 5.00 µg/L | < 5.00 µg/L |
| Carbon disulfide | 5.00 µg/L | < 5.00 µg/L |
| Carbon tetrachloride | 5.00 µg/L | < 5.00 µg/L |
| Chlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| Chloroethane | 5.00 µg/L | < 5.00 µg/L |
| Chloroform | 5.00 µg/L | < 5.00 µg/L |
| 2-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| 4-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| Dibromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/L | < 25.0 µg/L |

016034

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

REPORT NUMBER : D95-8690-7
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,4-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,4-Dichloro-2-butene | 100 µg/L | < 100 µg/L |
| 1,1-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| cis-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 2,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| cis-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| Ethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 2-Hexanone | 50.0 µg/L | < 50.0 µg/L |
| Bromomethane | 5.00 µg/L | < 5.00 µg/L |
| Chloromethane | 5.00 µg/L | < 5.00 µg/L |
| Dibromomethane | 5.00 µg/L | < 5.00 µg/L |
| 2-Butanone | 100 µg/L | < 100 µg/L |
| Iodomethane | 5.00 µg/L | < 5.00 µg/L |
| Methylene chloride | 5.00 µg/l | < 5.00 µg/l |
| 4-Methyl-2-pentanone | 100 µg/L | < 100 µg/L |
| Styrene | 5.00 µg/L | < 5.00 µg/L |

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

016035

District : Tulsa
Project : Longhorn AAP
Site : Harrison Bayou
Date Received : September 11 1995
Sample Matrix : Water
Method No : 8260
QC Batch No : 950913W1

Date Reported : September 14 1995
Field ID : HBW-9-QA
Date Sampled : September 11 1995
Date Analyzed : September 13 1995
SWD Number : S50212-13
Dilution Factor : 1
Analyst : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Benzene | 1 | < 1 |
| Bromobenzene | 1 | < 1 |
| Bromochloromethane | 1 | < 1 |
| Bromodichloromethane | 1 | < 1 |
| Bromoform | 1 | < 1 |
| Bromomethane | 1 | < 1 |
| n-Butylbenzene | 1 | < 1 |
| sec- Butylbenzene | 1 | < 1 |
| tert-Butylbenzene | 1 | < 1 |
| Carbon tetrachloride | 1 | < 1 |
| Chlorobenzene | 1 | < 1 |
| Chloroethane | 1 | < 1 |
| Chloroform | 1 | < 1 |
| Chloromethane | 1 | < 1 |
| 2-Chlorotoluene | 1 | < 1 |
| 4-Chlorotoluene | 1 | < 1 |
| Dibromochloromethane | 1 | < 1 |
| 1,2-Dibromo-3-chloropropane | 1 | < 1 |
| 1,2-Dibromoethane | 1 | < 1 |
| Dibromomethane | 1 | < 1 |
| 1,2-Dichlorobenzene | 1 | < 1 |
| 1,3-Dichlorobenzene | 1 | < 1 |
| 1,4-Dichlorobenzene | 1 | < 1 |
| Dichlorodifluoromethane | 1 | < 1 |
| 1,1-Dichloroethane | 1 | < 1 |
| 1,2-Dichloroethane | 1 | < 1 |
| 1,1-Dichloroethene | 1 | < 1 |
| cis-1,2-Dichloroethene | 1 | < 1 |
| trans-1,2-Dichloroethene | 1 | < 1 |
| 1,2-Dichloropropane | 1 | < 1 |
| 1,3-Dichloropropane | 1 | < 1 |
| 2,2-Dichloropropane | 1 | < 1 |

016036

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

**District** : Tulsa
**Project** : Longhorn AAP
**Site** : Harrison Bayou
**Date Received** : September 11 1995
**Sample Matrix** : Water
**Method No** : 8260
**QC Batch No** : 950913W1

**Date Reported** : September 14 1995
**Field ID** : HBW-9-QA
**Date Sampled** : September 11 1995
**Date Analyzed** : September 13 1995
**SWD Number** : S50212-13
**Dilution Factor** : 1
**Analyst** : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| 1,1-Dichloropropene | 1 | < 1 |
| Ethylbenzene | 1 | < 1 |
| Hexachlorobutadiene | 1 | < 1 |
| Isopropylbenzene | 1 | < 1 |
| p-Isopropyltoluene | 1 | < 1 |
| Methylene chloride | 1 | < 1 |
| Naphthalene | 1 | < 1 |
| n-Propylbenzene | 1 | < 1 |
| Styrene | 1 | < 1 |
| 1,1,1,2-Tetrachloroethane | 1 | < 1 |
| 1,1,2,2-Tetrachloroethane | 1 | < 1 |
| Tetrachloroethene | 1 | < 1 |
| Toluene | 1 | < 1 |
| 1,2,3-Trichlorobenzene | 1 | < 1 |
| 1,2,4-Trichlorobenzene | 1 | < 1 |
| 1,1,1-Trichloroethane | 1 | < 1 |
| 1,1,2-Trichloroethane | 1 | < 1 |
| Trichloroethene | 1 | < 1 |
| Trichlorofluoromethane | 1 | < 1 |
| 1,2,3-Trichloropropane | 1 | < 1 |
| 1,2,4-Trimethylbenzene | 1 | < 1 |
| 1,3,5-Trimethylbenzene | 1 | < 1 |
| Vinyl chloride | 1 | < 1 |
| o-Xylene | 1 | < 1 |
| m & p-Xylene | 2 | < 2 |

| Surrogates | Concentration of Surrogate (ug/l) | % Recovered |
|---|---|---|
| Dibromofluoromethane | 10 | 97 % |
| 1,2-Dichloroethane-d4 | 10 | 110 % |
| Toluene-d8 | 10 | 99 % |
| 4-Bromofluorobenzene | 10 | 103 % |

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

**District** : Tulsa
**Project** : Longhorn AAP
**Site** : Harrison Bayou
**Date Received** : September 11 1995
**Sample Matrix** : Water
**Method No** : 8260
**QC Batch No** : 950913W1

**Date Reported** : September 14 1995
**Field ID** : HBW-8-QA
**Date Sampled** : September 11 1995
**Date Analyzed** : September 13 1995
**SWD Number** : S50212-11
**Dilution Factor** : 1
**Analyst** : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| 1,1-Dichloropropene | 1 | < 1 |
| Ethylbenzene | 1 | < 1 |
| Hexachlorobutadiene | 1 | < 1 |
| Isopropylbenzene | 1 | < 1 |
| p-Isopropyltoluene | 1 | < 1 |
| Methylene chloride | 1 | < 1 |
| Naphthalene | 1 | < 1 |
| n-Propylbenzene | 1 | < 1 |
| Styrene | 1 | < 1 |
| 1,1,1,2-Tetrachloroethane | 1 | < 1 |
| 1,1,2,2-Tetrachloroethane | 1 | < 1 |
| Tetrachloroethene | 1 | < 1 |
| Toluene | 1 | < 1 |
| 1,2,3-Trichlorobenzene | 1 | < 1 |
| 1,2,4-Trichlorobenzene | 1 | < 1 |
| 1,1,1-Trichloroethane | 1 | < 1 |
| 1,1,2-Trichloroethane | 1 | < 1 |
| Trichloroethene | 1 | < 1 |
| Trichlorofluoromethane | 1 | < 1 |
| 1,2,3-Trichloropropane | 1 | < 1 |
| 1,2,4-Trimethylbenzene | 1 | < 1 |
| 1,3,5-Trimethylbenzene | 1 | < 1 |
| Vinyl chloride | 1 | < 1 |
| o-Xylene | 1 | < 1 |
| m & p-Xylene | 2 | < 2 |

| Surrogates | Concentration of Surrogate (ug/l) | % Recovered |
|---|---|---|
| Dibromofluoromethane | 10 | 99 % |
| 1,2-Dichloroethane-d4 | 10 | 110 % |
| Toluene-d8 | 10 | 101 % |
| 4-Bromofluorobenzene | 10 | 103 % |

1E

SAMPLE NO.

S50212-11

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: LONGHORN Site: Location: 016038

Matrix: (soil/water) WATER Lab Sample ID: 50212-11

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: 0101012.D

Level: (low/med) Date Received: 9/11/95

% Moisture: not dec. 100 Date Analyzed: 9/13/95

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Number TICs found: 0 Concentration Units: (ug/L or ug/Kg) ug/L

| CAS Number | Compound Name | RT | Est. Conc. | Q |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
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016039

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-7
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : HBW-9 S50212-12
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : MGD
ANALYZED ON : 13-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS7-798

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/L | < 100 µg/L |
| Acrylonitrile | 5.00 µg/L | < 5.00 µg/L |
| Benzene | 5.00 µg/L | < 5.00 µg/L |
| Bromobenzene | 5.00 µg/L | < 5.00 µg/L |
| Bromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromodichloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromoform | 5.00 µg/L | < 5.00 µg/L |
| Carbon disulfide | 5.00 µg/L | < 5.00 µg/L |
| Carbon tetrachloride | 5.00 µg/L | < 5.00 µg/L |
| Chlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| Chloroethane | 5.00 µg/L | < 5.00 µg/L |
| Chloroform | 5.00 µg/L | < 5.00 µg/L |
| 2-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| 4-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| Dibromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/L | < 25.0 µg/L |

016040

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

REPORT NUMBER : D95-8690-7
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,4-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,4-Dichloro-2-butene | 100 µg/L | < 100 µg/L |
| 1,1-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| cis-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 2,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| cis-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| Ethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 2-Hexanone | 50.0 µg/L | < 50.0 µg/L |
| Bromomethane | 5.00 µg/L | < 5.00 µg/L |
| Chloromethane | 5.00 µg/L | < 5.00 µg/L |
| Dibromomethane | 5.00 µg/L | < 5.00 µg/L |
| 2-Butanone | 100 µg/L | < 100 µg/L |
| Iodomethane | 5.00 µg/L | < 5.00 µg/L |
| Methylene chloride | 5.00 µg/l | < 5.00 µg/l |
| 4-Methyl-2-pentanone | 100 µg/L | < 100 µg/L |
| Styrene | 5.00 µg/L | < 5.00 µg/L |

**Inchcape Testing Services**
Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

REPORT NUMBER : D95-8690-7
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| Tetrachloroethene | 5.00 µg/L | < 5.00 µg/L |
| Toluene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,1,1-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| Trichloroethene | 5.00 µg/L | < 5.00 µg/L |
| Trichlorofluoromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,3,5-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| Vinyl acetate | 50.0 µg/L | < 50.0 µg/L |
| Vinyl chloride | 5.00 µg/L | < 5.00 µg/L |
| m,p-Xylene | 5.00 µg/L | < 5.00 µg/L |
| o-Xylene | 5.00 µg/L | < 5.00 µg/L |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 110 % |
| Toluene-d8 (SS) | 50.0 µg/L | 96.3 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 95.1 % |

Applicable results are reported on Dry Weight basis.

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.
S50212-13

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ LONGHORN Site: _____ Location: 016042

Matrix: (soil/water) WATER Lab Sample ID: 50212-13

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: 0101013.D

Level: (low/med) _____ Date Received: 9/11/95

% Moisture: not dec. 100 Date Analyzed: 9/13/95

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: __ (uL)

Number TICs found: 0 Concentration Units: (ug/L or ug/Kg) ug/L

| CAS Number | Compound Name | RT | Est. Conc. | Q |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
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016043

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

**District** : Tulsa
**Project** : Longhorn AAP
**Date Analyzed** : September 13 1995
**Method No** : 8260
**QC Batch No** : 950913W1

**Date Reported** : September 14 1995
**QC Identifier** : Method Blank
**Sample Matrix** : Water
**Dilution Factor** : 1
**Analyst** : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Benzene | 1 | < 1 |
| Bromobenzene | 1 | < 1 |
| Bromochloromethane | 1 | < 1 |
| Bromodichloromethane | 1 | < 1 |
| Bromoform | 1 | < 1 |
| Bromomethane | 1 | < 1 |
| n-Butylbenzene | 1 | < 1 |
| sec- Butylbenzene | 1 | < 1 |
| tert-Butylbenzene | 1 | < 1 |
| Carbon tetrachloride | 1 | < 1 |
| Chlorobenzene | 1 | < 1 |
| Chloroethane | 1 | < 1 |
| Chloroform | 1 | < 1 |
| Chloromethane | 1 | < 1 |
| 2-Chlorotoluene | 1 | < 1 |
| 4-Chlorotoluene | 1 | < 1 |
| Dibromochloromethane | 1 | < 1 |
| 1,2-Dibromo-3-chloropropane | 1 | < 1 |
| 1,2-Dibromoethane | 1 | < 1 |
| Dibromomethane | 1 | < 1 |
| 1,2-Dichlorobenzene | 1 | < 1 |
| 1,3-Dichlorobenzene | 1 | < 1 |
| 1,4-Dichlorobenzene | 1 | < 1 |
| Dichlorodifluoromethane | 1 | < 1 |
| 1,1-Dichloroethane | 1 | < 1 |
| 1,2-Dichloroethane | 1 | < 1 |
| 1,1-Dichloroethene | 1 | < 1 |
| cis-1,2-Dichloroethene | 1 | < 1 |
| trans-1,2-Dichloroethene | 1 | < 1 |
| 1,2-Dichloropropane | 1 | < 1 |
| 1,3-Dichloropropane | 1 | < 1 |

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

**District :** Tulsa
Sample No : S50212-3
**Date Analyzed :** September 13 1995
**Method No. :** 8260
**QC Batch No :** 950913W1

**Date Reported :** September 14 1995
**QC Identifier :** Matrix Spike
**Sample Matrix :** Water
**Dilution Factor :** 1
**Analyst :** JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Benzene | 1 | 20 |
| Bromobenzene | 1 | < 1 |
| Bromochloromethane | 1 | < 1 |
| Bromodichloromethane | 1 | < 1 |
| Bromoform | 1 | < 1 |
| Bromomethane | 1 | < 1 |
| n-Butylbenzene | 1 | < 1 |
| sec- Butylbenzene | 1 | < 1 |
| tert-Butylbenzene | 1 | < 1 |
| Carbon tetrachloride | 1 | < 1 |
| Chlorobenzene | 1 | 19 |
| Chloroethane | 1 | < 1 |
| Chloroform | 1 | < 1 |
| Chloromethane | 1 | < 1 |
| 2-Chlorotoluene | 1 | < 1 |
| 4-Chlorotoluene | 1 | < 1 |
| Dibromochloromethane | 1 | < 1 |
| 1,2-Dibromo-3-chloropropane | 1 | < 1 |
| 1,2-Dibromoethane | 1 | < 1 |
| Dibromomethane | 1 | < 1 |
| 1,2-Dichlorobenzene | 1 | < 1 |
| 1,3-Dichlorobenzene | 1 | < 1 |
| 1,4-Dichlorobenzene | 1 | < 1 |
| Dichlorodifluoromethane | 1 | < 1 |
| 1,1-Dichloroethane | 1 | < 1 |
| 1,2-Dichloroethane | 1 | < 1 |
| 1,1-Dichloroethene | 1 | 16 |
| cis-1,2-Dichloroethene | 1 | 3 |
| trans-1,2-Dichloroethene | 1 | < 1 |
| 1,2-Dichloropropane | 1 | < 1 |
| 1,3-Dichloropropane | 1 | < 1 |
| 2,2-Dichloropropane | 1 | < 1 |
| 1,1-Dichloropropene | 1 | < 1 |

016045

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

**District** : Tulsa
Sample No : S50212-3
**Date Analyzed** : September 13 1995
**Method No** : 8260
**QC Batch No** : 950913W1

**Date Reported** : September 14 1995
**QC Identifier** : Matrix Spike
**Sample Matrix** : Water
**Dilution Factor** : 1
**Analyst** : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Ethylbenzene | 1 | < 1 |
| Hexachlorobutadiene | 1 | < 1 |
| Isopropylbenzene | 1 | < 1 |
| p-Isopropyltoluene | 1 | < 1 |
| Methylene chloride | 1 | < 1 |
| Naphthalene | 1 | < 1 |
| n-Propylbenzene | 1 | < 1 |
| Styrene | 1 | < 1 |
| 1,1,1,2-Tetrachloroethane | 1 | < 1 |
| 1,1,2,2-Tetrachloroethane | 1 | < 1 |
| Tetrachloroethene | 1 | < 1 |
| Toluene | 1 | 20 |
| 1,2,3-Trichlorobenzene | 1 | < 1 |
| 1,2,4-Trichlorobenzene | 1 | < 1 |
| 1,1,1-Trichloroethane | 1 | < 1 |
| 1,1,2-Trichloroethane | 1 | < 1 |
| Trichloroethene | 1 | 29 |
| Trichlorofluoromethane | 1 | < 1 |
| 1,2,3-Trichloropropane | 1 | < 1 |
| 1,2,4-Trimethylbenzene | 1 | < 1 |
| 1,3,5-Trimethylbenzene | 1 | < 1 |
| Vinyl chloride | 1 | < 1 |
| o-Xylene | 1 | < 1 |
| m & p-Xylene | 2 | < 2 |

| Surrogates | Concentration of Surrogate (ug/l) | Amount Recovered |
|---|---|---|
| Dibromofluoromethane | 10 | 101 % |
| 1,2-Dichloroethane-d4 | 10 | 105 % |
| Toluene-d8 | 10 | 100 % |
| 4-Bromofluorobenzene | 10 | 110 % |

016046

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

**District** : Tulsa
Sample No : S50212-3
**Date Analyzed** : September 13 1995
**Method No** : 8260
**QC Batch No** : 950913W1

**Date Reported** : September 14 1995
**QC Identifier** : Matrix Spike Dup
**Sample Matrix** : Water
**Dilution Factor** : 1
**Analyst** : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Benzene | 1 | 20 |
| Bromobenzene | 1 | < 1 |
| Bromochloromethane | 1 | < 1 |
| Bromodichloromethane | 1 | < 1 |
| Bromoform | 1 | < 1 |
| Bromomethane | 1 | < 1 |
| n-Butylbenzene | 1 | < 1 |
| sec- Butylbenzene | 1 | < 1 |
| tert-Butylbenzene | 1 | < 1 |
| Carbon tetrachloride | 1 | < 1 |
| Chlorobenzene | 1 | 20 |
| Chloroethane | 1 | < 1 |
| Chloroform | 1 | < 1 |
| Chloromethane | 1 | < 1 |
| 2-Chlorotoluene | 1 | < 1 |
| 4-Chlorotoluene | 1 | < 1 |
| Dibromochloromethane | 1 | < 1 |
| 1,2-Dibromo-3-chloropropane | 1 | < 1 |
| 1,2-Dibromoethane | 1 | < 1 |
| Dibromomethane | 1 | < 1 |
| 1,2-Dichlorobenzene | 1 | < 1 |
| 1,3-Dichlorobenzene | 1 | < 1 |
| 1,4-Dichlorobenzene | 1 | < 1 |
| Dichlorodifluoromethane | 1 | < 1 |
| 1,1-Dichloroethane | 1 | < 1 |
| 1,2-Dichloroethane | 1 | < 1 |
| 1,1-Dichloroethene | 1 | 16 |
| cis-1,2-Dichloroethene | 1 | 3 |
| trans-1,2-Dichloroethene | 1 | < 1 |
| 1,2-Dichloropropane | 1 | < 1 |
| 1,3-Dichloropropane | 1 | < 1 |
| 2,2-Dichloropropane | 1 | < 1 |
| 1,1-Dichloropropene | 1 | < 1 |

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

01604

**District** : Tulsa
Sample No : S50212-3
**Date Analyzed** : September 13 1995
**Method No** : 8260
**QC Batch No** : 950913W1

**Date Reported** : September 14 1995
**QC Identifier** : Matrix Spike Dup
**Sample Matrix** : Water
**Dilution Factor** : 1
**Analyst** : JS

| Analyte | Detection Limit | Result (ug/l) |
|---|---|---|
| Ethylbenzene | 1 | < 1 |
| Hexachlorobutadiene | 1 | < 1 |
| Isopropylbenzene | 1 | < 1 |
| p-Isopropyltoluene | 1 | < 1 |
| Methylene chloride | 1 | < 1 |
| Naphthalene | 1 | < 1 |
| n-Propylbenzene | 1 | < 1 |
| Styrene | 1 | < 1 |
| 1,1,1,2-Tetrachloroethane | 1 | < 1 |
| 1,1,2,2-Tetrachloroethane | 1 | < 1 |
| Tetrachloroethene | 1 | < 1 |
| Toluene | 1 | 20 |
| 1,2,3-Trichlorobenzene | 1 | < 1 |
| 1,2,4-Trichlorobenzene | 1 | < 1 |
| 1,1,1-Trichloroethane | 1 | < 1 |
| 1,1,2-Trichloroethane | 1 | < 1 |
| Trichloroethene | 1 | 29 |
| Trichlorofluoromethane | 1 | < 1 |
| 1,2,3-Trichloropropane | 1 | < 1 |
| 1,2,4-Trimethylbenzene | 1 | < 1 |
| 1,3,5-Trimethylbenzene | 1 | < 1 |
| Vinyl chloride | 1 | < 1 |
| o-Xylene | 1 | < 1 |
| m & p-Xylene | 2 | < 2 |

| Surrogates | Concentration of Surrogate (ug/l) | Amount Recovered |
|---|---|---|
| Dibromofluoromethane | 10 | 97 % |
| 1,2-Dichloroethane-d4 | 10 | 111 % |
| Toluene-d8 | 10 | 101 % |
| 4-Bromofluorobenzene | 10 | 109 % |

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

016046

**District** : Tulsa
**QC Identifier** : Sample Duplicate
**SWD No** : S50212-3
**Method No** : 8260
**QC Batch No** : 950913W1

**Date Reported** : September 14 1995
**Date Analyzed** : September 13 1995
**Sample Matrix** : Water
**Dilution Factor** : 1
**Analyst** : JS

| Analyte | Detection Limit | Sample Result (ug/l) | Dup Result (ug/l) | RPD |
|---|---|---|---|---|
| Benzene | 1 | < 1 | < 1 | NA |
| Bromobenzene | 1 | < 1 | < 1 | NA |
| Bromochloromethane | 1 | < 1 | < 1 | NA |
| Bromodichloromethane | 1 | < 1 | < 1 | NA |
| Bromoform | 1 | < 1 | < 1 | NA |
| Bromomethane | 1 | < 1 | < 1 | NA |
| n-Butylbenzene | 1 | < 1 | < 1 | NA |
| sec- Butylbenzene | 1 | < 1 | < 1 | NA |
| tert-Butylbenzene | 1 | < 1 | < 1 | NA |
| Carbon tetrachloride | 1 | < 1 | < 1 | NA |
| Chlorobenzene | 1 | < 1 | < 1 | NA |
| Chloroethane | 1 | < 1 | < 1 | NA |
| Chloroform | 1 | < 1 | < 1 | NA |
| Chloromethane | 1 | < 1 | < 1 | NA |
| 2-Chlorotoluene | 1 | < 1 | < 1 | NA |
| 4-Chlorotoluene | 1 | < 1 | < 1 | NA |
| Dibromochloromethane | 1 | < 1 | < 1 | NA |
| 1,2-Dibromo-3-chloropropane | 1 | < 1 | < 1 | NA |
| 1,2-Dibromoethane | 1 | < 1 | < 1 | NA |
| Dibromomethane | 1 | < 1 | < 1 | NA |
| 1,2-Dichlorobenzene | 1 | < 1 | < 1 | NA |
| 1,3-Dichlorobenzene | 1 | < 1 | < 1 | NA |
| 1,4-Dichlorobenzene | 1 | < 1 | < 1 | NA |
| Dichlorodifluoromethane | 1 | < 1 | < 1 | NA |
| 1,1-Dichloroethane | 1 | < 1 | < 1 | NA |
| 1,2-Dichloroethane | 1 | < 1 | < 1 | NA |
| 1,1-Dichloroethene | 1 | < 1 | < 1 | NA |
| cis-1,2-Dichloroethene | 1 | 2 | 2 | 0 % |
| trans-1,2-Dichloroethene | 1 | < 1 | < 1 | NA |
| 1,2-Dichloropropane | 1 | < 1 | < 1 | NA |
| 1,3-Dichloropropane | 1 | < 1 | < 1 | NA |
| 2,2-Dichloropropane | 1 | < 1 | < 1 | NA |

016049

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

**District** : Tulsa
**QC Identifier** : Sample Duplicate
**SWD No** : S50212-3
**Method No** : 8260
**QC Batch No** : 950913W1

**Date Reported** : September 14 1995
**Date Analyzed** : September 13 1995
**Sample Matrix** : Water
**Dilution Factor** : 1
**Analyst** : JS

| Analyte | Detection Limit | Sample Result (ug/l) | Dup Result (ug/l) | RPD |
|---|---|---|---|---|
| 1,1-Dichloropropene | 1 | < 1 | < 1 | NA |
| Ethylbenzene | 1 | < 1 | < 1 | NA |
| Hexachlorobutadiene | 1 | < 1 | < 1 | NA |
| Isopropylbenzene | 1 | < 1 | < 1 | NA |
| p-Isopropyltoluene | 1 | < 1 | < 1 | NA |
| Methylene chloride | 1 | < 1 | < 1 | NA |
| Naphthalene | 1 | < 1 | < 1 | NA |
| n-Propylbenzene | 1 | < 1 | < 1 | NA |
| Styrene | 1 | < 1 | < 1 | NA |
| 1,1,1,2-Tetrachloroethane | 1 | < 1 | < 1 | NA |
| 1,1,2,2-Tetrachloroethane | 1 | < 1 | < 1 | NA |
| Tetrachloroethene | 1 | < 1 | < 1 | NA |
| Toluene | 1 | < 1 | < 1 | NA |
| 1,2,3-Trichlorobenzene | 1 | < 1 | < 1 | NA |
| 1,2,4-Trichlorobenzene | 1 | < 1 | < 1 | NA |
| 1,1,1-Trichloroethane | 1 | < 1 | < 1 | NA |
| 1,1,2-Trichloroethane | 1 | < 1 | < 1 | NA |
| Trichloroethene | 1 | 8 | 7 | 13 % |
| Trichlorofluoromethane | 1 | < 1 | < 1 | NA |
| 1,2,3-Trichloropropane | 1 | < 1 | < 1 | NA |
| 1,2,4-Trimethylbenzene | 1 | < 1 | < 1 | NA |
| 1,3,5-Trimethylbenzene | 1 | < 1 | < 1 | NA |
| Vinyl chloride | 1 | < 1 | < 1 | NA |
| o-Xylene | 1 | < 1 | < 1 | NA |
| m & p-Xylene | 2 | < 2 | < 2 | NA |

| Surrogates | Concentration of Surrogate (ug/l) | % Recovered | % Recovered | |
|---|---|---|---|---|
| Dibromofluoromethane | 10 | 92 % | 97 % | |
| 1,2-Dichloroethane-d4 | 10 | 97 % | 98 % | |
| Toluene-d8 | 10 | 97 % | 97 % | |
| 4-Bromofluorobenzene | 10 | 111 % | 111 % | |

*NA %RPD Cannot be calculated.

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Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

016050

**District :** Tulsa
**Date Reported :** September 14 1995
**Project :** Longhorn AAP
**Date Analyzed :** September 13 1995
**Sample Matrix :** Water
**Method No :** 8260
**Dilution Factor :** 1
**QC Batch No :** 950913W1
**Analyst :** JS
**QC Identifier :** Laboratory Control sample

| Analyte | Detection Limit | % Rec | Acceptance Limit |
|---|---|---|---|
| Benzene | 1 | 104 | 80 - 120 |
| Bromobenzene | 1 | 103 | 80 - 120 |
| Bromochloromethane | 1 | 104 | 80 - 120 |
| Bromodichloromethane | 1 | 110 | 80 - 120 |
| Bromoform | 1 | 110 | 80 - 120 |
| Bromomethane | 1 | 106 | 80 - 120 |
| n-Butylbenzene | 1 | 107 | 80 - 120 |
| sec- Butylbenzene | 1 | 101 | 80 - 120 |
| tert-Butylbenzene | 1 | 102 | 80 - 120 |
| Carbon tetrachloride | 1 | 96 | 80 - 120 |
| Chlorobenzene | 1 | 106 | 80 - 120 |
| Chloroethane | 1 | 97 | 80 - 120 |
| Chloroform | 1 | 103 | 80 - 120 |
| Chloromethane | 1 | 101 | 80 - 120 |
| 2-Chlorotoluene | 1 | 102 | 80 - 120 |
| 4-Chlorotoluene | 1 | 105 | 80 - 120 |
| Dibromochloromethane | 1 | 111 | 80 - 120 |
| 1,2-Dibromo-3-chloropropane | 1 | 94 | 80 - 120 |
| 1,2-Dibromoethane | 1 | 111 | 80 - 120 |
| Dibromomethane | 1 | 112 | 80 - 120 |
| 1,2-Dichlorobenzene | 1 | 103 | 80 - 120 |
| 1,3-Dichlorobenzene | 1 | 103 | 80 - 120 |
| 1,4-Dichlorobenzene | 1 | 103 | 80 - 120 |
| Dichlorodifluoromethane | 1 | 98 | 80 - 120 |
| 1,1-Dichloroethane | 1 | 100 | 80 - 120 |
| 1,2-Dichloroethane | 1 | 114 | 80 - 120 |
| 1,1-Dichloroethene | 1 | 101 | 80 - 120 |
| cis-1,2-Dichloroethene | 1 | 99 | 80 - 120 |

016051

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

**District** : Tulsa
**Date Reported** : September 14 1995
**Project** : Longhorn AAP
**Date Analyzed** : September 13 1995
**Sample Matrix** : Water
**Method No** : 8260
**Dilution Factor** : 1
**QC Batch No** : 950913W1
**Analyst** : JS
**QC Identifier** : Laboratory Control sample

| Analyte | Detection Limit | % Rec | Acceptance Limit |
|---|---|---|---|
| trans-1,2-Dichloroethene | 1 | 100 | 80 - 120 |
| 1,2-Dichloropropane | 1 | 112 | 80 - 120 |
| 1,3-Dichloropropane | 1 | 108 | 80 - 120 |
| 2,2-Dichloropropane | 1 | 93 | 80 - 120 |
| 1,1-Dichloropropene | 1 | 111 | 80 - 120 |
| Ethylbenzene | 1 | 104 | 80 - 120 |
| Hexachlorobutadiene | 1 | 102 | 80 - 120 |
| Isopropylbenzene | 1 | 105 | 80 - 120 |
| p-Isopropyltoluene | 1 | 101 | 80 - 120 |
| Methylene chloride | 1 | 101 | 80 - 120 |
| Naphthalene | 1 | 110 | 80 - 120 |
| n-Propylbenzene | 1 | 104 | 80 - 120 |
| Styrene | 1 | 104 | 80 - 120 |
| 1,1,1,2-Tetrachloroethane | 1 | 107 | 80 - 120 |
| 1,1,2,2-Tetrachloroethane | 1 | 106 | 80 - 120 |
| Tetrachloroethene | 1 | 105 | 80 - 120 |
| Toluene | 1 | 106 | 80 - 120 |
| 1,2,3-Trichlorobenzene | 1 | 100 | 80 - 120 |
| 1,2,4-Trichlorobenzene | 1 | 100 | 80 - 120 |
| 1,1,1-Trichloroethane | 1 | 109 | 80 - 120 |
| 1,1,2-Trichloroethane | 1 | 114 | 80 - 120 |
| Trichloroethene | 1 | 105 | 80 - 120 |
| Trichlorofluoromethane | 1 | 93 | 80 - 120 |
| 1,2,3-Trichloropropane | 1 | 113 | 80 - 120 |
| 1,2,4-Trimethylbenzene | 1 | 109 | 80 - 120 |
| 1,3,5-Trimethylbenzene | 1 | 104 | 80 - 120 |
| Vinyl chloride | 1 | 93 | 80 - 120 |
| o-Xylene | 1 | 106 | 80 - 120 |

US ARMY CORPS OF ENGINEERS
Southwestern Division Laboratory
4815 Cass Street
Dallas, TX-75235
214/905-9130

016052

**District :** Tulsa
**Date Reported :** September 14 1995
**Project :** Longhorn AAP
**Date Analyzed :** September 13 1995
**Sample Matrix :** Water
**Method No :** 8260
**Dilution Factor :** 1
**QC Batch No :** 950913W1
**Analyst :** JS
**QC Identifier :** Laboratory Control sample

| Analyte | Detection Limit | % Rec | Acceptance Limit |
|---|---|---|---|
| m & p-Xylene | 2 | 103 | 80 - 120 |
| **Surrogates** | **Concentration of Surrogate (ug/l)** | **Amount Recovered** | |
| Dibromofluoromethane | 10 | 99 % | |
| 1,2-Dichloroethane-d4 | 10 | 101 % | |
| Toluene-d8 | 10 | 100 % | |
| 4-Bromofluorobenzene | 10 | 105 % | |

2A

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ Site: _____ Location: _____ 016053

| | SAMPLE NO. | SMC1 # | SMC2 # | SMC3 # | SMC4 # | TOT OUT |
|---|---|---|---|---|---|---|
| 01 | VBLK01 | 96 | 102 | 99 | 111 | |
| 02 | LCS01 | 99 | 101 | 100 | 105 | |
| 03 | S50212-3 | 92 | 97 | 97 | 111 | |
| 04 | S50212-3 DUP | 97 | 98 | 97 | 111 | |
| 05 | S50212-3 MS | 101 | 105 | 100 | 110 | |
| 06 | S50212-3 MSD | 97 | 111 | 101 | 109 | |
| 07 | S50212-5 | 99 | 111 | 104 | 110 | |
| 08 | S50212-7 | 98 | 109 | 101 | 109 | |
| 09 | S50212-9 | 94 | 111 | 101 | 102 | |
| 10 | S50212-11 | 99 | 110 | 101 | 103 | |
| 11 | S50212-13 | 97 | 110 | 99 | 103 | |
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QC LIMITS

SMC1 = Dibromofluoromethane (86-118)

SMC2 = 1,2-Dichloroethane-d4 (80-120)

SMC3 = Toluene-d8 (88-110)

SMC4 = 4-Bromofluorobenzene (86-115)

# Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

Spike Recovery and RPD Summary Report - WATER

Method : C:\HPCHEM\1\METHODS\8260A15.M
Title : EPA METHOD 8260A 5 CAL 080495
ast Update : Wed Sep 13 11:21:49 1995
esponse via : Continuing Calibration

016054

Non-Spiked Sample: 0101005.D

| | Spike Sample | Spike Duplicate Sample |
|---|---|---|
| File ID : | 0101007.D | 0101008.D |
| Sample : | S50212-3 MS 8260 LONGHORN | S50212-3 MSD 8260 LONGHOR |
| Acq Time: | 13 Sep 95 1:31 pm | 13 Sep 95 2:12 pm |

| Compound | Sample Conc | Spike Added | Spike Res | Dup Res | Spike %Rec | Dup %Rec | RPD | QC Limits RPD | QC Limits % Rec |
|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 0.0 | 20 | 16 | 16 | 82 | 81 | 1 | 14 | 70-130 |
| Benzene | 0.0 | 20 | 20 | 20 | 98 | 102 | 4 | 11 | 76-127 |
| Trichloroethene | 7.8 | 20 | 29 | 29 | 105 | 105 | 0 | 14 | 71-120 |
| Toluene | 0.0 | 20 | 20 | 20 | 98 | 100 | 2 | 13 | 76-125 |
| Chlorobenzene | 0.0 | 20 | 19 | 20 | 97 | 100 | 3 | 13 | 75-130 |

8260A15.M Wed Sep 13 14:44:40 1995

4A

VOLATILE METHOD BLANK SUMMARY

SAMPLE NO.

VBLK01

Lab Name: US Army Corps Of Engineers SWD Lab

Project No.: _____ Site: _____ Location: _____

Lab File ID: 0101003.D Lab Sample ID: 016055 MB01

Date Analyzed: 9/13/95 Time Analyzed: 957

GC Column: DB-624 ID: 0.53 (mm) Heated Purge: (Y/N) N

Instrument ID: HP5970

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

| | SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | TIME ANALYZED |
|---|---|---|---|---|
| 01 | LCS01 | LCS01 | 0101004.D | 1055 |
| 02 | S50212-3 | S50212-3 | 0101005.D | 1152 |
| 03 | S50212-3 DUP | 212-3DUP | 0101006.D | 1244 |
| 04 | S50212-3 MS | 212-3MS | 0101007.D | 1331 |
| 05 | S50212-3 MSD | 212-3MSD | 0101008.D | 1412 |
| 06 | S50212-5 | S50212-5 | 0101009.D | 1504 |
| 07 | S50212-7 | S50212-7 | 0101010.D | 1555 |
| 08 | S50212-9 | S50212-9 | 0101011.D | 1646 |
| 09 | S50212-11 | 50212-11 | 0101012.D | 1737 |
| 10 | S50212-13 | 50212-13 | 0101013.D | 1827 |
| 11 | | | | |
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COMMENTS:

5A

# VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
## BROMOFLUOROBENZENE (BFB)

016056

Lab Name : US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ Site: _____ Location: _____

Lab File ID: 0101001.D

BFB Injection Date: 9/13/95

Instrument ID: HP5970

BFB Injection Time: 0835

GC Column: DB-624 ID: 0.53 (mm)

Heated Purge: (Y/N) N

| m/e | ION ABUNDANCE CRITERIA | %RELATIVE ABUNDANCE |
|---|---|---|
| 50 | 8.0 - 40.0% of mass 95 | 22.0 |
| 75 | 30.0 - 66.0% of mass 95 | 49.6 |
| 95 | Base peak, 100% relative abundance | 100.0 |
| 96 | 5.0 - 9.0% of mass 95 | 6.9 |
| 173 | Less than 2.0% of mass 174 | 0.0 ( 0.0 )1 |
| 174 | 50.0 - 120.0% of mass 95 | 90.2 |
| 175 | 4.0 - 9.0% of mass 174 | 6.5 ( 7.2 )1 |
| 176 | 93.0 - 101.0% of mass 174 | 88.2 ( 97.8 )1 |
| 177 | 5.0 - 9.0% of mass 176 | 5.8 ( 6.6 )2 |

1-Value is % mass 174 2-Value is % mass 176

This check applies to the following SAMPLES, MS, MSD, BLANKS and STANDARDS:

| | SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED | TIME ANALYZED |
|---|---|---|---|---|---|
| 01 | VSTD050 | CCS01 | 0101002.D | 9/13/95 | 0903 |
| 02 | VBLK01 | MB01 | 0101003.D | 9/13/95 | 0957 |
| 03 | LCS01 | LCS01 | 0101004.D | 9/13/95 | 1055 |
| 04 | S50212-3 | S50212-3 | 0101005.D | 9/13/95 | 1152 |
| 05 | S50212-3 DUP | 212-3DUP | 0101006.D | 9/13/95 | 1244 |
| 06 | S50212-3 MS | 212-3MS | 0101007.D | 9/13/95 | 1331 |
| 07 | S50212-3 MSD | 212-3MSD | 0101008.D | 9/13/95 | 1412 |
| 08 | S50212-5 | S50212-5 | 0101009.D | 9/13/95 | 1504 |
| 09 | S50212-7 | S50212-7 | 0101010.D | 9/13/95 | 1555 |
| 10 | S50212-9 | S50212-9 | 0101011.D | 9/13/95 | 1646 |
| 11 | S50212-11 | 50212-11 | 0101012.D | 9/13/95 | 1737 |
| 12 | S50212-13 | 50212-13 | 0101013.D | 9/13/95 | 1827 |
| 13 | | | | | |
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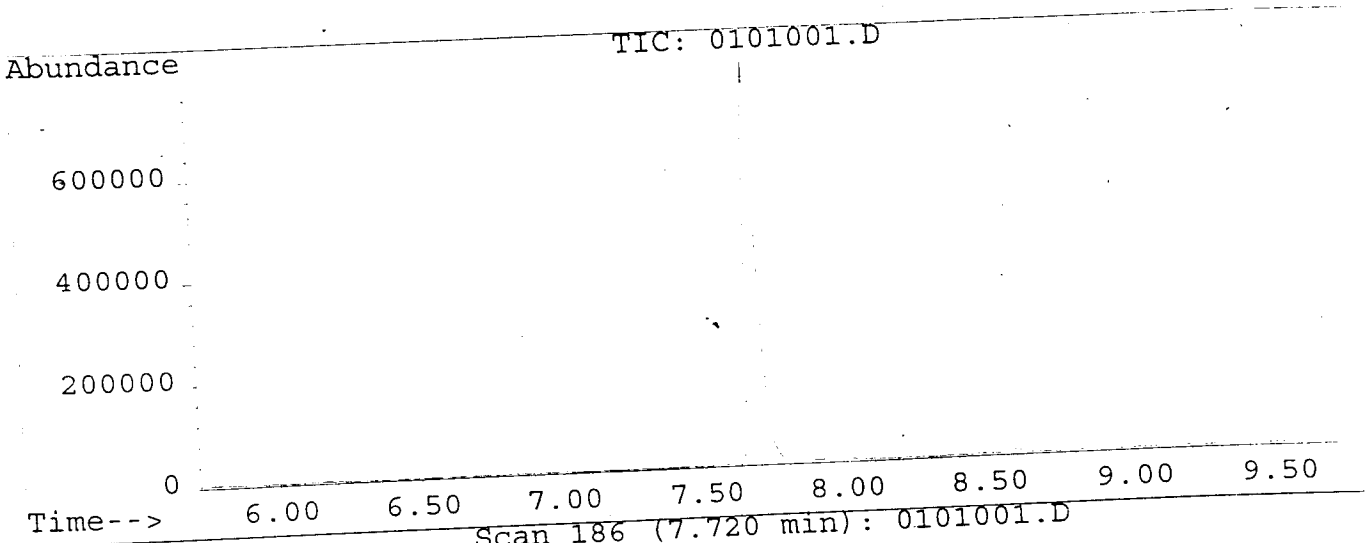
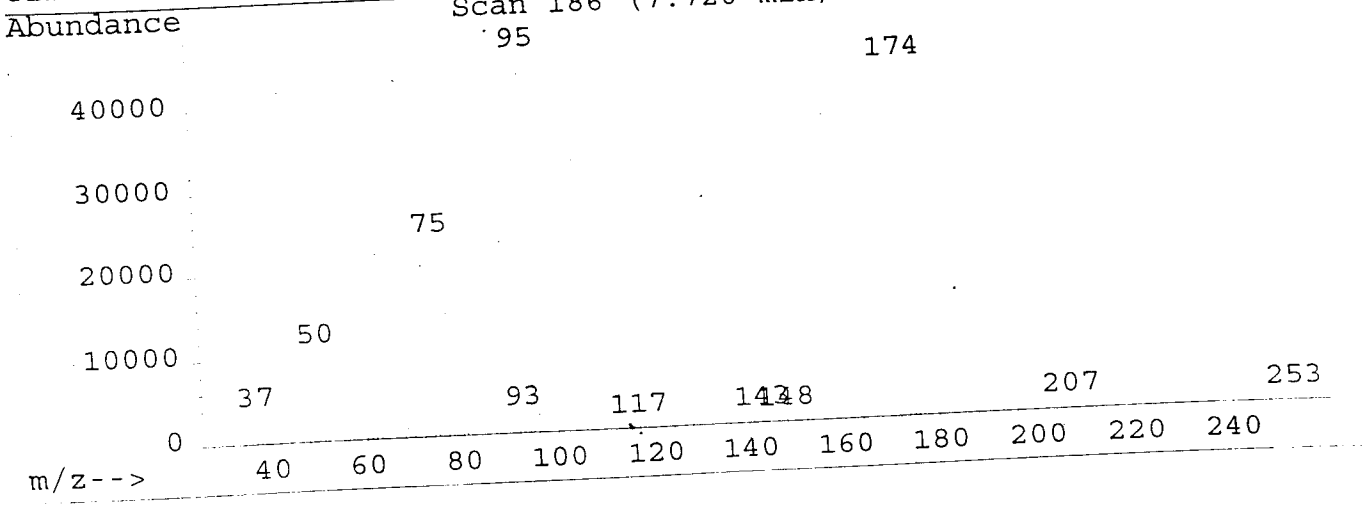
BFB 016057

Data File : C:\HPCHEM\1\DATA\9-12-95\0101001.D
Acq On : 13 Sep 95 8:35 am
Sample : VTUN01 50 NGN BFB
Misc :

Vial: 1
Operator:
Inst : 5970 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\8260A15.M
Title : EPA METHOD 8260A 5 CAL 080495




Peak Apex is scan: 186

| Target Mass | Rel. to Mass | Lower Limit% | Upper Limit% | Rel. Abn% | Raw Abn | Result Pass/Fail |
|---|---|---|---|---|---|---|
| 50 | 95 | 15 | 40 | 22.0 | 10123 | PASS |
| 75 | 95 | 30 | 60 | 49.6 | 22880 | PASS |
| 95 | 95 | 100 | 100 | 100.0 | 46104 | PASS |
| 96 | 95 | 5 | 9 | 6.9 | 3203 | PASS |
| 173 | 174 | 0 | 2 | 0.0 | 0 | PASS |
| 174 | 95 | 50 | 100 | 90.2 | 41576 | PASS |
| 175 | 174 | 5 | 9 | 7.2 | 2979 | PASS |
| 176 | 174 | 95 | 101 | 97.8 | 40680 | PASS |
| 177 | 176 | 5 | 9 | 6.6 | 2683 | PASS |

0101001.D 8260A15.M Wed Sep 13 09:58:21 1995

6A

# VOLATILE ORGANICS INITIAL CALIBRATION DATA

016058

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ Site: _____ Location: _____

Instrument ID: HP5970 Calibration Date(s): 8/4/95 8/4/95

Heated Purge: (Y/N) N Calibration Times: 1038 1358

GC Column: DB-624 ID: 0.53 (mm)

Lab File ID: RRF10 = 0101078.D RRF20 = 0101079.D
RRF50 = 0101080.D RRF100 = 0101081.D RRF200 = 0101082.D

| COMPOUND | | RRF10 | RRF20 | RRF50 | RRF100 | RRF200 | $\overline{RRF}$ | % RSD |
|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 0.340 | 0.413 | 0.375 | 0.394 | 0.393 | 0.383 | 7.1 |
| Chloromethane | * | 0.217 | 0.279 | 0.236 | 0.214 | 0.211 | 0.231 | 12.3 |
| Vinylchloride | ** | 0.207 | 0.174 | 0.163 | 0.167 | 0.163 | 0.175 | 10.8 |
| Bromomethane | | 0.043 | 0.056 | 0.054 | 0.052 | 0.063 | 0.054 | 13.7 |
| Chloroethane | | 0.085 | 0.084 | 0.090 | 0.090 | 0.099 | 0.090 | 6.8 |
| Trichlorofluoromethane | | 0.955 | 0.781 | 0.780 | 0.795 | 0.837 | 0.829 | 8.9 |
| 1,1-Dichloroethene | ** | 0.338 | 0.368 | 0.344 | 0.327 | 0.323 | 0.340 | 5.2 |
| Acetone | | 0.051 | 0.044 | 0.042 | 0.041 | 0.041 | 0.044 | 9.0 |
| Methylene chloride | | 0.233 | 0.257 | 0.239 | 0.236 | 0.242 | 0.242 | 3.9 |
| trans-1,2-Dichloroethene | | 0.336 | 0.332 | 0.332 | 0.344 | 0.347 | 0.338 | 2.1 |
| 1,1-Dichloroethane | * | 0.698 | 0.632 | 0.673 | 0.695 | 0.739 | 0.687 | 5.7 |
| 2,2-Dichloropropane | | 0.101 | 0.088 | 0.079 | 0.078 | 0.080 | 0.085 | 11.2 |
| Cis-1,2-Dichloroethene | | 0.364 | 0.344 | 0.350 | 0.360 | 0.372 | 0.358 | 3.1 |
| 2-Butanone | | 0.045 | 0.046 | 0.046 | 0.046 | 0.048 | 0.046 | 2.3 |
| Bromochloromethane | | 0.209 | 0.217 | 0.220 | 0.230 | 0.239 | 0.223 | 5.2 |
| Chloroform | ** | 0.947 | 0.923 | 0.968 | 1.020 | 1.045 | 0.981 | 5.2 |
| Pentafluorobenzene | | 1.473 | 1.547 | 1.400 | 1.483 | 1.447 | 1.470 | 3.7 |
| 1,1,1-Trichloroethane | | 0.279 | 0.271 | 0.268 | 0.294 | 0.315 | 0.286 | 6.8 |
| Carbon tetrachloride | | 0.109 | 0.116 | 0.134 | 0.142 | 0.157 | 0.132 | 14.9 |
| 1,1-Dichloropropene | | 0.652 | 0.587 | 0.595 | 0.586 | 0.592 | 0.602 | 4.7 |
| Benzene | | 0.799 | 0.717 | 0.726 | 0.729 | 0.737 | 0.742 | 4.4 |
| 1,2-Dichloroethane | | 0.561 | 0.594 | 0.623 | 0.640 | 0.639 | 0.611 | 5.5 |
| Trichloroethene | | 0.513 | 0.504 | 0.515 | 0.501 | 0.512 | 0.509 | 1.2 |
| 1,2-Dichloropropane | ** | 0.292 | 0.270 | 0.296 | 0.293 | 0.299 | 0.290 | 4.0 |
| Dibromomethane | | 0.245 | 0.253 | 0.278 | 0.283 | 0.289 | 0.269 | 7.2 |
| Bromodichloromethane | | 0.426 | 0.493 | 0.574 | 0.595 | 0.634 | 0.544 | 15.4 |
| cis-1,3-Dichloropropene | | 0.308 | 0.312 | 0.362 | 0.365 | 0.379 | 0.345 | 9.5 |
| 4-Methyl-2-pentanone | | 0.100 | 0.112 | 0.121 | 0.115 | 0.118 | 0.113 | 7.1 |
| Toluene | ** | 0.568 | 0.500 | 0.506 | 0.490 | 0.498 | 0.512 | 6.2 |
| trans-1,3-Dichloropropene | | 0.252 | 0.271 | 0.314 | 0.318 | 0.319 | 0.295 | 10.6 |
| 1,1,2-Trichloroethane | | 0.170 | 0.167 | 0.181 | 0.178 | 0.184 | 0.176 | 4.1 |
| 1,3-Dichloropropane | | 0.474 | 0.469 | 0.488 | 0.506 | 0.525 | 0.493 | 4.7 |
| Tetrachloroethene | | 0.802 | 0.770 | 0.763 | 0.756 | 0.761 | 0.770 | 2.4 |
| 2-Hexanone | | 0.093 | 0.102 | 0.110 | 0.109 | 0.121 | 0.107 | 9.5 |
| Dibromochloromethane | | 0.404 | 0.498 | 0.564 | 0.580 | 0.582 | 0.526 | 14.5 |
| 1,2-Dibromoethane | | 0.371 | 0.422 | 0.440 | 0.475 | 0.476 | 0.437 | 10.0 |

* Compounds requires minimum RRF of 0.1 ,>0.1 for bromoform ,0.3 for chlorobenzene & 1,1,2,2-Tetrachloroethane.** C Compounds allows maximum % RSD of 30%.

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ Site: _____ Location: _____

Instrument ID: HP5970 Calibration Date(s): 8/4/95 8/4/95 016059

Heated Purge: (Y/N) N Calibration Times: 1038 1358

GC Column: DB-624 ID: 0.53 (mm)

Lab File ID: RRF10 = 0101078.D RRF20 = 0101079.D
RRF50 = 0101080.D RRF100 = 0101081.D RRF200 = 0101082.D

| COMPOUND | RRF10 | RRF20 | RRF50 | RRF100 | RRF200 | $\overline{RRF}$ | % RSD |
|---|---|---|---|---|---|---|---|
| * Chlorobenzene | 1.027 | 0.988 | 0.993 | 1.002 | 1.010 | 1.004 | 1.6 |
| 1,1,1,2-Tetrachloroethane | 0.312 | 0.344 | 0.381 | 0.391 | 0.395 | 0.364 | 9.8 |
| ** Ethyl benzene | 1.716 | 1.720 | 1.729 | 1.718 | 1.696 | 1.716 | 0.7 |
| M&P Xylene | 0.559 | 0.529 | 0.529 | 0.519 | 0.507 | 0.529 | 3.6 |
| o- Xylene | 0.475 | 0.483 | 0.480 | 0.444 | 0.431 | 0.463 | 5.1 |
| Styrene | 0.684 | 0.758 | 0.761 | 0.728 | 0.718 | 0.730 | 4.3 |
| * Bromoform | 0.241 | 0.251 | 0.293 | 0.298 | 0.310 | 0.279 | 11.0 |
| Isopropyl benzene | 1.672 | 1.535 | 1.482 | 1.317 | 1.231 | 1.447 | 12.1 |
| 1,1,2,2-Tetrachloroethane * | 0.582 | 0.640 | 0.770 | 0.800 | 0.748 | 0.708 | 13.1 |
| Bromobenzene | 1.283 | 1.369 | 1.633 | 1.724 | 1.562 | 1.514 | 12.1 |
| 1,2,3-Trichloropropane | 0.606 | 0.537 | 0.652 | 0.652 | 0.635 | 0.617 | 7.8 |
| n-Propyl benzene | 4.549 | 4.330 | 5.037 | 5.105 | 4.623 | 4.729 | 7.0 |
| 2-Chloro toluene | 3.563 | 3.253 | 3.677 | 3.791 | 3.405 | 3.538 | 6.0 |
| 1,3,5-Trimethyl benzene | 3.192 | 2.923 | 3.071 | 2.840 | 2.513 | 2.908 | 8.9 |
| 4-Chloro toluene | 3.677 | 3.696 | 4.151 | 4.198 | 3.769 | 3.898 | 6.5 |
| t-Butyl benzene | 2.638 | 2.552 | 2.639 | 2.306 | 2.060 | 2.439 | 10.3 |
| 1,2,4-Trimethyl benzene | 3.043 | 2.594 | 2.765 | 2.578 | 2.360 | 2.668 | 9.5 |
| sec-Butyl benzene | 3.550 | 3.101 | 3.184 | 2.911 | 2.661 | 3.081 | 10.7 |
| 1,3-Dichlorobenzene | 1.540 | 1.636 | 1.712 | 1.671 | 1.600 | 1.632 | 4.1 |
| p-Isopropyl toluene | 2.493 | 2.159 | 2.223 | 2.132 | 2.069 | 2.215 | 7.4 |
| 1,4-Dichlorobenzene | 1.838 | 1.560 | 1.633 | 1.621 | 1.551 | 1.640 | 7.1 |
| n-Butyl benzene | 2.065 | 1.840 | 1.945 | 2.139 | 2.156 | 2.029 | 6.6 |
| 1,2-Dichlorobenzene | 1.137 | 1.116 | 1.153 | 1.221 | 1.221 | 1.169 | 4.2 |
| 1,2-Dibromo-3-chloro-propane | 0.115 | 0.099 | 0.100 | 0.116 | 0.124 | 0.111 | 9.7 |
| 1,2,4-Trichloro benzene | 0.751 | 0.812 | 1.001 | 1.043 | 1.056 | 0.932 | 15.1 |
| Hexachlorobutadiene | 0.989 | 1.022 | 1.193 | 1.306 | 1.400 | 1.182 | 15.0 |
| Naphthalene | 0.643 | 0.566 | 0.687 | 0.809 | 0.781 | 0.697 | 14.3 |
| 1,2,3-Trichloro benzene | 0.615 | 0.682 | 0.782 | 0.842 | 0.882 | 0.761 | 14.6 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Dibromofluoromethane | 0.760 | 0.797 | 0.817 | 0.852 | 0.878 | 0.821 | 5.6 |
| 1,2-Dichloroethane-d4 | 0.505 | 0.579 | 0.554 | 0.564 | 0.572 | 0.555 | 5.3 |
| Toluene-d8 | 0.920 | 0.960 | 0.955 | 0.941 | 0.921 | 0.940 | 2.0 |
| 4-Bromofluorobenzene | 1.072 | 1.084 | 1.061 | 1.124 | 1.160 | 1.100 | 3.7 |

* Compounds requires minimum RRF of 0.1 ,>0.1 for bromoform ,0.3 for chlorobenzene & 1,1,2,2-Tetrachloroethane.** C Compounds allows maximum % RSD of 30%.

7A

VOLATILE CONTINUING CALIBRATION CHECK

016060

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ Site: _____ Location: _____

Instrument ID: HP5970 Calibration Date: 9/13/95 Time: 903

Lab File ID: 0101002.D Init. Calib. Date(s): 8/4/95 8/4/95

Heated Purge: (Y/N) N Init. Calib. Times: 1038 1358

GC Column: DB-624 ID: 0.53 (mm)

| COMPOUND | | $\overline{RRF}$ | RRF50 | MIN RRF | %D | MAX %D |
|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | | 0.383 | 0.396 | 0.100 | -3.4 | 20.0 |
| Chloromethane | * | 0.231 | 0.249 | 0.100 | -7.8 | 20.0 |
| Vinylchloride | ** | 0.175 | 0.160 | 0.100 | 8.6 | 20.0 |
| Bromomethane | | 0.054 | 0.045 | 0.100 | 16.7 | 20.0 |
| Chloroethane | | 0.090 | 0.077 | 0.100 | 14.4 | 20.0 |
| Trichlorofluoromethane | | 0.829 | 0.920 | 0.100 | -11.0 | 20.0 |
| 1,1-Dichloroethene | ** | 0.340 | 0.359 | 0.100 | -5.6 | 20.0 |
| Acetone | | 0.044 | 0.047 | 0.100 | -6.8 | 20.0 |
| Methylene chloride | | 0.242 | 0.234 | 0.100 | 3.3 | 20.0 |
| trans-1,2-Dichloroethene | | 0.338 | 0.338 | 0.100 | 0.0 | 20.0 |
| 1,1-Dichloroethane | * | 0.687 | 0.778 | 0.100 | -13.2 | 20.0 |
| 2,2-Dichloropropane | | 0.085 | 0.097 | 0.100 | -14.1 | 20.0 |
| Cis-1,2-Dichloroethene | | 0.358 | 0.425 | 0.100 | -18.7 | 20.0 |
| 2-Butanone | | 0.046 | 0.047 | 0.010 | -2.2 | 20.0 |
| Bromochloromethane | | 0.223 | 0.231 | 0.100 | -3.6 | 20.0 |
| Chloroform | ** | 0.981 | 1.142 | 0.100 | -16.4 | 20.0 |
| Pentafluorobenzene | | 1.470 | 1.475 | 0.100 | -0.3 | 20.0 |
| 1,1,1-Trichloroethane | | 0.286 | 0.319 | 0.100 | -11.5 | 20.0 |
| Carbon tetrachloride | | 0.131 | 0.151 | 0.100 | -15.3 | 20.0 |
| 1,1-Dichloropropene | | 0.602 | 0.684 | 0.100 | -13.6 | 20.0 |
| Benzene | | 0.742 | 0.770 | 0.100 | -3.8 | 20.0 |
| 1,2-Dichloroethane | | 0.611 | 0.676 | 0.100 | -10.6 | 20.0 |
| Trichloroethene | | 0.509 | 0.571 | 0.100 | -12.2 | 20.0 |
| 1,2-Dichloropropane | ** | 0.290 | 0.316 | 0.100 | -9.0 | 20.0 |
| Dibromomethane | | 0.270 | 0.286 | 0.100 | -5.9 | 20.0 |
| Bromodichloromethane | | 0.544 | 0.639 | 0.100 | -17.5 | 20.0 |
| cis-1,3-Dichloropropene | | 0.345 | 0.394 | 0.100 | -14.2 | 20.0 |
| 4-Methyl-2-pentanone | | 0.113 | 0.103 | 0.010 | 8.8 | 20.0 |
| Toluene | ** | 0.512 | 0.533 | 0.100 | -4.1 | 20.0 |
| trans-1,3-Dichloropropene | | 0.295 | 0.342 | 0.100 | -15.9 | 20.0 |
| 1,1,2-Trichloroethane | | 0.176 | 0.173 | 0.100 | 1.7 | 20.0 |
| 1,3-Dichloropropane | | 0.493 | 0.521 | 0.100 | -5.7 | 20.0 |
| Tetrachloroethene | | 0.770 | 0.833 | 0.100 | -8.2 | 20.0 |
| 2-Hexanone | | 0.107 | 0.100 | 0.100 | 6.5 | 20.0 |
| Dibromochloromethane | | 0.526 | 0.602 | 0.100 | -14.4 | 20.0 |
| 1,2-Dibromoethane | | 0.437 | 0.457 | 0.100 | -4.6 | 20.0 |

* Compounds requires minimum RF of 0.1 ,>0.1 for bromoform,0.3 for chlorobenzene & 1,1,2,2-Tetrachloroethane. ** Compounds allows maximum deviation of 20%.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ Site: _____ Location: _____ 016061

Lab File ID (Standard): 0101002.D Date Analyzed: 9/13/95

Instrument ID: HP5970 Time Analyzed: 0903

GC Column: DB-624 ID: 0.53 (mm) Heated Purg (Y/N) N

| | | IS1 AREA # | RT # | IS2 AREA # | RT # | IS3 AREA # | RT # |
|---|---|---|---|---|---|---|---|
| | 12 HOUR STD | 171473 | 14.52 | 197188 | 14.86 | 129833 | 22.66 |
| | UPPER LIMIT | 342946 | 15.02 | 394376 | 15.36 | 259666 | 23.16 |
| | LOWER LIMIT | 85737 | 14.02 | 98594 | 14.36 | 64917 | 22.16 |
| | SAMPLE NO. | | | | | | |
| 01 | VBLK01 | 171711 | 14.53 | 190939 | 14.85 | 130428 | 22.65 |
| 02 | LCS01 | 171099 | 14.52 | 185813 | 14.86 | 126088 | 22.64 |
| 03 | S50212-3 | 158648 | 14.53 | 180350 | 14.85 | 115958 | 22.65 |
| 04 | S50212-3 DUP | 158266 | 14.52 | 183774 | 14.87 | 122462 | 22.66 |
| 05 | S50212-3 MS | 155310 | 14.60 | 178312 | 14.94 | 119411 | 22.69 |
| 06 | S50212-3 MSD | 144082 | 14.68 | 163272 | 15.00 | 109781 | 22.72 |
| 07 | S50212-5 | 143740 | 14.53 | 165771 | 14.87 | 115434 | 22.66 |
| 08 | S50212-7 | 138447 | 14.54 | 158845 | 14.86 | 107261 | 22.67 |
| 09 | S50212-9 | 142043 | 14.54 | 156243 | 14.88 | 106809 | 22.67 |
| 10 | S50212-11 | 152560 | 14.54 | 172002 | 14.88 | 116416 | 22.67 |
| 11 | S50212-13 | 143038 | 14.54 | 161010 | 14.86 | 108892 | 22.66 |
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IS1 = Fluorobenzene
IS2 = 1,4-Difluorobenzene
IS3 = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

8A

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: US ARMY CORPS OF ENGINEERS SWD LAB

Project No.: _____ Site: _____ Location: _____

016062

Lab File ID (Standard): 0101002.D Date Analyzed: 9/13/95

Instrument ID: HP5970 Time Analyzed: 0903

GC Column: DB-624 ID: 0.53 (mm) Heated Purg (Y/N) N

| | | IS4 AREA # | RT # | AREA # | RT # | AREA # | RT # |
|---|---|---|---|---|---|---|---|
| | 12 HOUR STD | 43962 | 29.21 | | | | |
| | UPPER LIMIT | 87924 | 29.71 | | | | |
| | LOWER LIMIT | 21981 | 28.71 | | | | |
| | SAMPLE NO. | | | | | | |
| 01 | VBLK01 | 53192 | 29.20 | | | | |
| 02 | LCS01 | 44136 | 29.21 | | | | |
| 03 | S50212-3 | 51039 | 29.22 | | | | |
| 04 | S50212-3 DUP | 52238 | 29.22 | | | | |
| 05 | S50212-3 MS | 50392 | 29.23 | | | | |
| 06 | S50212-3 MSD | 45817 | 29.23 | | | | |
| 07 | S50212-5 | 47553 | 29.22 | | | | |
| 08 | S50212-7 | 44603 | 29.21 | | | | |
| 09 | S50212-9 | 42258 | 29.23 | | | | |
| 10 | S50212-11 | 48799 | 29.23 | | | | |
| 11 | S50212-13 | 44410 | 29.23 | | | | |
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IS4 = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

016063

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-9
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-5 S50212-15
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : SAP
ANALYZED ON : 14-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS2-523

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/Kg | < 100 µg/Kg |
| Acrylonitrile | 5.00 µg/Kg | < 5.00 µg/Kg |
| Benzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromodichloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromoform | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon disulfide | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon tetrachloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroform | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/Kg | < 25.0 µg/Kg |

016064


# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592


REPORT NUMBER : D95-8690-9
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,4-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,4-Dichloro-2-butene | 100 µg/Kg | < 100 µg/Kg |
| 1,1-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Ethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Hexanone | 50.0 µg/Kg | < 50.0 µg/Kg |
| Bromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Butanone | 100 µg/Kg | < 100 µg/Kg |
| Iodomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Methylene chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Methyl-2-pentanone | 100 µg/Kg | < 100 µg/Kg |
| Styrene | 5.00 µg/Kg | < 5.00 µg/Kg |

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592


REPORT NUMBER : D95-8690-9
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Tetrachloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Toluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,3-Trichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,4-Trichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,1-Trichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,2-Trichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Trichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Trichlorofluoromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,3-Trichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3,5-Trimethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,4-Trimethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Vinyl acetate | 50.0 µg/Kg | < 50.0 µg/Kg |
| Vinyl chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| m,p-Xylene | 5.00 µg/Kg | < 5.00 µg/Kg |
| o-Xylene | 5.00 µg/Kg | < 5.00 µg/Kg |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 88.2 % |
| Toluene-d8 (SS) | 50.0 µg/L | 90.1 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 83.4 % |

Applicable results are reported on Dry Weight basis.

016066

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-9
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-5 S50212-15
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYZED BY : SAP
ANALYZED ON : 14-SEP-1995
ANALYSIS METHOD : /1
QC BATCH NO : ITS2-523

| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
|---|---|---|---|
| COMPOUND | RETENTION TIME | FRACTION | RESULT |
| No compounds detected above | | VOA | 15 ug/Kg |

Applicable results are reported on Dry Weight basis.

01606

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-9
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-5 S50212-15
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995

| MISCELLANEOUS ANALYSES | | | |
|---|---|---|---|
| TEST REQUESTED | | DETECTION LIMIT | RESULTS |
| Total Solids | /1 | 0.01 % | 67.2 % |
| Analyzed using ASTM D2216 mod. on 13-SEP-1995 by RLR<br>QC Batch No : 536086B | | | |

Applicable results are reported on Dry Weight basis.

016066

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-10
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-6 S50212-16
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : SAP
ANALYZED ON : 14-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS2-523

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/Kg | < 100 µg/Kg |
| Acrylonitrile | 5.00 µg/Kg | < 5.00 µg/Kg |
| Benzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromodichloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromoform | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon disulfide | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon tetrachloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroform | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromochloromethane | 25.0 µg/Kg | < 25.0 µg/Kg |
| 1,2-Dibromo-3-chloropropane | | |

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592


016065

REPORT NUMBER : D95-8690-9
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Tetrachloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Toluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,3-Trichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,4-Trichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,1-Trichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,2-Trichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Trichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Trichlorofluoromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,3-Trichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3,5-Trimethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,4-Trimethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Vinyl acetate | 50.0 µg/Kg | < 50.0 µg/Kg |
| Vinyl chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| m,p-Xylene | 5.00 µg/Kg | < 5.00 µg/Kg |
| o-Xylene | 5.00 µg/Kg | < 5.00 µg/Kg |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 88.2 % |
| Toluene-d8 (SS) | 50.0 µg/L | 90.1 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 83.4 % |

Applicable results are reported on Dry Weight basis.

016070

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-9
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-5 S50212-15
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYZED BY : SAP
ANALYZED ON : 14-SEP-1995
ANALYSIS METHOD : /1
QC BATCH NO : ITS2-523

| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
|---|---|---|---|
| COMPOUND | RETENTION TIME | FRACTION | RESULT |
| No compounds detected above | | VOA | 15 ug/Kg |

Applicable results are reported on Dry Weight basis.

# Inchcape Testing Services
## Environmental Laboratories

016071

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-9
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-5 S50212-15
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995

| MISCELLANEOUS ANALYSES | | | |
|---|---|---|---|
| TEST REQUESTED | | DETECTION LIMIT | RESULTS |
| Total Solids | /1 | 0.01 % | 67.2 % |
| Analyzed using ASTM D2216 mod. on 13-SEP-1995 by RLR<br>QC Batch No : 536086B | | | |

Applicable results are reported on Dry Weight basis.

01607

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-10
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-6 S50212-16
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : SAP
ANALYZED ON : 14-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS2-523

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/Kg | < 100 µg/Kg |
| Acrylonitrile | 5.00 µg/Kg | < 5.00 µg/Kg |
| Benzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromodichloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromoform | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon disulfide | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon tetrachloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroform | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/Kg | < 25.0 µg/Kg |

# Inchcape Testing Services
Environmental Laboratories

016073

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592


REPORT NUMBER : D95-8690-10
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,4-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,4-Dichloro-2-butene | 100 µg/Kg | < 100 µg/Kg |
| 1,1-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Ethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Hexanone | 50.0 µg/Kg | < 50.0 µg/Kg |
| Bromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Butanone | 100 µg/Kg | < 100 µg/Kg |
| Iodomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Methylene chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Methyl-2-pentanone | 100 µg/Kg | < 100 µg/Kg |
| Styrene | 5.00 µg/Kg | < 5.00 µg/Kg |

016074

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-3591
Fax. 214-238-3592

REPORT NUMBER : D95-8690-10
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | | | |
|---|---|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | | RESULTS | |
| 1,1,1,2-Tetrachloroethane | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,1,2,2-Tetrachloroethane | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| Tetrachloroethene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| Toluene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,2,3-Trichlorobenzene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,2,4-Trichlorobenzene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,1,1-Trichloroethane | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,1,2-Trichloroethane | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| Trichloroethene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| Trichlorofluoromethane | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,2,3-Trichloropropane | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,3,5-Trimethylbenzene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,2,4-Trimethylbenzene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| Vinyl acetate | 50.0 | µg/Kg | < 50.0 | µg/Kg |
| Vinyl chloride | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| m,p-Xylene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| o-Xylene | 5.00 | µg/Kg | < 5.00 | µg/Kg |

| QUALITY CONTROL DATA | | | | |
|---|---|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | | SPIKE RECOVERED | |
| Dibromofluoromethane (SS) | 50.0 | µg/L | 91.8 | % |
| Toluene-d8 (SS) | 50.0 | µg/L | 93.0 | % |
| 4-Bromofluorobenzene (SS) | 50.0 | µg/L | 89.3 | % |

Applicable results are reported on Dry Weight basis.

016075

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-10
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-6 S50212-16
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYZED BY : SAP
ANALYZED ON : 14-SEP-1995
ANALYSIS METHOD : /1
QC BATCH NO : ITS2-523

| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
|---|---|---|---|
| COMPOUND | RETENTION TIME | FRACTION | RESULT |
| No compounds detected above | | VOA | 19 ug/Kg |

Applicable results are reported on Dry Weight basis.

016076

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-10
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-6 S50212-16
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995

| MISCELLANEOUS ANALYSES | | | |
|---|---|---|---|
| TEST REQUESTED | | DETECTION LIMIT | RESULTS |
| Total Solids | /1 | 0.01 % | 53.7 % |
| Analyzed using ASTM D2216 mod. on 13-SEP-1995 by RLR<br>QC Batch No : 536086B | | | |

Applicable results are reported on Dry Weight basis.

016077

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-11
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-7 S50212-17
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : SAP
ANALYZED ON : 14-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS2-523

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/Kg | < 100 µg/Kg |
| Acrylonitrile | 5.00 µg/Kg | < 5.00 µg/Kg |
| Benzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromodichloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromoform | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon disulfide | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon tetrachloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroform | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/Kg | < 25.0 µg/Kg |

016076


# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592


REPORT NUMBER : D95-8690-11
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,4-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,4-Dichloro-2-butene | 100 µg/Kg | < 100 µg/Kg |
| 1,1-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Ethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Hexanone | 50.0 µg/Kg | < 50.0 µg/Kg |
| Bromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Butanone | 100 µg/Kg | < 100 µg/Kg |
| Iodomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Methylene chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Methyl-2-pentanone | 100 µg/Kg | < 100 µg/Kg |
| Styrene | 5.00 µg/Kg | < 5.00 µg/Kg |

016079

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

REPORT NUMBER : D95-8690-11
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Tetrachloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Toluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,3-Trichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,4-Trichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,1-Trichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,2-Trichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Trichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Trichlorofluoromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,3-Trichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3,5-Trimethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,4-Trimethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Vinyl acetate | 50.0 µg/Kg | < 50.0 µg/Kg |
| Vinyl chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| m,p-Xylene | 5.00 µg/Kg | < 5.00 µg/Kg |
| o-Xylene | 5.00 µg/Kg | < 5.00 µg/Kg |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 88.3 % |
| Toluene-d8 (SS) | 50.0 µg/L | 93.2 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 83.5 % |

Applicable results are reported on Dry Weight basis.

016080

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-11
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-7 S50212-17
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYZED BY : SAP
ANALYZED ON : 14-SEP-1995
ANALYSIS METHOD : /1
QC BATCH NO : ITS2-523

| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
|---|---|---|---|
| COMPOUND | RETENTION TIME | FRACTION | RESULT |
| No compounds detected above | | VOA | 13 ug/Kg |

Applicable results are reported on Dry Weight basis.

016081

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-11
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-7 S50212-17
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995

| MISCELLANEOUS ANALYSES | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Total Solids /1 | 0.01 % | 76.0 % |
| Analyzed using ASTM D2216 mod. on 13-SEP-1995 by RLR<br>QC Batch No : 536086B | | |

Applicable results are reported on Dry Weight basis.

016082

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-12
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-8 S50212-18
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : SAP
ANALYZED ON : 14-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS2-523

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/Kg | < 100 µg/Kg |
| Acrylonitrile | 5.00 µg/Kg | < 5.00 µg/Kg |
| Benzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromodichloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromoform | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon disulfide | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon tetrachloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroform | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/Kg | < 25.0 µg/Kg |

016083

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

REPORT NUMBER : D95-8690-12
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,4-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,4-Dichloro-2-butene | 100 µg/Kg | < 100 µg/Kg |
| 1,1-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Ethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Hexanone | 50.0 µg/Kg | < 50.0 µg/Kg |
| Bromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Butanone | 100 µg/Kg | < 100 µg/Kg |
| Iodomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Methylene chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Methyl-2-pentanone | 100 µg/Kg | < 100 µg/Kg |
| Styrene | 5.00 µg/Kg | < 5.00 µg/Kg |

016084

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

REPORT NUMBER : D95-8690-12
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Tetrachloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Toluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,3-Trichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,4-Trichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,1-Trichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,2-Trichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Trichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Trichlorofluoromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,3-Trichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3,5-Trimethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,4-Trimethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Vinyl acetate | 50.0 µg/Kg | < 50.0 µg/Kg |
| Vinyl chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| m,p-Xylene | 5.00 µg/Kg | < 5.00 µg/Kg |
| o-Xylene | 5.00 µg/Kg | < 5.00 µg/Kg |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 95.8 % |
| Toluene-d8 (SS) | 50.0 µg/L | 89.3 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 79.6 % |

Applicable results are reported on Dry Weight basis.

016085

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-12
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-8 S50212-18
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYZED BY : SAP
ANALYZED ON : 14-SEP-1995
ANALYSIS METHOD : /1
QC BATCH NO : ITS2-523

| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
|---|---|---|---|
| COMPOUND | RETENTION TIME | FRACTION | RESULT |
| No compounds detected above | | VOA | 17 ug/Kg |

Applicable results are reported on Dry Weight basis.

016086

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-12
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-8 S50212-18
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995

| MISCELLANEOUS ANALYSES | | | |
|---|---|---|---|
| TEST REQUESTED | | DETECTION LIMIT | RESULTS |
| Total Solids | /1 | 0.01 % | 60.5 % |
| Analyzed using ASTM D2216 mod. on 13-SEP-1995 by RLR<br>QC Batch No : 536086B | | | |

Applicable results are reported on Dry Weight basis.

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-13
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-9 S50212-19
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : SAP
ANALYZED ON : 14-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS2-523

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/Kg | < 100 µg/Kg |
| Acrylonitrile | 5.00 µg/Kg | < 5.00 µg/Kg |
| Benzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromodichloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromoform | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon disulfide | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon tetrachloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroform | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/Kg | < 25.0 µg/Kg |

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5391
Fax. 214-238-5392


REPORT NUMBER : D95-8690-13
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,4-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,4-Dichloro-2-butene | 100 µg/Kg | < 100 µg/Kg |
| 1,1-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Ethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Hexanone | 50.0 µg/Kg | < 50.0 µg/Kg |
| Bromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Butanone | 100 µg/Kg | < 100 µg/Kg |
| Iodomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Methylene chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Methyl-2-pentanone | 100 µg/Kg | < 100 µg/Kg |
| Styrene | 5.00 µg/Kg | < 5.00 µg/Kg |

016089

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

REPORT NUMBER : D95-8690-13
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | | | |
|---|---|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | | RESULTS | |
| 1,1,1,2-Tetrachloroethane | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,1,2,2-Tetrachloroethane | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| Tetrachloroethene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| Toluene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,2,3-Trichlorobenzene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,2,4-Trichlorobenzene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,1,1-Trichloroethane | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,1,2-Trichloroethane | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| Trichloroethene | 5.00 | µg/Kg | 5.06 | µg/Kg |
| Trichlorofluoromethane | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,2,3-Trichloropropane | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,3,5-Trimethylbenzene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| 1,2,4-Trimethylbenzene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| Vinyl acetate | 50.0 | µg/Kg | < 50.0 | µg/Kg |
| Vinyl chloride | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| m,p-Xylene | 5.00 | µg/Kg | < 5.00 | µg/Kg |
| o-Xylene | 5.00 | µg/Kg | < 5.00 | µg/Kg |

| QUALITY CONTROL DATA | | | | |
|---|---|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | | SPIKE RECOVERED | |
| Dibromofluoromethane (SS) | 50.0 | µg/L | 94.3 | % |
| Toluene-d8 (SS) | 50.0 | µg/L | 91.8 | % |
| 4-Bromofluorobenzene (SS) | 50.0 | µg/L | 77.4 | % |

Applicable results are reported on Dry Weight basis.

016090

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-13
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-9 S50212-19
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYZED BY : SAP
ANALYZED ON : 14-SEP-1995
ANALYSIS METHOD : /1
QC BATCH NO : ITS2-523

| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
|---|---|---|---|
| COMPOUND | RETENTION TIME | FRACTION | RESULT |
| No compounds detected above | | VOA | 25 ug/Kg |

Applicable results are reported on Dry Weight basis.

016091

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-13
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : HBS-9 S50212-19
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995

| MISCELLANEOUS ANALYSES | | | |
|---|---|---|---|
| TEST REQUESTED | | DETECTION LIMIT | RESULTS |
| Total Solids | /1 | 0.01 % | 39.3 % |
| Analyzed using ASTM D2216 mod. on 13-SEP-1995 by RLR<br>QC Batch No : 5360868 | | | |

Applicable results are reported on Dry Weight basis.

# ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

016092

Project Name :Longhorn-Harrison Bayou

Field Sample Number :HBS-1B-QA Matrix :SOIL

SWD Sample Number :S5 0212-20

Date Sample Collected :09/11/95

Date Sample Received :09/13/95

Contract Laboratory Sample Number :9509-278-01

**Dilution Factor:1**

| TEST | RESULT | | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | | | 8260A |
| | | | | | | 09/13/95 | LS | |
| Benzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromochloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromodichloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromoform | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| n-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| sec-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| tert-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Carbon Tetrachloride | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chlorodibromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloroform | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| o-Chlorotoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Chlorotoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dibromo-3-Chloropropane | < | 5.00 | ug/Kg | 5.00 | | | | |
| Dibromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| o-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| m-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Dichlorodifluormethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| cis-1,2-Dichloroethylene | | 16.8 | ug/Kg | 1.00 | | | | |
| trans-1,2-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Dichloromethane | < | 20.0 | ug/Kg | 20.0 | | | | |
| 1,2-Dichloropropane | < | 5.00 | ug/Kg | 5.00 | | | | |
| 1,3-Dichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 2,2-Dichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloropropene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,3-Dichloropropene | < | 5.00 | ug/Kg | 5.00 | | | | |
| Ethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Ethylene dibromide | < | 1.00 | ug/Kg | 1.00 | | | | |
| Fluorotrichloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Hexachlorobutadiene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Isopropylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Isopropyltoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Naphthalene | < | 1.00 | ug/Kg | 1.00 | | | | |
| n-Propylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |

ND - Not Detected

LABORATORY MANAGER

# ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

016093

Project Name :Longhorn-Harrison Bayou

Field Sample Number :HBS-1B-QA Matrix :SOIL

SWD Sample Number :S5 0212-20

Date Sample Collected :09/11/95

Date Sample Received :09/13/95

Contract Laboratory Sample Number :9509-278-01

**Dilution Factor:1**

| TEST | RESULT | | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | 09/13/95 | LS | 8260A |
| Styrene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,1,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,2,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Tetrachloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Toluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,1-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,2-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Trichloroethylene | | 220 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,3,5-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Vinyl Chloride | < | 1.00 | ug/Kg | 1.00 | | | | |
| Xylenes (total) | < | 1.00 | ug/Kg | 1.00 | | | | |

| Surrogate Standard | % Recovery | QC Limits | |
|---|---|---|---|
| S1 - Dibromofluoromethane | 110 | 70 | 121 |
| S2 - Toluene-d8 | 96 | 81 | 117 |
| S3 - 4-Bromofluorobenzene | 102 | 74 | 121 |

ND - Not Detected

LABORATORY MANAGER

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9509-278-1

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Matrix: (soil/water) SOIL Lab Sample ID: 016094

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 0401002

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/13/95

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
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# ENVIRONMENTAL TESTING & CONSULTING, INC

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

Project Name :Longhorn-Harrison Bayou

Field Sample Number :HBS-5-QA 016095

SWD Sample Number :S5 0212-21

Matrix :SOIL

Date Sample Collected :09/11/95

Date Sample Received :09/13/95

Contract Laboratory Sample Number :9509-278-02

**Dilution Factor:1**

| TEST | RESULT | | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | | | 8260A |
| | | | | | | 09/13/95 | LS | |
| Benzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromochloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromodichloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromoform | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| n-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| ec-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| ert-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Carbon Tetrachloride | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chlorodibromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloroform | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| o-Chlorotoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Chlorotoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dibromo-3-Chloropropane | < | 5.00 | ug/Kg | 5.00 | | | | |
| Dibromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| o-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| m-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Dichlorodifluormethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| cis-1,2-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| trans-1,2-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Dichloromethane | < | 20.0 | ug/Kg | 20.0 | | | | |
| 1,2-Dichloropropane | < | 5.00 | ug/Kg | 5.00 | | | | |
| 1,3-Dichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 2,2-Dichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloropropene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,3-Dichloropropene | < | 5.00 | ug/Kg | 5.00 | | | | |
| Ethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Ethylene dibromide | < | 1.00 | ug/Kg | 1.00 | | | | |
| Fluorotrichloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Hexachlorobutadiene | < | 1.00 | ug/Kg | 1.00 | | | | |
| sopropylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| -Isopropyltoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Naphthalene | < | 1.00 | ug/Kg | 1.00 | | | | |
| n-Propylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |

ND - Not Detected

LABORATORY MANAGER

# ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

016096

Project Name :Longhorn-Harrison Bayou

Field Sample Number :HBS-5-QA Matrix :SOIL

SWD Sample Number :S5 0212-21

Date Sample Collected :09/11/95

Date Sample Received :09/13/95

Contract Laboratory Sample Number :9509-278-02

**Dilution Factor:1**

| TEST | RESULT | | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | 09/13/95 | LS | 8260A |
| Styrene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,1,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,2,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Tetrachloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Toluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,1-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,2-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Trichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,3,5-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Vinyl Chloride | < | 1.00 | ug/Kg | 1.00 | | | | |
| Xylenes (total) | < | 1.00 | ug/Kg | 1.00 | | | | |

| Surrogate Standard | % Recovery | QC Limits | |
|---|---|---|---|
| S1 - Dibromofluoromethane | 111 | 70 | 121 |
| S2 - Toluene-d8 | 93 | 81 | 117 |
| S3 - 4-Bromofluorobenzene | 92 | 74 | 121 |

ND - Not Detected

LABORATORY MANAGER

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET 01609
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.
9509-278-2

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Matrix: (soil/water) SOIL Lab Sample ID:

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 0501002

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/13/95

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
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| 1. | | | | | |
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# ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

016098

Project Name :Longhorn-Harrison Bayou

Field Sample Number :HBS-6-QA Matrix :SOIL
SWD Sample Number :S5 0212-22

Date Sample Collected :09/11/95
Date Sample Received :09/13/95

Contract Laboratory Sample Number :9509-278-03

**Dilution Factor:1**

| TEST | RESULT | | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | | | 8260A |
| | | | | | | 09/13/95 | LS | |
| Benzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromochloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromodichloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromoform | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| n-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| sec-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| tert-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Carbon Tetrachloride | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chlorodibromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloroform | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| o-Chlorotoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Chlorotoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dibromo-3-Chloropropane | < | 5.00 | ug/Kg | 5.00 | | | | |
| Dibromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| o-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| m-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Dichlorodifluormethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| cis-1,2-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| trans-1,2-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Dichloromethane | < | 20.0 | ug/Kg | 20.0 | | | | |
| 1,2-Dichloropropane | < | 5.00 | ug/Kg | 5.00 | | | | |
| 1,3-Dichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 2,2-Dichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloropropene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,3-Dichloropropene | < | 5.00 | ug/Kg | 5.00 | | | | |
| Ethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Ethylene dibromide | < | 1.00 | ug/Kg | 1.00 | | | | |
| Fluorotrichloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Hexachlorobutadiene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Isopropylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Isopropyltoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Naphthalene | < | 1.00 | ug/Kg | 1.00 | | | | |
| n-Propylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |

ND - Not Detected

LABORATORY MANAGER

# ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

016099

Project Name :Longhorn-Harrison Bayou

Field Sample Number :HBS-6-QA Matrix :SOIL

SWD Sample Number :S5 0212-22

Date Sample Collected :09/11/95

Date Sample Received :09/13/95

Contract Laboratory Sample Number :9509-278-03

**Dilution Factor:1**

| TEST | RESULT | | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | | | 8260A |
| | | | | | | 09/13/95 | LS | |
| Styrene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,1,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,2,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Tetrachloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Toluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| ,1,1-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| ,1,2-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Trichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,3,5-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Vinyl Chloride | < | 1.00 | ug/Kg | 1.00 | | | | |
| Xylenes (total) | < | 1.00 | ug/Kg | 1.00 | | | | |

| Surrogate Standard | % Recovery | QC Limits | |
|---|---|---|---|
| S1 - Dibromofluoromethane | 118 | 70 | 121 |
| S2 - Toluene-d8 | 92 | 81 | 117 |
| S3 - 4-Bromofluorobenzene | 85 | 74 | 121 |

ND - Not Detected

LABORATORY MANAGER

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9509-278-3

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Matrix: (soil/water) SOIL Lab Sample ID:

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 0601002

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/13/95

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
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# ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

Project Name :Longhorn-Harrison Bayou 016101

Field Sample Number :HBS-7-QA Matrix :SOIL
SWD Sample Number :S5 0212-23

Date Sample Collected :09/11/95
Date Sample Received :09/13/95

Contract Laboratory Sample Number :9509-278-04

**Dilution Factor:1**

| TEST | RESULT | | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | | | 8260A |
| | | | | | | 09/13/95 | LS | |
| Benzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromochloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromodichloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromoform | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| n-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| sec-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| tert-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Carbon Tetrachloride | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chlorodibromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloroform | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| o-Chlorotoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Chlorotoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dibromo-3-Chloropropane | < | 5.00 | ug/Kg | 5.00 | | | | |
| Dibromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| o-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| m-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Dichlorodifluormethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| cis-1,2-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| trans-1,2-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Dichloromethane | < | 20.0 | ug/Kg | 20.0 | | | | |
| 1,2-Dichloropropane | < | 5.00 | ug/Kg | 5.00 | | | | |
| 1,3-Dichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 2,2-Dichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloropropene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,3-Dichloropropene | < | 5.00 | ug/Kg | 5.00 | | | | |
| Ethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Ethylene dibromide | < | 1.00 | ug/Kg | 1.00 | | | | |
| Fluorotrichloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Hexachlorobutadiene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Isopropylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Isopropyltoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Naphthalene | < | 1.00 | ug/Kg | 1.00 | | | | |
| n-Propylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |

ND - Not Detected

000015

# ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

Project Name :Longhorn-Harrison Bayou

Field Sample Number :HBS-7-QA
SWD Sample Number :S5 0212-23

Matrix :SOIL

016102

Date Sample Collected :09/11/95
Date Sample Received :09/13/95

Contract Laboratory Sample Number :9509-278-04

**Dilution Factor:1**

| TEST | RESULT | | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | | | 8260A |
| | | | | | | 09/13/95 | LS | |
| Styrene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,1,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,2,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Tetrachloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Toluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,1-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,2-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Trichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,3,5-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Vinyl Chloride | < | 1.00 | ug/Kg | 1.00 | | | | |
| Xylenes (total) | < | 1.00 | ug/Kg | 1.00 | | | | |

| Surrogate Standard | % Recovery | QC Limits | |
|---|---|---|---|
| S1 - Dibromofluoromethane | 115 | 70 | 121 |
| S2 - Toluene-d8 | 95 | 81 | 117 |
| S3 - 4-Bromofluorobenzene | 102 | 74 | 121 |

ND - Not Detected

LABORATORY MANAGER

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9509-278-4

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Matrix: (soil/water) SOIL Lab Sample ID:

Sample wt/vol: 10.6 (g/mL) G Lab File ID: 0701003

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/13/95

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |
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016104

# ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

Project Name :Longhorn-Harrison Bayou

Field Sample Number :HBS-8-QA Matrix :SOIL
SWD Sample Number :S5 0212-24

Date Sample Collected :09/11/95
Date Sample Received :09/13/95

Contract Laboratory Sample Number :9509-278-05

**Dilution Factor:1**

| TEST | RESULT | | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | | | 8260A |
| | | | | | | 09/13/95 | LS | |
| Benzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromochloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromodichloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromoform | < | 1.00 | ug/Kg | 1.00 | | | | |
| Bromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| n-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| sec-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| tert-Butylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Carbon Tetrachloride | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chlorodibromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloroform | < | 1.00 | ug/Kg | 1.00 | | | | |
| Chloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| o-Chlorotoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Chlorotoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dibromo-3-Chloropropane | < | 5.00 | ug/Kg | 5.00 | | | | |
| Dibromomethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| o-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| m-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Dichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Dichlorodifluormethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| cis-1,2-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| trans-1,2-Dichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Dichloromethane | < | 20.0 | ug/Kg | 20.0 | | | | |
| 1,2-Dichloropropane | < | 5.00 | ug/Kg | 5.00 | | | | |
| 1,3-Dichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 2,2-Dichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloropropene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,3-Dichloropropene | < | 5.00 | ug/Kg | 5.00 | | | | |
| Ethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Ethylene dibromide | < | 1.00 | ug/Kg | 1.00 | | | | |
| Fluorotrichloromethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Hexachlorobutadiene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Isopropylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| p-Isopropyltoluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Naphthalene | < | 1.00 | ug/Kg | 1.00 | | | | |
| n-Propylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |

ND - Not Detected

LABORATORY MANAGER

# ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

Project Name :Longhorn-Harrison Bayou

Field Sample Number :HBS-8-QA Matrix :SOIL
SWD Sample Number :S5 0212-24

Date Sample Collected :09/11/95
Date Sample Received :09/13/95

Contract Laboratory Sample Number :9509-278-05

**Dilution Factor:1**

| TEST | RESULT | | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | | | 8260A |
| | | | | | | 09/13/95 | LS | |
| Styrene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,1,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,2,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Tetrachloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Toluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| ,1,2-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Trichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,3,5-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Vinyl Chloride | < | 1.00 | ug/Kg | 1.00 | | | | |
| Xylenes (total) | < | 1.00 | ug/Kg | 1.00 | | | | |

| Surrogate Standard | % Recovery | QC Limits | |
|---|---|---|---|
| S1 - Dibromofluoromethane | 111 | 70 | 121 |
| S2 - Toluene-d8 | 92 | 81 | 117 |
| S3 - 4-Bromofluorobenzene | 87 | 74 | 121 |

ND - Not Detected

LABORATORY MANAGER

016106

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

9509-278-5

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Matrix: (soil/water) SOIL Lab Sample ID:

Sample wt/vol: 10.0 (g/mL) G Lab File ID: 0801004

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/13/95

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 1. | | | | | |
| 2. | | | | | |
| 3. | | | | | |
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| 29. | | | | | |
| 30. | | | | | |

# ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

Project Name :Longhorn-Harrison Bayou

Field Sample Number :HBS-9-QA Matrix :SOIL
SWD Sample Number :S5 0212-25

Date Sample Collected :09/11/95
Date Sample Received :09/13/95

Contract Laboratory Sample Number :9509-278-06

**Dilution Factor:1**

| TEST | RESULT | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | | 8260A |
| | | | | | 09/13/95 | LS | |
| Benzene | < 1.00 | ug/Kg | 1.00 | | | | |
| Bromobenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| Bromochloromethane | < 1.00 | ug/Kg | 1.00 | | | | |
| Bromodichloromethane | < 1.00 | ug/Kg | 1.00 | | | | |
| Bromoform | < 1.00 | ug/Kg | 1.00 | | | | |
| Bromomethane | < 1.00 | ug/Kg | 1.00 | | | | |
| n-Butylbenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| sec-Butylbenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| ert-Butylbenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| Carbon Tetrachloride | < 1.00 | ug/Kg | 1.00 | | | | |
| Chlorobenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| Chlorodibromomethane | < 1.00 | ug/Kg | 1.00 | | | | |
| Chloroethane | < 1.00 | ug/Kg | 1.00 | | | | |
| Chloroform | < 1.00 | ug/Kg | 1.00 | | | | |
| Chloromethane | < 1.00 | ug/Kg | 1.00 | | | | |
| o-Chlorotoluene | < 1.00 | ug/Kg | 1.00 | | | | |
| p-Chlorotoluene | < 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dibromo-3-Chloropropane | < 5.00 | ug/Kg | 5.00 | | | | |
| Dibromomethane | < 1.00 | ug/Kg | 1.00 | | | | |
| o-Dichlorobenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| m-Dichlorobenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| p-Dichlorobenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| Dichlorodifluormethane | < 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethane | < 1.00 | ug/Kg | 1.00 | | | | |
| 1,2-Dichloroethane | < 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloroethylene | < 1.00 | ug/Kg | 1.00 | | | | |
| cis-1,2-Dichloroethylene | < 1.00 | ug/Kg | 1.00 | | | | |
| trans-1,2-Dichloroethylene | < 1.00 | ug/Kg | 1.00 | | | | |
| Dichloromethane | < 20.0 | ug/Kg | 20.0 | | | | |
| 1,2-Dichloropropane | < 5.00 | ug/Kg | 5.00 | | | | |
| 1,3-Dichloropropane | < 1.00 | ug/Kg | 1.00 | | | | |
| 2,2-Dichloropropane | < 1.00 | ug/Kg | 1.00 | | | | |
| 1,1-Dichloropropene | < 1.00 | ug/Kg | 1.00 | | | | |
| 1,3-Dichloropropene | < 5.00 | ug/Kg | 5.00 | | | | |
| Ethylbenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| Ethylene dibromide | < 1.00 | ug/Kg | 1.00 | | | | |
| Fluorotrichloromethane | < 1.00 | ug/Kg | 1.00 | | | | |
| Hexachlorobutadiene | < 1.00 | ug/Kg | 1.00 | | | | |
| sopropylbenzene | < 1.00 | ug/Kg | 1.00 | | | | |
| -Isopropyltoluene | < 1.00 | ug/Kg | 1.00 | | | | |
| Naphthalene | < 1.00 | ug/Kg | 1.00 | | | | |
| n-Propylbenzene | < 1.00 | ug/Kg | 1.00 | | | | |

ND - Not Detected

LABORATORY MANAGER

# ENVIRONMENTAL TESTING & CONSULTING, INC.

2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## ORGANIC ANALYSIS DATA SHEET

Project Name :Longhorn-Harrison Bayou

Field Sample Number :HBS-9-QA Matrix :SOIL
SWD Sample Number :S5 0212-25

Date Sample Collected :09/11/95
Date Sample Received :09/13/95

Contract Laboratory Sample Number :9509-278-06

**Dilution Factor:1**

| TEST | RESULT | | UNITS | DETECTION LIMIT | DATE EXTRACTED | DATE ANALYZED | BY | METHOD |
|---|---|---|---|---|---|---|---|---|
| Volatile Organics | | | | | | | | 8260A |
| | | | | | | 09/13/95 | LS | |
| Styrene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,1,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,2,2-Tetrachloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Tetrachloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Toluene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trichlorobenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,1-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,1,2-Trichloroethane | < | 1.00 | ug/Kg | 1.00 | | | | |
| Trichloroethylene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,3-Trichloropropane | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,2,4-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| 1,3,5-Trimethylbenzene | < | 1.00 | ug/Kg | 1.00 | | | | |
| Vinyl Chloride | < | 1.00 | ug/Kg | 1.00 | | | | |
| Xylenes (total) | < | 1.00 | ug/Kg | 1.00 | | | | |

| Surrogate Standard | % Recovery | QC Limits | |
|---|---|---|---|
| S1 - Dibromofluoromethane | 113 | 70 | 121 |
| S2 - Toluene-d8 | 93 | 81 | 117 |
| S3 - 4-Bromofluorobenzene | 95 | 74 | 121 |

ND - Not Detected

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT [illegible]

9509-278-6

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Matrix: (soil/water) SOIL Lab Sample ID:

Sample wt/vol: 10.6 (g/mL) G Lab File ID: 0901005

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/13/95

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/Kg

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|---|
| 1. | | | | | |
| 2. | | | | | |
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016110

ENVIRONMENTAL TESTING & CONSULTING, INC.
2924 Walnut Grove Road • Memphis, TN 38111 • (901) 327-2750 • FAX (901) 327-6334
*Founded 1972*

September 14, 1995

Ms. Anhmai P. Tran
US Army Corps of Engineers
4815 Cass Street
Dallas, TX 75235

Ref: Analytical Testing
ETC Order # 9509278
Project Description Longhorn-Harrison Bayou

The above referenced project has been analyzed per your instructions. The analyses were performed in our laboratory in accordance with Standard Methods 17th Edition; The Solid Waste Manual SW-846; EPA Methods for the Analysis of Water and Wastes and/or 40 CFR part 136. The results are shown on the attached analysis sheet(s).

Within the attached report, some analyte data may be reported as "Qualified" data indicated by a "Data Flag" next to the result. The following summarizes the possible "Data Flags" that may be associated with this data :

Q - Surrogate recovery outside QC Limits.
j - Estimated Value. Presence of the compound was confirmed but less than the sample quanititation limit but greater than zero.
E - Concentration exceeds the established method calibration range but is within the working range of the instrument.
B - Analyte detected in blank.
S - Associated Surrogate Recovery outside QC Limits
N - Non-Compliance Report associated with this sample or project indicating standard protocol was not followed. Please refer to attached report.

Please do not hesitate to contact our office if you have any questions.

Sincerely,

Nathan A. Perá, IV
Vice-President
Chief Operations Officer

lb

Attachment

016111

# LOGIN
# CHAIN-OF-CUSTODY

COOLER RECEIPT FORM

Number of Coolers: 1

LIMS #: 9509278 / 9509279 Date Received: September 13, 1995

PROJECT: Harrison Bayou / Winnie, TX Longhorn-

USE OTHER SIDE OF THIS FORM TO NOTE DETAILS CONCERNING CHECK-IN PROBLEMS

A. PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 9/13/95
by (print): S. Herrmann (sign): S. Herrmann

1. Did cooler come with a shipping slip (airbill,etc.)? ..... YES
If YES, enter carrier name & airbill number: Greyhound #129-040-974-7

2. Were custody seals on outside of cooler? ..... YES
How many & where: 2/Front & Back, seal date: 9/12/95, seal name: n/a

3. Were custody seals unbroken and intact at the date and time of arrival? ..... YES

4. Did you screen samples for radioactivity using a Geiger Counter? ..... NO

5. Were custody papers sealed in a plastic bag & taped inside to the lid? ..... YES

6. Were custody papers filled out properly (ink, signed, etc.)? ..... NO

7. Did you sign custody papers in the appropriate place? ..... YES

8. Was project identifiable from custody papers? If YES, enter project name at top of this form..... YES

9. If required, was enough ice used? cooler temp: 4°C, Type of ice: Bagged Cubes YES

10. Have designated person initial here to acknowledge receipt of cooler: SD date: 9/13/95

B. LOG-IN PHASE: Date samples were logged-in: 9/13/95
by (print): S. Herrmann (sign): S. Herrmann

11. Describe type of packing in cooler: Foam Insert, Bagged Ice, Baggies

12. Were all bottles sealed in separate plastic bags? ..... YES

13. Did all bottles arrive unbroken and were labels in good condition? ..... YES

14. Were all bottle labels complete (ID, date, time, signature, preserved, etc.)? ..... YES

15. Did all bottle labels agree with custody papers? ..... NO

16. Were correct containers used for the tests indicated? ..... YES

17. Were correct preservatives added to samples? ..... YES

18. Was a sufficient amount of sample sent for tests indicated? ..... YES

19. Were bubbles absent in VOA samples? If NO, list by sample#: N/A

20. Was the project manager called and status discussed? If YES, give details on the back of this form.... YES

21. Who was called? Shirley Johns By whom ? R. Medina (date) 9/13/95

Environmental Testing and Consulting, Inc.
2924 Walnut Grove Road - Memphis, TN 38111 - (901)327-2750

## Cross Reference Table

Project : Longhorn-Harrison Bayou

| Field ID | SWD NO. | Laboratory ID |
|---|---|---|
| HBS-1B-QA | S5 0212-20 | 9509-278-01 |
| HBS-5-QA | S5 0212-21 | 9509-278-02 |
| HBS-6-QA | S5 0212-22 | 9509-278-03 |
| HBS-7-QA | S5 0212-23 | 9509-278-04 |
| HBS-8-QA | S5 0212-24 | 9509-278-05 |
| HBS-9-QA | S5 0212-25 | 9509-278-06 |

016114

ENVIRONMENTAL TESTING & CONSULTING, INC.
**Memphis, TN**
**INORGANIC ANALYSIS DATA SHEET**
**PERCENT SOLIDS**

Project Name :Longhorn-Harrison Bayou

Matrix :SOIL

Date Sample Received :09/13/95

Contract Laboratory Order Number :9509-278

| Contract Lab Sample No | SWD Sample Number | Date Sampled | Result Units :(%) | Date Analyzed | Method | Analyst |
|---|---|---|---|---|---|---|
| 9509-278-01 | S5 0212-20 | 09/11/95 | 78.6 | 09/14/95 | 160.3 | PM |
| 9509-278-02 | S5 0212-21 | 09/11/95 | 61.7 | 09/14/95 | 160.3 | PM |
| 9509-278-03 | S5 0212-22 | 09/11/95 | 61.6 | 09/14/95 | 160.3 | PM |
| 9509-278-04 | S5 0212-23 | 09/11/95 | 80.4 | 09/14/95 | 160.3 | PM |
| 9509-278-05 | S5 0212-24 | 09/11/95 | 60.2 | 09/14/95 | 160.3 | PM |
| 9509-278-06 | S5 0212-25 | 09/11/95 | 58.0 | 09/14/95 | 160.3 | PM |

016115

# Quality Control Data
# GC/MS VOCs

- [x] Case Narrative
- [x] Surrogate Recovery FORM 2
- [x] Laboratory Control Sample FORM 3
- [x] Matrix Spike/Matrix Spike Duplicate FORM 3
- [x] Method Blank Summary FORM 4
- [x] GC/MS Instrument Tune Report FORM 5
- [x] Initial Calibration Data FORM 6
- [x] Continuing Calibration Data FORM 7
- [x] Internal Standard Summary FORM 8
- [x] Analytical Sequence FORM 8

LB 9/14/05
QC Coordinator

ENVIRONMENTAL TESTING AND CONSULTING, INC.
MEMPHIS, TN
CASE NARRATIVE
VOLATILE COMPOUNDS

Project Name : Longhorn
Delivery Order # : 0311

ETC Order # : 9509-278
Method (SW-846) : 8260

**HOLDING TIMES**

Sample Analysis : All samples analyzed within 14 days of collection.

**QUALITY CONTROL**

System Monitoring Compounds FORM 2
Surrogate recoveries within QC limits.

Laboratory Control Sample FORM 3
All criteria met.

Matrix Spike / Matrix Spike Dup FORM 3
9509-278-2 RPD : All analytes within QC limits.
Spike Recovery : All analytes within QC limits.

See Laboratory Control Samples for system verification.

Method Blank FORM 4
No Target Analytes detected above Practical Quantitation Limit.
Methylene Chloride identified in Method Blank for 0913-BLANK at 0.4j ug/L.

**CALIBRATION**

BFB Daily 12 Hour Tune : All criteria met. FORM 5
Initial Calibration : All criteria met. FORM 6
Daily Calibration : All criteria met. FORM 7A

Volatile Analytical Sequence FORM 8

| Date Analyzed | BFB Injection Time |
|---|---|
| 09/13/95 | 1146 |

Non-Continuing Calibration Compounds (CCC) flagged "<-" indicating % Differences greater than 35%.
Please note that Method 8240 sets specific % Difference criteria for the CCC (Continuing Calibration Compounds) only.(>25%)

Volatile Internal Standard Area and RT FORM 8
Daily Check Standard(s) Internal Standard Areas and Retention Times within QC limits.

**SAMPLE ANALYSIS**

Instrumentation : HP 5890 Series II GC, 5971MSD
Dilutions Required : No dilutions required.

Laboratory Manager

FORM 2 016117
SOIL VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Level: (low/med) LOW

| | CLIENT SAMPLE NO. | SMC1 (TOL) # | SMC2 (BFB) # | SMC3 # | OTHER | TOT OUT |
|---|---|---|---|---|---|---|
| 01 | 9509-278-1 | 96 | 102 | 110 | | 0 |
| 02 | 9509-278-2 | 92 | 92 | 111 | | 0 |
| 03 | 9509-278-3 | 92 | 85 | 118 | | 0 |
| 04 | 9509-278-4 | 94 | 102 | 114 | | 0 |
| 05 | 9509-278-5 | 92 | 87 | 111 | | 0 |
| 06 | 9509-278-6 | 93 | 95 | 113 | | 0 |
| 07 | 9509-278-2MS | 98 | 104 | 109 | | 0 |
| 08 | 9509-278-2MS | 95 | 99 | 116 | | 0 |
| 09 | 9509-278-5 | 95 | 97 | 114 | | 0 |
| 10 | 9509-278-6 | 99 | 105 | 112 | | 0 |
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| | | QC LIMITS |
|---|---|---|
| SMC1 (TOL) | = Toluene-d8 | (81-117) |
| SMC2 (BFB) | = Bromofluorobenzene | (74-121) |
| SMC3 | = Dibromofluromethane | (80-120) |

# Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

016118

FORM 2
WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

| | CLIENT SAMPLE NO. | SMC1 (TOL) # | SMC2 (BFB) # | SMC3 # | OTHER | TOT OUT |
|---|---|---|---|---|---|---|
| 01 | 0913-BLANKBS | 104 | 99 | 97 | | 0 |
| 02 | 0913-BLANK | 98 | 102 | 98 | | 0 |
| 03 | | | | | | |
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| | | QC LIMITS |
|---|---|---|
| SMC1 (TOL) | = Toluene-d8 | (88-110) |
| SMC2 (BFB) | = Bromofluorobenzene | (86-115) |
| SMC3 | = Dibromofluromethane | (86-118) |

# Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out



000027

FORM 3
WATER VOLATILE BLANK SPIKE RECOVERY

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Matrix Spike - Sample No.: 0913-BLANK

| COMPOUND | SPIKE ADDED (ug/L) | BLANK CONCENTRATION (ug/L) | BS CONCENTRATION (ug/L) | BS % REC # | QC. LIMITS REC. |
|---|---|---|---|---|---|
| Chloromethane | 20.0 | 0.00 | 21.0 | 105 | 0-273 |
| Bromomethane | 20.0 | 0.00 | 21.1 | 106 | 0-242 |
| Vinyl Chloride | 20.0 | 0.00 | 21.1 | 106 | 0-251 |
| Chloroethane | 20.0 | 0.00 | 21.1 | 106 | 14-230 |
| Methylene Chloride | 20.0 | 0.40 | 19.9 | 98 | 0-221 |
| Trichlorofluoromethane | 20.0 | 0.00 | 18.5 | 92 | 17-181 |
| 1,1-Dichloroethene | 20.0 | 0.00 | 20.9 | 104 | 0-234 |
| trans-1,2-Dichloroethen | 20.0 | 0.00 | 20.7 | 104 | 54-156 |
| 1,1-Dichloroethane | 20.0 | 0.00 | 20.0 | 100 | 59-155 |
| 1,2-Dichloroethane | 20.0 | 0.00 | 17.0 | 85 | 49-155 |
| Chloroform | 20.0 | 0.00 | 18.9 | 94 | 51-138 |
| 1,1,1-Trichloroethane | 20.0 | 0.00 | 18.2 | 91 | 52-162 |
| Carbon Tetrachloride | 20.0 | 0.00 | 18.1 | 90 | 70-140 |
| Bromodichloromethane | 20.0 | 0.00 | 18.4 | 92 | 35-155 |
| 1,2-Dichloropropane | 20.0 | 0.00 | 20.3 | 102 | 0-210 |
| cis-1,3-Dichloropropene | 20.0 | 0.00 | 18.8 | 94 | 0-227 |
| Trichloroethene | 20.0 | 0.00 | 20.8 | 104 | 71-157 |
| Benzene | 20.0 | 0.00 | 21.5 | 108 | 37-151 |
| trans-1,3-Dichloroprope | 20.0 | 0.00 | 17.4 | 87 | 17-183 |
| 1,1,2-Trichloroethane | 20.0 | 0.00 | 18.9 | 94 | 52-150 |
| Chlorodibromomethane | 20.0 | 0.00 | 17.4 | 87 | 53-149 |
| Bromoform | 20.0 | 0.00 | 16.3 | 82 | 45-169 |
| 1,1,2,2-Tetrachloroetha | 20.0 | 0.00 | 17.8 | 89 | 46-157 |
| Tetrachloroethene | 20.0 | 0.00 | 21.8 | 109 | 64-148 |
| Toluene | 20.0 | 0.00 | 21.6 | 108 | 47-150 |
| Chlorobenzene | 40.0 | 0.00 | 21.0 | 52 | 37-160 |
| Ethylbenzene | 20.0 | 0.00 | 20.9 | 104 | 37-162 |
| 1,3-Dichlorobenzene | 20.0 | 0.00 | 21.4 | 107 | 59-156 |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER VOLATILE BLANK SPIKE RECOVERY

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Matrix Spike - Sample No.: 0913-BLANK

| COMPOUND | SPIKE ADDED (ug/L) | BLANK CONCENTRATION (ug/L) | BS CONCENTRATION (ug/L) | BS % REC # | QC. LIMITS REC. |
|---|---|---|---|---|---|
| 1,4-Dichlorobenzene | 20.0 | 0.00 | 21.3 | 106 | 18-190 |
| 1,2-Dichlorobenzene | 20.0 | 0.00 | 20.6 | 103 | 18-190 |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits
Spike Recovery: 0 out of 30 outside limits

COMMENTS: _____

FORM 3
SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Matrix Spike - Sample No.: 9509-278-2 Level: (low/med) LOW

| COMPOUND | SPIKE ADDED (ug/Kg) | SAMPLE CONCENTRATION (ug/Kg) | MS CONCENTRATION (ug/Kg) | MS % REC # | QC. LIMITS REC. |
|---|---|---|---|---|---|
| 1,1-Dichloroethene | 99.0 | 0.00 | 87.2 | 88 | 59-172 |
| Trichloroethene | 99.0 | 0.65 | 92.0 | 92 | 62-137 |
| Benzene | 99.0 | 0.00 | 95.1 | 96 | 66-142 |
| Toluene | 99.0 | 0.00 | 96.8 | 98 | 59-139 |
| Chlorobenzene | 99.0 | 0.00 | 99.2 | 100 | 60-133 |

| COMPOUND | SPIKE ADDED (ug/Kg) | MSD CONCENTRATION (ug/Kg) | MSD % REC # | % RPD # | QC LIMITS RPD | QC LIMITS REC. |
|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 99.0 | 91.4 | 92 | 4 | 20 | 59-172 |
| Trichloroethene | 99.0 | 93.1 | 93 | 1 | 20 | 62-137 |
| Benzene | 99.0 | 97.5 | 98 | 2 | 20 | 66-142 |
| Toluene | 99.0 | 97.3 | 98 | 0 | 20 | 59-139 |
| Chlorobenzene | 99.0 | 101 | 102 | 2 | 20 | 60-133 |

# Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

FORM 4
VOLATILE METHOD BLANK SUMMARY

CLIE SAMPLE NO

0913-BLANK

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Lab File ID: 0301002 Lab Sample ID:

Date Analyzed: 09/13/95 Time Analyzed: 1249

GC Column: ID: 2 (mm) Heated Purge: (Y/N) Y

Instrument ID: VOC2

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

| | SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | TIME ANALYZED |
|---|---|---|---|---|
| 01 | 0913-BLANKBS | | 0201002LCS | 1205 |
| 02 | 9509-278-1 | | 0401002 | 1330 |
| 03 | 9509-278-2 | | 0501002 | 1407 |
| 04 | 9509-278-3 | | 0601002 | 1444 |
| 05 | 9509-278-4 | | 0701003 | 1524 |
| 06 | 9509-278-5 | | 0801004 | 1608 |
| 07 | 9509-278-6 | | 0901005 | 1651 |
| 08 | 9509-278-2MS | | 1001006 | 1735 |
| 09 | 9509-278-2MS | | 1101007 | 1817 |
| 10 | 9509-278-5 | | 1201008 | 1900 |
| 11 | 9509-278-6 | | 1301009 | 1941 |
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COMMENTS:

FORM 1 016123 CLIENT SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

0913-BLANK

ab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 20.00 (g/mL) ML Lab File ID: 0301002

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/13/95

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 1.0 | U |
| 74-83-9 | Bromomethane | 1.0 | U |
| 75-01-4 | Vinyl Chloride | 1.0 | U |
| 75-00-3 | Chloroethane | 1.0 | U |
| 75-09-2 | Methylene Chloride | 0.40 | J |
| 75-69-4 | Trichlorofluoromethane | 1.0 | U |
| 75-35-4 | 1,1-Dichloroethene | 1.0 | U |
| 74-97-5 | Bromochloromethane | 1.0 | U |
| 156-60-5 | trans-1,2-Dichloroethene | 1.0 | U |
| 75-34-3 | 1,1-Dichloroethane | 1.0 | U |
| 107-06-2 | 1,2-Dichloroethane | 1.0 | U |
| 67-66-3 | Chloroform | 1.0 | U |
| 75-71-8 | Dichlorodifluoromethane | 1.0 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 1.0 | U |
| 56-23-5 | Carbon Tetrachloride | 1.0 | U |
| 75-27-4 | Bromodichloromethane | 1.0 | U |
| 78-87-5 | 1,2-Dichloropropane | 1.0 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 1.0 | U |
| 79-01-6 | Trichloroethene | 1.0 | U |
| 71-43-2 | Benzene | 1.0 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 1.0 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 1.0 | U |
| 74-95-3 | Dibromomethane | 1.0 | U |
| 124-48-1 | Chlorodibromomethane | 1.0 | U |
| 75-25-2 | Bromoform | 1.0 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.0 | U |
| 127-18-4 | Tetrachloroethene | 1.0 | U |
| 108-88-3 | Toluene | 1.0 | U |
| 108-90-7 | Chlorobenzene | 1.0 | U |
| 100-41-4 | Ethylbenzene | 1.0 | U |
| 100-42-5 | Styrene | 1.0 | U |
| 96-18-4 | 1,2,3-Trichloropropane | 1.0 | U |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 1.0 | U |

FORM 1 VOLATILE ORGANICS ANALYSIS DATA SHEET 016124 CLIENT ...

0913-BLANK

ab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 20.00 (g/mL) ML Lab File ID: 0301002

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/13/95

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 1330-20-7 | Xylene-mp | 1.0 | U |
| 95-47-6 | Xylene-o | 1.0 | U |
| 156-59-4 | cis-1,2-Dichloroethene | 1.0 | U |
| 106-93-4 | 1,2-Dibromoethane | 1.0 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 1.0 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 1.0 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 1.0 | U |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 1.0 | U |
| 590-20-7 | 2,2-Dichloropropane | 1.0 | U |
| 563-58-6 | 1,1-Dichloropropene | 1.0 | U |
| 142-28-9 | 1,3-Dichloropropane | 1.0 | U |
| 98-82-8 | Isopropylbenzene | 1.0 | U |
| 108-86-1 | Bromobenzene | 1.0 | U |
| 103-65-1 | n-Propylbenzene | 1.0 | U |
| 95-49-8 | 2-Chlorotoluene | 1.0 | U |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.0 | U |
| 106-43-4 | 4-Chlorotoluene | 1.0 | U |
| 98-06-6 | tert-Butylbenzene | 1.0 | U |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.0 | U |
| 135-98-8 | sec-Butylbenzene | 1.0 | U |
| 99-87-6 | 4-Isopropyltoluene | 1.0 | U |
| 104-51-8 | n-Butylbenzene | 1.0 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 1.0 | U |
| 87-63-3 | Hexachlorobutadiene | 1.0 | U |
| 91-20-3 | Naphthalene | 1.0 | U |
| 87-61-6 | 1,2,3-Trichlorobenzene | 1.0 | U |

FORM 1
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIEN- SAMPLE NO.

0913-BLANK

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Matrix: (soil/water) WATER Lab Sample ID:

Sample wt/vol: 20.00 (g/mL) ML Lab File ID: 0301002

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Date Analyzed: 09/13/95

GC Column: ID: 2.00 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/L

| | CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
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FORM 5
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

01612

ab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Lab File ID: 0101001 BFB Injection Date: 09/13/95

Instrument ID: VOC2 BFB Injection Time: 1146

GC Column: ID: 2.00 (mm) Heated Purge: (Y/N) N

| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 50 | 15.0 - 40.0% of mass 95 | 20.9 |
| 75 | 30.0 - 60.0% of mass 95 | 51.2 |
| 95 | Base Peak, 100% relative abundance | 100.0 |
| 96 | 5.0 - 9.0% of mass 95 | 7.2 |
| 173 | Less than 2.0% of mass 174 | 0.0 ( 0.0)1 |
| 174 | Greater than 50.0% of mass 95 | 65.7 |
| 175 | 4.0 - 9.0% of mass 174 | 5.7 ( 8.6)1 |
| 176 | 95.0 - 101.0% of mass 174 | 65.1 ( 99.2)1 |
| 177 | 5.0 - 9.0% of mass 176 | 4.2 ( 6.4)2 |

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

| | EPA SAMPLE NO. | LAB SAMPLE ID | LAB FILE ID | DATE ANALYZED | TIME ANALYZED |
|---|---|---|---|---|---|
| 01 | DCS-20 | | 0201002 | 09/13/95 | 1205 |
| 02 | 0913-BLANKBS | | 0201002LCS | 09/13/95 | 1205 |
| 03 | 0913-BLANK | | 0301002 | 09/13/95 | 1249 |
| 04 | 9509-278-1 | | 0401002 | 09/13/95 | 1330 |
| 05 | 9509-278-2 | | 0501002 | 09/13/95 | 1407 |
| 06 | 9509-278-3 | | 0601002 | 09/13/95 | 1444 |
| 07 | 9509-278-4 | | 0701003 | 09/13/95 | 1524 |
| 08 | 9509-278-5 | | 0801004 | 09/13/95 | 1608 |
| 09 | 9509-278-6 | | 0901005 | 09/13/95 | 1651 |
| 10 | 9509-278-2MS | | 1001006 | 09/13/95 | 1735 |
| 11 | 9509-278-2MS | | 1101007 | 09/13/95 | 1817 |
| 12 | 9509-278-5 | | 1201008 | 09/13/95 | 1900 |
| 13 | 9509-278-6 | | 1301009 | 09/13/95 | 1941 |
| 14 | | | | | |
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| 20 | | | | | |
| 21 | | | | | |
| 22 | | | | | |

eport Date : 14-Sep-1995 08:54 

Environmental Testing & Consulting, Inc.

INITIAL CALIBRATION DATA

tart Cal Date : 05-SEP-95 14:21
End Cal Date : 05-SEP-1995 17:10
uant Method : ISTD
arget Version : 3.12
Integrator : HP RTE
Method file : /chem/voc2.i/v2091301.b/v2090501.8260.m
al Date. : 13-Sep-1995 13:23 mike
urve Type : Average

Calibration File Names:
evel 1: /chem/voc2.i/v2090501.b/0401006.d
Level 2: /chem/voc2.i/v2090501.b/0501007.d
Level 3: /chem/voc2.i/v2090501.b/0601008.d
Level 4: /chem/voc2.i/v2090501.b/0701009.d
evel 5: /chem/voc2.i/v2090501.b/0801010.d
Level 6: /chem/voc2.i/v2090501.b/0901011.d
Level 7: /chem/voc2.i/v2090501.b/1001012.d

| Compound | 5 Level 1 | 10 Level 2 | 20 Level 3 | 50 Level 4 | 100 Level 5 | 150 Level 6 | RRF | % RSD | |
|---|---|---|---|---|---|---|---|---|---|
| | 200 Level 7 | | | | | | | | |
| 1 Dichlorodifluoromethane | 2.02610 | 2.06214 | 1.93677 | 1.84771 | 1.91414 | 1.75278 | | | |
| | 1.75571 | | | | | | 1.89934 | 6.411 | |
| 2 Chloromethane | 0.89673 | 0.95060 | 0.91351 | 0.84803 | 0.89567 | 0.82358 | | | |
| | 0.78483 | | | | | | 0.87328 | 6.542 | |
| 3 Vinyl Chloride | 1.13940 | 1.34189 | 1.24983 | 1.19293 | 1.23539 | 1.14390 | | | |
| | 1.11505 | | | | | | 1.20264 | 6.608 | |
| 4 Bromomethane | 1.59372 | 1.72900 | 1.66029 | 1.57489 | 1.68875 | 1.68120 | | | |
| | 1.65782 | | | | | | 1.65511 | 3.263 | |
| 5 Chloroethane | 0.80873 | 0.85606 | 0.83089 | 0.77438 | 0.82986 | 0.77202 | | | |
| | 0.76567 | | | | | | 0.80538 | 4.384 | |
| 6 Trichlorofluoromethane | 5.74427 | 5.90314 | 5.49117 | 5.04323 | 5.20953 | 5.07161 | | | |
| | 4.82623 | | | | | | 5.32703 | 7.444 | |
| 7 1,1-Dichloroethene | 1.83186 | 1.97183 | 1.90855 | 1.76826 | 1.82062 | 1.73952 | | | |
| | 1.60114 | | | | | | 1.80598 | 6.657 | |
| 8 Acetone | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | | | |
| | +++++ | | | | | | +++++ | +++++ | <- |

Environmental Testing & Consulting, Inc.

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End Cal Date : 05-SEP-1995 17:10
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arget Version : 3.12
Integrator : HP RTE
Method file : /chem/voc2.i/v2091301.b/v2090501.8260.m
al Date. : 13-Sep-1995 13:23 mike
urve Type : Average

| Compound | 5 Level 1 | 10 Level 2 | 20 Level 3 | 50 Level 4 | 100 Level 5 | 150 Level 6 | 200 Level 7 | RRF | % RSD | |
|---|---|---|---|---|---|---|---|---|---|---|
| 9 Iodomethane | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | <- |
| 10 Carbon Disulfide | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | <- |
| Acrylonitrile | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | <- |
| 12 Methylene Chloride | 2.33271 | 2.16146 | 2.02173 | 1.80340 | 1.86324 | 1.86798 | 1.73713 | 1.96967 | 10.864 | |
| 13 trans-1,2-Dichloroethene | 2.04119 | 2.18960 | 2.14473 | 2.00477 | 2.14548 | 2.02849 | 1.92074 | 2.06787 | 4.615 | |
| 14 1,1-Dichloroethane | 4.41273 | 4.64598 | 4.66030 | 4.35854 | 4.60541 | 4.51579 | 4.30581 | 4.50065 | 3.190 | |
| 15 Vinyl Acetate | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | <- |
| 16 2,2-Dichloropropane | 4.82538 | 4.85934 | 4.74540 | 4.30528 | 4.44080 | 4.22654 | 4.08315 | 4.49799 | 6.943 | |
| 17 2-Butanone | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | <- |
| 18 cis-1,2-Dichloroethene | 2.14406 | 2.27817 | 2.28919 | 2.14441 | 2.21084 | 2.18336 | 2.02561 | 2.18225 | 4.136 | |
| 19 Chloroform | 6.08559 | 6.32445 | 6.31972 | 5.93973 | 6.18077 | 6.16475 | 5.92343 | 6.13406 | 2.648 | |

Environmental Testing & Consulting, Inc.

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Method file : /chem/voc2.i/v2091301.b/v2090501.8260.m
al Date. : 13-Sep-1995 13:23 mike
urve Type : Average

| Compound | 5 Level 1 | 10 Level 2 | 20 Level 3 | 50 Level 4 | 100 Level 5 | 150 Level 6 | RRF | % RSD |
|---|---|---|---|---|---|---|---|---|
| | 200 Level 7 | | | | | | | |
| 20 Bromochloromethane | 1.12262 | 1.09154 | 1.10247 | 1.08155 | 1.10239 | 1.17556 | | |
| | 1.03976 | | | | | | 1.10227 | 3.748 |
| 24 1,1,1-Trichloroethane | 6.00097 | 6.36233 | 6.39964 | 5.92339 | 6.28719 | 6.03467 | | |
| | 5.94408 | | | | | | 6.13605 | 3.354 |
| 5 1,1-Dichloropropene | 0.62990 | 0.65855 | 0.64350 | 0.58694 | 0.63504 | 0.57864 | | |
| | 0.57745 | | | | | | 0.61572 | 5.487 |
| 26 Carbon Tetrachloride | 0.99895 | 1.06315 | 1.07356 | 1.00318 | 1.07602 | 1.00290 | | |
| | 1.02659 | | | | | | 1.03491 | 3.388 |
| 27 1,2-Dichloroethane | 0.48665 | 0.48095 | 0.50327 | 0.47726 | 0.49967 | 0.48923 | | |
| | 0.47593 | | | | | | 0.48756 | 2.187 |
| 28 Benzene | 0.91336 | 0.94185 | 0.92171 | 0.84480 | 0.88333 | 0.84139 | | |
| | 0.84100 | | | | | | 0.88392 | 4.807 |
| 29 Trichloroethene | 0.53584 | 0.55592 | 0.53895 | 0.48351 | 0.51194 | 0.47837 | | |
| | 0.47702 | | | | | | 0.51165 | 6.378 |
| 30 1,2-Dichloropropane | 0.43761 | 0.43990 | 0.44385 | 0.40830 | 0.42346 | 0.41244 | | |
| | 0.40573 | | | | | | 0.42447 | 3.780 |
| 31 Bromodichloromethane | 0.97493 | 0.99949 | 1.01457 | 0.95057 | 0.97665 | 0.96518 | | |
| | 0.94193 | | | | | | 0.97476 | 2.634 |
| 32 Dibromomethane | 0.44374 | 0.45045 | 0.46897 | 0.43851 | 0.44802 | 0.44049 | | |
| | 0.42557 | | | | | | 0.44511 | 2.979 |
| 33 4-Methyl-2-Pentanone | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | | |
| | +++++ | | | | | | +++++ | +++++ |

Environmental Testing & Consulting, Inc.

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Integrator : HP RTE
Method file : /chem/voc2.i/v2091301.b/v2090501.8260.m
al Date. : 13-Sep-1995 13:23 mike
urve Type : Average

| Compound | 5 Level 1 | 10 Level 2 | 20 Level 3 | 50 Level 4 | 100 Level 5 | 150 Level 6 | RRF | % RSD | |
|---|---|---|---|---|---|---|---|---|---|
| | 200 Level 7 | | | | | | | | |
| 34 cis-1,3-Dichloropropene | 0.61772 | 0.64185 | 0.67840 | 0.63019 | 0.65022 | 0.63271 | | | |
| | 0.60138 | | | | | | 0.63607 | 3.857 | |
| 36 Toluene | 0.58059 | 0.60061 | 0.58741 | 0.54649 | 0.57332 | 0.54335 | | | |
| | 0.54126 | | | | | | 0.56758 | 4.202 | |
| 7 trans-1,3-Dichloropropene | 0.52666 | 0.53273 | 0.56550 | 0.54144 | 0.55748 | 0.54555 | | | |
| | 0.51713 | | | | | | 0.54093 | 3.145 | |
| 38 1,1,2-Trichloroethane | 0.28808 | 0.28422 | 0.30206 | 0.28134 | 0.28206 | 0.27646 | | | |
| | 0.26201 | | | | | | 0.28232 | 4.277 | |
| 39 2-Hexanone | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | | | |
| | +++++ | | | | | | +++++ | +++++ | <- |
| 40 1,3-Dichloropropane | 0.63310 | 0.63217 | 0.66775 | 0.63731 | 0.66177 | 0.64142 | | | |
| | 0.61578 | | | | | | 0.64133 | 2.801 | |
| 41 Tetrachloroethene | 0.49474 | 0.52540 | 0.51798 | 0.47334 | 0.50143 | 0.45886 | | | |
| | 0.46209 | | | | | | 0.49055 | 5.402 | |
| 42 Chlorodibromomethane | 0.83695 | 0.85233 | 0.90570 | 0.86652 | 0.89941 | 0.88426 | | | |
| | 0.85994 | | | | | | 0.87216 | 2.896 | |
| 43 1,2-Dibromoethane | 0.59165 | 0.59663 | 0.64013 | 0.60315 | 0.63561 | 0.62501 | | | |
| | 0.59860 | | | | | | 0.61297 | 3.276 | |
| 45 Chlorobenzene | 0.85712 | 0.93231 | 0.91892 | 0.85377 | 0.91356 | 0.86554 | | | |
| | 0.84916 | | | | | | 0.88434 | 4.029 | |
| 46 1,1,1,2-Tetrachloroethane | 0.55048 | 0.58981 | 0.59892 | 0.56192 | 0.59183 | 0.57437 | | | |
| | 0.55200 | | | | | | 0.57419 | 3.463 | |

Environmental Testing & Consulting, Inc.

INITIAL CALIBRATION DATA

ɔtart Cal Date : 05-SEP-95 14:21
End Cal Date : 05-SEP-1995 17:10
ʔ ıant Method : ISTD
' ırget Version : 3.12
ıntegrator : HP RTE
Method file : /chem/voc2.i/v2091301.b/v2090501.8260.m
ıal Date. : 13-Sep-1995 13:23 mike
ırve Type : Average

| Compound | 5 Level 1 | 10 Level 2 | 20 Level 3 | 50 Level 4 | 100 Level 5 | 150 Level 6 | 200 Level 7 | RRF | % RSD | |
|---|---|---|---|---|---|---|---|---|---|---|
| 47 Ethylbenzene | 1.55272 | 1.67282 | 1.63243 | 1.51291 | 1.57863 | 1.46621 | 1.43989 | 1.55100 | 5.473 | |
| 48 Xylene-mp | 0.51994 | 0.54591 | 0.53932 | 0.50471 | 0.52481 | 0.48257 | 0.47243 | 0.51280 | 5.401 | |
| 9 Xylene-o | 0.50504 | 0.54924 | 0.53661 | 0.49450 | 0.51184 | 0.47676 | 0.46773 | 0.50596 | 5.870 | |
| 50 Styrene | 0.76882 | 0.92404 | 0.91639 | 0.83639 | 0.86593 | 0.81015 | 0.78583 | 0.84394 | 7.234 | |
| 51 Bromoform | 0.54651 | 0.57621 | 0.63782 | 0.61264 | 0.63629 | 0.61782 | 0.58087 | 0.60117 | 5.685 | |
| 52 Isopropylbenzene | 3.22834 | 3.37363 | 3.29356 | 3.04322 | 3.33008 | 3.16339 | 3.12419 | 3.22234 | 3.689 | |
| 53 1,1,2,2-Tetrachloroethane | 0.91456 | 0.91919 | 1.01546 | 0.95487 | 1.04368 | 1.05612 | 1.00201 | 0.98655 | 5.838 | |
| 55 1,2,3-Trichloropropane | 0.23154 | 0.22905 | 0.25853 | 0.25366 | 0.27780 | 0.28168 | 0.26142 | 0.25624 | 7.965 | |
| 56 Bromobenzene | 0.93726 | 0.99897 | 1.01240 | 0.90132 | 0.97062 | 0.94389 | 0.92120 | 0.95510 | 4.260 | |
| 57 n-Propylbenzene | 3.81607 | 4.14841 | 4.02615 | 3.71406 | 4.01305 | 3.75531 | 3.70239 | 3.88220 | 4.581 | |
| 58 trans-1,4-Dichloro-2-butene | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | <- |

Environmental Testing & Consulting, Inc.

INITIAL CALIBRATION DATA

Start Cal Date : 05-SEP-95 14:21
End Cal Date : 05-SEP-1995 17:10
Quant Method : ISTD
Target Version : 3.12
Integrator : HP RTE
Method file : /chem/voc2.i/v2091301.b/v2090501.8260.m
Cal Date. : 13-Sep-1995 13:23 mike
Curve Type : Average

| Compound | 5 Level 1 | 10 Level 2 | 20 Level 3 | 50 Level 4 | 100 Level 5 | 150 Level 6 | 200 Level 7 | RRF | % RSD |
|---|---|---|---|---|---|---|---|---|---|
| 59 2-Chlorotoluene | 2.82078 | 2.82634 | 2.91759 | 2.60960 | 2.99916 | 2.78356 | 2.61967 | 2.79667 | 5.132 |
| 60 1,3,5-Trimethylbenzene | 2.52069 | 2.67374 | 2.52498 | 2.37319 | 2.58067 | 2.43606 | 2.44302 | 2.50748 | 4.014 |
| 4-Chlorotoluene | 3.11363 | 3.14019 | 3.16604 | 2.86464 | 3.21776 | 2.93810 | 2.93512 | 3.05364 | 4.510 |
| 62 tert-Butylbenzene | 2.57441 | 2.68109 | 2.62864 | 2.43420 | 2.59249 | 2.44210 | 2.40739 | 2.53719 | 4.257 |
| 63 1,2,4-Trimethylbenzene | 2.51486 | 2.66027 | 2.58515 | 2.38359 | 2.61507 | 2.46853 | 2.47807 | 2.52936 | 3.799 |
| 64 sec-Butylbenzene | 3.70916 | 3.98936 | 3.82240 | 3.55916 | 3.82758 | 3.60761 | 3.57513 | 3.72720 | 4.296 |
| 65 4-Isopropyltoluene | 2.74328 | 2.91556 | 2.78785 | 2.59894 | 2.79119 | 2.63734 | 2.61785 | 2.72743 | 4.233 |
| 66 1,3-Dichlorobenzene | 1.45825 | 1.55036 | 1.50508 | 1.36767 | 1.45369 | 1.38243 | 1.36345 | 1.44013 | 5.019 |
| 68 1,4-Dichlorobenzene | 1.40525 | 1.52504 | 1.50368 | 1.40616 | 1.48928 | 1.42651 | 1.42552 | 1.45450 | 3.436 |
| 69 n-Butylbenzene | 3.05511 | 3.26024 | 3.12125 | 2.97489 | 3.20319 | 3.05483 | 3.04828 | 3.10254 | 3.199 |
| 70 1,2-Dichlorobenzene | 1.28167 | 1.37358 | 1.35604 | 1.24331 | 1.31623 | 1.27380 | 1.24173 | 1.29805 | 4.030 |

Environmental Testing & Consulting, Inc.

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Integrator : HP RTE
Method file : /chem/voc2.i/v2091301.b/v2090501.8260.m
al Date. : 13-Sep-1995 13:23 mike
urve Type : Average

| Compound | 5 Level 1 | 10 Level 2 | 20 Level 3 | 50 Level 4 | 100 Level 5 | 150 Level 6 | RRF | % RSD |
|---|---|---|---|---|---|---|---|---|
| | 200 Level 7 | | | | | | | |
| 71 1,2-Dibromo-3-chloropropane | 0.22274 | 0.22976 | 0.25449 | 0.25396 | 0.27475 | 0.27560 | | |
| | 0.27108 | | | | | | 0.25463 | 8.408 |
| 72 1,2,4-Trichlorobenzene | 1.11220 | 1.23521 | 1.16325 | 1.16604 | 1.24621 | 1.20080 | | |
| | 1.17341 | | | | | | 1.18530 | 3.894 |
| Hexachlorobutadiene | 1.43567 | 1.58644 | 1.46413 | 1.43352 | 1.53048 | 1.56255 | | |
| | 1.54075 | | | | | | 1.50765 | 4.143 |
| 74 Naphthalene | 1.03710 | 1.10818 | 1.11869 | 1.11057 | 1.22263 | 1.20413 | | |
| | 1.17402 | | | | | | 1.13933 | 5.667 |
| 75 1,2,3-Trichlorobenzene | 0.96156 | 1.02724 | 0.98386 | 0.99090 | 1.07749 | 1.03539 | | |
| | 1.01093 | | | | | | 1.01248 | 3.793 |
| $ 21 Dibromofluromethane | 4.76026 | 4.76976 | 4.92040 | 4.93649 | 4.95511 | 5.23345 | | |
| | 4.97971 | | | | | | 4.93645 | 3.198 |
| $ 35 Toluene-d8 | 0.96220 | 0.96542 | 0.95598 | 0.95040 | 0.93880 | 0.93924 | | |
| | 0.95660 | | | | | | 0.95266 | 1.099 |
| 54 Bromofluorobenzene | 0.73470 | 0.73448 | 0.70017 | 0.71892 | 0.68012 | 0.69002 | | |
| | 0.70002 | | | | | | 0.70835 | 3.027 |

7A

VOLATILE CONTINUING CALIBRATION CHECK 01613

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Instrument ID: VOC2 Calibration Date: 09/13/95 Time: 1205

Lab File ID: 0201002 Init. Calib. Date(s): 09/05/95

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform) Max %D for CCC(*) = 25.0%

| COMPOUND | | $\overline{RRF}$ | RRF20 | %D |
|---|---|---|---|---|
| Chloromethane | # | 0.873 | 0.915 | 4.8110# |
| Bromomethane | | 1.655 | 1.748 | 5.6193 |
| Vinyl Chloride | * | 1.202 | 1.267 | 5.4077* |
| Chloroethane | | 0.805 | 0.848 | 5.3416 |
| Methylene Chloride | | 1.970 | 1.960 | 0.5076 |
| Trichlorofluoromethane | | 5.327 | 4.933 | 7.3963 |
| 1,1-Dichloroethene | * | 1.806 | 1.888 | 4.5404* |
| Bromochloromethane | | 1.102 | 1.165 | 5.7169 |
| trans-1,2-Dichloroethene | | 2.068 | 2.139 | 3.4333 |
| 1,1-Dichloroethane | # | 4.500 | 4.496 | 0.0889# |
| 1,2-Dichloroethane | | 0.488 | 0.414 | 15.164 |
| Chloroform | * | 6.134 | 5.801 | 5.4288* |
| Dichlorodifluoromethane | | 1.899 | 2.138 | 12.586 |
| 1,1,1-Trichloroethane | | 6.136 | 5.586 | 8.9635 |
| Carbon Tetrachloride | | 1.035 | 0.936 | 9.5652 |
| Bromodichloromethane | | 0.974 | 0.896 | 8.0082 |
| 1,2-Dichloropropane | * | 0.424 | 0.431 | 1.6509* |
| cis-1,3-Dichloropropene | | 0.636 | 0.602 | 5.3459 |
| Trichloroethene | | 0.512 | 0.531 | 3.7109 |
| Benzene | | 0.884 | 0.949 | 7.3529 |
| trans-1,3-Dichloropropene | | 0.541 | 0.467 | 13.678 |
| 1,1,2-Trichloroethane | | 0.282 | 0.267 | 5.3191 |
| Dibromomethane | | 0.445 | 0.401 | 9.8876 |
| Chlorodibromomethane | | 0.872 | 0.758 | 13.073 |
| Bromoform | # | 0.601 | 0.489 | 18.636# |
| 1,1,2,2-Tetrachloroethane | # | 0.986 | 0.881 | 10.649# |
| Tetrachloroethene | | 0.490 | 0.534 | 8.9796 |
| Toluene | * | 0.567 | 0.612 | 7.9365* |
| Chlorobenzene | # | 0.884 | 0.928 | 4.9774# |
| Ethylbenzene | * | 1.551 | 1.623 | 4.6422* |
| Styrene | | 0.844 | 0.862 | 2.1327 |
| 1,2,3-Trichloropropane | | 0.256 | 0.207 | 19.141 |
| 1,1,1,2-Tetrachloroethane | | 0.574 | 0.544 | 5.2265 |
| Xylene-mp | | 0.513 | 0.555 | 8.1871 |
| Xylene-o | | 0.506 | 0.549 | 8.4980 |
| cis-1,2-Dichloroethene | | 2.182 | 2.265 | 3.8038 |
| 1,2-Dibromoethane | | 0.613 | 0.531 | 13.377 |
| 1,3-Dichlorobenzene | | 1.440 | 1.537 | 6.7361 |



FORM VII VOA

7A
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Instrument ID: VOC2 Calibration Date: 09/13/95 Time: 1205

Lab File ID: 0201002 Init. Calib. Date(s): 09/05/95

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

Min RRF50 for SPCC(#) = 0.300 (0.250 for Bromoform) Max %D for CCC(*) = 25.0%

| COMPOUND | $\overline{RRF}$ | RRF20 | %D | |
|---|---|---|---|---|
| 1,4-Dichlorobenzene | 1.454 | 1.556 | 7.0151 | |
| 1,2-Dichlorobenzene | 1.298 | 1.340 | 3.2357 | |
| 1,2-Dibromo-3-chloropropane | 0.255 | 0.176 | 30.980 | <- |
| 2,2-Dichloropropane | 4.498 | 4.576 | 1.7341 | |
| 1,1-Dichloropropene | 0.616 | 0.604 | 1.9481 | |
| 1,3-Dichloropropane | 0.641 | 0.558 | 12.949 | |
| Isopropylbenzene | 3.222 | 3.413 | 5.9280 | |
| Bromobenzene | 0.955 | 0.986 | 3.2461 | |
| n-Propylbenzene | 3.882 | 4.215 | 8.5781 | |
| 2-Chlorotoluene | 2.797 | 3.065 | 9.5817 | |
| 1,3,5-Trimethylbenzene | 2.508 | 2.640 | 5.2632 | |
| 4-Chlorotoluene | 3.054 | 3.183 | 4.2240 | |
| tert-Butylbenzene | 2.537 | 2.691 | 6.0702 | |
| 1,2,4-Trimethylbenzene | 2.529 | 2.665 | 5.3776 | |
| sec-Butylbenzene | 3.727 | 4.065 | 9.0690 | |
| 4-Isopropyltoluene | 2.727 | 2.905 | 6.5273 | |
| n-Butylbenzene | 3.102 | 3.348 | 7.9304 | |
| 1,2,4-Trichlorobenzene | 1.185 | 1.237 | 4.3882 | |
| Hexachlorobutadiene | 1.508 | 1.549 | 2.7188 | |
| Naphthalene | 1.139 | 0.960 | 15.716 | |
| 1,2,3-Trichlorobenzene | 1.012 | 0.998 | 1.3834 | |
| Toluene-d8 | 0.952 | 0.994 | 4.4118 | |
| Bromofluorobenzene | 0.708 | 0.704 | 0.5650 | |
| Dibromofluromethane | 4.936 | 4.782 | 3.1199 | |



FORM VII VOA

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Lab File ID (Standard): 0201002 Date Analyzed: 09/13/95

Instrument ID: VOC2 Time Analyzed: 1205

GC Column: ID: 2.00 (mm) Heated Purge: (Y/N) Y

| | | IS1(CBZ) AREA # | RT # | IS2 AREA # | RT # | IS3(DCB) AREA # | RT # |
|---|---|---|---|---|---|---|---|
| | 12 HOUR STD | 624556 | 15.93 | 123717 | 7.18 | 316358 | 21.94 |
| | UPPER LIMIT | 1249112 | 16.43 | 247434 | 7.68 | 632716 | 22.44 |
| | LOWER LIMIT | 312278 | 15.43 | 61858 | 6.68 | 158179 | 21.44 |
| | CLIENT SAMPLE NO. | | | | | | |
| 01 | 0913-BLANKBS | 624556 | 15.93 | 123717 | 7.18 | 316358 | 21.94 |
| 02 | 0913-BLANK | 627024 | 15.96 | 124424 | 7.19 | 335451 | 21.95 |
| 03 | 9509-278-1 | 510157 | 15.96 | 95647 | 7.21 | 265026 | 21.96 |
| 04 | 9509-278-2 | 452507 | 15.99 | 90489 | 7.25 | 211785 | 21.98 |
| 05 | 9509-278-3 | 333505 | 15.97 | 67750 | 7.24 | 137716* | 21.97 |
| 06 | 9509-278-4 | 433039 | 15.95 | 81046 | 7.13 | 231392 | 21.97 |
| 07 | 9509-278-5 | 389131 | 15.97 | 80770 | 7.22 | 165566 | 21.97 |
| 08 | 9509-278-6 | 427765 | 15.97 | 83169 | 7.21 | 204982 | 21.97 |
| 09 | 9509-278-2MS | 347986 | 15.97 | 65876 | 7.21 | 167661 | 21.97 |
| 10 | 9509-278-2MS | 416412 | 15.97 | 80544 | 7.22 | 196680 | 21.97 |
| 11 | 9509-278-5 | 438313 | 15.99 | 86824 | 7.23 | 207040 | 21.98 |
| 12 | 9509-278-6 | 468098 | 15.99 | 90635 | 7.24 | 219313 | 21.99 |
| 13 | | | | | | | |
| 14 | | | | | | | |
| 15 | | | | | | | |
| 16 | | | | | | | |
| 17 | | | | | | | |
| 18 | | | | | | | |
| 19 | | | | | | | |
| 20 | | | | | | | |
| 21 | | | | | | | |
| 22 | | | | | | | |

IS1 (CBZ) = Chlorobenzene-d5
IS2 = Pentaflurobenzene
IS3 (DCB) = 1,4-Dichlorobenzene-d4

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM 8
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

01613

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

Lab File ID (Standard): 0201002 Date Analyzed: 09/13/95

Instrument ID: VOC2 Time Analyzed: 1205

GC Column: ID: 2.00 (mm) Heated Purge: (Y/N) Y

| | | IS4 (DFB) AREA # | RT # | AREA # | RT # | AREA # | RT # |
|---|---|---|---|---|---|---|---|
| | 12 HOUR STD | 749830 | 9.14 | | | | |
| | UPPER LIMIT | 1499660 | 9.64 | | | | |
| | LOWER LIMIT | 374915 | 8.64 | | | | |
| | CLIENT SAMPLE NO. | | | | | | |
| 01 | 0913-BLANKBS | 749830 | 9.14 | | | | |
| 02 | 0913-BLANK | 742938 | 9.16 | | | | |
| 03 | 9509-278-1 | 608225 | 9.18 | | | | |
| 04 | 9509-278-2 | 575317 | 9.21 | | | | |
| 05 | 9509-278-3 | 444579 | 9.19 | | | | |
| 06 | 9509-278-4 | 526971 | 9.12 | | | | |
| 07 | 9509-278-5 | 522287 | 9.18 | | | | |
| 08 | 9509-278-6 | 538545 | 9.19 | | | | |
| 09 | 9509-278-2MS | 413444 | 9.18 | | | | |
| 10 | 9509-278-2MS | 513211 | 9.19 | | | | |
| 11 | 9509-278-5 | 543837 | 9.20 | | | | |
| 12 | 9509-278-6 | 551104 | 9.21 | | | | |
| 13 | | | | | | | |
| 14 | | | | | | | |
| 15 | | | | | | | |
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| 20 | | | | | | | |
| 21 | | | | | | | |
| 22 | | | | | | | |

IS4 (DFB) = 1,4-Difluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = + 0.50 minutes of internal standard RT
RT LOWER LIMIT = - 0.50 minutes of internal standard RT

# Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

FORM 8
VOLATILE ANALYTICAL SEQUENCE

016136

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

GC Column: ID: 2.00 (mm) Init. Calib. Date(s): 09/05/95 09/05/95

Instrument ID: VOC2

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 12.42 S2 : 18.95

| | CLIENT SAMPLE NO. | LAB SAMPLE ID | DATE ANALYZED | TIME ANALYZED | S1 RT # | S2 RT # |
|---|---|---|---|---|---|---|
| 01 | DCS-20 | | 09/13/95 | 1205 | 12.42 | 18.95 |
| 02 | ZZZZZ | ZZZZZ | 09/13/95 | 1205 | 12.42 | 18.95 |
| 03 | ZZZZZ | ZZZZZ | 09/13/95 | 1249 | 12.44 | 18.98 |
| 04 | 9509-278-1 | | 09/13/95 | 1330 | 12.44 | 18.98 |
| 05 | 9509-278-2 | | 09/13/95 | 1407 | 12.47 | 19.00 |
| 06 | 9509-278-3 | | 09/13/95 | 1444 | 12.46 | 18.99 |
| 07 | 9509-278-4 | | 09/13/95 | 1524 | 12.42 | 18.98 |
| 08 | 9509-278-5 | | 09/13/95 | 1608 | 12.45 | 18.99 |
| 09 | 9509-278-6 | | 09/13/95 | 1651 | 12.46 | 18.99 |
| 10 | 9509-278-2MS | | 09/13/95 | 1735 | 12.46 | 18.99 |
| 11 | 9509-278-2MS | | 09/13/95 | 1817 | 12.47 | 19.00 |
| 12 | 9509-278-5 | | 09/13/95 | 1900 | 12.47 | 19.01 |
| 13 | 9509-278-6 | | 09/13/95 | 1941 | 12.47 | 19.01 |
| 14 | | | | | | |
| 15 | | | | | | |
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| 28 | | | | | | |
| 29 | | | | | | |
| 30 | | | | | | |
| 31 | | | | | | |
| 32 | | | | | | |

QC LIMITS

S1 = Toluene-d8 (+/- 0.50 MINUTES)
S2 = Bromofluorobenzene (+/- 0.50 MINUTES)

# Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
VOLATILE ANALYTICAL SEQUENCE 016139

Lab Name: ENVIRONMENTAL TESTING AND Contract:

Lab Code: ETC Case No.: SAS No.: SDG No.: 9509-278

GC Column: ID: 2.00 (mm) Init. Calib. Date(s): 09/05/95 09/05/95

Instrument ID: VOC2

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S3 : 7.29

| | CLIENT SAMPLE NO. | LAB SAMPLE ID | DATE ANALYZED | TIME ANALYZED | S3 RT # | RT # |
|---|---|---|---|---|---|---|
| 01 | DCS-20 | | 09/13/95 | 1205 | 7.29 | |
| 02 | ZZZZZ | ZZZZZ | 09/13/95 | 1205 | 7.29 | |
| 03 | ZZZZZ | ZZZZZ | 09/13/95 | 1249 | 7.31 | |
| 04 | 9509-278-1 | | 09/13/95 | 1330 | 7.32 | |
| 05 | 9509-278-2 | | 09/13/95 | 1407 | 7.37 | |
| 06 | 9509-278-3 | | 09/13/95 | 1444 | 7.34 | |
| 07 | 9509-278-4 | | 09/13/95 | 1524 | 7.25 | |
| 08 | 9509-278-5 | | 09/13/95 | 1608 | 7.33 | |
| 09 | 9509-278-6 | | 09/13/95 | 1651 | 7.33 | |
| 10 | 9509-278-2MS | | 09/13/95 | 1735 | 7.33 | |
| 11 | 9509-278-2MS | | 09/13/95 | 1817 | 7.34 | |
| 12 | 9509-278-5 | | 09/13/95 | 1900 | 7.35 | |
| 13 | 9509-278-6 | | 09/13/95 | 1941 | 7.35 | |
| 14 | | | | | | |
| 15 | | | | | | |
| 16 | | | | | | |
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| 28 | | | | | | |
| 29 | | | | | | |
| 30 | | | | | | |
| 31 | | | | | | |
| 32 | | | | | | |

QC LIMITS

S3 = Dibromofluromethane (+/- 0.50 MINUTES)

# Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

016140

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED: 1-SEP-1995 REPORT NUMBER: D95-8338
REPORT DATE: 8-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran
PROJECT : Longhorn AAP
DATE SAMPLED : 31-AUG-1995

---

CASE NARRATIVE COMMENTS:

The applicable results were reported on a dry weight basis, having been corrected for total solids.

No problems were encountered with the analysis for this job.

Please refer to the attached Case Narrative Summary for sample identification and analytical requests.

If you have any questions, please call Mr. John Todd at (214) 238-5591.

Amy Pence
Data Review

016141


# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592


JOB ID : D95-8338
CUSTOMER : US Army Corps of Engineers
PROJECT : Longhorn AAP

SAMPLE ID : D95-8338-1 DATE SAMPLED : 31-AUG-1995
ID MARKS : HBW-1-TB S5 0193-1

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_L /1 | | | MGD | 5-SEP-1995 | ITS7-788 |

SAMPLE ID : D95-8338-2 DATE SAMPLED : 31-AUG-1995
ID MARKS : HBW-1 S5 0193-2

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_L /1 | | | MGD | 5-SEP-1995 | ITS7-788 |

SAMPLE ID : D95-8338-3 DATE SAMPLED : 31-AUG-1995
ID MARKS : HBW-2 S5 0193-4

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_L /1 | | | MGD | 5-SEP-1995 | ITS7-788 |

SAMPLE ID : D95-8338-4 DATE SAMPLED : 31-AUG-1995
ID MARKS : HBW-3 S5 0193-6

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_L /1 | | | MGD | 5-SEP-1995 | ITS7-788 |

SAMPLE ID : D95-8338-5 DATE SAMPLED : 31-AUG-1995
ID MARKS : HBW-4 S5 0193-8

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_L /1 | | | MGD | 5-SEP-1995 | ITS7-788 |

SAMPLE ID : D95-8338-6 DATE SAMPLED : 31-AUG-1995
ID MARKS : HBS-1 S5 0193-10

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_S /1 | | | SAP | 7-SEP-1995 | ITS2-515 |

016142

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

SAMPLE ID : D95-8338-6 DATE SAMPLED : 31-AUG-1995
ID MARKS : HBS-1 S5 0193-10

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| SOLID_TPER /1 | | | RRP | 5-SEP-1995 | 536026Z |

SAMPLE ID : D95-8338-7 DATE SAMPLED : 31-AUG-1995
ID MARKS : HBS-2 S5 0193-12

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_S /1 | | | SAP | 7-SEP-1995 | ITS2-515 |
| SOLID_TPER /1 | | | RRP | 5-SEP-1995 | 536026Z |

SAMPLE ID : D95-8338-8 DATE SAMPLED : 31-AUG-1995
ID MARKS : HBS-3 S5 0193-14

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_S /1 | | | SAP | 7-SEP-1995 | ITS2-515 |
| SOLID_TPER /1 | | | RRP | 5-SEP-1995 | 536026Z |

SAMPLE ID : D95-8338-9 DATE SAMPLED : 31-AUG-1995
ID MARKS : HBS-4 S5 0193-16

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_S /1 | | | SAP | 7-SEP-1995 | ITS2-515 |
| SOLID_TPER /1 | | | RRP | 5-SEP-1995 | 536026Z |

SAMPLE ID : D95-8338-10 DATE SAMPLED : 1-SEP-1995
ID MARKS : Method Blank (Liquid)

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_L /1 | | | MGD | 5-SEP-1995 | ITS7-788 |

SAMPLE ID : D95-8338-11 DATE SAMPLED : 1-SEP-1995
ID MARKS : Method Blank (Soil)

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_S /1 | | | SAP | 7-SEP-1995 | ITS2-515 |

016143


# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592


JOB ID : D95-8338
CUSTOMER : US Army Corps of Engineers
PROJECT : Longhorn AAP

| ANALYSIS | DESCRIPTION |
|---|---|
| 8260_L | Volatiles, GCMS, 258 App 1, 5 ml Purge |
| 8260_S | Volatiles, GCMS, 258 App 1, 5 ml Purge |
| SOLID_TPER | Total Solids, Soil/Sludge, % |

01614

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

DATE RECEIVED : 1-SEP-1995

REPORT NUMBER : D95-8338
REPORT DATE : 8-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran
PROJECT : Longhorn AAP

Included in this data package are the analytical results for the sample group which you have submitted to Inchcape Testing Services for analysis.

The information contained herein has undergone extensive review and is deemed accurate and complete. Sample analysis and quality control were performed in accordance with all applicable protocols. Any deviations from these protocols or observations of interest are detailed in an accompanying Case Narrative.

If you have any questions regarding this report and its associated materials please call your Project Manager at (214) 238-5591.

We appreciate the opportunity to serve you and look forward to providing continued service in the future.

Martin Jeffus
General Manager

016145

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

DATE RECEIVED : 1-SEP-1995

REPORT NUMBER : D95-8338-10
REPORT DATE : 8-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : Method Blank (Liquid)
PROJECT : Longhorn AAP
DATE SAMPLED : 1-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : MGD
ANALYZED ON : 5-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS7-788

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/L | < 100 µg/L |
| Acrylonitrile | 5.00 µg/L | < 5.00 µg/L |
| Benzene | 5.00 µg/L | < 5.00 µg/L |
| Bromobenzene | 5.00 µg/L | < 5.00 µg/L |
| Bromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromodichloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromoform | 5.00 µg/L | < 5.00 µg/L |
| Carbon disulfide | 5.00 µg/L | < 5.00 µg/L |
| Carbon tetrachloride | 5.00 µg/L | < 5.00 µg/L |
| Chlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| Chloroethane | 5.00 µg/L | < 5.00 µg/L |
| Chloroform | 5.00 µg/L | < 5.00 µg/L |
| 2-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| 4-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| Dibromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/L | < 25.0 µg/L |

**Inchcape Testing Services**
Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

REPORT NUMBER : D95-8338-10
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,4-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,4-Dichloro-2-butene | 100 µg/L | < 100 µg/L |
| 1,1-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| cis-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 2,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| cis-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| Ethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 2-Hexanone | 50.0 µg/L | < 50.0 µg/L |
| Bromomethane | 5.00 µg/L | < 5.00 µg/L |
| Chloromethane | 5.00 µg/L | < 5.00 µg/L |
| Dibromomethane | 5.00 µg/L | < 5.00 µg/L |
| 2-Butanone | 100 µg/L | < 100 µg/L |
| Iodomethane | 5.00 µg/L | < 5.00 µg/L |
| Methylene chloride | 5.00 µg/l | < 5.00 µg/l |
| 4-Methyl-2-pentanone | 100 µg/L | < 100 µg/L |
| Styrene | 5.00 µg/L | < 5.00 µg/L |

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592


016147

REPORT NUMBER : D95-8338-10
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| Tetrachloroethene | 5.00 µg/L | < 5.00 µg/L |
| Toluene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,1,1-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| Trichloroethene | 5.00 µg/L | < 5.00 µg/L |
| Trichlorofluoromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,3,5-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| Vinyl acetate | 50.0 µg/L | < 50.0 µg/L |
| Vinyl chloride | 5.00 µg/L | < 5.00 µg/L |
| m,p-Xylene | 5.00 µg/L | < 5.00 µg/L |
| o-Xylene | 5.00 µg/L | < 5.00 µg/L |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 107 % |
| Toluene-d8 (SS) | 50.0 µg/L | 98.1 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 108 % |

Applicable results are reported on Dry Weight basis.

016148

# SUMMARY REPORT

CLIENT : US Army Corps of Engineers
PROJECT : Longhorn AAP

JOB NUMBER : D95-8338
REPORT DATE : 2-OCT-1995

| SAMPLE NO. | ID MARKS | MATRIX | DATE SAMPLED |
|---|---|---|---|
| 5 | HBW-4 S5 0193-8 | Liquid | 31-AUG-1995 |
| 10 | Method Blank (Liquid) | Liquid | 1-SEP-1995 |
| | | | |
| | | | |

| TENTATIVELY IDENTIFIED COMPOUNDS - VOA | | 5 | 10 | | |
|---|---|---|---|---|---|
| No compounds detected above | ug/L | 10 | 10 | | |

Preliminary report based upon incomplete data. Applicable results are reported on Dry Weight basis.

016149

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 1-SEP-1995

REPORT NUMBER : D95-8338-11
REPORT DATE : 8-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : Method Blank (Soil)
PROJECT : Longhorn AAP
DATE SAMPLED : 1-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : SAP
ANALYZED ON : 7-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS2-515

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/Kg | < 100 µg/Kg |
| Acrylonitrile | 5.00 µg/Kg | < 5.00 µg/Kg |
| Benzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromodichloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromoform | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon disulfide | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon tetrachloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroform | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/Kg | < 25.0 µg/Kg |

# Inchcape Testing Services
## Environmental Laboratories

016150

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592


REPORT NUMBER : D95-8338-11
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,4-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,4-Dichloro-2-butene | 100 µg/Kg | < 100 µg/Kg |
| 1,1-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Ethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Hexanone | 50.0 µg/Kg | < 50.0 µg/Kg |
| Bromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Butanone | 100 µg/Kg | < 100 µg/Kg |
| Iodomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Methylene chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Methyl-2-pentanone | 100 µg/Kg | < 100 µg/Kg |
| Styrene | 5.00 µg/Kg | < 5.00 µg/Kg |

016151

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

REPORT NUMBER : D95-8338-11
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Tetrachloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Toluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,3-Trichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,4-Trichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,1-Trichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,2-Trichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Trichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Trichlorofluoromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,3-Trichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3,5-Trimethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,4-Trimethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Vinyl acetate | 50.0 µg/Kg | < 50.0 µg/Kg |
| Vinyl chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| m,p-Xylene | 5.00 µg/Kg | < 5.00 µg/Kg |
| o-Xylene | 5.00 µg/Kg | < 5.00 µg/Kg |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 90.2 % |
| Toluene-d8 (SS) | 50.0 µg/L | 91.7 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 88.9 % |

Applicable results are reported on Dry Weight basis.

016152

# SUMMARY REPORT

CLIENT : US Army Corps of Engineers
PROJECT : Longhorn AAP

JOB NUMBER : D95-8338
REPORT DATE : 2-OCT-19

| SAMPLE NO. | ID MARKS | MATRIX | DATE SAMPLE |
|---|---|---|---|
| 11 | Method Blank (Soil) | Soil | 1-SEP-1995 |
| | | | |
| | | | |
| | | | |

| TENTATIVELY IDENTIFIED COMPOUNDS - VOA | | 11 | | | |
|---|---|---|---|---|---|
| No compounds detected above | ug/Kg | 10 | | | |

Preliminary report based upon incomplete data. Applicable results are reported on Dry Weight basis.

016153

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

REPORT DATE : 8-SEP-1995 REPORT NUMBER : D95-8338

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ATTENTION : Ms. Mai Tran
PROJECT : Longhorn AAP

LABORATORY QUALITY CONTROL REPORT

| ANALYTE | 1,1-Dichloroethene | Trichloroethene | Benzene | Toluene | Chlorobenzene |
|---|---|---|---|---|---|
| BATCH NO. | ITS7-788 | ITS7-788 | ITS7-788 | ITS7-788 | ITS7-788 |
| LCS LOT NO. | G-1128 | G-1128 | G-1128 | G-1128 | G-1128 |
| PREP METHOD | --- | --- | --- | --- | --- |
| PREPARED BY | --- | --- | --- | --- | --- |
| ANALYSIS METHOD | EPA 8260 | EPA 8260 | EPA 8260 | EPA 8260 | EPA 8260 |
| ANALYZED BY | MGD | MGD | MGD | MGD | MGD |
| UNITS | µg/L | µg/L | µg/L | µg/L | µg/L |
| METHOD BLANK | < 5.00 | < 5.00 | < 5.00 | < 5.00 | < 5.00 |
| SPIKE LEVEL | 500 | 500 | 500 | 500 | 500 |
| MS RESULT | 456 | 418 | 469 | 474 | 508 |
| MS RECOVERY % | 91.2 | 83.6 | 93.8 | 94.8 | 102 |
| MSD RESULT | 456 | 412 | 473 | 482 | 493 |
| MSD RECOVERY % | 91.2 | 82.4 | 94.6 | 96.4 | 98.6 |
| MS/MSD RPD % | 0.00 | 1.45 | 0.85 | 1.67 | 3.00 |
| BS RESULT | NA | NA | NA | NA | NA |
| BS RECOVERY % | NA | NA | NA | NA | NA |
| BSD RESULT | NA | NA | NA | NA | NA |
| BSD RECOVERY % | NA | NA | NA | NA | NA |
| BS/BSD RPD % | NA | NA | NA | NA | NA |
| DUPLICATE RPD % | NA | NA | NA | NA | NA |
| LCS LEVEL | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| LCS RESULT | 44.4 | 42.8 | 47.8 | 47.4 | 50.3 |
| LCS RECOVERY % | 88.8 | 85.6 | 95.6 | 94.8 | 101 |
| SPIKE SAMPLE ID | 8338-2 | 8338-2 | 8338-2 | 8338-2 | 8338-2 |
| DUP SAMPLE ID | --- | --- | --- | --- | --- |

NA Not applicable

# Inchcape Testing Services
## Environmental Laboratories

016154

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

REPORT DATE : 8-SEP-1995 REPORT NUMBER : D95-8338

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ATTENTION : Ms. Mai Tran
PROJECT : Longhorn AAP

LABORATORY QUALITY CONTROL REPORT

| ANALYTE | 1,1-Dichloroethene | Trichloroethene | Benzene | Toluene | Chlorobenzene |
|---|---|---|---|---|---|
| BATCH NO. | ITS2-515 | ITS2-515 | ITS2-515 | ITS2-515 | ITS2-515 |
| LCS LOT NO. | G-1128 | G-1128 | G-1128 | G-1128 | G-1128 |
| PREP METHOD | --- | --- | --- | --- | --- |
| PREPARED BY | --- | --- | --- | --- | --- |
| ANALYSIS METHOD | EPA 8260 | EPA 8260 | EPA 8260 | EPA 8260 | EPA 8260 |
| ANALYZED BY | SAP | SAP | SAP | SAP | SAP |
| UNITS | µg/Kg | µg/Kg | µg/Kg | µg/Kg | µg/Kg |
| METHOD BLANK | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 |
| SPIKE LEVEL | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| MS RESULT | 41.8 | 33.8 | 38.2 | 39.4 | 37.8 |
| MS RECOVERY % | 83.6 | 67.6 | 76.4 | 78.8 | 75.6 |
| MSD RESULT | 43.6 | 39.9 | 42.9 | 46.2 | 41.8 |
| MSD RECOVERY % | 87.2 | 79.8 | 85.8 | 92.4 | 83.6 |
| MS/MSD RPD % | 4.22 | 16.6 | 11.6 | 15.9 | 10.1 |
| BS RESULT | NA | NA | NA | NA | NA |
| BS RECOVERY % | NA | NA | NA | NA | NA |
| BSD RESULT | NA | NA | NA | NA | NA |
| BSD RECOVERY % | NA | NA | NA | NA | NA |
| BS/BSD RPD % | NA | NA | NA | NA | NA |
| DUPLICATE RPD % | NA | NA | NA | NA | NA |
| LCS LEVEL | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| LCS RESULT | 34.3 | 35.6 | 37.8 | 38.4 | 36.1 |
| LCS RECOVERY % | 68.6 | 71.2 | 75.6 | 76.8 | 72.2 |
| SPIKE SAMPLE ID | 8112-1 | 8112-1 | 8112-1 | 8112-1 | 8112-1 |
| DUP SAMPLE ID | --- | --- | --- | --- | --- |

NA Not applicable

016155

Data File: /chem1/its7.i/09-05-95.b/AA4720101001A.d

Page 1

Date : 05-SEP-95 08:15

Client ID: 50 UG/L

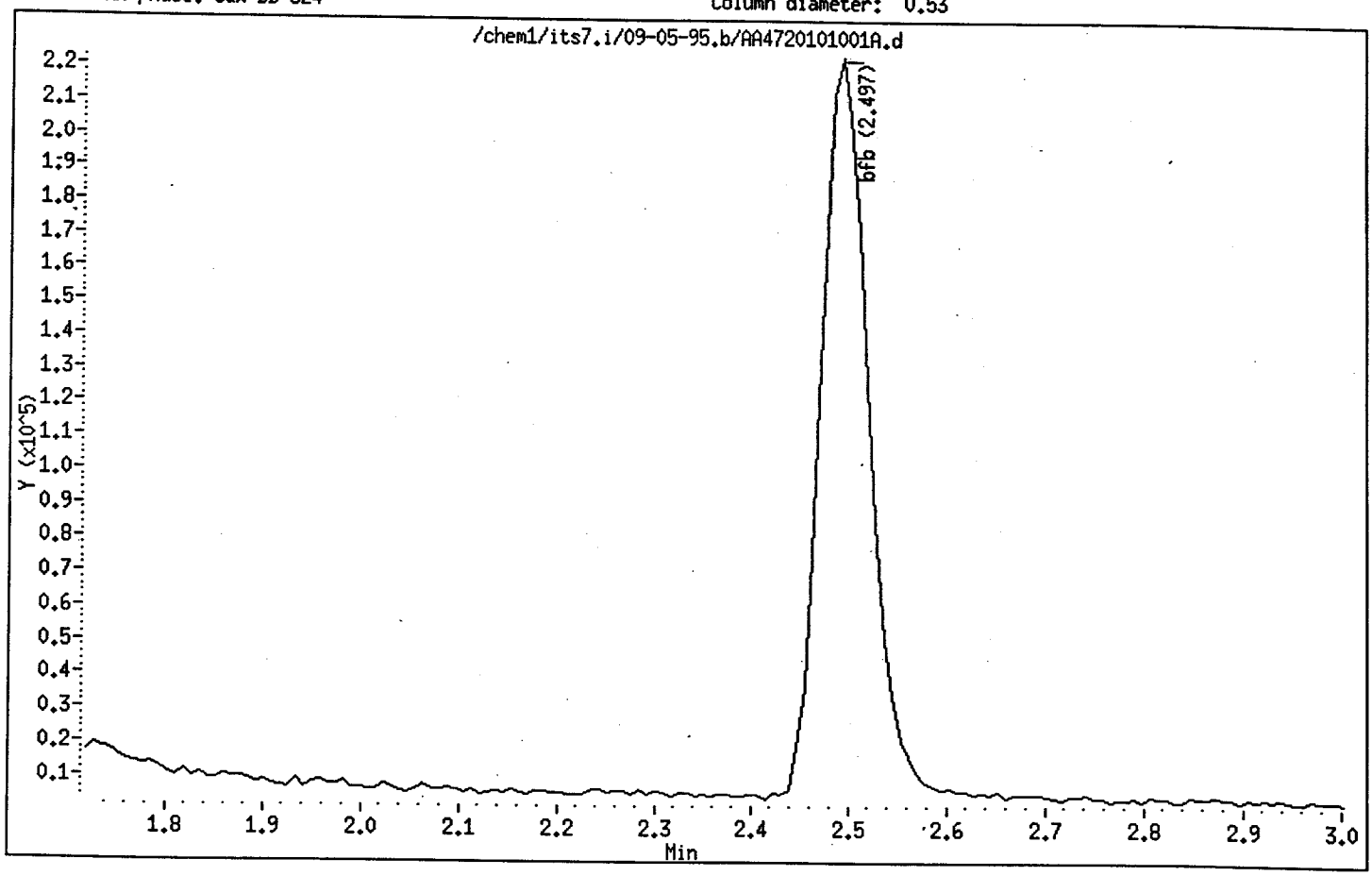
Instrument: its7.i

Sample Info: DAILY TUNE

Operator: MICHELLE

Column phase: J&W DB-624

Column diameter: 0.53



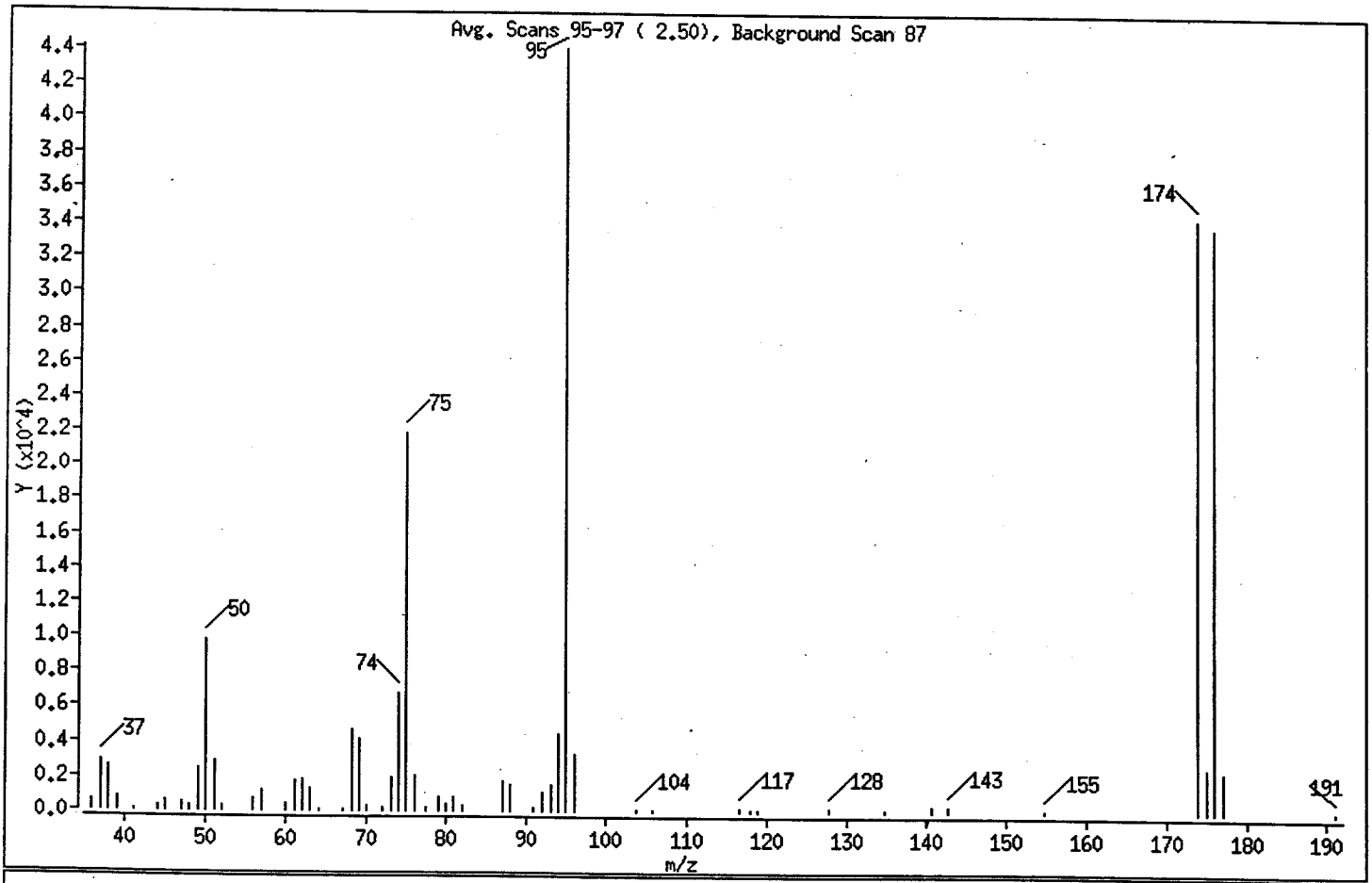
Data File: /chem1/its7.i/09-05-95.b/AA4720101001A.d
Date : 05-SEP-95 08:15
Client ID: 50 UG/L
Sample Info: DAILY TUNE

Instrument: its7.i

016155

Operator: MICHELLE
Column diameter: 0.53

Column phase: J&W DB-624
1 bfb




| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 95 | Base Peak, 100% relative abundance | 100.00 |
| 50 | 15.00 - 40.00% of mass 95 | 22.13 |
| 75 | 30.00 - 60.00% of mass 95 | 49.62 |
| 96 | 5.00 - 9.00% of mass 95 | 7.51 |
| 173 | Less than 2.00% of mass 174 | 0.00 ( 0.00) |
| 174 | 50.00 - 120.00% of mass 95 | 77.94 |
| 175 | 5.00 - 9.00% of mass 174 | 5.89 ( 7.56) |
| 176 | 95.00 - 101.00% of mass 174 | 76.88 ( 98.64) |
| 177 | 5.00 - 9.00% of mass 176 | 5.50 ( 7.16) |

Data File: /chem1/its7.i/09-05-95.b/AA4720101001A.d

Date : 05-SEP-95 08:15

Client ID: 50 UG/L

Instrument: its7.i

Sample Info: DAILY TUNE

Operator: MICHELLE

Column phase: J&W DB-624

Column diameter: 0.53

Data File: AA4720101001A.d

Spectrum : Avg. Scans 95-97 ( 2.50), Background Scan 87

Largest m/z: 95.00

Number of peaks: 57

| m/z | Y | m/z | Y | m/z | Y | m/z | Y |
|---|---|---|---|---|---|---|---|
| 36.05 | 580 | 60.10 | 446 | 78.95 | 882 | 117.95 | 101 |
| 37.05 | 2913 | 61.10 | 1779 | 79.95 | 383 | 118.95 | 142 |
| 38.05 | 2563 | 62.00 | 1845 | 80.85 | 871 | 127.80 | 224 |
| 39.05 | 883 | 63.00 | 1385 | 81.95 | 270 | 134.90 | 67 |
| 41.15 | 90 | 64.00 | 75 | 87.00 | 1817 | 140.75 | 265 |
| 44.05 | 336 | 67.05 | 73 | 87.90 | 1558 | 142.85 | 317 |
| 45.05 | 591 | 68.05 | 4730 | 90.90 | 160 | 154.85 | 71 |
| 47.15 | 560 | 68.95 | 4185 | 92.00 | 1167 | 173.90 | 34376 |
| 48.00 | 312 | 70.05 | 358 | 93.00 | 1521 | 175.00 | 2600 |
| 49.00 | 2478 | 71.95 | 209 | 94.00 | 4485 | 175.90 | 33912 |
| 50.00 | 9760 | 73.05 | 1931 | 95.00 | 44112 | 177.00 | 2428 |
| 51.10 | 2896 | 74.05 | 6775 | 96.10 | 3314 | 190.95 | 67 |
| 52.00 | 322 | 75.05 | 21888 | 103.75 | 84 | | |
| 56.00 | 771 | 76.05 | 2064 | 105.85 | 76 | | |
| 57.00 | 1227 | 77.35 | 202 | 116.75 | 175 | | |

016158

Data File: /chem1/its2.i/09-07-95.b/DD4160101001.d

Page 1

Date : 07-SEP-95 09:00

Client ID: 50NG

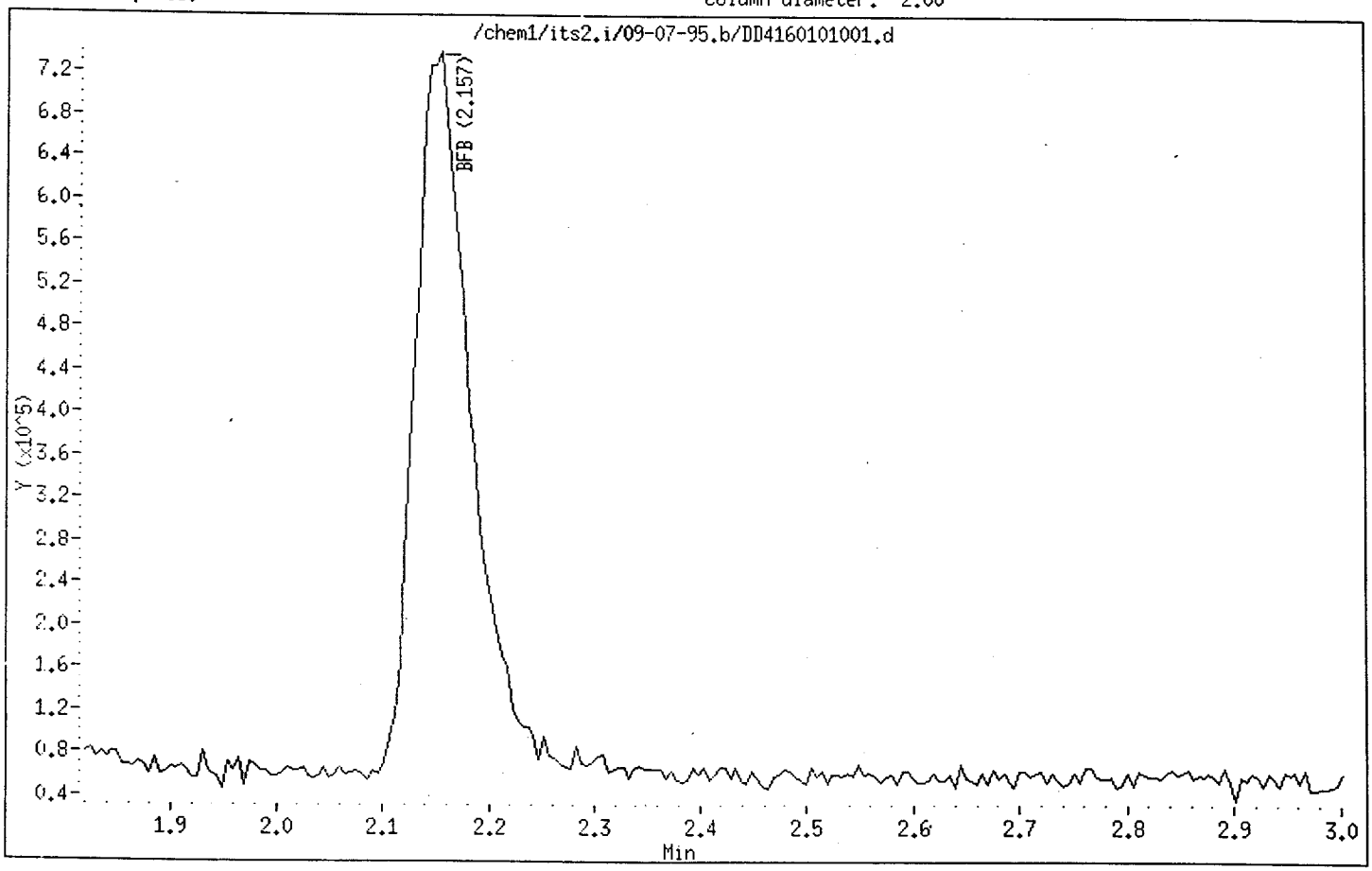
Instrument: its2.i

Sample Info: BFB TUNE CHK

Operator: SAP

Column phase:

Column diameter: 2.00



Data File: /chem1/its2.i/09-07-95.b/DD4160101001.d

Date : 07-SEP-95 09:00

Client ID: 50NG

Sample Info: BFB TUNE CHK

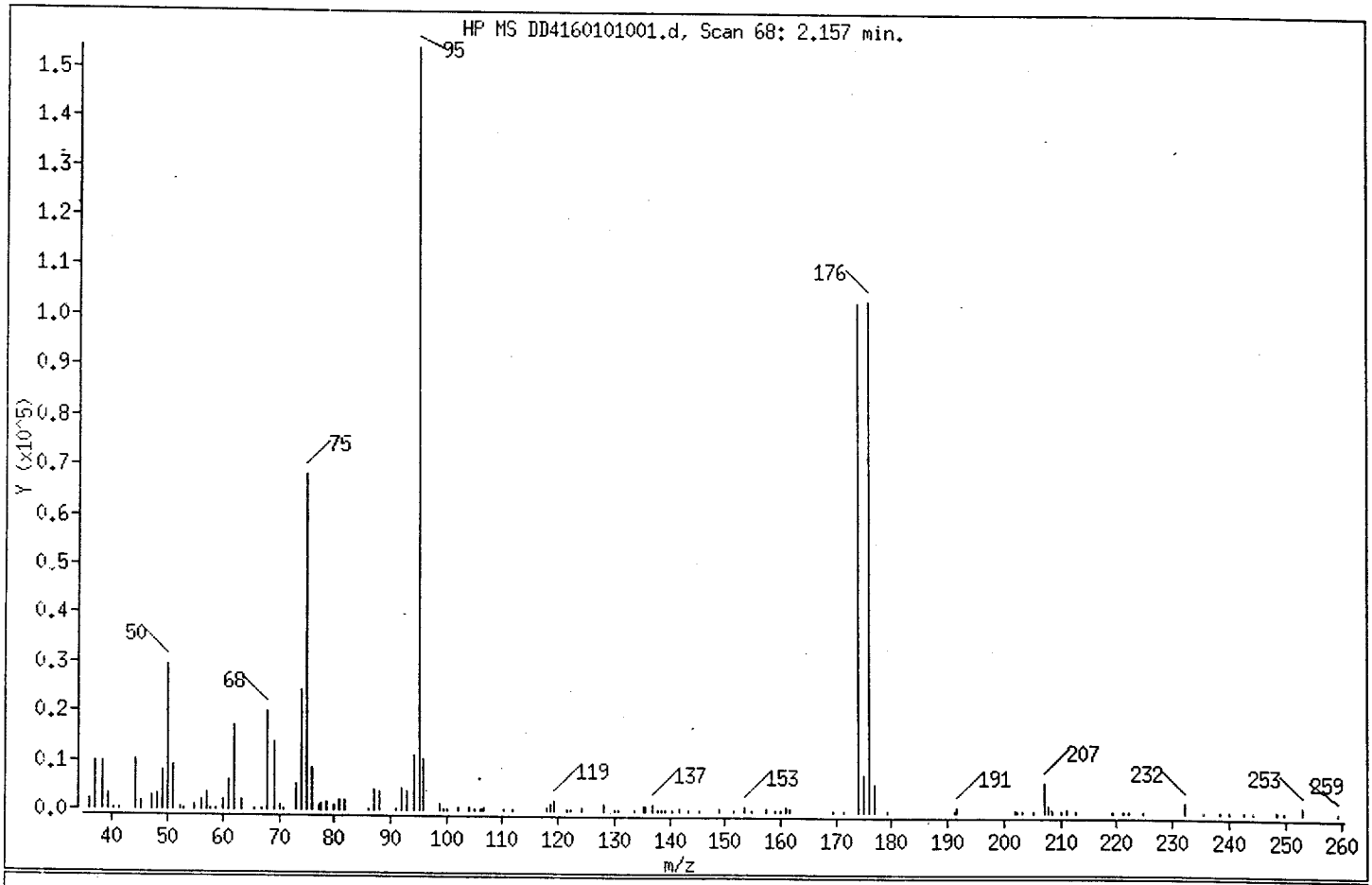
016159

Instrument: its2.i

Operator: SAP

Column phase:
1 BFB

Column diameter: 2.00




| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 95 | Base Peak, 100% relative abundance | 100.00 |
| 50 | 8.00 - 40.00% of mass 95 | 19.03 |
| 75 | 30.00 - 66.00% of mass 95 | 44.21 |
| 96 | 5.00 - 9.00% of mass 95 | 6.78 |
| 173 | Less than 2.00% of mass 174 | 0.00 ( 0.00) |
| 174 | 50.00 - 120.00% of mass 95 | 66.60 |
| 175 | 4.00 - 9.00% of mass 174 | 4.86 ( 7.29) |
| 176 | 93.00 - 101.00% of mass 174 | 66.96 (100.54) |
| 177 | 5.00 - 9.00% of mass 176 | 3.87 ( 5.77) |

Data File: DD4160101001.d
Spectrum : HP MS DD4160101001.d, Scan 68: 2.157 min.
Largest m/z: 95.10
Number of peaks: 122

| m/z | Y | m/z | Y | m/z | Y | m/z | Y |
|---|---|---|---|---|---|---|---|
| 36.00 | 2076 | 74.10 | 24400 | 119.45 | 2009 | 175.95 | 103328 |
| 37.10 | 9960 | 75.10 | 68224 | 121.55 | 201 | 176.85 | 5964 |
| 38.10 | 9933 | 76.10 | 8700 | 122.15 | 300 | 179.25 | 470 |
| 39.20 | 3215 | 77.20 | 1020 | 124.15 | 894 | 191.25 | 451 |
| 40.20 | 516 | 77.80 | 1458 | 127.95 | 1454 | 191.65 | 966 |
| 41.20 | 523 | 78.70 | 1957 | 130.05 | 320 | 201.85 | 613 |
| 44.10 | 10043 | 80.00 | 1239 | 130.85 | 353 | 202.35 | 251 |
| 45.10 | 1701 | 80.90 | 2201 | 133.75 | 220 | 203.15 | 317 |
| 47.00 | 2810 | 81.90 | 2327 | 135.35 | 914 | 205.25 | 233 |
| 48.10 | 3179 | 86.10 | 338 | 135.65 | 1274 | 207.05 | 6254 |
| 49.10 | 8052 | 87.00 | 4284 | 136.95 | 1294 | 207.95 | 1368 |
| 50.10 | 29368 | 88.00 | 3902 | 137.85 | 205 | 208.65 | 634 |
| 51.10 | 9043 | 91.10 | 203 | 138.55 | 426 | 210.15 | 271 |
| 52.20 | 659 | 92.00 | 4596 | 139.15 | 495 | 211.15 | 617 |
| 53.00 | 205 | 93.00 | 3836 | 140.55 | 543 | 212.75 | 441 |
| 55.00 | 1216 | 94.10 | 11151 | 141.85 | 718 | 219.25 | 413 |
| 56.00 | 2119 | 95.10 | 154304 | 143.55 | 505 | 221.15 | 336 |
| 57.00 | 3676 | 95.90 | 10467 | 145.35 | 292 | 222.25 | 247 |
| 57.70 | 205 | 98.80 | 1450 | 149.05 | 583 | 224.85 | 400 |
| 58.80 | 458 | 99.50 | 351 | 151.55 | 314 | 232.35 | 2227 |
| 60.00 | 2106 | 100.10 | 306 | 153.55 | 1118 | 235.45 | 240 |
| 61.00 | 6377 | 101.90 | 677 | 154.85 | 318 | 238.45 | 281 |
| 62.10 | 17104 | 104.10 | 696 | 157.55 | 571 | 240.05 | 389 |
| 63.20 | 2070 | 105.00 | 488 | 159.05 | 531 | 242.65 | 510 |
| 65.70 | 443 | 105.80 | 439 | 159.85 | 453 | 244.35 | 547 |
| 67.00 | 468 | 106.30 | 238 | 160.85 | 1107 | 248.45 | 617 |
| 68.00 | 20152 | 106.70 | 639 | 161.65 | 608 | 249.95 | 516 |
| 69.10 | 13815 | 110.35 | 233 | 169.35 | 460 | 253.15 | 1588 |
| 70.10 | 1146 | 111.85 | 380 | 171.45 | 400 | 259.25 | 271 |
| 70.70 | 288 | 117.95 | 575 | 173.95 | 102768 | | |
| 73.10 | 5348 | 118.75 | 1641 | 174.95 | 7492 | | |

016161

## COOLER RECEIPT FORM

Date Received: 9/1/95 Project: Longhorn AAP

Date Logged-in: 9/1/95 Received by: Laurel Meyer

No. of coolers received: 1 Cooler Numbers: TC-21

| | | | |
|---|---|---|---|
| 1 | Shipping slip. If yes, carrier and bill number: | Yes | (No) |
| 2 | Custody seals on cooler. If yes, how many and where: 1 Front of Cooler & 1 Back of Cooler | (Yes) | No |
| 3 | Custody seals intact. | (Yes) | No |
| 4 | Chain of Custody in plastic. | (Yes) | No |
| 5 | Chain of Custody filled out properly. | (Yes) | No |
| 6 | Client signed Chain of Custody. | (Yes) | No |
| 7 | Samples shipped on ice. If no, temperature of cooler: | (Yes) | No |
| 8 | All bottles sealed. | Yes | (No) |
| 9 | All bottles received intact. | (Yes) | No |
| 10 | Labels in good condition and complete. | (Yes) | No |
| 11 | Sample labels agree with Chain of Custody. | (Yes) | No |
| 12 | Correct containers used. | (Yes) | No |
| 13 | Correct preservative used. | (Yes) | No |
| 14 | Sufficient sample provided. | (Yes) | No |
| 15 | Bubbles absent from VOA. | (Yes) | No |
| 16 | Comments (use corrective action form if necessary): | | |

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# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED: 12-SEP-1995 REPORT NUMBER: D95-8690
REPORT DATE: 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995

CASE NARRATIVE COMMENTS:

The applicable results were reported on a dry weight basis, having been corrected for total solids.

*EPA 8260 Volatile analysis*

The method blank in quality control batch ITS2-523 contained Methylene Chloride at a concentration of 7.84 µg/Kg. Methylene Chloride is known to be common laboratory contaminant at low levels.

No further problems were encountered with the analysis for this job.

Please refer to the attached Case Narrative Summary for sample identification and analytical requests.

If you have any questions, please call Mr. John Todd at (214) 238-5591.

Amy Pence
Data Review

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# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

JOB ID : D95-8690
CUSTOMER : US Army Corps of Engineers
PROJECT : Longhorn Harrison Bayou

SAMPLE ID : D95-8690-1 DATE SAMPLED : 11-SEP-1995
ID MARKS : HBW-9-TB S50212-1

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_L /1 | | | MGD | 13-SEP-1995 | ITS7-798 |
| 8260_TIC /1 | | | MGD | 13-SEP-1995 | ITS7-798 |

SAMPLE ID : D95-8690-2 DATE SAMPLED : 11-SEP-1995
ID MARKS : HBW-1B S50212-2

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_L /1 | | | MGD | 13-SEP-1995 | ITS7-798 |
| 8260_TIC /1 | | | MGD | 13-SEP-1995 | ITS7-798 |

SAMPLE ID : D95-8690-3 DATE SAMPLED : 11-SEP-1995
ID MARKS : HBW-5 S50212-4

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_L /1 | | | MGD | 13-SEP-1995 | ITS7-798 |
| 8260_TIC /1 | | | MGD | 13-SEP-1995 | ITS7-798 |

SAMPLE ID : D95-8690-4 DATE SAMPLED : 11-SEP-1995
ID MARKS : HBW-6 S50212-6

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_L /1 | | | MGD | 13-SEP-1995 | ITS7-798 |
| 8260_TIC /1 | | | MGD | 13-SEP-1995 | ITS7-798 |

SAMPLE ID : D95-8690-5 DATE SAMPLED : 11-SEP-1995
ID MARKS : HBW-7 S50212-8

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_L /1 | | | MGD | 13-SEP-1995 | ITS7-798 |
| 8260_TIC /1 | | | MGD | 13-SEP-1995 | ITS7-798 |

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# Inchcape Testing Services
## Environmental Laboratories

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Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

JOB ID : D95-8690
CUSTOMER : US Army Corps of Engineers
PROJECT : Longhorn Harrison Bayou

SAMPLE ID : D95-8690-6 DATE SAMPLED : 11-SEP-1995
ID MARKS : HBW-8 S50212-10

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_L /1 | | | MGD | 13-SEP-1995 | ITS7-798 |
| 8260_TIC /1 | | | MGD | 13-SEP-1995 | ITS7-798 |

SAMPLE ID : D95-8690-7 DATE SAMPLED : 11-SEP-1995
ID MARKS : HBW-9 S50212-12

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_L /1 | | | MGD | 13-SEP-1995 | ITS7-798 |
| 8260_TIC /1 | | | MGD | 13-SEP-1995 | ITS7-798 |

SAMPLE ID : D95-8690-8 DATE SAMPLED : 11-SEP-1995
ID MARKS : HBS-1B S50212-14

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_S /1 | | | SAP | 14-SEP-1995 | ITS2-523 |
| 8260_TIC /1 | | | SAP | 14-SEP-1995 | ITS2-523 |
| SOLID_TPER /1 | | | RLR | 13-SEP-1995 | 536086B |

SAMPLE ID : D95-8690-9 DATE SAMPLED : 11-SEP-1995
ID MARKS : HBS-5 S50212-15

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_S /1 | | | SAP | 14-SEP-1995 | ITS2-523 |
| 8260_TIC /1 | | | SAP | 14-SEP-1995 | ITS2-523 |
| SOLID_TPER /1 | | | RLR | 13-SEP-1995 | 536086B |

# Inchcape Testing Services
## Environmental Laboratories

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Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

JOB ID : D95-8690
CUSTOMER : US Army Corps of Engineers
PROJECT : Longhorn Harrison Bayou

SAMPLE ID : D95-8690-10 DATE SAMPLED : 11-SEP-1995
ID MARKS : HBS-6 S50212-16

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_S /1 | | | SAP | 14-SEP-1995 | ITS2-523 |
| 8260_TIC /1 | | | SAP | 14-SEP-1995 | ITS2-523 |
| SOLID_TPER /1 | | | RLR | 13-SEP-1995 | 536086B |

SAMPLE ID : D95-8690-11 DATE SAMPLED : 11-SEP-1995
ID MARKS : HBS-7 S50212-17

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_S /1 | | | SAP | 14-SEP-1995 | ITS2-523 |
| 8260_TIC /1 | | | SAP | 14-SEP-1995 | ITS2-523 |
| SOLID_TPER /1 | | | RLR | 13-SEP-1995 | 536086B |

SAMPLE ID : D95-8690-12 DATE SAMPLED : 11-SEP-1995
ID MARKS : HBS-8 S50212-18

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_S /1 | | | SAP | 14-SEP-1995 | ITS2-523 |
| 8260_TIC /1 | | | SAP | 14-SEP-1995 | ITS2-523 |
| SOLID_TPER /1 | | | RLR | 13-SEP-1995 | 536086B |

SAMPLE ID : D95-8690-13 DATE SAMPLED : 11-SEP-1995
ID MARKS : HBS-9 S50212-19

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_S /1 | | | SAP | 14-SEP-1995 | ITS2-523 |
| 8260_TIC /1 | | | SAP | 14-SEP-1995 | ITS2-523 |
| SOLID_TPER /1 | | | RLR | 13-SEP-1995 | 536086B |

# Inchcape Testing Services
## Environmental Laboratories

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Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

JOB ID : D95-8690
CUSTOMER : US Army Corps of Engineers
PROJECT : Longhorn Harrison Bayou

SAMPLE ID : D95-8690-14 DATE SAMPLED : 11-SEP-1995
ID MARKS : Method Blank (Liquid)

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_L /1 | | | MGD | 13-SEP-1995 | ITS7-798 |
| 8260_TIC /1 | | | MGD | 13-SEP-1995 | ITS7-798 |

SAMPLE ID : D95-8690-15 DATE SAMPLED : 11-SEP-1995
ID MARKS : Method Blank (Soil)

| ANALYSIS | PRP | PRP DATE | ANL | ANL DATE | QC BATCH NUMBER |
|---|---|---|---|---|---|
| 8260_S /1 | | | SAP | 14-SEP-1995 | ITS2-523 |
| 8260_TIC /1 | | | SAP | 14-SEP-1995 | ITS2-523 |

| ANALYSIS | DESCRIPTION |
|---|---|
| 8260_L | Volatiles, GCMS, 258 App 1, 5 ml Purge |
| 8260_TIC | Tentatively Identified Compounds - VOA |
| 8260_S | Volatiles, GCMS, 258 App 1, 5 ml Purge |
| SOLID_TPER | Total Solids, Soil/Sludge, % |

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# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592


DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran
PROJECT : Longhorn Harrison Bayou

Included in this data package are the analytical results for the sample group which you have submitted to Inchcape Testing Services for analysis.

The information contained herein has undergone extensive review and is deemed accurate and complete. Sample analysis and quality control were performed in accordance with all applicable protocols. Any deviations from these protocols or observations of interest are detailed in an accompanying Case Narrative.

If you have any questions regarding this report and its associated materials please call your Project Manager at (214) 238-5591.

We appreciate the opportunity to serve you and look forward to providing continued service in the future.

Martin Jeffus
General Manager

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-14
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : Method Blank (Liquid)
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : MGD
ANALYZED ON : 13-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS7-798

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/L | < 100 µg/L |
| Acrylonitrile | 5.00 µg/L | < 5.00 µg/L |
| Benzene | 5.00 µg/L | < 5.00 µg/L |
| Bromobenzene | 5.00 µg/L | < 5.00 µg/L |
| Bromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromodichloromethane | 5.00 µg/L | < 5.00 µg/L |
| Bromoform | 5.00 µg/L | < 5.00 µg/L |
| Carbon disulfide | 5.00 µg/L | < 5.00 µg/L |
| Carbon tetrachloride | 5.00 µg/L | < 5.00 µg/L |
| Chlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| Chloroethane | 5.00 µg/L | < 5.00 µg/L |
| Chloroform | 5.00 µg/L | < 5.00 µg/L |
| 2-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| 4-Chlorotoluene | 5.00 µg/L | < 5.00 µg/L |
| Dibromochloromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/L | < 25.0 µg/L |

# Inchcape Testing Services
## Environmental Laboratories

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Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592


REPORT NUMBER : D95-8690-14
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,4-Dichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,4-Dichloro-2-butene | 100 µg/L | < 100 µg/L |
| 1,1-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| cis-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,2-Dichloroethene | 5.00 µg/L | < 5.00 µg/L |
| 1,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 2,2-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,1-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| 1,3-Dichloropropane | 5.00 µg/L | < 5.00 µg/L |
| cis-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| trans-1,3-Dichloropropene | 5.00 µg/L | < 5.00 µg/L |
| Ethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 2-Hexanone | 50.0 µg/L | < 50.0 µg/L |
| Bromomethane | 5.00 µg/L | < 5.00 µg/L |
| Chloromethane | 5.00 µg/L | < 5.00 µg/L |
| Dibromomethane | 5.00 µg/L | < 5.00 µg/L |
| 2-Butanone | 100 µg/L | < 100 µg/L |
| Iodomethane | 5.00 µg/L | < 5.00 µg/L |
| Methylene chloride | 5.00 µg/l | < 5.00 µg/l |
| 4-Methyl-2-pentanone | 100 µg/L | < 100 µg/L |
| Styrene | 5.00 µg/L | < 5.00 µg/L |

**Inchcape Testing Services**
Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

REPORT NUMBER : D95-8690-14
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/L | < 5.00 µg/L |
| Tetrachloroethene | 5.00 µg/L | < 5.00 µg/L |
| Toluene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trichlorobenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,1,1-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| 1,1,2-Trichloroethane | 5.00 µg/L | < 5.00 µg/L |
| Trichloroethene | 5.00 µg/L | < 5.00 µg/L |
| Trichlorofluoromethane | 5.00 µg/L | < 5.00 µg/L |
| 1,2,3-Trichloropropane | 5.00 µg/L | < 5.00 µg/L |
| 1,3,5-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| 1,2,4-Trimethylbenzene | 5.00 µg/L | < 5.00 µg/L |
| Vinyl acetate | 50.0 µg/L | < 50.0 µg/L |
| Vinyl chloride | 5.00 µg/L | < 5.00 µg/L |
| m,p-Xylene | 5.00 µg/L | < 5.00 µg/L |
| o-Xylene | 5.00 µg/L | < 5.00 µg/L |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 104 % |
| Toluene-d8 (SS) | 50.0 µg/L | 97.6 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 97.3 % |

Applicable results are reported on Dry Weight basis.

016171

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-14
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Liquid
ID MARKS : Method Blank (Liquid)
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYZED BY : MGD
ANALYZED ON : 13-SEP-1995
ANALYSIS METHOD : /1
QC BATCH NO : ITS7-798

| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
|---|---|---|---|
| COMPOUND | RETENTION TIME | FRACTION | RESULT |
| No compounds detected above | | VOA | 10 ug/L |

Applicable results are reported on Dry Weight basis.

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# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-15
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : Method Blank (Soil)
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYSIS METHOD : EPA 8260 /1
ANALYZED BY : SAP
ANALYZED ON : 14-SEP-1995
DILUTION FACTOR : 1
METHOD FACTOR : 1
QC BATCH NO : ITS2-523

| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| Acetone | 100 µg/Kg | < 100 µg/Kg |
| Acrylonitrile | 5.00 µg/Kg | < 5.00 µg/Kg |
| Benzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromodichloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Bromoform | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon disulfide | 5.00 µg/Kg | < 5.00 µg/Kg |
| Carbon tetrachloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloroform | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Chlorotoluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromochloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dibromo-3-chloropropane | 25.0 µg/Kg | < 25.0 µg/Kg |

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# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

REPORT NUMBER : D95-8690-15
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,2-Dibromoethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,4-Dichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,4-Dichloro-2-butene | 100 µg/Kg | < 100 µg/Kg |
| 1,1-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,2-Dichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2,2-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3-Dichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| cis-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| trans-1,3-Dichloropropene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Ethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Hexanone | 50.0 µg/Kg | < 50.0 µg/Kg |
| Bromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Chloromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Dibromomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 2-Butanone | 100 µg/Kg | < 100 µg/Kg |
| Iodomethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Methylene chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| 4-Methyl-2-pentanone | 100 µg/Kg | < 100 µg/Kg |
| Styrene | 5.00 µg/Kg | < 5.00 µg/Kg |

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592


016174

REPORT NUMBER : D95-8690-15
ANALYSIS METHOD : EPA 8260 /1



| VOLATILE ORGANICS | | |
|---|---|---|
| TEST REQUESTED | DETECTION LIMIT | RESULTS |
| 1,1,1,2-Tetrachloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,2,2-Tetrachloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Tetrachloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Toluene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,3-Trichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,4-Trichlorobenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,1-Trichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,1,2-Trichloroethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| Trichloroethene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Trichlorofluoromethane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,3-Trichloropropane | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,3,5-Trimethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| 1,2,4-Trimethylbenzene | 5.00 µg/Kg | < 5.00 µg/Kg |
| Vinyl acetate | 50.0 µg/Kg | < 50.0 µg/Kg |
| Vinyl chloride | 5.00 µg/Kg | < 5.00 µg/Kg |
| m,p-Xylene | 5.00 µg/Kg | < 5.00 µg/Kg |
| o-Xylene | 5.00 µg/Kg | < 5.00 µg/Kg |

| QUALITY CONTROL DATA | | |
|---|---|---|
| SURROGATE COMPOUND | SPIKE LEVEL | SPIKE RECOVERED |
| Dibromofluoromethane (SS) | 50.0 µg/L | 89.7 % |
| Toluene-d8 (SS) | 50.0 µg/L | 93.1 % |
| 4-Bromofluorobenzene (SS) | 50.0 µg/L | 92.4 % |

Applicable results are reported on Dry Weight basis.

016175

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-258-5591
Fax. 214-258-5592

DATE RECEIVED : 12-SEP-1995

REPORT NUMBER : D95-8690-15
REPORT DATE : 14-SEP-1995

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ADDRESS : 4815 Cass St.
: Dallas, TX 75235-8011
ATTENTION : Ms. Mai Tran

SAMPLE MATRIX : Soil
ID MARKS : Method Blank (Soil)
PROJECT : Longhorn Harrison Bayou
DATE SAMPLED : 11-SEP-1995
ANALYZED BY : SAP
ANALYZED ON : 14-SEP-1995
ANALYSIS METHOD : /1
QC BATCH NO : ITS2-523

| TENTATIVELY IDENTIFIED COMPOUNDS | | | |
|---|---|---|---|
| COMPOUND | RETENTION TIME | FRACTION | RESULT |
| No compounds detected above | | VOA | 10 ug/Kg |

Applicable results are reported on Dry Weight basis.

# Inchcape Testing Services
## Environmental Laboratories

016176

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

REPORT DATE : 14-SEP-1995 REPORT NUMBER : D95-8690

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ATTENTION : Ms. Mai Tran
PROJECT : Longhorn Harrison Bayou

LABORATORY QUALITY CONTROL REPORT

| ANALYTE | 1,1-Dichloroethene | Trichloroethene | Benzene | Toluene | Chlorobenzene |
|---|---|---|---|---|---|
| BATCH NO. | ITS7-798 | ITS7-798 | ITS7-798 | ITS7-798 | ITS7-798 |
| LCS LOT NO. | G-1128 | G-1128 | G-1128 | G-1128 | G-1128 |
| PREP METHOD | --- | --- | --- | --- | --- |
| PREPARED BY | --- | --- | --- | --- | --- |
| ANALYSIS METHOD | EPA 8260 | EPA 8260 | EPA 8260 | EPA 8260 | EPA 8260 |
| ANALYZED BY | MGD | MGD | MGD | MGD | MGD |
| UNITS | µg/L | µg/L | µg/L | µg/L | µg/L |
| METHOD BLANK | < 5.00 | < 5.00 | < 5.00 | < 5.00 | < 5.00 |
| SPIKE LEVEL | 500 | 500 | 500 | 500 | 500 |
| MS RESULT | 423 | 440 | 483 | 462 | 467 |
| MS RECOVERY % | 84.6 | 88.0 | 96.6 | 92.4 | 93.4 |
| MSD RESULT | 419 | 441 | 480 | 459 | 461 |
| MSD RECOVERY % | 83.8 | 88.2 | 96.0 | 91.8 | 92.2 |
| MS/MSD RPD % | 0.95 | 0.23 | 0.62 | 0.65 | 1.29 |
| BS RESULT | NA | NA | NA | NA | NA |
| BS RECOVERY % | NA | NA | NA | NA | NA |
| BSD RESULT | NA | NA | NA | NA | NA |
| BSD RECOVERY % | NA | NA | NA | NA | NA |
| BS/BSD RPD % | NA | NA | NA | NA | NA |
| DUPLICATE RPD % | NA | NA | NA | NA | NA |
| LCS LEVEL | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| LCS RESULT | 41.2 | 41.0 | 44.4 | 42.3 | 42.8 |
| LCS RECOVERY % | 82.4 | 82.0 | 88.8 | 84.6 | 85.6 |
| SPIKE SAMPLE ID | 8690-1 | 8690-1 | 8690-1 | 8690-1 | 8690-1 |
| DUP SAMPLE ID | --- | --- | --- | --- | --- |

NA Not applicable

016177

# Inchcape Testing Services
## Environmental Laboratories

1089 E. Collins Blvd.
Richardson, TX 75081
Tel. 214-238-5591
Fax. 214-238-5592

REPORT DATE : 14-SEP-1995 REPORT NUMBER : D95-8690

SAMPLE SUBMITTED BY : US Army Corps of Engineers
ATTENTION : Ms. Mai Tran
PROJECT : Longhorn Harrison Bayou

LABORATORY QUALITY CONTROL REPORT

| ANALYTE | 1,1-Dichloroethene | Trichloroethene | Benzene | Toluene | Chlorobenzene |
|---|---|---|---|---|---|
| BATCH NO. | ITS2-523 | ITS2-523 | ITS2-523 | ITS2-523 | ITS2-523 |
| LCS LOT NO. | G-1128 | G-1128 | G-1128 | G-1128 | G-1128 |
| PREP METHOD | --- | --- | --- | --- | --- |
| PREPARED BY | --- | --- | --- | --- | --- |
| ANALYSIS METHOD | EPA 8260 | EPA 8260 | EPA 8260 | EPA 8260 | EPA 8260 |
| ANALYZED BY | SAP | SAP | SAP | SAP | SAP |
| UNITS | µg/Kg | µg/Kg | µg/Kg | µg/Kg | µg/Kg |
| METHOD BLANK | <5.00 | <5.00 | <5.00 | <5.00 | <5.00 |
| SPIKE LEVEL | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| MS RESULT | 43.8 | 40.1 | 46.1 | 43.8 | 41.7 |
| MS RECOVERY % | 87.6 | 80.2 | 92.2 | 87.6 | 83.4 |
| MSD RESULT | 44.0 | 40.0 | 43.3 | 35.9 | 44.5 |
| MSD RECOVERY % | 88.0 | 80.0 | 86.6 | 71.8 | 89.0 |
| MS/MSD RPD % | 0.46 | 0.25 | 6.26 | 19.8 | 6.50 |
| BS RESULT | NA | NA | NA | NA | NA |
| BS RECOVERY % | NA | NA | NA | NA | NA |
| BSD RESULT | NA | NA | NA | NA | NA |
| BSD RECOVERY % | NA | NA | NA | NA | NA |
| BS/BSD RPD % | NA | NA | NA | NA | NA |
| DUPLICATE RPD % | NA | NA | NA | NA | NA |
| LCS LEVEL | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| LCS RESULT | 37.7 | 36.7 | 39.2 | 41.0 | 39.8 |
| LCS RECOVERY % | 75.4 | 73.4 | 78.4 | 82.0 | 79.6 |
| SPIKE SAMPLE ID | 8778-1 | 8778-1 | 8778-1 | 8778-1 | 8778-1 |
| DUP SAMPLE ID | --- | --- | --- | --- | --- |

NA Not applicable

Data File: /chem1/its2.i/09-14-95.b/DD4220101001.d

016178



Date : 14-SEP-95 09:12

Client ID: 50NG

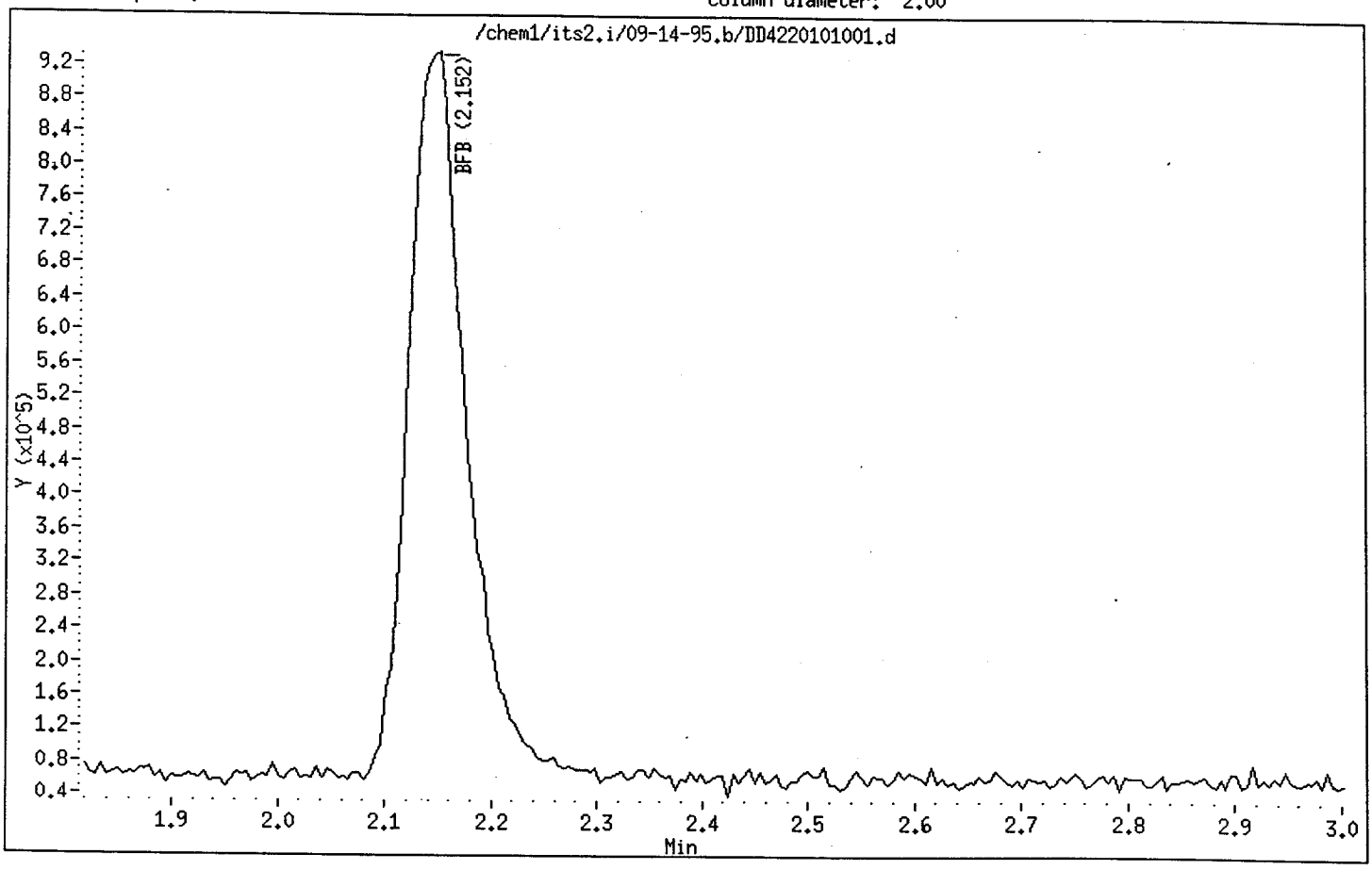
Instrument: its2.i

Sample Info: BFB TUNE CHK

Operator: SAP

Column phase:

Column diameter: 2.00



016179

Data File: /chem1/its2.i/09-14-95.b/DD4220101001.d

Date : 14-SEP-95 09:12

Client ID: 50NG

Instrument: its2.i

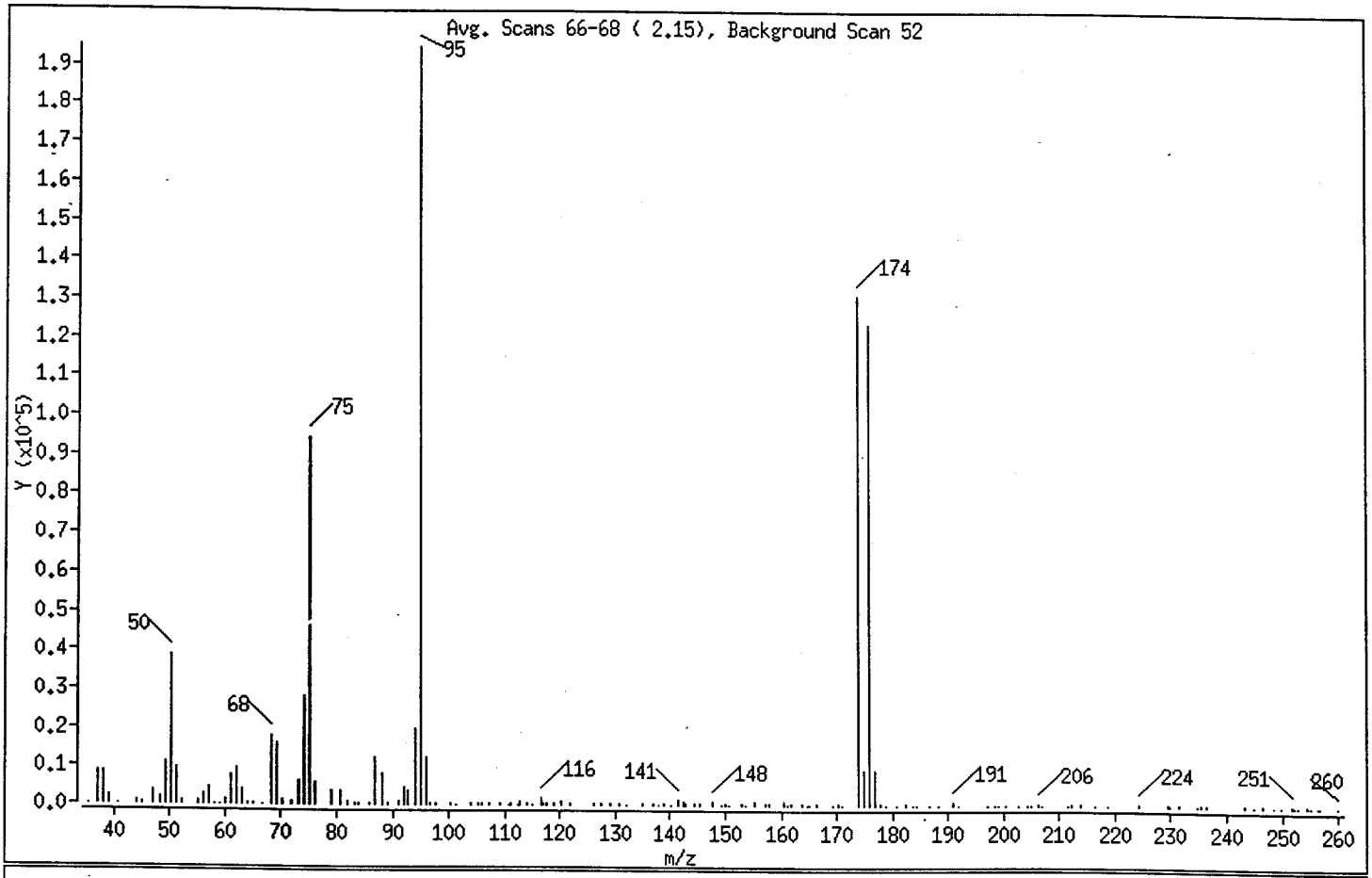
Sample Info: BFB TUNE CHK

Operator: SAP

Column phase:

Column diameter: 2.00

1 BFB




| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 95 | Base Peak, 100% relative abundance | 100.00 |
| 50 | 8.00 - 40.00% of mass 95 | 19.76 |
| 75 | 30.00 - 66.00% of mass 95 | 48.49 |
| 96 | 5.00 - 9.00% of mass 95 | 6.33 |
| 173 | Less than 2.00% of mass 174 | 0.00 ( 0.00) |
| 174 | 50.00 - 120.00% of mass 95 | 67.20 |
| 175 | 4.00 - 9.00% of mass 174 | 4.79 ( 7.12) |
| 176 | 93.00 - 101.00% of mass 174 | 63.30 ( 94.20) |
| 177 | 5.00 - 9.00% of mass 176 | 4.65 ( 7.35) |

Data File: /chem1/its2.i/09-14-95.b/DD4220101001.d

016180

Date : 14-SEP-95 09:12

Client ID: 50NG

Instrument: its2.i

Sample Info: BFB TUNE CHK

Operator: SAP

Column phase:

Column diameter: 2.00

Data File: DD4220101001.d

Spectrum : Avg. Scans 66-68 ( 2.15), Background Scan 52

Largest m/z: 95.10

Number of peaks: 152

| m/z | Y | m/z | Y | m/z | Y | m/z | Y |
|---|---|---|---|---|---|---|---|
| 35.50 | 216 | 87.00 | 12656 | 140.25 | 161 | 191.85 | 172 |
| 37.10 | 8807 | 88.10 | 8452 | 141.45 | 1215 | 197.15 | 93 |
| 38.10 | 8864 | 89.30 | 527 | 142.55 | 856 | 198.35 | 142 |
| 39.10 | 2423 | 91.00 | 922 | 142.85 | 650 | 198.95 | 71 |
| 40.70 | 187 | 92.00 | 4828 | 144.45 | 396 | 200.25 | 193 |
| 44.00 | 902 | 92.90 | 3753 | 145.45 | 340 | 202.75 | 117 |
| 45.00 | 614 | 94.10 | 19976 | 147.85 | 903 | 204.25 | 193 |
| 47.00 | 3523 | 95.10 | 194944 | 149.35 | 183 | 204.85 | 80 |
| 48.10 | 2071 | 96.10 | 12350 | 149.95 | 318 | 206.15 | 658 |
| 49.10 | 11210 | 96.80 | 499 | 150.75 | 111 | 207.05 | 165 |
| 50.10 | 38520 | 97.80 | 568 | 153.05 | 390 | 211.45 | 132 |
| 51.10 | 9904 | 100.40 | 276 | 153.75 | 75 | 212.35 | 409 |
| 52.30 | 824 | 101.10 | 163 | 155.15 | 837 | 213.95 | 237 |
| 55.20 | 989 | 103.90 | 557 | 157.15 | 244 | 216.55 | 223 |
| 56.10 | 2793 | 105.20 | 564 | 157.85 | 302 | 218.85 | 109 |
| 57.10 | 4384 | 105.70 | 565 | 160.55 | 877 | 224.15 | 512 |
| 58.00 | 62 | 107.00 | 567 | 161.05 | 154 | 229.65 | 317 |
| 59.10 | 174 | 109.10 | 508 | 161.85 | 311 | 229.75 | 88 |
| 60.00 | 1460 | 110.65 | 171 | 163.65 | 566 | 231.65 | 430 |
| 61.00 | 7670 | 110.95 | 580 | 164.65 | 207 | 234.65 | 152 |
| 62.00 | 9592 | 112.45 | 177 | 164.95 | 159 | 235.45 | 271 |
| 63.10 | 4372 | 112.85 | 826 | 166.35 | 457 | 236.25 | 388 |
| 64.10 | 673 | 114.15 | 369 | 169.45 | 75 | 243.35 | 503 |
| 65.00 | 485 | 115.05 | 176 | 170.15 | 629 | 244.85 | 72 |
| 66.60 | 168 | 116.55 | 1942 | 170.85 | 76 | 246.55 | 309 |
| 68.10 | 17976 | 116.85 | 284 | 173.95 | 131016 | 248.45 | 167 |
| 69.10 | 16058 | 117.75 | 575 | 174.95 | 9332 | 249.95 | 92 |
| 70.10 | 1291 | 118.85 | 455 | 175.85 | 123416 | 251.65 | 642 |
| 71.70 | 1043 | 120.35 | 775 | 176.85 | 9073 | 252.25 | 126 |
| 73.10 | 6607 | 121.85 | 381 | 177.85 | 251 | 252.85 | 200 |
| 74.00 | 28008 | 126.25 | 521 | 178.75 | 120 | 254.55 | 295 |
| 75.10 | 94544 | 127.45 | 565 | 180.65 | 74 | 255.15 | 182 |
| 76.10 | 5979 | 129.05 | 512 | 180.85 | 125 | 256.35 | 165 |
| 79.00 | 3814 | 130.65 | 639 | 182.25 | 344 | 256.85 | 127 |
| 80.80 | 3916 | 131.95 | 159 | 183.65 | 217 | 259.95 | 132 |

Data File: /chem1/its7.i/09-13-95.b/AA4790101001A.d

016181



Date : 13-SEP-95 08:15

Client ID: 50 UG/L

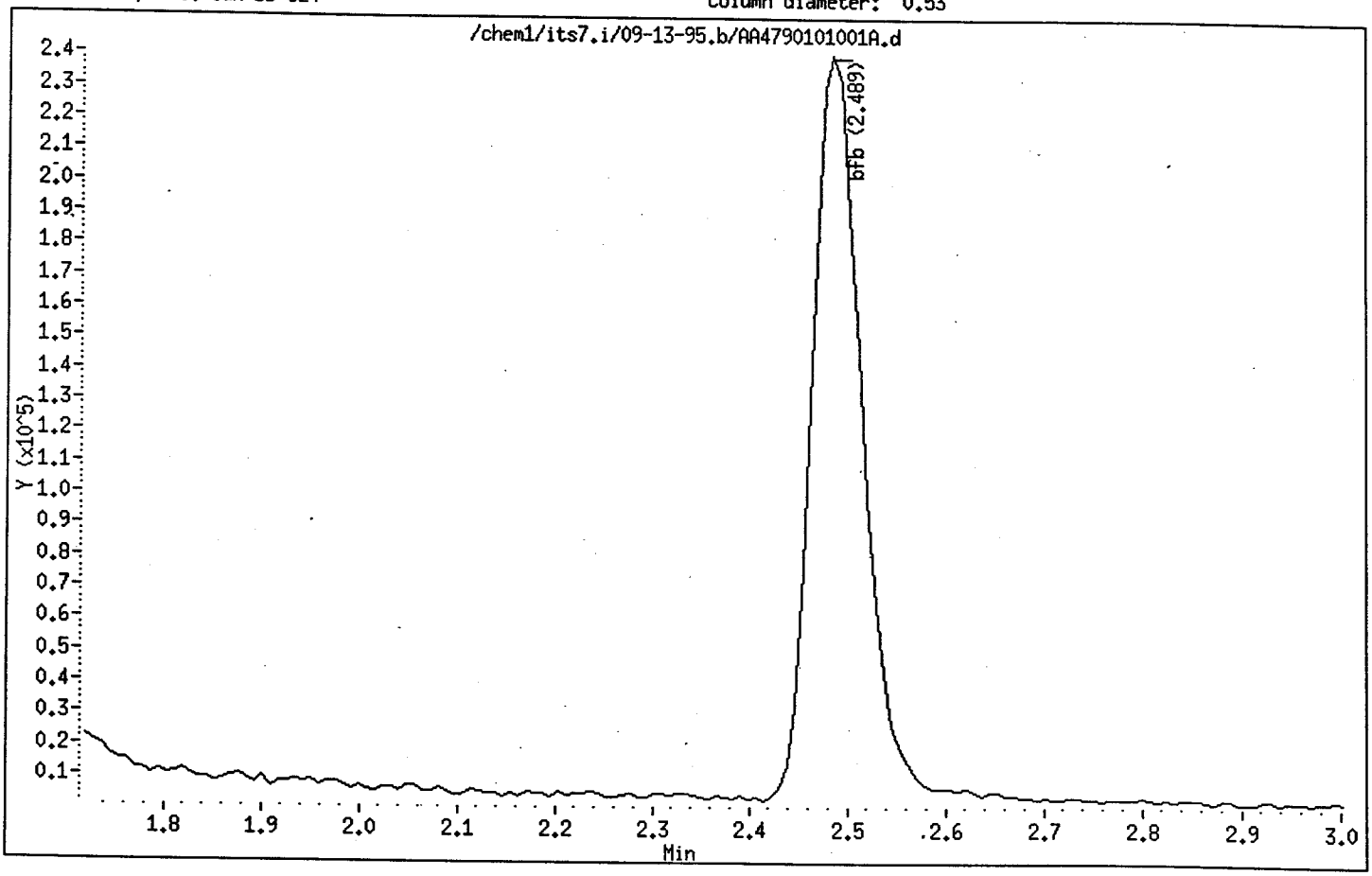
Instrument: its7.i

Sample Info: DAILY TUNE

Operator: MICHELLE

Column phase: J&W DB-624

Column diameter: 0.53

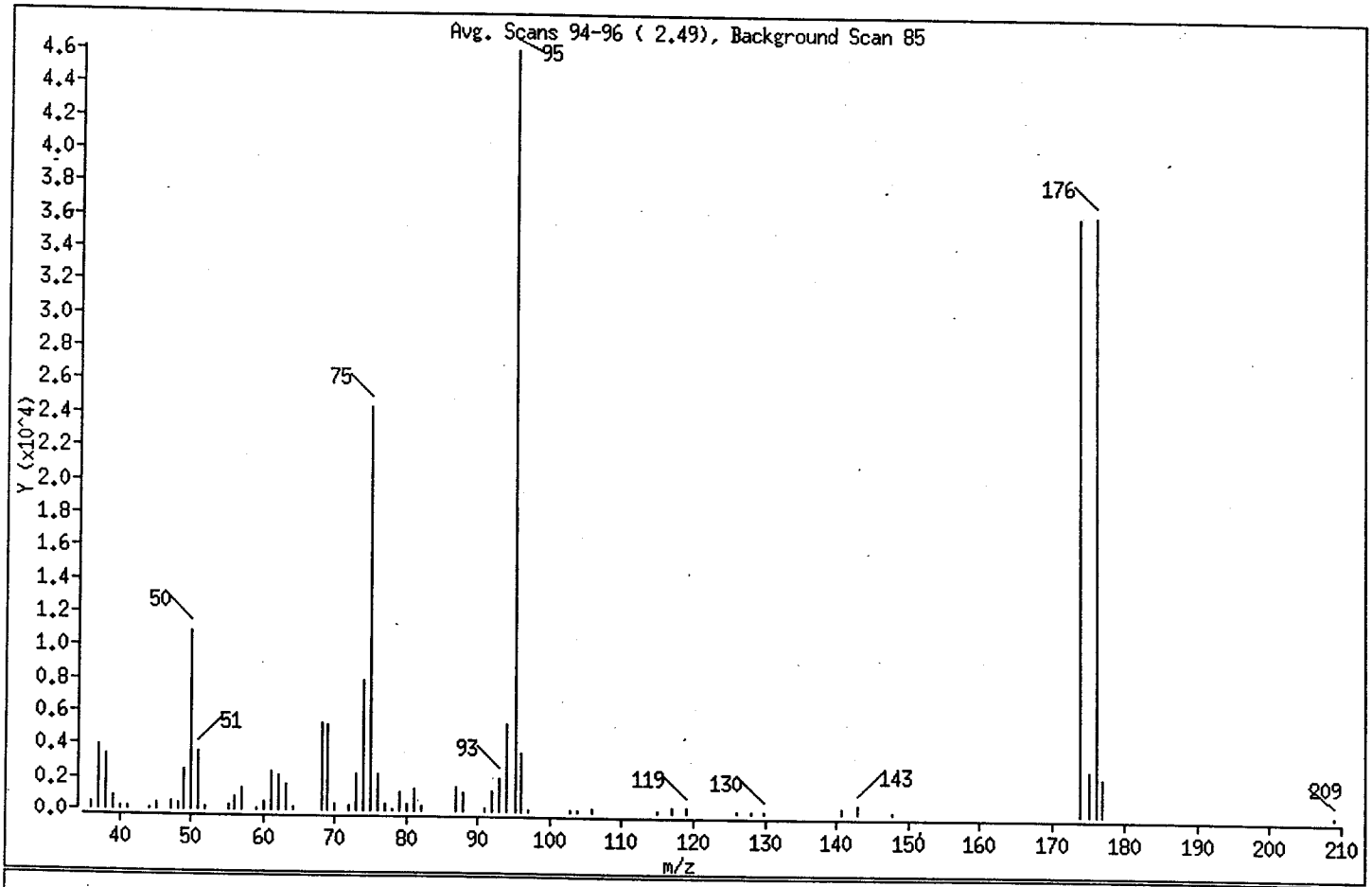


Data File: /chem1/its7.i/09-13-95.b/AA4790101001A.d
Date : 13-SEP-95 08:15
Client ID: 50 UG/L
Sample Info: DAILY TUNE

Instrument: its7.i

Operator: MICHELLE
Column diameter: 0.53

Column phase: J&W DB-624
1 bfb




| m/e | ION ABUNDANCE CRITERIA | % RELATIVE ABUNDANCE |
|---|---|---|
| 95 | Base Peak, 100% relative abundance | 100.00 |
| 50 | 15.00 - 40.00% of mass 95 | 23.72 |
| 75 | 30.00 - 60.00% of mass 95 | 53.08 |
| 96 | 5.00 - 9.00% of mass 95 | 7.90 |
| 173 | Less than 2.00% of mass 174 | 0.00 ( 0.00) |
| 174 | 50.00 - 120.00% of mass 95 | 78.47 |
| 175 | 5.00 - 9.00% of mass 174 | 5.90 ( 7.52) |
| 176 | 95.00 - 101.00% of mass 174 | 78.84 (100.47) |
| 177 | 5.00 - 9.00% of mass 176 | 5.08 ( 6.44) |

Data File: /chem1/its7.i/09-13-95.b/AA4790101001A.d

016183

Date : 13-SEP-95 08:15

Client ID: 50 UG/L

Instrument: its7.i

Sample Info: DAILY TUNE

Operator: MICHELLE

Column phase: J&W DB-624

Column diameter: 0.53

Data File: AA4790101001A.d
Spectrum : Avg. Scans 94-96 ( 2.49), Background Scan 85
Largest m/z: 95.10
Number of peaks: 63

| m/z | Y | m/z | Y | m/z | Y | m/z | Y |
|---|---|---|---|---|---|---|---|
| 36.05 | 419 | 57.10 | 1437 | 77.95 | 156 | 105.85 | 221 |
| 37.05 | 3912 | 59.00 | 90 | 78.95 | 1232 | 114.95 | 70 |
| 38.05 | 3367 | 60.00 | 501 | 79.95 | 397 | 117.05 | 283 |
| 39.05 | 883 | 61.10 | 2376 | 80.95 | 1363 | 118.95 | 329 |
| 40.05 | 188 | 62.00 | 2148 | 82.05 | 302 | 126.10 | 68 |
| 41.05 | 206 | 63.10 | 1608 | 87.00 | 1477 | 128.00 | 79 |
| 44.05 | 108 | 64.10 | 177 | 87.90 | 1235 | 129.80 | 97 |
| 45.05 | 489 | 68.05 | 5381 | 90.90 | 243 | 140.85 | 311 |
| 47.15 | 501 | 69.05 | 5190 | 92.00 | 1349 | 142.95 | 520 |
| 48.10 | 400 | 70.05 | 470 | 93.00 | 2049 | 147.85 | 83 |
| 49.00 | 2468 | 71.95 | 294 | 94.00 | 5371 | 173.90 | 36184 |
| 50.00 | 10939 | 73.05 | 2287 | 95.10 | 46112 | 175.00 | 2720 |
| 51.10 | 3651 | 74.05 | 7916 | 96.10 | 3642 | 176.00 | 36352 |
| 52.10 | 236 | 75.05 | 24472 | 97.00 | 71 | 177.00 | 2341 |
| 55.20 | 356 | 76.05 | 2309 | 102.90 | 67 | 209.00 | 78 |
| 56.10 | 872 | 76.95 | 384 | 103.75 | 87 | | |

Southwestern Division Laboratory 016184
CHAIN OF CUSTODY REPORT BY DEPARTMENT (Unold)
4815 Cass Street
Dallas, Texas 75235
(214) 905-9130
Sep 12 1995, 12:23 pm

Login Number: S50212
Department: Inchcape '94
Account: Longhorn AAP: HARRISON BAYOU

| Sample #/ Matrix | Field ID/ Test Parameter | Collect date/ Method # | Due Date/ # of Bottles |
|---|---|---|---|
| S50212-1 Water | HBW-9 **Volatiles** by Sub11 | 11-SEP-95 SW-846 8260 | 14-SEP-95 |
| S50212-2 Water | HBW-1B **Volatiles** by Sub11 | 11-SEP-95 SW-846 8260 | 14-SEP-95 |
| S50212-4 Water | HBW-5 **Volatiles** by Sub11 | 11-SEP-95 SW-846 8260 | 14-SEP-95 |
| S50212-6 Water | HBW-6 **Volatiles** by Sub11 | 11-SEP-95 SW-846 8260 | 14-SEP-95 |
| S50212-8 Water | HBW-7 **Volatiles** by Sub11 | 11-SEP-95 SW-846 8260 | 14-SEP-95 |
| 50212-10 Water | HBW-8 **Volatiles** by Sub11 | 11-SEP-95 SW-846 8260 | 14-SEP-95 |
| S50212-12 Water | HBW-9 **Volatiles** by Sub11 | 11-SEP-95 SW-846 8260 | 14-SEP-95 |
| S50212-14 Soil | HBS-1B **Volatiles** by Sub11 | 11-SEP-95 SW-846 8260 | 14-SEP-95 |
| S50212-15 Soil | HBS-5 **Volatiles** by Sub11 | 11-SEP-95 SW-846 8260 | 14-SEP-95 |
| S50212-16 Soil | HBS-6 **Volatiles** by Sub11 | 11-SEP-95 SW-846 8260 | 14-SEP-95 |
| S50212-17 Soil | HBS-7 Volatiles by Sub11 | 11-SEP-95 SW-846 8260 | 14-SEP-95 |
| S50212-18 Soil | HBS-8 Volatiles by Sub11 | 11-SEP-95 SW-846 8260 | 14-SEP-95 |
| S50212-19 Soil | HBS-9 **Volatiles** by Sub11 | 11-SEP-95 SW-846 8260 | 14-SEP-95 |



**** ALL NON-CONTRACT ANALYSIS REQUIRE YOUR INTERNAL QC PACKAGE ****

lease Signature: _____ Receipt Signature: _____

Date/Time: _____ Date/Time: _____

016185

## COOLER RECEIPT FORM

Date Received: 9/12/95 Project:

Date Logged-in: 9/12/95 Received by: David Meyer

No. of coolers received: 4 Cooler Numbers: TC-50, TC-42, TC-100, TC-27

| | | | |
|---|---|---|---|
| 1 | Shipping slip. If yes, carrier and bill number: | Yes | (No) |
| 2 | Custody seals on cooler. If yes, how many and where: 1 on front of cooler + 1 on Back of cooler | (Yes) | No |
| 3 | Custody seals intact. | (Yes) | No |
| 4 | Chain of Custody in plastic. | (Yes) | No |
| 5 | Chain of Custody filled out properly. | (Yes) | No |
| 6 | Client signed Chain of Custody. | (Yes) | No |
| 7 | Samples shipped on ice. If no, temperature of cooler: Styrofoam | (Yes) | No |
| 8 | All bottles sealed. | Yes | (No) |
| 9 | All bottles received intact. | (Yes) | No |
| 10 | Labels in good condition and complete. | (Yes) | No |
| 11 | Sample labels agree with Chain of Custody. | (Yes) | No |
| 12 | Correct containers used. | (Yes) | No |
| 13 | Correct preservative used. | (Yes) | No |
| 14 | Sufficient sample provided. | (Yes) | No |
| 15 | Bubbles absent from VOA. | (Yes) | No |
| 16 | Comments (use corrective action form if necessary): | | |

| MIPR# 95-139 | SWD LAB# | Chest# | Temp. |
|---|---|---|---|

~~GROUNDWATER MONITORING WELL~~ EM SURFACE WATER

# CHAIN OF CUSTODY
## for
# VOLATILE ORGANICS

U.S. Army Corps of Engineers
Tulsa District, Tulsa, Okla.

016186

Location: LHAAP Site: HARRISON BAYOU

**TRAVEL BLANK DATA**

Sample ID#: HBW-1-TB Date: 8/31/95 Time: 0700

Water Source: Geotech Env Sampling Millipore System

Analysis Requested: Volatile Organics / 8260

Date Mfg: 8/30/95 Bottle#: _____ C/Seal#: 829

pH: 6.03 Meter#: CP Condt: _____ Meter#: _____

Signature of Sampler: Rusty Roberts EM

**SAMPLES CONTAINED IN THIS SHIPMENT**

| Sample ID Code Number | VOA | Alt# | X-Chest# | SWD Lab # |
|---|---|---|---|---|
| HBW - 1 - TB - ~~TB~~ EM | 2 | | | 1 S50193-1 |
| HBW - 1 | 3 | | TC-07 | S50193-2 |
| HBW - 1 - QA - | 3 | | TC-07 | S50193-3 |
| HBW - 2 | 3 | | " | S50193-4 |
| HBW - 2 - QA - | 3 | | " | S50193-5 |
| HBW - 3 | 3 | | " | S50193-6 |
| HBW - 3 - QA - | 3 | | " | S50193-7 |
| HBW - 4 - - | 3 | | " | S50193-8 |
| HBW - 4 - QA - | 3 | | " | S50193-9 |
| Total Samples Shipped | 26 | | | |

**CUSTODY RECORD**

| | | | |
|---|---|---|---|
| Relinquished by: Rusty Roberts | | Date 8-31-95 | Time 1530 |
| Chest#: TC-19 | C/Seal#: | Bus Bill#: Delivered | |
| Received by: | | Date 01 SEPT 95 | Time 1000 |

016187

10

| MIPR# | SWD Lab# S50193-RA |
|---|---|

SEDIMENT - CHAIN OF CUSTODY

**U.S. Army Corps Of Engineers - TULSA DISTRICT**

| | | |
|---|---|---|
| Project: Longhorn AAP | Site: Harrison Bayou | |
| Sample ID: HBS-1 | | |
| Sampling Date: 8/31/95 | Sampling Time: 1000 | |
| Project Manager: Jonna Pirtle | Phone: (918) 669-7239 | Due Date: 48 HRS. |

**SAMPLE MATRIX (check one)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X | ~~Soil~~ Sediment | | Water | | Sludge | | Free Product | | (unknown) |

**ANALYTICAL PARAMETERS**

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 1311/8260 | Toxic characteristic leaching potential (TCLP)/ volatile organics | 250 ml glass |
| | 1311/8260 | Volatile organics | 3- 40 ml Vials |
| | | | |
| | | | |
| | | | |
| | | | |

**CONTAINER TYPE/SIZE INFORMATION**

| Glass (>500ml) | Glass (<=500ml) | Plastic (>500ml) | Vials (40ml) | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| 1 | | | | TC-07 | Delivered |
| | | | | | |
| | | | | | |

**CUSTODY RECORD**

| Relinquished by: (signature) | Date/Time: | Received by: (signature) | Date/Time: |
|---|---|---|---|
| Rusty Roberts | 8-31-95 1530 | | |
| | | | |
| | | | 90195 1000 |

**ENVIRONMENTAL SAMPLERS/REMARKS**

Name(s): RUSTY ROBERTS & EDDIE MATTIODA

FROM 16WW12: NE TO CREEK BEND. (200 FT upstream FROM SITE 20

016188

| MIPR# | SWD Lab# 550193-8 |
|---|---|

# SEDIMENT - CHAIN OF CUSTODY
## U.S. Army Corps Of Engineers - TULSA DISTRICT

| | | |
|---|---|---|
| Project: Longhorn AAP | Site: Harrison Bayou | |
| Sample ID: HBS-1-QA | | |
| Sampling Date: 8/31/95 | Sampling Time: 1000 | |
| Project Manager: Jonny Pace | Phone: (918)669-7239 | Due Date: 48 HRS |

**SAMPLE MATRIX (check one)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X | SEDIMENT ~~Soil~~ FM | | Water | | Sludge | | Free Product | | (unknown) |

**ANALYTICAL PARAMETERS**

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 1311/8260 | Toxic characteristic leaching potential (TCLP)/ volatile organics | 250 ml glass |
| | 1311/8260 | Volatile organics | 3 - 40 ml Vials |
| | | | |
| | | | |
| | | | |
| | | | |

**CONTAINER TYPE/SIZE INFORMATION**

| Glass (>500ml) | Glass (<=500ml) | Plastic (>500ml) | Vials (40ml) | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| 1 | | | | TC-07 | Delivered |
| | | | | | |
| | | | | | |

**CUSTODY RECORD**

| Relinquished by: (signature) | Date/Time: | Received by: (signature) | Date/Time: |
|---|---|---|---|
| Rusty Roberts | 8-31-95 1530 | | |
| | | | |
| | | | 90195 1000 |

**ENVIRONMENTAL SAMPLERS/REMARKS**

Name(s): RUSTY ROBERTS & EDDIE MATTIODA

FROM 16WW12: NE TO CREEK BEND (200 FT upstream FROM SITE 2)

016189

12

| MIPR# | SWD Lab# SS0193-AM |
|---|---|

# SEDIMENT CHAIN OF CUSTODY
## U.S. Army Corps Of Engineers - TULSA DISTRICT

| | | |
|---|---|---|
| Project: Longhorn AAP | Site: Harrison Bayou | |
| Sample ID: HBS - 2 | | |
| Sampling Date: 8/31/95 | Sampling Time: 1100 | |
| Project Manager: Jonny Pyeatt | Phone: (918) 669 - 7239 | Due Date: 48 HRS |

**SAMPLE MATRIX (check one)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X | Sediment ~~Soil~~ | | Water | | Sludge | | Free Product | | (unknown) |

**ANALYTICAL PARAMETERS**

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 1311/8260 | Toxic characteristic leaching potential (TCLP)/ volatile organics | 250 ml glass |
| | 1311/8260 | Volatile organics | 3 - 40 ml Vials |
| | | | |
| | | | |
| | | | |
| | | | |

**CONTAINER TYPE/SIZE INFORMATION**

| Glass (>500ml) | Glass (<=500ml) | Plastic (>500ml) | Vials (40ml) | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| 1 | | | | TC-07 | delivered |
| | | | | | |
| | | | | | |

**CUSTODY RECORD**

| Relinquished by: (signature) | Date/Time: | Received by: (signature) | Date/Time: |
|---|---|---|---|
| Rusty Roberts | 8-31-95 1530 | | |
| | | | |
| | | [signature] | 90195 1000 |

**ENVIRONMENTAL SAMPLERS/REMARKS**

Name(s): RUSTY ROBERTS & EDDIE MATTIODA

FROM JCWW12: STRAIGHT EAST TO CREEK

016190

13

| MIPR# | SWD Lab# 55019 3-8 MA |
|---|---|

# SEDIMENT - CHAIN OF CUSTODY
## U.S. Army Corps Of Engineers - TULSA DISTRICT

| | | |
|---|---|---|
| Project: Longhorn AAP | Site: Harrison Bayou | |
| Sample ID: HB5-2-QA | | |
| Sampling Date: 5/31/95 | Sampling Time: 1100 | |
| Project Manager: Jonny Pyle | Phone (918) 661-7237 | Due Date: 48 HRS |

**SAMPLE MATRIX (check one)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X | SEDIMENT ~~Soil~~ | | Water | | Sludge | | Free Product | | (unknown) |

**ANALYTICAL PARAMETERS**

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 1311/8260 | Toxic characteristic leaching potential (TCLP)/ volatile organics | 250 ml glass |
| | 1311/8260 | Volatile organics | 3-40 ml Vials |
| | | | |
| | | | |
| | | | |
| | | | |

**CONTAINER TYPE/SIZE INFORMATION**

| Glass (>500ml) | Glass (<=500ml) | Plastic (>500ml) | Vials (40ml) | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| 1 | | | | TC-07 | delivered |
| | | | | | |
| | | | | | |

**CUSTODY RECORD**

| Relinquished by: (signature) | Date/Time: | Received by: (signature) | Date/Time: |
|---|---|---|---|
| Rusty Roberts | 5-31-95 1530 | | |
| | | | |
| | | | 90195 1000 |

**ENVIRONMENTAL SAMPLERS/REMARKS**

Name(s): RUSTY ROBERTS & EDDIE MATTIODA

FROM 16WW12! STRAIGHT EAST TO CREEK

016191

14

| MIPR# | SWD Lab# SS0193-16 MA |
|---|---|

SEDIMENT - CHAIN OF CUSTODY

**U.S. Army Corps Of Engineers - TULSA DISTRICT**

| | | |
|---|---|---|
| Project: Longhorn AAP | Site: Harrison Bayou | |
| Sample ID: HBS-3 | | |
| Sampling Date: 8/31/95 | Sampling Time: 1120 | |
| Project Manager: Jonny Pyeatt | Phone: (918) 669-7737 | Due Date: 4/8 HRS |

**SAMPLE MATRIX (check one)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| X | SEDIMENT SOIL Em | | Water | | Sludge | | Free Product | | (unknown) |

**ANALYTICAL PARAMETERS**

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 1311/8260 | Toxic characteristic leaching potential (TCLP)/ volatile organics | 250 ml glass |
| | 1311/8260 | Volatile organics | 3 - 40 ml Vials |
| | | | |
| | | | |
| | | | |
| | | | |

**CONTAINER TYPE/SIZE INFORMATION**

| Glass (>500ml) | Glass (<=500ml) | Plastic (>500ml) | Vials (40ml) | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| ~~X~~ Em | ~~X~~ Em | | | | |
| 1 | | | | TC-07 | Delivered |
| | | | | | |

**CUSTODY RECORD**

| Relinquished by: (signature) | Date/Time: | Received by: (signature) | Date/Time: |
|---|---|---|---|
| Rusty Roberts | 8-31-95 1530 | | |
| | | | |
| | | | 90195 1000 |

**ENVIRONMENTAL SAMPLERS/REMARKS**

Name(s): RUSTY ROBERTS & EDDIE MATTIODA

FROM 16WW12: 200 FT S OF SITE 21 ALONG downstream CREEK

01619

| MIPR# | SWD Lab# SSO193-7 (15) |
|---|---|

Sediment

# - CHAIN OF CUSTODY
## U.S. Army Corps Of Engineers - TULSA DISTRICT

| | | |
|---|---|---|
| Project: Longhorn AAP | Site: Harrison Bayou | |
| Sample ID: HBS-3 QA | | |
| Sampling Date: 8-31-95 | Sampling Time: 1120 | |
| Project Manager: Jonna Pyeatt | Phone: 7239 | Due Date: 48 hr |

Sediment

**SAMPLE MATRIX (check one)**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Soil | | Water | | Sludge | | Free Product | | (unknown) |

**ANALYTICAL PARAMETERS**

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 1311/8260 | Toxic characteristic leaching potential (TCLP)/ volatile organics | 250 ml glass |
| | 1311/8260 | Volatile organics | 3- 40 ml Vials |
| | | | |
| | | | |
| | | | |
| | | | |

**CONTAINER TYPE/SIZE INFORMATION**

| Glass (>500ml) | Glass (<=500ml) | Plastic (>500ml) | Vials (40ml) | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| 1 | XRR | | | TC-07 | Delivered |
| | | | | | |
| | | | | | |

**CUSTODY RECORD**

| Relinquished by: (signature) | Date/Time: | Received by: (signature) | Date/Time: |
|---|---|---|---|
| Rusty Roberts | 8-31-95 1530 | | |
| | | | |
| | | | 90195 1000 |

**ENVIRONMENTAL SAMPLERS/REMARKS**

Name(s):

200 ft S. of site 2 on Creek

016195

16

| MIPR# | SWD Lab# 550193-8 MJ |
|---|---|

SEDIMENT - CHAIN OF CUSTODY

**U.S. Army Corps Of Engineers - TULSA DISTRICT**

| Project: Longhorn AAP | Site: Harrison Bayou | |
|---|---|---|
| Sample ID: HBS-4 | | |
| Sampling Date: 8/31/95 | Sampling Time: 1145 | |
| Project Manager: Jonny Pyle | Phone: (918) 669-7239 | Due Date: 48 HRS. |

**SAMPLE MATRIX (check one)**

| [X] SEDIMENT ~~Soil~~ | [ ] Water | [ ] Sludge | [ ] Free Product | [ ] (unknown) |
|---|---|---|---|---|

**ANALYTICAL PARAMETERS**

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 1311/8260 | Toxic characteristic leaching potential (TCLP)/ volatile organics | 250 ml glass |
| | 1311/8260 | Volatile organics | 3-40 ml Vials |
| | | | |
| | | | |
| | | | |
| | | | |

**CONTAINER TYPE/SIZE INFORMATION**

| Glass (>500ml) | Glass (<=500ml) | Plastic (>500ml) | Vials (40ml) | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| 1 | | | | TC-07 | Delivered |
| | | | | | |
| | | | | | |

**CUSTODY RECORD**

| ~~Relinquished~~ by: (signature) | Date/Time: | Received by: (signature) | Date/Time: |
|---|---|---|---|
| Rusty Roberts | 8-31-95 1530 | | |
| | | | |
| | | | 90195 1000 |

**ENVIRONMENTAL SAMPLERS/REMARKS**

Name(s): RUSTY ROBERTS & EDDIE MATTIODA

FROM 16WW12: 400 FT S OF SITE 2 ALONG CREEK

016194

17.

| MIPR# | SWD Lab# 550193-9 MJ |
|---|---|

# SEDIMENT - CHAIN OF CUSTODY
## U.S. Army Corps Of Engineers - TULSA DISTRICT

| Project: Longhorn AAP | Site: Harrison Bayou | |
|---|---|---|
| Sample ID: HBS-4-QA | | |
| Sampling Date: 8/31/95 | Sampling Time: 1145 | |
| Project Manager: Jonny Parker | Phone: (918) 669-7239 | Due Date: 48 HRS |

**SAMPLE MATRIX (check one)**

| [X] Sediment ~~Soil~~ | [ ] Water | [ ] Sludge | [ ] Free Product | [ ] (unknown) |
|---|---|---|---|---|

**ANALYTICAL PARAMETERS**

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 1311/8260 | Toxic characteristic leaching potential (TCLP)/ volatile organics | 250 ml glass |
| | 1311/8260 | Volatile organics | 3- 40 ml Vials |
| | | | |
| | | | |
| | | | |
| | | | |

**CONTAINER TYPE/SIZE INFORMATION**

| Glass (>500ml) | Glass (<=500ml) | Plastic (>500ml) | Vials (40ml) | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| 1 | | | | TC-07 | delivered |
| | | | | | |
| | | | | | |

**CUSTODY RECORD**

| Relinquished by: (signature) | Date/Time: | Received by: (signature) | Date/Time: |
|---|---|---|---|
| Rusty Roberts | 8-31-95 | | |
| | | | |
| | | | 90195 1000 |

**ENVIRONMENTAL SAMPLERS/REMARKS**

Name(s): RUSTY ROBERTS & EDDIE MATTIODA

FROM 16WW12: 400 FT S OF SITE 2 ALONG CREEK.

016195

LIMS#_____

COOLER RECEIPT FORM

Date Received 1 SEPT 95 Project LONGHORN

Number of Coolers 2 District TULSA

Date Checked in 1 SEPT 95 By (sign) [signature]

1. Shipping bill number HAND DELIVERED
2. Custody seals on cooler NONE
3. Samples were non-radioactive..... (Yes) No
4. Custody seals intact..... Yes (No) 1
5. Chain-of-Custody in plastic..... Yes (No) 2
6. Temperature of cooler at receipt less than 4(±2)°C. (Yes) No
   If NO, Actual temperature(s) of cooler(s)_____
   Call POC. Details_____
7. Ice and Packing ICE & INSERT
8. Chain-of-Custody filled out properly..... (Yes) No
9. SWD signed Chain-of-Custody properly..... (Yes) No
10. All bottles sealed and in separate plastic bags..... Yes (No)
11. Sample containers intact..... (Yes) No
12. Label(s) complete (ID, date, time, etc) and in good condition..... (Yes) No
13. Label(s) agree with COC..... A-GM ~~Yes~~ (No) 4
14. Correct containers used..... (Yes) No
15. Preserved properly..... (Yes) No
16. Sufficient sample..... (Yes) No
17. Bubbles absent from VOA..... Yes (No) 3
18. Client called..... (Yes) No
    Details:_____
19. MIPR #_____
20. Comments ① NO SEALS OR TAPE/HAND DELIVERED DIRECTLY
② HAND DELIVERED
③ All ✓ Comm ④ COC 1311/8260 VOA / SAMPLE 8260 VOA

10/1/95 @ 0935 I TALKED TO CLIFF MURRAY AND HE ADVISED NOT TO RUN TCLP. JUST RUN VOA (8260). dj

| MIPR# | SWD LAB# 550212-1 | Chest# | Temp. |
|---|---|---|---|

# SURFACE WATER SAMPLE CHAIN OF CUSTODY for VOLATILE ORGANICS

016190

U.S. Army Corps of Engineers
Tulsa District, Tulsa, Okla.

Project : **Longhorn AAP** Site: **Harrison Bayou**

## TRAVEL BLANK DATA

Sample ID: HBW-9-TB Date: 9/11/95 Time: 0700

Water Source: Geotech Env Sampling Millipore System

Analysis Requested: Volatile Organics / 8260

Date Mfg: 9/8/95 Bottle#: — C/Seal#: —

pH: 5.35 Meter#: 58113 Condt: 8uS Meter#: 58165

Signature of Sampler: Eddie Matteoli

## SAMPLES CONTAINED IN THIS SHIPMENT

| Sample ID Code Number | | VOA | Alt# | X-Chest# | SWD Lab # |
|---|---|---|---|---|---|
| HBW-9 | - TB | 3 | | | [1] 550212-1 |
| HBW-1B | - | 3 | | | 550212-2 |
| HBW-1B | - QA | 3 | | | 550212-3 |
| HBW-5 | - | 3 | | | 550212-4 |
| HBW-5-QA | - | 3 | | | 550212-5 |
| HBW-6 | - | 3 | | | 550212-6 |
| HBW-6-QA | - | 3 | | | 550212-7 |
| HBW-7 | - | 3 | | | 550212-8 |
| HBW-7-QA | - | 3 | | | 550212-9 |
| Total Samples Shipped | | 27 | | | |

## CUSTODY RECORD

| | | | |
|---|---|---|---|
| Relinquished by: Eddie Matteoli | | Date 9/11/95 | Time 1700 |
| Chest#: TD66 | C/Seal#: 66091195 | Bus Bill#: Delivered | |
| Received by: Scott Boggs | | Date 9/11/95 | Time 17:05 SCB |

| MIPR# | SWD LAB# [1] | Chest# | Temp. |
|---|---|---|---|

# SURFACE WATER SAMPLE CHAIN OF CUSTODY for VOLATILE ORGANICS

01619?

U.S. Army Corps of Engineers
Tulsa District, Tulsa, Okla.

Project : **Longhorn AAP** Site: **Harrison Bayou**

## TRAVEL BLANK DATA

Sample ID: HBW-9-TB Date: 9/11/95 Time: 0700

Water Source: Geotech Env Sampling Millipore System

Analysis Requested: Volatile Organics / 8260

Date Mfg: 9/8/95 Bottle#: — C/Seal#: —

pH: 5.35 Meter#: 58113 Condt: 8 µs Meter#: 58165

Signature of Sampler: Eddie Matthews

## SAMPLES CONTAINED IN THIS SHIPMENT

| Sample ID Code Number | | VOA | Alt# | X-Chest# | SWD Lab # |
|---|---|---|---|---|---|
| HBW-9 | - TB | 3 ~~6~~ | | | [1] |
| HBW-8 | - | 3 | | | 550212-10 |
| HBW-8 | - QA | 3 | | | 550212-11 |
| HBW-9 | - | 3 | | | 550212-12 |
| HBW-9 | - QA | 3 | | | 550212-13 |
| | - | | | | |
| Total Samples Shipped | | 39 | | | |

## CUSTODY RECORD

| | | | |
|---|---|---|---|
| Relinquished by: Eddie Matthews | | Date 9/11/95 | Time 1700 |
| Chest#: TD66 | C/Seal#: 66091195 | Bus Bill#: Delivered | |
| Received by: Steph Brooks | | Date 9/11/95 | Time 17:05 |

016198

| MIPR# | SWD Lab# 550212-2 |
|---|---|

# SURFACE WATER MONITORING - CHAIN OF CUSTODY
## U.S. Army Corps Of Engineers - TULSA DISTRICT

| Project: Longhorn AAP | Site: Harrison Bayou | |
|---|---|---|
| Sample ID: HBW - 1B | | |
| Sampling Date: 9/11/95 | Sampling Time: 1115 | |
| Project Manager: Jonna Polk | Phone: (918) 669-7239 | Due Date: 48 HRS Turn-around |

## ANALYTICAL PARAMETERS

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 8260 | Volatile Organics | 3 - 40 ml vials |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

## CONTAINER INFORMATION

| 1L Glass | 1/2L Glass | 1L Plastic | Vials | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| | | | 3 | TD66 | Delivered |
| | | | | | |
| | | | | | |

## CUSTODY RECORD

| Relinquished by: (signature) | Received by: (signature) | Date: | Time: |
|---|---|---|---|
| Eddie Mattioda | Stephen Brooks | 9-11-95 | 17:15 |
| | | | |
| | | | |

## ENVIRONMENTAL SAMPLERS

Name(s): EDDIE MATTIODA

016199

| MIPR# | SWD Lab# 55012-3 |
|---|---|

# SURFACE WATER MONITORING - CHAIN OF CUSTODY
## U.S. Army Corps Of Engineers - TULSA DISTRICT

| Project: Longhorn AAP | Site: Harrison Bayou | |
|---|---|---|
| Sample ID: HBW-1B-QA | | |
| Sampling Date: 9/11/95 | Sampling Time: 1115 | |
| Project Manager: Jonna Polk | Phone: (918) 669-7239 | Due Date: 48 HRS Turn-around |

## ANALYTICAL PARAMETERS

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 8260 | Volatile Organics | 3 - 40 ml vials |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

## CONTAINER INFORMATION

| 1L Glass | 1/2L Glass | 1L Plastic | Vials | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| | | | 3 | TD66 | Delivered |
| | | | | | |
| | | | | | |

## CUSTODY RECORD

| Relinquished by: (signature) | Received by: (signature) | Date: | Time: |
|---|---|---|---|
| Eddie Mattioda | Kent Brooks | 9-11-95 | 1715 |
| | | | |
| | | | |

## ENVIRONMENTAL SAMPLERS

Name(s): EDDIE MATTIODA

016200

| MIPR# | SWD Lab# S50212-4 |
|---|---|

# SURFACE WATER MONITORING - CHAIN OF CUSTODY
## U.S. Army Corps Of Engineers - TULSA DISTRICT

| | | |
|---|---|---|
| Project: Longhorn AAP | Site: Harrison Bayou | |
| Sample ID: HBW-5 | | |
| Sampling Date: 9/11/95 | Sampling Time: 1200 | |
| Project Manager: Jonna Polk | Phone: (918) 669-7239 | Due Date: 48 HRS Turn-around |

## ANALYTICAL PARAMETERS

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 8260 | Volatile Organics | 3 - 40 ml vials |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

## CONTAINER INFORMATION

| 1L Glass | 1/2L Glass | 1L Plastic | Vials | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| | | | 3 | TD66 | Delivered |
| | | | | | |
| | | | | | |

## CUSTODY RECORD

| Relinquished by: (signature) | Received by: (signature) | Date: | Time: |
|---|---|---|---|
| Eddie Mattioda | Steph Burks | 9-11-95 | 17:15 |
| | | | |
| | | | |

## ENVIRONMENTAL SAMPLERS

Name(s): EDDIE MATTIODA

016201

| MIPR# | SWD Lab# SS0212-5 |
|---|---|

# SURFACE WATER MONITORING - CHAIN OF CUSTODY
## U.S. Army Corps Of Engineers - TULSA DISTRICT

| Project: Longhorn AAP | Site: Harrison Bayou | |
|---|---|---|
| Sample ID: HBW-5-QA | | |
| Sampling Date: 9/11/95 | Sampling Time: 1200 | |
| Project Manager: Jonna Polk | Phone: (918) 669-7239 | Due Date: 48 HRS Turn-around |

## ANALYTICAL PARAMETERS

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 8260 | Volatile Organics | 3 - 40 ml vials |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

## CONTAINER INFORMATION

| 1L Glass | 1/2L Glass | 1L Plastic | Vials | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| | | | 3 | TD66 | Delivered |
| | | | | | |
| | | | | | |

## CUSTODY RECORD

| Relinquished by: (signature) | Received by: (signature) | Date: | Time: |
|---|---|---|---|
| Eddie Mattioda | Stephen Brooks | 9-11-95 | Stephen Brooks |
| | | | |
| | | | |

## ENVIRONMENTAL SAMPLERS

Name(s): EDDIE MATTIODA

016202

| MIPR# | SWD Lab# 550212-6 |
|---|---|

# SURFACE WATER MONITORING - CHAIN OF CUSTODY
## U.S. Army Corps Of Engineers - TULSA DISTRICT

| | | |
|---|---|---|
| Project: Longhorn AAP | Site: Harrison Bayou | |
| Sample ID: HBW-6 | | |
| Sampling Date: 9/11/95 | Sampling Time: 1030 | |
| Project Manager: Jonna Polk | Phone: (918) 669-7239 | Due Date: 48 HRS Turn-around |

## ANALYTICAL PARAMETERS

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 8260 | Volatile Organics | 3 - 40 ml vials |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

## CONTAINER INFORMATION

| 1L Glass | 1/2L Glass | 1L Plastic | Vials | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| | | | 3 | TD 66 | Delivered |
| | | | | | |
| | | | | | |

## CUSTODY RECORD

| Relinquished by: (signature) | Received by: (signature) | Date: | Time: |
|---|---|---|---|
| Eddie Mattioda | Steph Brooks | 9-11-95 | 17:15 |
| | | | |
| | | | |

## ENVIRONMENTAL SAMPLERS

Name(s): EDDIE MATTIODA

016203

| MIPR# | SWD Lab# 550212-7 |
|---|---|

# SURFACE WATER MONITORING - CHAIN OF CUSTODY
## U.S. Army Corps Of Engineers - TULSA DISTRICT

| | | |
|---|---|---|
| Project: Longhorn AAP | Site: Harrison Bayou | |
| Sample ID: HBW-6-QA | | |
| Sampling Date: 9/11/95 | Sampling Time: 1030 | |
| Project Manager: Jonna Polk | Phone: (918) 669-7239 | Due Date: 48 HRS Turn-around |

## ANALYTICAL PARAMETERS

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 8260 | Volatile Organics | 3 - 40 ml vials |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

## CONTAINER INFORMATION

| 1L Glass | 1/2L Glass | 1L Plastic | Vials | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| | | | 3 | TD66 | Delivered |
| | | | | | |
| | | | | | |

## CUSTODY RECORD

| Relinquished by: (signature) | Received by: (signature) | Date: | Time: |
|---|---|---|---|
| Eddie Mattioda | Steve Gosha | 9-11-95 | 17:17 |
| | | | |
| | | | |

## ENVIRONMENTAL SAMPLERS

Name(s): EDDIE MATTIODA

016204

| MIPR# | SWD Lab# 550212-8 |
|---|---|

# SURFACE WATER MONITORING - CHAIN OF CUSTODY
## U.S. Army Corps Of Engineers - TULSA DISTRICT

| Project: Longhorn AAP | Site: Harrison Bayou | |
|---|---|---|
| Sample ID: HBW-7 | | |
| Sampling Date: 9/11/95 | Sampling Time: 1000 | |
| Project Manager: Jonna Polk | Phone: (918) 669-7239 | Due Date: 48 HRS Turn-around |

## ANALYTICAL PARAMETERS

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 8260 | Volatile Organics | 3 - 40 ml vials |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

## CONTAINER INFORMATION

| 1L Glass | 1/2L Glass | 1L Plastic | Vials | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| | | | 3 | TD66 | Deland |
| | | | | | |
| | | | | | |

## CUSTODY RECORD

| Relinquished by: (signature) | Received by: (signature) | Date: | Time: |
|---|---|---|---|
| Eddie Mattioda | Hyatt Brooks | 9-11-95 | 17:17 |
| | | | |
| | | | |

## ENVIRONMENTAL SAMPLERS

Name(s): EDDIE MATTIODA

016205

| MIPR# | SWD Lab# 550212-9 |
|---|---|

# SURFACE WATER MONITORING - CHAIN OF CUSTODY
## U.S. Army Corps Of Engineers - TULSA DISTRICT

| Project: Longhorn AAP | Site: Harrison Bayou | |
|---|---|---|
| Sample ID: HBW-7-QA | | |
| Sampling Date: 9/11/95 | Sampling Time: 1000 | |
| Project Manager: Jonna Polk | Phone: (918) 669-7239 | Due Date: 48 HRS Turn-around |

## ANALYTICAL PARAMETERS

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 8260 | Volatile Organics | 3 - 40 ml vials |
| | | | |
| | | | |
| | | | |
| | | | |
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| | | | |
| | | | |

## CONTAINER INFORMATION

| 1L Glass | 1/2L Glass | 1L Plastic | Vials | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| | | | 3 | TD66 | Delivered |
| | | | | | |
| | | | | | |

## CUSTODY RECORD

| Relinquished by: (signature) | Received by: (signature) | Date: | Time: |
|---|---|---|---|
| Eddie Mattioda | Steph Brooks | 9-11-95 | 17:18 |
| | | | |
| | | | |

## ENVIRONMENTAL SAMPLERS

Name(s): EDDIE MATTIODA

016205

| MIPR# | SWD Lab# 550212-10 |
|---|---|

# SURFACE WATER MONITORING - CHAIN OF CUSTODY
## U.S. Army Corps Of Engineers - TULSA DISTRICT

| | | |
|---|---|---|
| Project: Longhorn AAP | Site: Harrison Bayou | |
| Sample ID: HBW - 8 | | |
| Sampling Date: 9/11/95 | Sampling Time: 0935 | |
| Project Manager: Jonna Polk | Phone: (918) 669-7239 | Due Date: 48 HRS Turn-around |

## ANALYTICAL PARAMETERS

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 8260 | Volatile Organics | 3 - 40 ml vials |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

## CONTAINER INFORMATION

| 1L Glass | 1/2L Glass | 1L Plastic | Vials | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| | | | 3 | TD66 | Delivered |
| | | | | | |
| | | | | | |

## CUSTODY RECORD

| Relinquished by: (signature) | Received by: (signature) | Date: | Time: |
|---|---|---|---|
| Eddie Mattioda | Stephen Brooks | 9-11-95 | 17:19 |
| | | | |
| | | | |

## ENVIRONMENTAL SAMPLERS

Name(s): EDDIE MATTIODA

01620

| MIPR# | SWD Lab# 550212-11 |
|---|---|

# SURFACE WATER MONITORING - CHAIN OF CUSTODY
## U.S. Army Corps Of Engineers - TULSA DISTRICT

| | | |
|---|---|---|
| Project: Longhorn AAP | Site: Harrison Bayou | |
| Sample ID: HBW-8-QA | | |
| Sampling Date: 9/11/95 | Sampling Time: 0935 | |
| Project Manager: Jonna Polk | Phone: (918) 669-7239 | Due Date: 48 HRS Turn-around |

## ANALYTICAL PARAMETERS

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 8260 | Volatile Organics | 3 - 40 ml vials |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

## CONTAINER INFORMATION

| 1L Glass | 1/2L Glass | 1L Plastic | Vials | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| | | | 3 | TD66 | Delivered |
| | | | | | |
| | | | | | |

## CUSTODY RECORD

| Relinquished by: (signature) | Received by: (signature) | Date: | Time: |
|---|---|---|---|
| Eddie Mattioda | Stephen Beach | 9-11-95 | 17:20 |
| | | | |
| | | | |

## ENVIRONMENTAL SAMPLERS

Name(s): EDDIE MATTIODA

016206

| MIPR# | SWD Lab# 550212-12 |
|---|---|

# SURFACE WATER MONITORING - CHAIN OF CUSTODY
## U.S. Army Corps Of Engineers - TULSA DISTRICT

| | | |
|---|---|---|
| Project: Longhorn AAP | Site: Harrison Bayou | |
| Sample ID: HBW-9 | | |
| Sampling Date: 9/11/95 | Sampling Time: 0900 | |
| Project Manager: Jonna Polk | Phone: (918) 669-7239 | Due Date: 48 HRS Turn-around |

## ANALYTICAL PARAMETERS

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 8260 | Volatile Organics | 3 - 40 ml vials |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

## CONTAINER INFORMATION

| 1L Glass | 1/2L Glass | 1L Plastic | Vials | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| | | | 3 | TD66 | Dulond |
| | | | | | |
| | | | | | |

## CUSTODY RECORD

| Relinquished by: (signature) | Received by: (signature) | Date: | Time: |
|---|---|---|---|
| Eddie Mattioda | Steph Beasley | 9-11-95 | 17:22 |
| | | | |
| | | | |

## ENVIRONMENTAL SAMPLERS

Name(s): EDDIE MATTIODA

016203

| MIPR# | SWD Lab# 550212-13 |
|---|---|

# SURFACE WATER MONITORING - CHAIN OF CUSTODY
## U.S. Army Corps Of Engineers - TULSA DISTRICT

| Project: Longhorn AAP | Site: Harrison Bayou | |
|---|---|---|
| Sample ID: HBW-9-QA | | |
| Sampling Date: 9/11/95 | Sampling Time: 0900 | |
| Project Manager: Jonna Polk | Phone: (918) 669-7239 | Due Date: 48 HRS Turn-around |

## ANALYTICAL PARAMETERS

| | Method: | Remarks: | Container: |
|---|---|---|---|
| ✓ | 8260 | Volatile Organics | 3 - 40 ml vials |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

## CONTAINER INFORMATION

| 1L Glass | 1/2L Glass | 1L Plastic | Vials | Chest# | Bus Bill# |
|---|---|---|---|---|---|
| | | | 3 | TD66 | Delivered |
| | | | | | |
| | | | | | |

## CUSTODY RECORD

| Relinquished by: (signature) | Received by: (signature) | Date: | Time: |
|---|---|---|---|
| Eddie Mattioda | Steph Brooks | 9-11-95 | 17:19 |
| | | | |
| | | | |

## ENVIRONMENTAL SAMPLERS

Name(s): EDDIE MATTIODA

| MIPR# | SWD LAB#[1] SSO212-14 016210 |
|---|---|

| Chest/Temp | |
|---|---|
| | |
| | |

# SEDIMENT SAMPLE
## CHAIN OF CUSTODY

U.S. Army Corps of Engineers
Tulsa District

Location: **Longhorn AAP** Site: **Harrison Bayou** Date: 9/11/95

Sample ID#: HBS-1B Time: 1115

Project Manager: Jonna Polk Ext: 7239 Due Date: **48 Hours**

**CONTAINERS**

| Glass | Plastic | Vial | Chest# | C/Seal# |
|---|---|---|---|---|
| 1/2 L | — | — | PTX-028 | 28091195 |
| | | | | |

**PARAMETERS SAMPLED**

| | | | |
|---|---|---|---|
| ✓ | Volatile Organics | 8260 | (1) |
| | | | |
| | | | |
| | | | |

* Containers: () = 500 ml Glass

**CUSTODY RECORD**

| Relinquished By | Received By | Date | Time |
|---|---|---|---|
| Eddie Mattioda | Steph Brooks | 9-11-95 | 17:25 |
| | | | |
| | | | |

| MIPR# | SWD LAB#[1] 550212-15 |
|---|---|

| Chest/Temp | |
|---|---|
| | |
| | |

# SEDIMENT SAMPLE
## CHAIN OF CUSTODY

**U.S. Army Corps of Engineers**
**Tulsa District**

Location: **Longhorn AAP** Site: **Harrison Bayou** Date: 9/11/95

Sample ID#: HBS-5 Time: 1200

Project Manager: Jonna Polk Ext: 7239 Due Date: **48 Hours**

**CONTAINERS**

| Glass | Plastic | Vial | Chest# | C/Seal# |
|---|---|---|---|---|
| 1/2 L | — | — | PTX-028 | 28091195 |
| | | | | |

**PARAMETERS SAMPLED**

| | | | |
|---|---|---|---|
| X | Volatile Organics | 8260 | (1) |
| | | | |
| | | | |
| | | | |

* Containers: () = 500 ml Glass

**CUSTODY RECORD**

| Relinquished By | Received By | Date | Time |
|---|---|---|---|
| Eddie Matthews | Stephen Brock | 9-11-95 | 17:28 |
| | | | |
| | | | |

01621

| MIPR# | SWD LAB#[1] 550212-110 |
|---|---|

| Chest/Temp | |
|---|---|
| | |
| | |

# SEDIMENT SAMPLE
## CHAIN OF CUSTODY

**U.S. Army Corps of Engineers**
**Tulsa District**

Location: **Longhorn AAP** Site: **Harrison Bayou** Date: 9/11/95

Sample ID#: HBS-6 Time: 1030

Project Manager: Jonna Polk Ext: 7239 Due Date: **48 Hours**

**CONTAINERS**

| Glass | Plastic | Vial | Chest# | C/Seal# |
|---|---|---|---|---|
| 1/2 L | — | — | PTX-028 | 28091195 |
| | | | | |

**PARAMETERS SAMPLED**

| | | | |
|---|---|---|---|
| X | Volatile Organics | 8260 | (1) |
| | | | |
| | | | |
| | | | |

* Containers: () = 500 ml Glass

**CUSTODY RECORD**

| Relinquished By | Received By | Date | Time |
|---|---|---|---|
| Eddie Matteoda | Steph Brock | 9-11-95 | 17:30 |
| | | | |
| | | | |

| MIPR# | SWD LAB#[1] SSC 01621-17 |
|---|---|

| Chest/Temp | |
|---|---|
| | |
| | |

# SEDIMENT SAMPLE
## CHAIN OF CUSTODY

**U.S. Army Corps of Engineers**
**Tulsa District**

Location: **Longhorn AAP** Site: **Harrison Bayou** Date: 9/11/95

Sample ID#: HBS-7 Time: 1000

Project Manager: Jonna Polk Ext: 7239 Due Date: **48 Hours**

**CONTAINERS**

| Glass | Plastic | Vial | Chest# | C/Seal# |
|---|---|---|---|---|
| 1/2 L | — | — | PTX-028 | 28091195 |
| | | | | |

**PARAMETERS SAMPLED**

| | | | |
|---|---|---|---|
| X | Volatile Organics | 8260 | (1) |
| | | | |
| | | | |
| | | | |

* Containers: () = 500 ml Glass

**CUSTODY RECORD**

| Relinquished By | Received By | Date | Time |
|---|---|---|---|
| Eddie Mattoon | Stephen Brooks | 9-11-95 | 17:32 |
| | | | |
| | | | |

016214

| MIPR# | SWD LAB#[1] 550212-18 |
|---|---|

| Chest/Temp | |
|---|---|
| | |
| | |

# SEDIMENT SAMPLE
## CHAIN OF CUSTODY

U.S. Army Corps of Engineers
Tulsa District

Location: Longhorn AAP Site: Harrison Bayou Date: 7/11/95

Sample ID#: HBS-8 Time: 0935

Project Manager: Jonna Polk Ext: 7239 Due Date: 48 Hours

**CONTAINERS**

| Glass | Plastic | Vial | Chest# | C/Seal# |
|---|---|---|---|---|
| 1/2 L | — | — | PTX-028 | 28091195 |
| | | | | |

**PARAMETERS SAMPLED**

| | | | |
|---|---|---|---|
| ✓ | Volatile Organics | 8260 | (1) |
| | | | |
| | | | |
| | | | |

* Containers: () = 500 ml Glass

**CUSTODY RECORD**

| Relinquished By | Received By | Date | Time |
|---|---|---|---|
| Eddie Mattood | Steph Brooks | 9-11-95 | 17:33 |
| | | | |
| | | | |

016215

| MIPR# | SWD LAB#[1] 550212-19 |
|---|---|

| Chest/Temp | |
|---|---|
| | |
| | |

# SEDIMENT SAMPLE
## CHAIN OF CUSTODY

**U.S. Army Corps of Engineers**
**Tulsa District**

Location: **Longhorn AAP** Site: **Harrison Bayou** Date: 9/11/95

Sample ID#: HBS-9 Time: 0900

Project Manager: Jonna Polk Ext: 7239 Due Date: **48 Hours**

**CONTAINERS**

| Glass | Plastic | Vial | Chest# | C/Seal# |
|---|---|---|---|---|
| 1/2 L | — | — | PTX-028 | 28091195 |
| | | | | |

**PARAMETERS SAMPLED**

| | | | |
|---|---|---|---|
| ✓ | Volatile Organics | - 8260 | (1) |
| | | | |
| | | | |
| | | | |

* Containers: () = 500 ml Glass

**CUSTODY RECORD**

| Relinquished By | Received By | Date | Time |
|---|---|---|---|
| Eddie Mattocks | Stephen Brooks | 9-11-95 | 17:36 |
| | | | |
| | | | |

| MIPR# | SWD LAB#[1] 016216 SSOZ12-20 |
|---|---|

| Chest/Temp | |
|---|---|
| | |
| | |

# SEDIMENT SAMPLE
## CHAIN OF CUSTODY

**U.S. Army Corps of Engineers**
**Tulsa District**

Location: **Longhorn AAP** Site: **Harrison Bayou** Date: 9/11/95

Sample ID#: HBS – 1B – QA Time: 1115

Project Manager: Jonna Polk Ext: 7239 Due Date: **48 Hours**

**CONTAINERS**

| Glass | Plastic | Vial | Chest# | C/Seal# |
|---|---|---|---|---|
| 1/2 L | – | – | PTX-028 | 28091195 |
| | | | | |

**PARAMETERS SAMPLED**

| ✓ | | | |
|---|---|---|---|
| | Volatile Organics | 8260 | (1) |
| | | | |
| | | | |
| | | | |

* Containers: () = 500 ml Glass

**CUSTODY RECORD**

| Relinquished By | Received By | Date | Time |
|---|---|---|---|
| Eddie Matlock | Stuart Cooke | 9-11-95 | 17:22 |
| | | | |
| | | | |

016217

| MIPR# | SWD LAB#[1] 55021Z-21 |
|---|---|

| Chest/Temp | |
|---|---|
| | |
| | |

# SEDIMENT SAMPLE
## CHAIN OF CUSTODY

**U.S. Army Corps of Engineers**
**Tulsa District**

Location: **Longhorn AAP** Site: **Harrison Bayou** Date: 9/11/95

Sample ID#: HBS-5-QA Time: 1200

Project Manager: Jonna Polk Ext: 7239 Due Date: 48 Hours

**CONTAINERS**

| Glass | Plastic | Vial | Chest# | C/Seal# |
|---|---|---|---|---|
| 1/2L | — | — | PTX-028 | 28091195 |
| | | | | |

**PARAMETERS SAMPLED**

| | | | |
|---|---|---|---|
| ✓ | Volatile Organics | 8260 | (1) |
| | | | |
| | | | |
| | | | |

* Containers: () = 500 ml Glass

**CUSTODY RECORD**

| Relinquished By | Received By | Date | Time |
|---|---|---|---|
| Eddie Mattioda | Steve Brooks | 9-11-95 | 17:29 |
| | | | |
| | | | |

016218

| MIPR# | SWD LAB#[1] 50212-22 |
|---|---|

| Chest/Temp | |
|---|---|
| | |
| | |

# SEDIMENT SAMPLE
## CHAIN OF CUSTODY

U.S. Army Corps of Engineers
Tulsa District

Location: **Longhorn AAP** Site: **Harrison Bayou** Date: 9/11/95

Sample ID#: HBS-6-QA Time: 1030

Project Manager: Jonna Polk Ext: 7239 Due Date: **48 Hours**

**CONTAINERS**

| Glass | Plastic | Vial | Chest# | C/Seal# |
|---|---|---|---|---|
| 1/2L | — | — | PTX-028 | 28091195 |
| | | | | |

**PARAMETERS SAMPLED**

| | | | |
|---|---|---|---|
| T | Volatile Organics | 8260 | (1) |
| | | | |
| | | | |
| | | | |

* Containers: () = 500 ml Glass

**CUSTODY RECORD**

| Relinquished By | Received By | Date | Time |
|---|---|---|---|
| Eddie Mattoon | Steph Brooks | 9-11-95 | 17:31 |
| | | | |
| | | | |

016219

| MIPR# | SWD LAB#[1] 550212-23 |
|---|---|

| Chest/Temp | |
|---|---|
| | |
| | |

# SEDIMENT SAMPLE
## CHAIN OF CUSTODY

U.S. Army Corps of Engineers
Tulsa District

Location: **Longhorn AAP** Site: **Harrison Bayou** Date: 9/11/95

Sample ID#: HBS-7-QA Time: 1000

Project Manager: Jonna Polk Ext: 7239 Due Date: **48 Hours**

**CONTAINERS**

| Glass | Plastic | Vial | Chest# | C/Seal# |
|---|---|---|---|---|
| 1/2 L | — | — | PTX-028 | 28091195 |
| | | | | |

**PARAMETERS SAMPLED**

| | | | |
|---|---|---|---|
| ✓ | Volatile Organics | 8260 | (1) |
| | | | |
| | | | |
| | | | |

* Containers: () = 500 ml Glass

**CUSTODY RECORD**

| Relinquished By | Received By | Date | Time |
|---|---|---|---|
| Eddie Mattock | Steph Brooks | 9-11-95 | 17:31 |
| | | | |
| | | | |

016220

| MIPR# | SWD LAB#[1] 550212-2A |
|---|---|

| Chest/Temp | |
|---|---|
| | |
| | |

# SEDIMENT SAMPLE
## CHAIN OF CUSTODY

**U.S. Army Corps of Engineers**
**Tulsa District**

Location: **Longhorn AAP** Site: **Harrison Bayou** Date: 9/11/95

Sample ID#: HBS-8-QA Time: 0935

Project Manager: Jonna Polk Ext: 7239 Due Date: **48 Hours**

**CONTAINERS**

| Glass | Plastic | Vial | Chest# | C/Seal# |
|---|---|---|---|---|
| 1/2L | — | — | PTX-028 | 28091195 |
| | | | | |

**PARAMETERS SAMPLED**

| | | | |
|---|---|---|---|
| ✓ | Volatile Organics | 8260 | (1) |
| | | | |
| | | | |
| | | | |

* Containers: () = 500 ml Glass

**CUSTODY RECORD**

| Relinquished By | Received By | Date | Time |
|---|---|---|---|
| Eddie Mattoo | Stephanie Brooks | 9-11-95 | 17:35 |
| | | | |
| | | | |

016221

| MIPR# | SWD LAB#[1] 550212-25 |
|---|---|

| Chest/Temp | |
|---|---|
| | |
| | |

# SEDIMENT SAMPLE
## CHAIN OF CUSTODY

**U.S. Army Corps of Engineers**
**Tulsa District**

Location: **Longhorn AAP** Site: **Harrison Bayou** Date: 9/11/95

Sample ID#: HBS-9-QA Time: 0900

Project Manager: Jonna Polk Ext: 7239 Due Date: **48 Hours**

**CONTAINERS**

| Glass | Plastic | Vial | Chest# | C/Seal# |
|---|---|---|---|---|
| 1/2L | — | — | PTX-028 | 28091195 |
| | | | | |

**PARAMETERS SAMPLED**

| | | | |
|---|---|---|---|
| X | Volatile Organics | 8260 | (1) |
| | | | |
| | | | |
| | | | |

* Containers: () = 500 ml Glass

**CUSTODY RECORD**

| Relinquished By | Received By | Date | Time |
|---|---|---|---|
| Eddie Mattoon | Hyde Brock | 9-11-95 | 17:36 |
| | | | |
| | | | |

016222

LIMS#_____

0212-1

0212-25

COOLER RECEIPT FORM

Date Received 11 SEPT 95 Project LONGHORN

Number of Coolers 2 District TULSA

Date Checked in 11 SEPT 95 By (sign) [signature]

1. Shipping bill number HAND DELIVERED
2. Custody seals on cooler No
3. Samples were non-radioactive..... (Yes) No
4. Custody seals intact.....Yes (No) 1
5. Chain-of-Custody in plastic.....Yes (No) 2
6. Temperature of cooler at receipt less than 4(±2)°C. (Yes) No
   If NO, Actual temperature(s) of cooler(s)_____
   Call POC. Details_____
7. Ice and Packing ICE & INSERT
8. Chain-of-Custody filled out properly..... (Yes) No
9. SWD signed Chain-of-Custody properly..... (Yes) No
10. All bottles sealed and in separate plastic bags... (Yes) No
11. Sample containers intact..... (Yes) No
12. Label(s) complete (ID, date, time, etc) and in good condition..... (Yes) No
13. Label(s) agree with COC..... (Yes) No
14. Correct containers used..... (Yes) No
15. Preserved properly..... (Yes) No
16. Sufficient sample..... (Yes) No
17. Bubbles absent from VOA.....Yes (No) 3
18. Client called..... (Yes) No
    Details:_____
19. MIPR # _____
20. Comments: (1) NO SEALS (2) HAND DELIVERED (3) ALL BUBBLES <6MM

SWD KEPT WATER QA

016223

SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS
4815 CASS STREET
DALLAS, TEXAS 75235-8011
(214) 905-9130

REQUEST FOR ANALYSES

LABORATORY: ETC LABORATORY

PROJECT: LONGHORN AAP

DATE RESULTS REQUIRED: 06 SEPTEMBER 1995

DATE SAMPLES SENT: 01 SEPTEMBER 1995

TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

| FIELD ID | SWD NO. | DATE SAMPLED |
|---|---|---|
| HBS-1-QA | S5 O193-11 | 31 AUGUST 1995 |
| HBS-2-QA | S5 O193-13 | 31 AUGUST 1995 |
| HBS-3-QA | S5 O193-15 | 31 AUGUST 1995 |
| HBS-4-QA | S5 O193-17 | 31 AUGUST 1995 |

ANALYZE FOUR SOIL SAMPLE FOR VOLATILE ORGANICS (8260)

DISKETTE REQUESTED

*****ALL NON-CONTRACT ANALYSIS REQUIRE YOUR INTERNAL QC PACKAGE*****

| RELINQUISHED BY: | RECEIVED BY | DATE | TIME |
|---|---|---|---|
| [signature] | [signature] | 9/5/95 | 1107 |
| [signature] | [signature] | 9/5/95 | 0805 |

000002

016224

SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS
4815 CASS STREET
DALLAS, TEXAS 75235-8011
(214) 905-9130

REQUEST FOR ANALYSES

LABORATORY: INCHCAPE

PROJECT: LONGHORN AAP

SCREENED FOR RADIOACTIVITY

DATE RESULTS REQUIRED: 06 SEPTEMBER 1995

DATE SAMPLES SENT: 01 SEPTEMBER 1995

COOLER TEMPERATURE WHEN RECEIVED 4 °C

TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

| FIELD ID | SWD NO. | DATE SAMPLED | |
|---|---|---|---|
| HBW-1-TB | S5 O193-1 | 31 AUGUST 1995 | 83338-1 |
| HBW-1 | S5 O193-2 | 31 AUGUST 1995 | 2 |
| HBW-2 | S5 O193-4 | 31 AUGUST 1995 | 3 |
| HBW-3 | S5 O193-6 | 31 AUGUST 1995 | 4 |
| HBW-4 | S5 O193-8 | 31 AUGUST 1995 | 5 |
| ~~MB (L)~~ | | | |
| ~~MB (S)~~ | | | |
| HBS-1 | S5 O193-10 | | 6 |
| HBS-2 | 12 | | 7 |
| HBS-3 | 14 | | 8 |
| HBS-4 | 16 | | 9 |
| | | | MB(L) 10 |
| | | | MB(S) 11 |

ANALYZE FIVE WATER SAMPLE FOR VOLATILE ORGANICS (8260)
ANALYZE FOUR SOIL SAMPLE FOR VOLATILE ORGANICS (8260)

DISKETTE REQUESTED

*****ALL NON-CONTRACT ANALYSIS REQUIRE YOUR INTERNAL QC PACKAGE*****

| RELINQUISHED BY: | RECEIVED BY | DATE | TIME |
|---|---|---|---|
| | -SEALED- | 01SEPT95 | 9:30 |
| | | 9/1/95 | 10 30 |

016225

SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS
4815 CASS STREET
DALLAS, TEXAS 75235-8011
(214) 905-9130

REQUEST FOR ANALYSES

LABORATORY: ENVIRONMENTAL TESTING AND CONSULTING

PROJECT: LONGHORN -- HARRISON BAYOU

DATE RESULTS REQUIRED: 14 SEPTEMBER 1995

DATE SAMPLES SENT: 12 SEPTEMBER 1995

TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

| FIELD ID | SWD NO. | DATE SAMPLED |
|---|---|---|
| HBS-1B-QA | S5 0212-20 | 11 SEPTEMBER 1995 |
| HBS-5-QA | S5 0212-21 | 11 SEPTEMBER 1995 |
| HBS-6-QA | S5 0212-22 | 11 SEPTEMBER 1995 |
| HBS-7-QA | S5 0212-23 | 11 SEPTEMBER 1995 |
| HBS-8-QA | S5 0212-24 | 11 SEPTEMBER 1995 |
| HBS-9-QA | S5 0212-25 | 11 SEPTEMBER 1995 |

ANALYZE SIX SOIL SAMPLES FOR VOLATILE ORGANICS (8260)

DISKETTE REQUESTED

*****ALL NON-CONTRACT ANALYSIS REQUIRE YOUR INTERNAL QC PACKAGE*****

| RELINQUISHED BY: | RECEIVED BY | DATE | TIME |
|---|---|---|---|
| [signature] | -SEALED- | 12SEPT | 1300 |
| | [signature] | 9/13/95 | 0950 |

000002

016226

SOUTHWESTERN DIVISION LABORATORY, CORPS OF ENGINEERS
4815 CASS STREET
DALLAS, TEXAS 75235-8011
(214) 905-9130

REQUEST FOR ANALYSES

LABORATORY: INCHCAPE TESTING SERVICES

PROJECT: LONGHORN – HARRISON BAYOU

DATE RESULTS REQUIRED: 14 SEPTEMBER 1995

DATE SAMPLES SENT: 12 SEPTEMBER 1995

SCREEN
PACKAGE

COOLER TEMPERATURE
~~WHEN RECEIVED~~
4 °C

TEST THE FOLLOWING SAMPLES AS INDICATED BELOW:

| FIELD ID | SWD NO. | DATE SAMPLED | |
|---|---|---|---|
| HBW-9-TB | S5 0212-1 | 11 SEPTEMBER 1995 | 8690 -1 |
| HBW-1B | S5 0212-2 | 11 SEPTEMBER 1995 | 2 |
| HBW-5 | S5 0212-4 | 11 SEPTEMBER 1995 | 3 |
| HBW-6 | S5 0212-6 | 11 SEPTEMBER 1995 | 4 |
| HBW-7 | S5 0212-8 | 11 SEPTEMBER 1995 | 5 |
| HBW-8 | S5 0212-10 | 11 SEPTEMBER 1995 | 6 |
| HBW-9 | S5 0212-12 | 11 SEPTEMBER 1995 | 7 |
| HBS-1B | S5 0212-14 | 11 SEPTEMBER 1995 | 8 |
| HBS-5 | S5 0212-15 | 11 SEPTEMBER 1995 | 9 |
| HBS-6 | S5 0212-16 | 11 SEPTEMBER 1995 | 10 |
| HBS-7 | S5 0212-17 | 11 SEPTEMBER 1995 | 11 |
| HBS-8 | S5 0212-18 | 11 SEPTEMBER 1995 | 12 |
| HBS-9 | S5 0212-19 | 11 SEPTEMBER 1995 | 13 |
| MB (Liquid) | | | 14 |
| MB (Soil) | | | 15 |

ANALYZE SEVEN WATER SAMPLES FOR VOLATILE ORGANICS (8260)
ANALYZE SIX SOIL SAMPLES FOR VOLATILE ORGANICS (8260)

ORIGINAL

DISKETTE REQUESTED

*****ALL NON-CONTRACT ANALYSIS REQUIRE YOUR INTERNAL QC PACKAGE*****

| RELINQUISHED BY: | RECEIVED BY | DATE | TIME |
|---|---|---|---|
| Shirley A. Johns | Laura Imey | 12 SEP 95 | 1100 |
| | | | |