Annual Operations and Maintenance Report
Year 1 of the Long-Term Remedial Action
October 1, 2004 to September 30, 2005

City of Perryton Well No. 2 Site
Perryton, Ochiltree County, Texas

Response Action Contract No. 68-W6-0025
Work Assignment No. 245-RALR-06DH
DCN 05-8294

Prepared for:

U.S. Environmental Protection Agency

Prepared by:
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Executive Summary

This Annual Operations and Maintenance (O&M) Report is for Year 1 of the Long-Term Remedial Action (LTRA) at the City of Perryton Well No. 2 Superfund Site located in Perryton, Texas (herein referred to as the Site). The remedial action at the Site consists of a ground water pump and treat (P&T) system for containment and restoration of a carbon tetrachloride (CTC) plume that has contaminated a public water supply well. This O&M report is prepared annually to document Site operations and the progress of the LTRA at the Site. This report is for the period October 1, 2004 to September 30, 2005 (also referred to as the current reporting period in this report). The Record of Decision (ROD) for the Site stipulates that an annual remedy evaluation will be performed for the Site. This annual report has been prepared to meet this ROD requirement and in accordance with the approved Work Plan for Work Assignment No. 245-RALR-06DH under Environmental Protection Agency (EPA) RAC V Contract No. 68-W6-0025 dated November 22, 2004 (**CH2M HILL, 2004a**).

The Site P&T system is composed of two active pumping wells and an Air Stripper Treatment Plant (ASTP) to remove CTC from the extracted ground water. The treated water is then piped to the nearby City of Perryton North Ground Storage Tank where the water is blended with other ground water as part of the City's water supply system. No system modifications were made during this reporting period.

During the current reporting period, the ASTP was operational 99.2 percent of the time. Most of the downtime for the ASTP was the result of routine maintenance to clean the bag filter and check the ASTP trays for scale build-up. The City of Perryton's Supervisory Control and Data Acquisition (SCADA) system was damaged during a thunderstorm on July 5, 2005, and one of the ASTP Programmable Logical Controller (PLC) units was damaged during the same storm. The damage to the SCADA system and PLC unit resulted in an inability to monitor the ASTP remotely. The damaged PLC unit was replaced the week of August 15, 2005. Several programming and software issues were diagnosed during the PLC replacement, which resulted in inaccurate SCADA measurements of several operational parameters. These issues had yet to be completely resolved at the end of the current reporting period. As a result, weekly onsite inspections of the ASTP were conducted from July 5 through September 30, 2005. The two extraction wells and the ASTP remained operational during this time period. No other significant operating problems were encountered during the current reporting period. Process monitoring data collected during the current reporting period demonstrated that there were no exceedences of the Site remediation goals in the treated water from the ASTP.

The objectives of the Site LTRA are to prevent further migration of the ground water CTC contaminant plume (short-term objective) and to restore the ground water to its expected beneficial use as a drinking water supply (long-term objective). The Site P&T system was designed and constructed to meet these objectives. Water level data collected during the current reporting period indicate that the CTC contaminant plume (as defined by ground water concentrations above the Site remediation goal of 5 micrograms per liter [µg/L] for CTC) in the lower ground water zone is being captured by the ground water extraction wells. Also, the CTC plume in the lower ground water zone at the Site appears to be stable in size. These data indicate that the short-term objective of preventing migration of the contaminant plume is being achieved. The CTC concentrations in Site monitor wells in the lower ground water zone and the two Site extraction wells are generally decreasing. Nitrate concentrations in all lower ground water zone monitor wells were below the remediation goal during the 4th quarter 2004 sampling event. Nitrate concentrations in the two Site extraction wells have been below the remediation goal since March 2004. Beginning in December 2004, methyl tertiary butyl ether (MTBE) has been detected in the shallow hydrologic zone at monitor well MWCL-13S. However, MTBE has not been detected in the lower hydrologic zone or in the water entering the ASTP. The contaminant concentration data suggest that the long-term objective of restoring the ground water to its expected beneficial use as a drinking water supply is being achieved.

During April 2005, as part of an evaluation of alternatives to address ground water contamination in the upper ground water zone, water levels in the upper ground water zone were evaluated to determine if a ground water flow pattern had developed in response to pumping at Well No. 2. The water level evaluation determined that water levels in Unit 1 of the upper ground water zone did correlate between wells, and that a ground water flow direction toward the northwest existed (opposite the flow direction in the lower ground water zone) (**CH2M HILL, 2005g**). Prior to this evaluation, the Conceptual Site Model (CSM) had been based on the idea that ground water flow in the upper ground water zone was limited. However, as discussed in this report, this flow direction generally supports the CSM in that ground water contamination most likely migrated down the gravel pack for Well No. 2 to the lower ground water zone. Based on the operational data and ground water monitoring data, no other new inconsistencies or gaps in the CSM have been identified.

No changes or modifications are recommended to the Site P&T system based on the operational and ground water monitoring data collected during the current reporting period.

Table of Contents

List of Tables

List of Figures

List of Appendices

Acronyms

ASTP	Air Stripper Treatment Plant
CLP	Contract Laboratory Program
CTC	Carbon Tetrachloride
EPA	United States Environmental Protection Agency
ft/day	feet per day
ft/ft	feet per foot
gpm	gallons per minute
H_2SO_4	Sulfuric Acid
kwh	kilowatt hour
lbs	Pounds
LTRA	Long Term Remedial Action
MCL	Maximum Contaminant Level
mg/L	milligrams per liter
MPMW	Multi-Port Monitor Well
MTBE	Methyl Tertiary Butyl Ether
NGST	North Ground Storage Tank
O&M	Operations and Maintenance
P&T	Pump and Treat
PDB	Passive Diffusion Bag
PLC	Programmable Logical Controller
psi	pounds per square inch
psig	pounds per square inch gauge
RAO	Remedial Action Objective
RO	Reverse Osmosis
ROD	Record of Decision
SCADA	Supervisory Control and Data Acquisition
scfm	standard cubic feet per minute
SDWA	Safe Drinking Water Act
SHMP	Sodium Hexametaphosphate
TCEQ	Texas Commission on Environmental Quality
TM	Technical Memorandum
VOC	Volatile Organic Compound
µg/L	micrograms per liter

1.0 Introduction

The remedial action at the City of Perryton Well No. 2 Superfund Site in Perryton, Texas, consists of a ground water pump and treat (P&T) system for containment and restoration of a carbon tetrachloride (CTC) plume that has contaminated a public water supply well. The P&T system is composed of two active pumping wells and an Air Stripper Treatment Plant (ASTP) to remove the CTC from the extracted ground water. The treated water is then piped to the nearby City of Perryton North Ground Storage Tank (NGST) where the water is blended with other ground water as part of the City's water supply system. The ASTP was constructed in February 2002 and began full-time treatment of ground water from Well No. 2 in November 2002. A second extraction well (MW-17-EX) was installed in June 2003 and began full-time operation in November 2003.

Since March 2004, the nitrate concentrations in Well No. 2 and MW-17-EX have been below the Site remediation goal of 10 milligrams per liter (mg/L). As a result, the RO facility, completed in August 2003, was shut down in August 2004. The RO facility was operated for 1 hour per week from October 1 through December 17, 2004 to flush the RO unit. The RO unit was preserved on December 17, 2004 and has not operated since that time. The U. S. Environmental Protection Agency (EPA) is currently in the process of determining the options available for decommissioning the RO facility and removing it from the Site. Since operation of the RO facility was not necessary for the treatment of nitrate contamination during the period covered by this report (October 1, 2004 – September 30, 2005), the RO facility is not discussed in the remainder of this report.

1.1 Purpose of This Report

This Annual Operations and Maintenance (O&M) Report is for Year 1 of the Long-Term Remedial Action (LTRA) at the City of Perryton Well No. 2 Superfund Site (Site). The location of the Site is presented on **Figure 1**. This O&M report is prepared annually to document site operations and the progress of the LTRA at the Site. This report is for the period October 1, 2004 to September 30, 2005 (also referred to as the current reporting period in this report). The Record of Decision (ROD) for the Site stipulates that an annual remedy evaluation will be performed for the Site (**EPA, 2002**). This annual report has been prepared to meet this ROD requirement and in accordance with the approved Work Plan for

Work Assignment No. 245-RALR-06DH under EPA RAC V Contract No. 68-W6-0025 dated November 22, 2004 (**CH2M HILL, 2004a**).

This annual report is organized into four sections. **Section 1** is the introduction. **Section 2** provides a summary of the P&T system operation during the current reporting period. The subsurface performance summary is provided in **Section 3**. Suggested system modifications are provided in **Section 4**. A list of References is provided in **Section 5**. This annual report was prepared in accordance with the guidelines and in the format presented in the document *O&M Report Template for Ground Water Remedies (With Emphasis on Pump-and-Treat Remedies)* EPA 542-R-05-010 (**EPA, 2005**).

1.2 Brief Summary of Site Conceptual Model

The primary source of contamination is the past usage of CTC as a fumigant at the adjacent Perryton Equity Exchange (PEX), a grain storage facility. The CTC vapor migrated downward through the silos and entered the underlying soil. The PEX facility had previously used an 80/20 fumigant mixture within the grain storage bins and silos. The fumigant consisted of 80 percent CTC and 20 percent carbon disulfide. The fumigant was applied at the top of the silos from 1-gallon to 5-gallon storage containers. The fumigant was available prior to the 1960's, and its use was discontinued by 1985. The rate of application was generally 5 to 10 pounds per 1,000 bushels of grain. Similar sites with CTC contamination from grain storage sites are in EPA Region 7, including the Hastings Ground Water Superfund Site in Nebraska, the Farmer's Mutual Cooperative Superfund Site in Iowa, and the Waverly Ground Water Superfund Site in Nebraska.

Specific sources of the CTC contamination within the grain storage facility could not be identified during the Remedial Investigation (RI). Residual CTC concentrations were detected in three of the soil vapor monitoring wells installed near the grain silos. The RI report stated that the contamination migrated to the ground water in the upper zone through three primary mechanisms: migration of water containing dissolved contaminants through the unsaturated zone or a well bore; migration of vapor phase contamination through the unsaturated zone; and possibly free phase dense non-aqueous phase liquid (DNAPL) migration through the unsaturated zone, a well bore, or in the saturated zone.

However, the presence of mobile or residual-phase DNAPLs have not been identified in either the vadose zone or in the aquifer with either direct or indirect data.

Nitrate is a primary source of nitrogen for plants and is a compound found in nature. Nitrates are also commonly found in fertilizers, animal wastes, and sewage. Leaking sewer lines are the source of nitrate contamination observed in the ground water. Ground water samples analyzed for nitrogen isotopes confirmed that the nitrates are from human or animal waste rather than fertilizer. The City of Perryton conducted a survey of the three sewer lines that join together at a manhole located 75 feet south of Well No. 2 and confirmed the clay tile pipes were leaking. The City completed repairs to the lines in February 2002.

Based on the distribution of contamination present at the Site, Well No. 2 was suspected as the primary migration route for contamination between the upper and lower ground water zones. Well No. 2 was constructed such that the gravel pack in the annulus of the well extends from its total depth up to 15 feet below ground surface (bgs). This gravel pack created a route through which ground water could migrate from the upper to the lower zone (**CH2M HILL, 2001**). There are no known continuing sources of contamination at the Site.

The Site hydrogeology is described in detail in the RI Report (**CH2M HILL, 2001**). The primary geologic unit of interest at the Site is the Ogallala Formation. At the Site, the saturated portion of the Ogallala Formation is separated into four hydrogeologic units. Each unit is separated from the overlying and underlying unit by lower permeability strata consisting primarily of silt and clay. The four units are:

- Unit 1 (240 to 260 feet bgs): Generally unsaturated, medium to coarse sand. Lower portions often saturated and underlain by clay, silt, and sandy clay.
- Unit 2 (260 to 330 feet bgs): Saturated, silty clay to sandy clay, usually at least two to three intervals of thinly bedded clayey sand between silty and clayey strata. Upper and lower intervals of the unit show significantly different water level differences.
- Unit 3 (330 to 370 feet bgs): Saturated, silty to clayey sand, fine and medium to coarse sand, trace fine gravel.
- Unit 4 (370 to 400 feet bgs): Saturated, silty clay to sandy clay, some interbedded clayey sand (**CH2M HILL, 2001**).

Hydrogeophysical cross-sections were prepared to demonstrate the Site geology and hydrogeology as discussed above. The locations of each cross-section are provided on **Figure 2**. The hydrogeophysical cross-sections are provided in **Figures 3** through **8**.

Based on observed water level differences at the Site, the hydrogeology was further broken down into an upper and a lower ground water zone. The upper ground water zone consists of hydrogeologic Unit 1 and the upper portion of Unit 2. The lower ground water zone consists of the lower portion of Unit 2, Unit 3, and Unit 4 (see **Figures 3** through **8**). Water levels in the upper zone are generally 30 feet higher than water levels in the lower zone. A downward vertical flow gradient between the upper and lower zones exists at the Site. Ground water in the upper zone behaves like that in a perched aquifer. In Unit 1, ground water flows to the northwest, toward Well No. 2. Lateral ground water flow in upper Unit 2 is limited due to the heterogeneous nature of the strata present.

Aquifer parameters at the Site have been determined through pumping tests conducted during the RI and as part of the Remedial Design, and through ground water modeling efforts. The ground water flow gradient at the Site is about 0.0013 feet per foot (ft/ft). Modeled horizontal hydraulic conductivity values range from 5 feet per day (ft/day) for the upper zone to 40 ft/day for the lower zone. Horizontal hydraulic conductivity values calculated based on pump test results for the lower zone range from 26.06 ft/day to 39.38 ft/day across the Site. The estimated ground water flow velocity at the Site ranges from 0.03 to 0.05 ft/day. Transmissivity values for the lower zone calculated from pump test results range from 1,731 ft^2/day to 3,480 ft^2/day across the Site. A transmissivity value of 2,800 ft^2/day has been used for modeling for the lower zone.

The lower zone is the primary ground water production interval in the Perryton area. Unit 3 is the primary ground water producing unit within the lower zone. Unit 3 is also the primary migration pathway for CTC at the Site. The ground water monitoring network effectively monitors the CTC plume in Unit 3. Ground water flow in the lower zone is to the south-southeast in the area of the Site. There is no interaction between ground water and surface water in the area of the Site (**CH2M HILL, 2005g**).

In April 2005, an evaluation was performed to determine if options were available to address ground water contamination present in the upper zone. The current P&T system does not extract water from the upper zone. As part of this evaluation, water levels in the upper zone were examined to determine if a flow direction had developed in response to the P&T system operation. It was determined that a northwesterly ground water flow direction does exist in Unit 1. This flow direction is opposite the flow direction in the lower zone. The likely cause of the northwesterly ground water flow direction is that natural or artificial connections between the upper and lower ground water zones exist near the Site that allow ground water to drain from Unit 1 into the lower ground water zone. It is known that the gravel pack at Well No. 2 would provide such a connection. However, due to the lack of monitor well locations northwest of Well No. 2, it was also deemed possible that a natural connection between Unit 1 and the lower zone exists northwest of Well No. 2 (**CH2M HILL, 2005g**).

Potential exposure to the contaminated ground water is through the City of Perryton's municipal supply wells that are or could be impacted by the contaminant plume. The nearest upgradient exposure point is Well No. 1, which is not impacted (see **Figure 1**). Well No. 2 and extraction well MW-17-EX both produce contaminated ground water. Well No. 3, which is not impacted, is the nearest downgradient exposure point. Potential receptors include people who might use contaminated ground water from the City of Perryton municipal water supply for domestic uses (primarily through drinking the water). There are no ecological receptors at the Site. Exposure to the contaminated ground water through the drinking water supply has been eliminated by treatment of the water extracted from Well No. 2 and MW-17-EX in the ASTP prior to the water entering the public water supply at the NGST.

1.3 Statement of Remedy Goals and Conditions for Terminating the Ground Water Remedy

The remedy selected by the ROD for the Site includes extraction of the contaminated ground water using Well No. 2 and a second extraction well, treatment of the extracted water in the ASTP to remove CTC contamination, and blending of the extracted water in the South Ground Storage Tank (SGST) with water from other City of Perryton Municipal Supply Wells to reduce the nitrate concentration to below 7 mg/L. The ROD also called for long-term ground water monitoring to monitor the Site plume (**EPA, 2002**). The completed RA for the Site replaced the blending of water in the SGST with treatment in an RO facility to reduce the nitrate concentrations.

The ROD for the Site lists two Remedial Action Objectives (RAOs) for the LTRA:

1) Prevent or minimize further migration of the contaminant plume; and,
2) Restore the ground water throughout the plume to its expected beneficial use (as a drinking water supply) wherever practicable (**EPA, 2002).**

The remediation goals for the ground water contaminants at the Site are the maximum contaminant levels (MCLs) established under the Safe Drinking Water Act (SDWA). The remediation goals set by the ROD are:

1) CTC: 5 micrograms per liter (µg/L);

2) Chloroform: 100 µg/L;

3) Nitrate: 10,000 µg/L (or 10 mg/L); and,

4) Atrazine: 3 µg/L (**EPA, 2002**).

Containment of the plume is a short-term RAO for the Site. The ROD states that containment was anticipated to be achieved within 12 months. Restoration of the ground water is the long-term RAO. It is stated in the ROD that cleanup of the contamination is anticipated to require between 10 and 20 years (**EPA, 2002**).

During the current reporting period, several activities were conducted at the Site in order to monitor whether progress is being made toward achieving the RAOs. O&M activities were conducted on a biweekly and weekly basis for the ASTP to ensure that system components were functioning properly and to make repairs when necessary. Sampling of the ASTP was conducted on a quarterly basis to determine that the system was effectively treating the extracted contaminated ground water. Ground water sampling activities occurred during November 2004, March 2005, and September 2005 to monitor contaminant concentrations and concentration trends within the plume at the Site. Also, water level measurements were collected during ground water sampling activities to determine that the ground water extraction system has been capturing and preventing migration of the contaminant plume.

The ROD specifies that the long-term RAO is to remediate the ground water contamination to concentrations below the remediation goal (MCL) of each contaminant. Achieving the MCLs throughout the Site plume is the condition that must be met in order to terminate components of the remedy. The ROD does stipulate, however, that the remedy would be reevaluated if at some future point contaminant concentrations cease to decline and remain at a concentration above the remediation goals. The ROD includes a contingency for using natural attenuation to complete the LTRA if further pumping does not result in a significant or consistent decline in contaminant concentrations. This contingency would be implemented based on ground water monitoring and modeling data that demonstrate that the remaining contamination would not impact existing receptors. Also, the ROD includes a contingency to discontinue operation of the P&T system if the CTC concentration decreases to below the remediation goal before the nitrate concentrations. This contingency would require continued sampling of Well No. 2 to meet the monitoring requirements of the SDWA and the Texas State Water Hygiene Code (**EPA, 2002**).

1.4 Remedy Description

The following sections provide a description of the implemented remedy at the Site.

1.4.1 Pump and Treat System Description

The P&T system at the Site includes two ground water extraction wells and the ASTP. The two extraction wells include Well No. 2 and MW-17-EX. Well No. 2 is owned and maintained by the City of Perryton, while MW-17-EX is owned and maintained by the EPA. The combined total flow rate from each well is between 200 and 220 gpm. Well No. 2 pumps at a rate of between 120 and 135 gpm and MW-17-EX pumps at a rate of between 80 and 85 gpm. These flow rates are the maximum flow rates for the pumps installed in each well. The combined total flow rate from each well (220 gpm) is 180 gpm less than the maximum designed flow rate for the ASTP of 400 gpm. The ASTP includes a three tray air stripper designed to treat ground water contaminated with up to 40 µg/l of CTC at a maximum flow rate of 400 gpm to below the MCL. The treated water from the ASTP is discharged to the NGST. **Figure 1** shows the locations of Well No. 2, MW-17-EX, the ASTP, and the NGST.

1.4.2 Other Remedy Components

The only institutional control mentioned in the ROD is a City of Perryton Ordinance that requires the issuance of a permit to install new wells within the city limits. The ROD stipulates that this permitting process would act to alert EPA to any changes in the exposure scenario that currently exists at the Site.

1.5 Interaction with Public and/or Agencies

There was no interaction regarding the Site with the public during the current reporting period. The Texas Commission on Environmental Quality (TCEQ) did not make any visits to the Site during the current reporting period. CH2M HILL continues to work closely with the City of Perryton when necessary to maintain and operate the P&T system, and the City of Perryton is contacted when CH2M HILL personnel visit the Site.

2.0 System Operational Summary

The following sections provide a summary of the operations of the P&T system at the Site for the period October 1, 2004 through September 30, 2005. The P&T system is designed to operate continuously. The system is controlled through the City of Perryton's supervisory control and data acquisition (SCADA) system. The system is designed such that a shutdown to any component of the system will shut down the entire system. However, as a result of damage that occurred to the SCADA system during a thunderstorm on July 5, 2005 (further discussed in **Section 2.1.2**), the Programmable Logical Controller (PLC) unit for MW-17-EX does not currently communicate properly with the SCADA system. MW-17-EX is currently operating in the manual mode, and the well must be manually shut down when the ASTP is shut down. The City of Perryton Water Superintendent shuts down MW-17-EX when the ASTP shuts down due to an alarm condition. During maintenance activities, the onsite CH2M HILL employee shuts down MW-17-EX prior to shutting down the ASTP.

2.1 System Downtime

The ASTP run-time for the period October 1, 2004 – September 30, 2005 was approximately 99.2 percent. This estimate is based on the run-time percentages reported for the ASTP for each month in the monthly Cleanup Status Reports prepared during the current reporting period. P&T system downtime during the period October 1, 2004 – September 30, 2005 was mostly related to system maintenance and repair.

2.1.1 Routine System Downtime

Routine system downtime occurs because of planned or anticipated system maintenance activities. Routine system downtime during the current reporting period included time to clean the ASTP bag filters and inspect the ASTP trays for scaling. **Table 1** presents the dates system components were not operational for routine reasons. The table also indicates the purpose for each downtime event.

2.1.2 Non-Routine System Downtime

Non-routine system downtime occurs because of unplanned or unanticipated system maintenance activities. Such activities might include unplanned maintenance of system components or unanticipated frequent cleaning of system components. Non-routine system downtime can also occur because an equipment malfunction or alarm condition shuts down the system. **Table 2** presents the dates system components were not operational for non-routine reasons. The table also indicates the purpose or cause for each downtime event. The following paragraphs briefly describe the two occurrences of non-routine system downtime that lasted longer than two hours. It is not believed, based on data collected at the Site since the RI in 1999, that unacceptable migration of contaminants occurred because of either non-routine system downtime occurrence.

On February 1, 2005, the ASTP was shut down so the PLC program could be downloaded from the control panel in the ASTP. Extraction well MW-17-EX did not shut down when the ASTP was shut down, which resulted in flooding inside the ASTP building. The failure of MW-17-EX to shut down was most likely caused by a radio communication failure between the well and the SCADA system inside City Hall. The radio communication link between MW-17-EX and the SCADA system is occasionally interrupted due to the placement of the radio unit inside an underground well vault and atmospheric interferences. The flooding inside the ASTP resulted in the blower pressure monitoring tube providing faulty measurements. This condition was noticed during a SCADA monitoring event on February 3, 2005. OMI personnel went to the Site on February 4, 2005 to remove the blower pressure monitoring tube and dry it out. The tube was left disconnected overnight and reinstalled on the following morning. The ASTP was shut down for approximately 24 hours from February 4 to February 5, 2005. As a result of this event, contractor personnel were reminded to check the ASTP for flow into the trays after shutting down the ASTP to ensure that MW-17-EX shuts down.

On July 5, 2005, the City of Perryton's SCADA system was damaged during a thunderstorm. The PLC unit in the ASTP was also damaged. As a result, the P&T system could not be monitored remotely via the SCADA system. A new PLC unit was ordered, and activities to replace the damaged PLC unit and repair communications between the SCADA system and the ASTP occurred the week of August 15 through August 19, 2005. These activities included installing the PLC unit and diagnosing and repairing the communication issues between the ASTP and the SCADA system. It was determined that the programming would have to be upgraded to make the well flow rates, flow totalizers, and hour meter readings match between the SCADA system and the meters in the ASTP. In addition, it was determined that a communication issue that prevented MW-17-EX from shutting down when the ASTP was shut down would require a software upgrade. Well MW-17-EX was changed to operate in the manual mode. The City of Perryton was notified so that the well could be shut down manually by City staff if an alarm condition resulted in a shutdown of the ASTP.

The P&T system was shut down for approximately 27 hours from August 17 through August 19, 2005 while the PLC unit in the ASTP was replaced. The flow rate readings between the SCADA system and the flow meters in the ASTP were fixed on September 1, 2005. Programming adjustments are still being made to correct the discrepancies between the totalizer and hour readings in the SCADA system so they match the meters in the ASTP. Other than the period noted above between August 17 and August 19, 2005, the P&T system was operational from July 5, 2005 through September 30, 2005. Due to the inability to accurately monitor the system remotely through the SCADA system, OMI conducted weekly, as opposed to biweekly, onsite inspections of the P&T system during the periods noted in the next section.

2.2 Operational and Process Monitoring Data

The ASTP inspection and process monitoring (analytical sample collection) schedule varied during the current reporting period. The variation in the inspection monitoring schedule was related to the need to operate the RO facility once a week to flush the system prior to its preservation in December 2004 and the inability to accurately monitor the ASTP via the SCADA system after July 5, 2005. From October 1, 2004 through December 2004, onsite inspections of the ASTP occurred on a weekly basis. Beginning in January 2005 and continuing through July 5, 2005, onsite inspections of the ASTP occurred on a biweekly basis. From July 5, 2005 through September 30, 2005, onsite inspections of the ASTP occurred on a weekly basis. The ASTP process monitoring (analytical sample collection) occurred on a quarterly basis during the period October 1, 2004 through September 30, 2005.

2.2.1 Plant Influent and Treated Water, and Efficiency of Above-Ground Treatment Components

Process monitoring of the ASTP occurred on a quarterly basis during the current reporting period. The process monitoring schedule, sampling locations, and analytical parameters for the ASTP are provided in **Table 3**. When the ASTP treated water is blended with water from Well No. 1 in the NGST to reduce nitrate concentrations, nitrate sampling is performed at Well No. 1 and the NGST. This information is also shown in **Table 3**. Blending did not occur during the current reporting period because the nitrate concentrations in Well No. 2 and MW-17-EX remained below the remediation goal.

The ASTP is designed to treat water containing varied concentrations of CTC based on the actual water flow rate and a constant air flow rate into the air stripper. The ASTP has a maximum designed flow capacity of 400 gpm. At this flow rate, the ASTP is able to treat water containing 40 µg/L of CTC to below the remediation goal of 5 µg/L. At a flow rate of 300 gpm, the ASTP can treat water containing 50 µg/L of CTC to below the remediation goal, and at a flow rate of 140 gpm, the ASTP can treat water containing 100 µg/L of CTC to below the remediation goal. These designed parameters are based on a constant air flow rate into the air stripper of 1,800 standard cubic feet per minute (scfm).

Figure 10 shows the average ASTP influent water flow rate (by month) versus these designed flow rates. The average monthly flow rate for Well No. 2 is determined based on the actual meter reading and the actual blower hour meter reading collected during the last onsite inspection conducted each month. The average monthly flow rate for MW-17-EX is determined based on the recorded flow rates from the SCADA and onsite inspections and the actual blower hour meter reading collected during the last onsite inspection conducted each month. The addition of the new extraction well (MW-17-EX) to the system in November 2003 resulted in the increased average monthly influent water flow rate from October 2003 to November 2004. From October 2004 to September 2005, the average monthly influent water flow rate ranged from 177 to 227 gpm. The average monthly flow rate during most months was generally the same as the average monthly flow rates for the previous reporting period (October 1, 2003 through September 30, 2004). However, slightly decreased average monthly flow rates were reported for the months of April, July, and August 2005. The decreased monthly flow rates in April and July 2005 were the result of clogging of the bag filters in the ASTP, which slows down the pumping rate in the extraction wells. The decreased monthly flow rate in August 2005 was the result of clogging of the bag filters in the ASTP and the system shut down from August 17 to August 19, 2005. The clogging of the bag filters occurs sporadically due to degradation of the original well casing for Well No. 2. Rust from the degraded well casing enters the water pumped from Well No. 2 and gets trapped by the bag filters. The amount of rust entering the water pumped from Well No. 2 occasionally increases significantly for no apparent reason. When this happens, the bag filters become clogged, and the resultant back pressure slows down the pumping rate at each extraction well.

The monthly ground water production totals for each month of ASTP operation are provided in **Table 4**. **Table 4** also details the production totals for the period November 2002 – September 2003, October 2003 – September 2004, and the cumulative production since the start of ASTP operations. Approximately 110,241,000 gallons of ground water were extracted and treated in the ASTP during the period October 2004 – September 2005. Approximately 95,039,000 gallons of ground water were extracted and treated in the ASTP during the period October 2003 – September 2004. Ground water production during the current reporting period increased approximately 16 percent over the previous period. This increase was due to the removal of the RO facility from the treatment system. This resulted in fewer shutdowns of the system to perform maintenance to the RO system. Through

September 2004, the total production was approximately 243,156,400 gallons of ground water.

Figure 11 depicts the ASTP influent and treated water concentrations relative to the design concentrations at various flow rates and the CTC remediation goal. The influent CTC concentrations were below the design concentrations at flow rates of 300 and 140 gpm during the current reporting period. As shown on **Figure 11**, the influent CTC concentrations increased from October 2004 to November 2004. However, the influent CTC concentrations had a decreasing trend from November 2004 to September 2005 (from 20 μg/L in November 2004 down to 7.3 μg/L in September 2005). The ASTP influent CTC concentrations varied during the period November 2002 through August 2003. Since August 2003, the ASTP influent CTC concentrations have been more consistent, and the trend has been decreasing slightly since that time. Prior to November 2003, the ASTP influent came from water pumped from Well No. 2 only. Ground water produced from the new extraction well MW-17-EX became part of the ASTP influent in November 2003. As shown on **Figure 11**, the ASTP influent CTC concentrations remained above the remediation goal of 5 μg/L during the current reporting period. Since the start of ASTP operations, the ASTP treated water CTC concentration has been non-detect at a detection limit of 0.5 μg/L. On **Figure 11**, a value of one-half the detection limit (0.25 μg/L) is used for reporting the ASTP treated water concentration.

The amount of CTC removed from the ground water by the ASTP (the mass loading) is dependent on the ASTP influent CTC concentration and the flow rate into the ASTP. **Table 4** presents the monthly and cumulative mass loading for the ASTP. The same information is also presented graphically on **Figure 12**. For months when the ASTP influent was not sampled, the ASTP influent CTC concentration from the first sample collected after that month was used to calculate the CTC mass loading. During the current reporting period, the monthly CTC mass loading varied slightly due primarily to variations in the influent CTC concentrations. During the current reporting period, approximately 13.05 pounds (lbs) of CTC were removed from the ground water by the ASTP. Between October 2003 and September 2004, the ASTP removed 12.94 lbs of CTC from the ground water. The CTC mass removal was approximately the same during the current reporting period as the CTC mass removal during the period October 2003 through September 2004. Although more ground water was extracted during the current reporting period, the CTC mass removal was almost identical due to the decreasing CTC influent concentration. From the start of ASTP operation in November 2002 through September 2005, the total CTC mass removal by the ASTP was about 32 lbs.

Table 5 presents the ASTP influent and treated water CTC concentrations. The calculated air stripper CTC removal efficiency, expressed as a percentage, is also shown on **Table 5**. Since the beginning of ASTP operations, the ASTP treated water CTC concentration has been non-detect at a detection limit of 0.5 μg/L. For purposes of calculating the air stripper CTC removal efficiency, a value of one-half the detection limit (0.25 μg/L) was used. The calculated air stripper CTC removal efficiency will vary based on the influent and treated water CTC concentrations. At the Site, the air stripper efficiency varies due solely to the influent CTC concentration, since the treated water CTC concentration has been non-detect since the start of operation. The calculated air stripper CTC removal efficiency for the ASTP will increase when the influent CTC concentration is higher. The calculated air stripper CTC removal efficiency for the current reporting period ranged from 96.6 percent to 98.8 percent (see **Table 5**). Since the start of ASTP operation in November 2002, the calculated air stripper CTC removal efficiency has ranged from 94.9 percent to 99.4 percent. The designed air stripper CTC removal efficiency, based on an influent CTC concentration of 50 μg/L (at a 300 gpm flow rate) and a treated water CTC concentration of 5 μg/L (the CTC remediation goal) is 90 percent. These design values were chosen because the 300 gpm flow rate is closest to the actual flow rate in the ASTP. The ASTP operating efficiency exceeds the design efficiency.

The air/water ratio for the ASTP is determined based on the air and water flow rates through the air stripper. The ASTP is designed to operate at an air/water ratio of between 34:1 and 96:1. These ratios are based on a minimum ground water production rate of 140 gpm, a maximum ground water production rate of 400 gpm, and a constant air flow rate of 1,800 scfm. **Table 6** shows the range of operating air/water ratios for the ASTP. This table was compiled from data recorded on the weekly onsite and SCADA monitoring inspection log forms contained in the monthly Cleanup Status Reports for the current reporting period. **Table 6** shows that the operating air/water ratio ranged from 60:1 to 128:1 during the current reporting period. During the reporting period, on April 1, 2005, April 5, 2005, and

May 3, 2005, the air/water ratio exceeded the maximum design ratio of 96:1. These exceedances were the result of clogged bag filters causing backflow pressure to the well pumps. The resultant backpressure resulted in decreased pumping rates from the wells. When the actual air/water ratio exceeds the maximum designed ratio, it is an indication that more air is being sent through the air stripper than is necessary to treat the water.

2.2.2 Extraction Well Data

The average monthly pumping rates at Well No. 2 and MW-17-EX are provided in **Table 7**. The same information is shown graphically on **Figure 13**. During the period October 1, 2004 through September 30, 2005, the average monthly pumping rate at Well No. 2 ranged from 95 gpm to 148 gpm, while the average monthly pumping rate at MW-17-EX ranged from 75 gpm to 83 gpm. The average monthly pumping rates for Well No. 2 during the current reporting period were slightly lower than the average monthly pumping rates during the period October 2003 through September 2004. This slight decrease may be an indication that the well screen for Well No. 2 is becoming fouled. However, the current pumping rate has not decreased significantly enough to cause concern relative to the system and remedy performance. The pumping rate at Well No. 2 should continue to be monitored closely to determine if the decreasing production trend continues. Extraction well MW-17-EX operated at a fairly constant pumping rate during the current reporting period.

CTC concentrations at Well No. 2 and MW-17-EX are also provided in **Table 7**. The CTC concentrations ranged from 6.7 µg/L to 8.2 µg/L for Well No. 2 and 14 µg/L to 23 µg/L for MW-17-EX during the current reporting period. In general, the CTC concentrations at Well No. 2 were slightly lower during the current reporting period than during the period October 2003 through September 2004. There was not as much variation in the CTC concentration at Well No. 2 during the current reporting period as compared to the period November 2002 through September 2004. The CTC concentrations at well MW-17-EX were similar during the current reporting period to the CTC concentrations during the period October 2003 through September 2004. The CTC concentrations at MW-17-EX did not vary much during the current reporting period. The CTC concentration at both wells remains above the remediation goal of 5 µg/L.

Nitrate concentrations at Well No. 2 and MW-17-EX are also provided in **Table 7**. The nitrate concentrations ranged from 4.9 mg/L to 6.7 mg/L for Well No. 2 and 6.7 mg/L to 9.4 mg/L for MW-17-EX during the current reporting period. The nitrate concentrations were lower at Well No. 2 during the current period than during the period October 2003 through September 2004. The nitrate concentration at Well No. 2 has generally decreased since the start of ASTP operations in November 2002, but the nitrate concentration appears to have been stable during the current reporting period. The nitrate concentrations were slightly lower during the current reporting period than during the period October 2003 through September 2004. The nitrate concentration at MW-17-EX has generally decreased since the well began operating in November 2003, but the nitrate concentrations appear to have been stable during the later half of the current reporting period. The nitrate concentration has remained below the 10 mg/L remediation goal since November 2003 at Well No. 2 and since March 2004 at MW-17-EX.

Well No. 2 is owned and maintained by the City of Perryton. There is a sounding or vent tube present at the wellhead that was intended to allow for the collection of water levels. However, the tube does not work properly, which prevents the collection of water levels. MW-17-EX was constructed without a sounding tube, which prevents the collection of water levels from the well. The lack of water level data from Well No. 2 and MW-17-EX prevents the calculation of specific capacities at each well, which prevents an evaluation of potential fouling at each well based on specific capacities. In order to evaluate potential fouling of the well screens, the pumping rates at each well should be monitored closely for decreasing trends. Decreasing pumping rates are the only indicator available to monitor for potential well screen fouling. There was a slight decrease in the average monthly pumping rate at Well No. 2 during the current reporting period, when compared to the average monthly pumping rate recorded for the period October 2003 through September 2004. There has been no indication of a decline in pumping rate at MW-17-EX.

2.3 Start Utilities, Consumables, and Waste Handling/Disposal

Costs incurred at the Site to operate the P&T system are mostly from utilities and chemical usage. Electricity is the only utility used at the Site. Chemicals used during the current reporting period were primarily for preventing scaling of the ASTP.

2.3.1 Utilities Usage

Electrical power usage is monitored by the local electricity service provider company at three meters. Separate meters are installed for the ASTP, RO facility, and MW-17-EX. During the period October 1, 2004 through September 30, 2005, the total power usage at the Site was 323,539 kilowatt-hours (kwh). The ASTP used 174,040 kwh of electricity and accounted for 53.8 percent of the electrical power consumed at the Site during the current reporting period. The primary components in the ASTP that use electrical power are the blower and the treated water pump. The RO facility used 26,146 kwh of electricity and accounted for 8.1 percent of the electrical power consumed at the Site during the current reporting period. Since the RO facility is no longer operational, the primary components in the RO facility that use electrical power are the lighting and RO control panel. MW-17-EX used 123,353 kwh of electricity and accounted for 38.1 percent of the electrical power consumed at the Site during the current reporting period. The well pump is the primary component of MW-17-EX that uses electrical power.

2.3.2 Consumables Used

The only major consumable items used at the Site during the current reporting period were chemicals. Minor consumable items such as sampling supplies were also used. The following paragraphs detail the chemical usage at the Site during the current reporting period.

Sulfuric Acid (H_2SO_4) is used at the Site as a pH adjuster and scale inhibitor in the ASTP. A total of 16,202 lbs of H_2SO_4 were used at the Site during the current reporting period. Deliveries of H_2SO_4 occurred biweekly during the current reporting period. Prior to the preservation of the RO unit, approximately 910 lbs were delivered to the Site at each delivery. After the RO unit was preserved and no longer operated, approximately 546 lbs were delivered to the Site at each delivery.

2.3.3 Waste Handling and Disposal

Wastes generated at the site during the current reporting period included general trash from Site maintenance and sampling activities and purge and decontamination water generated during ground water sampling activities. General trash was disposed in City of Perryton dumpsters at the Site. The purge and decontamination water was disposed at the City of

Perryton Warehouse wash rack sump at the Site. Water from the wash rack drains to the City's sanitary sewer.

2.4 Problems Encountered With P&T Component Operation

Very few problems were encountered with system operations during the current reporting period. The problems associated with City of Perryton's SCADA system after July 5, 2005 and with the blower pressure monitoring tube on February 1, 2005 were discussed in **Section 2.1.2**. Other problems encountered with system operations are described in the following paragraphs.

2.4.1 Above-Ground Treatment System Components

On December 24, 2004, City of Perryton personnel observed that a clamp holding a rubber boot in place that connected the piping between the ASPT blower and ASTP trays had come loose. An approximate one-inch gap was present between the blower discharge and the piping connecting the blower to the air stripper sump. This condition was immediately repaired by City of Perryton personnel. Based on observations made of the blower chart in the SCADA, it was determined that this condition persisted for approximately 10.5 hours. The ASTP continued to operate, although the air flow into the air stripper trays was reduced. CH2M HILL prepared a Technical Memorandum (TM) documenting this incident. The TM concluded that the ASTP was still able to treat the extracted ground water to below the MCL. It was calculated that the CTC concentration in the treated water was no greater than 3.0 µg/L (**CH2M HILL, 2005a**). As a result of this incident, the clamp holding the rubber boot in place is inspected regularly for tightness.

2.4.2 Subsurface System Components

The original well casing from Well No. 2 is slowly deteriorating with time. Rust from the deterioration of the casing is captured by the bag filters in the ASTP. As the rust builds up, the filters become clogged, which results in a reduction in the pumping rates at the extraction wells due to back pressure on the well pumps. Clogging of the bag filters due to rust occurs sporadically, and reduced pumping rates occurred as a result of clogged bag filters during April, July, and August 2005. No other problems were encountered with subsurface system components during the current reporting period.

2.5 System Maintenance and Modification

Various system maintenance activities occurred during the current reporting period. System maintenance activities included both routine and non-routine maintenance. Routine maintenance is considered maintenance activities that are regularly scheduled or can reasonably be expected to be necessary. Non-routine maintenance activities would include system maintenance that was not scheduled or expected to be necessary. No system modifications occurred during the current reporting period. A system modification is considered a change in the construction and/or operation of a system component that is needed to continue and/or improve system operation or performance.

2.5.1 Routine System Maintenance

Routine onsite inspections were conducted for the ASTP during the current reporting period. During these inspections, operational data including bag filter inlet and outlet pressure, treated water pump discharge pressure, blower pressure, sump pressure, blower discharge rate, extraction well flow rates, and ASTP discharge flow rates were monitored and recorded. In addition, the ASTP was examined for leaks, equipment operation, and other issues during each inspection.

Routine maintenance activities performed on the ASPT during the current reporting period included cleaning of the bag filter and the air intake screen on the blower. The bag filter is cleaned when the inlet and outlet differential pressure across the filter exceeds 30 pounds per square inch gauge (psig). Under normal operating conditions, the differential pressure is usually less than 30 psig. The filter can be clogged by accumulated silt and particles from the extraction wells with time and especially when Well No. 2 has been off for an extended period of time. The air intake screen on the blower is cleaned daily by City of Perryton personnel during their daily meter reading of the treated water flow meters. Daily cleaning of the blower air intake screen prevents air pressure increases as a result of a clogged screen and also prevents foreign particles from entering and damaging the blower. Through February 2005, the ASTP was shut down and the tray windows were removed to inspect the air stripper trays for scaling. No appreciable scaling was observed on the air stripper trays; therefore, a tray cleaning did not occur during the current reporting period.

Anticipated routine maintenance activities during the next reporting period will include continued daily cleaning of the blower air intake screen, cleaning of the bag filters, examination of the air stripper trays for scaling, and possibly an air stripper tray cleaning. The bag filters will only be cleaned if the inlet and outlet pressure differential exceeds 30 psig. The ASTP will be shut down at least bimonthly during the next reporting period so the air stripper tray windows can be removed and the trays inspected for scaling. A bimonthly schedule will be followed because biweekly inspection of the trays during the first two months of the current reporting period has revealed no scaling problems with the ASTP trays. Bimonthly inspections will be conducted to ensure that scaling of the trays is not occurring. If scale begins to build up on the air stripper trays, a cleaning of the air stripper trays will be scheduled.

The RO facility was operated once a week through December 17, 2004 to flush the RO unit. The RO unit was preserved on that date and has not been operated since. Since the RO facility is no longer in operation, no routine maintenance activities are anticipated during the next reporting period. It is anticipated that the RO facility will be decommissioned and removed from the Site during the next reporting period.

2.5.2 Non-Routine System Maintenance

Several non-routine maintenance activities were performed at the Site during the current reporting period. Non-routine maintenance activities were performed the ASTP and SCADA system. Non-routine maintenance activities for the ASTP included the following:

- On February 1, 2005, the blower pressure gauge was flooded and started providing faulty readings. The ASTP had to be shut down so the pressure gauge could be dried out. After drying out, the pressure gauge started providing accurate readings of the blower pressure.

Non-routine maintenance activities for the SCADA system included the following:

- On July 5, 2005, the City of Perryton's SCADA system failed due to a lightning strike. As a result of the same storm, one of the PLCs in the ASTP also failed. Communication with the SCADA System was lost until the PLC was replaced the week of August 15, 2005.

Several programming issues are still being resolved in order to obtain accurate hour meter and totalizer readings from the SCADA system.

2.5.3 System Modifications

No system modifications occurred during the current reporting period.

2.6 Coordination With City of Perryton Personnel

The City of Perryton Water Superintendent, Mr. Richard Collins (806-435-4014), is the point-of-contact with the City of Perryton for all onsite O&M activities involving the Site P&T system. Mr. Collins can be contacted either via radio, by City staff, and the City of Perryton Warehouse (where the ASTP is located) or via the City of Perryton Dispatcher, located inside the police department at 110 S. Ash Street.

3.0 Subsurface Performance Summary

Ground water at the Site occurs under confined conditions in the Ogallala Aquifer. Beneath the Site, the Ogallala Aquifer has been divided into four aquifer units (numbered 1 through 4) and two aquifer zones (upper and lower). The upper ground water zone is composed of Unit 1 and the upper portion of Unit 2, while the lower ground water zone is composed of the lower portion of Unit 2 and Units 3 and 4. Ground water contamination (both CTC and nitrate) at the Site is present in both the upper and lower ground water zones (**CH2M HILL, 2001**).

The monitor well network for the Site is composed of 5 multi-port monitor wells (MPMWs), 14 conventional monitor wells, extraction well MW-17-EX, and four municipal supply wells. The Site map presented in **Figure 1** shows the location of each well sampled as part of the ground water monitoring program. The well construction information for each well is provided in **Table 8**. Ground water monitoring at the Site consists of ground water sampling for VOCs and nitrates and water level monitoring. This monitoring is conducted to track concentrations of CTC and nitrates and to evaluate the P&T system performance, as required by the ROD (**EPA, 2002**). The following sections provide a summary of the ground water sampling and water level monitoring at the Site for the period October 1, 2004 through September 30, 2005.

3.1 Monitoring Events Performed During This Reporting Period

Ground water monitoring events were conducted quarterly and semiannually during the current reporting period. The dates of the monitoring events were November 28 through December 2, 2004, February 28 through March 2, 2005, and September 6 through 9, 2005. The quarterly ground water monitoring schedule was changed to semiannual after the February/March sampling event. During semiannual monitoring events, water levels are collected at all Site monitor wells and selected municipal supply wells, and ground water samples are collected at a subset of the conventional wells, MPMWs, the extraction well, and selected municipal supply wells. During the annual sampling event, water levels and ground water samples are collected at all site monitor wells except the Pride well, MWCL-07 S/D, Well No. 1, Well No. 3, and Well No. 4, where only water levels are collected. The Pride well was discovered to have been abandoned by the well owner during the September 2005 sampling event. The water level and ground water sampling frequency at each well are provided in **Table 9**.

Ground water sampling at the Site is conducted using several sampling techniques. Well No. 2 and well MW-17-EX are sampled via sample ports located outside the ASTP building just prior to the junction between the MW-17-EX and Well No. 2 discharge pipes. The MPMWs are sampled using West Bay™ technology sampling equipment. The conventional site monitor wells were sampled during the current reporting period using two different methods. Passive diffusion bags (PDBs) are installed in each monitor well for the collection of VOC samples only (the PDBs cannot be used to collect samples for nitrate analysis). In addition, samples were collected using the low-flow purge sampling method during the November/December 2004 sampling event at selected monitor wells to collect samples for nitrates and to verify the results of the PDBs. Based on the nitrate results, sampling via the low-flow purge sampling method has been discontinued at the Site. Low-flow purge sampling will be conducted during future sampling events only if nitrate concentrations are detected above the MCL in Well No. 2 or MW-17-EX. The sampling method used at each well is provided in **Table 9**.

Samples collected during the ground water monitoring events are analyzed for VOCs and nitrates. The VOC samples are submitted to an EPA Contract Laboratory Program (CLP) laboratory for analysis of Target Compound List VOCs via CLP method OLC03.2. The nitrate samples are submitted to an offsite laboratory for analysis of nitrates via EPA Method 353.1. The analytes sampled for at each monitor well are listed in **Table 9**.

3.2 Monitoring Results and Interpretation

Monitoring data and interpretations of the results for the current reporting period are provided in the following sections.

3.2.1 Water Levels

Water level measurements from each monitoring event completed during the current reporting period are presented in **Table 10**. Historical water levels collected at the Site since October 2002 are provided in **Appendix A**. Water level distribution maps for the upper ground water zone for each monitoring event are provided in **Figures 14-16**. **Figures 17-19** show the water level distribution maps for the lower ground water zone, Unit 3, for each monitoring event. Water level maps are prepared only for the lower ground water zone, Unit 3, because this is the hydrogeologic unit in the lower zone where the CTC contamination is the most prevalent.

As previously stated in **Section 1.2**, it was determined after the February/March 2005 monitoring event that ground water flow does occur in the upper ground water zone, Unit 1. Therefore, water level contours are presented on **Figures 15** and **16**. Ground water flow within Unit 1 is toward the northwest. This flow direction is opposite the regional ground water flow direction in the lower ground water zone. It is suspected that some connection, including possibly the gravel pack for Well No. 2, causes the ground water to flow in a northwest direction in Unit 1. Due to limited correlation of water levels between upper Unit 2 wells, water level contours are not prepared for wells screened in this unit. This has been a consistent phenomenon since the initial site investigation and is the result of the lower permeability strata that comprise Unit 2 (**CH2M HILL, 2001**). Overall, the water level data do continue to support the conclusion that ground water in the upper ground water zone occurs under perched conditions with only limited lateral movement as compared with the lower ground water zone.

As shown on **Figures 17-19**, a ground water depression exists in the lower ground water zone, Unit 3. This depression has formed in response to operation of the ground water extraction wells. During the current reporting period, this depression remained relatively stable in size. In the September 2005 sampling event, the water level data show that the depression deepened in the area near Well No. 2 as evidenced by the multiple closed depression contours shown on **Figure 19**.

A comparison of the water level elevations at selected monitor wells versus the average monthly pumping rates at Well No. 2 and MW-17-EX are provided on **Figure 20** (for the upper ground water zone) and **Figure 21** (for the lower ground water zone, Unit 3). Monitor wells that are located nearest the extraction wells were selected for presentation on each figure. **Figure 20** shows that the water levels in the upper ground water zone respond very little to changes in the pumping rates at the extraction wells. While wells MPMW 03-3 and MPMW 02-2 are screened in lower Unit 2, which has historically been identified as part of the lower zone, water levels in this unit do not show a correlation with pumping in Unit 3. **Figure 21** shows that the water levels in the lower ground water zone, Unit 3, do respond to changes in the pumping rates at the extraction wells. The water level response to pumping rate changes at each monitor well is almost identical. **Figure 21** also shows that the changes in water levels are closely related to changes in the pumping rate at Well No. 2. This is to be expected, since the pumping rate at MW-17-EX is more constant than the pumping rate at Well No. 2. It should be noted that even at monitor wells located closer to MW-17-EX than to Well No. 2 (such as MW-09 and MW-16), the water levels respond to changes in the pumping rate at Well No. 2.

3.2.2 Ground Water Contaminant Concentrations

CTC and nitrate analytical results from each quarterly monitoring event completed during the current reporting period are presented in **Table 11**. Historical CTC and nitrate analytical results from samples collected at the Site since October 2002 are provided in **Appendix B**. CTC and nitrate concentration distribution maps for the upper ground water zone for each quarterly monitoring event are provided in **Figures 22-24**. Nitrate samples were not collected during the February/March 2005 sampling event, and nitrate concentrations are therefore not shown on **Figure 23**. **Figures 25-27** show the CTC concentration distribution maps for the lower ground water zone, Unit 3, for each quarterly monitoring event. **Figure 28** shows the nitrate concentration distribution map for the lower ground water zone, Unit 3, for the November/December 2004 monitoring event. **Figures 3** through **8** present the CTC results from the most recent sampling event (September 2005) to show the current vertical profile of the CTC contamination at the Site.

CTC concentration trends at selected monitor wells in the upper ground water zone are shown on **Figure 29**. **Figure 29** also shows the average monthly pumping rates for Well No. 2 and MW-17-EX. At monitor wells MPMW-02-1, MPMW-03-3, and MWCL-11S, the CTC concentrations varied during the current reporting period. At all three wells, the CTC concentration decreased from November/December 2004 to February/March 2005, and the CTC concentration then increased in September 2005. At monitor wells MWCL-11S, MPMW-01-1, and MPMW-06-1, the CTC concentration increased overall during the current reporting period. The CTC concentration at MWCL-11S increased from 76 µg/L in November/December 2004 to 90 µg/L during September 2005. The CTC concentration at MPMW-01-1 increased from 15 µg/L in November/December 2004 to 39 µg/L in September 2005, and at MPMW-06-1, the CTC concentration increased slightly from 16 µg/L to 19 µg/L during the same period. At MPMW-02-1, the CTC concentration decreased overall during the current reporting period from 82 µg/L in November/December 2004 to 65 µg/L during September 2005. At MPMW-02-2, the CTC concentration decreased during the current reporting period from 25 µg/L in November/December 2004 to 16 µg/L during September 2005. At MPMW-04-1, the CTC concentration also decreased during the current reporting period from 3.4 µg/L in November/December 2005 to 1.3 µg/L in September 2005. Since the start of quarterly monitoring in October 2002, the CTC concentrations have increased at monitor wells MPMW-01-1, MPMW-02-1, MPMW-03-3, and MWCL-11S. **Figures 22-24** show that the CTC plume in the upper ground water zone did not change dramatically during the current reporting period. **Figure 29** shows that the CTC concentrations in the upper ground water zone are not significantly affected by changes in the pumping rates at Well No. 2 or MW-17-EX.

CTC concentration trends at selected monitor wells in the lower ground water zone, Unit 3, are shown on **Figure 30**. In addition, **Figure 30** shows the average monthly pumping rates at Well No. 2 and MW-17-EX. The CTC concentration decreased at monitor well MPMW-06-3 during the current reporting period. At MPMW-06-3, the CTC concentration was 19 µg/L in November/December 2004 and 4.2 µg/L during September 2005. The CTC concentration at MPMW-06-3 was below the MCL in September 2005 for the first time since May 2003. The

CTC concentrations increased slightly at monitor wells MPMW-04-4 (from 14 µg/L in November/December 2004 to 19 µg/L in September 2005) and MW-09 (from 2.5 µg/L in November/December 2004 to 5.0 µg/L in September 2005) during the current reporting period. At MW-09, the CTC concentration increase may only be apparent, since it was just discovered during the September 2005 sampling event that the CTC concentration was significantly higher at the bottom of the well screen (based on sample results obtained through the installation of additional PDBs in the well). A discrepancy also exists between the PDB and low-flow purge data at monitor well MWCL-11D (see **Table 11** and **Appendix B**). The PDBs consistently demonstrate lower CTC concentrations than those obtained via the low-flow purge method. Additional PDBs were also installed in this well and sampled during the September 2005 sampling event. The CTC results were non-detect in all the PDBs. It was concluded that the higher CTC concentrations observed during low-flow purge sampling were the result of pumping water containing higher CTC concentrations into the well from a distance. Overall, the CTC concentrations in the lower ground water zone, Unit 3, have continued to decrease since long-term monitoring began in October 2002. The decrease in CTC concentrations in the lower ground water zone, Unit 3, is most likely a result of the continued operation of Well No. 2 and MW-17-EX. **Figures 25-27** show that the CTC plume in the lower ground water zone, Unit 3, decreased slightly in size during the current reporting period.

Nitrate concentration trends at selected monitor wells in the upper ground water zone are shown on **Figure 31**. The nitrate concentrations were fairly stable in the upper ground water zone during the current reporting period.

Nitrate concentration trends at selected monitor wells in the lower ground water zone, Unit 3, are shown on **Figure 32**. In addition, **Figure 32** shows the average monthly pumping rates at Well No. 2 and MW-17-EX. The nitrate concentrations in the lower ground water zone, Unit 3, decreased to below the MCL at all monitor wells sampled during the November/December 2004 sampling event. As a result, nitrate samples have not been collected since that time. Overall, nitrate concentrations have decreased in the lower ground water zone, Unit 3, since quarterly monitoring began in October 2002. This overall trend is most likely related to the pumping at the two extraction wells. **Figure 28** shows the nitrate concentrations in the lower ground water zone, Unit 3, during November/December 2005.

During the December 2004 sampling event. and in each subsequent sampling event, MTBE was detected in upper zone monitor well MWCL-13D (**CH2M HILL, 2005d**). MTBE has not been detected in the lower zone or in water entering into the ASTP.

3.3 Interpretation of Progress toward System Goals

The ROD for the Site listed one short-term and one long-term RAO for the Site LTRA. As stated in **Section 1.3**, the short-term objective for the Site LTRA is to prevent or minimize further migration of the contaminant plume. The long-term objective is to restore the ground water throughout the plume to its expected beneficial use (as a drinking water supply) wherever practicable (**EPA, 2002)**.

3.3.1 Progress With Respect to Short-Term Goals

The P&T system has achieved the objective of containing and preventing further migration of the ground water contamination in the lower ground water zone (Unit 3) based on a capture zone analysis of the pumping wells and an interpretation of the water level and contaminant concentration data.

A capture zone analysis was completed for the Site in February 2005. As part of the capture zone analysis, the Site ground water model was updated and re-calibrated using actual water level data recorded at five-minute intervals in eight Site monitor wells during the period March 17 – June 22, 2004. In addition, pumping data for Well Nos. 1, 2, 3, and 4 and MW-17-EX were used as part of the modeling efforts. The capture zone analysis was performed to determine the extent of the P&T system capture zone based on conditions in 2004. The average pumping rates used were 85 gpm for Well No. 2 and 63 gpm for MW-17-EX. The average pumping rates of the three nearest municipal wells, Well Nos. 1, 3, and 4 (located north and south of the contaminant plume) were 45 gpm, 90 gpm, and 249 gpm respectively. The calculated capture zones for Well No. 2 and MW-17-EX based on these average flow conditions are shown in **Figure 9**. The predicted capture zone based on these average pumping conditions approximates the mapped extent of the CTC plume in 2005.

Well records were obtained from the City of Perryton to compare pumping rates for 2005 with the rates used in the capture zone analysis. Over the last year, the average pumping rates in Well Nos. 1 (<40 gpm), 3 (45 gpm), and 4 (190 gpm) are were lower than the rates modeled under average pumping conditions from 2004. In addition, the current average pumping rates for the extraction wells (Well No. 2 and MW-17-EX) are about 120 gpm and 80 gpm respectively. **Table 12** illustrates the average pumping rates for 2005 at each well compared to the average pumping rates modeled for the capture zone analysis in 2004. Based on the decreased pumping observed in 2005 for the municipal wells and higher pumping rates in the extraction wells, as compared to the rates modeled in the capture zone analysis, it is likely that the actual capture zones for Well No. 2 and MW-17-EX are larger than those shown in **Figure 9**.

The water level data demonstrate that the ground water extraction system has established a sizeable capture zone. The capture zone appears to encompass the entire plume area within the lower ground water zone, Unit 3, where CTC concentrations are above the Site remediation goals. Water level data collected at the Site since October 2002 show the development of a depression in the ground water elevations at the Site in an area extending from south of MW-09 north to MW-16 and then west towards Well No. 2. Contaminant concentration data demonstrate that the CTC plume in the lower ground water zone, Unit 3, continues to decrease in size. The CTC concentrations in monitor wells MW-08 and MW-14, located along the southern boundary of the capture zone, have decreased. The increase observed in the CTC concentration at MW-09 was due to an increase in the number of PDBs placed in the well. Contaminant concentration data demonstrate that the nitrate plume in the lower ground water zone, Unit 3, has decreased to concentrations below the Site remediation goal of 10 mg/L.

The water level data show that the extraction system does not affect the upper ground water zone to any great extent, although water level maps show that pumping at Well No. 2 may have some influence on ground water flow in Unit 1. The upper ground water zone is a perched aquifer with limited lateral movement of ground water. Also, ground water in the upper zone is not used for drinking purposes. However, Well No. 2 is constructed such that the gravel pack extends almost to ground surface. The Remedial Investigation concluded that CTC contamination in the upper ground water zone could potentially migrate along the gravel pack for Well No. 2 to the lower ground water zone. This potential CTC migration pathway still exists.

3.3.2 Progress With Respect to Long-Term Goals

The contaminant concentration data indicate that the P&T system is restoring the ground water and reducing CTC concentrations in the lower ground water zone, Unit 3. The contaminant concentration data generally demonstrate that the CTC and nitrate concentrations are decreasing in the lower ground water zone, Unit 3. In addition, as stated in Section 3.2.2, the CTC plume in the lower ground water zone, Unit 3, decreased slightly in size during the current reporting period. Nitrate concentrations in the lower ground water zone, Unit 3, decreased to below the Site remediation goal at all monitor well locations during the November/December 2004 sampling event. These data support the conclusion that the extraction system has met the long-term objective of restoring the ground water with respect to nitrate contamination in the lower ground water zone, Unit 3. The ground water would need to continue to be monitored over time after pumping is stopped to verify that the nitrate concentrations do not rebound. Also, the data support the conclusion that the extraction system is reducing the CTC concentrations in the lower ground water zone, Unit 3.

The data indicate that no reduction in contaminant concentrations in the upper ground water zone has occurred since the P&T system began operation in November 2002. The contaminant concentration data show that the P&T system does not have any observable effect on contaminant concentrations in the upper ground water zone. CTC and nitrate concentrations have either varied without exhibiting an increasing or decreasing trend or been stable since the start of quarterly monitoring in October 2002. Based on all historical site data and modeling efforts, it can be concluded that the upper ground water zone could not be used as a water supply. However, as discussed in **Section 3.3.1**, the potential for contaminant migration from the upper ground water zone to the lower ground water zone exists.

3.3.3 Gaps or Inconsistencies in the Site Conceptual Model

As previously stated, it was determined after the February/March 2005 that ground water flow does occur in the upper ground water zone, Unit 1. The ground water flow direction appears to be toward the northwest, and is potentially influenced by pumping at Well No. 2 and ground water seepage down the gravel pack at Well No. 2. This observation tends to support the original conclusions for the Site regarding Well No. 2 serving as the potential migration pathway for contamination between the upper and lower ground water zones.

In upper zone monitor well MPMW01-01, the CTC concentration has increased since the start of quarterly ground water monitoring in October 2002 (see **Figure 29**). This well is located near the southwest end of the PEX facility. This monitor well is most likely located near a source of CTC contamination to the upper zone beneath the PEX facility.

Prior to the installation of extraction well MW-17-EX, the general ground water flow direction in the lower zone, Unit 3 was toward the southeast. As part of the Phase II Remedial Design, an aquifer test was performed to evaluate potential locations for the installation of the new extraction well at the Site. Based on the results of the model and ground water flow direction, the present location of extraction well MW-17-EX was selected for the installation of the new extraction well (**CH2M HILL, 2002**). Since operation of MW-17-EX began, the ground water flow direction at the Site has changed from a southeasterly direction to a south-southeasterly direction. The ground water flow direction has been modified by the operation of the MW-17-EX.

4.0 Suggested System Modifications and Recommendations

Based on the operational and ground water monitoring data collected during the current period of operations, one system modification is suggested for the Site. It is recommended that the RO facility be decommissioned and that the RO system be permanently removed as part of the overall Site P&T system. This recommendation was included in the October 2003 through September 2004 Annual O&M Report. Options for decommissioning the RO facility have been presented to EPA.

The P&T system does not impact ground water contamination in the upper ground water zone. Although the upper ground water zone has limited lateral extent and ground water flow, the construction of Well No. 2 creates the potential for contamination in the upper ground water zone to migrate to the lower ground water zone. Options for remediating contamination in the upper ground water zone have been evaluated and presented to EPA. Remediation of the upper ground water zone will reduce the potential for migration into the lower ground water zone and may reduce the amount of time necessary to operate the P&T system at the Site. However, there is significant uncertainty about whether it is technically feasible to remediate the upper zone based on the lack of information about a specific source area.

Pumping data from City Well Nos. 1, 3, and 4 should be collected for the October 2005 through September 2006 reporting period. The data from these wells, along with the data that is already recorded for Well No. 2 and MW-17-EX, should be used to update the capture zone modeling used to assess the capture of the P&T system. An evaluation of the P&T system capture zone should then be performed using the model results for the next reporting period.

Recommendations regarding ground water monitoring activities at the Site are included in an annual summary TM prepared for the final ground water sampling event conducted each year. This TM will include recommended changes to the ground water monitoring activities.

5.0 References

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Tables

Table 1
Dates and Purpose of Routine Down-Time of P&T System Components
October 1, 2004 - September 30, 2005
City of Perryton Well No. 2 Superfund Site, Perryton, Texas

Date of Down-Time	System Component	Purpose of Down-Time
12/01/2004	ASTP	Check trays for scaling
01/07/2005	ASTP	Check trays for scaling
01/19/2005	ASTP	Check trays for scaling
02/01/2005	ASTP	Check trays for scaling
02/18/2005	ASTP	Check trays for scaling
02/28/2005	ASTP	Check trays for scaling
04/07/2005	ASTP	Clean bag filters
05/10/2005	ASTP	Clean bag filters
07/07/2005	ASTP	Clean bag filters
07/20/2005	ASTP	Clean bag filters
08/11/2005	ASTP	Clean bag filters
08/19/2005	ASTP	Clean bag filters
09/02/2005	ASTP	Check trays for scaling

P&T - Pump and Treat
ASTP - Air Stripper Treatment Plant
RO - Reverse Osmosis

Table 2
Dates and Purpose of Non-Routine Down-Time of P&T System Components
October 1, 2004 - September 30, 2005
City of Perryton Well No. 2 Superfund Site, Perryton, Texas

Date of Down-Time	System Component	Purpose or Cause of Down-Time
10/21/2004	ASTP	Maintenance on SCADA
02/01/2005	ASTP	Work on PLC/SCADA program
02/04/2005	ASTP	Dry out blower pressure gauge tube
04/29/2005	MW-17-EX	Well shut down - cause unknown
05/25/2005	SCADA	City's SCADA System shut down due to lightning. The ASTP and extraction wells remained operational during shut-down.
7/05/2005 - 8/19/2005	SCADA	City's SCADA shut down due to damaged communication ports. The ASTP and extraction wells remained operational during shut-down.
8/17/2005 - 8/19/2005	ASTP	Replace PLC and restore communications with the City's SCADA system.
09/23/2005	ASTP	Update PLC program.
09/27/2005	ASTP	Update PLC program.

Notes:
P&T - Pump and Treat
ASTP - Air Stripper Treatment Plant
RO - Reverse Osmosis
NGST - North Ground Storage Tank
CIP - Clean-in-place
PLC - Programmable Logical Controller

Table 3
Frequency of P&T System Process Monitoring
October 1, 2004 - September 30, 2005
City of Perryton Well No. 2 Superfund Site, Perryton, Texas

Analytical Parameter	Frequency of Sampling (October 1, 2004 - September 30, 2005)					
	ASTP Influent[A]	ASTP Effluent[B]	Well No. 1[C]	Well No. 2[D]	MW-17-EX[E]	NGST[F]
VOCs	Quarterly	Quarterly	As Needed[1]	Quarterly	Quarterly	
Nitrates	Quarterly	Quarterly	As Needed[1]	Quarterly	Quarterly	As Needed[1]
TDS	As Needed[2]					

Notes:
ASTP - Air Stripper Treatment Plant
NGST - North Ground Storage Tank
VOCs - Volatile Organic Compounds
TDS - Total Dissolved Solids
1 - Sampling only conducted when water is blended from the ASTP Effluent and Well No. 1 in the NGST
2 - Sampling conducted as deemed necessary
A - ASTP Influent sampling point located inside ASTP building upstream of the bag filter.
B - ASTP Effluent sampling point located inside ASTP building on discharge from air stripper trays on north side.
C - Well No. 1 sampling point located at well head immediately upstream of pump on discharge pipe.
D - Well No. 2 sampling point located outside of ASTP building on discharge pipe between well head and junction with influent pipe from MW-17-EX.
E - MW-17-EX sampling point located outside of ASTP building on influent pipe just prior to junction with discharge pipe from Well No. 2.
F - NGST sampling point located in building on east side of NGST.

Table 4
ASTP System Flow Rate, CTC Influent Concentrations, and CTC Mass Loading
November 2002 - September 2005
City of Perryton Well No. 2 Superfund Site, Perryton, Texas

Month	Average Flow Rate (gpm)	Maximum Design Flow Rate (gpm)	Water Production for Month (gal)	Influent CTC Concentration (ug/L)	Design Influent CTC Concentration at 400 gpm (ug/L)	CTC Mass Loading for Month (lbs)	Maximum Design CTC Mass Loading per Month (lbs)	Cumulative CTC Mass Loading (lbs)
Nov-02	46		271500					
Dec-02	48	400	1202200	30	40	0.30	5.76	0.30
Jan-03	54	400	2453500	36	40	0.73	5.76	1.03
Feb-03	61	400	3191780	8.6	40	0.22	5.76	1.25
Mar-03	85	400	3313020	23	40	0.63	5.76	1.88
Apr-03	86	400	4438900	15	40	0.55	5.76	2.43
May-03	85	400	3279400	5.2	40	0.14	5.76	2.57
Jun-03	129	400	5140900	4.9	40	0.20	5.76	2.77
Jul-03	125	400	4435600	41	40	1.51	5.76	4.28
Aug-03	115	400	5353800	20	40	0.88	5.76	5.16
Sep-03	123	400	4795780	22	40	0.87	5.76	6.03
Oct-03	104	400	4350400	21 [2]	40	0.75	5.76	6.78
Nov-03[1]	234	400	5068790	21	40	0.88	5.76	7.66
Dec-03	241	400	5540590	22	40	1.00	5.76	8.66
Jan-04	243	400	14314960	18	40	2.12	5.76	10.78
Feb-04	233	400	8422080	23	40	1.60	5.76	12.38
Mar-04	211	400	5530000	18	40	0.82	5.76	13.20
Apr-04	217	400	10194180	13 [2]	40	1.08	5.76	14.28
May-04	223	400	7053970	13 [2]	40	0.75	5.76	15.03
Jun-04	220	400	2263890	13	40	0.24	5.76	15.27
Jul-04	225	400	12089010	14 [2]	40	1.38	5.76	16.65
Aug-04	221	400	10897250	14 [2]	40	1.25	5.76	17.90
Sep-04	224	400	9313920	14	40	1.07	5.76	18.97
Oct-04	219	400	8980520	14	40	1.03	5.76	19.97
Nov-04	226	400	9275460	20	40	1.53	5.76	21.49
Dec-04	227	400	9109710	15 [2]	40	1.12	5.76	22.61
Jan-05	221	400	10755620	15 [2]	40	1.32	5.76	23.93
Feb-05	221	400	9549660	15	40	1.17	5.76	25.11
Mar-05	213	400	8569100	15 [2]	40	1.05	5.76	26.16
Apr-05	194	400	8669180	15 [2]	40	1.06	5.76	27.22
May-05	225	400	9739020	15 [2]	40	1.20	5.76	28.42
Jun-05	220	400	9820160	15 [2]	40	1.21	5.76	29.63
Jul-05	197	400	8501590	13.6	40	0.95	5.76	30.57
Aug-05	177	400	7648350	13.6 [2]	40	0.85	5.76	31.42
Sep-05	209	400	9622600	7.3	40	0.57	5.76	31.99

Total Production (November 2002 - September 2003)	37876400	gallons
Total Production (October 2003 - September 2004)	95039000	gallons
Total Production (October 2004 - September 2005)	110241000	gallons
Total Cummulative Production	243156400	gallons

Notes:
ASTP - Air Stripper Treatment Plant
CTC - Carbon Tetrachloride
gpm - gallons per minute
gal - gallons
ug/l - micrograms per liter
lbs - pounds
1 - First month where Well No. 2 and MW-17-EX were both operational
2 - No Influent sample collected for month. Sample result for first sampling event following that month used as influent concentration when calculating mass loading.

Table 5
ASTP System CTC Influent/Effluent Concentrations and Air Stripper Efficiency
November 2002 - September 2005
City of Perryton Well No. 2 Superfund Site, Perryton, Texas

Sampling Point	ASTP Influent (ug/L)	ASTP Effluent (ug/L)*	Air Stripper Efficiency (%)
Month	**CTC Remediation Goal - 5 ug/L**		
Dec-02	30	0.5 U	99.2%
Jan-03	36	0.5 U	99.3%
Feb-03	8.6	0.5 U	97.1%
Mar-03	23	0.5 U	98.9%
Apr-03	15	0.5 U	98.3%
May-03	5.2	0.5 U	95.2%
Jun-03	4.9	0.5 U	94.9%
Jul-03	41	0.5 U	99.4%
Aug-03	20	0.5 U	98.8%
Sep-03	22	0.5 U	98.9%
Nov-03	21	0.5 U	98.8%
Dec-03	22	0.5 U	98.9%
Jan-04	18	0.5 U	98.6%
Feb-04	23	0.5 U	98.9%
Mar-04	18	0.5 U	98.6%
Jun-04	13	0.5 U	98.1%
Oct-04	14	0.5 U	98.2%
Nov-04	20	0.5 U	98.8%
Feb-05	15	0.5 U	98.3%
Jun-05	13.6	0.48 U	98.2%
Sep-05	7.3	0.5 U	96.6%

Notes:
CTC - Carbon Tetrachloride
ASTP - Air Stripper Treatment Plant
ug/L - micrograms per liter
* - A value of 1/2 the CTC detection limit or 0.5 ug/L used to report the ASTP effluent CTC concentration. All ASTP effluent CTC concentrations have been not detected.

Table 6
ASTP Operating Air/Water Ratios and Design Air/Water Ratios
October 2004 - September 2005
City of Perryton Well No. 2 Superfund Site, Perryton, Texas

Date*	ASTP Blower Air Flow Rate (scfm)	ASTP Influent flow rate (gpm)	Air/Water Ratio
04-Oct-04	2063	225	69:1
08-Oct-04	2108	225	70:1
14-Oct-04	2022	220	69:1
19-Oct-04	1897	235	60:1
27-Oct-04	1993	240	62:1
05-Nov-04	2021	220	69:1
18-Nov-04	2096	220	71:1
01-Dec-04	2125	230	69:1
17-Dec-04	2115	230	69:1
20-Dec-04	1817	196	69:1
22-Dec-04	2072	220	70:1
27-Dec-04	1932	194	75:1
29-Dec-04	1919	193	74:1
03-Jan-05	1905	192	74:1
06-Jan-05	1948	192	76:1
07-Jan-05	2117	220	72:1
13-Jan-05	1909	192	74:1
17-Jan-05	1922	192	75:1
19-Jan-05	2093	220	71:1
20-Jan-05	1891	192	74:1
24-Jan-05	1962	193	76:1
27-Jan-05	1937	195	74:1
31-Jan-05	1980	192	77:1
01-Feb-05	2076	220	71:1
03-Feb-05	1927	192	75:1
07-Feb-05	1938	192	76:1
11-Feb-05	1915	192	75:1
14-Feb-05	1909	192	74:1
17-Feb-05	1929	192	75:1
18-Feb-05	2073	220	71:1
24-Feb-05	1912	189	76:1
28-Feb-05	2085	220	71:1
08-Mar-05	1962	177	83:1
10-Mar-05	1834	176	78:1
15-Mar-05	1974	172	86:1
17-Mar-05	1955	170	86:1
21-Mar-05	1829	220	62:1
23-Mar-05	1912	165	87:1
28-Mar-05	1929	158	91:1
01-Apr-05	1940	149	97:1
05-Apr-05	1903	141	101:1
07-Apr-05	2110	175	90:1
08-Apr-05	1908	193	74:1
12-Apr-05	1899	193	74:1
20-Apr-05	1891	194	73:1
21-Apr-05	1964	220	67:1
29-Apr-05	1901	111	128:1
03-May-05	1889	193	73:1
06-May-05	1889	194	73:1

Table 6
ASTP Operating Air/Water Ratios and Design Air/Water Ratios
October 2004 - September 2005
City of Perryton Well No. 2 Superfund Site, Perryton, Texas

Date*	ASTP Blower Air Flow Rate (scfm)	ASTP Influent flow rate (gpm)	Air/Water Ratio
09-May-05	1887	195	72:1
10-May-05	2042	220	69:1
12-May-05	1866	196	71:1
16-May-05	1890	195	73:1
19-May-05	1855	196	71:1
23-May-05	1815	197	69:1
26-May-05	2025	220	69:1
31-May-05	1839	195	71:1
02-Jun-05	1861	196	71:1
06-Jun-05	1857	194	72:1
10-Jun-05	1852	193	72:1
13-Jun-05	1849	192	72:1
15-Jun-05	1842	192	72:1
20-Jun-05	1896	191	74:1
24-Jun-05	1841	188	73:1
27-Jun-05	1858	180	77:1
30-Jun-05	1874	174	81:1
07-Jul-05	2174	230	71:1
15-Jul-05	2150	200	80:1
20-Jul-05	2114	220	72:1
29-Jul-05	2048	220	70:1
04-Aug-05	2053	230	67:1
11-Aug-05	2128	230	69:1
19-Aug-05	2149	230	70:1
26-Aug-05	1856	225	62:2
01-Sep-05	2043	220	70:1
08-Sep-05	1999	220	68:1
13-Sep-05	1968	220	67:1
19-Sep-05	2025	210	72:1
Minimum Design Ratio	**1800**	**400**	**34 : 1**
Maximum Design Ratio	**1800**	**140**	**96 : 1**

<u>Notes:</u>
ASTP - Air Stripper Treatment Plant
scfm - standard cubic feet per minute
gpm - gallons per minute
* - Operational data is from weekly inspection log sheets.
Yellow highlighting indicates exceedance of the maximum design ratio.

Table 7
Extraction Well Average Monthly Pumping Rates,
CTC, and Nitrate Concentrations
November 2002 - September 2005
City of Perryton Well No. 2 Superfund Site, Perryton, Texas

Month	Average Pumping Rate (gpm)			CTC Concentration (ug/L)		Nitrate Concentration (mg/L)	
	Well No. 2	MW-17-EX	Total	Well No. 2	MW-17-EX	Well No. 2	MW-17-EX
Nov-02	46		46			20.0	
Dec-02	48		48	30.0		16.0	
Jan-03	54		54	36.0		16.0	
Feb-03	64		64	8.6		14.0	
Mar-03	85		85	23.0		14.0	
Apr-03	86		86	15.0		11.1	
May-03	85		85	5.2		12.0	
Jun-03	127		127	4.9		9.5	
Jul-03	127		127	41.0		13.0	
Aug-03	113		113	20.0		9.4	4.6
Sep-03	123		123	22.0		12.0	
Oct-03	104		104			16.0	13.0
Nov-03	147	87	234	9.7	17.0	7.2	12.0
Dec-03	154	87	241	8.1	25.0	6.3	11.0
Jan-04	156	87	243	8.8	17.0	9.0	11.0
Feb-04	150	83	233	10.0	19.0	7.0	10.0
Mar-04	126	85	211	12.0	25.0	6.6	9.4
Apr-04	131	85	216			6.8	9.4
May-04	138	85	223				
Jun-04	134	86	220	6.7	20.0	6.4	9.1
Jul-04	142	83	225				
Aug-04	135	86	221				
Sep-04	144	80	224				
Oct-04	140	79	219	6.9	21.0	6.7	9.4
Nov-04	148	78	226	8.2	21.0	5.7	8.9
Dec-04	143	83	227				
Jan-05	139	82	221				
Feb-05	140	81	221	6.7	23.0	5.4	8.4
Mar-05	133	80	213				
Apr-05	119	75	194				
May-05	142	83	225				
Jun-05	138	82	220	6.8	16.7	4.9	6.8
Jul-05	118	79	197				
Aug-05	95	83	177				
Sep-05	129	80	209	6.9	14.0	5.7	6.7

Notes:
CTC - Carbon Tetrachloride
gpm - gallons per minute
ug/L - micrograms per liter
mg/L - milligrams per liter

Table 8
Well Construction Details
Ground Water Monitoring Network
City of Perryton Well No. 2 Superfund Site, Perryton, Texas

Well ID	Date Drilled	Northing	Easting	Ground Surface Elevation (feet above MSL)	TOC Elevation (feet above MSL)	Total Depth (feet)	Depth to Top of Screen (feet)	Depth to Bottom of Screen (feet)	Top of Screen Elevation (feet above MSL)	Bottom of Screen Elevation (feet above MSL)	Hyrdologic Zone[1]	Hydrologic Unit[1]
Well No. 1 (GW-01) (M)	Feb-80	9182.194	4534.565	2934.37	2934.37	NA	280	435	2654.37	2499.37	L	3
Well No. 2 (GW-02) (M)	May-46	6996.508	4255.026	2933.51	2933.65	NA	330	415	2603.51	2518.51	L	2L/3
Well No. 3 (GW-03) (M)	Jun-73	3310.054	5136.944	2929.16	2929.16	NA	278	490	2651.16	2439.16	L	3
Well No. 4 (GW-04) (M)	NA	1569.764	5537.870	2926.30	2926.30	NA	NA	NA	NA	NA	L	3
MPMW-01-1	Dec-99	6325.500	3691.100	2935.45	2934.60	272	250	260	2685.45	2675.45	U	1
MPMW-01-2	Dec-99	6325.500	3691.100	2935.45	2934.60	301	275	285	2660.45	2650.45	U	2U
MPMW-01-3	Dec-99	6325.500	3691.100	2935.45	2934.60	322	305	315	2630.45	2620.45	L	2L
MPMW-01-4	Dec-99	6325.500	3691.100	2935.45	2934.60	368	340	350	2595.45	2585.45	L	3
MPMW-01-5	Dec-99	6325.500	3691.100	2935.45	2934.60	395	375	385	2560.45	2550.45	L	4
MPMW-02-1	Dec-99	6872.000	4152.800	2931.54	2931.20	309	285	295	2646.54	2636.54	U	2U
MPMW-02-2	Dec-99	6872.000	4152.800	2931.54	2931.20	341	315	325	2616.54	2606.54	L	2L
MPMW-02-3	Dec-99	6872.000	4152.800	2931.54	2931.20	383	345	355	2586.54	2576.54	L	3
MPMW-02-4	Dec-99	6872.000	4152.800	2931.54	2931.20	405	390	400	2541.54	2531.54	L	4
MPMW-03-1	Dec-99	7240.600	4251.400	2932.88	2932.30	271.5	250	260	2682.88	2672.88	U	1
MPMW-03-2	Dec-99	7240.600	4251.400	2932.88	2932.30	310	275	285	2657.88	2647.88	U	2U
MPMW-03-3	Dec-99	7240.600	4251.400	2932.88	2932.30	338	315	325	2617.88	2607.88	L	2L
MPMW-03-4	Dec-99	7240.600	4251.400	2932.88	2932.30	369	345	355	2587.88	2577.88	L	3
MPMW-03-5	Dec-99	7240.600	4251.400	2932.88	2932.30	393	375	385	2557.88	2547.88	L	4
MPMW-04-1	Dec-99	6370.500	4478.100	2942.88	2942.40	305	275	285	2667.88	2657.88	U	1
MPMW-04-2	Dec-99	6370.500	4478.100	2942.88	2942.40	335	310	320	2632.88	2622.88	U	2U
MPMW-04-3	Dec-99	6370.500	4478.100	2942.88	2942.40	370	340	350	2602.88	2592.88	L	2L
MPMW-04-4	Dec-99	6370.500	4478.100	2942.88	2942.40	410	375	385	2567.88	2557.88	L	3
MPMW-04-5	Dec-99	6370.500	4478.100	2942.88	2942.40	434	415	425	2527.88	2517.88	L	4
MW-05D	Jan-00	7796.269	4641.946	2930.49	2929.69	335	320	330	2610.49	2600.49	L	3
MW-05S	Jan-00	7796.415	4658.112	2930.65	2930.22	275	260	270	2670.65	2660.65	U	2U
MPMW-06-1	Dec-99	7013.000	4800.400	2940.60	2939.70	285	250	260	2690.60	2680.60	U	1
MPMW-06-2	Dec-99	7013.000	4800.400	2940.60	2939.70	315	290	300	2650.60	2640.60	L	2L
MPMW-06-3	Dec-99	7013.000	4800.400	2940.60	2939.70	337	320	330	2620.60	2610.60	L	3
MWCL-07D	Jan-00	5902.838	3832.320	2942.17	2941.53	375	360	370	2582.17	2572.17	L	3
MWCL-07S	Jan-00	5902.436	3832.303	2942.17	2941.65	310	295	305	2647.17	2637.17	U	2U

Table 8
Well Construction Details
Ground Water Monitoring Network
City of Perryton Well No. 2 Superfund Site, Perryton, Texas

Well ID	Date Drilled	Northing	Easting	Ground Surface Elevation (feet above MSL)	TOC Elevation (feet above MSL)	Total Depth (feet)	Depth to Top of Screen (feet)	Depth to Bottom of Screen (feet)	Top of Screen Elevation (feet above MSL)	Bottom of Screen Elevation (feet above MSL)	Hyrdologic Zone[1]	Hydrologic Unit[1]
MW-08	Jan-00	5605.400	4508.538	2938.52	2938.03	365*	355	365	2583.52	2573.52	L	3
MW-09	Feb-00	5961.257	5439.137	2934.39	2933.99	345	330	340	2604.39	2594.39	L	3
MW-10	Feb-00	7050.312	5614.025	2940.68	2940.38	335	320	330	2620.68	2610.68	L	3
MWCL-11D	Apr-00	6654.974	4144.733	2935.65	2935.39	380	365	375	2570.65	2560.65	L	3
MWCL-11S	Apr-00	6654.668	4144.970	2935.65	2935.34	275	260	270	2675.65	2665.65	U	2U
MWCL-13D	May-00	7767.284	6389.707	2939.72	2939.48	330	315	325	2624.72	2614.72	L	3
MWCL-13S	May-00	7766.975	6389.909	2939.72	2939.40	275	240	270	2699.72	2669.72	U	2U
MW-14	May-00	5490.222	6092.364	2931.29	2931.21	355	340	350	2591.29	2581.29	L	3
MW-15	May-00	6698.708	6370.598	2932.95	2932.46	340	325	335	2607.95	2597.95	L	3
MW-16	Jun-03	6685.400	5354.700	2940.09	2939.56	335	305	325	2635.09	2615.09	L	3
MW-17-EX	Jun-03	6354.400	5243.200	2938.86	2940.35	400	330	380	2608.86	2558.86	L	3
Pride [2]	Mar-98	8489.371	7915.973	NA	2932.93	325	260	320	2672.93 [3]	2612.93 [2]	L	3

Notes:
1 - See Remedial Investigation Report for explaination of hydrologic units
2 - Pride monitor well found to be abandoned during September 2005 ground water sampling event
3 - Ground surface elevation unknown. Well screen elevations determined using top-of-casing elevation
U - Upper
L - Lower
MPMW - Multi-port monitor well
MW - monitor well
MWCL - monitor well cluster
NA - not available
(M) - Municipal Well
* - Well repaired in July 2003 - Sump filled with sand and a PVC plug was inserted to the bottom of the screen
MSL - Mean sea level
TOC - Top of Casing

TABLE 9
Ground Water Monitoring Frequency by Well
City of Perryton Well No. 2 Superfund Site, Perryton, Texas

Well	Water Level Collection Frequency	Sampling Frequency	Sampling Method	Analytical Parameters
Well No. 1 (GW-01)	Semi-Annually	NS	NS	NS
Well No. 2 (GW-02)	NS	Quarterly	Existing Pump	VOCs, nitrates
Well No. 3 (GW-03)	Semi-Annually	NS	NS	NS
Well No. 4 (GW-04)	Semi-Annually	NS	NS	NS
MPMW-01-1	Semi-Annually	Semi-Annually	West Bay™ [1]	VOCs
MPMW-01-2	Semi-Annually	Semi-Annually	West Bay™ [1]	VOCs, nitrates[3]
MPMW-01-3	Semi-Annually	Semi-Annually	West Bay™ [1]	VOCs, nitrates[3]
MPMW-01-4	Semi-Annually	Annually	West Bay™ [1]	VOCs, nitrates[3]
MPMW-01-5	Semi-Annually	Annually	West Bay™ [1]	VOCs
MPMW-02-1	Semi-Annually	Semi-Annually	West Bay™ [1]	VOCs, nitrates annually
MPMW-02-2	Semi-Annually	Semi-Annually	West Bay™ [1]	VOCs, nitrates annually
MPMW-02-3	Semi-Annually	Semi-Annually	West Bay™ [1]	VOCs, nitrates[3]
MPMW-02-4	Semi-Annually	Annually	West Bay™ [1]	VOCs, nitrates[3]
MPMW-03-1	Semi-Annually	Semi-Annually	West Bay™ [1]	VOCs, nitrates annually
MPMW-03-2	Semi-Annually	Semi-Annually	West Bay™ [1]	VOCs, nitrates annually
MPMW-03-3	Semi-Annually	Semi-Annually	West Bay™ [1]	VOCs, nitrates[3]
MPMW-03-4	Semi-Annually	Annually	West Bay™ [1]	VOCs
MPMW-03-5	Semi-Annually	Annually	West Bay™ [1]	VOCs
MPMW-04-1	Semi-Annually	Semi-Annually	West Bay™ [1]	VOCs
MPMW-04-2	Semi-Annually	Annually	West Bay™ [1]	VOCs
MPMW-04-3	Semi-Annually	Annually	West Bay™ [1]	VOCs
MPMW-04-4	Semi-Annually	Semi-Annually	West Bay™ [1]	VOCs, nitrates[3]
MPMW-04-5	Semi-Annually	Annually	West Bay™ [1]	VOCs
MW-05S	Semi-Annually	Annually	PDB/LFS	VOCs, nitrates[3]
MW-05D	Semi-Annually	Semi-Annually	PDB/LFS	VOCs, nitrates[3]
MPMW-06-1	Semi-Annually	Semi-Annually	West Bay™ [1]	VOCs, nitrates annually
MPMW-06-2	Semi-Annually	Annually	West Bay™ [1]	VOCs
MPMW-06-3	Semi-Annually	Semi-Annually	West Bay™ [1]	VOCs, nitrates[3]
MWCL-07S	Semi-Annually	NS	NS	NS
MWCL-07D	Semi-Annually	NS	NS	NS
MW-08	Semi-Annually	Semi-Annually	PDB/LFS	VOCs, nitrates[3]
MW-09	Semi-Annually	Semi-Annually	PDB/LFS	VOCs, nitrates[3]
MW-10	Semi-Annually	Semi-Annually	PDB/LFS	VOCs, nitrates[3]
MWCL-11S	Semi-Annually	Semi-Annually	PDB/LFS	VOCs, nitrates[3]
MWCL-11D	Semi-Annually	Annually	PDB/LFS	VOCs, nitrates[3]
MWCL-13S	Semi-Annually	Semi-Annually	PDB	VOCs
MWCL-13D	Semi-Annually	Annually	PDB	VOCs
MW-14	Semi-Annually	Annually	PDB/LFS	VOCs, nitrates[3]
MW-15	Semi-Annually	Annually	PDB/LFS	VOCs, nitrates[3]
MW-16	Semi-Annually	Semi-Annually	PDB/LFS	VOCs, nitrates[3]
MW-17-EX	NS	Quarterly	Existing Pump	VOCs, nitrates
Pride[2]	Semi-Annually	NS	NS	NS

Notes:
1 - West Bay™ - West Bay Technologies Sampling System
2 - The Pride Well was found to have been abandoned during the September 2005 sampling event.
3 - Samples were collected for nitrate analysis during the November/December 2004 sampling event only.
VOCs - Volatile Organic Compounds
NS - Not Sampled
PDB - Passive Diffusion Bag
LFS - Low-flow purge sampling method (conducted only during the November/December 2004 sampling event).

TABLE 10
Water Level Measurements
November 2004 - September 2005
City of Perryton Well No. 2 Superfund Site, Perryton, Texas

Well ID	Date	Hyrdologic Zone Screened[1]	TOC Elevation (feet above MSL)	Depth to Water (feet BTOC)	Water Level Elevation (feet above MSL)
MPMW-01-1	28-Nov-04	U	2934.60	247.22	2687.38
	28-Feb-05			247.33	2687.27
	06-Sep-05			247.36	2687.24
MPMW-01-2	28-Nov-04	U	2934.60	247.83	2686.77
	28-Feb-05			248.29	2686.31
	06-Sep-05			247.49	2687.11
MPMW-01-3	28-Nov-04	L	2934.60	276.29	2658.31
	28-Feb-05			274.19	2660.41
	06-Sep-05			278.95	2655.65
MPMW-01-4	28-Nov-04	L	2934.60	287.67	2646.93
	28-Feb-05			286.96	2647.64
	06-Sep-05			289.35	2645.25
MPMW-01-5	28-Nov-04	L	2934.60	286.52	2648.08
	28-Feb-05			286.17	2648.43
	06-Sep-05			288.57	2646.03
MPMW-02-1	28-Nov-04	U	2931.20	245.60	2685.60
	28-Feb-05			245.30	2685.90
	06-Sep-05			233.46	2697.74
MPMW-02-2	28-Nov-04	L	2931.20	288.68	2642.52
	28-Feb-05			288.26	2642.94
	06-Sep-05			190.55	2740.65
MPMW-02-3	28-Nov-04	L	2931.20	286.43	2644.77
	28-Feb-05			285.39	2645.81
	06-Sep-05			290.37	2640.83
MPMW-02-4	28-Nov-04	L	2931.20	283.74	2647.46
	28-Feb-05			283.72	2647.48
	06-Sep-05			285.91	2645.29
MPMW-03-1	29-Nov-04	U	2932.30	248.93	2683.37
	28-Feb-05			247.41	2684.89
	06-Sep-05			248.56	2683.74
MPMW-03-2	29-Nov-04	U	2932.30	248.90	2683.40
	28-Feb-05			248.21	2684.09
	06-Sep-05			248.53	2683.77
MPMW-03-3	29-Nov-04	L	2932.30	280.27	2652.03
	28-Feb-05			278.29	2654.01
	06-Sep-05			282.28	2650.02
MPMW-03-4	29-Nov-04	L	2932.30	284.86	2647.44
	28-Feb-05			285.00	2647.30
	06-Sep-05			286.61	2645.69
MPMW-03-5	29-Nov-04	L	2932.30	283.21	2649.09
	28-Feb-05			283.74	2648.56
	06-Sep-05			286.11	2646.19
MPMW-04-1	28-Nov-04	U	2942.40	255.64	2686.76
	28-Feb-05			255.80	2686.60
	06-Sep-05			255.43	2686.97

TABLE 10
Water Level Measurements
November 2004 - September 2005
City of Perryton Well No. 2 Superfund Site, Perryton, Texas

Well ID	Date	Hyrdologic Zone Screened[1]	TOC Elevation (feet above MSL)	Depth to Water (feet BTOC)	Water Level Elevation (feet above MSL)
MPMW-04-2	28-Nov-04	U	2942.40	259.43	2682.97
	28-Feb-05			260.29	2682.11
	06-Sep-05			258.90	2683.50
MPMW-04-3	28-Nov-04	L	2942.40	286.43	2655.97
	28-Feb-05			286.40	2656.00
	06-Sep-05			287.79	2654.61
MPMW-04-4	28-Nov-04	L	2942.40	296.63	2645.77
	28-Feb-05			296.74	2645.66
	06-Sep-05			298.33	2644.07
MPMW-04-5	28-Nov-04	L	2942.40	295.28	2647.12
	28-Feb-05			295.33	2647.07
	06-Sep-05			297.50	2644.90
MW-05D	28-Nov-04	L	2929.69	281.62	2648.07
	28-Feb-05			282.04	2647.65
	06-Sep-05			282.53	2647.16
MW-05S	28-Nov-04	U	2930.22	240.33	2689.89
	28-Feb-05			240.17	2690.05
	06-Sep-05			239.61	2690.61
MPMW-06-1	29-Nov-04	U	2939.70	250.99	2688.71
	28-Feb-05			251.24	2688.46
	06-Sep-05			251.19	2688.51
MPMW-06-2	29-Nov-04	L	2939.70	286.33	2653.37
	28-Feb-05			286.08	2653.62
	06-Sep-05			286.82	2652.88
MPMW-06-3	29-Nov-04	L	2939.70	294.76	2644.94
	28-Feb-05			294.49	2645.21
	06-Sep-05			295.59	2644.11
MWCL-07D	28-Nov-04	L	2941.53	295.48	2646.05
	28-Feb-05			295.50	2646.03
	06-Sep-05			297.16	2644.37
MWCL-07S	28-Nov-04	U	2941.65	256.22	2685.43
	28-Feb-05			256.26	2685.39
	06-Sep-05			256.10	2685.55
MW-08	28-Nov-04	L	2938.03	292.59	2645.44
	28-Feb-05			292.53	2645.50
	06-Sep-05			294.43	2643.60
MW-09	28-Nov-04	L	2933.99	289.92	2644.07
	28-Feb-05			289.89	2644.10
	06-Sep-05			291.52	2642.47
MW-10	28-Nov-04	L	2940.68	294.29	2646.39
	28-Feb-05			294.50	2646.18
	06-Sep-05			295.40	2645.28
MWCL-11D	28-Nov-04	L	2935.39	290.52	2644.87
	28-Feb-05			290.68	2644.71
	06-Sep-05			291.80	2643.59

TABLE 10
Water Level Measurements
November 2004 - September 2005
City of Perryton Well No. 2 Superfund Site, Perryton, Texas

Well ID	Date	Hyrdologic Zone Screened[1]	TOC Elevation (feet above MSL)	Depth to Water (feet BTOC)	Water Level Elevation (feet above MSL)
MWCL-11S	28-Nov-04	U	2935.34	250.38	2684.96
	28-Feb-05			250.40	2684.94
	06-Sep-05			252.22	2683.12
MWCL-13D	28-Nov-04	L	2939.48	290.04	2649.44
	28-Feb-05			291.36	2648.12
	06-Sep-05			291.89	2647.59
MWCL-13S	28-Nov-04	U	2939.40	243.65	2695.75
	28-Feb-05			243.57	2695.83
	06-Sep-05			243.28	2696.12
MW-14	28-Nov-04	L	2931.21	285.55	2645.66
	28-Feb-05			285.50	2645.71
	06-Sep-05			287.51	2643.70
MW-15	28-Nov-04	L	2932.95	285.61	2647.34
	28-Feb-05			285.72	2647.23
	06-Sep-05			286.66	2646.29
MW-16	28-Nov-04	L	2939.56	295.40	2644.16
	28-Feb-05			295.46	2644.10
	06-Sep-05			296.65	2642.91
Pride	28-Nov-04	L	2932.93	283.05	2649.88
	28-Feb-05			283.37	2649.56
	*				
Well No. 1 (GW-01)	28-Nov-04	L	2934.37	281.87	2652.50
	28-Feb-05			282.67	2651.70
	06-Sep-05			278.98	2655.39
Well No. 3 (GW-03)	28-Nov-04	L	2929.16	276.78	2652.38
	28-Feb-05			276.43	2652.73
	06-Sep-05			284.15	2645.01
Well No. 4 (GW-04)	28-Nov-04	L	2926.30	282.16	2644.14
	28-Feb-05			280.52	2645.78
	06-Sep-05			287.78	2638.52

Notes:
1 - See Remedial Investigation Report for explaination of hydrologic units
* - Pride monitor well discovered to be abandoned on September 6, 2005
TOC - Top of Casing
MSL - Mean Sea Level
BTOC - Below Top of Casing
U - Upper
L - Lower

Table 11
Summary of CTC and Nitrate Results in Site
Monitor Wells - November 2004 - September 2005
City of Perryton Well No. 2 Superfund Site, Perryton Texas

StationID	Hydrologic Zone [1]	Date Collected	CARBON TETRACHLORIDE			NITRATE-NITRITE		
			Concentration	Qualifier	Unit	Concentration	Qualifier	Unit
Remediation Goal			5 ug/L			10 mg/L		
MPMW-01-1	U	30-Nov-04	**15**	=	UG/L	*		MG/L
MPMW-01-1	U	01-Mar-05	**14**	=	UG/L	*		MG/L
MPMW-01-1	U	07-Sep-05	**39**	=	UG/L	*		MG/L
MPMW-01-2	U	30-Nov-04	**9.8**	=	UG/L	*		MG/L
MPMW-01-2	U	01-Mar-05	**6.5**	=	UG/L	*		MG/L
MPMW-01-2	U	07-Sep-05	**5.8**	=	UG/L	*		MG/L
MPMW-01-3	L	30-Nov-04	**6.8**	=	UG/L	*		MG/L
MPMW-01-3	L	01-Mar-05	**5.4**	=	UG/L	*		MG/L
MPMW-01-3	L	07-Sep-05	**5.3**	=	UG/L	*		MG/L
MPMW-01-4	L	30-Nov-04	0.37	LJ	UG/L	*		MG/L
MPMW-01-4	L	07-Sep-05	0.21	LJ	UG/L	*		MG/L
MPMW-01-5	L	30-Nov-04	0.5	U	UG/L	*		MG/L
MPMW-01-5	L	07-Sep-05	0.5	U	UG/L	*		MG/L
MPMW-02-1	U	29-Nov-04	**82**	=	UG/L	**12**	=	MG/L
MPMW-02-1	U	01-Mar-05	**62**	D	UG/L	*		MG/L
MPMW-02-1	U	07-Sep-05	**65**	=	UG/L	**11**	=	MG/L
MPMW-02-2	L	29-Nov-04	**25**	=	UG/L	4.4	=	MG/L
MPMW-02-2	L	01-Mar-05	**22**	=	UG/L	*		MG/L
MPMW-02-2	L	07-Sep-05	**16**	=	UG/L	4.1	=	MG/L
MPMW-02-3	L	29-Nov-04	0.5	U	UG/L	2.3	=	MG/L
MPMW-02-3	L	01-Mar-05	0.5	U	UG/L	*		MG/L
MPMW-02-3	L	07-Sep-05	0.5	U	UG/L	*		MG/L
MPMW-02-4	L	29-Nov-04	0.5	U	UG/L	2	=	MG/L
MPMW-02-4	L	07-Sep-05	0.5	U	UG/L	*		MG/L
MPMW-03-1	U	01-Dec-04	**17**	=	UG/L	**10**	=	MG/L
MPMW-03-1	U	01-Mar-05	**18**	=	UG/L	*		MG/L
MPMW-03-1	U	08-Sep-05	**7.1**	=	UG/L	*		MG/L
MPMW-03-2	U	01-Dec-04	**11**	=	UG/L	**10**	=	MG/L
MPMW-03-2	U	01-Mar-05	**12**	=	UG/L	*		MG/L
MPMW-03-2	U	08-Sep-05	**12**	=	UG/L	**10**	=	MG/L
MPMW-03-3	L	01-Dec-04	**13**	Jv	UG/L	8.6	=	MG/L
MPMW-03-3	L	01-Mar-05	**9.4**	=	UG/L	*		MG/L
MPMW-03-3	L	08-Sep-08	**11**	=	UG/L	*		MG/L
MPMW-03-4	L	01-Dec-04	0.52	=	UG/L	*		MG/L
MPMW-03-4	L	08-Sep-05	0.5	U	UG/L	*		MG/L
MPMW-03-5	L	01-Dec-04	0.5	U	UG/L	*		MG/L
MPMW-03-5	L	08-Sep-05	0.5	U	UG/L	*		MG/L
MPMW-04-1	U	30-Nov-04	3.4	=	UG/L	*		MG/L
MPMW-04-1	U	01-Mar-05	2.2	=	UG/L	*		MG/L
MPMW-04-1	U	08-Sep-05	1.3	=	UG/L	*		MG/L
MPMW-04-2	U	30-Nov-04	0.5	U	UG/L	*		MG/L
MPMW-04-2	U	08-Sep-05	0.5	U	UG/L	*		MG/L
MPMW-04-3	L	30-Nov-04	0.5	U	UG/L	*		MG/L
MPMW-04-3	L	08-Sep-05	0.5	U	UG/L	*		MG/L
MPMW-04-4	L	30-Nov-04	**14**	D	UG/L	7.5	=	MG/L
MPMW-04-4	L	01-Mar-05	**20**	=	UG/L	*		MG/L
MPMW-04-4	L	08-Sep-05	**19**	=	UG/L	*		MG/L
MPMW-04-5	L	30-Nov-04	0.5	U	UG/L	*		MG/L
MPMW-04-5	L	08-Sep-05	0.5	U	UG/L	*		MG/L
MW-05D-5	L	30-Nov-04	2.7	=	UG/L	*		MG/L
MW-05D-2	L	01-Mar-05	1.1	=	UG/L	*		MG/L
MW-05D-5	L	07-Sep-05	0.45	LJ	UG/L	*		MG/L
MW-05S	U	30-Nov-04	0.5	U	UG/L	*		MG/L
MW-05S-2	U	07-Sep-05	0.5	U	UG/L	*		MG/L

Table 11
Summary of CTC and Nitrate Results in Site
Monitor Wells - November 2004 - September 2005
City of Perryton Well No. 2 Superfund Site, Perryton Texas

StationID	Hydrologic Zone [1]	Date Collected	CARBON TETRACHLORIDE			NITRATE-NITRITE		
			Concentration	Qualifier	Unit	Concentration	Qualifier	Unit
Remediation Goal			5 ug/L			10 mg/L		
MPMW-06-1	U	29-Nov-04	**16**	=	UG/L	*		MG/L
MPMW-06-1	U	01-Mar-05	**17**	=	UG/L	*		MG/L
MPMW-06-1	U	07-Sep-05	**19**	=	UG/L	5.5	=	MG/L
MPMW-06-2	L	29-Nov-04	0.5	U	UG/L	*		MG/L
MPMW-06-2	L	07-Sep-05	0.5	U	UG/L	*		MG/L
MPMW-06-3	L	29-Nov-04	**19**	=	UG/L	7.4	=	MG/L
MPMW-06-3	L	01-Mar-05	**7.6**	=	UG/L	*		MG/L
MPMW-06-3	L	07-Sep-05	4.2	=	UG/L	*		MG/L
MW-08	L	01-Dec-04	3.4	=	UG/L	2.8	=	MG/L
MW-08-5	L	01-Mar-05	0.7	=	UG/L	*		MG/L
MW-08-5	L	08-Sep-05	0.57	=	UG/L	*		MG/L
MW-09	L	01-Dec-04	2.5	=	UG/L	3.6	=	MG/L
MW-09-5	L	28-Feb-05	0.43	LJ	UG/L	*		MG/L
MW-09-9.5	L	07-Sep-05	**5**	=	UG/L	*		MG/L
MW-10	L	02-Dec-04	0.44	LJ	UG/L	2.2	=	MG/L
MW-10-2	L	01-Mar-05	0.2	LJ	UG/L	*		MG/L
MW-10-2	L	07-Sep-05	0.5	U	UG/L	*		MG/L
MWCL-11D	L	02-Dec-04	4.7	=	UG/L	2.6	=	MG/L
MWCL-11D-2	L	07-Sep-05	0.5	U	UG/L	*		MG/L
MWCL-11S-8	U	02-Dec-04	**76**	=	UG/L	**13**	=	MG/L
MWCL-11S-2	U	01-Mar-05	**46**	=	UG/L	*		MG/L
MWCL-11S-8	U	07-Sep-05	**90**	=	UG/L	*		MG/L
MWCL-13D-2	L	02-Dec-04	0.5	U	UG/L	*		MG/L
MWCL-13D-5	L	08-Sep-05	0.5	U	UG/L	*		MG/L
MWCL-13S-8	U	02-Dec-04	0.39	LJ	UG/L	*		MG/L
MWCL-13S-2	U	28-Feb-05	0.21	LJ	UG/L	*		MG/L
MWCL-13S-1	U	08-Sep-05	0.28	LJ	UG/L	*		MG/L
MW-14	L	01-Dec-04	0.88	=	UG/L	*		MG/L
MW-14-2	L	07-Sep-05	0.5	U	UG/L	*		MG/L
MW-15	L	30-Nov-04	0.5	U	UG/L	*		MG/L
MW-15-2	L	07-Sep-05	0.5	U	UG/L	*		MG/L
MW-16	L	01-Dec-04	0.5	U	UG/L	2.8	=	MG/L
MW-16-2	L	01-Mar-05	0.5	U	UG/L	*		MG/L
MW-16-2	L	08-Sep-05	0.5	U	UG/L	*		MG/L
MW-17-EX	L	29-Nov-04	**21**	=	UG/L	8.9	=	MG/L
MW-17-EX	L	28-Feb-05	**23**	=	UG/L	8.4	=	MG/L
MW-17-EX	L	28-Feb-05	**16.7**	=	UG/L	6.8	=	MG/L
MW-17-EX	L	06-Sep-05	**14**	=	UG/L	6.7	=	MG/L
GW-01	L	29-Nov-04	0.5	U	UG/L	5	=	MG/L
GW-02	L	29-Nov-04	**8.2**	=	UG/L	5.7	=	MG/L
GW-02	L	28-Feb-05	**6.7**	=	UG/L	5.4	=	MG/L
GW-02	L	28-Feb-05	**6.8**	=	UG/L	4.9	=	MG/L
GW-02	L	06-Sep-05	**6.9**	=	UG/L	5.7	=	MG/L
GW-03	L	29-Nov-04	0.5	U	UG/L	*		MG/L

Notes:
* - Nitrate Sample Not Collected
1 - See Remedial Investigation Report for explaination of hydrologic units
CTC - Carbon Tetrachloride
Detected
J - Estimated Value
"=" - Detected Value
L - Reported concentration is below the Contract Required Quantitation Limit
B - Reported concentration is less than the Project Reporting Limit but greater than or equal to the Method Detection Limit
D - Result is from a diluted sample
UG/L - Micrograms per liter
MG/L - Milligrams per liter
BOLD - indicates exceedance of the Remediation Goal

Table 12
Modeled Pumping Rates Used in the Capture Zone Analysis vs.
Actual Pumping Rates for the Period October 2004 - September 2005
City of Perryton Well No. 2 Superfund Site, Perryton, Texas

	Extraction Wells		**Nearest City Municipal Wells**		
	Well No. 2	MW-17-EX	Well No. 1	Well No. 3	Well No. 4
Modeled Average Pumping Rate* - gpm	85	63	45	90	249
Actual Average Pumping Rate (October 2004 through September 2005) - gpm	120	80	40	45	190

NOTES:
gpm - gallons per minute
* - Modeled average pumping rates were the average pumping rates recorded for the period
March 17 - June 22, 2004 that were used for modeling in the capture zone analysis.

Figures

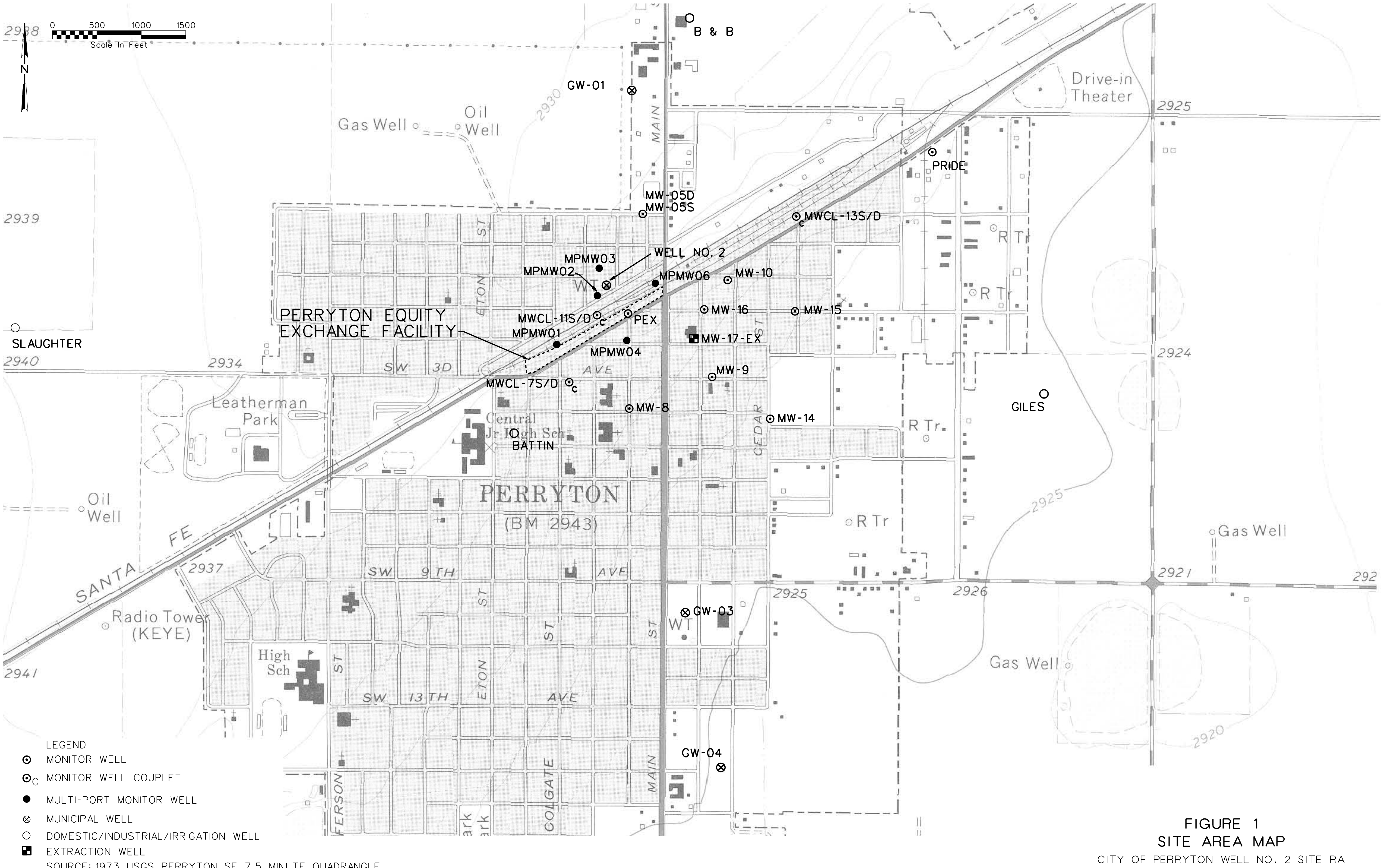
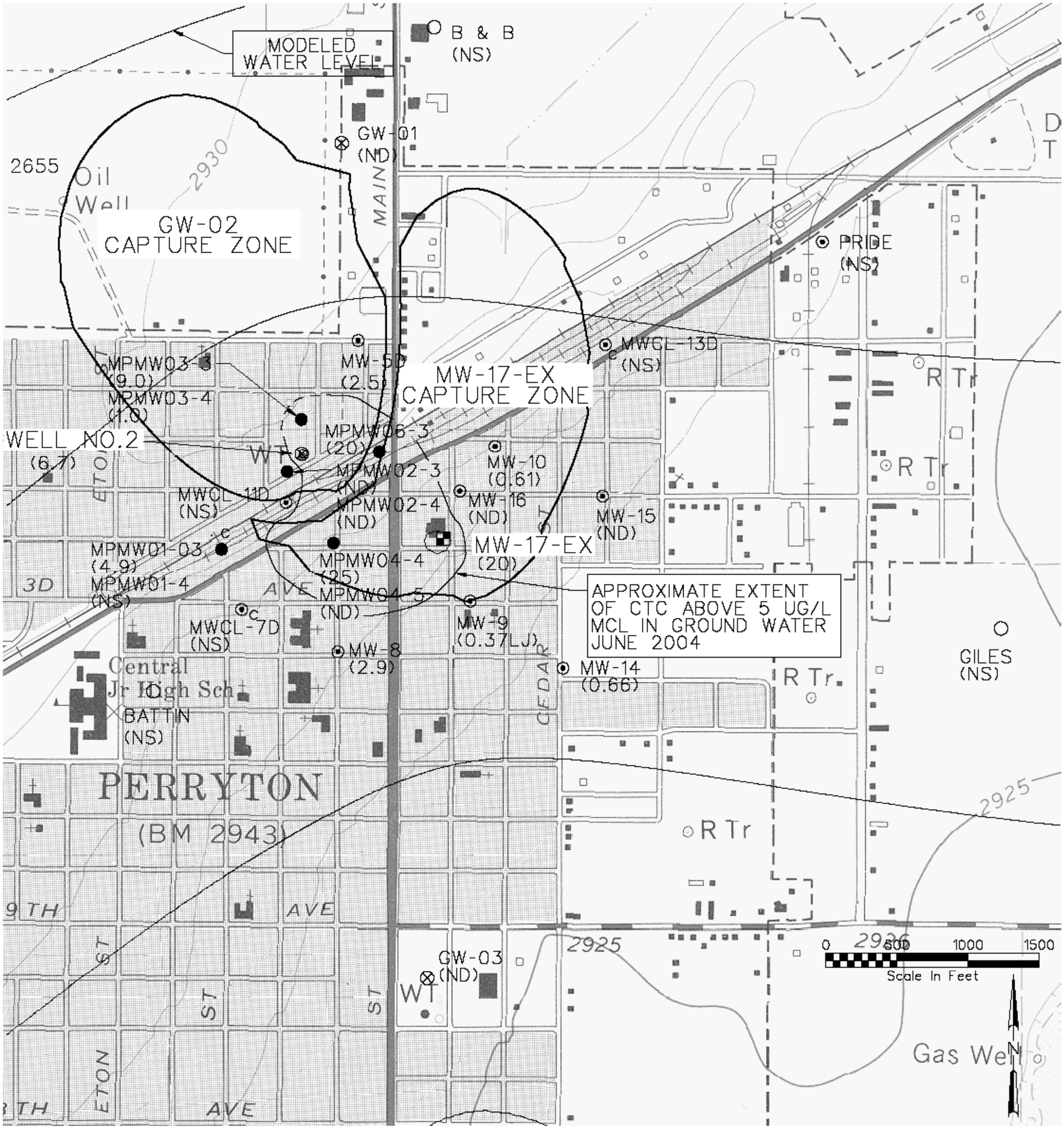


FIGURE 1
SITE AREA MAP
CITY OF PERRYTON WELL NO. 2 SITE RA
PERRYTON, TEXAS

CH2MHILL

54105F171.DGN



LEGEND

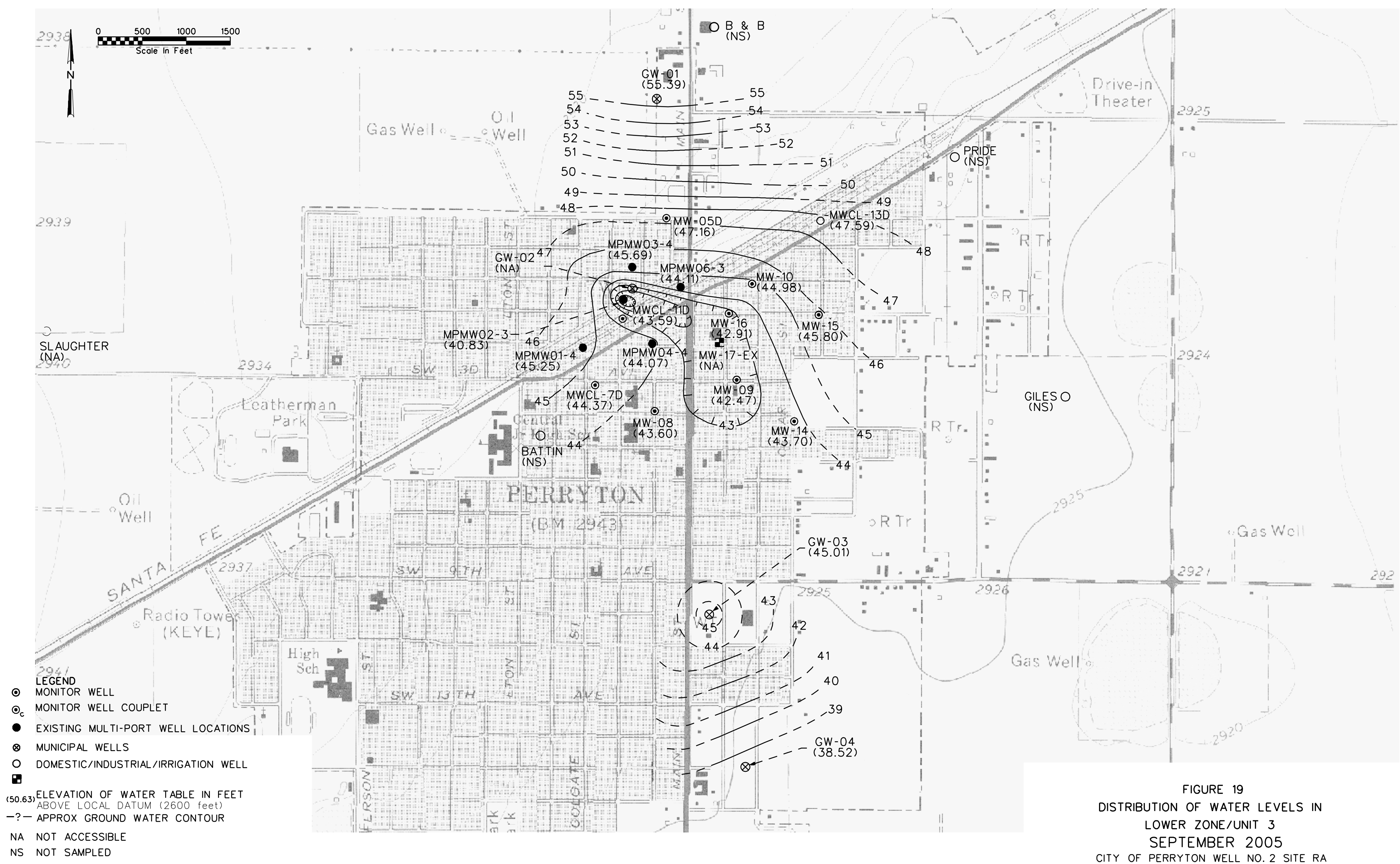
- MODELED WATER LEVEL (ft msl)
- 10 YR CAPTURE ZONE
- MONITOR WELL COUPLET
- MONITOR WELL
- MULTI-PORT MONITOR WELL
- MUNICIPAL WELL
- DOMESTIC/INDUSTRIAL/IRRIGATION WELL
- EXTRACTION WELL
- (1) CONCENTRATION OF CARBON TETRACHLORIDE Micrograms per Liter (ug/L)
- LJ ESTIMATED RESULT BELOW THE QUANTITATION LIMIT
- ND NOT DETECTED
- NS NOT SAMPLED
- MCL MAXIMUM CONTAMINANT LEVEL

SOURCE: 1973 USGS PERRYTON SE QUADRANGLE, 7.5 MINUTE SERIES

FIGURE 9
CAPTURE ZONE ANALYSIS
OBSERVED AVERAGE PUMPING RATES
MARCH - JUNE 2004
CITY OF PERRYTON WELL NO. 2 SITE RA
PERRYTON, TEXAS

CH2MHILL

Graphics/EBL/Perryton/325243/325243F16.DGN



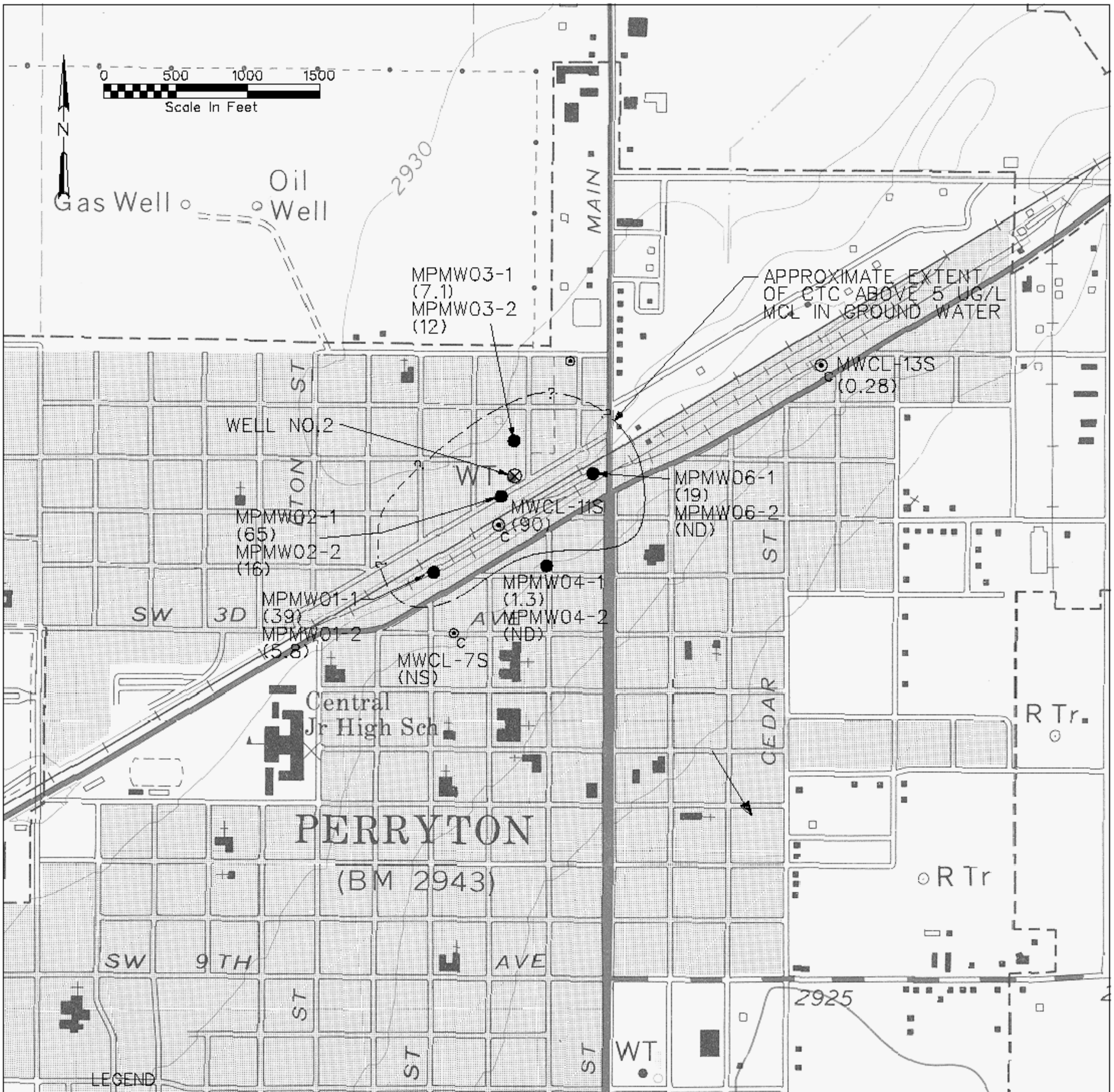
SOURCE: 1973 USGS PERRYTON SE 7.5 MINUTE QUADRANGLE, 7.5 MINUTE SERIES

NOTE: WATER LEVEL DATA CONTOURED BY HAND

FIGURE 19
DISTRIBUTION OF WATER LEVELS IN LOWER ZONE/UNIT 3
SEPTEMBER 2005
CITY OF PERRYTON WELL NO. 2 SITE RA
PERRYTON, TEXAS

CH2MHILL

Graphics/EBL/Perryton/325343/325243F11(SEP05)O&M.DGN



LEGEND

⊙	MONITOR WELL
⊙C	MONITOR WELL COUPLET
●	MULTI-PORT MONITOR WELL AND PORT NUMBER(S)
⊗	MUNICIPAL WELL
D	DILUTED SAMPLE RESULT
MCL	MAXIMUM CONTAMINANT LEVEL
LJ	ESTIMATED RESULT BELOW THE QUANITATION LIMIT
NS	NOT SAMPLED
(22)	CONCENTRATION OF CARBON TETRACHLORIDE MICROGRAMS PER LITER(ug/L)
--?--	INFERRED CONTOUR
——►	APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTE: CONCENTRATION DATA CONTOURED BY HAND

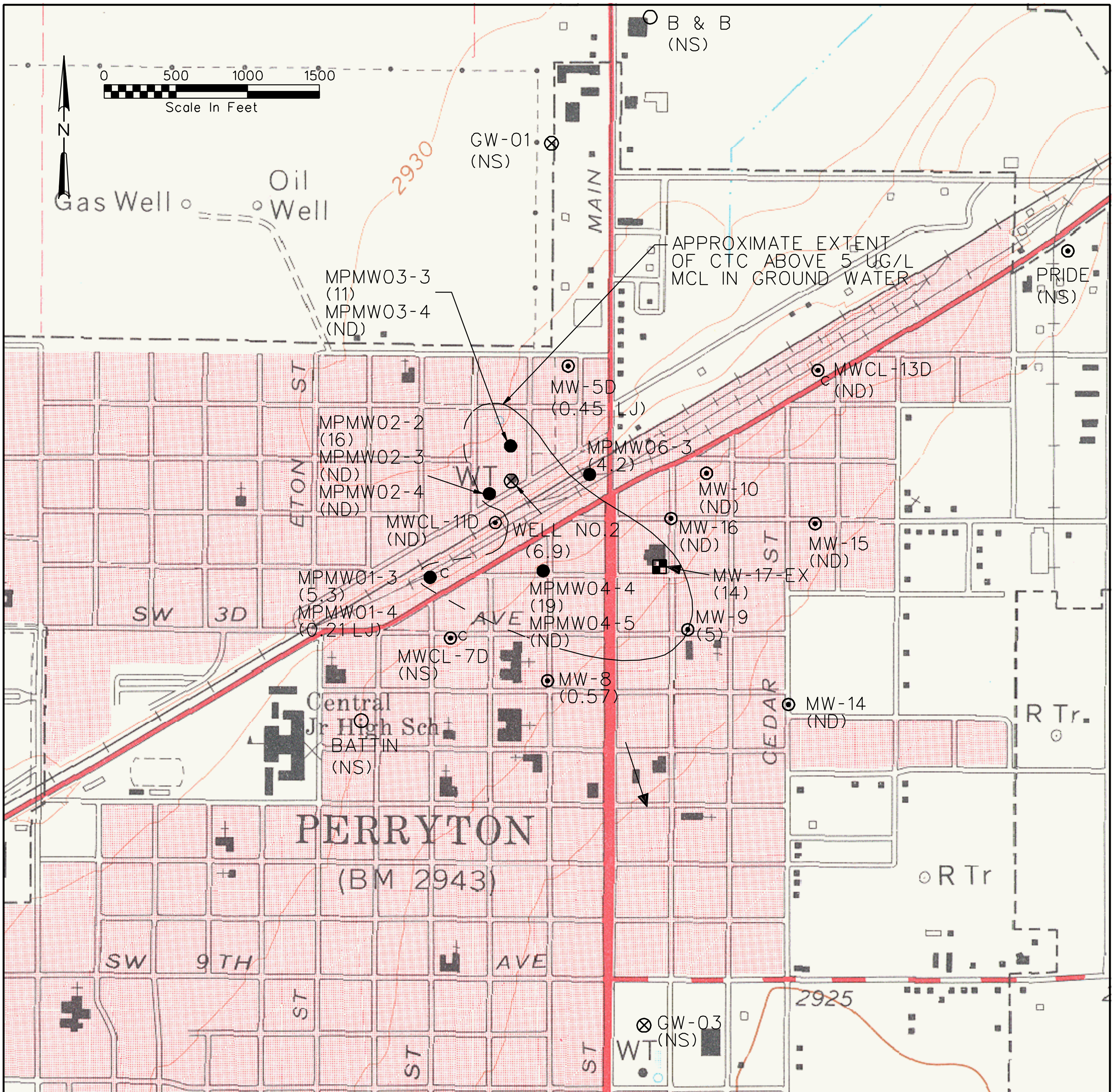
SOURCE: 1973 USGS PERRYTON SE QUADRANGE, 7.5 MINUTE SERIES

Graphics/EBL/Perryton/325243/325243F16(SEP05)O&M.DGN

FIGURE 24
DISTRIBUTION OF CARBON TETRACHLORIDE
IN GROUND WATER IN UPPER ZONE
SEPTEMBER 2005

CITY OF PERRYTON WELL NO. 2 SITE RA
PERRYTON, TEXAS

CH2MHILL



LEGEND

—?— INFERRED CONTOUR

——→ APPROXIMATE GROUND WATER FLOW DIRECTION

MONITOR WELL COUPLET

MONITOR WELL

MULTI-PORT MONITOR WELL

MUNICIPAL WELL

DOMESTIC/INDUSTRIAL/IRRIGATION WELL

EXTRACTION WELL

(1) CONCENTRATION OF CARBON TETRACHLORIDE Micrograms per Liter (ug/L)

LJ ESTIMATED RESULT BELOW THE QUANTITATION LIMIT

ND NOT DETECTED

NS NOT SAMPLED

MCL MAXIMUM CONTAMINANT LEVEL

SOURCE: 1973 USGS PERRYTON SE QUADRANGLE, 7.5 MINUTE SERIES

NOTE: CONCENTRATION DATA CONTOURED BY HAND

Graphics/EBL/Perryton/325243/325243F19(SEP05)O&M.DGN

FIGURE 27
DISTRIBUTION OF CARBON TETRACHLORIDE IN GROUND WATER IN LOWER ZONE UNIT 3
SEPTEMBER 2005

CITY OF PERRYTON WELL NO. 2 SITE RA
PERRYTON, TEXAS

CH2MHILL

Appendix A

Appendix A
Historical Water Level Elevations
October 2002 - September 2005
City of Perryton Well No. 2
Superfund Site, Perryton, Texas

Well ID	MPMW-01-1	MPMW-01-2	MPMW-01-3	MPMW-01-4	MPMW-01-5	MPMW-02-1	MPMW-02-2	MPMW-02-3
Hydrologic Zone[1]	U	U	L	L	L	U	L	L
12-Oct-02	2688.00	2686.65	2661.51	2652.37	2651.75	2685.63	2655.60	2653.26
17-Feb-03	2688.05	2688.10	2660.06	2650.87	2680.86	2685.44	2649.97	2650.17
18-May-03						2686.09	2647.09	2648.30
19-May-03	2688.05	2687.97	2658.24	2648.57	2648.54			
18-Aug-03	2687.84	2687.57	2657.73	2648.24	2648.22	2685.42	2645.94	2647.40
16-Nov-03								
17-Nov-03	2687.80	2687.69	2676.72	2646.68	2642.36	2685.58	2641.74	2645.07
15-Mar-04	2687.57	2687.41	2655.84	2645.15	2646.44	2685.44	2641.58	2643.50
21-Jun-04	2687.61	2687.37	2656.74	2646.10	2646.97	2685.10	2641.46	2644.38
28-Nov-04	2687.38	2686.77	2658.31	2646.93	2648.08	2685.60	2642.52	2644.77
29-Nov-04								
28-Feb-05	2687.27	2686.31	2660.41	2647.64	2648.43	2685.90	2642.94	2645.81
06-Sep-05	2687.24	2687.11	2655.65	2645.25	2646.03	2697.74	2640.65	2640.83

Notes:

1 - See Remedial Investigation Report for explaination of hydrologic units
2- Pride monitor well was abandoned at some time between February and September 2005.
All Elevations are in feet above Mean Sea Level

Appendix A
Historical Water Level Elevations
October 2002 - September 2005
City of Perryton Well No. 2
Superfund Site, Perryton, Texas

Well ID	MPMW-02-4	MPMW-03-1	MPMW-03-2	MPMW-03-3	MPMW-03-4	MPMW-03-5	MPMW-04-1	MPMW-04-2
Hydrologic Zone [1]	L	U	U	L	L	L	U	U
12-Oct-02	2652.60	2683.30	2683.37	2656.82	2653.35	2652.97	2687.38	2684.12
17-Feb-03	2650.69	2683.44	2683.40	2653.66	2650.95	2650.76	2687.57	2684.10
18-May-03	2648.77							
19-May-03		2683.16	2683.19	2652.79	2648.85	2649.03	2687.48	2683.85
18-Aug-03	2648.17	2683.32	2683.28	2652.44	2648.57	2648.96	2687.20	2683.50
16-Nov-03								
17-Nov-03	2615.14	2683.48	2683.54	2650.71	2646.75	2647.32	2687.41	2683.68
15-Mar-04	2644.92	2683.16	2683.26	2649.74	2644.51	2644.73	2687.13	2683.45
21-Jun-04	2646.01	2683.32	2683.35	2650.69	2646.29	2647.06	2687.01	2683.43
28-Nov-04	2647.46						2686.76	2682.97
29-Nov-04		2683.37	2683.40	2652.03	2647.44	2649.09		
28-Feb-05	2647.48	2684.89	2684.09	2654.01	2647.30	2648.56	2686.60	2682.11
06-Sep-05	2645.29	2683.74	2683.77	2650.02	2645.69	2646.19	2686.97	2683.50

Notes:

1 - See Remedial Investigation Report for explaination of hydrologic units
2- Pride monitor well was abandoned at some time between February and September 2005.
All Elevations are in feet above Mean Sea Level

Appendix A
Historical Water Level Elevations
October 2002 - September 2005
City of Perryton Well No. 2
Superfund Site, Perryton, Texas

Well ID	MPMW-04-3	MPMW-04-4	MPMW-04-5	MW-05D	MW-05S	MPMW-06-1	MPMW-06-2	MPMW-06-3
Hydrologic Zone [1]	L	L	L	L	U	U	L	L
12-Oct-02	2660.47	2652.63	2651.66	2651.31	2688.73	2688.78	2659.53	2651.60
17-Feb-03	2659.16	2650.74	2650.74	2649.91	2688.98	2689.08	2658.14	2649.97
18-May-03				2649.40	2689.27			
19-May-03	2656.55	2648.47	2648.18			2688.92	2656.04	2648.14
18-Aug-03	2656.30	2648.06	2647.76	2649.24	2689.34	2688.71	2655.31	2647.67
16-Nov-03				2649.64	2689.35			
17-Nov-03	2655.58	2645.45	2646.66			2688.67	2659.87	2645.35
15-Mar-04	2655.24	2644.02	2645.39	2646.78	2689.50	2688.34	2652.86	2643.30
21-Jun-04	2655.31	2644.78	2645.85	2647.72	2689.66	2688.71	2654.06	2644.75
28-Nov-04	2655.97	2645.77	2647.12	2648.07	2689.89			
29-Nov-04						2688.71	2653.37	2644.94
28-Feb-05	2656.00	2645.66	2647.07	2647.65	2690.05	2688.46	2653.62	2645.21
06-Sep-05	2654.61	2644.07	2644.90	2647.16	2690.61	2688.51	2652.88	2644.11

Notes:

1 - See Remedial Investigation Report
for explaination of hydrologic units
2- Pride monitor well was abandoned
at some time between February and
September 2005.
All Elevations are in feet above Mean
Sea Level

Appendix A
Historical Water Level Elevations
October 2002 - September 2005
City of Perryton Well No. 2
Superfund Site, Perryton, Texas

Well ID	MWCL-07D	MWCL-07S	MW-08	MW-09	MW-10	MWCL-11D	MWCL-11S	MWCL-13D
Hydrologic Zone [1]	L	U	L	L	L	L	U	L
12-Oct-02	2649.29	2686.07	2650.02	2650.46	2650.30	2654.05	2685.23	2650.50
17-Feb-03	2649.98	2686.23	2649.96	2649.90	2649.87	2649.74	2685.35	2650.29
18-May-03	2647.69	2686.24	2648.37	2648.02	2648.70	2647.71	2685.66	2649.58
19-May-03								
18-Aug-03	2647.31	2686.08	2647.12	2647.70	2648.50	2647.36	2685.86	2649.43
16-Nov-03	2646.95	2685.79	2646.35	2645.98	2646.70	2647.92	2685.18	2648.46
17-Nov-03								
15-Mar-04	2644.94	2685.64	2644.52	2642.13	2644.33	2643.32	2685.10	2646.73
21-Jun-04	2645.22	2685.05	2644.50	2643.38	2645.68	2644.33	2685.09	2648.23
28-Nov-04	2646.05	2685.43	2645.44	2644.07	2646.09	2644.87	2684.96	2649.44
29-Nov-04								
28-Feb-05	2646.03	2685.39	2645.50	2644.10	2645.88	2644.71	2684.94	2648.12
06-Sep-05	2644.37	2685.55	2643.60	2642.47	2644.98	2643.59	2683.12	2647.59

Notes:

1 - See Remedial Investigation Report for explaination of hydrologic units
2- Pride monitor well was abandoned at some time between February and September 2005.
All Elevations are in feet above Mean Sea Level

Appendix A
Historical Water Level Elevations
October 2002 - September 2005
City of Perryton Well No. 2
Superfund Site, Perryton, Texas

Well ID	MWCL-13S	MW-14	MW-15	MW-16	Pride[2]	Well No. 1	Well No. 3	Well No. 4
Hydrologic Zone[1]	U	L	L	L	L	L	L	L
12-Oct-02	2693.71	2650.00	2650.30			2649.09	2652.70	2644.82
17-Feb-03	2694.13	2649.60	2649.94			2650.01	2653.18	2645.04
18-May-03	2694.57	2647.33	2648.79		2650.79	2650.70	2647.62	
19-May-03								
18-Aug-03	2695.05	2647.15	2648.62	2648.10	2650.51	2651.11	2646.38	2640.33
16-Nov-03	2695.09	2645.70	2647.11		2650.21	2652.75	2650.23	2642.65
17-Nov-03				2644.10				
15-Mar-04	2695.55	2644.97	2645.65	2642.77	2649.59	2643.63	2651.85	2645.06
21-Jun-04	2695.60	2644.83	2646.82	2643.62	2649.75	2652.01	2648.95	2640.87
28-Nov-04	2695.75	2645.66	2646.85	2644.16	2649.88	2652.50	2652.38	2644.14
29-Nov-04								
28-Feb-05	2695.83	2645.71	2646.74	2644.10	2649.56	2651.70	2652.73	2645.78
06-Sep-05	2696.12	2643.70	2645.80	2642.91	NS	2655.39	2645.01	2638.52

Notes:

1 - See Remedial Investigation Report for explaination of hydrologic units
2- Pride monitor well was abandoned at some time between February and September 2005.
All Elevations are in feet above Mean Sea Level

Appendix B

Appendix B
Summary of Historical CTC and Nitrate Concentrations
October 2002 - June 2004
City of Perryton Well No. 2
Perryton, Texas

StationID	CLP SampleID	CH2M SampleID	Date Collected	Sample Type	Matrix	Sampling Equipment	CARBON TETRACHLORIDE			NITRATE-NITRITE		
							Concentration	Qualifier	Unit	Concentration	Qualifier	Unit
MPMW-01-1	F0AW2	RAF639	30-Oct-02	N	WG	WB	6	=	UG/L	2.9	J	MG/L
MPMW-01-1	F0CT2	RAF719	19-Feb-03	N	WG	WB	5.1	=	UG/L	2.9	=	MG/L
MPMW-01-1	F0G45	RAF773	21-May-03	N	WG	WB	5.2	=	UG/L	4	=	MG/L
MPMW-01-1	F0M36	RAF0827	19-Aug-03	N	WG	WB	17	=	UG/L	3.1	=	MG/L
MPMW-01-1	F0QN2	RAF0881	17-Nov-03	N	WG	WB	16	=	UG/L	3.3	=	MG/L
MPMW-01-1	F0QN2	RAF0881	17-Nov-03	N	WG	WB	16	=	UG/L	3.3	=	MG/L
MPMW-01-1	F0WT7DL	RAF0931	16-Mar-04	N	WG	WB	25	D	UG/L	3.6	=	MG/L
MPMW-01-1	F10A9	RAF0959	22-Jun-04	N	WG	WB	23	=	UG/L	3.7	=	MG/L
MPMW-01-1	F18L4DL	*	30-Nov-04	N	WG	WB	15	=	UG/L	*		MG/L
MPMW-01-1	F1BR5	*	01-Mar-05	N	WG	WB	14	=	UG/L	*		MG/L
MPMW-01-1	F1T91DL	*	07-Sep-05	N	WG	WB	39	=	UG/L	*		MG/L
MPMW-01-2	F0AW3	RAF641	30-Oct-02	N	WG	WB	6.2	=	UG/L	2.9	J	MG/L
MPMW-01-2	F0CT3	RAF759	19-Feb-03	N	WG	WB	5.7	=	UG/L	3.2	=	MG/L
MPMW-01-2	F0G46	RAF774	21-May-03	N	WG	WB	6.6	=	UG/L	4	=	MG/L
MPMW-01-2	F0M37	RAF0828	19-Aug-03	N	WG	WB	6.6	=	UG/L	3.4	=	MG/L
MPMW-01-2	F0QN3	RAF0882	17-Nov-03	N	WG	WB	7	J	UG/L	3.5	=	MG/L
MPMW-01-2	F0WT8	RAF0932	16-Mar-04	N	WG	WB	7.6	=	UG/L	3.5	=	MG/L
MPMW-01-2	F10B0	RAF0960	22-Jun-04	N	WG	WB	5.2	=	UG/L	3.3	=	MG/L
MPMW-01-2	F18L5	*	30-Nov-04	N	WG	WB	9.8	=	UG/L	*		MG/L
MPMW-01-2	F1BR6	*	01-Mar-05	N	WG	WB	6.5	=	UG/L	*		MG/L
MPMW-01-2	F1T92	*	07-Sep-05	N	WG	WB	5.8	=	UG/L	*		MG/L
MPMW-01-3	F0AW2	RAF642	30-Oct-02	N	WG	WB	6	=	UG/L	3.6	J	MG/L
MPMW-01-3	F0CT4	RAF720	19-Feb-03	N	WG	WB	3.9	=	UG/L	3	=	MG/L
MPMW-01-3	F0G47	RAF775	21-May-03	N	WG	WB	7.7	=	UG/L	4	=	MG/L
MPMW-01-3	F0M36	RAF0829	19-Aug-03	N	WG	WB	5.8	=	UG/L	3.4	=	MG/L
MPMW-01-3	F0QN4	RAF0883	17-Nov-03	N	WG	WB	0.25	U	UG/L	0.032	B	MG/L
MPMW-01-3	F0WT9	RAF0933	16-Mar-04	N	WG	WB	6.4	=	UG/L	3.7	=	MG/L
MPMW-01-3	F10B1	RAF0961	22-Jun-04	N	WG	WB	4.9	=	UG/L	3.3	=	MG/L
MPMW-01-3	F18L6	*	30-Nov-04	N	WG	WB	6.8	=	UG/L	*		MG/L
MPMW-01-3	F1BR7	*	01-Mar-05	N	WG	WB	5.4	=	UG/L	*		MG/L
MPMW-01-3	F1T93	*	07-Sep-05	N	WG	WB	5.3	=	UG/L	*		MG/L
MPMW-01-4	F0AW4	RAF643	30-Oct-02	N	WG	WB	0.24	LJ	UG/L	3	J	MG/L
MPMW-01-4	F0CT5	RAF721	19-Feb-03	N	WG	WB	0.18	LJ	UG/L	2.5	=	MG/L
MPMW-01-4	F0G48	RAF776	21-May-03	N	WG	WB	0.36	LJ	UG/L	3.4	=	MG/L
MPMW-01-4	F0M39	RAF0830	19-Aug-03	N	WG	WB	0.24	LJ	UG/L	2.7	=	MG/L
MPMW-01-4	F0QN5	RAF0884	17-Nov-03	N	WG	WB	0.31	LJ	UG/L	2.7	=	MG/L
MPMW-01-4	F18L7	*	30-Nov-04	N	WG	WB	0.37	LJ	UG/L	*		MG/L
MPMW-01-4	F1T94	*	07-Sep-05	N	WG	WB	0.21	LJ	UG/L	*		MG/L

Appendix B
Summary of Historical CTC and Nitrate Concentrations
October 2002 - June 2004
City of Perryton Well No. 2
Perryton, Texas

StationID	CLP SampleID	CH2M SampleID	Date Collected	Sample Type	Matrix	Sampling Equipment	CARBON TETRACHLORIDE			NITRATE-NITRITE		
							Concentration	Qualifier	Unit	Concentration	Qualifier	Unit
MPMW-01-5	F0AW6	RAF645	30-Oct-02	N	WG	WB	0.5	U	UG/L	2.4	J	MG/L
MPMW-01-5	F0CT6	RAF722	19-Feb-03	N	WG	WB	0.5	U	UG/L	1.7	=	MG/L
MPMW-01-5	F0G49	RAF777	21-May-03	N	WG	WB	0.5	U	UG/L	2.3	=	MG/L
MPMW-01-5	F0M40	RAF0831	19-Aug-03	N	WG	WB	0.5	U	UG/L	1.8	=	MG/L
MPMW-01-5	F0QN6	RAF0885	17-Nov-03	N	WG	WB	0.5	U	UG/L	1.7	=	MG/L
MPMW-01-5	F18L8	*	30-Nov-04	N	WG	WB	0.5	U	UG/L	*		MG/L
MPMW-01-5	F1T95	*	07-Sep-05	N	WG	WB	0.5	U	UG/L	*		MG/L
MPMW-02-1	F0AH7	RAF646	23-Oct-02	N	WG	WB	35	J	UG/L	12	=	MG/L
MPMW-02-1	F0CT7DL	RAF723	18-Feb-03	N	WG	WB	58	Jv	UG/L	11	=	MG/L
MPMW-02-1	F0G50DL	RAF778	20-May-03	N	WG	WB	47	D	UG/L	13	=	MG/L
MPMW-02-1	F0M41DL	RAF0832	19-Aug-03	N	WG	WB	91	D	UG/L	10	=	MG/L
MPMW-02-1	F0QN7DL	RAF0886	19-Nov-03	N	WG	WB	100	D	UG/L	11	=	MG/L
MPMW-02-1	F0WW0DL	RAF0934	16-Mar-04	N	WG	WB	110	D	UG/L	12	=	MG/L
MPMW-02-1	F10B2	RAF0962	22-Jun-04	N	WG	WB	74	D	UG/L	12	=	MG/L
MPMW-02-1	F18L9DL	RAF0999	29-Nov-04	N	WG	WB	82	=	UG/L	12	=	MG/L
MPMW-02-1	F1BR8	*	01-Mar-05	N	WG	WB	62	D	UG/L	*		MG/L
MPMW-02-1	F1T96DL	RAF1040	07-Sep-05	N	WG	WB	65	=	UG/L	11	=	MG/L
MPMW-02-2	F0AH8	RAF648	23-Oct-02	N	WG	WB	20	=	UG/L	6.1	=	MG/L
MPMW-02-2	F0CT9	RAF725	18-Feb-03	N	WG	WB	25	=	UG/L	5.3	=	MG/L
MPMW-02-2	F0G52	RAF780	20-May-03	N	WG	WB	2.2	=	UG/L	5.7	=	MG/L
MPMW-02-2	F0M43DL	RAF0834	19-Aug-03	N	WG	WB	41	D	UG/L	4.5	=	MG/L
MPMW-02-2	F0QN9	RAF0888	19-Nov-03	N	WG	WB	22	=	UG/L	4.2	=	MG/L
MPMW-02-2	F0WW2DL	RAF0936	16-Mar-04	N	WG	WB	19	D	UG/L	4.2	=	MG/L
MPMW-02-2	F10B4	RAF0964	22-Jun-04	N	WG	WB	17	=	UG/L	4.1	=	MG/L
MPMW-02-2	F18M1DL	RAF1000	29-Nov-04	N	WG	WB	25	=	UG/L	4.4	=	MG/L
MPMW-02-2	F1BR9	*	01-Mar-05	N	WG	WB	22	=	UG/L	*		MG/L
MPMW-02-2	F1T97	RAF1041	07-Sep-05	N	WG	WB	16	=	UG/L	4.1	=	MG/L
MPMW-02-3	F0AH9DL	RAF649	23-Oct-02	N	WG	WB	27	D	UG/L	18	=	MG/L
MPMW-02-3	F0CW0DL	RAF726	18-Feb-03	N	WG	WB	25	Jv	UG/L	14	=	MG/L
MPMW-02-3	F0G53	RAF781	20-May-03	N	WG	WB	6.1	=	UG/L	3.6	=	MG/L
MPMW-02-3	F0M44	RAF0835	19-Aug-03	N	WG	WB	0.72	=	UG/L	2.2	=	MG/L
MPMW-02-3	F0QP0	RAF0889	19-Nov-03	N	WG	WB	0.47	LJ	UG/L	2	=	MG/L
MPMW-02-3	F0WW4	RAF0938	16-Mar-04	N	WG	WB	0.27	LJ	UG/L	2	=	MG/L
MPMW-02-3	F10B5	RAF0965	22-Jun-04	N	WG	WB	0.5	U	UG/L	2	=	MG/L
MPMW-02-3	F18M2	RAF1001	29-Nov-04	N	WG	WB	0.5	U	UG/L	2.3	=	MG/L
MPMW-02-3	F1BS1	*	01-Mar-05	N	WG	WB	0.5	U	UG/L	*		MG/L
MPMW-02-3	F1T99	*	07-Sep-05	N	WG	WB	0.5	U	UG/L	*		MG/L
MPMW-02-4	F0AJ0	RAF651	23-Oct-02	N	WG	WB	0.5	0.25	UG/L	1.7	=	MG/L
MPMW-02-4	F0CW1	RAF727	18-Feb-03	N	WG	WB	0.24	LJv	UG/L	1.8	=	MG/L
MPMW-02-4	F0G54	RAF782	20-May-03	N	WG	WB	0.5	U	UG/L	2.1	=	MG/L
MPMW-02-4	F0M45	RAF0836	19-Aug-03	N	WG	WB	0.13	LJ	UG/L	1.7	=	MG/L
MPMW-02-4	F0QP1	RAF0890	19-Nov-03	N	WG	WB	0.25	U	UG/L	1.6	=	MG/L
MPMW-02-4	F0WW3	RAF0937	16-Mar-04	N	WG	WB	0.5	U	UG/L	2	=	MG/L
MPMW-02-4	F10B6	RAF0966	22-Jun-04	N	WG	WB	0.5	U	UG/L	1.6	=	MG/L
MPMW-02-4	F18M3	RAF1002	29-Nov-04	N	WG	WB	0.5	U	UG/L	2	=	MG/L
MPMW-02-4	F1TA0	*	07-Sep-05	N	WG	WB	0.5	U	UG/L	*		MG/L

Appendix B
Summary of Historical CTC and Nitrate Concentrations
October 2002 - June 2004
City of Perryton Well No. 2
Perryton, Texas

StationID	CLP SampleID	CH2M SampleID	Date Collected	Sample Type	Matrix	Sampling Equipment	CARBON TETRACHLORIDE			NITRATE-NITRITE		
							Concentration	Qualifier	Unit	Concentration	Qualifier	Unit
MPMW-03-1	F0AW7	RAF653	30-Oct-02	N	WG	WB	13	=	UG/L	11	=	MG/L
MPMW-03-1	F0CW2	RAF728	18-Feb-03	N	WG	WB	3.1	Jv	UG/L	8.1	=	MG/L
MPMW-03-1	F0G55	RAF783	20-May-03	N	WG	WB	4.1	=	UG/L	9	=	MG/L
MPMW-03-1	F0M46	RAF0837	20-Aug-03	N	WG	WB	19	=	UG/L	9	=	MG/L
MPMW-03-1	F0QP2	RAF0891	18-Nov-03	N	WG	WB	17	=	UG/L	11	=	MG/L
MPMW-03-1	F0WW5	RAF0939	16-Mar-04	N	WG	WB	13	=	UG/L	11	=	MG/L
MPMW-03-1	F10B7	RAF0967	22-Jun-04	N	WG	WB	12	=	UG/L	11	=	MG/L
MPMW-03-1	F18M4	RAF1003	01-Dec-04	N	WG	WB	17	=	UG/L	10	=	MG/L
MPMW-03-1	F1BS2	*	01-Mar-03	N	WG	WB	18	=	UG/L	*		MG/L
MPMW-03-1	F1TA1	*	08-Sep-05	N	WG	WB	7.1	=	UG/L	*		MG/L
MPMW-03-2	F0AW8	RAF654	30-Oct-02	N	WG	WB	12	=	UG/L	9.5	J	MG/L
MPMW-03-2	F0CW3	RAF729	18-Feb-03	N	WG	WB	9	Jv	UG/L	8.2	=	MG/L
MPMW-03-2	F0G56	RAF784	20-May-03	N	WG	WB	0.2	LJ	UG/L	9.5	=	MG/L
MPMW-03-2	F0M47	RAF0838	20-Aug-03	N	WG	WB	19	=	UG/L	8.8	=	MG/L
MPMW-03-2	F0QP3	RAF0892	18-Nov-03	N	WG	WB	18	=	UG/L	10	=	MG/L
MPMW-03-2	F0WW6	RAF0940	16-Mar-04	N	WG	WB	12	=	UG/L	11	=	MG/L
MPMW-03-2	F10B8	RAF0968	22-Jun-04	N	WG	WB	11	=	UG/L	11	=	MG/L
MPMW-03-2	F18M5	RAF1004	01-Dec-04	N	WG	WB	11	=	UG/L	10	=	MG/L
MPMW-03-2	F1BS3	*	01-Mar-05	N	WG	WB	12	=	UG/L	*		MG/L
MPMW-03-2	F1TA2	RAF1043	08-Sep-05	N	WG	WB	12	=	UG/L	10	=	MG/L
MPMW-03-3	F0AW9	RAF655	30-Oct-02	N	WG	WB	6.5	=	UG/L	9	J	MG/L
MPMW-03-3	F0CW4	RAF730	18-Feb-03	N	WG	WB	8.6	Jv	UG/L	7.4	=	MG/L
MPMW-03-3	F0G57	RAF785	20-May-03	N	WG	WB	12	=	UG/L	8.4	=	MG/L
MPMW-03-3	F0M48	RAF0839	20-Aug-03	N	WG	WB	15	=	UG/L	7.6	=	MG/L
MPMW-03-3	F0QP4	RAF0893	18-Nov-03	N	WG	WB	9.7	=	UG/L	8.3	=	MG/L
MPMW-03-3	F0WW7	RAF0941	16-Mar-04	N	WG	WB	10	=	UG/L	9.3	=	MG/L
MPMW-03-3	F10B9	RAF0969	22-Jun-04	N	WG	WB	9	=	UG/L	8.9	=	MG/L
MPMW-03-3	F18M6	RAF1005	01-Dec-04	N	WG	WB	13	Jv	UG/L	8.6	=	MG/L
MPMW-03-3	F1BS4	*	01-Mar-05	N	WG	WB	9.4	=	UG/L	*		MG/L
MPMW-03-3	F1TA3	*	08-Sep-05	N	WG	WB	11	=	UG/L	*		MG/L
MPMW-03-4	F0AX0	RAF656	30-Oct-02	N	WG	WB	6.6	=	UG/L	4.3	J	MG/L
MPMW-03-4	F0CW5	RAF731	18-Feb-03	N	WG	WB	12	Jv	UG/L	5.3	=	MG/L
MPMW-03-4	F0G58	RAF786	20-May-03	N	WG	WB	10	=	UG/L	5.2	=	MG/L
MPMW-03-4	F0M49	RAF0840	20-Aug-03	N	WG	WB	12	=	UG/L	3.8	=	MG/L
MPMW-03-4	F0QP5	RAF0894	18-Nov-03	N	WG	WB	5.7	=	UG/L	2.9	=	MG/L
MPMW-03-4	F0WW8	RAF0942	16-Mar-04	N	WG	WB	2.1	=	UG/L	2.3	=	MG/L
MPMW-03-4	F10C0	RAF0970	22-Jun-04	N	WG	WB	1	=	UG/L	2.3	=	MG/L
MPMW-03-4	F18M7	*	01-Dec-04	N	WG	WB	0.52	=	UG/L	*		MG/L
MPMW-03-4	F1TA4	*	08-Sep-05	N	WG	WB	0.5	U	UG/L	*		MG/L
MPMW-03-5	F0AX1	RAF658	30-Oct-02	N	WG	WB	0.5	U	UG/L	0.2	U	MG/L
MPMW-03-5	F0CW6	RAF732	18-Feb-03	N	WG	WB	0.5	U	UG/L	0.05	U	MG/L
MPMW-03-5	F0G59	RAF787	20-May-03	N	WG	WB	0.5	U	UG/L	0.05	U	MG/L
MPMW-03-5	F0M50	RAF0841	20-Aug-03	N	WG	WB	0.5	U	UG/L	0.05	U	MG/L
MPMW-03-5	F0QP6	RAF0895	18-Nov-03	N	WG	WB	0.5	U	UG/L	0.05	U	MG/L
MPMW-03-5	F18M8	*	01-Dec-04	N	WG	WB	0.5	U	UG/L	*		MG/L
MPMW-03-5	F1TA5	*	08-Sep-05	N	WG	WB	0.5	U	UG/L	*		MG/L

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October 2002 - June 2004
City of Perryton Well No. 2
Perryton, Texas

StationID	CLP SampleID	CH2M SampleID	Date Collected	Sample Type	Matrix	Sampling Equipment	CARBON TETRACHLORIDE			NITRATE-NITRITE		
							Concentration	Qualifier	Unit	Concentration	Qualifier	Unit
MPMW-04-1	F0AJ7	RAF659	23-Oct-02	N	WG	WB	1.8	J	UG/L	3.4	=	MG/L
MPMW-04-1	F0CW7	RAF733	18-Feb-03	N	WG	WB	9.4	=	UG/L	3.6	=	MG/L
MPMW-04-1	F0G60	RAF788	21-May-03	N	WG	WB	3.1	=	UG/L	3.5	=	MG/L
MPMW-04-1	F0M51	RAF0842	19-Aug-03	N	WG	WB	4.7	=	UG/L	2.8	=	MG/L
MPMW-04-1	F0QP7	RAF0896	18-Nov-03	N	WG	WB	5.1	=	UG/L	2.3	=	MG/L
MPMW-04-1	F0WW9	RAF0943	16-Mar-04	N	WG	WB	3.9	=	UG/L	2.1	=	MG/L
MPMW-04-1	F10C1	RAF0971	22-Jun-04	N	WG	WB	2.6	=	UG/L	2.5	=	MG/L
MPMW-04-1	F18M9	*	30-Nov-04	N	WG	WB	3.4	=	UG/L	*		MG/L
MPMW-04-1	F1BS5	*	01-Mar-05	N	WG	WB	2.2	=	UG/L	*		MG/L
MPMW-04-1	F1TA6	*	08-Sep-05	N	WG	WB	1.3	=	UG/L	*		MG/L
MPMW-04-2	F0AJ8	RAF661	23-Oct-02	N	WG	WB	0.5	U	UG/L	2.4	=	MG/L
MPMW-04-2	F0CW8	RAF734	18-Feb-03	N	WG	WB	0.5	U	UG/L	2.6	=	MG/L
MPMW-04-2	F0G61	RAF789	21-May-03	N	WG	WB	0.5	U	UG/L	3	=	MG/L
MPMW-04-2	F0M52	RAF0843	19-Aug-03	N	WG	WB	0.5	U	UG/L	2.3	=	MG/L
MPMW-04-2	F0QP8	RAF0897	18-Nov-03	N	WG	WB	0.5	U	UG/L	2.3	=	MG/L
MPMW-04-2	F18N0	*	30-Nov-04	N	WG	WB	0.5	U	UG/L	*		MG/L
MPMW-04-2	F1TA7	*	08-Sep-05	N	WG	WB	0.5	U	UG/L	*		MG/L
MPMW-04-3	F0AJ9	RAF662	23-Oct-02	N	WG	WB	0.5	U	UG/L	2.8	=	MG/L
MPMW-04-3	F0CW9	RAF735	18-Feb-03	N	WG	WB	0.5	U	UG/L	3.1	=	MG/L
MPMW-04-3	F0G62	RAF790	21-May-03	N	WG	WB	0.5	U	UG/L	3.2	=	MG/L
MPMW-04-3	F0M53	RAF0844	19-Aug-03	N	WG	WB	0.5	U	UG/L	2.8	=	MG/L
MPMW-04-3	F0QP9	RAF0898	18-Nov-03	N	WG	WB	0.5	U	UG/L	2.7	=	MG/L
MPMW-04-3	F18N1	*	30-Nov-04	N	WG	WB	0.5	U	UG/L	*		MG/L
MPMW-04-3	F1TA8	*	08-Sep-05	N	WG	WB	0.5	U	UG/L	*		MG/L
MPMW-04-4	F0AK0	RAF663	23-Oct-02	N	WG	WB	39	J	UG/L	19	=	MG/L
MPMW-04-4	F0CX0DL	RAF736	18-Feb-03	N	WG	WB	28	D	UG/L	21	=	MG/L
MPMW-04-4	F0G63DL	RAF791	21-May-03	N	WG	WB	26	D	UG/L	22	=	MG/L
MPMW-04-4	F0M54DL	RAF0845	19-Aug-03	N	WG	WB	41	D	UG/L	17	=	MG/L
MPMW-04-4	F0QQ0DL	RAF0899	18-Nov-03	N	WG	WB	39	D	UG/L	15	=	MG/L
MPMW-04-4	F0WX0DL	RAF0944	16-Mar-04	N	WG	WB	39	D	UG/L	23	=	MG/L
MPMW-04-4	F10C2	RAF0972	22-Jun-04	N	WG	WB	25	=	UG/L	9.3	=	MG/L
MPMW-04-4	F18N2	RAF1006	30-Nov-04	N	WG	WB	14	=	UG/L	7.5	=	MG/L
MPMW-04-4	F1BS6	*	01-Mar-05	N	WG	WB	20	=	UG/L	*		MG/L
MPMW-04-4	F1TA9	*	08-Sep-05	N	WG	WB	19	=	UG/L	*		MG/L
MPMW-04-5	F0AK1	RAF665	23-Oct-02	N	WG	WB	30	J	UG/L	2.6	=	MG/L
MPMW-04-5	F0CX1	RAF737	18-Feb-03	N	WG	WB	0.5	U	UG/L	2.5	=	MG/L
MPMW-04-5	F0G64	RAF792	21-May-03	N	WG	WB	0.5	U	UG/L	2.6	=	MG/L
MPMW-04-5	F0M55	RAF0846	19-Aug-03	N	WG	WB	0.5	U	UG/L	2.2	=	MG/L
MPMW-04-5	F0QQ1	RAF0900	18-Nov-03	N	WG	WB	0.5	U	UG/L	0.05	U	MG/L
MPMW-04-5	F0WX1	RAF0946	16-Mar-04	N	WG	WB	0.5	U	UG/L	3.2	=	MG/L
MPMW-04-5	F10C3	RAF0973	22-Jun-04	N	WG	WB	0.5	U	UG/L	2	=	MG/L
MPMW-04-5	F18N3	*	30-Nov-04	N	WG	WB	0.5	U	UG/L	*		MG/L
MPMW-04-5	F1TB0	*	08-Sep-05	N	WG	WB	0.5	U	UG/L	*		MG/L

Appendix B
Summary of Historical CTC and Nitrate Concentrations
October 2002 - June 2004
City of Perryton Well No. 2
Perryton, Texas

StationID	CLP SampleID	CH2M SampleID	Date Collected	Sample Type	Matrix	Sampling Equipment	CARBON TETRACHLORIDE			NITRATE-NITRITE		
							Concentration	Qualifier	Unit	Concentration	Qualifier	Unit
MPMW-06-1	F0AX2	RAF666	29-Oct-02	N	WG	WB	21	=	UG/L	4.5	J	MG/L
MPMW-06-1	F0CX2	RAF738	19-Feb-03	N	WG	WB	12	=	UG/L	3.9	=	MG/L
MPMW-06-1	F0G65	RAF793	20-May-03	N	WG	WB	1.9	=	UG/L	5.1	=	MG/L
MPMW-06-1	F0M56	RAF0847	20-Aug-03	N	WG	WB	21	=	UG/L	5	=	MG/L
MPMW-06-1	F0QQ2	RAF0901	18-Nov-03	N	WG	WB	21	=	UG/L	4.5	=	MG/L
MPMW-06-1	F0WX2	RAF0946	16-Mar-04	N	WG	WB	15	=	UG/L	5.2	=	MG/L
MPMW-06-1	F10C4	RAF0974	22-Jun-04	N	WG	WB	16	=	UG/L	4.5	=	MG/L
MPMW-06-1	F18N4DL	*	29-Nov-04	N	WG	WB	16	=	UG/L	*		MG/L
MPMW-06-1	F1BS7	*	01-Mar-05	N	WG	WB	17	=	UG/L	*		MG/L
MPMW-06-1	F1TB1	RAF1044	07-Sep-05	N	WG	WB	19	=	UG/L	5.5	=	MG/L
MPMW-06-2	F0AX3	RAF668	29-Oct-02	N	WG	WB	0.076	LJ	UG/L	2.5	J	MG/L
MPMW-06-2	F0CX3	RAF739	19-Feb-03	N	WG	WB	0.5	U	UG/L	2.7	=	MG/L
MPMW-06-2	F0G66	RAF794	20-May-03	N	WG	WB	0.5	U	UG/L	3.3	=	MG/L
MPMW-06-2	F0M57	RAF0848	20-Aug-03	N	WG	WB	0.5	U	UG/L	2.9	=	MG/L
MPMW-06-2	F0QQ3	RAF0902	18-Nov-03	N	WG	WB	0.5	U	UG/L	2.8	=	MG/L
MPMW-06-2	F18N5	*	29-Nov-04	N	WG	WB	0.5	U	UG/L	*		MG/L
MPMW-06-2	F1TB2	*	07-Sep-05	N	WG	WB	0.5	U	UG/L	*		MG/L
MPMW-06-3	F0AX5DL	RAF669	29-Oct-02	N	WG	WB	23	D	UG/L	20	J	MG/L
MPMW-06-3	F0CX5	RAF741	19-Feb-03	N	WG	WB	13	=	UG/L	15	=	MG/L
MPMW-06-3	F0G68	RAF796	20-May-03	N	WG	WB	2.9	=	UG/L	20	=	MG/L
MPMW-06-3	F0M59DL	RAF0850	20-Aug-03	N	WG	WB	15	D	UG/L	14	=	MG/L
MPMW-06-3	F0QQ5DL	RAF0904	18-Nov-03	N	WG	WB	30	D	UG/L	16	=	MG/L
MPMW-06-3	F0WX3DL	RAF0947	16-Mar-04	N	WG	WB	26	D	UG/L	24	=	MG/L
MPMW-06-3	F10C5	RAF0975	22-Jun-04	N	WG	WB	20	=	UG/L	12	=	MG/L
MPMW-06-3	F18N6	RAF1007	29-Nov-04	N	WG	WB	19	=	UG/L	7.4	=	MG/L
MPMW-06-3	F1BS8	*	01-Mar-05	N	WG	WB	7.6	=	UG/L	*		MG/L
MPMW-06-3	F1TB3	*	07-Sep-05	N	WG	WB	4.2	=	UG/L	*		MG/L
MW-05S	F0AK7	RAF0673	28-Oct-02	N	WG	P	0.25	U	UG/L	3.3	J	MG/L
MW-05S	F0CY0	RAF0740	17-Feb-03	N	WG	P	0.2	LJv	UG/L	2.8	=	MG/L
MW-05S	F0G73	RAF0798	19-May-03	N	WG	P	0.28	LJ	UG/L	1.7	U	MG/L
MW-05S	F0M64	RAF0852	18-Aug-03	N	WG	P	0.25	U	UG/L	2.8	=	MG/L
MW-05S	F0QR0	RAF0906	17-Nov-03	N	WG	P	0.25	U	UG/L	2.8	=	MG/L
MW-05S	F18P1	*	30-Nov-04	N	WG	DB	0.5	U	UG/L	*		MG/L
MW-05S-2	F1T33	*	07-Sep-05	N	WG	DB	0.5	U	UG/L	*		MG/L
MW-05D	F0AK5	RAF0671	28-Oct-02	N	WG	P	10	=	UG/L	4	J	MG/L
MW-05D	F0CX6	RAF0742	17-Feb-03	N	WG	P	3.9	=	UG/L	3.1	=	MG/L
MW-05D	F0G69	RAF0797	19-May-03	N	WG	P	4.6	=	UG/L	1.9	U	MG/L
MW-05D	F0M60	RAF0851	18-Aug-03	N	WG	P	11	=	UG/L	2.9	=	MG/L
MW-05D	F0QQ6	RAF0905	17-Nov-03	N	WG	P	11	=	UG/L	2.7	=	MG/L
MW-05D-8	F0WX6	*	16-Mar-04	N	WG	DB	6.2	=	UG/L	*		MG/L
MW-05D-8	F10C8	*	22-Jun-04	N	WG	DB	2.5	=	UG/L	*		MG/L
MW-05D-5	F18N9	*	30-Nov-04	N	WG	DB	2.7	=	UG/L	*		MG/L
MW-05D-2	F1BN8	*	01-Mar-05	N	WG	DB	1.1	=	UG/L	*		MG/L
MW-05D-2	F1T36	*	07-Sep-05	N	WG	DB	0.45	LJ	UG/L	*		MG/L

Appendix B
Summary of Historical CTC and Nitrate Concentrations
October 2002 - June 2004
City of Perryton Well No. 2
Perryton, Texas

StationID	CLP SampleID	CH2M SampleID	Date Collected	Sample Type	Matrix	Sampling Equipment	CARBON TETRACHLORIDE			NITRATE-NITRITE		
							Concentration	Qualifier	Unit	Concentration	Qualifier	Unit
MWCL-07S	F0AL3	RAF681	30-Oct-02	N	WG	P	0.5	U	UG/L	3.3	J	MG/L
MWCL-07S	F0D10	RAF750	19-Feb-03	N	WG	P	0.5	U	UG/L	2.7	=	MG/L
MWCL-07S	F0G99	RAF805	21-May-03	N	WG	P	0.5	U	UG/L	3.5	U	MG/L
MWCL-07S	F0M94	RAF0861	20-Aug-03	N	WG	P	0.5	U	UG/L	2.7	=	MG/L
MWCL-07S	F0QW5	RAF0914	19-Nov-03	N	WG	P	0.5	U	UG/L	2.7	=	MG/L
MWCL-07D	F0AL2	RAF680	30-Oct-02	N	WG	P	0.5	U	UG/L	2.5	J	MG/L
MWCL-07D	F0D06	RAF749	19-Feb-03	N	WG	P	0.5	U	UG/L	1.8	=	MG/L
MWCL-07D	F0G95	RAF804	21-May-03	N	WG	P	0.5	U	UG/L	2.6	U	MG/L
MWCL-07D	F0M90	RAF0860	20-Aug-03	N	WG	P	0.5	U	UG/L	2.1	=	MG/L
MWCL-07D	F0QW1	RAF0913	19-Nov-03	N	WG	P	0.5	U	UG/L	2.1	=	MG/L
MW-08	F0AK7	RAF0675	30-Oct-02	N	WG	P	0.12	LJ	UG/L	1.7	J	MG/L
MW-08	F0M70	RAF0854	18-Aug-03	N	WG	P	14	=	UG/L	3.9	=	MG/L
MW-08	F0QR5	RAF0908	17-Nov-03	N	WG	P	13	=	UG/L	3.5	=	MG/L
MW-08-2	F0WX7	*	16-Mar-04	N	WG	DB	9.2	=	UG/L	*		MG/L
MW-08-2	F10C9	*	22-Jun-04	N	WG	DB	2.9	=	UG/L	*		MG/L
MW-08	F18P6	RAF0993	01-Dec-04	N	WG	P	3.4	=	UG/L	2.8	=	MG/L
MW-08-5	F1BP2	*	01-Mar-05	N	WG	DB	0.7	=	UG/L	*		MG/L
MW-08-5	F1T40	*	08-Sep-05	N	WG	DB	0.57	=	UG/L	*		MG/L
MW-09	F0AK8	RAF0676	29-Oct-02	N	WG	P	4.1	=	UG/L	4.4	J	MG/L
MW-09	F0CZ0	RAF0745	18-Feb-03	N	WG	P	0.25	U	UG/L	3.6	=	MG/L
MW-09	F0G79	RAF0800	20-May-03	N	WG	P	0.43	LJ	UG/L	4.5	=	MG/L
MW-09	F0M74	RAF0855	19-Aug-03	N	WG	P	5.3	=	UG/L	4.3	=	MG/L
MW-09	F0QR9	RAF0909	18-Nov-03	N	WG	P	5.1	J	UG/L	4.6	=	MG/L
MW-09-8	F0WY3	*	16-Mar-04	N	WG	DB	0.35	LJ	UG/L	*		MG/L
MW-09-8	F10D5	*	22-Jun-04	N	WG	DB	0.37	J	UG/L	*		MG/L
MW-09	F18Q1	RAF1008	01-Dec-04	N	WG	P	2.5	=	UG/L	3.6	=	MG/L
MW-09-5	F1BP5	*	01-Mar-05	N	WG	DB	0.43	LJ	UG/L	*		MG/L
MW-09-9.5	F1T48	*	07-Sep-05	N	WG	DB	5	=	UG/L	*		MG/L
MW-10	F0AK9	RAF677	29-Oct-02	N	WG	P	7.9	=	UG/L	4	J	MG/L
MW-10	F0CZ4	RAF746	18-Feb-03	N	WG	P	4.1	=	UG/L	3.9	=	MG/L
MW-10	F0G83	RAF801	19-May-03	N	WG	P	2.9	=	UG/L	3.4	U	MG/L
MW-10	F0M78	RAF0856	19-Aug-03	N	WG	P	6.2	=	UG/L	3.5	=	MG/L
MW-10	F0QS3	RAF0886	18-Nov-03	N	WG	P	2.4	=	UG/L	2.8	=	MG/L
MW-10-8	F0WY6	*	16-Mar-04	N	WG	DB	0.96	=	UG/L	*		MG/L
MW-10-2	F10D6	*	22-Jun-04	N	WG	DB	0.61	=	UG/L	*		MG/L
MW-10	F18Q5	RAF1009	02-Dec-04	N	WG	P	0.44	LJ	UG/L	2.2	=	MG/L
MW-10-2	F1BP7	*	01-Mar-05	N	WG	DB	0.2	LJ	UG/L	*		MG/L
MW-10-2	F1T49	*	07-Sep-05	N	WG	DB	0.5	U	UG/L	*		MG/L
MWCL-11D	F0AL4	RAF682	28-Oct-02	N	WG	P	1.7	=	UG/L	1.4	J	MG/L
MWCL-11D	F0D14	RAF751	17-Feb-03	N	WG	P	1.1	=	UG/L	2.7	=	MG/L
MWCL-11D	F0GA3	RAF806	19-May-03	N	WG	P	0.58	=	UG/L	1.6	U	MG/L
MWCL-11D	F0M98	RAF0862	18-Aug-03	N	WG	P	8.4	=	UG/L	2.6	=	MG/L
MWCL-11D	F0QW9	RAF0915	17-Nov-03	N	WG	P	0.92	J	UG/L	2.6	=	MG/L
MWCL-11D	F18S4	RAF1012	02-Dec-04	N	WG	P	4.7	=	UG/L	2.6	=	MG/L
MWCL-11D-2	F1T56	*	07-Sep-05	N	WG	DB	0.5	U	UG/L	*		MG/L

Appendix B
Summary of Historical CTC and Nitrate Concentrations
October 2002 - June 2004
City of Perryton Well No. 2
Perryton, Texas

StationID	CLP SampleID	CH2M SampleID	Date Collected	Sample Type	Matrix	Sampling Equipment	CARBON TETRACHLORIDE			NITRATE-NITRITE		
							Concentration	Qualifier	Unit	Concentration	Qualifier	Unit
MWCL-11S	F0AL5DL	RAF684	28-Oct-02	N	WG	P	42	D	UG/L	19	J	MG/L
MWCL-11S	F0D18DL	RAF752	17-Feb-03	N	WG	P	81	Jv	UG/L	16	=	MG/L
MWCL-11S	F0GA7	RAF807	19-May-03	N	WG	P	11	=	UG/L	8.5	U	MG/L
MWCL-11S	F0MA2DL	RAF0863	18-Aug-03	N	WG	P	67	D	UG/L	14	=	MG/L
MWCL-11S	F0QX3DL	RAF0916	17-Nov-03	N	WG	P	70	D	UG/L	14	=	MG/L
MWCL-11S-2	F0WZ7DL	*	16-Mar-04	N	WG	DB	72	D	UG/L	*		MG/L
MWCL-11S-8	F10F4DL	*	22-Jun-04	N	WG	DB	69	D	UG/L	*		MG/L
MWCL-11S-8	F18T1DL	RAF1013	02-Dec-04	N	WG	DB/P	76	=	UG/L	13	=	MG/L
MWCL-11S-2	F1BQ5DL	*	01-Mar-05	N	WG	DB	46	D	UG/L	*		MG/L
MWCL-11S-8	F1T54DL	*	07-Sep-05	N	WG	DB	90	=	UG/L	*		MG/L
MWCL-13S	F0AL7	RAF686	29-Oct-02	N	WG	P	0.36	LJ	UG/L	3.7	J	MG/L
MWCL-13S	F0D26	RAF754	19-Feb-03	N	WG	P	0.5	U	UG/L	2.6	=	MG/L
MWCL-13S	F0GB5	RAF809	20-May-03	N	WG	P	0.5	U	UG/L	3.1	=	MG/L
MWCL-13S	F0MB0	RAF0865	20-Aug-03	N	WG	P	0.3	LJ	UG/L	2.4	=	MG/L
MWCL-13S	F0QY1	RAF0918	19-Nov-03	N	WG	P	0.25	LJ	UG/L	2.2	=	MG/L
MWCL-13S-8	F18T7	*	02-Dec-04	N	WG	DB	0.39	LJ	UG/L	*		MG/L
MWCL-13S-2	F1BQ8	*	28-Feb-05	N	WG	DB	0.21	LJ	UG/L	*		MG/L
MWCL-13S-1	F1T63	*	08-Sep-05	N	WG	DB	0.28	LJ	UG/L	*		MG/L
MWCL-13D	F0AL6	RAF686	29-Oct-02	N	WG	P	0.055	LJ	UG/L	2.9	J	MG/L
MWCL-13D	F0D22	RAF753	19-Feb-03	N	WG	P	0.5	U	UG/L	2.4	=	MG/L
MWCL-13D	F0GB1	RAF808	20-May-03	N	WG	P	0.5	U	UG/L	3.1	=	MG/L
MWCL-13D	F0MA6	RAF0864	20-Aug-03	N	WG	P	0.5	U	UG/L	2.6	=	MG/L
MWCL-13D	F0QX7	RAF0917	19-Nov-03	N	WG	P	0.5	U	UG/L	2.8	=	MG/L
MWCL-13D-2	F18T2	*	02-Dec-04	N	WG	DB	0.5	U	UG/L	*		MG/L
MWCL-13D-5	F1T74	*	08-Sep-05	N	WG	DB	0.5	U	UG/L	*		MG/L
MW-14	F0AL0	RAF678	29-Oct-02	N	WG	P	3.7	=	UG/L	4	J	MG/L
MW-14	F0CZ8	RAF747	18-Feb-03	N	WG	P	4.9	=	UG/L	4.5	=	MG/L
MW-14	F0G87	RAF802	20-May-03	N	WG	P	1	=	UG/L	4.8	=	MG/L
MW-14	F0M82	RAF0857	19-Aug-03	N	WG	P	2.5	=	UG/L	3.3	=	MG/L
MW-14	F0QS8	RAF0903	18-Nov-03	N	WG	P	4.9	=	UG/L	3.9	=	MG/L
MW-14-5	F0WY8	*	16-Mar-04	N	WG	DB	0.81	=	UG/L	*		MG/L
MW-14-2	F10D9	*	22-Jun-04	N	WG	DB	0.66	=	UG/L	*		MG/L
MW-14	F18R0	*	01-Dec-04	N	WG	P	0.88	=	UG/L	*		MG/L
MW-14-2`	F1T76	*	07-Sep-05	N	WG	DB	0.5	U	UG/L	*		MG/L
MW-15	F0AL1	RAF679	29-Oct-02	N	WG	P	0.89	=	UG/L	2.8	J	MG/L
MW-15	F0D02	RAF748	18-Feb-03	N	WG	P	0.94	=	UG/L	2.5	=	MG/L
MW-15	F0G91	RAF803	20-May-03	N	WG	P	0.31	LJ	UG/L	3.1	=	MG/L
MW-15	F0M86	RAF0858	19-Aug-03	N	WG	P	0.24	LJ	UG/L	2.4	=	MG/L
MW-15	F0QT2	RAF0910	18-Nov-03	N	WG	P	0.19	LJ	UG/L	2.3	=	MG/L
MW-15-2	F0WZ0	*	17-Mar-04	N	WG	DB	0.5	U	UG/L	*		MG/L
MW-15-2	F10E2	*	22-Jun-04	N	WG	DB	0.5	U	UG/L	*		MG/L
MW-15	F18R4	*	30-Nov-04	N	WG	P	0.5	U	UG/L	*		MG/L
MW-15-2	F1T79	*	07-Sep-05	N	WG	DB	0.5	U	UG/L	*		MG/L

Appendix B
Summary of Historical CTC and Nitrate Concentrations
October 2002 - June 2004
City of Perryton Well No. 2
Perryton, Texas

StationID	CLP SampleID	CH2M SampleID	Date Collected	Sample Type	Matrix	Sampling Equipment	CARBON TETRACHLORIDE			NITRATE-NITRITE		
							Concentration	Qualifier	Unit	Concentration	Qualifier	Unit
MW-16	F0MB9	RAF0859	19-Aug-03	N	WG	P	1.7	=	UG/L	3	=	MG/L
MW-16	F0QT6	RAF0911	18-Nov-03	N	WG	P	2	=	UG/L	3	=	MG/L
MW-16-5	F0WZ5	*	16-Mar-04	N	WG	DB	0.5	U	UG/L	*		MG/L
MW-16-2	F10E8	*	22-Jun-04	N	WG	DB	0.5	U	UG/L	*		MG/L
MW-16	F18R8	RAF1011	01-Dec-04	N	WG	P	0.5	U	UG/L	2.8	=	MG/L
MW-16-2	F1BQ0	*	01-Mar-05	N	WG	DB	0.5	U	UG/L	*		MG/L
MW-16-2	F1T81	*	08-Sep-05	N	WG	DB	0.5	U	UG/L	*		MG/L
MW-17-EX	F0M28	RAF0819	20-Aug-03	N	WG	P	5.5	=	UG/L	4.6	=	MG/L
MW-17-EX	F0QW0DL	RAF0912	17-Nov-03	N	WG	P	17	J	UG/L	12	=	MG/L
MW-17-EX	F0WZ6DL	RAF0948	17-Mar-04	N	WG	P	25	D	UG/L	9.4	=	MG/L
MW-17-EX	F10F0	RAF0976	21-Jun-04	N	WG	P	20	=	UG/L	9.1	=	MG/L
MW-17-EX	F18L0	RAF0994	29-Nov-04	N	WG	P	21	=	UG/L	8.9	=	MG/L
MW-17-EX	F1BN3	RAF1018	28-Feb-05	N	WG	P	23	=	UG/L	8.4	=	MG/L
MW-17-EX	F1T27	RAF1035	06-Sep-05	N	WG		14	=	UG/L	6.7	=	MG/L
GW-01	F0AH0	RAF636	22-Oct-01	N	WG	P	0.5	U	UG/L	2.1	=	MG/L
GW-01	F0D44	RAF757	17-Feb-03	N	WG	P	0.5	UJv	UG/L	5.4	=	MG/L
GW-01	F0GC4	RAF812	21-May-03	N	WG	P	0.5	U	UG/L	2.5	=	MG/L
GW-01	F0M34	RAF0825	19-Aug-03	N	WG	P	0.5	U	UG/L	2.3	=	MG/L
GW-01	F0WT4	RAF0928	17-Mar-04	N	WG	P	0.5	U	UG/L	2	=	MG/L
GW-01	F18K7	RAF0991	29-Nov-04	N	WG	P	0.5	U	UG/L	5	=	MG/L
GW-02	F0AH1DL	RAF638	22-Oct-02	N	WG	P	23	=	UG/L	22	=	MG/L
GW-02	F0CT1	*	17-Feb-03	N	WG	P	8.6	=	UG/L	*		MG/L
GW-02	F0G32	RAF760	21-May-03	N	WG	P	1.1	Jv	UG/L	12	=	MG/L
GW-02	F0M22	RAF0813	19-Aug-03	N	WG	P	20	=	UG/L	9.4	=	MG/L
GW-02	F0QN1	RAF0880	17-Nov-03	N	WG	P	9.7	J	UG/L	7.2	=	MG/L
GW-02	F0WT5	RAF0929	17-Mar-04	N	WG	P	12	=	UG/L	6.6	=	MG/L
GW-02	F10A6	RAF0957	22-Jun-04	N	WG	P	6.7	=	UG/L	6.4	=	MG/L
GW-02	F18K8	RAF0992	29-Nov-04	N	WG	P	8.2	=	UG/L	5.7	=	MG/L
GW-02	F1BN2	RAF1017	28-Feb-05	N	WG	P	6.7	=	UG/L	5.4	=	MG/L
GW-02	F1T26	RAF1034	06-Sep-05	N	WG	P	6.9	=	UG/L	5.7	=	MG/L
GW-03	F0WT6	RAF0930	17-Mar-04	N	WG	P	0.5	U	UG/L	3	=	MG/L
GW-03	F10A8	*	21-Jun-04	N	WG	P	0.5	U	UG/L	*		MG/L
GW-03	F18K9	*	29-Nov-04	N	WG	P	0.5	U	UG/L	*		MG/L
SVMWN-10-6	F0AX6	*	30-Oct-02	N	WG	HS	18	=	UG/L	*		MG/L
SVMWN-10-6	F0D30	RAF756	20-Feb-03	N	WG	HS	17	=	UG/L	15	=	MG/L
SVMWN-10-6	F0GB9	*	22-May-03	N	WG	HS	0.56	J	UG/L	*		MG/L

Notes:

* - Nitrate Sample Not Collected	J = Estimated Value
N - Normal Sample	"=" = Detected Value
WG - Ground Water	v = Low Biased; actual concentration may be higher than the concentration reported
HS - HydraSleeve	L = Reported concentration is below the Contract Required Quantitation Limit
P - Pump	B = Reported concentration is less than the Project Reporting Limit but greater than or equal to the Method Detection Limit
DB - Passive Diffusion Bag	D = Result is from a diluted sample
WB - West Bay	UG/L - Micrograms per liter
CTC - Carbon Tetrachloride	MG/L - Milligrams per liter
U = Not Detected	