

THIRD FIVE-YEAR REVIEW REPORT

For

Raymark Superfund Site

Borough of Hatboro
Montgomery County, Pennsylvania

September 2008

PREPARED BY:

United States Environmental Protection Agency
Region III
Philadelphia, Pennsylvania

Approved by:



James J. Burke, Director
Hazardous Site Cleanup Division
U.S. EPA, Region III

Date:

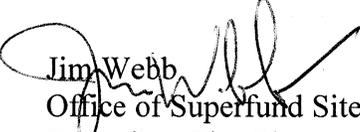


UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103

SUBJECT: Five-Year Review for Raymark Superfund Site

DATE:

FROM:


Jim Webb
Office of Superfund Site Remediation (3HS20)
Hazardous Site Cleanup Division

TO:

James J. Burke
Division Director
Hazardous Site Cleanup Division

The Office of Superfund Site Remediation has prepared a Five-Year Review for the Raymark Superfund Site in Montgomery County, Pennsylvania.

This report is the third Five-Year Review for the Site. The Five-Year Review determines whether the remedy at the Site is protective of human health and the environment. In the case of Raymark, a protectiveness determination cannot be made until vapor intrusion is evaluated. The remedy has been constructed in accordance with the requirements of the ROD and is functioning as designed. PADEP has responsibility for the operation and maintenance of the groundwater treatment system and the cap. Other than possible vapor intrusion, EPA has determined that there is no current exposure to groundwater that exceeds MCLs and appropriate institutional controls are in place.

I recommend that you sign this Five-Year Review after which it will be placed in the Administrative Record.

Table of Contents

List of Acronyms	iii
Executive Summary	iv
Five-Year Review Summary Form.....	v
I. Introduction	1
II. Site Chronology	2
III. Background.....	3
IV. Remedial Actions	5
V. Progress Since Last Five-Year Review	9
VI. Five-Year Review Process.....	10
VII. Technical Assessment.....	13
VIII. Issues	14
IX. Recommendations and Follow-Up Actions.....	14
X. Protectiveness Statement	15
XI. Next Review	15
References for Raymark Superfund Site Five-Year Review.....	16

Tables

- Table 1: Chronology of Site Events
- Table 2: Operable Units for Raymark Site
- Table 3: Issues Identified
- Table 4: Recommendations and Follow-up Actions

Figures

- Figure 1: Site Location Map
- Figure 2: Site Layout Map
- Figure 3: Map of Shallow Groundwater Analysis
- Figure 4: Map of Intermediate Groundwater Analysis
- Figure 5: Map of Deep Groundwater Analysis

Attachments

- Attachment 1: Advertisement in the Montgomery County Intelligencer

List of Acronyms

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
ICs	Institutional Controls
MCLs	Maximum Contaminant Levels
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
OU	Operable Unit
O&M	Operations and Maintenance
PADEP	Pennsylvania Department of Environmental Protection
PCOR	Preliminary Close Out Report
POTW	Publicly Owned Treatment Works
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SARA	Superfund Amendments and Reauthorization Act of 1986
USACE	U.S. Army Corps of Engineers

Executive Summary

The United States Environmental Protection Agency (EPA) Region III conducted the third five-year review of the Raymark Superfund Site. This five-year review consisted of reviewing monitoring data on the current groundwater pump and treat system as well as off-site monitoring wells, and insuring the integrity of the on-site low-permeability cap. During the review several issues were identified and recommendations were established regarding the groundwater remedy.

The remedy for the Raymark Superfund Site included: SVE removal of contaminants from the subsurface soils and unsaturated bedrock; pumping and treatment of contaminated groundwater via air stripping and carbon adsorption; construction of a low permeability cap over the former lagoon area; installation of vapor phase carbon units on the air strippers at two local public supply wells. The site achieved construction completion with the signing of the Preliminary Close-out Report on September 14, 1995. This is the third five-year review for this Site. The trigger for the first five-year review was the actual start of the construction in September 1993.

This third five-year review for the Raymark Site finds that the remedy has been constructed in accordance with the requirements of the ROD and is functioning as designed. The immediate threats have been addressed through capping the on-site source area, performing soil vapor extraction (SVE) on contaminated soils and pumping and treating the contaminated groundwater. Groundwater exceeds Maximum Contaminant Levels (MCLs) for TCE and PCE. Proper Operation and Maintenance (O&M) reporting and groundwater treatment system (GWTS) optimization should be pursued.

A protectiveness determination of the groundwater portion of the remedy cannot be made until further information is obtained with regard to vapor intrusion. It will take between 18 to 24 months to gather this information. A protectiveness determination will be made at that time. Other than possible vapor intrusion, EPA has determined that there is no current exposure to groundwater that exceeds MCLs. In addition, appropriate institutional controls are in place.

As part of this Five Year Review, the Government Performance and Results Act (GPRA) Measures have also been reviewed. The GPRA Measures and their status are provided as follows:

Environmental Indicators

Human Health: The current Environmental Indicator is Human Exposure Under Control (HEUC). However, following this Five Year Review, the Environmental Indicator will be updated to Insufficient Data to Determine Human Exposure Control (HEID).

Groundwater Migration: Groundwater Migration Insufficient Data (GMID)

Sitewide Ready for Anticipated Use (RAU): The Site was determined Site-Wide Ready for Anticipated Use (SWRAU) in 2008, however this determination will be retracted until further information is obtained with regard to vapor intrusion.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name: Raymark Superfund Site

EPA ID: PAD039017694

Region: 3

State: PA

City/County: Borough of Hatboro,
Montgomery County

SITE STATUS

NPL status: Final Deleted Other (specify) _____

Remediation status (choose all that apply) Under Construction Operating Complete

Multiple OUs?* Yes No

Construction Completion date: 09/14/1995

Has site been put into reuse? Yes No

REVIEW STATUS

Lead agency: EPA State Tribe Other Federal Agency _____

Author name: Sharon Fang

Author title: Remedial Project Manager

Author Affiliation: U.S. EPA Region 3

Review period:** 01/2008 to 09/2008

Date of site inspection: 4/22/2008

Type of review:

Post-SARA Pre-SARA NPL-Removal only Non-NPL Remedial Action Site
 NPL State/Tribe-lead Regional Discretion

Review number: first second third other _____

Triggering action:

Actual RA Onsite Construction at OU# _____ Actual RA Start at OU# _____
 Construction Completion Previous Five-Year Review Report
 Other (specify) _____

Triggering action date: 9/24/2003

Due Date: 09/24/2008

* "OU" refers to operable unit.

Five-Year Review Summary Form, cont'd

Issues:

1. Operation and Maintenance (O&M) reporting from the Pennsylvania Department of Environmental Protection (PADEP) is not provided on a regular basis.
2. Vapor Intrusion.
3. Optimize the Groundwater Treatment System.

Recommendations:

1. An O&M Plan should be developed to document the activities to be performed for the Site and expected frequency. In addition, an annual report should be submitted to EPA each year in order to document what O&M activities were performed.
2. Evaluate if Vapor Intrusion attributable to the Site poses an issue to nearby residents.
3. Optimize the current pump and treat system. A plan should be developed to focus on increasing the effectiveness of the groundwater extraction and treatment system.

Five-Year Review Summary Form, cont'd

Protectiveness Statement(s):

This third five-year review for the Raymark Site finds that the remedy has been constructed in accordance with the requirements of the ROD and is functioning as designed. The immediate threats have been addressed through capping the on-site source area, performing soil vapor extraction (SVE) on contaminated soils and pumping and treating the contaminated groundwater. Groundwater exceeds Maximum Contaminant Levels (MCLs) for TCE and PCE. Proper Operation and Maintenance (O&M) reporting and groundwater treatment system (GWTS) optimization should be pursued.

A protectiveness determination of the groundwater portion of the remedy cannot be made until further information is obtained with regard to vapor intrusion. It will take between 18 to 24 months to gather this information. A protectiveness determination will be made at that time. Other than possible vapor intrusion, EPA has determined that there is no current exposure to groundwater that exceeds MCLs. In addition, appropriate institutional controls are in place.

Five-Year Review Report
For the
Raymark Superfund Site
Hatboro, Montgomery County, Pennsylvania

I. Introduction

The purpose of a five-year review is to determine whether the remedy at a Site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in five-year review reports. In addition, five-year review reports identify issues found during the review, if any, and recommendations to address them.

Environmental Protection Agency (EPA) guidance on conducting the five-year review is provided by OSWER Directive 9355.7-03B-P, *Comprehensive Five-Year Review Guidance* (EPA, 2001). EPA personnel followed the guidance provided in this OSWER directive in conducting the five-year review performed for the Site.

Five-year reviews are conducted either to meet the statutory mandate under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) § 121, or as a matter of EPA policy. The statutory requirement to conduct a five-year review was added to CERCLA as part of the Superfund Amendments and Reauthorization Act of 1986 (SARA). CERCLA §121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The Agency interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

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

The EPA Region III conducted a five-year review of the remedial actions implemented at the Raymark Superfund Site in Montgomery County, Pennsylvania. This report documents the results of the review, which determines whether the remedy at a site is protective of human

health and the environment. The methods, findings, and conclusions of the review are documented in this five year review report. In addition, the five-year review report will identify issues found during the review and will identify follow-up actions to address them.

This is the third five-year review for the Raymark Superfund Site. The first five-year review was completed on September 30, 1998 and was the trigger for the second statutory review, dated September 24, 2003. The date of the second five-year review is the trigger for this third review. This third review was conducted for the entire Site by the Remedial Project Manager from January to September 2008. The five-year review is required because hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure.

II. Site Chronology

Table 1 Chronology of Site Events

Event	Date
Detection of solvents in soil and groundwater	November 1979
Proposed to NPL List	June 1988
Consent Decree entered	February 1989
NPL Listing	October 1989
Work plan for Remedial Investigation and Feasibility Study (RI/FS)	January 1990
Record of Decision (ROD) selecting remedy is signed for OU2 and OU3	September 1990
ROD selecting remedy is signed for OU1	December 1991
Construction for OU1 (SVE system)	September 1993 to January 1994
Construction for OU1 (low-permeability cap)	September 1993 to April 1994
Construction for OU2 (off-site vapor phase carbon unit project)	February 1993 to July 1993
Construction for OU3 (on-site groundwater pump and treatment system)	September 1993 to December 1993
Construction complete (Preliminary Closeout Report signed)	September 1995
First five-year review conducted by EPA	September 1998
State assumes responsibility for Operation and Maintenance (O&M) for low-permeability cap	July 1999
Second five-year review conducted by EPA	September 2003
State assumes responsibility for Operation and Maintenance (O&M) for groundwater treatment system	September 2004
PADEP issues HSCA 512 Order to implement	February 2, 2007

institutional controls on the property	
Explanation of Significant Differences eliminated the institutional control component that ensured continuous public water supply operation and treatment by the Hatboro Borough Water Authority and required on-site institutional controls.	September 2007

III. Background

Physical Characteristics

The Raymark Site (Site) is a 7-acre operating facility located on Jacksonville Road between Tanner and Markley Avenues in Hatboro, Montgomery County, Pennsylvania as shown in Figure 1. The Site is located on relatively flat ground and consists of a manufacturing building which contains office space and a wastewater treatment building. The manufacturing building was historically used to treat electroplating wastes. A metal cleaning/degreasing operation was formerly located in the rear section of the manufacturing building and a solvent storage tank was formerly located immediately outside this area. A septic tank was located near the wastewater treatment building. Four small lagoons were located in the rear of the property but were removed in the early 1970's.

Land and Resource Use

The Site is located in an industrial area approximately 100 feet from the nearest residence on Jacksonville Road, in the borough of Hatboro. The nearest surface water body is the Pennypack Creek, which flows 4,000 feet southwest of the Site. The public water supply was operated by the Hatboro Borough Water Authority (HBWA), which pumped groundwater from twelve large capacity wells. Public water is currently supplied by Aqua America Inc. ("Aqua"). There are no known residential drinking wells impacted by the Raymark Site.

Corporate Ownership

From 1948 to 1980, metal fabricating operations, including rivet manufacturing and electroplating, were conducted at the Site. The Milford Rivet and Machine Company, under two separate ownerships, operated the facility from 1948 to 1969 (Milford I) and from 1969 to 1980 (Milford II). Milford I was a subsidiary of Raybestos-Manhattan, Inc. In 1969, Milford I merged with Raybestos-Manhattan, Inc. and Milford II was simultaneously created as a subsidiary of Raybestos-Manhattan, Inc. In 1982, Milford II merged with RMFPC, which subsequently changed its name to Raymark Formed Products, Inc. In 1980, the Raymark entities ceased operations at the Site when the property was sold to Penn Fasteners, Inc. In 2005, Penn Fasteners, Inc. leased a portion of the facility to the C&L Rivet Company which used it to

manufacture rivets and fasteners. Later that year, the C&L Rivet Company purchased the property from Penn Fasteners, Inc. and is the current owner of the property.

History of Contamination

Metal fabrication operations, including rivet manufacturing and electroplating, began at the Site in 1948. Solvent containing trichloroethene (TCE) was used in the manufacturing process to clean and degrease metal parts. Over a period of several decades of manufacturing, TCE apparently leaked or spilled in areas where it was used or stored. These areas included storage tanks, and four small, unlined wastewater lagoons that were located at the rear of the property. The lagoons were excavated and backfilled in 1972. TCE has not been used at the Site since 1980.

Initial Response

In late 1979, a series of environmental samples collected by EPA, the former Pennsylvania Department of Environmental Resources (PADER), now the Pennsylvania Department of Environmental Protection (PADEP), and the Hatboro Borough Water Authority (HBWA), revealed the presence of TCE and several other volatile organic compounds (VOCs) in 8 of 16 public supply wells. As a result, HBWA removed the affected wells from routine operation and began to supplement its water needs from an interconnection with a neighboring water company.

EPA installed a monitoring well on the Site in 1981 as part of an effort to investigate regional groundwater contamination. A pump test was also conducted on the monitoring well in 1982. Soil samples were collected from the area of the former TCE storage tanks and from the area of the former lagoons in 1982. In June 1983, EPA conducted a preliminary Site Investigation to determine the relative hazards posed by the Site.

In the Fall of 1984, EPA initiated a second field investigation that included: installation and sampling of five monitoring wells along the railroad tracks located west of the Site, sampling of other nearby monitoring wells and abandoned water supply wells, and additional on-site soil sampling. Further investigations were conducted from November 1986 through January 1987, which included extensive sampling of the soil and bedrock on-site and further sampling of onsite and area monitoring wells.

Investigation activities were completed by 1985 and were sufficient for the United States to file a Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and Resource Conservation and Recovery Act (RCRA) complaint against Raymark Industries, Inc, on behalf of EPA, requesting reimbursement of past and future remedial action response costs. Before a decision was rendered, a settlement was reached between the United States and the Defendants in late 1988. The terms of the settlement were documented in a Consent Decree that was judicially entered in February 1989.

The Raymark Site was proposed for the National Priorities List (NPL) in June 1988 and was promulgated on the NPL in October 1989.

Basis for Taking Action

Past disposal practices at the Site resulted in groundwater and soil contamination at the Site. As a result of site investigations, three areas were identified as sources of TCE contamination to groundwater. These areas were: 1) the lagoon area, 2) the solvent storage tank area, and 3) the degreaser area.

All Hatboro residents connected to the public water supply system, prior to 1979, could have been potentially exposed to groundwater contaminated by volatile organic compounds such as TCE. Based on the risk assessment performed for this Site, exposure to soil and groundwater were associated with significant human health risks, due to exceedances of EPA's risk management criteria for either the average or the reasonable maximum exposure scenarios. The following contaminants (identified as contaminants of concern) were found at levels exceeding their respective Maximum Contaminant Levels (MCLs) in the groundwater:

TCE	trans-1,2-DCE
tetrachloroethene (PCE)	1,1,1 -trichloroethane
1,1 -dichloroethene (1,1 -DCE)	vinyl chloride
cis-1,2-DCE	carbon tetrachloride

The following contaminants were identified as contaminants of concern in the soil:

TCE
PCE
1,2-DCE

IV. Remedial Actions

Remedy Selection

After reviewing the results of the RI/FS, EPA issued two Record of Decisions (RODs) for this Site. The first ROD for Operable Units 2 & 3 was signed on September 28, 1990. The second ROD for Operable Unit 1 was signed on December 30, 1991. The contaminants of concern in both RODs are volatile organic compounds, primarily trichloroethene (TCE).

Based on the remedial design, the remedies were organized into the following operable units.

Table 2: Operable Units for Raymark Site

Operable Unit (OU)	Description
OU-1	On-Site Soil (soil/source control)
OU-2	Off-Site-Groundwater (drinking water supply wells H-14 & H-17)
OU-3	On-Site Groundwater (groundwater treatment system)

To address the contamination, remedial alternative objectives (RAOs) as established in the RODs are as follows below:

Remedial Alternative Objectives (OU2 & OU3) for Groundwater

- 1) protect public health and the environment
- 2) reduce further migration of contaminated groundwater from the Site towards public supply wells
- 3) contain the contamination within the currently affected area
- 4) reduce risk resulting from release of contaminants into the air from treatment devices
- 5) contribute to the restoration of the aquifer to its beneficial use, and further to background quality, if practicable

Remedial Alternative Objectives (OU1) for Soils

- 1) protect public health and the environment
- 2) reduce amount of contamination in subsurface soil and bedrock such that leaching of contamination to groundwater is minimized
- 3) minimize leaching of residual contamination to the groundwater such that levels of TCE in groundwater do not exceed 5 parts per billion (ppb) or background, whichever is lower, as defined in the ROD for OU2 and OU3
- 4) reduce risk resulting from release of contaminants into the air from treatment devices

The cleanup goal for remediation of the Site soils was determined to be 50 ppb TCE. This number was calculated as the maximum amount of TCE allowable to prevent further migration of contamination from the soil into the groundwater.

In an effort to restore the aquifer to beneficial use, the remediation system implemented in each of the alternatives was intended to operate until the contaminant levels reach MCLs, non-zero Maximum Contaminant Level Goals (MCLGs), or background, whichever are lower.

EPA believes that background levels, defined by using upgradient concentrations, may be higher than health-based levels due to the presence of other source areas and regional TCE contamination. Due to the existence of other sources of contamination near the Site, it may be technically impracticable to achieve the cleanup goals until other sources are addressed.

Although the remedy selected in the ROD for OU2 & OU3 may not achieve cleanup goals throughout the contaminated aquifer, the groundwater extraction and treatment system being used to pump and treat groundwater may contribute to restoration of the aquifer. Once the Site no longer contributes contaminants to the aquifer, the groundwater pump and treat system would be used to remove contaminants from the aquifer that have already migrated from the Site. In addition, this system serves to contain the plume.

Each operable unit describes a series of treatment technologies to address the contamination. A remedial alternative was selected for each OU. The major components of the Soil Remedial Alternative that was selected in the 1991 ROD are summarized as follows:

- Vapor extraction of VOCs from subsurface soils
- Vapor extraction of VOCs from unsaturated bedrock
- Vapor phase carbon adsorption of extracted air
- Low permeability cap to minimize infiltration through soil and resultant leaching to groundwater
- Institutional Controls to ensure integrity of low permeability cap

The major components of the Groundwater Remedial Alternative that was selected in the 1990 ROD are summarized as follows:

- Operation and Maintenance of air stripping towers on public water supply wells
- Vapor Phase Carbon Adsorption on air stripping towers
- Groundwater Extraction and Treatment to remove contaminated groundwater from beneath the Site
- Air Stripping treatment on Site extraction wells
- Pipeline from Groundwater Treatment System to storm sewer system
- Institutional Controls to ensure that the Hatboro Water Authority continues to operate public water supply wells equipped with treatment systems as part of the groundwater remedy

In June 2007, EPA issued a Draft Explanation of Significant Differences (ESD) for public comment. In September 2007, the Draft ESD became final. The ESD modified the remedy by eliminating the requirement for wells H14 and H17, associated with OU2 and OU3, to be operated and treated by the Hatboro Borough Water Authority and by requiring institutional controls in connection with the on-Site treatment system as well as contaminated groundwater attributable to the Site.

Remedy Implementation

In February 1989, Raymark Industries, Inc., Raymark Formed Products Company, Penn Fasteners, Inc., and two individual Site owners (Defendants) entered into a Consent Decree with EPA (Plaintiff) and Hatboro Borough Authority (Plaintiff-Intervenor). In exchange for payment from the Settling Defendants, Hatboro agreed to design, install, operate and maintain two vapor phase carbon adsorption units on two off-site wells (H-14 and H-17). In accordance with the 2007 ESD, these wells have since been removed from service. Pursuant to the Consent Decree, EPA agreed to design construct, operate and maintain an on-site groundwater extraction and treatment system including two extraction wells (RW-1 and MW-3D). Additionally, EPA agreed to design, install, operate and maintain a vapor phase carbon adsorption unit as part of the on-site treatment system. Figure 2 is a map of the Site which shows the location of on-site wells.

Remedial activities for OU2 began in February 1993 and were completed in July 1993 by EPA's contractor. In September 1993, EPA signed a remedial action report certifying that the remedy was operational and functional.

Remedial activities for OU1 & OU3 began in September 1993 and were substantially completed in January 1994 by EPA's contractor. Following the final inspection in April, EPA signed a remedial action report certifying that the remedy was operational and functional in September 1994. The soil vapor extraction system (OU1) was run until the 50ppb cleanup goal was met; a multilayer low-permeability cap occupies approximately 1 acre; and an asphalt cap occupies approximately 1.5 acres. Currently, groundwater is being pumped and treated at the Site (OU3). The effluent from the treatment plant is discharged into the storm sewer located beneath the Site.

PADEP took responsibility for OU1 Operation and Maintenance (O&M) in July 1999. PADEP took responsibility for OU-2/3 O&M in September 2004.

Implementation of Institutional Controls

The remedy currently requires Institutional Controls (ICs). ICs usually refer to non-engineering instruments such as administrative and/or legal controls (e.g. title restrictions, restrictive covenants, etc.) which limit human activity in such a way as to prevent or reduce exposure to hazardous substances. On February 2, 2007, PADEP issued an Order pursuant to Section 512(a) of the Pennsylvania Hazardous Sites Cleanup Act (HSCA), 35 P.S. § 6020.512(a) to the current owners of the Site property. The Order requires the property owners to comply with certain engineering and institutional controls required by both RODs in order to prevent or reduce exposure to hazardous substances at the Site as well as protection of the OU1 soil cap and the on-

site GWTS. In addition, EPA has identified the Montgomery County Board of Health Department's Division of Water Quality Management Individual Water Supply Regulations as an institutional control mechanism that will protect potential human exposure to contaminated groundwater attributable to the Site by limiting the drilling and installation of new wells in the groundwater plume.

System Operation/Operation and Maintenance/Groundwater Sampling

Long-term monitoring and maintenance activities are proceeding at the Site. There is an updated O&M Manual (dated January 2003) for the Site. The purpose of the groundwater treatment system (GWTS) is to pump and treat TCE contaminated groundwater from two on-site groundwater extraction wells. PADEP took responsibility for the Operation and Maintenance of the GWTS in September 2004.

PADEP currently reports O&M status and issues to EPA on an as-needed basis. An Operation, Maintenance and Monitoring Plan (O&M Plan) and annual O&M Report would be helpful in order to document the performance and ensure protectiveness. EPA requests that the following be performed on an on-going basis:

- Groundwater samples collected and analyzed on an annual basis.
- Samples collected from the GWTS influent piping and effluent piping on a monthly basis.
- Analysis of discharge air with a Photo Ionization Detector on a weekly basis for indication of contaminant breakthrough from the granular activated carbon units.
- Proper maintenance of the GWTS granular activated carbon units which adsorbs TCE from an incoming air stream and discharges the air into the atmosphere. These carbon units are to be replaced when VOC levels of 2 ppm or greater, are detected in the discharge air.
- The cap should be mowed twice a year. The landfill cap, fence and surface water management features should also be inspected prior to each mowing.

V. Progress Since Last Five-Year Review

This is the third five-year review for the Raymark Superfund Site. PADEP took responsibility for OU-2/3 Operation and Maintenance in September 2004. The second five year review raised the following issues:

- 1) Analytical data showed that the on-site GWTS is restoring the aquifer beneath the Site. However, the system efficiency could be improved;

- 2) Overall, groundwater contamination levels have decreased and performance standards have been achieved for all COCs except for TCE;
- 3) The fence that surrounds the cap was damaged in two areas; and
- 4) Institutional controls had not been implemented.

Since the second five-year review, EPA has collected additional data in order to consider optimization strategies. The groundwater contamination continues to decrease; however, all performance standards still have not been met. The fence was repaired and institutional controls have been addressed at the site.

VI. Five-Year Review Process

Administrative Components

The five-year review team included Sharon Fang, EPA Remedial Project Manager; Bruce Rundell, EPA hydrogeologist; Nancy Rios Jafolla, EPA toxicologist; Yvette Hamilton, EPA counsel; Francisco Cruz, community involvement coordinator; Chick Clark, PADEP project manager; Jim Romig EPA consultant; and Patricia Flores, EPA air specialist. PADEP contractor WRS performs the operation and maintenance of the GWTS, maintains the low-permeability cap and associated fencing, and generates a quarterly status report. This review began in January 2008.

Community Involvement

To inform the community of the five-year review, the EPA RPM and community involvement coordinator met with the Hatboro Borough Manager Jim Gardner to discuss the five-year review process on February 20, 2008. Also, EPA placed an advertisement in the *Intelligencer* on April 24, 2008 notifying area residents of the upcoming five-year review (Attachment 1). The advertisement explained what a five-year review consists of, the reason EPA was conducting a five-year review and provided both the RPM and Community Involvement Coordinator (CIC) as contact people for questions or comments. The RPM and CIC did not receive any questions or comments as a result of the advertisement.

Document Review

The five-year review consisted of a review of relevant information on the Site which included the RODs, ESD, the previous five-year review reports, a 2001 optimization study, and data provided by PADEP.

Data Review

Environmental data provides information to assess and demonstrate that a remedy is achieving the performance standards described in the ROD, and provides information for the five-year review. Listed below is a summary of the monitoring events performed at the Site.

In November 2006 and April 2008, EPA performed routine groundwater monitoring in order to confirm that the GWTS is cleaning up the groundwater on the Site. The following on-site and offsite groundwater monitoring wells were sampled during both sampling events mentioned above: MW-1S, MW-1I, MW-1D, MW-2S, MW-2I, MW-2D, MW-3S, MW-3I, MW-3D, MW-PF1, MW-PF1S, R-1, R-2, R-3, and the "USGS well" MG-1302.

The groundwater was analyzed for volatile organic compounds and 1,4 dioxane, a semi-volatile that is a common stabilizer for chlorinated solvents. Figures 3, 4 and 5 show the on-site groundwater well locations, site features, monitoring points, and sampling data for the shallow, intermediate and deep aquifers respectively. Groundwater flows from the east towards the railroad tracks, such that the MW-1 well cluster is on the upgradient edge of the plume, and wells R-1, R-2, R-3 and the USGS well are downgradient.

Figures 3, 4 and 5 show all the contaminants that were detected during the 2004, 2006 and 2008 sampling events. This analytical data shows that the on-site groundwater treatment system is cleaning up the aquifer contamination attributed to the Site. However, the system efficiency could be improved. Overall, groundwater contamination levels have decreased since remedial action was initiated at the Site, indicating that the selected remedial alternative (combination of source area removal and capping, and pumping and treating contaminated groundwater) is reducing levels of VOCs in Site groundwater. Based on the 2008 data, performance standards have been achieved for all contaminants of concern except for TCE and PCE. TCE remains present at concentrations above the MCL (5 ug/L) in numerous Site wells with the highs at 980 ug/L in MW-2I and 350 ug/L in PF-1S near the old source area. PCE was found in two wells MW-2S at 11 ug/L and MW-3S at 30 ug/L. 1,1,1-DCE was found in one monitoring well MW-2I (Figure 4) at 6.9 ug/L, which is below the MCL of 7 ug/L.

The sampling data from 2004, 2006 and 2008 shows some contaminant fluctuations although generally concentrations continue to decrease. These fluctuations fall within the expected range for a GWTS. However, the biennial nature of this data emphasizes the need for consistent annual sampling to evaluate the progress of the groundwater remedy.

Groundwater monitoring data from the Stoveworks redevelopment located at 237 Jacksonville Road (shown on Figure 2) was also evaluated and revealed no detection of Raymark contaminants of concerns in their five wells.

Based on previous plume modeling efforts, it appears that the TCE contamination follows the regional groundwater gradient in the shallow bedrock from the known source area in the southeastern portion of the Site, and migrates downward to the intermediate and deep bedrock

(located downgradient of the extraction wells). Downward migration may be facilitated by fractures within the aquifer system.

The potential for Vapor Intrusion (VI) has been evaluated using the data presented in Figure 3 and the fact that residential housing is directly downgradient from wells R-2 and R-3, which both exceed the MCL for TCE. Additional information is needed in order to ensure that VI attributable to the Site does not present an unacceptable risk to adjacent residents.

Since the analytical data still shows concentrations of TCE that are relatively high, EPA suggests that the GWTS may be more effective with an optimization effort. The second five-year review suggested the installation of another pumping well to improve the system efficiency. Another possibility could be to recover larger contaminant mass using chemical oxidation.

Site Inspection

A key component of the five-year review at the Raymark Superfund Site includes the physical inspection of the groundwater treatment system, its components, a visual inspection of Site wells, and visual inspection of the low-permeability cap. The EPA RPM Sharon Fang, EPA's contractor Jim Romig, and PADEP project manager Chick Clark, and PADEP supervisor Tim Sheehan inspected the Site on April 22, 2008. Mr. Clark verbally told us that the GWTS was not operating properly during the months July 2007 through January 2008. During the site inspection, the system was noted to be operating according to its design.

The overall visual inspection of the Site buildings, fenced entryway, asphalt paved areas, low-permeability cap and perimeter fence revealed no damage or deterioration. EPA used the relevant portion of the checklist in EPA's Five-Year Review Guidance. EPA also relied on PADEP's institutional knowledge of the current operations and maintenance of the Site.

A number of issues were identified and discussed during the Site inspection. Mr. Clark kept a list of these items and is working to address these issues. The following list summarizes those items identified during the inspection:

- Need to develop and implement O&M Plan.
- Need PADEP to report annually to EPA on O&M implementation.
- Contingency plan/emergency response plan should be available on-site.
- Unclear if there are as-built drawings of the GWTS.
- OSHA training records should be readily available on-site and up to date.
- Need to have documentation of air and water discharge compliance records.
- Vault near Well 3S needs to have bollards replaced.
- Well 3S did not have a well cap
- Sampling ports in the GWTS should be properly marked.
- Sampling/maintenance log should be displayed on-site and up to date.
- A log should be kept to show the quantity of groundwater being treated.
- RW-1 meter and the latches on the electrical boxes should be repaired.

Interviews

EPA discussed the five year review process with Jim Gardner, the Hatboro Borough Manager, on February 22, 2008. As a follow-up, EPA will supply the borough with a copy of this five-year review.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

The review of relevant documents, reports and the Site inspection indicate that the remedy is functioning as intended by the RODs. The landfill cap and fence are intact and the GWTS is being operated by PADEP. Annual groundwater monitoring has not been performed by PADEP, however, as part of GWTS optimization efforts and this five year review, EPA has performed the groundwater monitoring. The data shows that contaminant levels are generally decreasing. Additional efforts could be taken to improve the operation of the GWTS.

In February 2005, PADEP issued a HSCA 512 order to the current owners of the Site property requiring them to comply with engineering controls and institutional controls required by both RODs for the site. Additionally, the existing Montgomery County Health Department Regulations limit wells that may be drilled in the groundwater plume, therefore, there are no residents that are being exposed to contaminated well water.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of the remedy still valid?

There have been no changes in the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of the remedy selection that would affect the protectiveness of the remedy. Since the last five-year review, EPA has begun evaluating vapor intrusion as a new pathway for sites that have VOC contamination in either the soil or groundwater. Applicable or relevant and appropriate public health or environmental standards are identified in the ROD. Many of these standards were met during construction of the remedy and the remaining standards are being achieved during the operation and maintenance of the Site.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

Yes. The 2004, 2006 and 2008 sampling has confirmed that the remedy has reduced groundwater contamination. However, the levels of contamination near the leading edge of the plume could suggest potential vapor intrusion issues for residents. Additional information is needed to evaluate this potential concern.

VIII. Issues

Table 3 Issues Identified

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Report proper operation and maintenance of the GWTS	N	N
Vapor Intrusion potential not known	Y	Y
Optimize GWTS	N	N

IX. Recommendations and Follow-Up Actions

Table 4 Recommendations and Follow-up Actions

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
O&M reporting not required	Develop an O&M Plan and submit a report annually to EPA	PADEP	EPA	September 2009	N	N
Vapor Intrusion Evaluation	Obtain additional information about the contaminant concentrations in shallow groundwater at the downgradient edge of our monitoring network.	EPA	PADEP	June 2009	Y	Y
	Perform vapor intrusion evaluation, if needed.	EPA	PADEP	September 2010	Y	Y

Optimize GWTS	Develop a plan to focus on increasing the effectiveness of the groundwater extraction and treatment system.	PADEP	EPA	September 2010	N	N
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X. Protectiveness Statement

This third five-year review for the Raymark Site finds that the remedy has been constructed in accordance with the requirements of the ROD and is functioning as designed. The immediate threats have been addressed through capping the on-site source area, performing SVE on contaminated soils and pumping and treating the contaminated groundwater. Groundwater exceeds Maximum Contaminant Levels (MCLs) for TCE and PCE. Proper Operation and Maintenance (O&M) reporting and groundwater treatment system (GWTS) optimization should be pursued.

A protectiveness determination of the groundwater portion of the remedy cannot be made until further information is obtained with regard to vapor intrusion. It will take between 18 to 24 months to gather this information. A protectiveness determination will be made at that time. Other than possible vapor intrusion, EPA has determined that there is no current exposure to groundwater that exceeds MCLs. In addition, appropriate institutional controls are in place.

XI. Next Review

Once the VI evaluation is complete, an addendum to this five-year review will be provided with a final protectiveness determination. The next five-year review for the Raymark Superfund Site is required by September 2013, which is five years from the date of this third review.

References for Raymark Superfund Site Five-Year Review

U.S. Environmental Protection Agency, Record of Decision OU-2, Raymark Superfund Site, Hatboro Montgomery County, Pennsylvania, September 1990.

U.S. Environmental Protection Agency, Record of Decision OU-1, Raymark Superfund Site, Hatboro Montgomery County, Pennsylvania, December 1991.

U.S. Environmental Protection Agency, Preliminary Closeout Report, Raymark Superfund Site, Hatboro Montgomery County, Pennsylvania, September 1995.

U.S. Environmental Protection Agency, Comprehensive Five-Year Review Guidance, June 2001.

U.S. Environmental Protection Agency, Second Five-Year Review Report, Raymark Superfund Site, Hatboro, Pennsylvania, September 2003.

CDM, Draft Technical Memorandum, Raymark Site, Hatboro, PA, June 6, 2007.

C.V.M Industries, Facsimile from Alex MacPhee containing Stoveworks monitoring well map and analysis, April 28, 2008.



Public Notice

EPA Reviews Cleanup at Raymark Superfund Site

The U.S. Environmental Protection Agency (EPA) is conducting the third Five-Year Review of the Raymark Superfund Site located in Hatboro, Montgomery County, Pennsylvania. The review will re-examine long-term cleanup work that was conducted to address contamination in the soil and groundwater. To treat the soil, a soil vapor extraction system was installed in 1994 and operated until 1995, when cleanup standards were met. In addition to this system, a permanent, protective cap was secured over the contaminated soil. Groundwater continues to be treated by a pump-and-treat system.

What is a Five-Year Review?

EPA inspects sites every five years to ensure that cleanups remain fully protective of human health and the environment. These regular reviews, which are required by law when contaminants remain at a site, include:

- Inspection of the site and cleanup technologies
- Review of monitoring data, operating data, and maintenance records
- Determination of any new regulatory requirements that have been established since EPA's original cleanup decision was finalized.

To Review Site Files:

There are two ways to review the site files for the Raymark Superfund Site:

- 1) Visit the site's website at: <http://www.epa.gov/reg3hwmd/super/sites/PAD039017694/index.htm>
- 2) Visit EPA's Public Reading Room at 1650 Arch Street Philadelphia, Pennsylvania. Call 215-815-3157 for an appointment.

The results of the Five-Year Review are expected to be available in September. You will be able to access the site's review the same way you access other site files.

To Comment on the Cleanup:

You may email or mail your comments regarding the cleanup to the EPA Representatives listed below. For comments or questions regarding the Raymark Superfund Site, please contact: EPA Region 3

1650 Arch Street
Mail Code 3HS52
Philadelphia, PA 19103

Francisco J. Cruz

Community Involvement Coordinator
215-814-5528

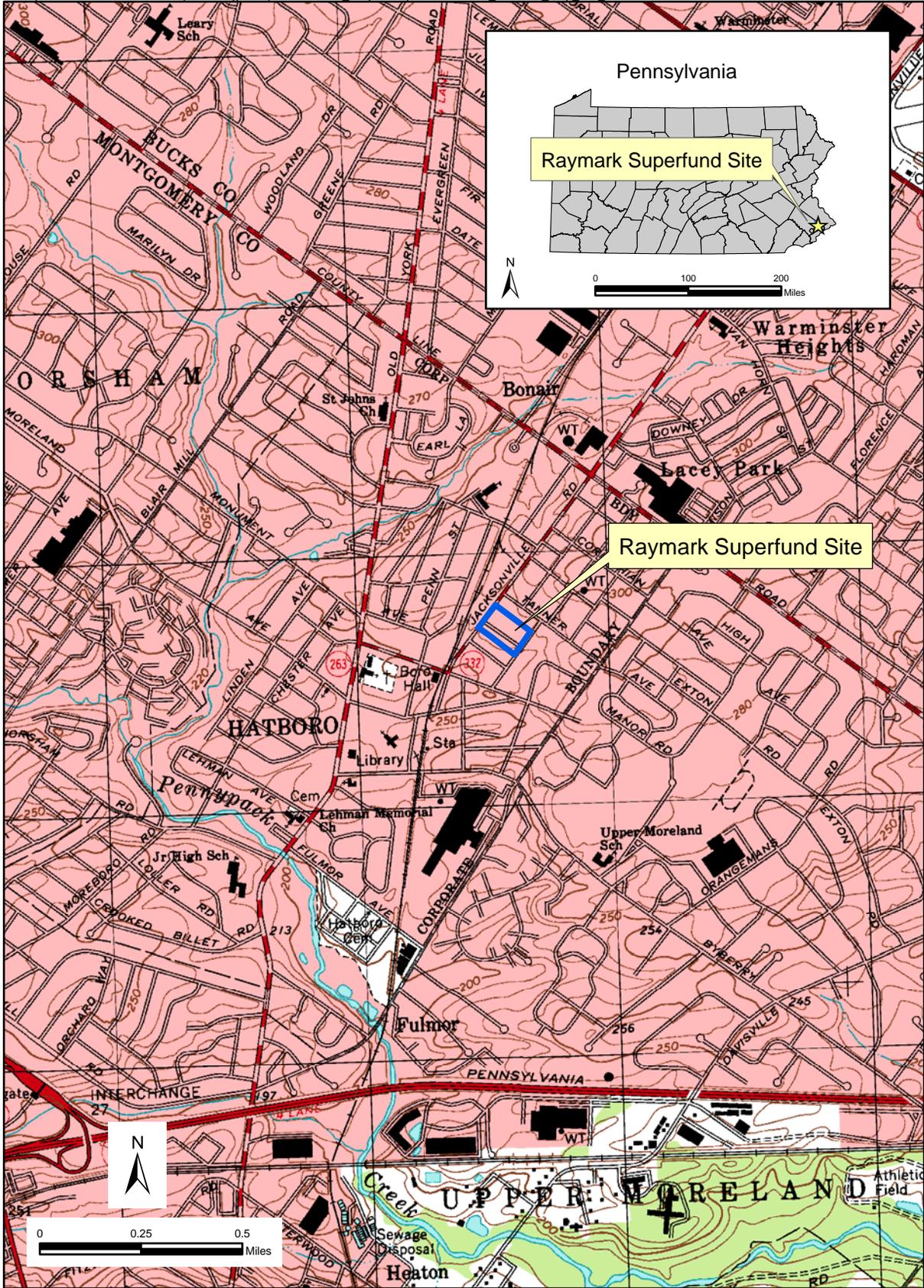
cruz.franciscoj@epa.gov

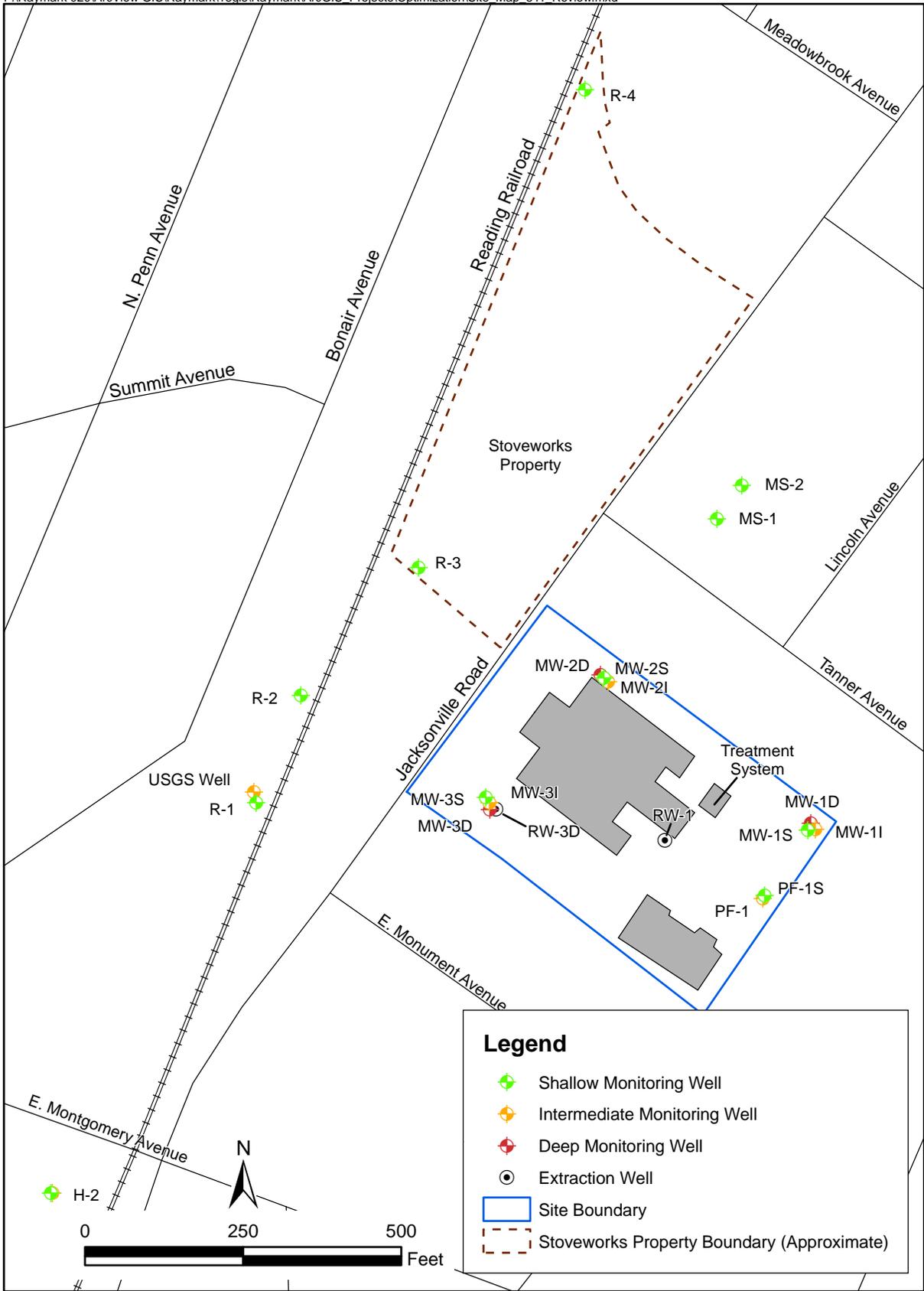
Sharon Fang

Remedial Project Manager

215-814-3018

fang.sharon@epa.gov





COC		MCL (ug/L)
1,1-Dichloroethene	1,1-DCE	7
1,1,1-Trichloroethane	1,1,1-TCA	200
Carbon Tetrachloride	Carbon Tetra	5
Cis-1,2-Dichloroethene	Cis-1,2-DCE	70
Tetrachloroethene	PCE	5
Trichloroethene	TCE	5
Trans-1,2-Dichloroethene	Trans-1,2-DCE	100
Vinyl Chloride	VC	2

Note:
 VOC = Volatile organic compounds
 MCL = Maximum contaminant levels
 COC = Contaminants of concern
 ug/L = Microgram per liter
 (ND) = Not detected in sample.
 NS = Not sampled
 B = Not detected substantially above the level reported in laboratory or field blanks.
 J = Analyte present. Reported value may not be accurate or precise.
 < 5.0 = Concentration was not detected above the quantitation limit of 5.0 ug/L.
 += Results reported from diluted analysis.
 All water levels are measured from the top of the well casing.
 TCE was the only COC whose detected concentrations exceeded the MCL.

MW-2D				
VOC	MCL	2004 Result	2006 Result	2008 Result
TCE	5	110	140	77

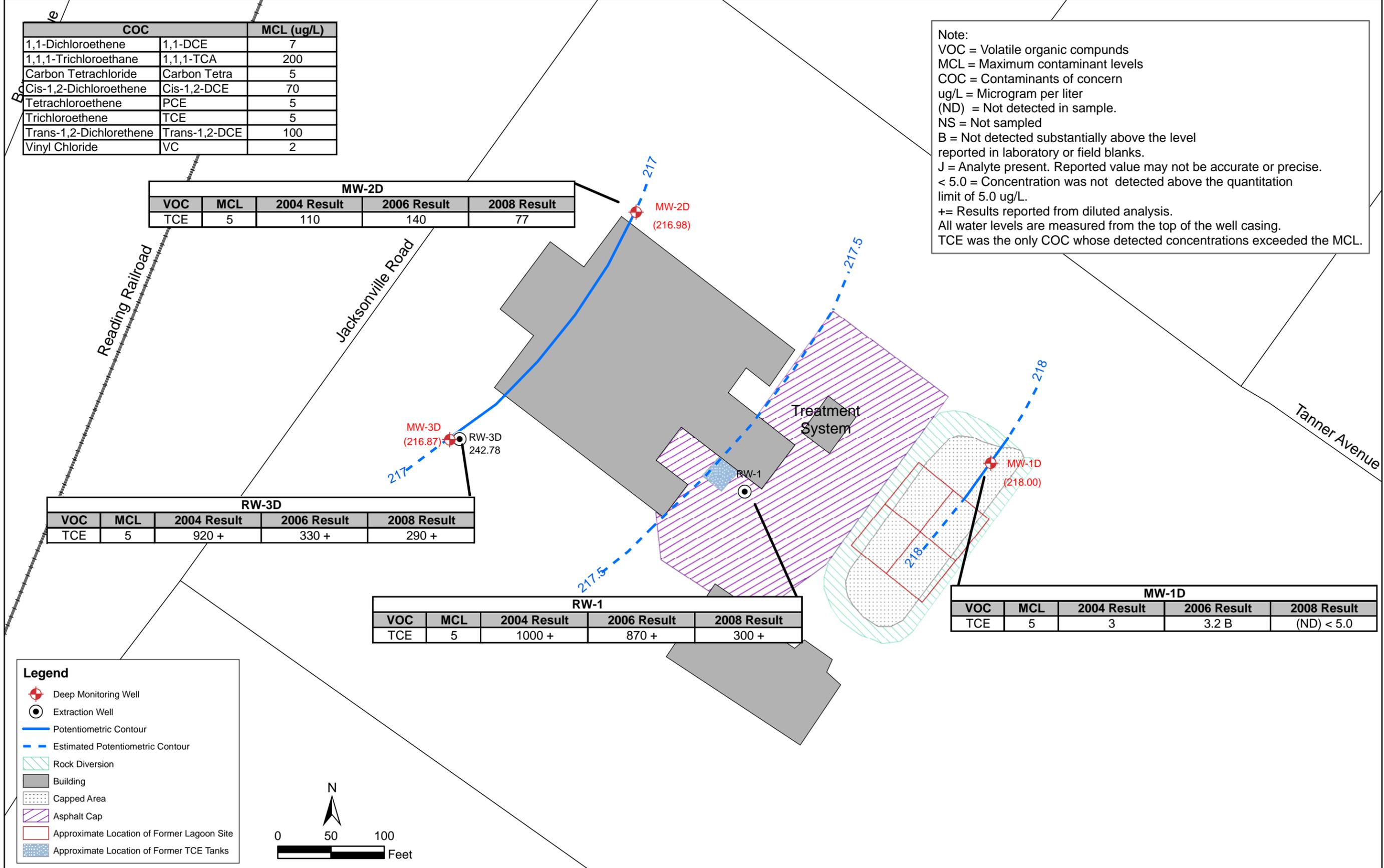
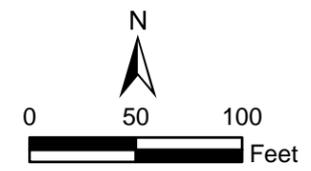
RW-3D				
VOC	MCL	2004 Result	2006 Result	2008 Result
TCE	5	920 +	330 +	290 +

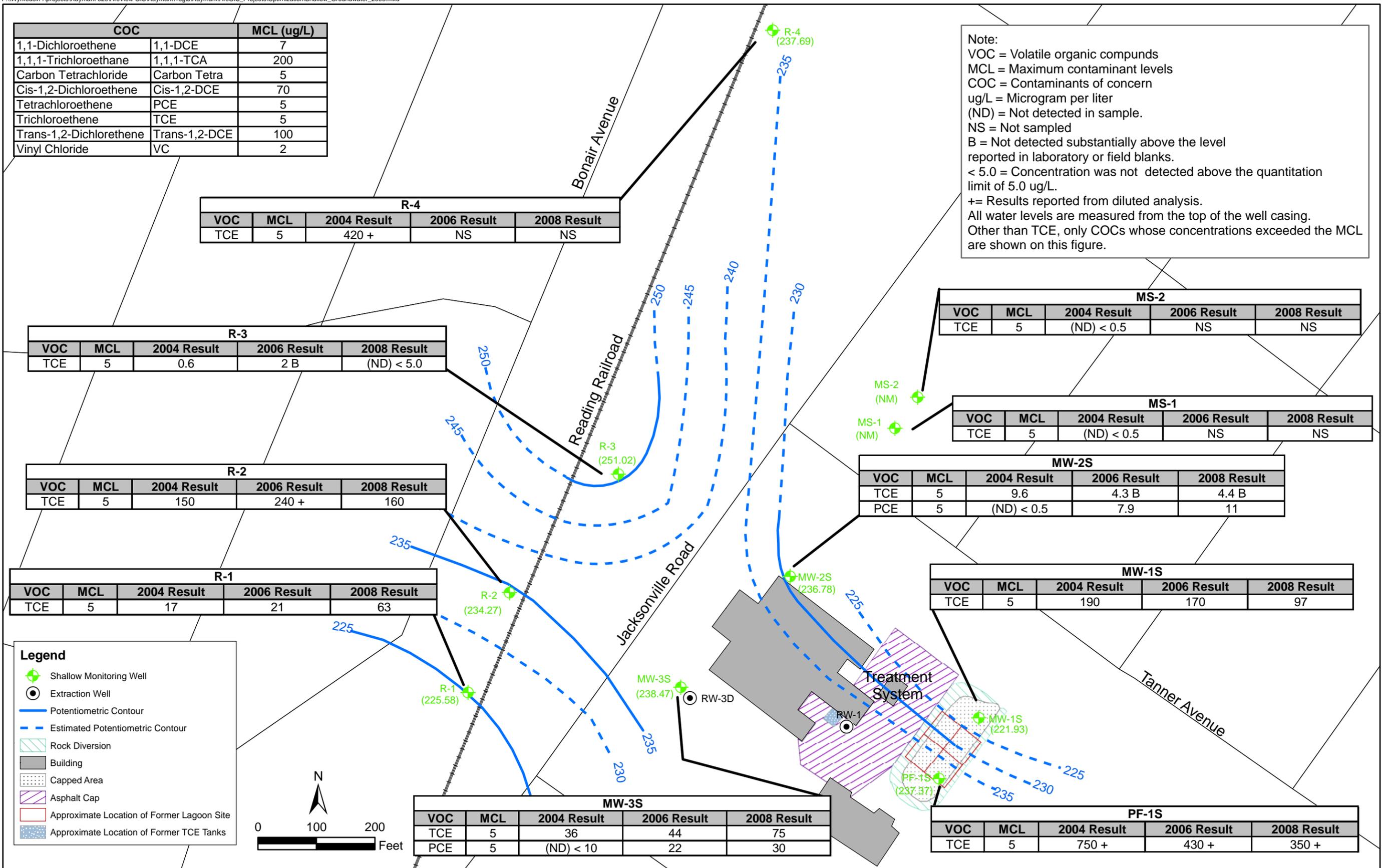
RW-1				
VOC	MCL	2004 Result	2006 Result	2008 Result
TCE	5	1000 +	870 +	300 +

MW-1D				
VOC	MCL	2004 Result	2006 Result	2008 Result
TCE	5	3	3.2 B	(ND) < 5.0

Legend

- Deep Monitoring Well
- Extraction Well
- Potentiometric Contour
- Estimated Potentiometric Contour
- Rock Diversion
- Building
- Capped Area
- Asphalt Cap
- Approximate Location of Former Lagoon Site
- Approximate Location of Former TCE Tanks





COC		MCL (ug/L)
1,1-Dichloroethene	1,1-DCE	7
1,1,1-Trichloroethane	1,1,1-TCA	200
Carbon Tetrachloride	Carbon Tetra	5
Cis-1,2-Dichloroethene	Cis-1,2-DCE	70
Tetrachloroethene	PCE	5
Trichloroethene	TCE	5
Trans-1,2-Dichloroethene	Trans-1,2-DCE	100
Vinyl Chloride	VC	2

MW-2I				
VOC	MCL	2004 Result	2006 Result	2008 Result
TCE	5	1200 +	750 +	980 +
1,1-DCE	7	8 J	3.8 J	6.9

MW-1I				
VOC	MCL	2004 Result	2006 Result	2008 Result
TCE	5	75	73	24

MW-3I				
VOC	MCL	2004 Result	2006 Result	2008 Result
TCE	5	1000 +	710 +	25

PF-1				
VOC	MCL	2004 Result	2006 Result	2008 Result
TCE	5	41	36	42

USGS Well				
VOC	MCL	2004 Result	2006 Result	2008 Result
TCE	5	660 +	650 +	(ND) < 5

Note:
 VOC = Volatile organic compounds
 MCL = Maximum contaminant levels
 COC = Contaminants of concern
 ug/L = Microgram per liter
 (ND) = Not detected in sample.
 NS = Not sampled
 B = Not detected substantially above the level reported in laboratory or field blanks.
 J = Analyte present. Reported value may not be accurate or precise.
 < 5.0 = Concentration was not detected above the quantitation limit of 5.0 ug/L.
 += Results reported from diluted analysis.
 All water levels are measured from the top of the well casing.
 Other than TCE, only COCs whose concentrations exceeded the MCL are shown on this figure.

Legend

- Intermediate Monitoring Well
- Extraction Well
- Potentiometric Contour
- Estimated Potentiometric Contour
- Rock Diversion
- Building
- Capped Area
- Asphalt Cap
- Approximate Location of Former Lagoon Site
- Approximate Location of Former TCE Tanks

