Second Five-Year Review Report
for the
MOTCO Superfund Site
LaMarque, Galveston County, Texas

September 2007

PREPARED BY:

United States Environmental Protection Agency
Region 6
Dallas, Texas

SECOND FIVE-YEAR REVIEW

MOTCO SUPERFUND SITE
EPA ID# TXD980629851
LaMarque, Galveston County, Texas

This memorandum documents the United States Environmental Protection Agency's (EPA) performance, determinations, and approval of the MOTCO Superfund Site Second Five-Year Review, provided in the attached Second Five-Year Review Report prepared by the United States Army Corps of Engineers on behalf of EPA.

Summary of Five-Year Review Findings
The results of the Second Five-year Review indicate that the remedy completed to date is currently protective of human health and the environment. Overall, the remedial actions performed are functioning as designed, and the site has been maintained appropriately. No deficiencies were noted that currently impact the protectiveness of the remedy, although several issues were identified that require further action to ensure the continued long-term protectiveness of the remedy.

Actions Needed
In order to remain protective for the long-term, the following actions are required:

- Complete a focused review of the UC-2 Zone and propose additional response actions to address increasing 1,1,2-trichloroethane levels.
- Perform quarterly sampling of the UC-1 Zone for one year and propose additional response actions if contaminant levels are found to be above the compliance monitoring standards.
- Prepare a plan to monitor for any impacts from the proposed water supply well, and implement the plan if the water well is completed.
- Implement the deed restrictions.
- Continue operation and maintenance activities.

Determinations
I have determined that the remedy for the MOTCO Superfund Site is protective of human health and the environment in the short term, and will remain so provided the action items identified in the Second Five-Year Review Report are addressed as described above.

Pamela Phillips Acting
Samuel Coleman, P.E.
Director
Superfund Division

Sept 24, 2007
Date

CONCURRENCES

FIVE-YEAR REVIEW
MOTCO Superfund Site
EPA ID# TXD980629851

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List of Acronyms

ARARs	Applicable or Relevant and Appropriate Requirements
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
C & I	Construction and Implementation
cm	centimeter
DNAPL	Dense Non-Aqueous Phase Liquid
EPA	Environmental Protection Agency
ESD	Explanation of Significant Differences
gpm	gallons per minute
GWTF	Ground Water Treatment Facility
HBN	Health-Based Number
HL&P	Houston Lighting and Power
IRM	Initial Remedial Measure
MCL	Maximum Contaminant Level
mg/l	milligrams per liter
MOM	Management of Migration
msl	mean sea level
MUD	Municipal Utility District
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OUs	Operable Units
PCL	Protective Concentration Level
PRP	Potentially Responsible Parties
RAMP	Remedial Action Master Plan
RAO	Remedial Action Objectives
RD/RA	Remedial Design/Remedial Action
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act
SFSI	Supplemental Feasibility Study Investigation
T.A.C.	Texas Administrative Code
TAG	Technical Assistance Grant
TBC	To Be Considered
TCEQ	Texas Commission on Environmental Quality
TDWR	Texas Department of Water Resources
TNRCC	Texas Natural Resource Conservation Commission
TOC	Total Organic Carbon
TRRP	Texas Risk Reduction Program
TWC	Texas Water Commission
TxDOT	Texas Department of Transportation
TZ	Transmissive Zone
UAO	Unilateral Administrative Order
UC	Upper Chicot (aquifer)
USCG	United States Coast Guard
µg/L	micrograms per liter

Executive Summary

The second Five-Year Review of the MOTCO Superfund Site located in La Marque, Galveston County, Texas was completed in September 2007. The results of the Five-Year Review indicate that the remedy completed to date is currently protective of human health and the environment. Overall, the remedial actions performed are functioning as designed, and the site has been maintained appropriately. No deficiencies were noted that currently impact the protectiveness of the remedy, although several issues were identified that require further action to ensure the continued long-term protectiveness of the remedy.

The U.S. Environmental Protection Agency (EPA) originally organized the work for this site into two Operable Units (OUs): Source Control and Management of Migration (MOM). The Record of Decision (ROD) for the Source Control OU was signed in March 1985, to address onsite waste pits and their contents, and the ROD for the MOM OU was signed in September 1989 to address remediation of offsite soil and affected subsurface media, including ground water.

As a result of information generated after selection of the Source Control and MOM remedies, EPA determined that a significant change to a component of the remedy selected in the Source Control ROD was necessary. Specifically, this change involved stabilization and capping of contaminated solids/soils onsite rather than offsite incineration or landfilling, with liquids, sludges, and tars still to be incinerated offsite. An Explanation of Significant Differences (ESD) was prepared and signed on January 13, 1993. In June 1993, EPA entered into a Consent Decree with a group of parties organized as the MOTCO Trust Group (MTG) who agreed to conduct the combined modified Source Control and MOM remedies. The combined remedy was designed and implemented, and EPA conducted the final site inspection for the site and issued the Preliminary Close Out Report in September 1997.

A 55 foot deep cutoff slurry wall that surrounds the perimeter of the site is in place to help prevent migration of affected ground water from inside the wall, with inward and upward gradients across the wall maintained by a ground water extraction system. The operations and maintenance (O&M) of the site is ongoing; O&M activities include pumping of affected ground water and DNAPL in the Transmissive Zone (TZ) inside the cutoff slurry wall, pumping of affected ground water in the Upper Chicot (UC) aquifer beneath the site, treatment and discharge onsite of the extracted ground water, offsite incineration of the extracted DNAPL, performance and compliance monitoring to ensure the remedial action continues to perform as planned, and maintenance of the cap, slurry wall, and onsite ground water treatment plant.

The remedy for the Source Control OU at the MOTCO site is protective of human health and the environment because the waste has been removed or contained and is protected from erosion. The remedy for the MOM OU is protective of human health and the environment in the short term because there is no evidence that there is current exposure and the remedy is being implemented as planned to reduce the volume of contamination and to control migration. In order to remain protective for the long term, the following recommendations should be implemented:

- Within 6 months from the date of this Five-Year Review, a focused review of the UC-2 aquifer and the increasing 1,1,2-trichloroethane levels should be completed and response actions proposed.
- Sampling of the UC-1 monitoring wells should be performed quarterly for one year to determine whether contaminant levels are above the compliance monitoring standards. If contaminant levels are found to be above the compliance monitoring standards, then additional response actions should be proposed.
- A plan to evaluate and report on a quarterly basis whether there is any impact on site operations from the proposed water supply well should be prepared. The plan should be implemented if the water well is completed.
- Implement the deed restrictions.
- Continue O&M actions.

Five Year Review Summary Form

SITE IDENTIFICATION		
Site name ***(from WasteLAN)***: MOTCO, Inc.		
EPA ID ***(from WasteLAN)***: TXD980629851		
Region: EPA Region 6	**State:** Texas	**City/County:** La Marque/Galveston County

SITE STATUS	
NPL status: ☒ Final ☐ Deleted ☐ Other (specify)	
Remediation status (choose all that apply): ☐ Under Construction ☒ Operating ☐ Complete	
Multiple OUs?* ☒ YES ☐ NO	**Construction completion date:** September 30, 1997
Has site been put into reuse? ☐ YES ☒ NO	

REVIEW STATUS
Lead agency: ☒ EPA ☐ State ☐ Tribe ☐ Other Federal Agency ____________
Author name: EPA Region 6, with support from USACE Tulsa District
Review period:** April 2007 to August 2007
Date(s) of site inspection: 5 / 15 / 2007
Type of review: ☒ Statutory ☐ Policy ☐ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only ☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion
Review number: ☐ 1 (first) ☒ 2 (second) ☐ 3 (third) ☐ Other (specify) __________
Triggering action: ☐ Actual RA Onsite Construction ☐ Actual RA Start ☐ Construction Completion ☒ Previous Five-Year Review Report ☐ Other (specify)
Triggering action date ***(from WasteLAN)***: September 24, 2002 (date of entry signing of first Five-year Review)
Due date ***(five years after triggering action date)***: September 24, 2007 (five years after 1st review)

*OU refers to operable unit

Five-Year Review Summary Form, cont'd.

Issues: There are several areas within the site where ground water concentrations sometimes exceed compliance monitoring levels. Concentrations for bis(2-chloroethyl)ether exceeded compliance levels in monitoring wells M5D and M5F, which are screened within the Transmissive Zone; as well as in several wells screened within the Upper Chicot (UC-1) aquifer, and several wells screened within the UC-3 aquifer. Well M5F is located outside of the slurry wall. In addition, the concentration of 1,1,2-trichloroethane in well CDW-2, screened in the UC-2 aquifer, is above compliance levels and increasing; and all analytes except naphthalene remain above compliance levels in extraction well E-1 in the UC-3 aquifer, although these concentrations seem to be decreasing.

Two issues were identified that do not currently affect the short-term protectiveness of the site. The Deed Restrictions required by the MOM OU ROD prohibiting land development have not yet been filed with the county. These Deed Restrictions are currently being drafted and should be filed sometime in 2007. Secondly, the Galveston County Municipal Utility District is considering installing a drinking water well approximately 1500 feet from the site. The well, if installed, could affect the ability of the plant to maintain the ground water gradient at the site.

Recommendations and Follow-up Actions: Recommended further actions include continuing site operations, maintenance and monitoring as currently defined, with special review of the data at least annually from the wells identified as exceeding compliance levels. Furthermore, the required deed restrictions should be filed with the County of Galveston at the earliest opportunity followed by notification to the regulators. Finally, the proposal of the Galveston County MUD to install a drinking water well should be followed closely and, if the well is installed, a course of action should be proposed to maintain the ground water gradient.

Protectiveness Statement(s): The remedy for the Source Control OU at the MOTCO site is protective of human health and the environment because the waste has been removed or contained and is protected from erosion. The remedy for the MOM OU is protective of human health and the environment in the short term because there is no evidence that there is current exposure and the remedy is being implemented as planned to reduce the volume of contamination and to control migration. However, in order to remain protective for the long term, institutional controls must be implemented. Ongoing implementation of performance and compliance monitoring will ensure that the migration of contamination continues to be restricted.

Other Comments: The site is well maintained and effectively operated.

1.0 Introduction

The purpose of a Five Year Review is to determine how well an existing remedial action is operating in order to protect human health and the environment, and to identify any problems or concerns that are affecting or may in the future affect the protectiveness of the remedy. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) call for Five-Year Reviews of certain remedial actions. The EPA policy also calls for a Five-Year Review of remedial actions in some other cases. The statutory requirement to conduct a Five-Year Review was added to CERCLA as part of the SARA of 1986. The EPA classifies each Five-Year Review as either statutory or policy depending on whether it is being required by statute or is being conducted as a matter of policy. The Five-Year Review for the MOTCO site is required by statute.

As specified by CERCLA and the NCP, statutory reviews are required for sites where, after remedial actions are complete, hazardous substances, pollutants, or contaminants will remain onsite at levels that will not allow for unlimited use or unrestricted exposure. Statutory reviews are required for such sites if the ROD was signed on or after the effective date of SARA. CERCLA §121(c), as amended by SARA, states:

> If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented.

Under the NCP, the Code of Federal Regulations (CFR) states, in 40 CFR §300.430(f)(4)(ii):

> If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

The MOTCO site is organized into two Operable Units (OUs): Source Control and Management of Migration (MOM). The Record of Decision (ROD) for the Source Control OU was signed in March 1985 to address onsite waste pits and their contents, and the ROD for the MOM OU was signed in September 1989 to address remediation of offsite soil and affected subsurface media, including ground water. The Five-Year Review for the MOTCO site is required by statute because the ROD for the MOM OU at the site was signed in 1989, after the effective date of SARA, and because materials remain onsite above levels that allow for unlimited use and unrestricted exposure. Because the MOTCO site is a Superfund site, the EPA has regulatory authority. The triggering action for this review is five years from the last Five-

Year Review. The first Five-Year Review was accepted by the EPA on September 24, 2002. This is the second Five-Year Review for the MOTCO site and was conducted for the period of May 2002 through August 2007 by the U.S. Army Corps of Engineers, Tulsa District, on behalf of EPA Region 6.

2.0 Site Chronology

A chronology of events and dates is included in **Table 1**, provided at the end of the report.

3.0 Background

This section describes the physical setting of the site, a description of the land and resource use, and the environmental setting. This section also describes the history of contamination associated with the site, the initial response actions taken, and the basis for each action.

3.1 Physical Characteristics

The MOTCO Superfund Site is located in La Marque, Texas, in Galveston County, near the intersection of State Highway 3 and the Gulf Freeway (I-45/US-75). The site originally consisted of an 11.3 acre tract of land (which expanded somewhat during the remediation to address offsite contamination). The site is bounded on the east and south by State Highway 3/146, on the north-northwest by vacant land, and on the west-southwest by the right-of-way for Houston Lighting and Power (HL&P) transmission lines (**Figure 1**). An abandoned trailer park was formerly located on the northwest boundary of the site. The Gulf Freeway is located approximately 1000 feet to the west-southwest, beyond the HL&P right-of-way. The Omega Bay Subdivision is located about 1500 feet to the west-southwest and the Bayou Vista Subdivision is located approximately 1500 to 2000 feet south-southwest (west of the Gulf Freeway) (**EPA 1989**).

The MOTCO site sits on the Gulf Coastal Plain at the edge of a coastal marsh system, and in the Highland Bayou drainage basin. Area topography slopes gently toward the Gulf of Mexico; Galveston Bay is approximately 2 miles south of the site. The Jones Bay/Trinity/San Jacinto estuary is about 1.5 miles to the south. Site drainage occurs through ditches located along the southwestern perimeter of the site, which drain to Jones Bay through offsite drainage ditches. Portions of the site are at an elevation of +5 feet above mean sea level (msl), which puts the site within the 100-year tidal flood plain of +12 feet above msl. Consequently, these areas are subject to inundation. In February 2001, a lift station was installed at the junction of US Highway 3 and Interstate Highway 45 by the Texas Department of Transportation (TxDOT). The lift station was constructed to prevent inundation of the roadways in the event that severe weather requires the evacuation of coastal communities served by these highways.

The MOTCO site was initially an approximately 11.3 acre tract of land that was purchased for the purpose of recycling styrene tars generated by local industry. After the recycling business was discontinued in 1961, the pits on the site were then used for disposal of industrial chemical wastes. In 1976 the site was abandoned. Prior to remediation, the site consisted of seven unlined pits varying in depth from 15 to 20 feet with a total surface area of 4.6 acres (**EPA, 1989**). The pits have been remediated and capped, a cutoff slurry wall installed around the perimeter of the affected materials, and an onsite ground water treatment facility is operating to extract and treat ground water and maintain hydraulic gradients around the site. The location of these site features are shown on **Figure 2**. The surface of the site is now covered with planted grasses. Site security is provided by a chain link fence. Site access is controlled via locked gates.

The uppermost geologic unit beneath the site is the Beaumont Clay Formation, which is composed of 800 to 1000+ feet of interbedded clay, sand and silt deposits. Predominant near-surface geologic units are two channel sand/silt deposits at about 5 to 10 feet below ground surface (bgs) and 20 to 30 feet bgs, and an additional bar finger deposit at about 40 to 50 feet bgs (**EPA 1989**). These layers are separated by clayey silts and silty clays. The upper two sand/silt deposits originally intersected the unlined pits and became a conduit for dissolved contaminants and DNAPL from the pits.

Hydrogeologically, the site consists of a Transmissive Zone (TZ) and the Upper Chicot (UC) aquifer. The TZ consists of the TZ-1 (approximately 0 to -5 feet msl), TZ-2 (approximately -18 to -28 feet msl) and TZ-3 (approximately -35 to -48 feet msl). These units vary in thickness, depth and continuity across the site. TZ-3 is the most homogeneous and areally extensive of the three units. TZ-2 appears to be the most permeable layer. All three units appear to be interconnected. Another potential pathway of contamination into the UC aquifers was an old abandoned deep process well that has since been removed. Prior to remediation, horizontal flow in the TZ was generally in a south to southeast direction at a seepage velocity ranging from 0.2 to 10 feet per year (**EPA 1989**).

Underlying the TZ is the Upper Chicot clay layer (UC-1 clay) that overlies the Upper Chicot aquifer. This clay varies in thickness from 20 to 48 feet across the site. Historical laboratory permeability tests and a field pumping test indicated that hydraulic conductivity of this clay layer ranged from a high of 1×10^{-4} cm/sec to a low of 8×10^{-8} cm/sec and, based on an assumed average porosity of 20%, the velocity of groundwater flow in the clay was estimated at 0.22 feet per year. These data indicate that the Upper Chicot Clay provides some degree of confinement between the TZ and the UC aquifer (**EPA 1989**).

The Upper Chicot aquifer is subdivided into three water bearing units below the site, referred to as Upper Chicot aquifer units UC-1, UC-2, and UC-3 (**Figure 3**). The exact depths and thicknesses of these units vary across the site. However, the average depth for the Upper Chicot 1 (UC-1) generally lies between -90 to -105 feet msl; Upper Chicot 2 (UC-2) lies between -150 to -210 feet msl; and the Upper Chicot 3 (UC-3) lies below -230 feet msl (**EPA 1989**).

3.2 Land and Resource Use

The 1989 MOM ROD indicated that approximately 3,000 people lived within a 1-mile radius of the site, and about 12,000 people lived within a 3-mile radius. Residential neighborhoods identified in the vicinity of the site were the Omega Bay subdivision (approximately 1,500 feet west-southwest of the site), the village of Bayou Vista (1,500 feet south-southwest), and a single residence located about 2,000 feet northwest of the site (**EPA, 1989**). Census data from the 2000 census shows that approximately 17,000 people now live within a 1-mile radius of the site, and about 40,000 people live within a 3-mile radius.

Land use in the area is divided principally among residential, industry, urban business, agriculture, and marsh covered tracts with abundant wildlife. Railroads, highways, pipelines, and power transmission systems cross the area. The nearby bay and estuary waters are used for commercial and sport fishing, recreation, transportation, and mineral production (**EPA, 1989**).

3.3 History of Contamination

The MOTCO site was purchased by U.T. Alexander in 1959 for the purpose of recycling styrene tars generated by local industry. Hurricane damage in 1961 caused discontinuation of the recycling business. The pits on the site were then used for disposal of industrial petro-chemical wastes. In 1963, Alexander transferred ownership of the site to Petro Processors, Inc., a Texas corporation, of which U.T. Alexander was president. In 1964 the site was permitted as an industrial disposal facility by the State of Texas for the operation of "salvage ponds", and it continued to operate until 1968 (**Federal Register Notice, 1983**). In 1968, due to numerous odor complaints, the City of La Marque passed an ordinance prohibiting disposal of liquid wastes in surface impoundments which effectively forced Petro Processors out of business. In 1969, the Mainland Bank foreclosed on the site.

Through a series of subsequent owners who did not operate the site, it eventually became the property of T. Holman, J.R. McDonald, and MOTCO, Inc., a Minnesota corporation. From 1974 to 1976, these owners attempted to recycle the wastes in the pits before abandoning the project in 1976 and declaring bankruptcy. At some point in the time during the recycling attempts, MOTCO bought Holman's and McDonald's interest in the site. In 1976, the Texas Department of Water Resources (TDWR), later known as the Texas Water Commission (TWC), now known as the Texas Commission on Environmental Quality (TCEQ), canceled MOTCO's permit by means of an Administrative Order and required a closure plan. Shortly thereafter, MOTCO Inc. forfeited its right to do business in the State of Texas (although it remained an active corporation on the Minnesota Secretary of State's records) (**EPA, 1989**).

In 1980, and again in 1981, the Coast Guard with EPA assistance, undertook emergency cleanups at the site under section 311 of the Clean Water Act. About 100 drums were removed, over 5 million gallons of wastes in the pits were treated and discharged, the dikes were reinforced, and the site was fenced (**Federal Register Notice, 1983**). Results of investigations at the site indicate that nearby surface water and sediments were marginally impacted; that the surface and subsurface soil and the ground water were most impacted by operations at the site. The contaminated surface soil was removed as part of the remediation of the Source Control OU. The principal chemical constituents detected in the subsurface soils were 1,1-dichloroethane, 1,2-dichloroethane, 1,2-dichloroethene, 1,1,2-trichloroethane, benzene, ethyl benzene, toluene, styrene, xylenes, bis(2-chloroethyl)ether, bis(2-chloroisopropyl)ether, naphthalene, 2-methylnaphthalene, and phenanthrene. The primary ground water contaminants detected in the Transmissive Zone were bis(2-chloroethyl)ether, 1,2-dichloroethane, benzene, 1,1,2-trichloroethane, vinyl chloride, toluene, ethyl benzene, styrene, xylenes, bis(2-chloroisopropyl)ether, naphthalene, and 2-methylnaphthalene. The primary constituents detected in the UC aquifers were vinyl chloride, 1,2-dichloroethane, 1,1-dichloroethane, and benzene (**EPA, 1989**). The site remained abandoned and several response actions were performed until the site investigation was complete and the final remedies for the site were selected and implemented.

3.4 Initial Response

In 1976, the TDWR, now known as the TCEQ, canceled MOTCO's permit by means of an Administrative Order and required a closure plan. Between May and September 1980, the U.S. Coast Guard (USCG), with recommendations and technical assistance from EPA and TDWR, used Clean Water Act section 311 funds to remove drums that had been stored in and around an abandoned service station building, extend and raise the perimeter dikes, and secure the site by erecting a 6-foot fence around the perimeter (**EPA, 1989**).

In February 1981, a Response Action Plan for the site was issued by EPA. From 1981 through 1982, an initial site investigation (including Tankage Waste Inventory) and a secondary site investigation that included characterization of pit wastes, analysis of surface soils, sediments, and a ground water monitoring program was completed. Contamination of shallow ground water was confirmed, but the area and vertical extent and degree of contaminant migration were not determined (**EPA, 1989**).

Three emergency response actions were conducted by EPA in September 1981, March 1983, and September 1983, to treat and discharge excess pit surface water collected in the extended and upgraded dikes constructed by the USCG. These response actions were conducted following periods of heavy rainfall and/or storm surges to reduce the potential for release of contaminants from dike overtopping (**EPA, 1989**).

In July 1982, EPA Region 6 ranked the site for inclusion on the National Priorities List (NPL) of Superfund sites. The site was added to the NPL on September 8, 1983. In May 1983, a Remedial Action Master Plan (RAMP) and a Source-Control Feasibility Study were completed. Based on assessment of available data and information contained in the RAMP, specific additional requirements were identified. A specialized sampling/analysis program was conducted from September to November 1983.

In early 1984, an Initial Remedial Measure (IRM) was conducted by the EPA. This IRM included removal and offsite disposal of wastes in the nine above-ground tanks and demolition/removal of those tanks.

3.5 Summary of Basis for Taking Action

The purpose of the response actions conducted at the MOTCO site was to protect public health and welfare and the environment from releases or threatened releases of hazardous substances from the site. Exposure to affected soil, ground water, surface water and sediment was determined to be associated with human health risks higher than the acceptable range. The primary threats that the MOTCO site posed to public health and safety were: direct contamination of ground water supplies in the area; transport of onsite waste material to nearby populated areas by surface runoff from severe flooding; and hazardous emissions to the air from pit wastes resulting from transport during severe flooding, dike rupture, or removal of the waste pit surface water layer.

4.0 Remedial Actions

This section provides a description of the remedy objectives, selection, and implementation. It also describes the ongoing Operation and Management (O&M), and the overall progress made at the MOTCO site. As previously described, the site was initially divided into two OUs, Source Control and MOM.

The 1985 Source Control ROD selected offsite incineration of liquid organic pit contents, offsite treatment of contaminated pit water, and offsite landfilling of tars, sludges and soils. The ROD also provided for onsite incineration of all waste materials to be considered during the remedial design phase. In 1987, EPA entered into a partial consent decree with a number of Potentially Responsible Parties (PRPs), who agreed to perform the Source Control remediation using onsite incineration.

The 1989 MOM ROD selected excavation of shallow offsite soils and ditch sediments, placement of excavated materials onsite beneath a cap, extraction and treatment of contaminated shallow and deep ground water by the Best Available Technology, removal and incineration of Dense Non-Aqueous Phase Liquids (DNAPL) to the extent feasible, long-term compliance monitoring, installation of deed restrictions to prohibit land development, and installation of additional security fencing around the site. The remedial design for the MOM OU, conditionally approved by EPA in September 1992, included a long-term ground water and DNAPL extraction and treatment system, and construction of a cutoff slurry wall to enhance ground water recovery and to help control ground water flow.

4.1 Remedy Objectives

The specific remedial objectives of the Source Control remedial action were:

- Prevent further contamination of the shallow aquifer and eliminate the potential threat to nearby surface water from the pit wastes.
- Eliminate the threat to public health from potential air releases and runoff from the pit wastes.
- Control and minimize air quality impacts, during and after remedial actions, from release of hazardous volatiles.
- Mitigate the potential for release due to tidal flood surges for wastes remaining onsite, if any.
- Close the site in a manner sufficient to provide site drainage, divert rainfall run-on, minimize areas of ponded water, mitigate impacts on air, surface, and subsurface waters and soils from migration of residual contaminants.

Cleanup criteria associated with each objective were not established since the goal of this action was source control; to contain/remove the material from the uncontrolled condition that existed at that time.

The MOM remedial action was to address the wastes or contaminated environmental media that had migrated below the waste pits and beyond site boundaries in both the surface and subsurface environmental media. The objectives of the MOM remedial action were:

- Isolate, remove, treat, and/or dispose of environmental media contaminated by the waste source in order to remove or reduce a threat to public health and the environment.
- Prevent further contamination of these environmental media.

Cleanup criteria associated with each objective were established and are discussed in section 7.2 of this report.

4.2 Remedy Selection

The ROD for the Source Control was issued in March 1985. The remedy for the Source Control OU dealt with the excavation of the onsite waste pits to the sludge/soil interface plus one foot and incineration of those wastes. The remedy for the MOM OU addressed the subsurface beneath the pits and offsite contamination of the ground water, subsurface soils, surface soils and sediment.

The original 1985 ROD remedy for the Source Control OU consisted of:

- Onsite or offsite incineration of organic liquids.
- Offsite landfill or onsite incineration of sludges/tars.
- Offsite landfill or onsite incineration of soils.

The major components of the remedy described in the ROD for the MOM OU, issued in September 1989, included:

- Extraction and treatment of contaminated shallow and deep ground water. The deep zone shall be treated to Maximum Contaminant Levels (MCLs) or appropriate levels to maintain 1 x 10^{-6} risk levels.
- Extraction, to the extent feasible, and incineration of DNAPL.
- Excavation, consolidation and onsite containment of contaminated surface soils and sediments to a maximum depth of 4 feet. Vertical and lateral extent of excavation shall be determined by 1 x 10^{-6} risk levels.
- Installation of a ground water gradient control system to create upward ground water gradients (from UC-1 to TZ) to impede contaminant migration from the shallow ground water to the deep ground water.
- Implementation of ground water compliance monitoring of the shallow and deep ground water aquifers. In addition, the monitoring of the clay layer between the shallow and deep ground water aquifers shall be performed to detect any contaminants that may migrate to the deep aquifer. In the event that contaminants are detected in the clay layer above one-half the MCL or appropriate health-based number, a more aggressive extraction program shall be implemented in the shallow ground water zone.
- Contaminated ground water extracted for treatment will be treated by the best available technology to the applicable or relevant and appropriate State or Federal discharge standard, or sent to a permitted waste water treatment plant.
- Implementation of deed restrictions to prohibit land development and installation of additional fencing around the site. To implement these controls, the Potentially Responsible Parties (PRPs) purchased additional land adjacent to the site. At a minimum, as a part of the annual monitoring and maintenance of the site, there will be a verification that site conditions have not changed and that there has been no land use or development that may affect the remedial action. If any changes occur, the EPA will evaluate the changes and take appropriate action.
- After DNAPL recovery is certified complete, pore water monitoring in the UC-1 clay layer is required.

In January 1993, based on new information developed for the site, an Explanation of Significant Differences (ESD) revising the ROD-specified remedy was issued by EPA (**EPA, 1993a**). For the modified remedy described in the ESD,

- Soil/solids would be capped onsite rather than transported offsite for disposal in a landfill.
- Sludges and tars would be incinerated offsite.

In order to expedite remediation of the site, EPA, with agreement of the Settling Defendants, combined the work to be performed for both the Source Control OU and the MOM OU into a single project under a Consent Decree signed in June 1993 (**EPA, 1993b**).

The Consent Decree also sets forth additional response requirements if EPA determines that the remedy ceases to be protective. Specifically, the Consent Decree states that:

> ...notwithstanding EPA's certification of achievement of the Performance Standard for DNAPL removal, if (1) EPA determines, based upon the potential for migration of mobile DNAPL, or DNAPL dissolution products, through the Upper Chicot-1 (UC-1) Clay, that the Remedial Action is not protective of human health and the environment, (2) lysimeters installed in the UC-1 Clay demonstrate the presence of the Indicator Constituents in the clay porewater at the UC-1 Clay Action Levels, or (3) Indicator Constituents are detected in the UC aquifer at concentrations equal to or exceeding the UC-1 Aquifer Compliance Monitoring Standards, the Settling Defendants shall undertake any further response actions EPA has determined are appropriate.

4.3 Remedy Implementation

Following the issuing of an Administrative Order on Consent in 1987, the original remedial action contract was awarded in January 1988. Incinerators were constructed onsite and the trial burn was begun in May 1990. After treatment of 7,568 tons of oils, 283 tons of sludges/tars and 4,699 tons of soils, incineration was stopped in December 1991 when the remedial action contractor filed suit against the MOTCO Trust Group. The remedial action was redefined in the Consent Decree entered during June 1993, and remedial activities were reinitiated in October 1993. Installation of monitoring wells and DNAPL recovery wells began in April 1995, with completion of the Ground Water/DNAPL Treatment system in August 1995. DNAPL recovery wells began operation in October 1995. Excavation of affected offsite materials began in October 1995 and was completed in April 1997. The Construction and Implementation (C & I) report for the excavation of affected offsite materials was submitted in May 1997. EPA conducted the final site inspection and issued the Preliminary Close Out Report in September 1997. The C & I report for the site was submitted in October 1997. This document addressed the following: closure of Pond 1, Pond 2, Pond 3, Pit 4, Pit 5, Pit 6, Pit 7; installation of the cutoff slurry wall; construction of new dikes and strengthening of existing dikes; excavation of offsite materials; disposal of salt, slag, and ash; placement and consolidation of affected materials; construction of the consolidated source control cap; site drainage; and the onsite water treatment facility. A flow diagram of the water treatment plant operations is found in **Figure 4**.

Following completion of the slurry wall and reconstruction of damaged portions of State Highway 3, cracks developed parallel to the highway in two locations. These cracks did not extend to the slurry wall. To evaluate whether significant ground movement was occurring that could potentially impact the integrity of the slurry wall, two slope inclinometers were installed (SI-3 and SI-4). The first inclinometer readings were collected on August 10, 1995. Readings from SI-4 were discontinued at the end of 1997, as no significant movement was observed at this location.

Through 1998, readings collected from slope inclinometer SI-3 indicated that some movement was occurring at this location. During the first portion of 1999, no readings were made due to damage to this inclinometer. A replacement inclinometer (I-3) was installed and baseline readings were obtained in August 1999. Readings collected during December 1999 detected only minimal movement, within the range of error attributable to differences in instrument calibration. Fourteen additional readings collected at inclinometer I-3 from March 31, 2000 through December 2, 2003 exhibited no significant movement below the 4-foot depth in any direction. No inclinometer readings were collected in 2006. Based on the lack of significant movement measured at slope inclinometers I-3 and SI-4, MOTCO has discontinued the routine measurement of these inclinometers as allowed in the *Post Closure Operations and Maintenance Plan* (Section 3.2.5).

The ground water and DNAPL pump and treatment system continues to operate. This system has been in operation since October 1995. The ground water compliance data and DNAPL extraction data indicate that the remedy is performing as expected. Since operations began, approximately 48,948 gallons of DNAPL have been recovered through the first quarter of 2007, which is about 4.9% of the estimated one million gallons of DNAPL at the site. About 26,427,679 gallons of ground water have been recovered from the TZ and approximately 53,750,797 gallons of ground water have been recovered from the UC-3 aquifer through the first quarter of 2007 (**MOTCO, 2007b**).

4.4 Operations and Maintenance

Because hazardous materials remain onsite, access to the MOTCO site and the ground water monitoring wells is restricted. A long-term ground water monitoring program has been established and, additionally, the vegetative cover and capped area must be maintained. Regularly scheduled inspections, as described below, of the access controls, ground water monitoring wells, extraction wells, recovery wells, and the capped area are performed (**MOTCO, 2002a**).

A revised, long-term O&M Manual for the Ground Water Treatment Plant was submitted to EPA on June 27, 2002. Required O&M activities at the site are specified in this document kept at the site.

The O&M activities include:

- Operation, maintenance, and monitoring of the gradient control/ground water recovery system.
- Operation and maintenance of the TZ oil/water separation system.
- Operation and maintenance of the ground water treatment system.
- Operation, maintenance, and monitoring of the UC aquifer ground water recovery system.

- Operation, maintenance, and monitoring of the DNAPL recovery system.
- Ground water sampling and monitoring.
- Effluent discharge monitoring

Table 2 provides a list of Compliance Monitoring Standards for indicator constituents identified for the site. Figures 5 through 9 show the latest ground water contour surfaces for the various strata. MOTCO personnel are at the site daily during the week performing O&M activities. Daily and weekly inspections are conducted to verify the condition of the components of the ground water treatment plant. In addition to regularly scheduled maintenance for the ground water treatment plant, monthly inspections are performed and inspection reports are prepared to document conditions at the site. These inspections include the following: gates, fences, access roads, wells, the cap, the gas venting system, the slurry wall cap, and drainage facilities. Ground water treatment plant operation is also monitored by computer and the systems are capable of calling MOTCO personnel at home during non-working hours if a problem occurs.

Additionally, MOTCO personnel conduct bi-monthly monitoring of the effluent discharge. After the ground water is treated at the plant, it is discharged on-site. This discharge occurs at a low rate, approximately 15 gpm, and does not require a permit. However, the discharge is tested to check that it meets the standards set out in the Post-Closure Operations and Maintenance Plan (MOTCO, 1997).

The O&M costs for the five year period covered by this report were reported to be $649,000 for 2002, $502,000 for 2003, $686,000 for 2004, $474,000 for 2005, and $363,000 for 2006. The average annual O&M cost for this period was $535,000. The highest cost occurred in 2004 and was due to one time expenditures for upgrading the plant facilities and for expansion of staff training. The estimated annual cost listed in the MOM OU ROD was $453,000 with an accuracy of -30% to +50%. The average annual cost of $535,00 falls within this range.

From September 21-26, 2005, the MOTCO Superfund site suspended operations because of Hurricane Rita. There were no other adverse effects from the hurricane.

5.0 Progress Since Last Review

This section reviews the protectiveness statement and issues and recommendations from the last Five-Year Review, which was the first Five-Year Review for the MOTCO site. The status of the recommendations made in that report are also reviewed and discussed.

5.1 Protectiveness Statements from Last Review

The protectiveness statement from the last Five-Year Review is given as follows:

> The remedy for the Source Control OU at the MOTCO site is considered protective of human health and the environment because the waste has been removed or contained and is protected from erosion. The remedy for the MOM OU is considered protective of human health and the environment in the short term because migration of contamination has been restricted, and the Long-Term Response Action is being implemented as planned to reduce the volume of contamination and to control migration. Ongoing implementation of performance and compliance monitoring will ensure that the migration of contamination continues to be restricted.

5.2 Status of Recommendations

The previous Five-Year Review report stated that the remedy continues to be protective of human health and the environment. Four issues, however, were identified that could potentially require further actions. The previous Five-Year Review recommended that these issues be monitored and re-evaluated to determine if they would adversely impact operations at the site. A summary of the issues and the re-evaluation and actions taken at the MOTCO site since the previous Five-Year Review are given below (**MOTCO, 2007a**):

1. **Issue:** Observed settlement in some areas of the cap.
   Actions: Since some settlement was expected from the ground water pumping, the cap was designed to allow for settlement. The well pads are designed to free float relative to the well casings to avoid damage to the wells. No adverse impact has been observed from any current cap settlement. As there are no survey markers on the cap, no resurvey of the cap was performed. Further action includes continuing to monitor the integrity of the cap and wells, and repair any damage or malfunctions which would affect the operations at the site.
2. **Issue:** Potential impacts on inward gradients across the slurry wall due to the installation by the Texas Department of Transportation of a storm water lift station near the site.
   Actions: No action. The lift station only pumps surface water and should have no impact on the ground water gradients.
3. **Issue:** The concentration of bis(2-chloroethyl)ether in the UC-1 zone has occasionally exceeded the compliance level.
   Actions: The UC-1 zone has continued to be monitored. Data from January 2002 to May 2006 show some wells have exceeded the compliance level, but there is no definitive trend and no spatial correlation.
4. **Issue:** The concentration of bis(2-chloroethyl)ether in the TZ-2 zone at the M5 well cluster has exceeded the compliance level. Of special concern was well M5F which is located outside of the slurry wall.

Actions: The M5 wells continue to be monitored annually. The data from May 2002 to May 2006 show that well M5D, located inside the slurry wall, had bis(2-chloroethyl)ether concentrations that were consistently above the compliance level. The data also showed that well M5F, located outside the slurry wall, had concentrations of bis(2-chloroethyl)ether near the compliance level. Some were above and some were below that level but there was no definitive trend.

6.0 Five-Year Review Process

This Five-Year Review has been conducted in accordance with the EPA's Comprehensive Five-Year Review Guidance (**EPA, 2001**). The Five-Year Review for this site was initiated by the EPA which tasked the U.S. Army Corps of Engineers to perform the technical components of the multidisciplinary review. The scheduled completion date for this review is September 24, 2007; five years after completion of the first Five-Year Review. Interviews were conducted with relevant parties; a site inspection was conducted; and applicable data and documentation covering the period of the review were evaluated. The findings of the review are described in the following sections.

6.1 Community Involvement

A public notice announcing initiation of the Five-Year Review was published in the Galveston County Daily News on May 16, 2007. Upon signature, the Five-Year Review will be placed in the information repositories for the site, including the MOTCO site and the TCEQ office in Austin, Texas. A notice will be published in the Galveston County Daily News to summarize the findings of the review and announce the availability of the report at the information repositories. A copy of the first public notice is provided as **Attachment 7** to this report.

6.2 Document Review

This Five-Year Review included a review of relevant site documents, including decision documents, construction and implementation reports, quarterly and annual reports, and related monitoring data. Documents that were reviewed are listed in **Attachment 1**.

6.3 Data Review

Performance and compliance monitoring data collected as part of the operations and maintenance were reviewed as part of this Five-Year Review. The data consist of ground water quality data, ground water level measurements, DNAPL level measurements, and DNAPL recovery volumes. Since initiation of the ground water recovery and monitoring system, data is collected quarterly, presented in quarterly effectiveness reports, and compiled in annual Remedial Action Effectiveness Reports.

Gradient control monitoring is conducted to assess the effectiveness of the groundwater recovery system in maintaining an inward lateral hydraulic gradient across the slurry wall within the TZ-2 and TZ-3 strata, and in maintaining an upward hydraulic gradient from the UC-1 aquifer to the TZ-3 layer. Static water level data is collected monthly from non-pumping TZ, UC-1, and UC-3 wells. These include six perimeter well clusters located along the slurry wall. Each perimeter cluster includes two TZ-2 wells (one inside and one outside the slurry wall), two TZ-3 wells (one inside and one outside the slurry wall), one UC-1 well (located inside the slurry wall), and one UC-3 well (located outside the slurry wall) (**MOTCO, 2006**). The data from the annual reports show that an inward and upward hydraulic gradient is usually maintained. Occasionally, this gradient is not achieved but can usually be attributed to increased rainfall or other weather related reasons.

Analysis of the treated ground water discharged on-site is conducted bi-monthly and compared to the standards set forth in the Post-Closure Operations and Maintenance Plan. These results are reported in the quarterly and annual reports. When any constituent concentration approaches the maximum discharge criteria, the carbon in the carbon filters is changed.

Over the course of the O&M program, the list of designated wells to be sampled has been modified with EPA approval (**EPA, 2002a**). The wells that are sampled in the monitoring program are listed in **Table 3**. Ground water samples were collected from wells screened over the Transmissive Zone (TZ-2 and TZ-3) and the Upper Chicot aquifer (UC-1, UC-2, and UC-3) (**Figure 2**). The samples collected from the TZ were analyzed for the following indicator analytes: 1,1,2-dichloroethane, 1,1-dichloroethene, 1,2-dichloroethane, benzene, vinyl chloride, naphthalene, bis(2-chloroethyl)ether, and total organic carbon. The samples collected from the UC were analyzed for 1,1,2-trichloroethane and bis(2-chloroethyl)ether. All wells are currently sampled annually except for wells CDW-2 (UC-2) and E1 (UC-3), which are sampled quarterly. Well CDW-2 began quarterly sampling in May 2005 to track the concentration trend of 1,1,2-trichloroethane, which had exceeded the compliance standard (0.6 μg/L) starting in 2004 (**MOTCO, 2005a**). Well E-1, which is an active recovery well, has always been sampled quarterly to monitor the progress of the remedy. A summary of the chemical data collected during the remedial operation is found in **Attachment 6**.

The first Five-Year Review (**EPA, 2002b**) noted that ground water concentrations sometimes exceeded compliance monitoring standards for bis(2-chloroethyl)ether in wells screened in the UC-1 aquifer, and in the TZ at monitoring well cluster M-5. Neither area appeared to pose a risk at that time and it was recommended to continue monitoring with special review at least annually of the UC-1 aquifer wells and the TZ-2 monitoring wells at the M-5 well cluster.

According to the MOM OU ROD, compliance standards for the UC aquifers are groundwater MCLs or, if MCLs do not exist for specific compounds, then values correlating to a $1x10^{-6}$ health risk level are to be used. Health Based Numbers (HBN) are used for the Transmissive Zone. The compliance monitoring standard for bis(2-chloroethyl)ether in the UC-1 aquifer is 0.03 µg/L, which represents a $1x10^{-6}$ risk level. The compliance monitoring standard for bis(2-chloroethyl)ether in the TZ is 2.4 mg/L, which is a Health-Based Number (HBN) defined for the site boundary.

An analysis of the chemical data trends from the last five years (January 2002 – March 2007) is given below according to the aquifer. Wells in the TZ and extraction well E-1 (UC-3) are sampled for seven indicator compounds (1,1,2-trichloroethane, 1,1-dichloroethene, 1,2-dichloroethane, benzene, vinyl chloride, bis(2-chloroethyl)ether, naphthalene) and total organic carbon (TOC). Wells in the UC-1, UC-2, and UC-3 aquifers are sampled for 1,1,2-trichloroethane and bis(2-chloroethyl)ether. In the last Five-Year Review, it was recommended that special attention be paid to results from the M5 well cluster in the TZ and the UC-1 wells because of past results that had exceeded compliance levels. These are also discussed below.

<u>Transmissive Zone</u>: All results from wells in this zone were below compliance levels except for wells M5D and M5F. **Attachments 5-1 through 5-7** provide graphic illustrations of the M5 well cluster results. Well M5D, which is located inside the slurry wall, consistently exceeded the compliance level (2.4 mg/L) for bis(2-chloroethyl)ether. Well M5F, which is located outside the slurry wall, exceeded the compliance level during three of five sampling events. These results are shown in **Attachment 5-6**.

<u>UC-1</u>: All of the UC-1 well results were below compliance levels for 1,1,2-trichloroethane. Wells M1B, M3B, M5B, M6B, UCW-3, and UCW-4 were above the compliance level (0.03 µg/L) for bis(2-chloroethyl)ether in one or both of the last two sampling events. Wells M2B and M4B have not exceeded the compliance level since the July 2002 sampling event, and wells UCW-1 and UCW-2 have not exceeded the compliance level since the January 2002 sampling event. All of these wells are located inside the slurry wall. There does not appear to be any spatial correlation for results exceeding the compliance level. **Attachment 5-8** gives a graphic illustration of the results. None of the results exceeded the TRRP level of 0.83 µg/L for bis(2-chloroethyl)ether.

<u>UC-2</u>: All of the UC-2 well results were below compliance levels for bis(2-chloroethyl)ether and 1,1,2-trichloroethane with one exception. Well CDW-2 has been consistently above the compliance level for 1,1,2-trichloroethane since the April 2003 sampling event. In order to better monitor the long-term concentration trend in CDW-2, the sampling frequency was changed from annual to quarterly beginning with the third quarter of 2005 (**MOTCO 2005a**). The results are displayed graphically in **Attachment 5-9** and the results show that the concentration of 1,1,2-trichloroethane is <u>increasing</u> over time.

UC-3: Results for extraction well E-1 will be discussed separately. All of the other UC-3 well results were below compliance levels for 1,1,2-trichloroethane. These wells were also below compliance levels for bis(2-chloroethyl)ether except wells M1E and M2E, which exceeded the level during the last (May 2006) sampling event as shown in **Attachment 5-10**. Extraction well E-1 is located adjacent to the abandoned deep process well. Well E-1, which is sampled quarterly, exceeded compliance levels for all parameters except naphthalene as depicted in **Attachments 5-11 through 5-17**. All the data trends for well E-1, however, have been decreasing over time except naphthalene, which has been consistently non-detect.

6.4 Interviews

An interview was conducted with the site O&M manager, John Danna, during the site visit conducted on May 15, 2007. In addition, interview forms were provided to the EPA Remediation Project Manager, the TCEQ representative, and Mr. Randal Andreasen of Fleet Services, a nearby business. Mr. Todd Graves of Integrity Metals, Inc., another nearby business, was contacted by phone but declined to be interviewed as he had no knowledge of the MOTCO site. Attempts to arrange an interview with Mr. Nick Narvaez, a resident living just north of the site, were unsuccessful. Of the interview forms provided, only Mr. Danna of MOTCO and Mr. Miller of EPA Region 6 responded. The completed interview record forms are presented in **Attachment 2**.

6.5 Site Inspection

An inspection was conducted at the site on May 15, 2007. The completed site inspection checklist is provided in **Attachment 3**. Site inspection tasks included a visual inspection of site features including the water treatment facility, the cap, compliance wells, fences and gates, and the treatment plant monitoring equipment and protocol. During the site inspection, an interview was conducted with the site manager, and the site logs, documents, and records were reviewed. Photographs taken during the MOTCO site inspection are provided in **Attachment 4**. The site inspection indicated that the remedy was effective and operating as intended. No concerns were noted. The inspection team consisted of Frank Roepke and Cliff Murray of the U.S. Army Corps of Engineers. They were accompanied by Gary Miller of EPA Region 6, John Danna (MOTCO site manager), Roger Pokluda (MOTCO site environmental scientist), and Larry Engle (MOTCO site engineer)

7.0 Technical Assessment

The Five-Year Review must determine whether the remedy at a site is protective of human health and the environment. The EPA guidance describes three questions used to provide a framework for organizing and evaluating data and information, and to ensure all relevant issues are considered when determining the protectiveness of a remedy.

7.1 Question A: Is the Remedy Functioning as Intended by the Decision Documents?

The documents that detail the remedial decisions for the site are the September 1989 ROD, the January 1993 ESD to the Source Control ROD, and the 1993 Consent Decree. EPA and TCEQ have concurred that the construction portion of the Source Control and MOM OU remedy defined by the Consent Decree are complete. The remedy is ongoing, and based on the data review, the site inspection, and interviews, the remedy is functioning as intended by the decision documents. Remedial action performance and monitoring results, O&M operations, and O&M costs are discussed in sections 4 and 6. Opportunities for optimization, early indicators of potential remedy problems, and implementation of institutional controls are discussed below.

Opportunities for Optimization. The site operators monitor the Ground Water Treatment Facility to identify potential opportunities for optimization. Efforts to optimize plant operation included upgrading the water treatment components and adding a carbon filter unit in 2004. The site manager also implemented additional staff training. Around the same time, leaks in the secondary containment piping of the ground water/DNAPL recovery system were discovered and corrected, and pressure gauges in the secondary lines were installed to monitor whether or not the primary pipe is leaking. This secondary containment system is a backup system to the primary transfer pipe and would only collect site liquids if the primary piping were to leak.

The site manager has recommended to the EPA that future opportunities for optimization include investigating an alternative to using well cluster 6 as a gradient control cluster due to the lack of a TZ plume in the area and because the local TZ groundwater elevation is adversely impacted by rainfall and inundation of surface water during storms in the Gulf. Additionally, the site manager has engaged in informal discussions with EPA about pumping less water from the TZ on the south side of the site while still meeting current requirements for maintaining the inward and upward hydraulic gradient. Historically, the ground water elevation difference on either side of the barrier wall has been as high as 20 feet. Another suggestion, which was made during the last Five-year Review, suggests incorporating current TRRP and MCL standards which have changed and/or been promulgated since the signing of the Consent Decree.

Early Indicators of Potential Remedy Problems. Several monitoring well results exceeded compliance levels as explained in section 6.3 of this report. These wells include wells M5D and M5F in the TZ; the wells in the UC-1 aquifer; and wells M1E, M2E and extraction well E-1 in the UC-3 aquifer. All of these wells had analyte concentrations that exceeded the compliance levels for those specific analytes, but had no discernible concentration trend or the trend was decreasing. Well CDW-2 in the UC-2 aquifer had exceedances for 1,1,2-trichloroethane which displayed an increasing concentration trend. These wells should continue to be monitored in order to determine if they indicate a problem with the remedy. A focused evaluation of the UC-2 aquifer should be performed and response actions proposed to address the increasing concentration trend of 1,1,2-trichloroethane. All of these wells are located within the slurry wall except well M5F which is located just outside of the wall.

Implementation of Institutional Controls. The MOM OU ROD required deed restrictions to prohibit land development, require installation of additional fencing around the site, provide annual verification that site conditions have not changed, and ensure that there will be no land use or development that may affect the remedial action (**EPA, 1989**). The site remains under control of the MOTCO Trust Group, access to the site and offsite wells is restricted, and signage is prominently displayed warning of potential hazardous conditions at the site. Furthermore, the installation of additional fencing, as required by the MOM OU ROD, is complete. Deed notices on the original approximately 11-acre site were filed with the Galveston County Courthouse in 1993. To date, deed restrictions prohibiting land development have not been filed with the Galveston County Courthouse, but draft deed restrictions have been submitted to the EPA for review. The deed restrictions are expected to be finalized and filed sometime in 2007.

7.2 Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives (RAOs) Used at the Time of the Remedy Selection Still Valid?

The purpose of this question is to evaluate the effects of any significant changes in standards or assumptions used at the time of remedy selection. Changes in promulgated standards or "to be considered" (TBC) and assumptions used in the original definition of the remedial action may indicate that an adjustment in the remedy is necessary to ensure the protectiveness of the remedy.

Changes in ARARs. Applicable or Relevant and Appropriate Requirements (ARARs) for this site were identified in the MOM OU ROD dated September 1989 and in the ESD for the Source Control OU dated January 1993. A comprehensive list of ARARs identified in the MOM OU ROD and Source Control OU ESD is in **Attachment 8**. The first Five-Year Review dated September 2002 indicated that there were no changes that would affect the protectiveness of the selected remedy.

The TCEQ and the Federal regulations have not been revised to the extent that the effectiveness of the remedy at the site would be called into question. The Texas Administrative Code Title 31 is now codified under Title 30; however, no significant changes have been made that would question the site remedy effectiveness.

The MOM OU ROD required the ground water standard in the UC aquifer be MCLs or $1x10^{-6}$ risk level. At the time the MOM OU ROD was signed, there were no MCLs for bis(2-chloroethyl)ether or 1,1,2-trichloroethane, and a $1x10^{-6}$ risk level was assigned as the recovery/compliance monitoring standard for these compounds. The compliance standard set for bis(2-chloroethyl)ether was 0.03 µg/L, and the compliance standard set for 1,1,2-trichloroethane was 0.6 µg/L. Since that time, there are two new regulations in effect that apply to these compounds. The TRRP, under the TCEQ, established a Protective Concentration Level (PCL) for bis(2-chloroethyl)ether for ground water ingestion at 0.83 µg/L; however, this represents a $1x10^{-5}$ risk level. In addition, a federal drinking water standard was established for 1,1,2-trichloroethane in 1994; the MCL is 5.0 µg/L. Both of the new standards are higher than those officially adopted for the MOTCO site and, therefore, do not affect the protectiveness of the remedy.

Changes in Exposure Pathways, Toxicity, and Other Contaminant Characteristics. There have been no changes in exposure pathways, toxicity characteristics, or other contaminant characteristics for the MOTCO site. There has been no change to the standardized risk assessment methodology that could affect the protectiveness of the remedy. Current published toxicity information, however, may need to be updated since the MOM OU ROD was signed.

7.3 Question C: Has Any Other Information Come to Light That Could Call into Question the Protectiveness of the Remedy?

The Galveston County MUD is considering installing a drinking water well approximately 1500 feet from the site. A pilot hole was drilled to a depth of 700 feet and tested around 500 feet and 700 feet, which is below the UC-3 aquifer. The UC-3 aquifer at the MOTCO site is about 250 feet above the pilot hole test interval at 500 feet. The test holes produced a good water yield (about 400 gpm) and no contamination was detected. The well, if installed, would not be operated continuously, but would be operated on an as needed basis. If the county does go ahead with plans to install a drinking water well, this could affect the ability of the plant to maintain an upward/inward water gradient at nearby wells and this would have to be monitored closely. The EPA has advised the Galveston County MUD #12 of this concern.

8.0 Issues

Several issues are identified for this site, as described in the following table.

No.	Issues	Affects Protectiveness (Y/N)	
		Current	Future
1	Compliance Level Exceedance at the M5 Well Cluster in the TZ-2 Zone. Monitoring well results show that bis(2-chloroethyl)ether has been detected above compliance levels at wells M5D and M5F. Well M5F is located outside of the slurry wall, however, no discernable trend at M5F has been observed.	N	Potential Impact
2	Compliance Level Exceedance in the UC-1 Aquifer. Monitoring well results show that bis(2-chloroethyl)ether has been detected above compliance levels at wells screened within the UC-1 aquifer. These wells are all located within the slurry cutoff wall. No discernible concentration trend has been identified.	N	Potential Impact
3	Compliance Level Exceedance in Well CDW-2. Monitoring well results show that 1,1,2-trichloroethane has been detected above compliance levels in well CDW-2 in the UC-2 aquifer. The concentration trend has been increasing.	N	Potential Impact
4	Compliance Level Exceedance in the UC-3 Aquifer. Monitoring well results show that bis(2-chloroethyl)ether has been detected above compliance levels at wells M1E and M2E during the May 2006 sampling event. Results for extraction well E-1 were above compliance levels for all compounds except naphthalene. The concentration trend for these compounds in well E-1 was decreasing.	N	Potential Impact
5	Deed Restrictions. Deed restrictions have not yet been filed with Galveston County as required by the MOM OU ROD.	N	Potential Impact
6	Galveston County MUD #12 Proposed Drinking Water Well. The Galveston County MUD is considering installing a drinking water well approximately 1500 feet from the site. If the county goes ahead with plans to install a drinking water well, this could affect the ability of the plant to maintain an upward/inward water gradient at nearby wells and this would have to be monitored closely.	N	Potential Impact

9.0 Recommendations and Follow-Up Actions

Recommended further actions are listed in the table below.

No.	Recommendations/Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Follow-up Actions: Affects Protectiveness (Y/N)	
					Current	Future
1	Compliance Level Exceedance at the M5 Well Cluster in the TZ-2 Zone. Continue monitoring and evaluating data.	MOTCO	EPA	Not Applicable	N	Y
2	Compliance Level Exceedance in the UC-1 Aquifer. Continue monitoring and evaluating data. An assessment report on the UC-1 aquifer should be submitted to the EPA.	MOTCO	EPA	March 2009	N	Y
3	Compliance Level Exceedance in Well CDW-2. Continue monitoring and evaluating data. Additional response actions should be proposed to the EPA.	MOTCO	EPA	March 2008	N	Y
4	Compliance Level Exceedance in the UC-3 Aquifer. Continue monitoring and evaluating data.	MOTCO	EPA	Not Applicable	N	Y
5	Deed Restrictions. The required deed restrictions should be filed with the County of Galveston at the earliest opportunity followed by notification to the regulators.	MOTCO	EPA	January 2008	N	Y
6	Galveston County MUD #12 Proposed Drinking Water Well. The proposal of the Galveston County MUD to install a drinking water well should be followed closely and, if the well is installed, a course of action should be evaluated and proposed to maintain the ground water gradient. A plan should be prepared to assess the impact of the well. This plan will be implemented if the drinking water well is installed.	MOTCO	EPA	January 2008	N	Y

10.0 Protectiveness Statement

The remedy for the Source Control OU at the MOTCO site is protective of human health and the environment because the waste has been removed or contained and is protected from erosion. The remedy for the MOM OU is protective of human health and the environment in the short term because there is no evidence that there is current exposure and the remedy is being implemented as planned to reduce the volume of contamination and to control migration. However, in order to remain protective for the long term, the recommendations listed in section 9.0 should be implemented. Ongoing implementation of performance and compliance monitoring will ensure that the migration of contamination continues to be restricted.

Because the completed remedial actions and monitoring program for the MOTCO site are protective for the short term, the remedy for the site is protective of human health and the environment and will continue to be protective if the action items identified in this report are addressed.

11.0 Next Review

The next Five-Year Review, the third for this site, should be completed by September 2012. Key issues to be considered, in addition to the ongoing performance of the remedy, are concentration trends in the wells which had compliance level exceedances, especially well CDW-2, and the filing of the deed restrictions with the County of Galveston. Another issue that may be considered is the impact a proposed drinking water well would have on ground water gradient at the site.

Figures and Tables

Figure 1. Aerial View of MOTCO Superfund Site

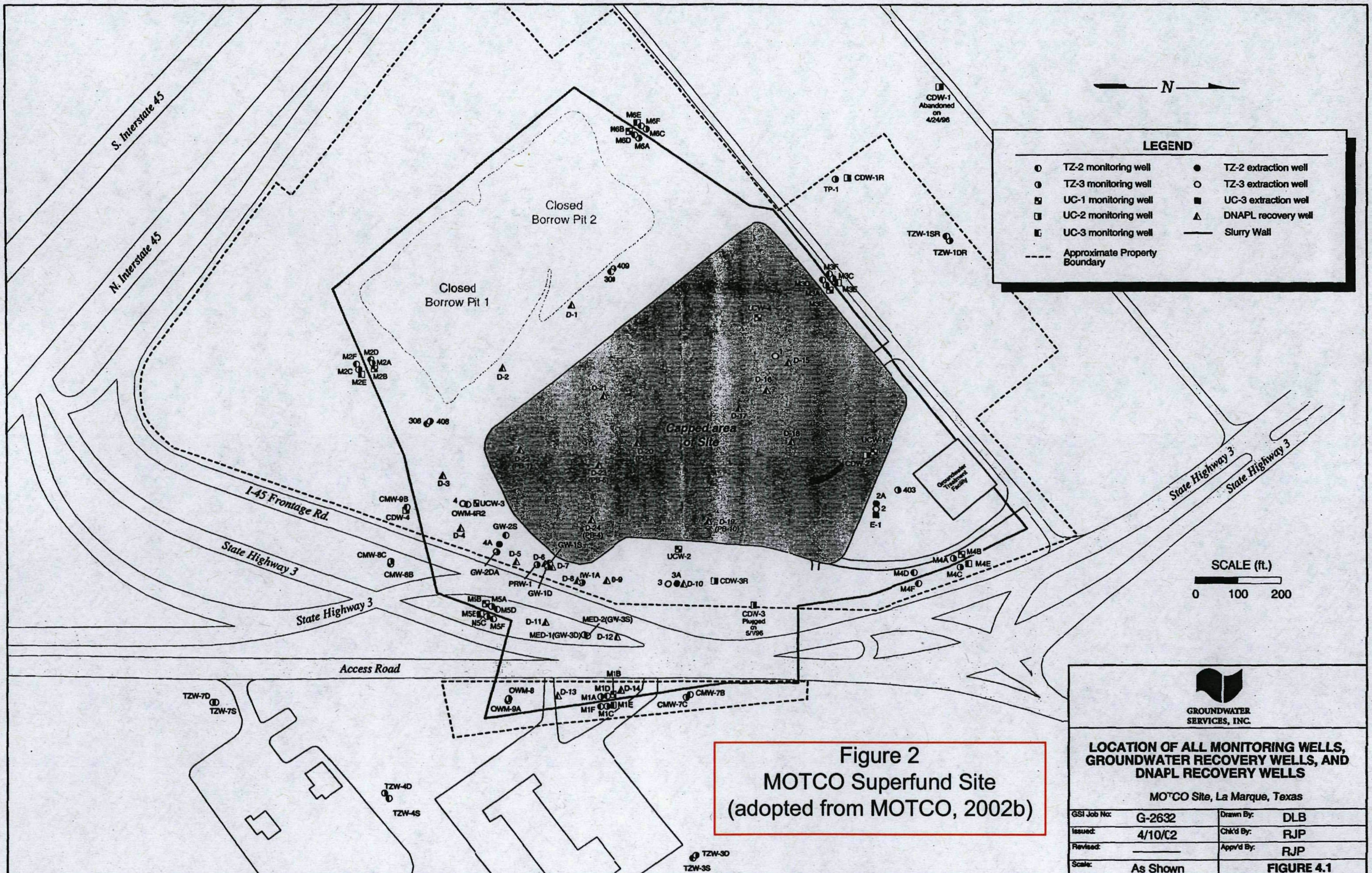
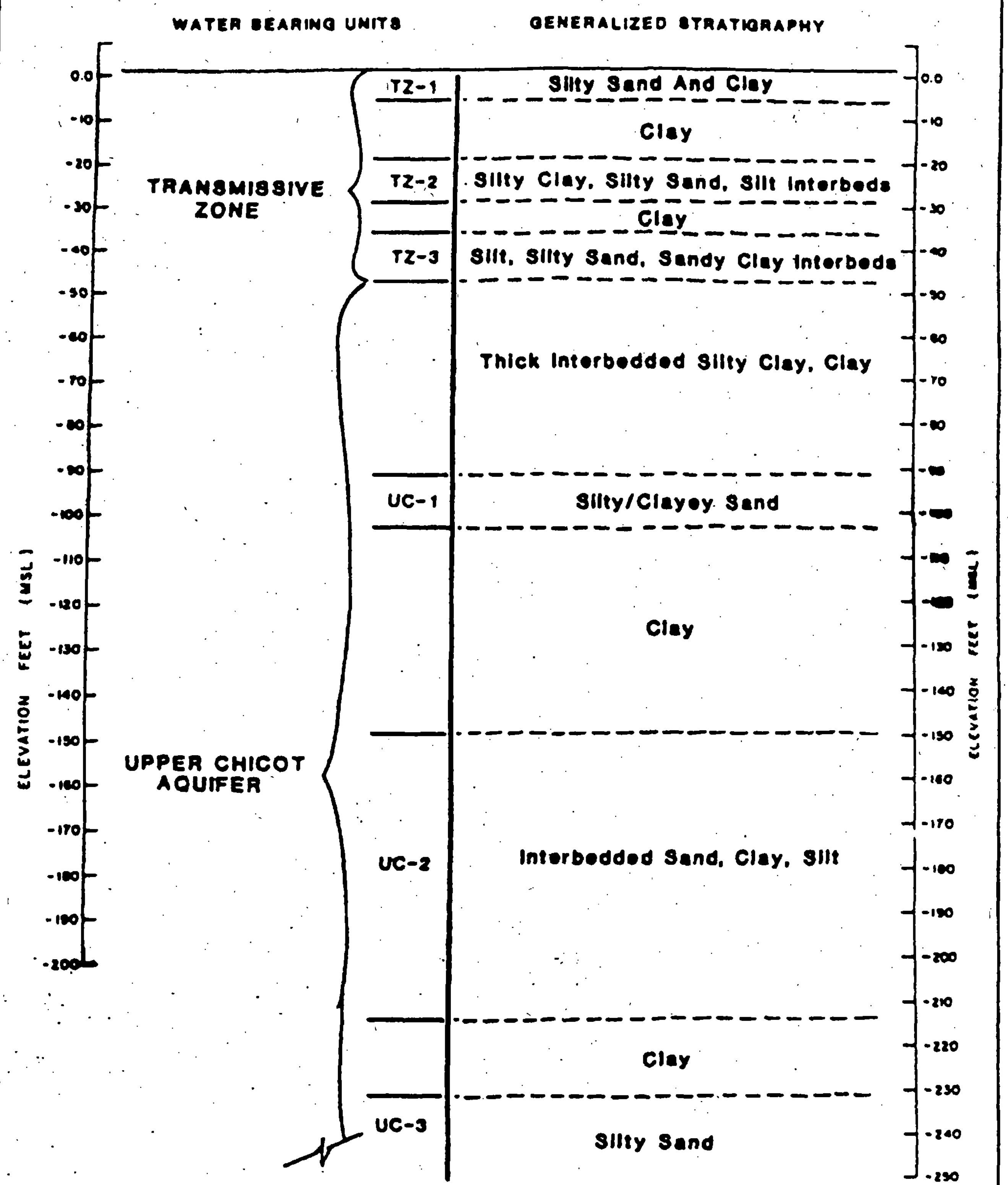


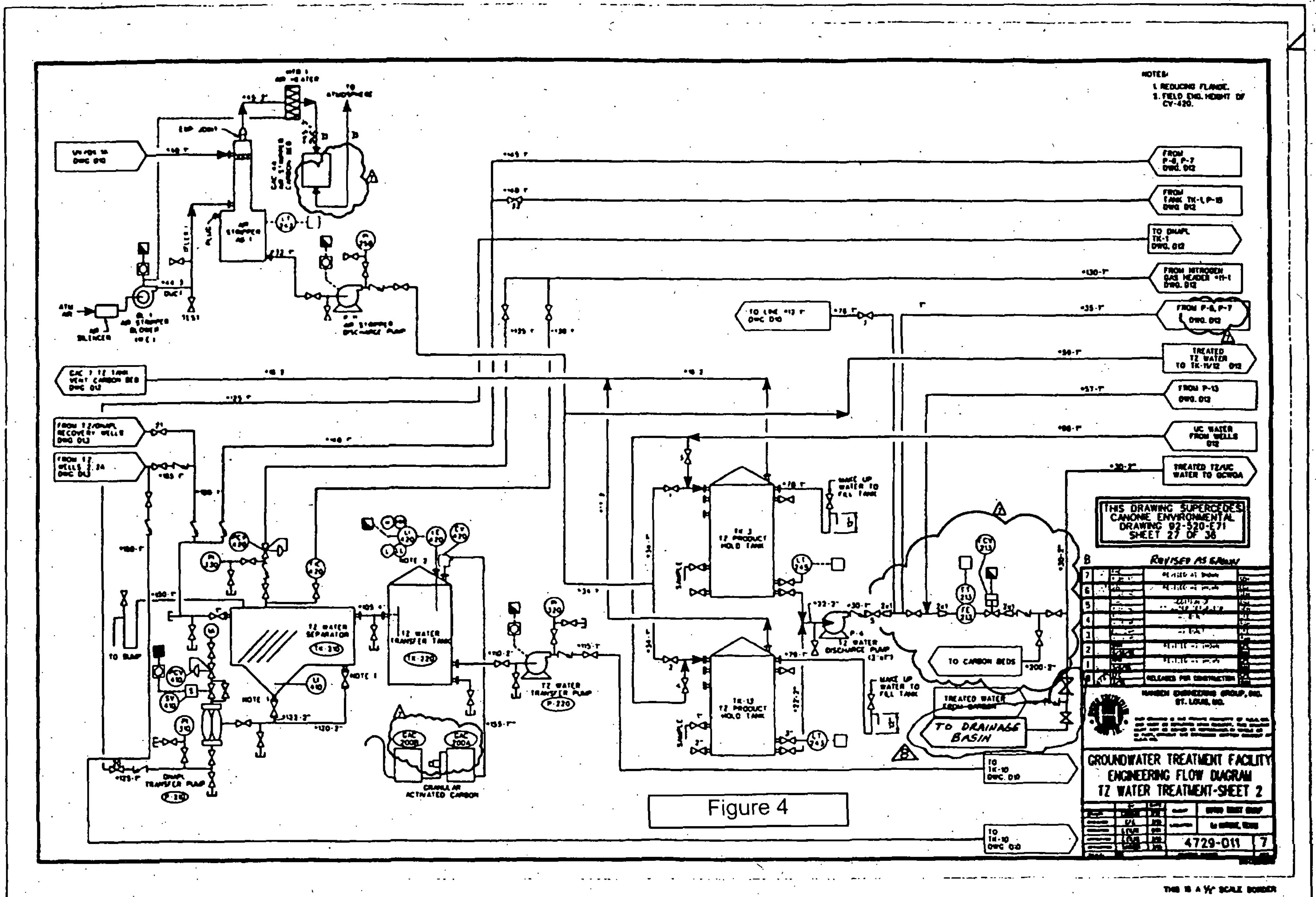
Figure 2
MOTCO Superfund Site
(adopted from MOTCO, 2002b)



NAME MOTCO SITE	Woodward-Clyde Consultants	GENERALIZED HYDROGEOLOGIC PROFILE	FILE NO. 88C5853
FOR MOTCO RESPONDENTS	SCALE NOTED / MADE BY PR DATE 5-11-88 / CHECKED BY DATE		FIGURE

000169

Figure 3



THIS DRAWING SUPERCEDES CANONIE ENVIRONMENTAL DRAWING 92-520-E71 SHEET 27 OF 36
REVISED AS SHOWN
RELEASED FOR CONSTRUCTION
HANSEN ENGINEERING GROUP, INC.
ST. LOUIS, MO.
GROUNDWATER TREATMENT FACILITY
ENGINEERING FLOW DIAGRAM
TZ WATER TREATMENT-SHEET 2
4729-011
7
TO CARBON BEDS
TO DRAINAGE BASIN
TREATED WATER
GRANULAR ACTIVATED CARBON
TZ WATER SEPARATOR
TZ WATER TRANSFER TANK
TZ WATER TRANSFER PUMP
TK-3 TZ PRODUCT HOLD TANK
TK-13 TZ PRODUCT HOLD TANK
TZ WATER DISCHARGE PUMP
MAKE UP WATER TO FILL TANK
DNAPL TRANSFER PUMP
TO SUMP
TREATED TZ/UC WATER TO GCWDA
UC WATER FROM WELLS
TREATED TZ WATER
NOTES:
1. REDUCING FLANGE.
2. FIELD ENG. HEIGHT OF CV-420.
THIS IS A 1/2" SCALE BORDER

Figure 4

Table 1
Chronology of Site Events
MOTCO Superfund Site
La Marque, Texas

Date	Event
1959	The site was purchased by U.T. Alexander for the purpose of recycling styrene tars.
1961	Flood tides associated with Hurricane Carla inundated the pits, and recycling operations ceased.
1961 to 1968	Onsite pits were used for disposal of chemical wastes from local petrochemical industries.
1963	U.T. Alexander transferred ownership to Petro Processors, Inc.
1964	The site was permitted as a disposal facility by the State of Texas (permit No. 01051).
1968	Due to odor complaints, the City of La Marque passed an ordinance prohibiting disposal of liquid wastes in surface impoundments within city limits.
1969	Mainland Bank foreclosed on the site.
1970s	Approximately 500,000 gallons of material were deposited, some were removed during attempts at waste recycling.
1974	MOTCO, Inc. acquired ownership and established an operation to remove and market styrene tars.
1976	MOTCO, Inc. abandoned the site. Seven unlined pits remained with contamination migrating into the subsurface. Ground water was heavily contaminated and migrating offsite.
1976	Texas Water Commission (subsequently Texas Natural Resource Conservation Commission which, subsequently, became the Texas Commission on Environmental Quality) issued an Administrative Order that canceled Permit No. 01051 and required a closure plan. Shortly thereafter, MOTCO filed for bankruptcy. The trustee abandoned the site as a worthless asset.
1977	MOTCO, Inc. forfeited its right to do business in the State of Texas, but remains an active corporation on the Minnesota Secretary of State's records.
May to September 1980	U.S. Coast Guard removed drums stored at the site and extended and raised perimeter dikes. A perimeter fence was erected around the site.
December 1980 to April 1985	EPA conducted four removal actions to stabilize the site.
1981 to 1982	Initial Site Investigation and a Secondary Site Investigation was completed by Black & Veatch.
February 1981	EPA issued the Response Action Plan for the MOTCO site.
September 1981	EPA conducted an emergency response action.
July 1982	EPA ranked the site on the National Priorities List (NPL) of Superfund sites.
1983	EPA completed the Remedial Action Master Plan (RAMP).
1983	EPA published notice of completion of the Source Control Feasibility Study.
March 1983	EPA conducted an emergency response action.
September 1983	EPA conducted an emergency response action.
September 1983	Site was added to the NPL.
1984	EPA conducted an Initial Remedial Measure.
1984	EPA determined that offsite remedial actions would be necessary.
March 15, 1985	EPA signed the Record of Decision for the Source Control Operable Unit.

Table 1
Chronology of Site Events
MOTCO Superfund Site
La Marque, Texas

January 1986	Original Proposed Plan Fact Sheets issued and public meetings for source control held.
December 1986	Removal action was initiated to repair the dike damaged by heavy rains.
1987	EPA negotiated a Consent Decree for the Source Control Operable Unit with 21 companies. The MOTCO Trust Group is to conduct the incineration remedy.
March 1987	Settling Defendants entered into an Administrative Order on Consent to conduct a Remedial Investigation and Feasibility Study (RI/FS) for the second operable unit for the site: the Management of Migration (MOM) operable unit.
April 1987	The MOTCO Trust Group entered into an Administrative Order on Consent to conduct offsite and ground water investigation.
1987	EPA began additional investigation at the site.
July 1987	The community involvement plan was developed.
July 1987	Original Proposed Plan Fact Sheets and Public meetings for MOM.
October 1987	EPA signed Source Control Mixed Funding Agreement with MOTCO Trust Group consisting of 20 PRPs.
January 1988	Remedial action contract was awarded by the PRPs.
November 1988	EPA received a letter of intent requesting a Technical Assistance Grant (TAG).
1989	The MOM Supplemental Feasibility Study Investigation (SFSI), Endangerment Assessment, and Feasibility Study Investigation was submitted to the EPA.
1989	The DNAPL Recovery Pilot Program Study was performed.
September 1989	EPA signed the ROD for the MOM operable unit.
March 1989	The community involvement plan was revised.
April 1989	Milestone fact sheets prepared.
July 1989	EPA published notice of completion of the MOM FS and the remedial alternatives identified therein.
September 1989	EPA issued the ROD for the MOM operable unit.
November 1989	Original ROD MOM fact sheets prepared.
April 1990	The negotiation moratorium for implementation of the Remedial Design/Remedial Action (RD/RA) ended.
May 1990	Onsite incineration of pit liquids, sludges/tars, and soil began.
June 1990	EPA issued an Unilateral Administrative Order (UAO) regarding the remedial design for the MOM OU.
June 1990	Milestone fact sheets prepared.
November 1990	Open houses and work shops were conducted.
November 1990	Milestone fact sheets prepared.
April 1991	Milestone fact sheets prepared.
June 1991	EPA paid the MOTCO Trust $2.8 million as part of the first Superfund Mixed Funding Agreement, for construction completion as part of the 1987 Source Control Consent Decree.
December 1991	Incineration was stopped.
1992	EPA issued an UAO.
February 1992	Milestone fact sheets prepared.
July 1992	Consent Decree entered for recovery of past MOM costs for approximately $300,000.

Table 1
Chronology of Site Events
MOTCO Superfund Site
La Marque, Texas

August 1992	Woodward Clyde issued the Assessment of Current Site Conditions report.
October 1992	EPA issued an UAO for implementation of the MOM RA.
December 1992	EPA reissued the UAO for pre-construction work on the MOM OU.
January 1993	EPA prepared an Explanation of Significant Differences (ESD) to the ROD.
June 24, 1993	Consent Decree with MOTCO Trust Group for implementation of the revised Source Control remedy and the MOM remedy signed.
October 1993	Open houses and work shops were conducted.
April 1995	Installation of monitoring wells and DNAPL recovery wells begun.
August 1995	Construction of Ground Water/DNAPL Treatment System completed.
September 1995	C & I Report, Ground Water/DNAPL Treatment System submitted.
October 1995	DNAPL recovery wells began operation.
October 1995	Excavation of affected offsite materials began.
May 1996	The Consolidated Remedial Design report was submitted.
April 1997	Excavation of affected offsite materials was completed.
May 1997	C & I Report for the Excavation of Affected Offsite Materials was submitted.
September 1997	EPA conducted the final site inspection.
September 1997	EPA issued the Preliminary Close Out Report.
October 1997	C & I Report for the Consolidation of Affected Materials was submitted.
October 1997	C & I Report for the Final Site Grading and Drainage was submitted.
October 1997	Draft Final C & I Report submitted.
January 1998	MOTCO Trust Group submitted the 1997 MOTCO Remedial Action Annual Effectiveness Report.
February 1998	Pre-Construction Work Report – Addendum 15, DNAPL Recovery Status Report issued.
February 1999	MOTCO Trust Group submitted the 1998 MOTCO Remedial Action Annual Effectiveness Report.
February 2000	The PhotoCat system (UV-OX) was taken offline at the ground water treatment plant.
March 2000	MOTCO Trust Group submitted the 1999 MOTCO Remedial Action Annual Effectiveness Report.
January 2001	The PhotoCat system (UV-OX) was removed from the ground water treatment plant.
February 2001	MOTCO Trust Group submitted the 2000 MOTCO Remedial Action Annual Effectiveness Report.
October 2001	EPA, Texas Natural Resource Conservation Commission (TNRCC) and MOTCO met and verified that the cap is protective and that the water treatment system is operating satisfactorily.
February 2002	MOTCO Trust Group submitted the 2001 MOTCO Remedial Action Annual Effectiveness Report.
June 2002	MOTCO Trust Group submitted the Ground Water Treatment Plant – Revision 6 to the O&M Manual.
September 2002	The first Five-Year Review was conducted by the EPA.
February 2003	MOTCO Trust Group submitted the 2002 MOTCO Remedial Action Annual Effectiveness Report.
February 2004	MOTCO Trust Group submitted the 2003 MOTCO Remedial Action Annual Effectiveness Report.
March 2005	MOTCO Trust Group submitted the 2004 MOTCO Remedial Action Annual

Table 1
Chronology of Site Events
MOTCO Superfund Site
La Marque, Texas

	Effectiveness Report.
February 2007	MOTCO Trust Group submitted the 2005 MOTCO Remedial Action Annual Effectiveness Report.
June 2007	MOTCO Trust Group submitted the 2006 MOTCO Remedial Action Annual Effectiveness Report.
June 2007	MOTCO Trust Group submitted the First Quarter 2007 MOTCO Remedial Effectiveness Quarterly Report.

Table 2
Compliance/Performance Monitoring Standards
MOTCO Superfund Site
La Marque, Texas

Transmissive Zone Compliance Monitoring Standards		
Constituent		**Health Based Number (mg/L)**
benzene		39.0
bis(2-chloroethyl)ether		2.4
1,2-dichloroethane		39.0
1,1-dichloroethylene		54.0
naphthalene		74.5
1,1,2-trichloroethane		14,000
vinyl chloride		16.0
UC-1, UC-2 and UC-3 Compliance Monitoring Standards		
Constituent		**Recovery Standard (mg/L)**
benzene		0.005
bis(2-chloroethyl)ether		0.00003
1,2-dichloroethane		0.005
1,1-dichloroethylene		0.007
naphthalene		3.5
1,1,2-trichloroethane		0.0006
vinyl chloride		0.002
UC-1 Clay Monitoring Standards[1]		
Constituent	**Compliance Standard (mg/L)**	**Half of Compliance Standard (mg/L)**
benzene	0.005	0.0025
bis(2-chloroethyl)ether	0.00003	0.00003*
1,2-dichloroethane	0.005	0.0025
1,1-dichloroethylene	0.007	0.0035
naphthalene	3.5	1.75
1,1,2-trichloroethane	0.0006	0.0006*
vinyl chloride	0.002	0.001
Target Levels for Soil and Sediment		
Indicator Constituent		**Target Level (μg/Kg)**
arsenic		20,000
benzene		16,000
benzo(a)anthracene		40
benzo(a)pyrene		40
bis(2-chloroethyl)ether		420
chrysene		40
1,2-dichloroethane		5,300
1,1-dichloroethene		840
1,1,2-trichloroethane		8,300
vinyl chloride		200

* -- The compliance standard for ground water in the UC was set at the MCL or a $1x10^{-6}$ risk level in the absence of an MCL
1 - The UC-1 clay monitoring program will begin after the DNAPL recovery program is completed.

Reference: MOM OU Remedial Design/Remedial Action Plan as referenced in the Consent Decree, 1993.

Table 3
Compliance/Performance Monitoring Wells[1]
MOTCO Superfund Site
La Marque, Texas

TZ-2		TZ-3		UC-1		UC-2	UC-3	
M1F	M6F	M1C	M5C	M1B	M6B	CDW-1R	M1E	M5E
M2F	M5D	M2C	M6C	M2B	UCW-1	CDW-2	M2E	M6E
M3F	TZW-3S	M3C	CMW-8C	M3B	UCW-2	CDW-4	M3E	E-1
M4F	TZW-4S	M4C	TP-1	M4B	UCW-3		M4E	
M5F	TZW-7S			M5B	UCW-4			

1 – List current as of 2007.

Note: The UC-1 clay monitoring wells will be installed following completion of the DNAPL recovery program.

Attachment 1

Documents Reviewed

Federal Register Notice, 1983. *NPL Site Narrative for MOTCO, Inc.* September 8, 1983.

MOTCO Trust Group, 1997. *Post-Closure Operations and Maintenance Plan*. May 1997.

MOTCO Trust Group, 1999. *Evaluation of Bis(2-chloroethyl)Ether Concentration in UC-1*. October 1999.

MOTCO Trust Group, 2002a. *Groundwater Treatment Plant – Revision 6 to the O&M Manual*. June 27, 2002.

MOTCO Trust Group, 2002b. *MOTCO Remedial Action Annual Effectiveness Report 2002, MOTCO Site, La Marque, Texas*. February 2003.

MOTCO Trust Group, 2003a. *Revised Discussion of Issues Raised in Five-Year Review Report, MOTCO Superfund Site, La Marque, Galveston County, Texas*. August 8, 2003.

MOTCO Trust Group, 2003b. *MOTCO Remedial Action Annual Effectiveness Report 2003, MOTCO Site, La Marque, Texas*. February 2004.

MOTCO Trust Group, 2004. *MOTCO Remedial Action Annual Effectiveness Report 2004, MOTCO Site, La Marque, Texas*. March 2005.

MOTCO Trust Group, 2005a. *Remedial Effectiveness Quarterly Report Second Quarter 2005, MOTCO Site, La Marque, Texas*. July 10, 2005.

MOTCO Trust Group, 2005b. *MOTCO Remedial Action Annual Effectiveness Report 2005, MOTCO Site, La Marque, Texas*. February 2007.

MOTCO Trust Group, 2006. *MOTCO Remedial Action Annual Effectiveness Report 2006, MOTCO Site, La Marque, Texas*. January 2007.

MOTCO Trust Group, 2007a. Letter to EPA Regarding *2002 MOTCO Five-Year Review Report, Actions Conducted by the MOTCO Site 2002 through 2006*. May 22, 2007.

MOTCO Trust Group, 2007b. *Remedial Effectiveness Quarterly Report First Quarter 2007, MOTCO Site, La Marque, Texas*. June 7, 2007.

U.S. Environmental Protection Agency (EPA), 1985. *Record of Decision for MOTCO Superfund Site, La Marque, Texas, Management of Migration Operable Unit*. March 15, 1985.

U.S. Environmental Protection Agency (EPA), 1989. *Record of Decision for MOTCO Superfund Site, La Marque, Texas, Management of Migration Operable Unit*. September 1989.

U.S. Environmental Protection Agency (EPA), 1993a. *Explanation of Significant Differences, MOTCO Superfund Site, La Marque, Texas*. January 13, 1993.

U.S. Environmental Protection Agency (EPA), 1993b. *United States vs. U.T. Alexander, Et. Al., Consent Decree and Appendices A-G*, June 24, 1993.

U.S. Environmental Protection Agency (EPA), 2001. *Comprehensive Five-Year Review Guidance*. OSWER No. 9355.7-03B-P. June 2001.

U.S. Environmental Protection Agency (EPA), 2002a. *Proposed Modification of Sampling Frequency and QA/QC Sample Collection, MOTCO Groundwater Monitoring Program, MOTCO Site, La Marque, Texas*. February 11, 2002.

U.S. Environmental Protection Agency (EPA), 2002b. *First Five-Year Review Report for MOTCO Superfund Site, La Marque, Galveston County, Texas*. September 2002.

Attachment 2

Interview Record Forms

Five-Year Review Interview Record MOTCO Superfund Site La Marque, Texas	**Interviewee:** John Danna (Site Manager, MOTCO Trust Group) Phone: (281) 831-2107 email: jdanna@centramedia.net

Site Name: MOTCO Superfund Site	**EPA ID No.** TXD980629851	**Date of Interview** May 15, 2007	**Interview Method** in person

Interview Contacts	**Organization**	**Phone**	**Email**	**Address**
Gary Miller	EPA Region 6	214-665-8318	Miller.Garyg@epamail.epa.gov	EPA Region 6 Superfund (6SF-AP) Dallas, TX 75202-2733
Edward Mattioda	U.S. Army Corps of Engineers	918-669-7445	Edward.Mattioda@usace.army.mil	Corps of Engineers CESWT-EC-EA 1645 S. 101st E. Ave Tulsa, OK 74128

Interview Questions (scope of the interview is from 2002 to present)

1. What is your overall impression of the work conducted at the site since 2002?

Response: Very positive. We do our best to meet compliance standards, protect workers, and protect the community and the environment.

2. From your perspective, what effect have remedial operations at the site had on the surrounding community? Are you aware of any ongoing community concerns regarding the site or its operation and maintenance?

Response: The site has had no negative effect on the community within the last five years. We have not received any complaints or affected public traffic. There are no ongoing concerns that we are aware of.

3. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please describe purpose and results.

Response: Activities consisted of routine O&M activities, ground water monitoring, and DNAPL extraction. We routinely report on these activities to the EPA and TCEQ.

4. Are you aware of any events, incidents, or activities that have occurred at the site such as dumping, vandalism, or anything that required emergency response from local authorities? If so, please give details.

Response: The well (D-11) facilities located in the median of Highway 3 were struck after work hours by a car on February 8, 2005. The police contacted the site manager and the well was shut off by a site worker who lives nearby. After the site worker deemed that it was safe to do so, the car was removed by the authorities and the well inspected by the site worker. The electrical system, transfer piping and fence needed repairs. There were no releases to the environment and no one was exposed to the substances being pumped and transferred.

5. Have there been any complaints, violations, or other incidents related to the site that required a response by your office? If so, please summarize the events and result. **Response:** Ground water discharge exceedance was reported to EPA in the spring of 2004 during the transition from the previous site manager to myself. The report was made immediately upon the discovery of laboratory results that exceeded the discharge criteria. This resulted in the site being immediately shut down and repairs implemented. At the EPA's request, the site sampled water from a ditch that conveys the discharge water offsite. The sample was taken within the site's fence line and the analysis indicated that the water leaving the site was not above the discharge criteria. New equipment was installed to prevent further incidences and the site workers were trained to review laboratory data. Furthermore, I also now receive laboratory results via email. The results are listed on a custom report format that includes the site's compliance limits for comparison.
6. Are you aware of any problems or difficulties encountered which impacted the effectiveness of the remedial action, or a change in O&M procedures? If so, please describe changes and impacts. **Response:** The TZ/UC gradients at well cluster 6 is impacted by retention of storm water in the borrow pits which affects the Site's ability to maintain the required upward/inward gradient. Currently, discussions with EPA are being held to resolve this issue.
7. Have there been any changes in state or federal environmental standards since 2002 which may call into question the protectiveness or effectiveness of the remedial action? **Response:** No.
8. Do you know of opportunities to optimize the operation, maintenance, or sampling efforts at the site since 2002, and have such changes been implemented? **Response:** Changes include upgrading the water treatment components and adding the carbon filter unit. We also implemented additional staff training. We discovered and corrected leaks in the secondary containment piping of ground water/DNAPL recovery system and also installed pressure gauges in the secondary lines to allow us to monitor whether or not the primary pipe is leaking. This secondary containment system is a backup system to the primary transfer pipe and would only collect site liquids if the primary piping were to leak. We did not detect any groundwater or DNAPL in the secondary piping during the repairs conducted in 2004.
9. Do you feel well-informed about the site's activities and progress? **Response:** Yes.
10. Do you have any comments, suggestions, or recommendations regarding the site? **Response:** Recommend investigating an alternative to using well cluster 6 as a gradient control cluster due to the lack of a TZ plume in the area and because the local TZ groundwater elevation is adversely impacted by rainfall and inundation of surface water during storms in the Gulf. Additionally, it would be helpful to pump less water from the TZ on the south side of the site and still meet current requirements. Historically, the gradient on either side of the barrier wall has been as high as 20 feet. We would also recommend finding a way to incorporate current TRRP and MCL standards which have changed and/or been promulgated since the signing of the Consent Decree.

Five-Year Review Interview Record MOTCO Superfund Site La Marque, Texas			**Interviewee:** Gary Miller (Remedial Project Manager, EPA) Phone: (214) 665-8318 email: miller.garyg@epa.gov	
Site Name: MOTCO Superfund Site	**EPA ID No.** TXD980629851		**Date of Interview** June13, 2007	**Interview Method**
Interview Contacts	**Organization**	**Phone**	**Email**	**Address**
Gary Miller	EPA Region 6	214-665-8318	Miller.Garyg@epamail.cpa.gov	EPA Region 6 Superfund (6SF-AP) Dallas, TX 75202-2733
Edward Mattioda	U.S. Army Corps of Engineers	918-669-7445	Edward.Mattioda@usace.army.mil	Corps of Engineers CESWT-EC-EA 1645 S. 101st E. Ave Tulsa, OK 74128

Interview Questions (scope of the interview is from 2002 to present)

1. What is your overall impression of the work conducted at the site since 2002?

Response: The site has been well maintained and operated.

2. From your perspective, what effect have remedial operations at the site had on the surrounding community? Are you aware of any ongoing community concerns regarding the site or its operation and maintenance?

Response: To my knowledge, the site has had little impact on the surrounding community. I am not aware of any ongoing community concerns.

3. Have there been routine communications or activities (site visits, inspections, reporting activities, etc.) conducted by your office regarding the site? If so, please describe purpose and results.

Response: The site operator has submitted quarterly and annual operation and maintenance reports to EPA. Also, I have received emails to report upset conditions or unusual circumstances as they occur. I have also conducted site visits and status meetings, generally on an annual basis.

4. Are you aware of any events, incidents, or activities that have occurred at the site such as dumping, vandalism, or anything that required emergency response from local authorities? If so, please give details.

Response: The only incident requiring emergency response from local authorities (police) that I am aware of was the traffic accident in February 2005, when a vehicle jumped the guardrail and hit one of the site wells located in the highway median. There were no leaks or releases, however.

5. Have there been any complaints, violations, or other incidents related to the site that required a response by your office? If so, please summarize the events and result.

Response: None

6. Are you aware of any problems or difficulties encountered which impacted the effectiveness of the remedial action, or a change in O&M procedures? If so, please describe changes and impacts.

Response: Heavy rainfall and/or high tides has had an impact on a few occasions when the site was not able to maintain an upward gradient as required due to water leaching down to the water bearing zones. The site operator is evaluating alternatives regarding the gradient.

7. Have there been any changes in state or federal environmental standards since 2002 which may call into question the protectiveness or effectiveness of the remedial action? **Response:** None that I am aware of.
8. Do you know of opportunities to optimize the operation, maintenance, or sampling efforts at the site since 2002, and have such changes been implemented? **Response:** In 2004, the site waste water treatment plant was upgraded following a treatment upset. The plant was upgraded and additional operator training conducted.
9. Do you feel well-informed about the site's activities and progress? **Response:** Yes, through the quarterly and annual reports, and through emails to report exceptions to normal operations.
10. Do you have any comments, suggestions, or recommendations regarding the site? **Response:** Implement institutional controls for the site.

Attachment 3

Site Inspection Checklist

Five-Year Review Site Inspection Checklist

I. SITE INFORMATION	
Site name: MOTCO Superfund Site	**Date of inspection: May 15, 2007**
Location and Region: La Marque, TX	**EPA ID: TXD980629851**
Agency, office, or company leading the Five-Year Review: USACE	**Weather/temperature: clear, sunny, 80-85° F**
Remedy Includes: (Check all that apply) ☐ Landfill cover/containment ✓ Access controls ✓ Institutional controls ✓ Groundwater pump and treatment ☐ Surface water collection ☐ Other:	☐ Monitored natural attenuation ✓ Groundwater containment (Cap) ✓ Vertical barrier walls
Attachments: ✓ Inspection team roster attached ☐ Site map attached *Inspection Team: Frank Roepke, Cliff Murray*	
II. INTERVIEWS (Check all that apply)	
1. **O&M site manager** Name: **John Danna** Title: Site Manager Date: 5/15/07 Interviewed ✓ at site ☐ at office ☐ by phone Phone no. (281) 831-2107 Problems, suggestions: *see interview form*	
2. **EPA RPM** Name: **Gary Miller** Title: Remedial Project Manager Date: 5/15/07 Interviewed ☐ at site ☐ at office ☐ by phone (Interview form e-mailed to Mr. Miller) Phone no. (214) 665-8318 Problems, suggestions: *see interview form*	
3. **O&M staff** Name: **Roger Pokluda** Title: Environmental Scientist Date: 5/15/07 **Larry Engle** Site Engineer Interviewed ✓ at site ☐ at office ☐ by phone (Assisted John Danna with interview) Phone no. (713) 522-6300 (Pokluda) (713) 914-6466 (Engle) Problems, suggestions:	

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency Texas Commission on Environmental Quality
Contact
Name: **Mark Erwin** Title Project Manager Date Phone no. (512) 239-2531
Problems; suggestions:

Agency ______________________
Contact ______________________ ______________ ________ __________
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached ______________________________

Agency ______________________
Contact ______________________ ______________ ________ __________
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached ______________________________

Agency ______________________
Contact ______________________ ______________ ________ __________
Name Title Date Phone no.
Problems; suggestions; ☐ Report attached ______________________________

4. **Other interviews** (optional) ☐ Report attached.

Interview record forms are provided in Attachment 2 to the Five-Year Review.

Mr. Randal Andreasen, Fleet Services, 246 Texas City Wye, La Marque, TX 77568

(409) 908-0442 (Interview form has not been received)

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	✓ O&M manual	✓ Readily available	☐ Up to date	☐ N/A
	✓ As-built drawings	✓ Readily available	✓ Up to date	☐ N/A
	✓ O&M logs	✓ Readily available	✓Up to date	☐ N/A
	Remarks: *Carbon filter needs to be updated in O&M manual. Waste manifests available and up to date.*			
2.	**Site-Specific Health and Safety Plan**	✓ Readily available	☐ Up to date	☐ N/A
	✓ Contingency plan/emergency response plan	✓ Readily available	✓ Up to date	☐ N/A
	Remarks: *Emergency phone numbers need to be updated.*			
3.	**O&M and OSHA Training Records**	✓ Readily available	✓ Up to date	☐ N/A
	Remarks			
4.	**Permits and Service Agreements**			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	✓ N/A
	☐ Effluent discharge	☐ Readily available	☐ Up to date	✓ N/A
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	✓ N/A
	☐ Other permits	☐ Readily available	☐ Up to date	✓N/A
Remarks: Effluent discharge is approximately 15 gpm. No discharge permit is required although bi-monthly testing of the effluent is conducted.				
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	✓ N/A
	Remarks:			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	✓ N/A
	Remarks:			
7.	**Groundwater Monitoring Records**	✓ Readily available	✓ Up to date	☐ N/A
	Remarks:			
8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	✓ N/A
	Remarks:			
9.	**Discharge Compliance Records**			
	☐ Air	☐ Readily available	☐ Up to date	✓ N/A
	✓ Water (effluent)	✓ Readily available	✓ Up to date	☐ N/A
	Remarks			
10.	**Daily Access/Security Logs**	✓ Readily available	✓ Up to date	☐ N/A
	Remarks:			
IV. O&M COSTS				

1. **O&M Organization**
☐ State in-house ☐ Contractor for State
✓ PRP in-house ☐ Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
Remarks: *PRP is Solutia.*

2. **O&M Cost Records**
✓ Readily available ✓ Up to date
✓ Funding mechanism/agreement in place (entirely funded by PRP)
Original O&M cost estimate ☐ Breakdown attached

Total annual cost by year for review period if available

From ☐ Breakdown attached
Date 1/1/2002 Date 12/31/2002 Total cost $649,000
From ☐ Breakdown attached
Date 1/1/2003 Date 12/31/2003 Total cost $502,000
From ☐ Breakdown attached
Date 1/1/2004 Date 12/31/2004 Total cost $686,000
From ☐ Breakdown attached
Date 1/1/2005 Date 12/31/2005 Total cost $474,000
From ☐ Breakdown attached
Date 1/1/2006 Date 12/31/2006 Total cost $363,000

3. **Unanticipated or Unusually High O&M Costs During Review Period**
Describe costs and reasons:

$100k overhaul of plant and update to training performed in 2004 due to discharge exceedances.

V. ACCESS AND INSTITUTIONAL CONTROLS ☐ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ✓ Location shown on site map ✓ Gates secured ☐ N/A
Remarks:

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A
Remarks: *Signs posted every 50 yards.*

C. Institutional Controls (ICs)

1. **Implementation and enforcement**
Site conditions imply ICs not properly implemented ☐ Yes ✓ No ☐ N/A
Site conditions imply ICs not being fully enforced ☐ Yes ✓ No ☐ N/A

Type of monitoring: *ground water compliance*
Frequency: *quarterly and annual*
Responsible party/agency: *PRP*

Contact:

Name: John Danna Title Date Phone no. (281) 831-2107

Reporting is up-to-date ✓ Yes ☐ No ☐ N/A
Reports are verified by the lead agency ✓ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ✓ No ☐ N/A
Violations have been reported ✓ Yes ☐ No ☐ N/A
Remarks: *Deed Notices for the original approximately 11-acres were filed with Galveston County in 1993. Draft deed restrictions have been sent to the EPA for review and will be filed following EPA approval.*

2. **Adequacy** ☐ ICs are adequate ✓ ICs are inadequate ☐ N/A
Remarks: *Deed restriction are currently being reviewed by EPA.*

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ✓ No vandalism evident
Remarks

2. **Land use changes on site** ✓ N/A
Remarks

3. **Land use changes off site** ✓ N/A
Remarks

VI. GENERAL SITE CONDITIONS

A. Roads ✓ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map ✓ Roads adequate ☐ N/A

Remarks:

B. Other Site Conditions

Remarks ____________________

VII. ENGINEERED COVERS ✓ Applicable ☐ N/A

A. Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ✓ Settlement not evident
Areal extent__________ Depth__________
Remarks:
Pads "float". They are separate from well to avoid damage when settlement occurs. Some settlement is expected from ground water pumping.

2. **Cracks** ☐ Location shown on site map ✓ Cracking not evident
Lengths__________ Widths__________ Depths__________
Remarks____________________

3. **Erosion** ☐ Location shown on site map ✓ Erosion not evident
Areal extent__________ Depth__________
Remarks: *Some minor surface erosion was reported on the north end of the cap in 2005. This has been repaired.*

4. **Holes** ☐ Location shown on site map ✓ Holes not evident
Areal extent__________ Depth__________
Remarks____________________

5. **Vegetative Cover** ✓ Grass ✓ Cover properly established ✓ No signs of stress
☐ Trees/Shrubs (indicate size and locations on a diagram)
Remarks:

6. **Alternative Cover (armored rock, concrete, etc.)** ✓ N/A
Remarks____________________

7. **Bulges** ☐ Location shown on site map ✓ Bulges not evident
Areal extent__________ Height__________
Remarks

8.	**Wet Areas/Water Damage**	✓ Wet areas/water damage not evident	
	☐ Wet areas	☐ Location shown on site map	Areal extent______
	☐ Ponding	☐ Location shown on site map	Areal extent______
	☐ Seeps	☐ Location shown on site map	Areal extent______
	☐ Soft subgrade	☐ Location shown on site map	Areal extent______
	Remarks:		
9.	**Slope Instability** ☐ Slides	☐ Location shown on site map	✓ No evidence of slope instability
	Areal extent______ Remarks______		
B.	**Benches** ☐ Applicable ✓ N/A (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		
1.	**Flows Bypass Bench** Remarks	☐ Location shown on site map	☐ okay
2.	**Bench Breached** Remarks	☐ Location shown on site map	☐ okay
3.	**Bench Overtopped** Remarks	☐ Location shown on site map	☐ okay
C.	**Letdown Channels** ☐ Applicable ✓ N/A (Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)		
1.	**Settlement** Areal extent______ Remarks______	☐ Location shown on site map Depth______	☐ No evidence of settlement
2.	**Material Degradation** Material type______ Remarks______	☐ Location shown on site map Areal extent______	☐ No evidence of degradation
3.	**Erosion** Areal extent______ Remarks:	☐ Evidence of Erosion Depth______	☐ No evidence of erosion
4.	**Undercutting** Remarks:	☐ Evidence of undercutting	☐ No evidence of undercutting

5.	**Obstructions** Type__________ ☐ No obstructions ☐ Location shown on site map Areal extent________ Size______ Remarks__________	
6.	**Excessive Vegetative Growth** Type__________ ☐ No evidence of excessive growth ☐ Vegetation in channels does not obstruct flow ☐ Location shown on site map Areal extent________ Remarks__________	
D. Cover Penetrations ✓ Applicable ☐ N/A		
1.	**Gas Vents** ☐ Active ✓ Passive ☐ Properly secured/locked ✓ Functioning ✓ Routinely sampled ✓ Good condition ☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A Remarks:	
2.	**Gas Monitoring Probes** ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs Maintenance ✓ N/A Remarks__________	
3.	**Monitoring Wells** (within surface area of landfill) ✓ Properly secured/locked ☐ Functioning ✓ Routinely sampled ✓ Good condition ☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A Remarks__________	
4.	**Leachate Extraction Wells (dual purpose: same as gas vent wells)** ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs Maintenance ✓ N/A Remarks__________	
5.	**Settlement Monuments** ☐ Located ☐ Routinely surveyed ✓ N/A Remarks:	

E. Gas Collection and Treatment ☐ Applicable ✓ N/A	
1.	**Gas Treatment Facilities** ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse ☐ Good condition ☐ Needs Maintenance Remarks________________
2.	**Gas Collection Wells, Manifolds and Piping** ☐ Good condition ☐ Needs Maintenance Remarks
3.	**Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings) ☐ Good condition ☐ Needs Maintenance ☐ N/A Remarks________________
F. Cover Drainage Layer ✓ Applicable ☐ N/A	
1.	**Outlet Pipes Inspected** ✓ Functioning ☐ N/A Remarks________________
2.	**Outlet Rock Inspected** ✓ Functioning ☐ N/A Remarks: *Concrete Pad.*
G. Detention/Sedimentation Ponds ☐ Applicable ✓ N/A	
1.	**Siltation** Areal extent__________ Depth__________ ☐ N/A ☐ Siltation not evident Remarks________________
2.	**Erosion** Areal extent__________ Depth__________ ☐ Erosion not evident Remarks
3.	**Outlet Works** ☐ Functioning ☐ N/A Remarks________________
4.	**Dam** ☐ Functioning ☐ N/A Remarks________________

H. Retaining Walls ☐ Applicable ✓ N/A
1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident Horizontal displacement________ Vertical displacement________ Rotational displacement________ Remarks________
2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident Remarks________
I. Perimeter Ditches/Off-Site Discharge ✓ Applicable ☐ N/A
1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident Areal extent________ Depth________ Remarks *Ditches cleaned out approximately every three years.*
2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A ✓ Vegetation does not impede flow Areal extent________ Type________ Remarks:
3. **Erosion** ☐ Location shown on site map ✓ Erosion not evident Areal extent________ Depth________ Remarks________
4. **Discharge Structure** ✓ Functioning ☐ N/A Remarks *Off-site discharge pipe in good condition.*
VIII. VERTICAL BARRIER WALLS ✓ Applicable ☐ N/A
1. **Settlement** ☐ Location shown on site map ✓ Settlement not evident Areal extent________ Depth________ Remarks________
2. **Performance Monitoring** Type of monitoring *DNAPL compliance* ☐ Performance not monitored Frequency *Annual* ☐ Evidence of breaching Head differential________ Remarks________

IX. GROUND WATER/SURFACE WATER REMEDIES ✓ Applicable ☐ N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines ✓ Applicable ☐ N/A
1. **Pumps, Wellhead Plumbing, and Electrical** ✓ Good condition ☐ All required wells properly operating ☐ Needs Maintenance ☐ N/A Remarks
2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances** ✓ Good condition ☐ Needs Maintenance Remarks
3. **Spare Parts and Equipment** ✓ Readily available ✓ Good condition ☐ Requires upgrade ☐ Needs to be provided Remarks
B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ✓ N/A
1. **Collection Structures, Pumps, and Electrical** ☐ Good condition ☐ Needs Maintenance Remarks
2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances** ☐ Good condition ☐ Needs Maintenance Remarks
3. **Spare Parts and Equipment** ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided Remarks:

C. Treatment System	✓ Applicable ☐ N/A
1.	**Treatment Train** (Check components that apply) ☐ Metals removal ✓ Oil/water separation ☐ Bioremediation ✓ Air stripping ✓ Carbon adsorbers ☐ Filters____ ✓ Additive (*e.g.*, chelation agent, flocculent) *sulfuric acid* ☐ Others____ ✓ Good condition ☐ Needs Maintenance ☐ Sampling ports properly marked and functional ✓ Sampling/maintenance log displayed and up to date ✓ Equipment properly identified Remarks:
2.	**Electrical Enclosures and Panels** (properly rated and functional) ☐ N/A ✓ Good condition ☐ Needs Maintenance Remarks____
3.	**Tanks, Vaults, Storage Vessels** ☐ N/A ✓ Good condition ✓ Proper secondary containment ☐ Needs Maintenance Remarks: *Single walled tanks with concrete secondary containment pads.*
4.	**Discharge Structure and Appurtenances** ☐ N/A ✓ Good condition ☐ Needs Maintenance Remarks____
5.	**Treatment Building(s)** ☐ N/A ✓ Good condition (esp. roof and doorways) ☐ Needs repair ✓ Chemicals and equipment properly stored Remarks: *Sulfuric acid purchased as needed; not stored on site.*
6.	**Monitoring Wells** (pump and treatment remedy) ☐ Properly secured/locked ✓ Functioning ✓ Routinely sampled ✓ Good condition ✓ All required wells located ☐ Needs Maintenance ☐ N/A Remarks: *Static water levels measured monthly. Flow is checked daily.*
D. Monitoring Data	
1.	Monitoring Data ✓ Is routinely submitted on time ✓ Is of acceptable quality

F. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs Maintenance ✓ N/A
Remarks____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The initial part of the remedy has been completed and involved excavation and disposal of the waste within the pits, and installation of a cap over the former pits. The ongoing remedy is to pump the groundwater within the area encompassed by the 55-foot deep slurry wall maintaining an inward and upward gradient. The pumped water is treated to remove the DNAPL contamination. The collected DNAPL is shipped off-site for incineration and the treated water is discharged on site. The site inspection conducted May 15, 2007 indicates that the remedy is effective and operating as designed.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

In 2004, the equipment at the treatment plant was upgraded and staff was given additional training which resulted in a one-time increase in O&M costs. In the long term, these changes should help improve the effectiveness of the remedy.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

None observed.

3.1.1. D. Opportunities for Optimization
Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. *Refer to Section 7.1 of the Five-Year Review (2007). Re-evaluate in next Five-Year Review.*

Attachment 4

Site Inspection Photographs

Photo 1: Looking southwest from front gate on east side of MOTCO site, office trailer in foreground, groundwater treatment facility (GWTF) in background.

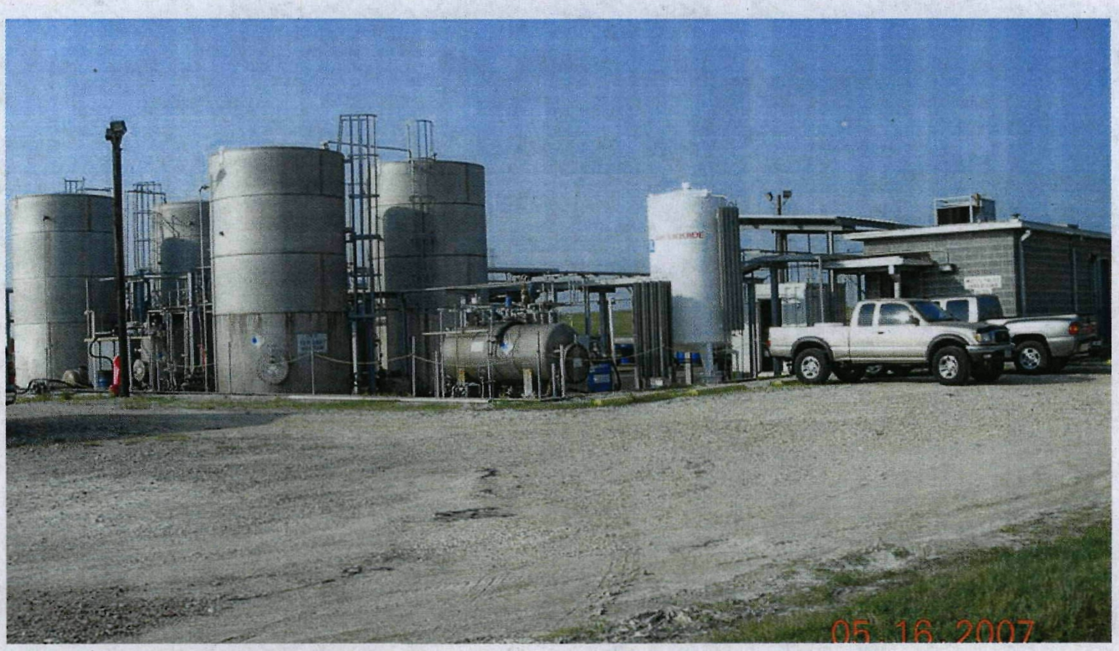


Photo 2: North side of GWTF

Photo 3: Southeast side of GWTF. Extraction well TZ-2A is in right foreground. TZ-3 monitoring well 0403 is in the left center of the picture.

Photo 4: Oil/Water separator. Temporary DNAPL holding tank on right side.

Photo 5: Oil/Water separator to right. Settling tank in center of photo. Note sight tube installed since previous 5-year review.

Photo 6: Bag filter vessel to left of photo. Blue vessel in center right of photo is prefilter for air stripper.

Photo 7: Air stripper at GWTF.

Photo 8: Carbon filter for air stream after treatment in air stripper (right background); Carbon filter for aqueous stream after treatment (right background).

Photo 9: Liquid nitrogen storage at GWTF.

Photo 10: Recovered DNAPL storage tank.

Photo 11: Looking southwest over the capped area from the GWTF.

Photo 12: Looking south over the capped area from the GWTF.

Photo 13: Looking north, Foreground – UCW-1 (left); CDW-2 (right); Background – GWTF.

Photo 14: DNAPL well, D-18, looking northwest.

Photo 15: DNAPL well, D-17, on left with air vent on right looking southeast.

Photo 16: DNAPL well, D-18, looking south

Photo 17: DNAPL Well, D-20, looking south-southeast. Note State Highway 3 (northbound) overpass in the background.

Photo 18: DNAPL Well, D-21, looking northwest.

Photo 19: DNAPL recovery well, D-1, looking southeast. Behind the well, note the elevated structure carrying piping and cables.

Photo 20: Looking northwest, wells 309 (left) and 409 (right).

Photo 21: Looking northwest along southwest edge of capped area. Drainage layer outlet pipe is in the middle of the photograph.

Photo 22: Looking south, slurry wall marker in foreground; TZ monitoring wells M6A and M6D in the right background.

Photo 23: Looking northwest at the treated groundwater discharge pipe and valve.

Photo 24: Looking southwest down the treated groundwater discharge pipe toward the outfall.

Photo 25: Looking east-northeast from the southernmost corner of the slurry wall along the slurry wall. The white posts in center foreground and center of the photograph indicate the location of the slurry wall. The M2 well cluster can be seen in the center background.

Photo 26: Looking southeast, M2B and M2A in foreground, white slurry wall marker in right center, M2E and M2C in right rear. Note State Highway 3 overpass in left rear.

Photo 27: Looking south-southeast, wells M2E, M2C and M2F. Note I-45 and I-45 frontage road in the background.

Photo 28: Looking northwest, wells 0308 and 0309 with utilities on raised posts in background. Capped area can be seen to the right of the high voltage power line towers.

Photo 29: Drainage layer outlet pipe at southern corner of capped area.

Photo 30: Facing northeast, raised utilities for extraction system on southeast side of capped area.

Photo 31: TZ-4 recovery well D-3 looking southeast. Note State Highway 3 overpass in the background.

Photo 32: DNAPL recovery well D-4 looking southeast. Note State Highway 3 overpass in the background.

Photo 33: TZ-2 extraction well 4A facing southeast with TZ-3 monitoring well GW-2DA to the rear near fence. Note I-45 frontage road and State Highway 3 in background.

Photo 34: DNAPL recovery well D-5 looking east-southeast. Note I-45 frontage road and State Highway 3 in background.

Photo 35: Facing northwest, from left to right, DNAPL recovery well D-6, groundwater monitoring wells GW-1S and GW-1D and DNAPL recovery well D-7.

Photo 36: Facing west, drainage layer outlet pipe at southeast corner of capped area

Photo 37: Facing east, DNAPL recovery well D-8. State Highway 3 can be seen in the background.

Photo 38: Facing southeast, DNAPL recovery well D-9.

Photo 39: Facing west, site information marker on east side of site. Note capped area in the background.

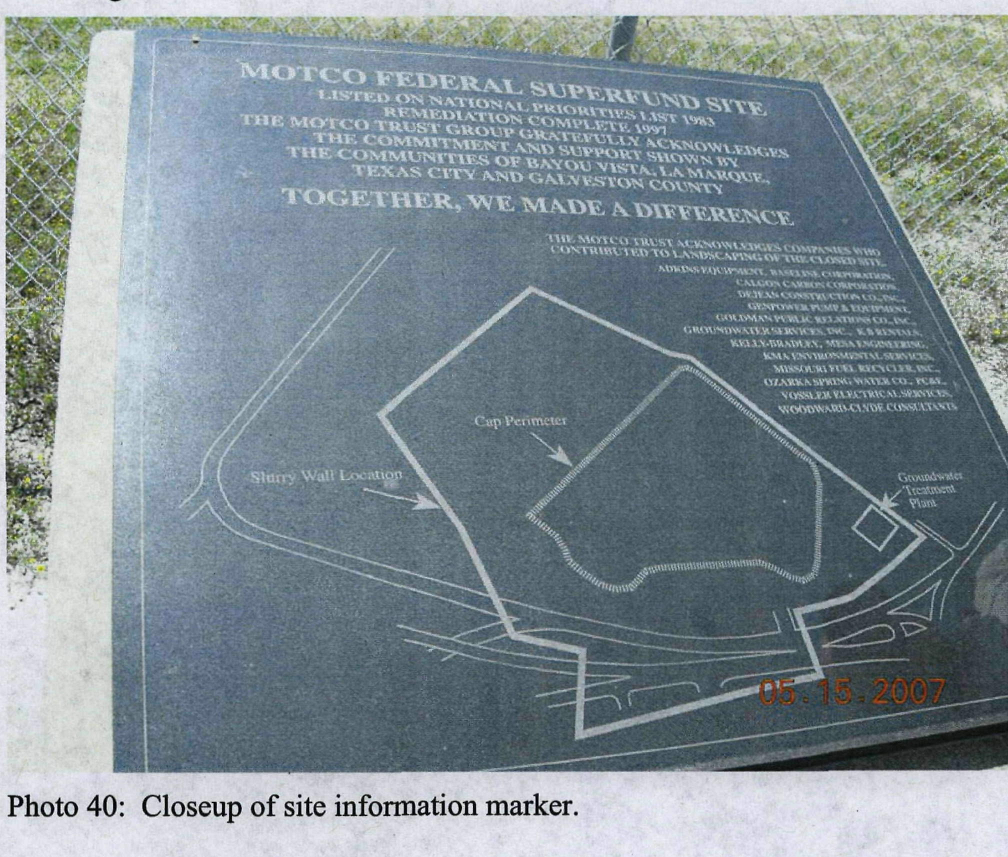


Photo 40: Closeup of site information marker.

Photo 41: Facing southwest, State Highway 3 median with DNAPL recovery well D-12 in the foreground. TZ monitoring wells GW-3S and GS-3D can be seen in the center left of the photo with DNAPL recovery well, D-11, visible above them. The M5 well cluster is located to the right and beyond D-11.

Photo 42: Facing north, State Highway 3 median. Center bottom, green riser pipe surrounded by yellow protective pipe is tilt gauge. Immediately behind tilt gauge is M5 well cluster. DNAPL recovery well D-11 can be seen beyond well cluster M5.

Photo 43: Facing east-northeast, TZ extraction wells, TZ-3A, left, and TZ-3, right,

Photo 44: Facing east, UC monitoring well CDW-3R.

Photo 45: Facing north, UC-3 extraction well E-1. Note that GWTF is in the background to the top left of the photo.

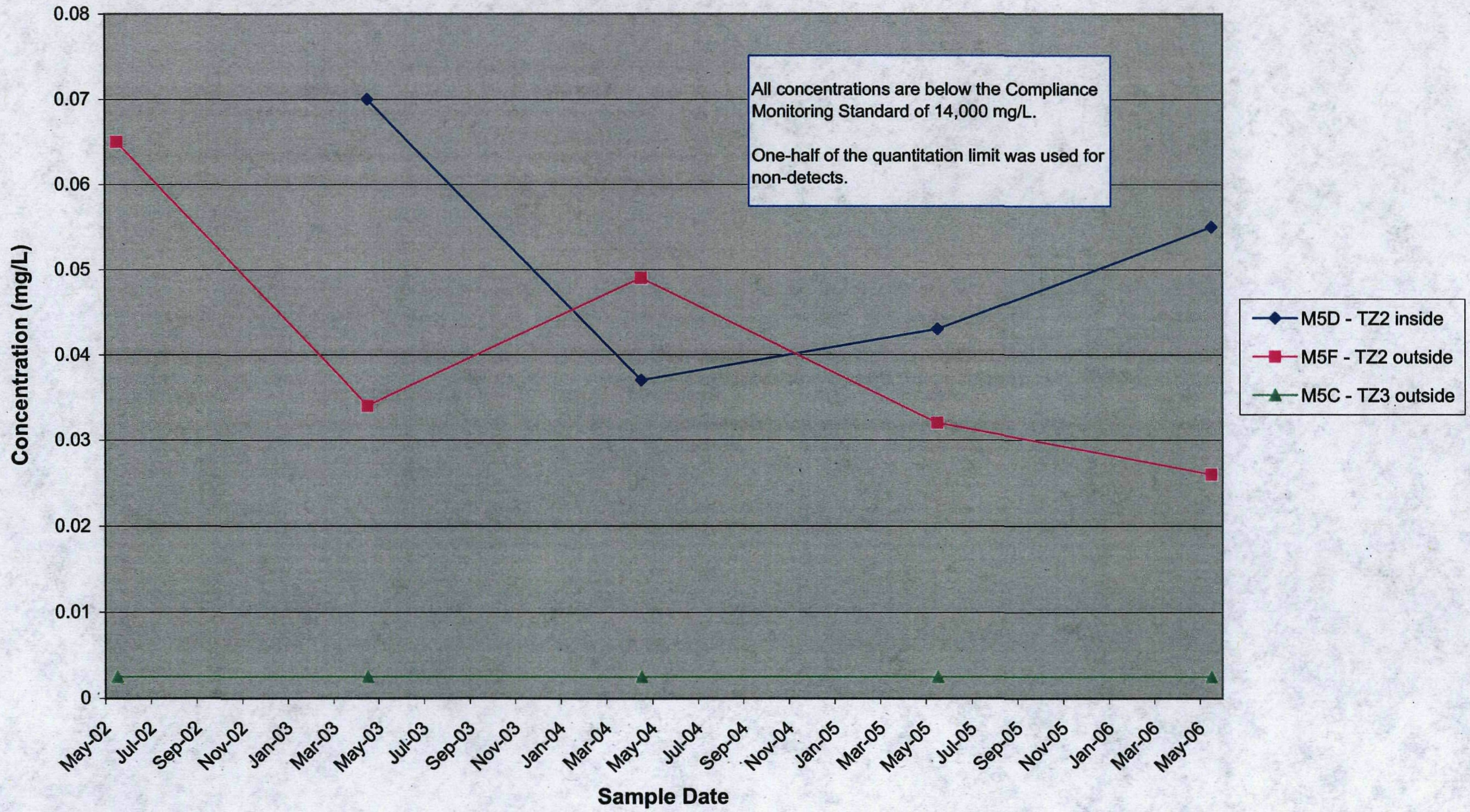
Photo 46: Facing north from left, TZ-2 extraction well (well TZ-2A) and TZ-3 extraction well (well TZ-2) with GWTF in the background.

Attachment 5

Concentration Graphs for Indicators

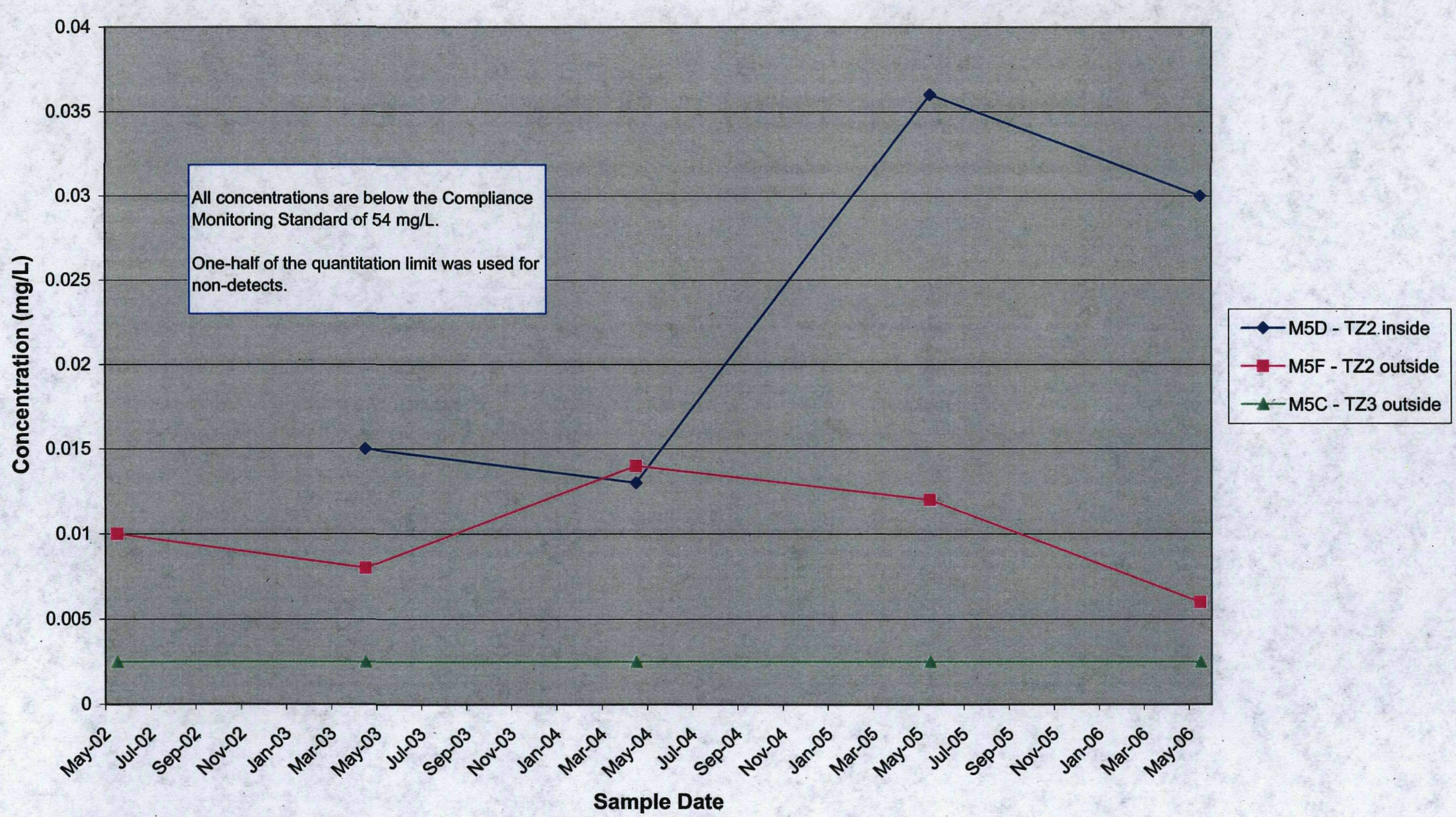
Attachment 5-1
Results of Ground Water Sampling
1,1,2-Trichloroethane Concentration Over Time

TZ-2 and TZ-3 Wells at the M-5 Well Cluster



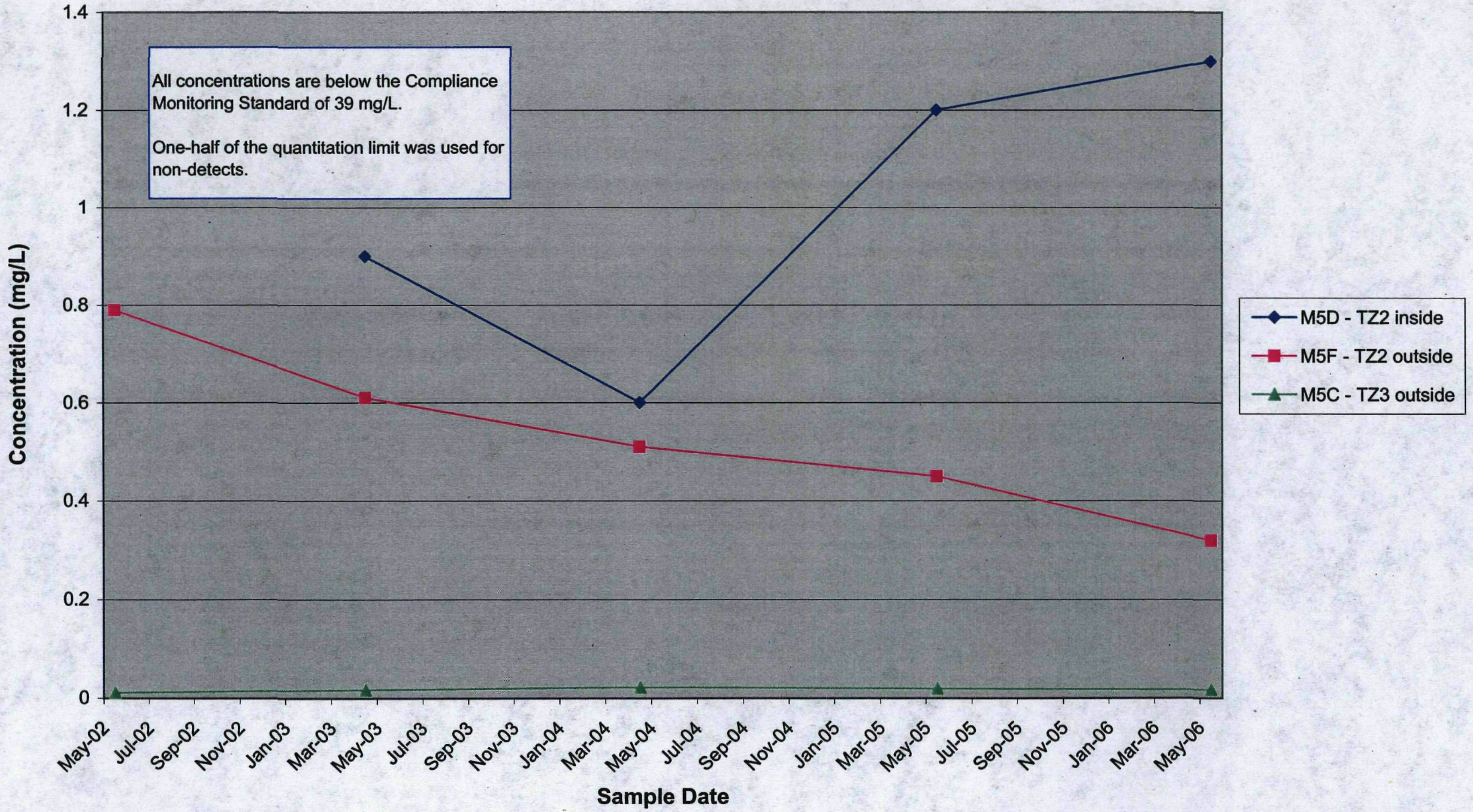
Attachment 5-2
Results of Ground Water Sampling
1,1-Dichloroethene Concentration Over Time

TZ-2 and TZ-3 Wells at the M-5 Well Cluster

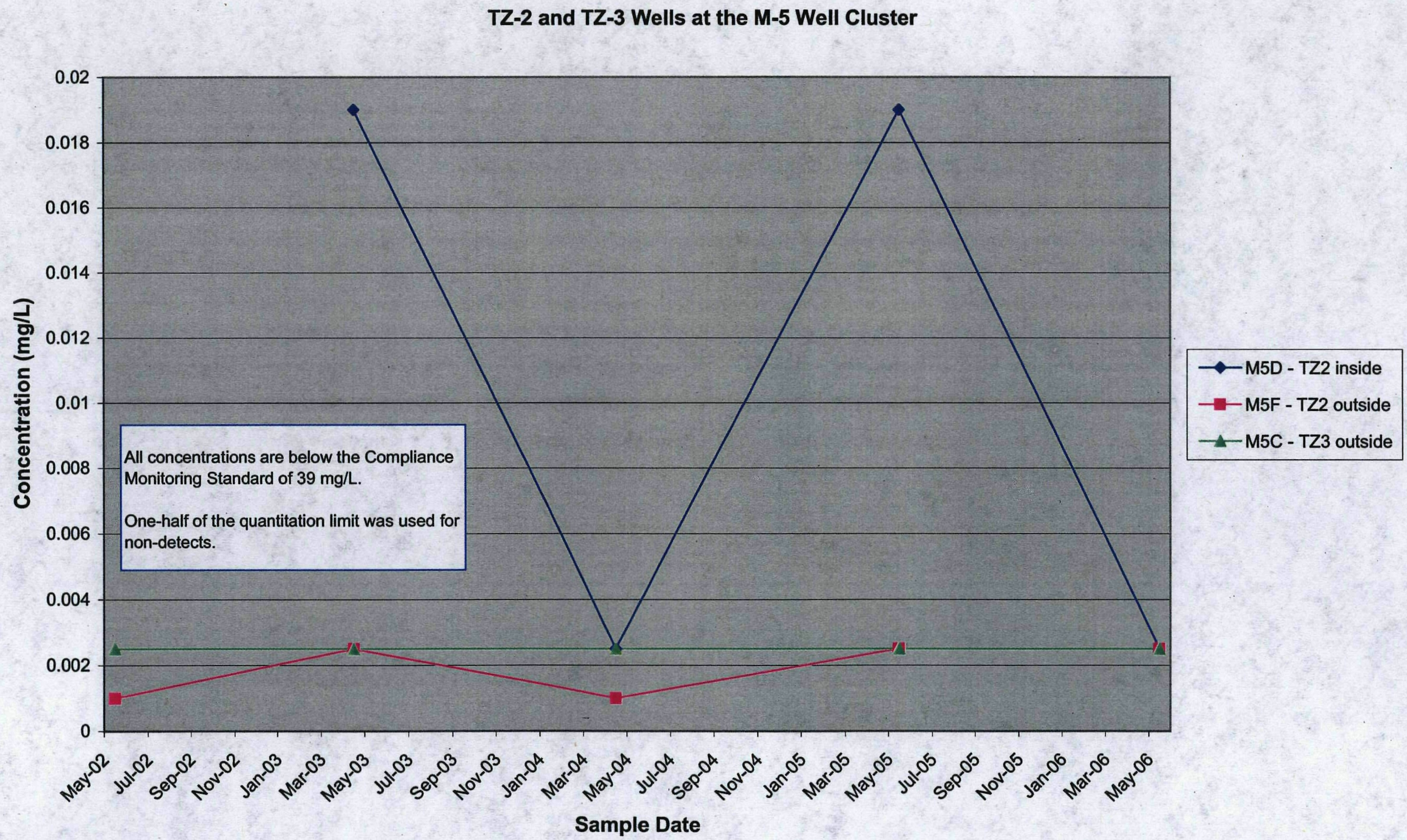


Attachment 5-3
Results of Ground Water Sampling
1,2-Dichloroethane Concentration Over Time

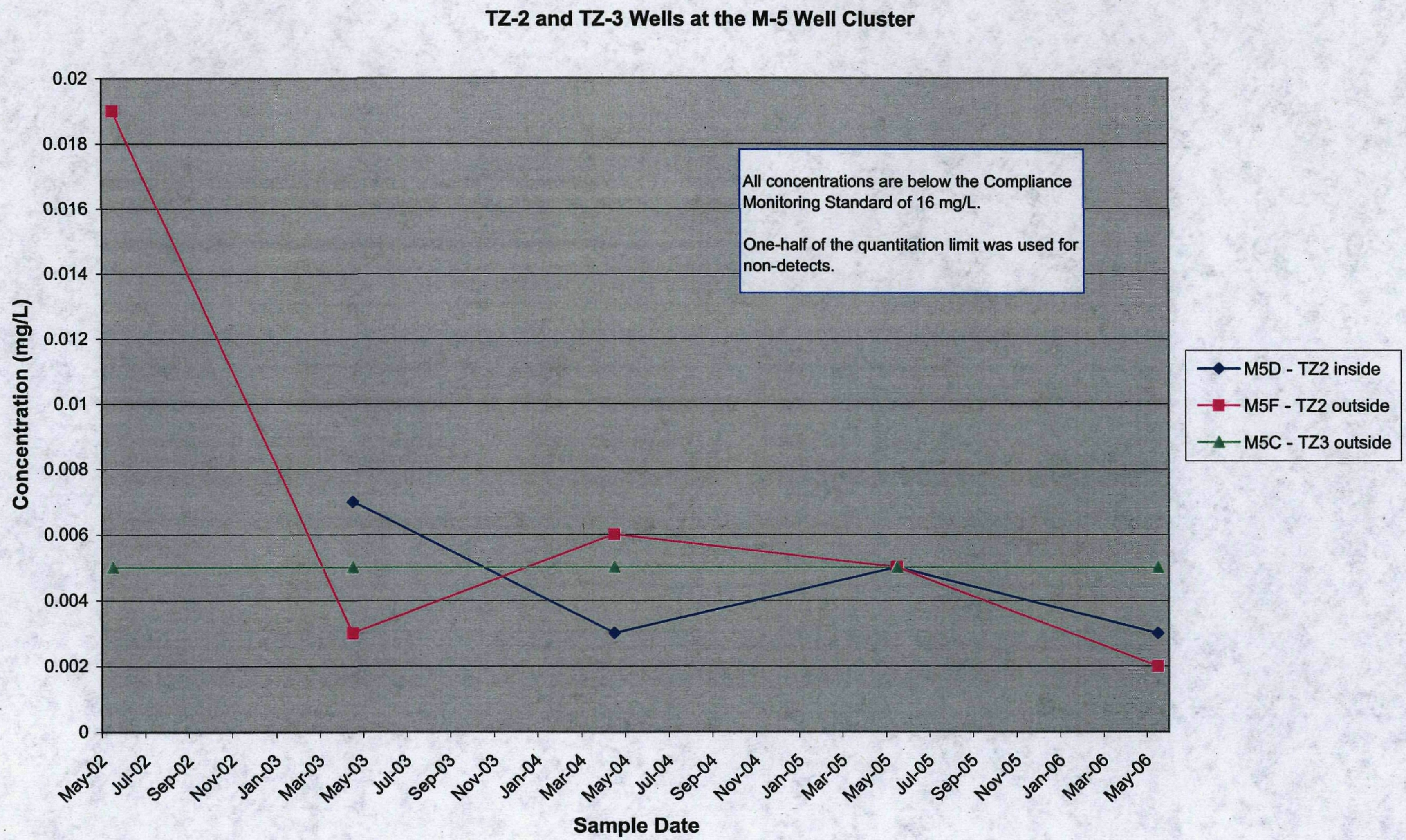
TZ-2 and TZ-3 Wells at the M-5 Well Cluster



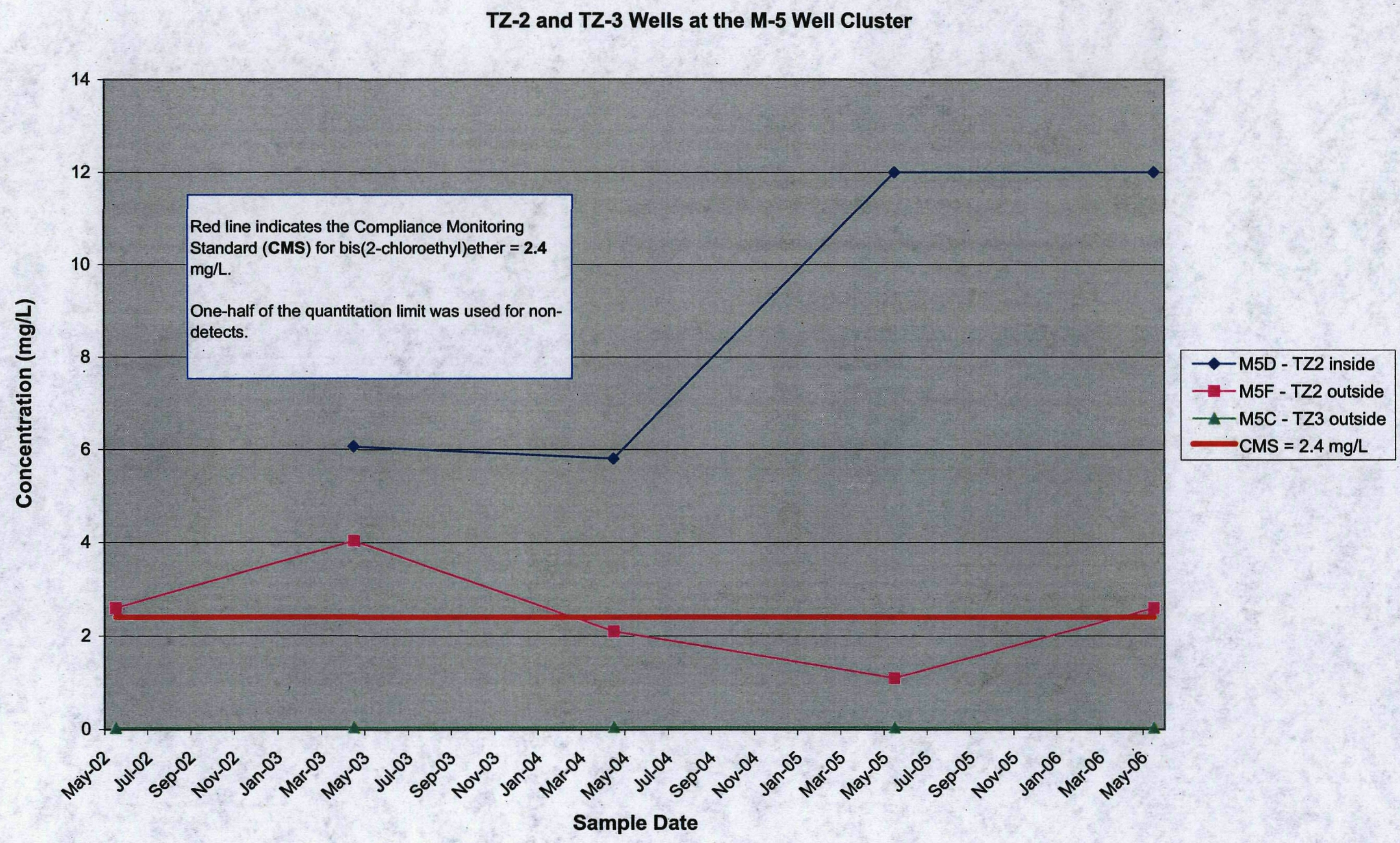
Attachment 5-4
Results of Ground Water Sampling
Benzene Concentration Over Time



Attachment 5-5
Results of Ground Water Sampling
Vinyl Chloride Concentration Over Time

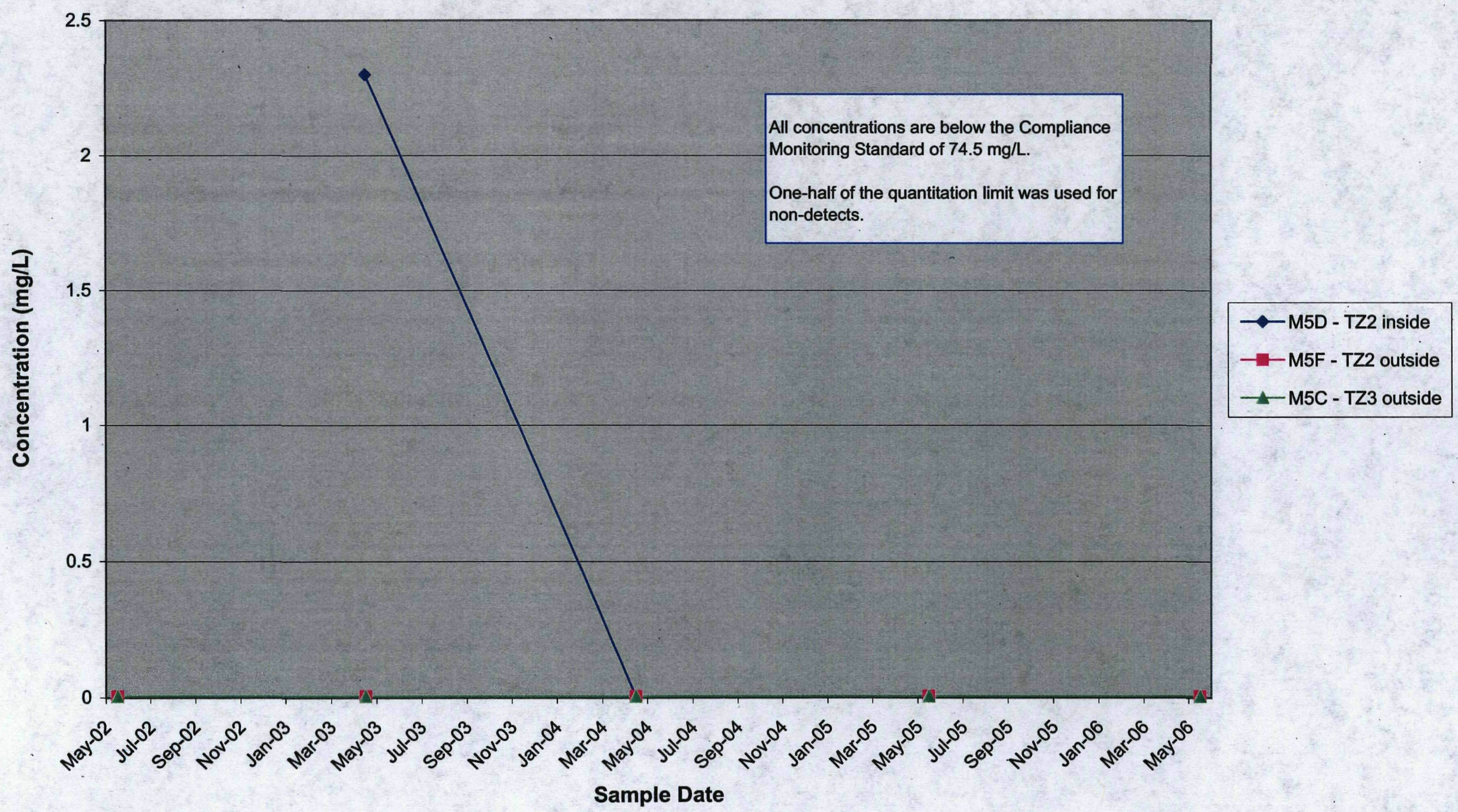


Attachment 5-6
Results of Ground Water Sampling
Bis(2-chloroethyl)ether Concentration Over Time



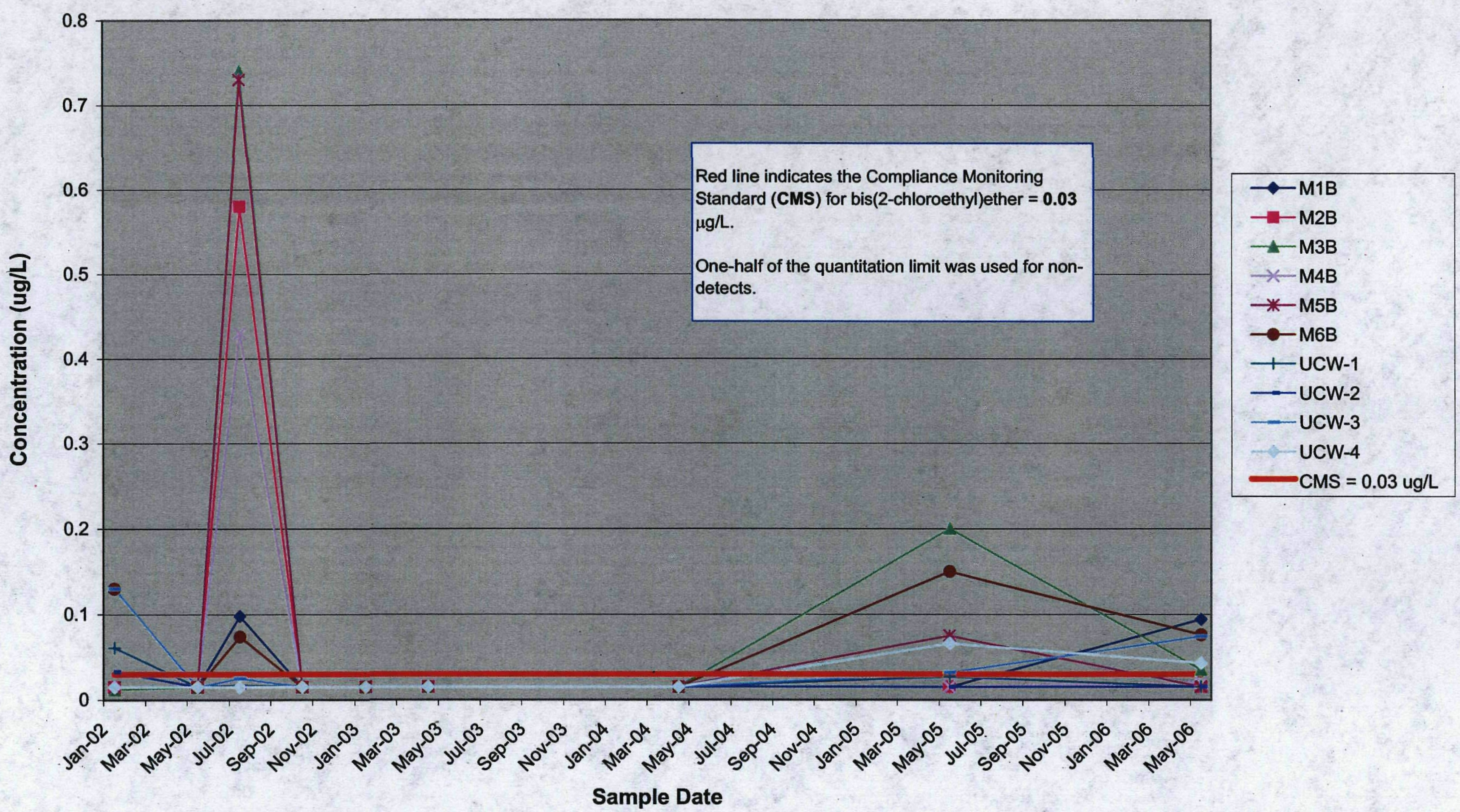
Attachment 5-7
Results of Ground Water Sampling
Naphthalene Concentration Over Time

TZ-2 and TZ-3 Wells at the M-5 Well Cluster



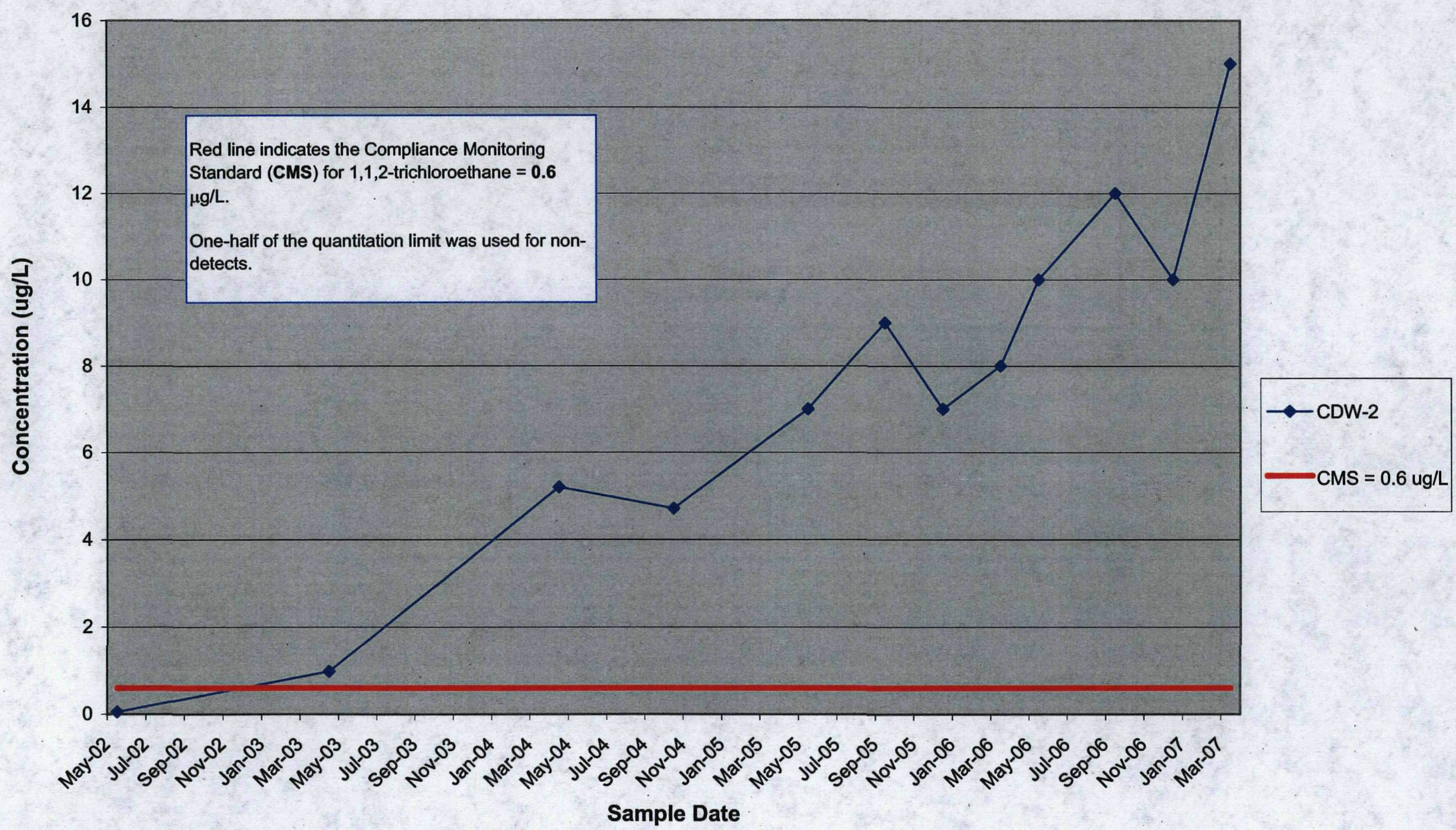
Attachment 5-8
Results of Ground Water Sampling
Bis(2-chloroethyl)ether Concentration Over Time

Upper Chicot (UC-1) Wells

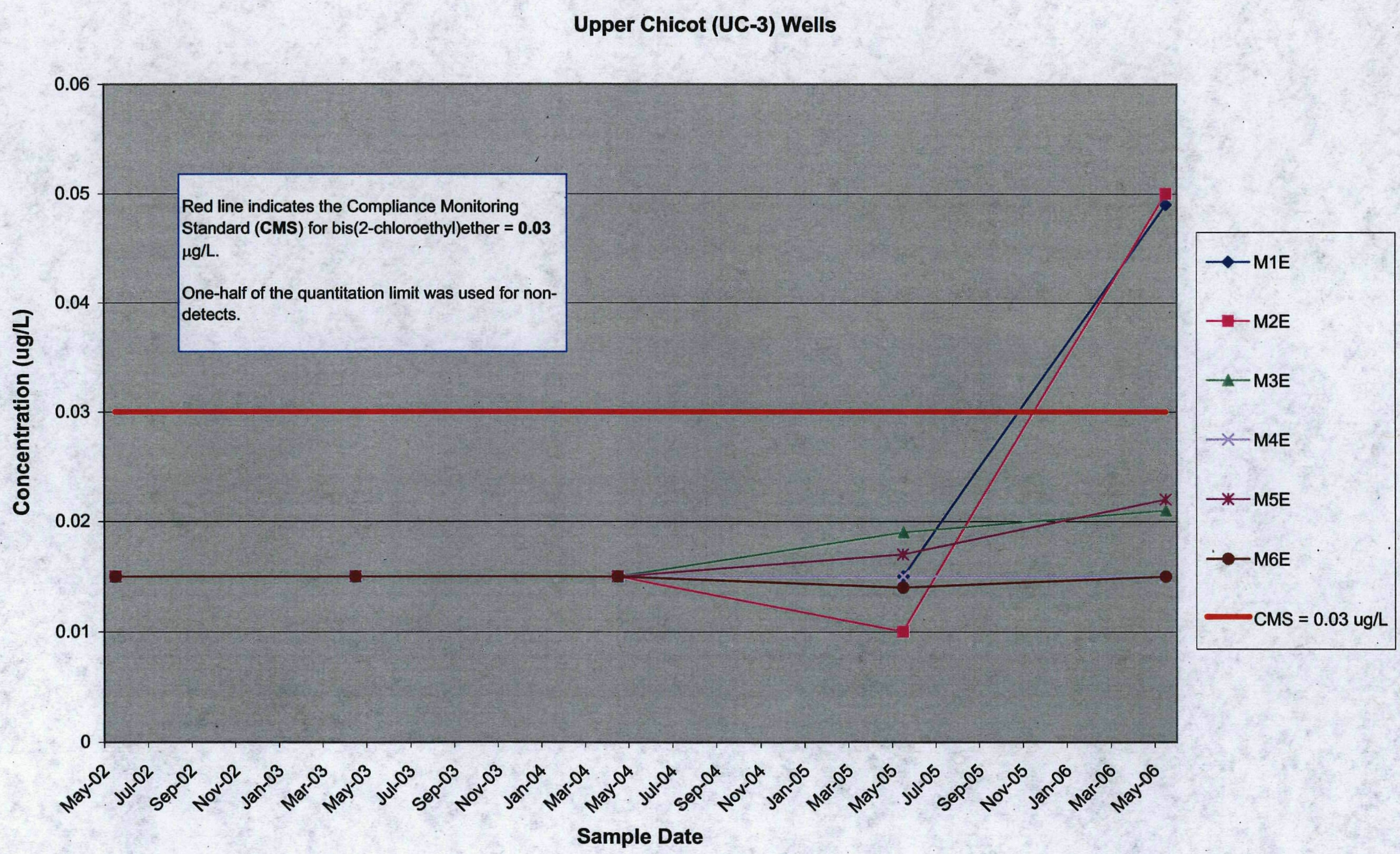


Attachment 5-9
Results of Ground Water Sampling
1,1,2-Trichloroethane Concentration Over Time

Upper Chicot (UC-2) Well CDW-2

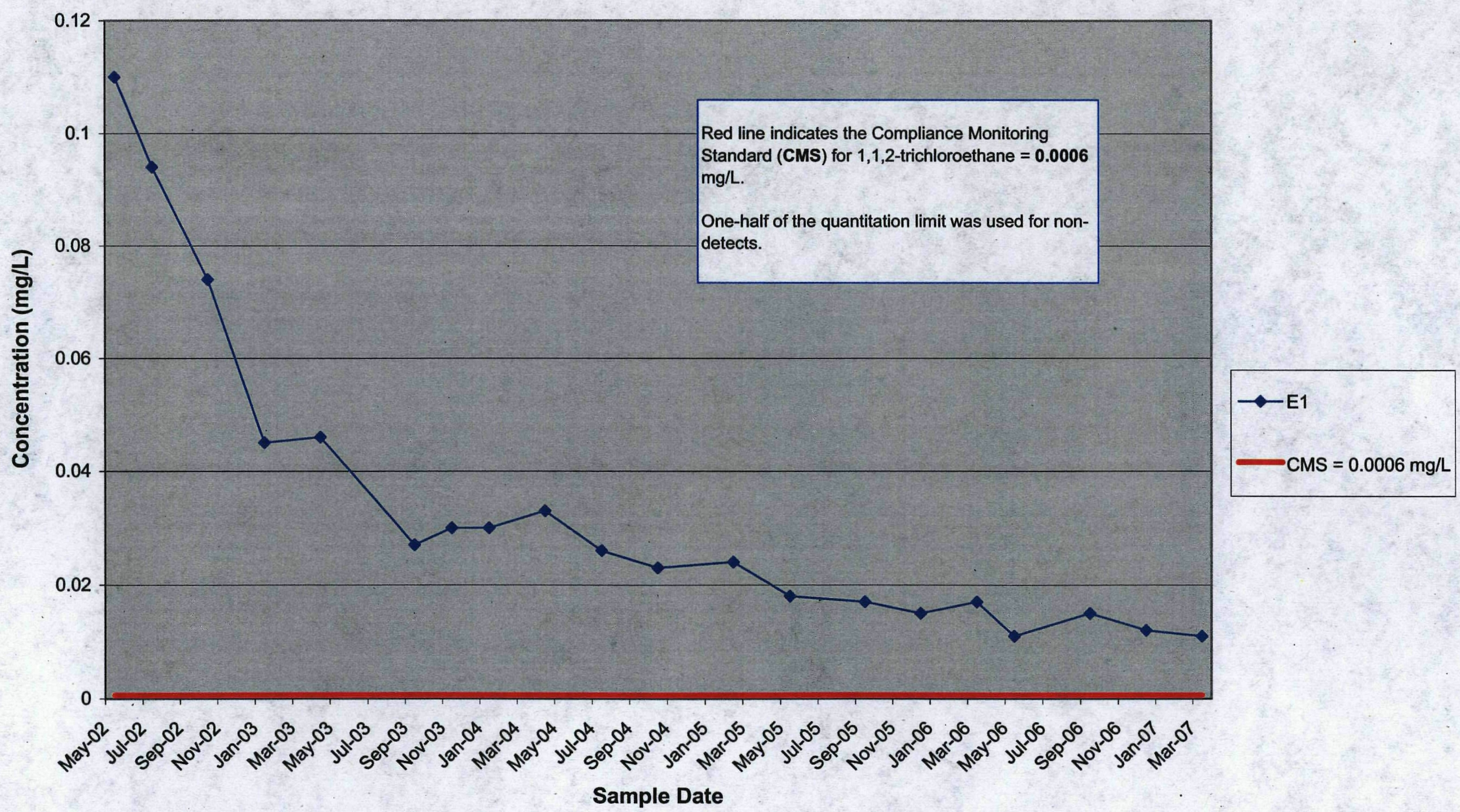


Attachment 5-10
Results of Ground Water Sampling
Bis(2-chloroethyl)ether Concentration Over Time



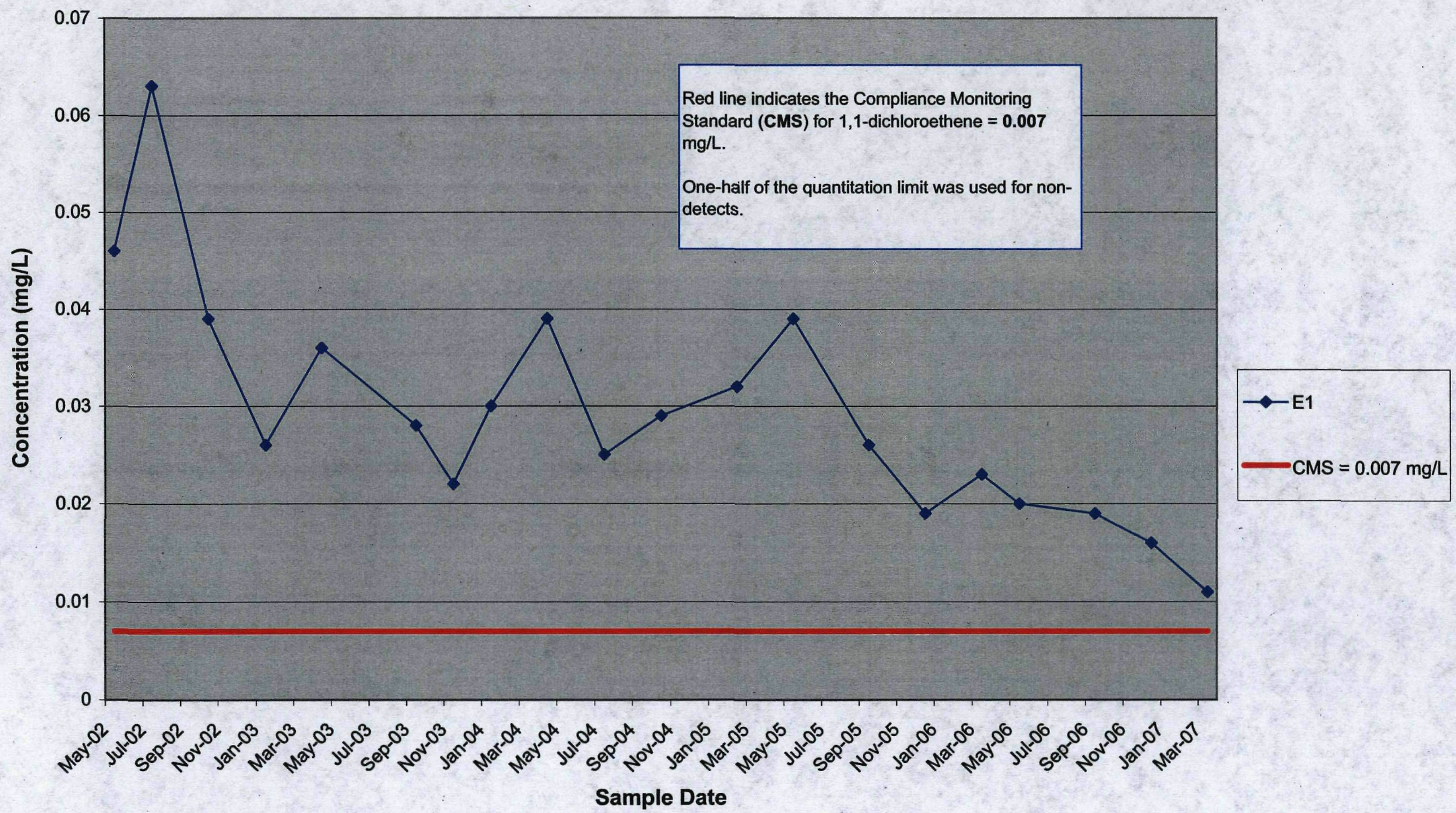
Attachment 5-11
Results of Ground Water Sampling
1,1,2-Trichloroethane Concentration Over Time

Upper Chicot (UC-3) Well E1

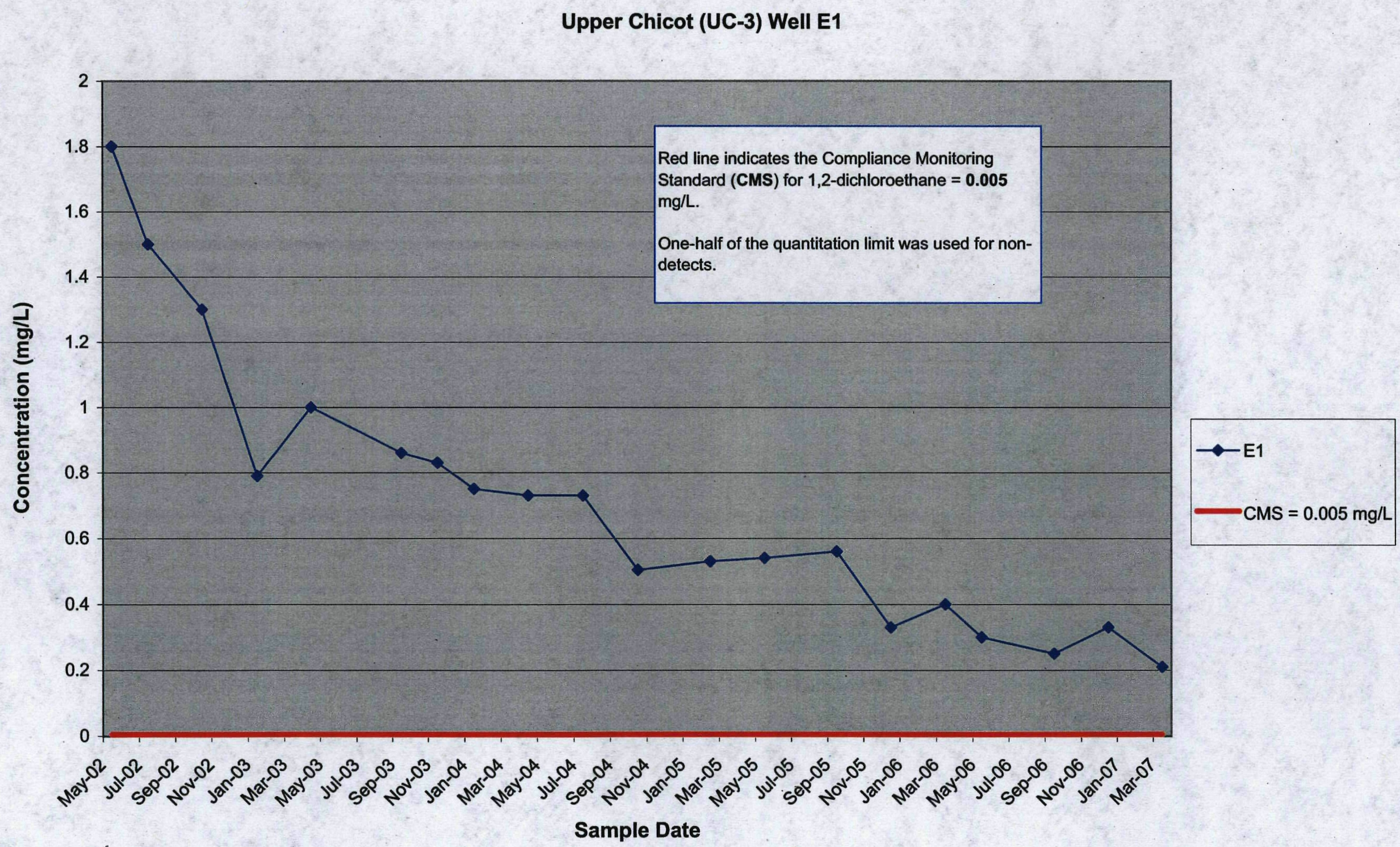


Attachment 5-12
Results of Ground Water Sampling
1,1-Dichloroethene Concentration Over Time

Upper Chicot (UC-3) Well E1

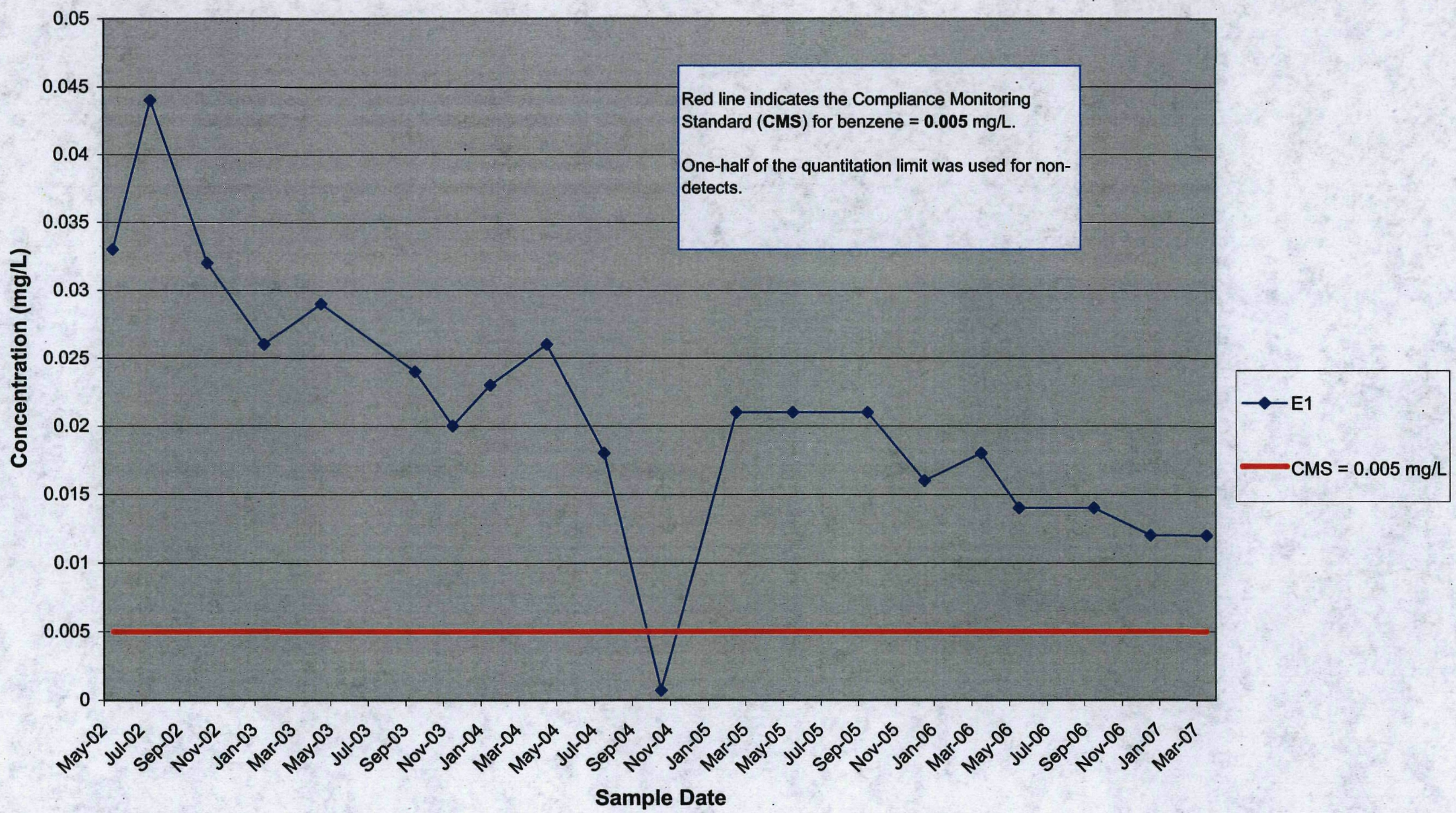


Attachment 5-13
Results of Ground Water Sampling
1,2-Dichloroethane Concentration Over Time



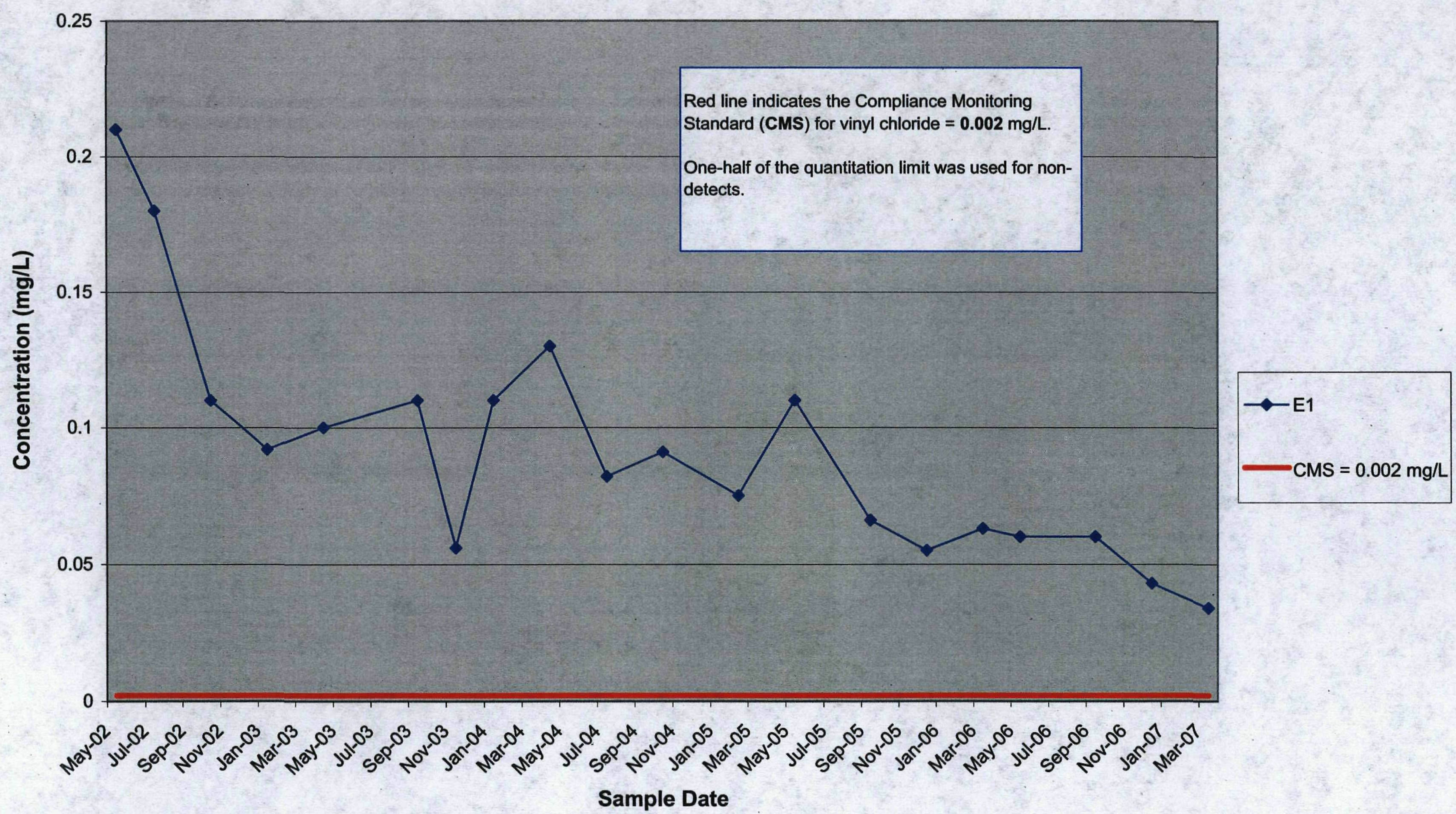
Attachment 5-14
Results of Ground Water Sampling
Benzene Concentration Over Time

Upper Chicot (UC-3) Well E1

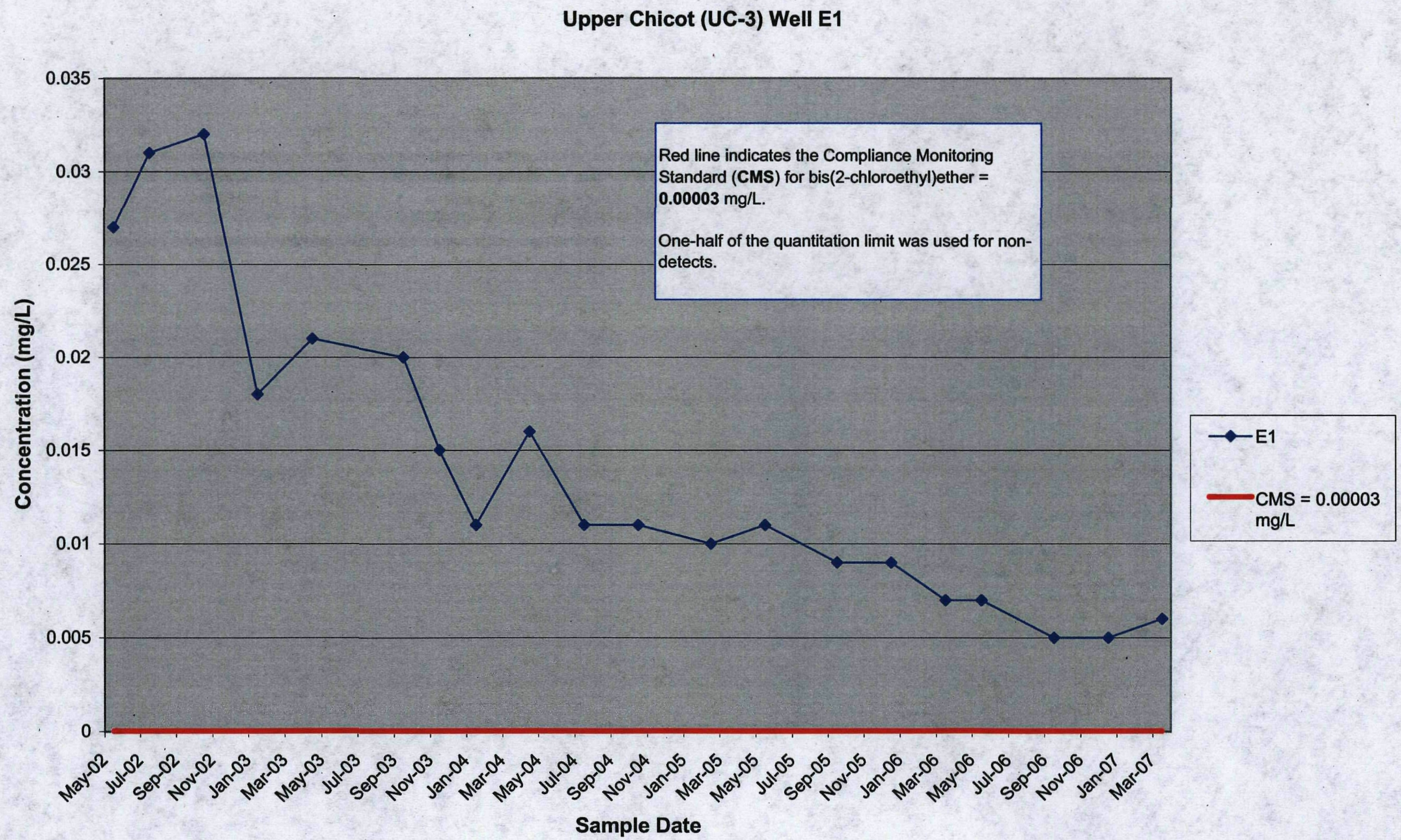


Attachment 5-15
Results of Ground Water Sampling
Vinyl Chloride Concentration Over Time

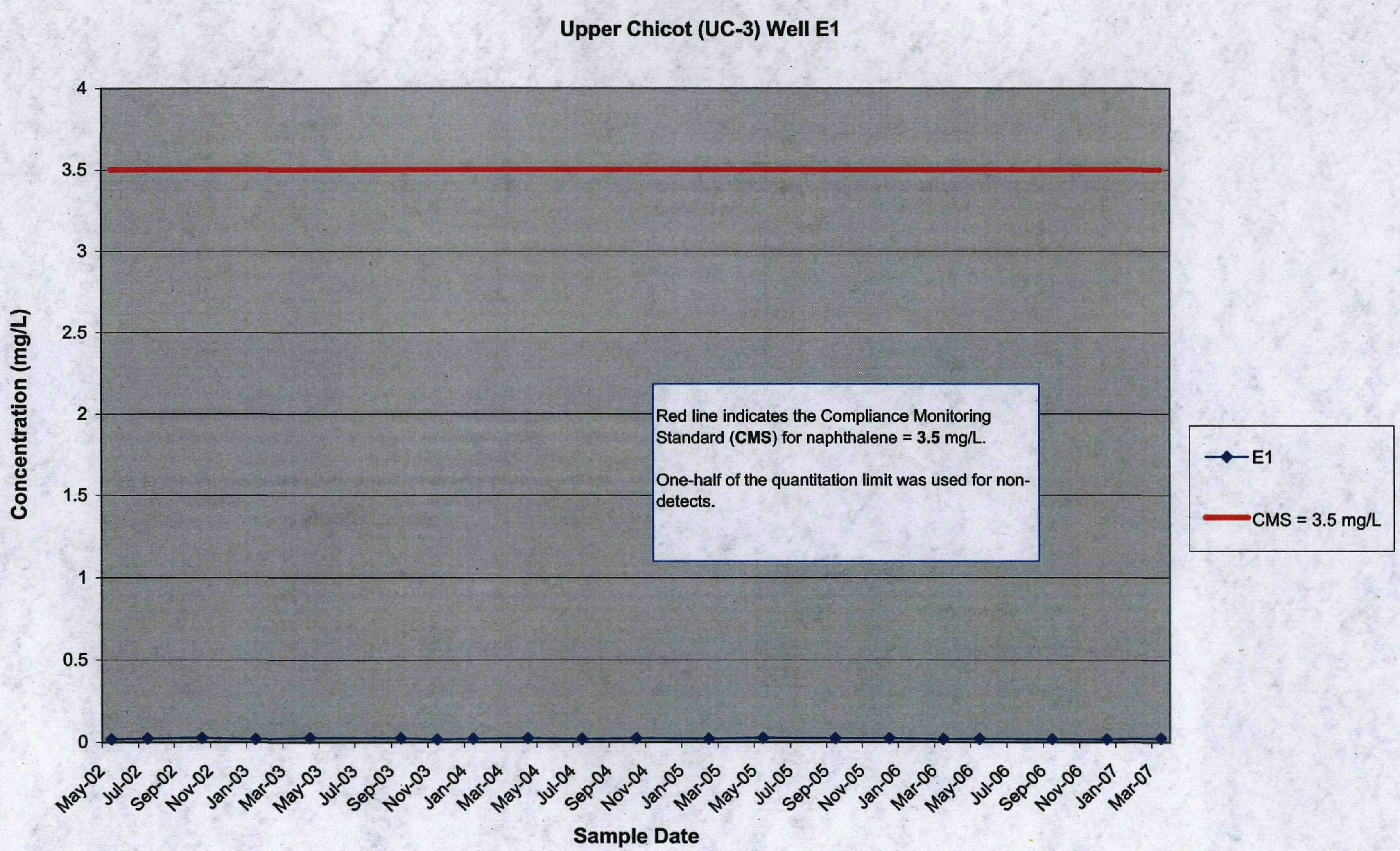
Upper Chicot (UC-3) Well E1



Attachment 5-16
Results of Ground Water Sampling
Bis(2-chloroethyl)ether Concentration Over Time



Attachment 5-17
Results of Ground Water Sampling
Naphthalene Concentration Over Time



Attachment 6

Compliance Monitoring Chemical Data

GROUNDWATER SERVICES, INC.

TABLE 2.2

RESULTS OF LTRA GROUNDWATER SAMPLING CONCENTRATIONS OVER TIME: TRANSMISSIVE ZONE (TZ) WELLS

LTRA Groundwater Monitoring Program
MOTCO Site, La Marque, Texas

Well I.D.	Constituent	HBN	Sample Concentrations																						
		(mg/L)	Jan-01 (mg/L)	Apr-01 (mg/L)	Jul-01 (mg/L)	Oct-01 (mg/L)	Jan-02 (mg/L)	May-02 (mg/L)	Jul-02 (mg/L)	Oct-02 (mg/L)	Jan-03 (mg/L)	Apr-03 (mg/L)	Sep-03 (mg/L)	Nov-03 (mg/L)	Jan-04 (mg/L)	Apr-04 (mg/L)	Jul-04 (mg/L)	Oct-04 (mg/L)	Feb-05 (mg/L)	May-05 (mg/L)	Sep-05 (mg/L)	Dec-05 (mg/L)	Mar-06 (mg/L)	May-06 (mg/L)	Sep-06 (mg/L)	Dec-06 (mg/L)
308	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
308	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
308	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
308	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
308	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
308	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
308	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
308	TOC	-	N/S	**0.87 B**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
309	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
309	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
309	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
309	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
309	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
309	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
309	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
309	TOC	-	N/S	**0.77 B**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-7B	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-7B	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-7B	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-7B	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-7B	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-7B	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-7B	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-7B	TOC	-	N/S	**0.82 B**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-8B	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-8B	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-8B	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-8B	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-8B	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-8B	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-8B	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-8B	TOC	-	N/S	**0.63 B**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-9B	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-9B	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-9B	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-9B	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-9B	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-9B	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-9B	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-9B	TOC	-	N/S	**1.6**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M2D	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M2D	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M2D	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M2D	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M2D	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M2D	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M2D	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M2D	TOC	-	N/S	**1.1**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S

GROUNDWATER SERVICES, INC.

TABLE 2.2

RESULTS OF LTRA GROUNDWATER SAMPLING CONCENTRATIONS OVER TIME:
TRANSMISSIVE ZONE (TZ) WELLS

LTRA Groundwater Monitoring Program
MOTCO Site, La Marque, Texas

Well I.D.	Constituent	HBN (mg/L)	Sample Concentrations Jan-01 (mg/L)	Apr-01 (mg/L)	Jul-01 (mg/L)	Oct-01 (mg/L)	Jan-02 (mg/L)	May-02 (mg/L)	Jul-02 (mg/L)	Oct-02 (mg/L)	Jan-03 (mg/L)	Apr-03 (mg/L)	Sep-03 (mg/L)	Nov-03 (mg/L)	Jan-04 (mg/L)	Apr-04 (mg/L)	Jul-04 (mg/L)	Oct-04 (mg/L)	Feb-05 (mg/L)	May-05 (mg/L)	Sep-05 (mg/L)	Dec-05 (mg/L)	Mar-06 (mg/L)	May-06 (mg/L)	Sep-06 (mg/L)	Dec-06 (mg/L)
M3D	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M3D	1,1-Dichloroethene	54	N/S	0.009	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M3D	1,2-Dichloroethane	39	N/S	0.024	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M3D	Benzene	39	N/S	0.018	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M3D	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M3D	Bis(2-Chloroethyl)Ether	2.4	N/S	0.003 J	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M3D	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M3D	TOC	-	N/S	1.9	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M4D	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M4D	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M4D	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M4D	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M4D	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M4D	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M4D	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M4D	TOC	-	N/S	3.3	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M5D	1,1,2-Trichloroethane	14000	0.03	0.077	0.13	0.14 J	0.16	N/S	N/S	N/S	N/S	0.07	N/S	N/S	N/S	0.037	N/S	N/S	N/S	0.043	N/S	N/S	N/S	0.043	N/S	N/S
M5D	1,1-Dichloroethene	54	0.013	0.023	0.023	0.021 J	0.036	N/S	N/S	N/S	N/S	0.015	N/S	N/S	N/S	0.013	N/S	N/S	N/S	0.036	N/S	N/S	N/S	0.036	N/S	N/S
M5D	1,2-Dichloroethane	39	0.42	0.65	1.1 D	1.0 J	0.82 D	N/S	N/S	N/S	N/S	0.9 D	N/S	N/S	N/S	0.6 D	N/S	N/S	N/S	1.2 D	N/S	N/S	N/S	1.2 D	N/S	N/S
M5D	Benzene	39	0.1	0.12	0.19	0.2 J	0.21	N/S	N/S	N/S	N/S	0.019	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	0.019	N/S	N/S	N/S	0.019	N/S	N/S
M5D	Vinyl Chloride	16	0.056	0.092	0.12	0.093 J	0.11	N/S	N/S	N/S	N/S	0.007 J	N/S	N/S	N/S	0.003 J	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M5D	Bis(2-Chloroethyl)Ether	2.4	4.6	7.1 D	5.7 D	8.5 J	6.8 D	N/S	N/S	N/S	N/S	6.060 D	N/S	N/S	N/S	5.8 D	N/S	N/S	N/S	12.0 D	N/S	N/S	N/S	12.0 D	N/S	N/S
M5D	Naphthalene	74.5	0.013	< 0.01	0.003 J	0.008 J	0.006 J	N/S	N/S	N/S	N/S	2.30 J	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M5D	TOC	-	<2.2	1.9	3	2.7	2.6	N/S	N/S	N/S	N/S	2.05	N/S	N/S	N/S	15.6	N/S	N/S	N/S	65.0	N/S	N/S	N/S	65.0	N/S	N/S
M6D	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M6D	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M6D	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M6D	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M6D	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M6D	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M6D	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M6D	TOC	-	N/S	1.1	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M1F	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M1F	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M1F	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	0.002 J	N/S	N/S	N/S	0.002 J	N/S	N/S	N/S	0.001 J	N/S	N/S
M1F	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M1F	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M1F	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M1F	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M1F	TOC	-	N/S	0.98 B	N/S	N/S	N/S	1.5	N/S	N/S	N/S	0.94 B	N/S	N/S	N/S	0.808 B	N/S	N/S	N/S	29.0	N/S	N/S	N/S	2.88	N/S	N/S
M2F	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M2F	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M2F	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M2F	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M2F	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M2F	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M2F	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M2F	TOC	-	N/S	1.3	N/S	N/S	N/S	1.2	N/S	N/S	N/S	1.69	N/S	N/S	N/S	0.417 B	N/S	N/S	N/S	8.3	N/S	N/S	N/S	0.591 B	N/S	N/S

TABLE 2.2

RESULTS OF LTRA GROUNDWATER SAMPLING CONCENTRATIONS OVER TIME:
TRANSMISSIVE ZONE (TZ) WELLS

LTRA Groundwater Monitoring Program
MOTCO Site, La Marque, Texas

GROUNDWATER SERVICES, INC.

Well I.D.	Constituent	HBN (mg/L)	Sample Concentrations																							
			Jan-01 (mg/L)	Apr-01 (mg/L)	Jul-01 (mg/L)	Oct-01 (mg/L)	Jan-02 (mg/L)	May-02 (mg/L)	Jul-02 (mg/L)	Oct-02 (mg/L)	Jan-03 (mg/L)	Apr-03 (mg/L)	Sep-03 (mg/L)	Nov-03 (mg/L)	Jan-04 (mg/L)	Apr-04 (mg/L)	Jul-04 (mg/L)	Oct-04 (mg/L)	Feb-05 (mg/L)	May-05 (mg/L)	Sep-05 (mg/L)	Dec-05 (mg/L)	Mar-06 (mg/L)	May-06 (mg/L)	Sep-06 (mg/L)	Dec-06 (mg/L)
M3F	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	0.002 J	N/S	N/S	N/S	0.001 J	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M3F	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	0.001 J	N/S	N/S	N/S	0.001 J	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M3F	1,2-Dichloroethane	39	N/S	0.005	N/S	N/S	N/S	0.006	N/S	N/S	N/S	0.004 J	N/S	N/S	N/S	0.004 J	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	0.003 J	N/S	N/S
M3F	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M3F	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M3F	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M3F	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M3F	TOC	-	N/S	4.5	N/S	N/S	N/S	2.3	N/S	N/S	N/S	1.19	N/S	N/S	N/S	2.55	N/S	N/S	N/S	13.1	N/S	N/S	N/S	5.56	N/S	N/S
M4F	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M4F	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M4F	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M4F	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M4F	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M4F	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M4F	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M4F	TOC	-	N/S	3.0	N/S	N/S	N/S	2.9	N/S	N/S	N/S	1.97	N/S	N/S	N/S	4.32	N/S	N/S	N/S	11.5	N/S	N/S	N/S	5.61	N/S	N/S
M5F	1,1,2-Trichloroethane	14000	0.038	0.036	0.053	0.061	0.035	0.065	N/S	N/S	N/S	0.034	N/S	N/S	N/S	0.049	N/S	N/S	N/S	0.032	N/S	N/S	N/S	0.026	N/S	N/S
M5F	1,1-Dichloroethene	54	0.007	0.008	0.007	0.007	0.007 J	0.01	N/S	N/S	N/S	0.008	N/S	N/S	N/S	0.014	N/S	N/S	N/S	0.012	N/S	N/S	N/S	0.006	N/S	N/S
M5F	1,2-Dichloroethane	39	0.48	0.45 D	0.61 D	0.86 D	0.37	0.79 D	N/S	N/S	N/S	0.61 D	N/S	N/S	N/S	0.51 D	N/S	N/S	N/S	0.45 D	N/S	N/S	N/S	0.320 D	N/S	N/S
M5F	Benzene	39	0.002 J	0.001 J	0.003 J	0.003 J	< 0.01	0.001 J	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	0.001 J	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M5F	Vinyl Chloride	16	0.012	0.008 J	0.018	0.009 J	0.010 J	0.019	N/S	N/S	N/S	0.003 J	N/S	N/S	N/S	0.006 J	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	0.002 J	N/S	N/S
M5F	Bis(2-Chloroethyl)Ether	2.4	5.1	6.8 D	1.6 D	5.1 D	3.5 D	2.6 D	N/S	N/S	N/S	4.033 D	N/S	N/S	N/S	2.1 D	N/S	N/S	N/S	1.1 D	N/S	N/S	N/S	2.6 D	N/S	N/S
M5F	Naphthalene	74.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.010	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M5F	TOC	-	<2.5	2.2	2	1.8	2.8	2.4	N/S	N/S	N/S	1.36	N/S	N/S	N/S	4.16	N/S	N/S	N/S	19.5	N/S	N/S	N/S	12.1	N/S	N/S
M6F	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	< 0.005 J	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M6F	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	< 0.005 J	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M6F	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005 J	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M6F	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005 J	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M6F	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	< 0.01 J	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M6F	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M6F	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M6F	TOC	-	N/S	2.1	N/S	N/S	N/S	1.0 B	N/S	N/S	N/S	0.53 B	N/S	N/S	N/S	< 0.36	N/S	N/S	N/S	6.5	N/S	N/S	N/S	1.04	N/S	N/S
MED-2	1,1,2-Trichloroethane	14000	N/S	0.004 J	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
MED-2	1,1-Dichloroethene	54	N/S	0.003 J	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
MED-2	1,2-Dichloroethane	39	N/S	0.085	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
MED-2	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
MED-2	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
MED-2	Bis(2-Chloroethyl)Ether	2.4	N/S	0.005 J	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
MED-2	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
MED-2	TOC	-	N/S	3.0	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-9	1,1,2-Trichloroethane	14000																								
OWM-9	1,1-Dichloroethene	54																								
OWM-9	1,2-Dichloroethane	39																								
OWM-9	Benzene	39	PLUGGED AND ABANDONED 4/14/94																							
OWM-9	Vinyl Chloride	16																								
OWM-9	Bis(2-Chloroethyl)Ether	2.4																								
OWM-9	Naphthalene	74.5																								
OWM-9	TOC	-																								

TABLE 2.2

RESULTS OF LTRA GROUNDWATER SAMPLING CONCENTRATIONS OVER TIME:
TRANSMISSIVE ZONE (TZ) WELLS

LTRA Groundwater Monitoring Program
MOTCO Site, La Marque, Texas

GROUNDWATER SERVICES, INC.

Well I.D.	Constituent	HBN (mg/L)	Sample Concentrations Jan-01 (mg/L)	Apr-01 (mg/L)	Jul-01 (mg/L)	Oct-01 (mg/L)	Jan-02 (mg/L)	May-02 (mg/L)	Jul-02 (mg/L)	Oct-02 (mg/L)	Jan-03 (mg/L)	Apr-03 (mg/L)	Sep-03 (mg/L)	Nov-03 (mg/L)	Jan-04 (mg/L)	Apr-04 (mg/L)	Jul-04 (mg/L)	Oct-04 (mg/L)	Feb-05 (mg/L)	May-05 (mg/L)	Sep-05 (mg/L)	Dec-05 (mg/L)	Mar-06 (mg/L)	May-06 (mg/L)	Sep-06 (mg/L)	Dec-06 (mg/L)
OWM-9A	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-9A	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-9A	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-9A	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-9A	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-9A	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-9A	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-9A	TOC	-	N/S	5.3	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-6R/6R2	1,1,2-Trichloroethane	14000	4.9	5.9 D	7.3	8.9	9.5 D	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-6R/6R2	1,1-Dichloroethene	54	1.1	1.5 D	0.8	1.5	3.2	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-6R/6R2	1,2-Dichloroethane	39	9.9	7.4 D	10	12	17 D	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-6R/6R2	Benzene	39	0.8	1.0 D	1.1	2	3.9	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-6R/6R2	Vinyl Chloride	16	3.4	6.4 D	4.4	7.6	18 D	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-6R/6R2	Bis(2-Chloroethyl)Ether	2.4	12	13.0 D	19	45 D	110 D	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-6R/6R2	Naphthalene	74.5	0.27	0.93 D	1	2.2D	2.5 D	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-6R/6R2	TOC	-	< 2.4J	4.9	4.4 J	6.9	20.3	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-1SR	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-1SR	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-1SR	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-1SR	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-1SR	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-1SR	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-1SR	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-1SR	TOC	-	N/S	1.1	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-3S	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
TZW-3S	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
TZW-3S	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
TZW-3S	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
TZW-3S	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
TZW-3S	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
TZW-3S	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
TZW-3S	TOC	-	N/S	1.8	N/S	N/S	N/S	2.5	N/S	N/S	N/S	0.50 B	N/S	N/S	N/S	0.926 B	N/S	N/S	N/S	8.6	N/S	N/S	N/S	2.34	N/S	N/S
TZW-4S	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
TZW-4S	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
TZW-4S	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
TZW-4S	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
TZW-4S	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
TZW-4S	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
TZW-4S	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
TZW-4S	TOC	-	N/S	1.4	N/S	N/S	N/S	1.1	N/S	N/S	N/S	0.55 B	N/S	N/S	N/S	0.44 B	N/S	N/S	N/S	4.2	N/S	N/S	N/S	2.41	N/S	N/S
TZW-7S	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
TZW-7S	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
TZW-7S	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
TZW-7S	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
TZW-7S	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
TZW-7S	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
TZW-7S	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
TZW-7S	TOC	-	N/S	1.5	N/S	N/S	N/S	1.1	N/S	N/S	N/S	0.60 B	N/S	N/S	N/S	0.707 B	N/S	N/S	N/S	5.2	N/S	N/S	N/S	3.02	N/S	N/S

TABLE 2.2

RESULTS OF LTRA GROUNDWATER SAMPLING CONCENTRATIONS OVER TIME: TRANSMISSIVE ZONE (TZ) WELLS

LTRA Groundwater Monitoring Program
MOTCO Site, La Marque, Texas

GROUNDWATER SERVICES, INC.

Well I.D.	Constituent	HBN (mg/L)	Sample Concentrations Jan-01 (mg/L)	Apr-01 (mg/L)	Jul-01 (mg/L)	Oct-01 (mg/L)	Jan-02 (mg/L)	May-02 (mg/L)	Jul-02 (mg/L)	Oct-02 (mg/L)	Jan-03 (mg/L)	Apr-03 (mg/L)	Sep-03 (mg/L)	Nov-03 (mg/L)	Jan-04 (mg/L)	Apr-04 (mg/L)	Jul-04 (mg/L)	Oct-04 (mg/L)	Feb-05 (mg/L)	May-05 (mg/L)	Sep-05 (mg/L)	Dec-05 (mg/L)	Mar-06 (mg/L)	May-06 (mg/L)	Sep-06 (mg/L)	Dec-06 (mg/L)
TZW-6	1,1,2-Trichloroethane	14000																								
TZW-6	1,1-Dichloroethene	54																								
TZW-6	1,2-Dichloroethane	39																								
TZW-6	Benzene	39	*TZW-6 WAS SCREENED ACROSS BOTH TZ-2 AND TZ-3 STRATA*																							
TZW-6	Vinyl Chloride	16	*TZW-6 PLUGGED AND ABANDONED 12/20/94*																							
TZW-6	Bis(2-Chloroethyl)Ether	2.4																								
TZW-6	Naphthalene	74.5																								
TZW-6	TOC	-																								
TZW-7	1,1,2-Trichloroethane	14000																								
TZW-7	1,1-Dichloroethene	54																								
TZW-7	1,2-Dichloroethane	39																								
TZW-7	Benzene	39	*TZ-7 WAS SCREENED ACROSS BOTH TZ-2 AND TZ-3 STRATA*																							
TZW-7	Vinyl Chloride	16	*TZ-7 PLUGGED AND ABANDONED 12/21/94*																							
TZW-7	Bis(2-Chloroethyl)Ether	2.4																								
TZW-7	Naphthalene	74.5																								
TZW-7	TOC	-																								
403	1,1,2-Trichloroethane	14000																								
403	1,1-Dichloroethene	54																								
403	1,2-Dichloroethane	39																								
403	Benzene	39	*WELL UTILIZED FOR GRADIENT MONITORING ONLY*																							
403	Vinyl Chloride	16																								
403	Bis(2-Chloroethyl)Ether	2.4																								
403	Naphthalene	74.5																								
403	TOC	-																								
408	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
408	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
408	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
408	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
408	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
408	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
408	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
408	TOC	-	N/S	**0.99 B**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
409	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
409	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
409	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
409	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
409	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
409	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
409	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
409	TOC	-	N/S	**0.72 B**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-7C	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-7C	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-7C	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-7C	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-7C	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-7C	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-7C	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
CMW-7C	TOC	-	N/S	**0.8 B**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S

TABLE 2.2

RESULTS OF LTRA GROUNDWATER SAMPLING CONCENTRATIONS OVER TIME: TRANSMISSIVE ZONE (TZ) WELLS

LTRA Groundwater Monitoring Program
MOTCO Site, La Marque, Texas

GROUNDWATER SERVICES, INC.

Well I.D.	Constituent	HBN (mg/L)	Sample Concentrations Jan-01 (mg/L)	Apr-01 (mg/L)	Jul-01 (mg/L)	Oct-01 (mg/L)	Jan-02 (mg/L)	May-02 (mg/L)	Jul-02 (mg/L)	Oct-02 (mg/L)	Jan-03 (mg/L)	Apr-03 (mg/L)	Sep-03 (mg/L)	Nov-03 (mg/L)	Jan-04 (mg/L)	Apr-04 (mg/L)	Jul-04 (mg/L)	Oct-04 (mg/L)	Feb-05 (mg/L)	May-05 (mg/L)	Sep-05 (mg/L)	Dec-05 (mg/L)	Mar-06 (mg/L)	May-06 (mg/L)	Sep-06 (mg/L)	Dec-06 (mg/L)
CMW-8C	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
CMW-8C	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
CMW-8C	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
CMW-8C	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
CMW-8C	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
CMW-8C	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
CMW-8C	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
CMW-8C	TOC	-	N/S	**0.77 B**	N/S	N/S	N/S	**1.1**	N/S	N/S	N/S	**0.46 B**	N/S	N/S	N/S	**0.456 B**	N/S	N/S	N/S	**8.5**	N/S	N/S	N/S	**2.14**	N/S	N/S
M1A	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M1A	1,1-Dichloroethene	54	N/S	**0.003 J**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M1A	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M1A	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M1A	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M1A	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M1A	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M1A	TOC	-	N/S	**2.3**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M2A	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M2A	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M2A	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M2A	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M2A	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M2A	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M2A	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M2A	TOC	-	N/S	**1**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M3A	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M3A	1,1-Dichloroethene	54	N/S	**0.003 J**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M3A	1,2-Dichloroethane	39	N/S	**0.007**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M3A	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M3A	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M3A	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M3A	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M3A	TOC	-	N/S	**2.1**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M4A	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M4A	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M4A	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M4A	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M4A	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M4A	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M4A	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M4A	TOC	-	N/S	**1.2**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M5A	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M5A	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M5A	1,2-Dichloroethane	39	N/S	**0.009**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M5A	Benzene	39	N/S	**0.009**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M5A	Vinyl Chloride	16	N/S	**0.03**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M5A	Bis(2-Chloroethyl)Ether	2.4	N/S	**0.074**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M5A	Naphthalene	74.5	N/S	**0.003 J**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M5A	TOC	-	N/S	**3.3**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S

TABLE 2.2

RESULTS OF LTRA GROUNDWATER SAMPLING CONCENTRATIONS OVER TIME:
TRANSMISSIVE ZONE (TZ) WELLS

LTRA Groundwater Monitoring Program
MOTCO Site, La Marque, Texas

GROUNDWATER SERVICES, INC.

Well I.D.	Constituent	HBN (mg/L)	Sample Concentrations Jan-01 (mg/L)	Apr-01 (mg/L)	Jul-01 (mg/L)	Oct-01 (mg/L)	Jan-02 (mg/L)	May-02 (mg/L)	Jul-02 (mg/L)	Oct-02 (mg/L)	Jan-03 (mg/L)	Apr-03 (mg/L)	Sep-03 (mg/L)	Nov-03 (mg/L)	Jan-04 (mg/L)	Apr-04 (mg/L)	Jul-04 (mg/L)	Oct-04 (mg/L)	Feb-05 (mg/L)	May-05 (mg/L)	Sep-05 (mg/L)	Dec-05 (mg/L)	Mar-06 (mg/L)	May-06 (mg/L)	Sep-06 (mg/L)	Dec-06 (mg/L)
M6A	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M6A	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M6A	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M6A	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M6A	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M6A	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M6A	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M6A	TOC	-	N/S	1.4	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
M1C	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M1C	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M1C	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M1C	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M1C	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M1C	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M1C	Naphthalene	74.5	N/S	0.004 J	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M1C	TOC	-	N/S	0.63 B	N/S	N/S	N/S	0.61 U	N/S	N/S	N/S	0.75 B	N/S	N/S	N/S	1.54	N/S	N/S	N/S	15.7	N/S	N/S	N/S	< 0.5175	N/S	N/S
M2C	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M2C	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M2C	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M2C	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M2C	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M2C	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M2C	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M2C	TOC	-	N/S	1.0 J	N/S	N/S	N/S	0.71 B	N/S	N/S	N/S	0.54 B	N/S	N/S	N/S	0.369 B	N/S	N/S	N/S	8.2	N/S	N/S	N/S	0.557 B	N/S	N/S
M3C	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	0.001 J	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	0.001 J	N/S	N/S
M3C	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	0.002 J	N/S	N/S	N/S	0.002 J	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	0.001 J	N/S	N/S
M3C	1,2-Dichloroethane	39	N/S	0.006	N/S	N/S	N/S	0.007	N/S	N/S	N/S	0.006	N/S	N/S	N/S	0.006	N/S	N/S	N/S	0.006	N/S	N/S	N/S	0.004 J	N/S	N/S
M3C	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M3C	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M3C	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M3C	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M3C	TOC	-	N/S	1.9	N/S	N/S	N/S	1.8	N/S	N/S	N/S	1.08 J	N/S	N/S	N/S	2.25	N/S	N/S	N/S	14.0	N/S	N/S	N/S	2.55	N/S	N/S
M4C	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M4C	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M4C	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	0.001 J	N/S	N/S
M4C	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M4C	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M4C	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M4C	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M4C	TOC	-	N/S	1.1	N/S	N/S	N/S	2.5	N/S	N/S	N/S	0.49 B	N/S	N/S	N/S	0.864 B	N/S	N/S	N/S	23.1	N/S	N/S	N/S	2.31	N/S	N/S
M5C	1,1,2-Trichloroethane	14000	N/S	0.003 J	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M5C	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M5C	1,2-Dichloroethane	39	N/S	0.023	N/S	N/S	N/S	0.011	N/S	N/S	N/S	0.017	N/S	N/S	N/S	0.022	N/S	N/S	N/S	0.019	N/S	N/S	N/S	0.017	N/S	N/S
M5C	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M5C	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M5C	Bis(2-Chloroethyl)Ether	2.4	N/S	0.052	N/S	N/S	N/S	0.032	N/S	N/S	N/S	0.04	N/S	N/S	N/S	0.053	N/S	N/S	N/S	0.044	N/S	N/S	N/S	0.031	N/S	N/S
M5C	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M5C	TOC	-	N/S	2.1	N/S	N/S	N/S	2.0	N/S	N/S	N/S	1.59	N/S	N/S	N/S	2.51	N/S	N/S	N/S	17.8	N/S	N/S	N/S	2.07	N/S	N/S

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TABLE 2.2

RESULTS OF LTRA GROUNDWATER SAMPLING CONCENTRATIONS OVER TIME:
TRANSMISSIVE ZONE (TZ) WELLS

LTRA Groundwater Monitoring Program
MOTCO Site, La Marque, Texas

GROUNDWATER SERVICES, INC.

Well I.D.	Constituent	HBN (mg/L)	Sample Concentrations																							
			Jan-01 (mg/L)	Apr-01 (mg/L)	Jul-01 (mg/L)	Oct-01 (mg/L)	Jan-02 (mg/L)	May-02 (mg/L)	Jul-02 (mg/L)	Oct-02 (mg/L)	Jan-03 (mg/L)	Apr-03 (mg/L)	Sep-03 (mg/L)	Nov-03 (mg/L)	Jan-04 (mg/L)	Apr-04 (mg/L)	Jul-04 (mg/L)	Oct-04 (mg/L)	Feb-05 (mg/L)	May-05 (mg/L)	Sep-05 (mg/L)	Dec-05 (mg/L)	Mar-06 (mg/L)	May-06 (mg/L)	Sep-06 (mg/L)	Dec-06 (mg/L)
M6C	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M6C	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M6C	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M6C	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
M6C	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M6C	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M6C	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
M6C	TOC	-	N/S	**1.0 B**	N/S	N/S	N/S	**0.58 U**	N/S	N/S	N/S	**0.49 J**	N/S	N/S	N/S	< 0.36	N/S	N/S	N/S	**3.6**	N/S	N/S	N/S	**1.57**	N/S	N/S
OWM-8	1,1,2-Trichloroethane	14000	N/S	**0.4 D**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-8	1,1-Dichloroethene	54	N/S	**0.044**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-8	1,2-Dichloroethane	39	N/S	**0.69 D**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-8	Benzene	39	N/S	**0.071**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-8	Vinyl Chloride	16	N/S	**0.031**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-8	Bis(2-Chloroethyl)Ether	2.4	N/S	**0.15**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-8	Naphthalene	74.5	N/S	**0.52 DE**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
OWM-8	TOC	-	N/S	**1.3**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-1D	1,1,2-Trichloroethane	14000																								
TZW-1D	1,1-Dichloroethene	54																								
TZW-1D	1,2-Dichloroethane	39																								
TZW-1D	Benzene	39	*WELL LOCATED ON ADJACENT PROPERTY NOT OWNED BY MOTCO*																							
TZW-1D	Vinyl Chloride	16	*TZW-1D WAS ABANDONED AND REPLACED WITH WELL TZW-1DR*																							
TZW-1D	Bis(2-Chloroethyl)Ether	2.4																								
TZW-1D	Naphthalene	74.5																								
TZW-1D	TOC	-																								
TZW-1DR	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-1DR	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-1DR	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-1DR	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-1DR	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-1DR	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-1DR	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-1DR	TOC	-	N/S	**0.68 B**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-3D	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-3D	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-3D	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-3D	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-3D	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-3D	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-3D	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-3D	TOC	-	N/S	**0.76 B**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-4D	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-4D	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-4D	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-4D	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-4D	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-4D	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-4D	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-4D	TOC	-	N/S	**1.5**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S

TABLE 2.2

RESULTS OF LTRA GROUNDWATER SAMPLING CONCENTRATIONS OVER TIME:
TRANSMISSIVE ZONE (TZ) WELLS

LTRA Groundwater Monitoring Program
MOTCO Site, La Marque, Texas

GROUNDWATER SERVICES, INC.

Well I.D.	Constituent	HBN (mg/L)	Sample Concentrations Jan-01 (mg/L)	Apr-01 (mg/L)	Jul-01 (mg/L)	Oct-01 (mg/L)	Jan-02 (mg/L)	May-02 (mg/L)	Jul-02 (mg/L)	Oct-02 (mg/L)	Jan-03 (mg/L)	Apr-03 (mg/L)	Sep-03 (mg/L)	Nov-03 (mg/L)	Jan-04 (mg/L)	Apr-04 (mg/L)	Jul-04 (mg/L)	Oct-04 (mg/L)	Feb-05 (mg/L)	May-05 (mg/L)	Sep-05 (mg/L)	Dec-05 (mg/L)	Mar-06 (mg/L)	May-06 (mg/L)	Sep-06 (mg/L)	Dec-06 (mg/L)
TZW-7D	1,1,2-Trichloroethane	14000	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-7D	1,1-Dichloroethene	54	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-7D	1,2-Dichloroethane	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-7D	Benzene	39	N/S	< 0.005	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-7D	Vinyl Chloride	16	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-7D	Bis(2-Chloroethyl)Ether	2.4	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-7D	Naphthalene	74.5	N/S	< 0.01	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TZW-7D	TOC	-	N/S	2.2	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
SW-14A	1,1,2-Trichloroethane	14000																								
SW-14A	1,1-Dichloroethene	54																								
SW-14A	1,2-Dichloroethane	39																								
SW-14A	Benzene	39	*SW-14A SAMPLED ONLY ONCE*																							
SW-14A	Vinyl Chloride	16	*PLUGGED AND ABANDONED ON 6/6/94*																							
SW-14A	Bis(2-Chloroethyl)Ether	2.4																								
SW-14A	Naphthalene	74.5																								
SW-14A	TOC	-																								
SW-15A	1,1,2-Trichloroethane	14000																								
SW-15A	1,1-Dichloroethene	54																								
SW-15A	1,2-Dichloroethane	39																								
SW-15A	Benzene	39	*SW-15A SAMPLED ONLY ONCE*																							
SW-15A	Vinyl Chloride	16	*PLUGGED AND ABANDONED ON 9/27/94*																							
SW-15A	Bis(2-Chloroethyl)Ether	2.4																								
SW-15A	Naphthalene	74.5																								
SW-15A	TOC	-																								
SW-16	1,1,2-Trichloroethane	14000																								
SW-16	1,1-Dichloroethene	54																								
SW-16	1,2-Dichloroethane	39																								
SW-16	Benzene	39	*SW-16 SAMPLED ONLY ONCE*																							
SW-16	Vinyl Chloride	16	*PLUGGED AND ABANDONED ON 6/6/94*																							
SW-16	Bis(2-Chloroethyl)Ether	2.4																								
SW-16	Naphthalene	74.5																								
SW-16	TOC	-																								
REC-2	1,1,2-Trichloroethane	14000	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-2	1,1-Dichloroethene	54	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-2	1,2-Dichloroethane	39	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-2	Benzene	39	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-2	Vinyl Chloride	16	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-2	Bis(2-Chloroethyl)Ether	2.4	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-2	Naphthalene	74.5	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-2	TOC	-	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-2A	1,1,2-Trichloroethane	14000	**0.043**	**0.016**	< 0.1	**0.029**	< 0.025	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-2A	1,1-Dichloroethene	54	**0.008**	**0.11**	< 0.1	**0.054**	**0.061**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-2A	1,2-Dichloroethane	39	**0.46**	**0.26**	**0.29**	**0.31 D**	**0.13**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-2A	Benzene	39	**0.004 J**	**0.16**	**0.17**	**0.15**	**0.21**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-2A	Vinyl Chloride	16	**0.026**	**5.9**	**3.5**	**4.9 D**	**5.2 D**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-2A	Bis(2-Chloroethyl)Ether	2.4	**3.8**	**11.0 J**	**9.9 D**	**11 D**	**12 D**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-2A	Naphthalene	74.5	< 0.01	**0.057**	**0.056**	**0.069**	**0.027**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-2A	TOC	-	**2.4**	**3.3**	**3.2**	**2.7**	**3.6**	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S

TABLE 2.2

RESULTS OF LTRA GROUNDWATER SAMPLING CONCENTRATIONS OVER TIME:
TRANSMISSIVE ZONE (TZ) WELLS

LTRA Groundwater Monitoring Program
MOTCO Site, La Marque, Texas

GROUNDWATER SERVICES, INC.

Well I.D.	Constituent	HBN (mg/L)	Sample Concentrations																							
			Jan-01 (mg/L)	Apr-01 (mg/L)	Jul-01 (mg/L)	Oct-01 (mg/L)	Jan-02 (mg/L)	May-02 (mg/L)	Jul-02 (mg/L)	Oct-02 (mg/L)	Jan-03 (mg/L)	Apr-03 (mg/L)	Sep-03 (mg/L)	Nov-03 (mg/L)	Jan-04 (mg/L)	Apr-04 (mg/L)	Jul-04 (mg/L)	Oct-04 (mg/L)	Feb-05 (mg/L)	May-05 (mg/L)	Sep-05 (mg/L)	Dec-05 (mg/L)	Mar-06 (mg/L)	May-06 (mg/L)	Sep-06 (mg/L)	Dec-06 (mg/L)
REC-3A	1,1,2-Trichloroethane	14000	0.055	0.54	0.72 D	0.96 DJ	0.8	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-3A	1,1-Dichloroethene	54	0.064	0.5	0.14	0.12	0.2 J	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-3A	1,2-Dichloroethane	39	0.36	47	60.0 D	59.0 D	60 D	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-3A	Benzene	39	0.13	1.5	1.3 D	1.4 DJ	1.3	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-3A	Vinyl Chloride	16	1.6	4.2	1.6 D	2.6 DJ	3.3	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-3A	Bis(2-Chloroethyl)Ether	2.4	13	0.078	0.083	0.12	0.18	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-3A	Naphthalene	74.5	0.1	0.65	0.51 D	0.68 D	0.64 D	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-3A	TOC	-	2.4	3.6	3.5	3	4.2	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-4A	1,1,2-Trichloroethane	14000	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-4A	1,1-Dichloroethene	54	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-4A	1,2-Dichloroethane	39	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-4A	Benzene	39	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-4A	Vinyl Chloride	16	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-4A	Bis(2-Chloroethyl)Ether	2.4	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-4A	Naphthalene	74.5	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
REC-4A	TOC	-	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S	N/S
TP-1	1,1,2-Trichloroethane	14000	N/S	<0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
TP-1	1,1-Dichloroethene	54	N/S	<0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
TP-1	1,2-Dichloroethane	39	N/S	<0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
TP-1	Benzene	39	N/S	<0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	<0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S	N/S	< 0.005	N/S	N/S
TP-1	Vinyl Chloride	16	N/S	<0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.01	N/S	N/S
TP-1	Bis(2-Chloroethyl)Ether	2.4	N/S	<0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	< 0.012	N/S	N/S	N/S	< 0.01	N/S	N/S
TP-1	Naphthalene	74.5	N/S	<0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	<0.01	N/S	N/S	N/S	< 0.01	N/S	N/S	N/S	0.057	N/S	N/S	N/S	< 0.01	N/S	N/S
TP-1	TOC	-	N/S	6.9	N/S	N/S	N/S	3.6	N/S	N/S	N/S	0.47 B	N/S	N/S	N/S	8.55	N/S	N/S	N/S	9.2	N/S	N/S	N/S	14.5	N/S	N/S

Notes:
1. Sample locations are shown on Figure 1.1.
2. < = Compound analyzed, but not detected at the detection limit shown.
3. Benzene, 1,1-DCE, Naphthalene, 1,1,2-TCA, and VC were not analyzed in April 1996 as per Table 2, Performance Monitoring Analyses, Groundwater Performance Monitoring of the RAP.
4. Total Organic Carbon samples were not collected as part of the Pre-LTRA monitoring program (September 1993 to April 1995).
5. N/S = Not sampled and/or analyzed
   J = Compound detected with results less than the method quantitation limit; values shown are estimated. D = Diluted sample.
   JX = Surrogate recoveries exceeded quality control limits for surrogate 1,2-dichloroethane-d4, and compound present with results less than sample quantitation limit, but greater than zero. Values shown are estimated.
   R = Surrogate recoveries outside quality control limits; values shown are rejected.
   UJ = Estimated detection limit
   \- = No Health Based Number provided for Total Organic Carbon
   TOC = Total Organic Carbon
   HBN = Health-Based Number
6. Due to space limitations, LTRA data prior to January 2001 is not shown (see previous annual reports).

GROUNDWATER SERVICES, INC.

TABLE 2.3

RESULTS OF LTRA GROUNDWATER SAMPLING CONCENTRATIONS OVER TIME: UPPER CHICOT (UC) WELLS
Recovery Well E-1

LTRA Groundwater Monitoring Program
MOTCO Site, La Marque, Texas

Well I.D.	Constituent	GRS (mg/L)	Sample Concentrations Jan-01 (mg/L)	Apr-01 (mg/L)	Jul-01 (mg/L)	Oct-01 (mg/L)	Jan-02 (mg/L)	May-02 (mg/L)	Jul-02 (mg/L)	Oct-02 (mg/L)	Jan-03 (mg/L)	Apr-03 (mg/L)
E-1	1,1,2-Trichloroethane	0.0006	0.270	0.200	0.22 DJ	0.17	0.160	0.11	0.094	0.074	0.045	0.046
E-1	1,1-Dichloroethene	0.007	0.043	0.079	0.042	0.038	0.05	0.046	0.063	0.039	0.026	0.036
E-1	1,2-Dichloroethane	0.005	2.3	1.8	2.2 D	2.0 D	1.600 D	1.8 D	1.5	1.3	0.790	1.0
E-1	Benzene	0.005	0.04	0.046	0.041	0.04	0.040	0.033	0.044	0.032	0.026	0.029
E-1	Vinyl Chloride	0.002	0.067	0.2	0.11	0.12 DJ	0.140	0.21 D	0.18	0.11	0.092	0.1
E-1	Bis(2-Chloroethyl)Ether	0.00003	0.037	0.037 J	0.03	0.029	0.034	0.027	0.031	0.032	0.018	0.021 J
E-1	Naphthalene	3.5	0.023	0.034 J	0.024	0.019	0.018	0.018	0.023	0.026	0.019	0.026 J
E-1	TOC	-	3.8	4.7	4.0	4.4	5.3	4.3	4.8	5.0	4.4	3.80

Well I.D.	Constituent	Sep-03 (mg/L)	Nov-03 (mg/L)	Jan-04 (mg/L)	Apr-04 (mg/L)	Jul-04 (mg/L)	Oct-04 (mg/L)	Feb-05 (mg/L)	May-05 (mg/L)	Sep-05 (mg/L)	Dec-05 (mg/L)	Mar-06 (mg/L)	May-06 (mg/L)	Sep-06 (mg/L)	Dec-06 (mg/L)
E-1	1,1,2-Trichloroethane	0.027	0.030	0.030	0.033	0.026	0.023	0.024	0.018	0.017	0.015	0.017	0.011	0.015	0.012
E-1	1,1-Dichloroethene	0.028	0.022	0.03	0.039	0.025	0.029	0.032	0.039	0.026	0.019	0.023	0.02	0.019	0.016
E-1	1,2-Dichloroethane	0.860	0.830	0.750	0.73 D	0.730	0.504	0.53 J	0.54 D	0.56 D	0.33 D	0.400 D	0.3	0.25	0.33
E-1	Benzene	0.024	0.020	0.023	0.026	0.018	< 0.00143	0.021	0.021	0.021	0.016	0.018	0.014	0.014	0.012
E-1	Vinyl Chloride	0.110	0.056	0.11	0.13	0.082	0.091	0.075	0.11	0.066	0.055	0.063	0.06	0.06	0.043
E-1	Bis(2-Chloroethyl)Ether	0.020	0.015	0.011	0.016	0.011	0.011	0.01	0.011	0.009	0.009 J	0.007 J	0.007 J	0.005 J	0.005 J
E-1	Naphthalene	0.024	0.016	0.021	0.023	0.018	0.022	0.02	0.025	0.023	0.023	0.018	0.02	0.019	0.018
E-1	TOC	5.1	5.4	4.44	3.8	4.19	4.62	4.9	18.1	10.1	4.64	5.31	3.99	5.42	4.69

Notes:
1. Sample location shown on Figure 1.1.
2. < = Compound analyzed, but not detected at the detection limit shown.
3. J = Compound detected with results less than the method quantitation limit; values shown are estimated.
4. - = No GRS provided for Total Organic Carbon (TOC).
5. GRS = Groundwater recovery standard.
6. Normal detection limit samples were collected for only UC well E-1 after the January 1999 LTRA sampling event as per the letter submitted to the EPA on March 1, 1999.
7. Due to space limitations, LTRA data prior to January 2001 is not shown (see previous annual reports).

GROUNDWATER SERVICES, INC.

TABLE 2.4

RESULTS OF LTRA GROUNDWATER SAMPLING CONCENTRATIONS OVER TIME LOW DETECTION METHOD UPPER CHICOT (UC) WELLS

LTRA Groundwater Monitoring Program
MOTCO Site, La Marque, Texas

Well I.D.	Constituent	GRS (ug/L)	Sample Concentrations Jan-03 (ug/L)	Apr-03 (ug/L)	Sep-03 (ug/L)	Nov-03 (ug/L)	Jan-04 (ug/L)	Apr-04 (ug/L)	Jul-04 (ug/L)	Oct-04 (ug/L)	Feb-05 (ug/L)	May-05 (ug/L)	Sep-05 (ug/L)	Dec-05 (ug/L)	Mar-06 (ug/L)	May-06 (ug/L)	Sep-06 (ug/L)	Dec-06 (ug/L)
M1B	Bis(2-Chloroethyl)Ether	0.03	< 0.03	< 0.03	NS	NS	NS	< 0.03	NS	NS	NS	< 0.03	NS	NS	NS	**0.094**	NS	NS
M1B	1,1,2-Trichloroethane	0.6	< 0.1	< 0.1 UJ	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS
M2B	Bis(2-Chloroethyl)Ether	0.03	< 0.03	< 0.03	NS	NS	NS	< 0.03	NS	NS	NS	**0.005 J**	NS	NS	NS	< 0.03	NS	NS
M2B	1,1,2-Trichloroethane	0.6	< 0.1	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS
M3B	Bis(2-Chloroethyl)Ether	0.03	< 0.03	< 0.03	NS	NS	NS	< 0.03	NS	NS	NS	**0.2**	NS	NS	NS	**0.035**	NS	NS
M3B	1,1,2-Trichloroethane	0.6	< 0.1	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS
M4B	Bis(2-Chloroethyl)Ether	0.03	< 0.03	< 0.03	NS	NS	NS	< 0.03	NS	NS	NS	< 0.03	NS	NS	NS	**0.02 J**	NS	NS
M4B	1,1,2-Trichloroethane	0.6	< 0.1	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS
M5B	Bis(2-Chloroethyl)Ether	0.03	< 0.03	< 0.03	NS	NS	NS	< 0.03	NS	NS	NS	**0.075**	NS	NS	NS	< 0.03	NS	NS
M5B	1,1,2-Trichloroethane	0.6	< 0.1	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS
M6B	Bis(2-Chloroethyl)Ether	0.03	< 0.03	< 0.03	NS	NS	NS	< 0.03	NS	NS	NS	**0.15**	NS	NS	NS	**0.076**	NS	NS
M6B	1,1,2-Trichloroethane	0.6	< 0.1	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS
UCW-1	Bis(2-Chloroethyl)Ether	0.03	< 0.03	< 0.03	NS	NS	NS	< 0.03	NS	NS	NS	**0.027 J**	NS	NS	NS	< 0.03	NS	NS
UCW-1	1,1,2-Trichloroethane	0.6	< 0.1	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS
UCW-2	Bis(2-Chloroethyl)Ether	0.03	< 0.03 UJ	< 0.03	NS	NS	NS	< 0.03	NS	NS	NS	< 0.03	NS	NS	NS	< 0.03	NS	NS
UCW-2	1,1,2-Trichloroethane	0.6	< 0.1 UJ	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1 UJ	NS	NS
UCW-3	Bis(2-Chloroethyl)Ether	0.03	< 0.03 UJ	< 0.03	NS	NS	NS	< 0.03 UJ	NS	NS	NS	**0.032**	NS	NS	NS	**0.074**	NS	NS
UCW-3	1,1,2-Trichloroethane	0.6	< 0.1 UJ	< 0.1	NS	NS	NS	< 0.1 UJ	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS
UCW-4	Bis(2-Chloroethyl)Ether	0.03	< 0.03	< 0.03	NS	NS	NS	< 0.03 UJ	NS	NS	NS	**0.066**	NS	NS	NS	**0.043**	NS	NS
UCW-4	1,1,2-Trichloroethane	0.6	< 0.1	< 0.1	NS	NS	NS	< 0.1 UJ	NS	NS	NS	< 0.1	NS	NS	NS	**0.035 J**	NS	NS
CDW-1R	Bis(2-Chloroethyl)Ether	0.03	NS	< 0.03	NS	NS	NS	< 0.03	NS	NS	NS	**0.007 J**	NS	NS	NS	< 0.03	NS	NS
CDW-1R	1,1,2-Trichloroethane	0.6	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS
CDW-2	Bis(2-Chloroethyl)Ether	0.03	NS	< 0.03 UJ	NS	NS	NS	< 0.03	NS	NS	NS	**0.014 J**	NS	NS	NS	**0.016 J**	NS	NS
CDW-2	1,1,2-Trichloroethane	0.6	NS	**0.98 J**	NS	NS	NS	**5.2 E**	NS	**4.71 J [6]**	NS	**7 [6]**	**9 [6]**	**7 [6]**	**8 [6]**	**10 [6]**	**12 [6]**	**10 [6]**
CDW-4	Bis(2-Chloroethyl)Ether	0.03	NS	< 0.03	NS	NS	NS	< 0.03	NS	NS	NS	< 0.03	NS	NS	NS	< 0.03	NS	NS
CDW-4	1,1,2-Trichloroethane	0.6	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS
M1E	Bis(2-Chloroethyl)Ether	0.03	NS	< 0.03	NS	NS	NS	< 0.03 UJ	NS	NS	NS	< 0.03	NS	NS	NS	**0.049**	NS	NS
M1E	1,1,2-Trichloroethane	0.6	NS	< 0.1	NS	NS	NS	< 0.1 UJ	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS
M2E	Bis(2-Chloroethyl)Ether	0.03	NS	< 0.03	NS	NS	NS	< 0.03 UJ	NS	NS	NS	**0.01 J**	NS	NS	NS	**0.05**	NS	NS
M2E	1,1,2-Trichloroethane	0.6	NS	< 0.1	NS	NS	NS	< 0.1 UJ	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS
M3E	Bis(2-Chloroethyl)Ether	0.03	NS	< 0.03	NS	NS	NS	< 0.03	NS	NS	NS	**0.019 J**	NS	NS	NS	**0.021 J**	NS	NS
M3E	1,1,2-Trichloroethane	0.6	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS
M4E	Bis(2-Chloroethyl)Ether	0.03	NS	< 0.03	NS	NS	NS	< 0.03	NS	NS	NS	< 0.03	NS	NS	NS	< 0.03	NS	NS
M4E	1,1,2-Trichloroethane	0.6	NS	< 0.1 UJ	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS
M5E	Bis(2-Chloroethyl)Ether	0.03	NS	< 0.03	NS	NS	NS	< 0.03	NS	NS	NS	**0.017 J**	NS	NS	NS	**0.022 J**	NS	NS
M5E	1,1,2-Trichloroethane	0.6	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS
M6E	Bis(2-Chloroethyl)Ether	0.03	NS	< 0.03 UJ	NS	NS	NS	< 0.03	NS	NS	NS	**0.014 J**	NS	NS	NS	< 0.03	NS	NS
M6E	1,1,2-Trichloroethane	0.6	NS	< 0.1 UJ	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS	NS	< 0.1	NS	NS

Notes:

1. Sample locations are shown on Figure 1.1.
2. < = Compound analyzed, but not detected at the detection limit shown.
3. GRS = Groundwater Recovery Standard.
   J = Compound detected with results less than the method quantitation limit; values shown are estimated. D = Diluted sample.
   UJ = Estimated quantitation limit.
   NS = Not sampled and/or analyzed.
   E = Estimated concentration, concentration exceeds calibration range.
4. Low detection method samples were not collected for well E-1 after the January 1998 event due to constituents being quantified using standard methodology analysis.
5. Due to space limitations, LTRA data prior to January 2003 is not shown (see previous annual reports).
6. Analysis by EPA Method 8260B because concentration exceeds calibration range of low detection methodology.

Attachment 7

Notice to the Public Regarding the Five-Year Review

The Galveston County Daily News

Published May 16, 2007

MOTCO, Inc. Superfund Site
PUBLIC NOTICE
U.S. EPA Region 6 Begins
Second Five-Year Review of Site Remedy

The U.S. Environmental Protection Agency Region 6 (EPA) has begun the Second Five-Year Review of the remedy for the MOTCO, Inc., Superfund Site in La Marque, Galveston County, Texas. The Review will evaluate the ability of the remedy to correct contamination problems and protect public health and the environment. The site, which was a former chemical waste disposal facility, is located two miles southeast of La Marque at the intersection of Interstate 45 and State Highway 3.

Once completed, the results of the Five-Year Review will be made available to the public at the following Information Repository:

MOTCO, Inc. Site Office
2917 Highway 3
La Marque, Texas 77568

Information about the MOTCO, Inc., Site is also available on the Internet at www.epa.gov/region6/superfund. For more information about the MOTCO Site contact Gary Miller at (214) 665-8318 or by e-mail at miller.garyg@epamail.epa.gov

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Attachment

County of Galveston §
§
State of Texas §

Before me, the undersigned authority, on this day personally came and appeared **Lois Colvin**, to me well known (or proved to me on the basis of satisfactory evidence), and who after being duly sworn (affirmed) did depose and say that she is an **AGENT** for **THE GALVESTON COUNTY DAILY NEWS**, a newspaper of general circulation, which has been continuously and regularly published for a period of not less than one year, in the County of Galveston, and that the **NOTICE**, a copy of which is hereto attached was published in said newspaper on the following days, to wit:

May 16, 2007

Lois Colvin
Agent Signature

Sworn and subscribed before me

On this the 16th day of May, 2007

Lynette Tisdale
Notary for the State of Texas

LYNETTE TISDALE
Notary Public, State of Texas
My Commission Expires
February 11, 2008

215989

Attachment 8

Applicable and Relevant or Appropriate Requirements (ARARs)

The ARARs identified by the ROD and ESD include contaminant, action, and location specific requirements. ARARs involving activities that are no longer occurring are **bolded** in the following list. This second Five-Year Review included evaluation of the remaining ARARs associated with on-going remedial activities to determine whether such changes may affect the protectiveness of the selected remedy. There have been no changes in these ARARs, standards, or TBCs that would affect the protectiveness of the remedy.

Air Pathway

Contaminant-Specific Requirements

1. **National Ambient Air Quality Standards, 40 CFR Part 50**
   - **Sulfur Dioxide, 50.4(a), (b), 50.5**
   - **Particulate Matter, 50.6 (a), (b)**
   - **Nitrogen Dioxide, 50.11**
   - **Carbon Monoxide, 50.8(a)(1), (2)**
   - **Ozone, 50.9**
   - **Lead, 50.12**
2. **Nuisance, 31 T.A.C. Part 101.4**
3. **Particulate – Net Ground level, 31 T.A.C. 111.52**
4. **Sulfur Dioxide Ground Level Concentration, 31 T.A.C. 112.7**

Action-Specific Requirements

1. **Hazardous Waste Incinerators, 40 CFR Part 264, Subpart O**
2. **Waste Analysis, 40 CFR §264.341, 270.62 (b)(2)**
3. **Performance Standards, 40 CFR Part 343**
4. **Trial Burn, 40 CFR Part 344, 40 CFR §270.62(b)(6)**
5. **Start-up/Shut-down, 40 CFR §264.345(c)**
6. **Fugitive Emissions Control, 40 CFR §264.345(d)**
7. **Monitoring, 40 CFR §264.347(a)**
8. **Automatic Cut Off, 40 CFR §264.345(e), (f)**
9. **Closure, 40 CFR §264.351**
10. **Control of Air Pollution for New Construction-BACT, 31 T.A.C. 116.3(a)(2), (3)**
11. **Opacity Criteria, 31 T.A.C. 111.21**
12. **Particulates, 31 T.A.C. 111.51**
13. **Vent Gas Streams, 31 T.A.C. 115.162**
14. **Cold Solvent Cleaning, 31 T.A.C. 115.172**

Surface Water Pathway

Contaminant-Specific Requirements

1. Pollution Prohibition Texas Water Code, 25 T.A.C. 26.121
2. Texas Surface Water Quality Standards, 31 T.A.C. 307.4(b)(1)
3. General Toxicity, 31 T.A.C. 307.4(d)
4. Acute Toxicity, 31 T.A.C. 307.6(b)(1)
5. Chronic Toxicity, 31 T.A.C. 307.6(b)(2)
6. Human Toxicity, 31 T.A.C. 307.6(b)(3)
7. Numerical Criteria for Toxics, 31 T.A.C. 307.6(c)
8. LC_{50} Toxicity Criteria, 31 T.A.C. 307.6(c)(10)
9. Site-Specific Uses and Criteria, 31 T.A.C. 307.7(b)(5)
10. Intermittent Streams, 31 T.A.C. 307.4(j)

Action-Specific Requirements

1. National Pollutant Discharge Elimination System, 40 CFR Part 402
2. Conditions Applicable to All Permits, 40 CFR §122.41
3. Establishing Limitations, 40 CFR §122.44
4. Technology-Based Treatment Requirements in Permits, 40 CFR §125.3
5. Best Management Practices, 40 CFR §125.100
6. Effluent Limitations Guidelines, 40 CFR Parts 400-471
7. Pretreatment Standards, 40 CFR §403.5
8. Texas Hazardous Metal Discharge Limits, 31 T.A.C. 319.22
9. Executive Order on Floodplain Management, Executive Order No. 11,988, 40 CFR §6.302(b), Appendix A

Ground Water Pathway

Contaminant-Specific Requirements

1. Primary Drinking Water Standards (MCL), Safe Drinking Water Act, 40 CFR Part 141
2. State and Federal Surface Water Quality Standards

Action-Specific Requirements

1. Closure, 31 T.A.C. 335.152(a)(5)
2. Containers, 31 T.A.C. 335.152(a)(9)
3. Tanks, 31 T.A.C. 335.152(a)(8)
4. **Incinerators, 31 T.A.C. 335.152(a)(13)**

<u>Location-Specific Requirements</u>

1. Clean Water Act, 31 U.S.C. 1344, 40 CFR Parts 230, 231, 33 CFR Parts 320-330
2. Protection of Wetlands, Executive Order No. 11,990; 40 CFR §6.302(a); and Appendix A
3. Floodplain Management, Executive Order No. 11,998; 40 CFR §6.302(b); and Appendix A
4. Location Standards, 40 CFR §264.18

Soil Pathway

<u>Contaminant-Specific Requirements</u>

1. General Facility Standards, 31 T.A.C. 335.152(a)(1)
2. Closure, 31 T.A.C. 335.152(a)(5)
3. Post-Closure, 31 T.A.C. 335.152 (a)(5)
4. Containers, 31 T.A.C. 335.152(a)(9)
5. Tanks, 31 T.A.C. 335.152(a)(8)
6. Land Treatment, 31 T.A.C. 335.152(a)(11), 31 T.A.C. 335.171, 172
7. Landfill, 31 T.A.C. 335.152(a)(12), 31 T.A.C. 335.173-.176
8. **Incinerators, 31 T.A.C. 335.152(a)(13)**

The TCEQ and the Federal regulations have not been revised to the extent that the effectiveness of the remedy at the site would be called into question. The Texas Administrative Code Title 31 is now codified under Title 30; however, no significant changes have been made that would question the site remedy effectiveness.