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**FIVE-YEAR REVIEW REPORT FOR
THE TYLER REFRIGERATION SUPERFUND SITE
KENT COUNTY, DELEWARE**




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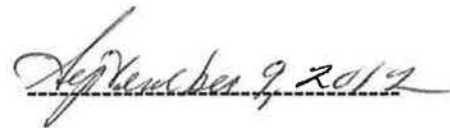
Prepared by

**U.S. Environmental Protection Agency
Region 3
PHILADELPHIA, PENNSYLVANIA**

Approved By:



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Date

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EXECUTIVE SUMMARY

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This third Five Year Review (FYR) report for the Tyler Refrigeration Pit Superfund Site ("Site") in Smyrna, Delaware, reviews the selected No Action and ground water monitoring remedy. Construction completion was attained when the No Action remedy was selected, since no construction was required. The trigger for this third FYR was the completion date of the second FYR on September 27, 2007.

This FYR found that the No Action remedy selected in the Record of Decision is protective of both human health and the environment, because the State-implemented Ground Water Management Zone (GMZ) prevents exposure to ground water on-site, and monitoring results have shown that contamination has not left the Site. Results from the periodic monitoring of ground water also suggest that natural and physical degradation processes have diminished the amount of contaminant that was originally present.

The remedy is considered protective of human health and the environment in both the short term and the long term, since the ground water under the Site is not currently in use and is not migrating off-site. Long-term protectiveness of the remedy is expected to be maintained through the continued implementation by DNREC of the GMZ over the area of the Site. The GMZ prevents the installation of wells, and therefore prevents any future exposure to ground water, thereby eliminating any future risk to human health or the environment, and thus assuring long-term protectiveness. The monitoring program will continue to verify that no contaminants are migrating off-site until EPA determines monitoring is no longer needed.

GPRM Measures:

As part of this third Five-Year Review, the GPRM Measures have also been reviewed. The GPRM Measures and their status are provided as follows:

Environmental Indicators

Human Health: Current Human Exposure Controlled and Protective Remedy in Place (HEPR)
Groundwater Migration: Groundwater Migration Under Control (GMUC)

Sitewide RAU:

The Site is achieved Site-Wide Ready for Anticipated Use (SWRAU) on June 26, 2006.

LIST OF ACRONYMS

AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirement
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
DCA	Dichloroethane
DCE	Dichloroethene
DNREC	[Delaware] Department of Natural Resources and Environmental Control
DOJ	United States Department of Justice
EPA	United States Environmental Protection Agency
HRS	Hazard Ranking System
HSCD	Hazardous Site Cleanup Division
MCL	Maximum Contaminant Level; see also SDWA
NCP	National Contingency Plan (the “National Oil and Hazardous Substances Pollution Contingency Plan”)
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PRP	Potentially Responsible Party
QA/QC	Quality Assurance/Quality Control
RA	Remedial Action
RAO	Remedial Action Objective
RAP	Response Action Plan
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SDWA	Safe Drinking Water Act
SVOC	Semi-Volatile Organic Compound
TCA	Trichloroethane
TCE	Trichloroethene

SITE IDENTIFICATION

Site Name: Tyler Refrigeration Superfund Site

EPA ID: DE980705545

Region: 3

State: DE

City/County: Smyrna, Kent

SITE STATUS

NPL Status: Deleted

Multiple OUs?

No

Has the site achieved construction completion?

Yes

REVIEW STATUS

Lead agency: EPA

If "Other Federal Agency" was selected above, enter Agency name: Click here to enter text.

Author name (Federal or State Project Manager): Anthony C. Iacobone

Author affiliation: Remedial Project Manager, US EPA

Review period: 03/12/2012 – 07/10/2012

Date of site inspection: 07/02/2012

Type of review: Statutory

Review number: 3

Triggering action date: 09/27/2007

Due date (five years after triggering action date): 09/27/2012

Five-Year Review Summary Form (continued)

Issues/Recommendations

OU(s) without Issues/Recommendations Identified in the Five-Year Review:

None

Issues and Recommendations Identified in the Five-Year Review:

OU(s): 1 Sitewide	Issue Category: Monitoring			
	Issue: This Site has not been sampled since 2006. Levels of Contaminants at the Site are predominately below MCLs with the exception of DCE. Since DCE is not below the MCL, monitoring at the Site must continue.			
	Recommendation: The Site needs to be sampled to determine if the levels of all contaminants are below their respective MCLs.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
No	Yes	PRP	EPA	09/30/2013

Protectiveness Statement(s)

Include each individual OU protectiveness determination and statement. If you need to add more protectiveness determinations and statements for additional OUs, copy and paste the table below as many times as necessary to complete for each OU evaluated in the FYR report.

Operable Unit:
1-Sitewide

Protectiveness Determination:
Protective

Addendum Due Date (if applicable):
[Click here to enter date.](#)

Protectiveness Statement:

The remedy is considered protective of human health and the environment in both the short term and the long term, since the ground water under the Site is not currently in use and is not migrating off-site. Long-term protectiveness of the remedy is expected to be maintained through the continued implementation by the Delaware Department of Natural Resources and Environmental Control (DNREC) of the Ground Water Management Zone (GMZ) over the area of the Site. The GMZ prevents the installation of wells, and therefore prevents any future exposure to ground water, thereby eliminating any future risk to human health or the environment, and thus assuring long-term protectiveness. The monitoring program will continue to verify that no contaminants are migrating off-site until EPA determines monitoring is no longer needed.

Sitewide Protectiveness Statement (if applicable)

For sites that have achieved construction completion, enter a sitewide protectiveness determination and statement.

Protectiveness Determination:
Protective

Addendum Due Date (if applicable):
[Click here to enter date.](#)

Protectiveness Statement:

The remedy is considered protective of human health and the environment in both the short term and the long term, since the ground water under the Site is not currently in use and is not migrating off-site. Long-term protectiveness of the remedy is expected to be maintained through the continued implementation by DNREC of the GMZ over the area of the Site. The GMZ prevents the installation of wells, and therefore prevents any future exposure to ground water, thereby eliminating any future risk to human health or the environment, and thus assuring long-term protectiveness. The monitoring program will continue to verify that no contaminants are migrating off-site until EPA determines monitoring is no longer needed.

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Five-Year Review Report

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I. Introduction

The purpose of the Five-Year Review (FYR) 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 provide recommendations to address them.

The United States Environmental Protection Agency (EPA) has prepared this Five-Year Review report pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §121 and the National Contingency Plan (NCP). 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 Code of Federal Regulations (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 remedy implemented at the Tyler Refrigeration Pit Superfund Site (Site) in Smyrna, Kent County, DE. This review was conducted from March 12, 2012 through August 28, 2012. This report documents the results of the review.

This is the third five-year review for the Site. The triggering action for this review is the date of the previous five-year review report, signed September 27, 2007. The five-year reviews at this Site are necessary because hazardous substances, pollutants, or contaminants currently remain on-site above levels that would allow for unlimited use and unrestricted exposure.

II. Site Chronology

The table below (Table 1) summarizes important events and relevant dates in the chronology of the Site.

Table 1. Chronology of Activities at Tyler Refrigeration Pit Superfund Site

Date	Description
through late 1940s	Property owned by Wilson Cabinet Company (John E. Wilson, Jr. and Bertha M. Wilson)
late 1940s	Refrigerator manufacturing plant constructed by Wilson Refrigeration Company. On November 7, 1949, Wilson Refrigeration Inc. merged with the Wilson Cabinet Company with the surviving entity being Wilson Refrigeration, Inc.
1951	Wilson Refrigeration, Inc operated a plant at the Site until June 12, 1951. On that date, Wilson Refrigeration granted the property to John E. Wilson and Bertha M. Wilson.
Between 1953 and 1954	Two lagoons constructed in NE portion of the property (apparently to receive wastewater).
1956	Title of the property transferred from the Wilsons to the Tyler Refrigeration Company (Tyler).
1963	Tyler sold the property to the Clark Equipment Company (Clark) and may have possibly become part of the refrigeration division of Clark.
1969	Wastewater discharges from the manufacturing operation were connected to municipal sewage system.
1973 – 1975	Sometime in this two-year period, the contents of the lagoons were excavated and removed by Clark; the lagoons were then backfilled.
1977	TCE detected during routing monitoring of Smyrna's two municipal water supply wells.
1978	Clark ceased manufacturing refrigeration equipment at the Site.
1978	Metal Masters Foodservice Equipment Co. (Metal Masters) took possession of the property.
1978	The Delaware Department of Community Affairs and Economic Development took title to the property pursuant to an installment sales loan agreement with Metal Masters.
1982	Smyrna installed granular activated carbon (GAC) units on its two municipal water supply wells, effectively reducing TCE to safe levels
1982	EPA performed a Preliminary Assessment/Site Inspection (PA/SI) at the Site
1983	DNREC performed a Preliminary Site Assessment
1985 (June)	EPA, after reviewing the available information, concluded that the Site was one of the possible sources of the TCE found in the municipal wells

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Date	Description
1986 (June 10)	EPA formally proposed adding the Site to the National Priorities List (NPL)
1989	EPA revised the HRS score for the Site to consider new ground water data from wells installed by DNREC
1990 (Feb. 20)	Site formally added to the NPL
1991 (March)	EPA and Clark enter into an Administrative Order on Consent for Clark to conduct an Remedial Investigation/Feasibility Study (RI/FS) at the Site
1993 (April)	Clark completed the RI at the Site.
1993 (May)	EPA determined that the Site did not pose an unacceptable risk to human health and the environment; preparation of an FS was not necessary.
1995 (Spring)	Metal Masters ceased operations at the Site
1995 (June)	Metal Masters RI completed pursuant to an order with DNREC and identifying several potential sources of 1,1,1 TCA
1996 (May)	EPA issued Record of Decision (ROD)
1997 - 2001	EPA conducts ground water monitoring while negotiations towards an AOC proceed (March 10, 1997; Sept. 22, 1997; July 8, 1998; Jan. 7, 1999; Nov. 27, 2001)
2002 (June 4)	Administrative Order on Consent between EPA and Metal Masters signed, allowing Metal Masters to take over monitoring program
2002 (Aug. 16)	EPA issued First Five-Year Review Report
2004 (Jan. 28)	EPA proposes Deletion of Site from NPL
2004 (Mar. 29)	Deletion of Site from NPL becomes effective.
2005 (Oct. 13)	First of three planned rounds of sampling reports submitted by Metal Masters to EPA
2006 (Oct. 31)	Second of three planned rounds of sampling reports submitted by Metal Masters to EPA.
2007 (Sep. 27)	EPA issued its Second Five-Year Review Report

III. Background

Physical Characteristics

The Site is located on a 3-acre parcel of property at 655 Glenwood Avenue, Smyrna, Delaware. This property is currently owned by the Harris Manufacturing Company, Inc. (Harris Manufacturing). The Site is approximately 1/2 miles southwest of the center of the town of Smyrna (Figure 1).

The Site includes an area which formerly contained two wastewater lagoons in the northeast portion of the property (Figure 2). Based on aerial photographs, the two lagoons were approximately 70 feet x 70 feet and 60 feet x 60 feet, and existed on the property from as early as 1954. The lagoons received wastewater from manufacturing operations at the property. Sometime between 1973 and 1975, the Clark Equipment Company excavated and removed the contents of the lagoons. The lagoons were then backfilled and graded, and are currently maintained as parts of a lawn and an asphalt parking lot.

Geology:

The Site lies within the Atlantic Coastal Plain physiographic province. Directly underlying the Site are sediments of the Quaternary-aged Columbia Formation, which is fluvial in origin, and consists of fine to coarse sands with some gravel and some silt. The Columbia Formation lies unconformably on top of older sediments of the Tertiary-aged Calvert Formation (which belongs to the Chesapeake Group). The Chesapeake Group is comprised of silts, clays, and fine to medium-grained sands. The fine-grained laminations within the Group act as aquitards, limiting vertical migration of ground water. Below the Calvert Formation are the Nanjemoy Formation and the Rancocas Group (comprised of the Hornerstown and Vincentown Formations). Under the Rancocas Group are Cretaceous-age deposits that lie unconformably on top of pre-Cambrian crystalline bedrock.

At the Site, the Columbia Formation sediments range from 52 feet to 75 feet thick, with unconfined ground water encountered as a water table at depths of approximately 23 to 28 feet below the ground surface. Ground water flows generally to the northeast in the Columbia. To the south of the Site, the Cheswold aquifer occurs within the Calvert Formation, but directly beneath the Site, the next productive aquifers are found in the Rancocas Group (and are used for both industrial and potable water).

Surface Drainage:

The topography at the Site is nearly level. The entire Site is at an elevation of approximately 40 feet above sea level. Surface drainage from the parking lot area at and adjacent to the Site is conveyed via storm drains to a shallow drainage ditch and retention basin located east of the Site, with no outlet. The drainage ditch and retention basin were constructed by Metal Masters after the closure of the lagoons and in conjunction with the construction of the parking lot. A scrub/shrub-emergent wetland area is located within the retention basin. Since this area is

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only intermittently saturated as a result of storm water runoff from blacktop areas and building roofs, it is not considered to be a functional wetland.

Surface water bodies in the general area include Greens Branch, Duck Creek, Lake Como, and Mill Creek. Greens Branch is located approximately 1500 feet west of the Site and flows in a northeasterly direction into Duck Creek. Duck Creek is located approximately 4000 feet to the north of the Site and flows east to its confluence with the Smyrna River. The Smyrna River flows to the northeast and discharges to the Delaware Bay. Lake Como is located approximately 4000 feet to the southeast of the Site and is used for recreational purposes.

Subsurface Soils:

Three distinct layers were encountered in the soil borings taken during the 1993 RI in the locations of the former lagoons: 1) a surficial material consisting predominantly of silty sand to sandy silt, probable backfill material; 2) a soft, dark gray colored silt to sandy silt material containing some organic material which most likely marks the bottom of the lagoons; and 3) native Columbia Formation sediments. Former Lagoon 1 was approximately 11.5 feet deep at its deepest point. The sandy silt material at what appears to be the bottom of Former Lagoon 1 is approximately 2 to 5.5 feet thick. In Former Lagoon 2, the sandy silt material is thinner and less extensive.

Land and Resource Use

The land use in the area surrounding the Site is predominantly residential with some light industry and farming. Properties to the north of the Site across Glenwood Avenue include commercial properties, several residences and agricultural lands. To the west-northwest of the Site are several residences along Glenwood Avenue. To the south and southwest of the lagoons are the Metal Masters building and property and a grain elevator/silo structure. The area to the south-southeast of the Site is mainly residential. During the Site visit, it was noted that there was some infrastructure work that had been performed to the east of the Harris manufacturing building for a small residential development but construction is now idle and did not progress beyond sewer and water line installation.

Potable water supplies in the vicinity of the Site are obtained from ground water and are provided primarily through municipal water systems. The Town of Smyrna operates two public water supply wells screened within the Columbia Formation. Well Numbers 1 and 2 are 1600 feet and 4600 feet east of the Site, respectively. An eight-day water level study conducted during the RI indicated that pumping at Smyrna Well Number 1 does not influence the water levels at the Site, although the Site may be within the capture zone of Smyrna Well Number 1 under steady-state, long-term conditions. The Town of Clayton operates three public water supply wells screened in the deeper Rancocas Group. The closest of these wells, Well Number 3, is located approximately 3300 feet southwest of the Site. All three of the Clayton wells are located in the up-gradient ground water flow direction from the Site.

Based on the well inventory conducted during the 1993 RI, several wells in the Smyrna-Clayton area are classified as domestic water wells. However, none of these wells are located in

a down-gradient ground water flow direction from the Site.

History of Contamination

In the late 1940s, a plant was constructed on the property to manufacture refrigerators by Wilson Refrigeration, Inc. Prior to this time, the property was owned by John E. Wilson, Jr., Bertha M. Wilson and the Wilson Cabinet Company. In 1951, Tyler leased the property from the Wilsons until 1956 at which time the Wilsons granted title to the property to Tyler. Aerial photographs taken in 1951 and 1959 indicate the presence of two lagoons in the northeast portion of the property. These lagoons were apparently constructed to receive wastewater from the refrigeration manufacturing operations at the Site, although little information is available as to their operation. The wastewater reportedly contained paints, paint-related waste, and solvents including trichloroethene (TCE).

In 1963, Tyler sold the property to Clark Equipment Company (Clark) and may have become part of Clark's refrigeration division. Clark manufactured refrigeration equipment at the property until 1976. Wastewater discharges from the manufacturing operation were connected to a municipal sewage system in 1969. Sometime between 1973 and 1975, Clark excavated and removed the contents of the lagoons, and then backfilled the lagoons. In 1978, the Metal Masters Food Service Equipment Co. (Metal Masters) took possession of the property and at approximately the same time, pursuant to a financing arrangement in connection with this transaction, the Delaware Department of Community Affairs and Economic Development (DCAED) took title to the property. Title to the property passed to Metal Masters in 2003 when it paid its loan in full to DCAED. Metal Masters sold the property to Linton Hill Partners, LLP in May 2004. In March 2006, the property was sold to Harris Manufacturing, the current owner and operator of the Site.

In 1977, during routine monitoring, the Town of Smyrna's two municipal water supply wells were found to contain TCE. Investigations conducted by the Delaware Department of Natural Resources and Environmental Control (DNREC), the Delaware Division of Public Health and the Town of Smyrna identified a number of potential sources of TCE in the Smyrna area, including the Site. In 1982, Smyrna installed Granular Activated Carbon (GAC) units on its two municipal water supply wells. The GAC units effectively reduced TCE concentrations in the drinking water supplies to safe levels.

In March 1991, EPA and Clark, the previous owner and operator at the Site, entered into an Administrative Order on Consent whereby Clark agreed to perform a Remedial Investigation/Feasibility Study (RI/FS) at the Site. Clark completed the RI in April of 1993. In May 1993, EPA determined that the Site did not pose an unacceptable risk to human health and the environment, thereby deeming the preparation of an FS unnecessary.

In the spring of 1995, Metal Masters ceased operations at the Site. Pursuant to an order with DNREC, Metal Masters completed an additional RI at the Site in June 1995.

In May of 1996, EPA issued a Record of Decision (ROD) for the Site. Selecting a No

Action remedy with the caveat that monitoring must continue to ensure that contaminants do not migrate off Site.

In August 2002, EPA completed its first five-year review for the Site. On March 28, 2004, EPA deleted the Site from the NPL.

Sampling of the Site by Metal Master began in October of 2005. Metal Master performed 2 of the 3 scheduled rounds of sampling (2005 and 2006). The third round is currently outstanding. On September 27, 2007, EPA completed its Second Five-Year Review of the Site.

Harris Manufacturing Corporation is the current owner and operator of the property. Metal Masters continues to be responsible for conducting groundwater monitoring at the Site.

Initial Response

In 1982, EPA performed a Preliminary Assessment/Site Inspection at the Site. Low levels of trichloroethane (TCA) and dichloroethane (DCA) were detected in one soil sample and toluene was detected in another soil sample. In December 1983, DNREC performed a Preliminary Site Assessment and concluded that TCE concentrations in the Smyrna wells appeared to be decreasing.

In June 1985, EPA reviewed the available information for the Site and concluded that it was one of several possible sources of the TCE found in the Smyrna municipal wells. On May 7, 1986, EPA collected a total of 10 ground water samples from domestic wells in the vicinity of the Site. The samples were analyzed for volatile organic compounds (VOCs). The only VOCs detected were low levels of chloroform in two of the samples.

On June 10, 1986, EPA formally proposed adding the Site to the National Priorities List (NPL). As a result of significant objections and opposition regarding EPA's scoring (29.41) of the Site under the Hazard Ranking System (HRS), EPA commissioned DNREC to perform a follow-up inspection of the Site. Under this investigation, DNREC installed and sampled six (6) monitoring wells located across Glenwood Avenue from the Site. Based on the ground water sampling results, three substances of concern were identified in connection with the Site: 1,1,1-TCA, 1,1-dichloroethene (1,1-DCE) and chromium. Using the ground water sampling data collected by DNREC, EPA revised the HRS score for the Site in 1989, increasing the score to 33.94. The Site was formally added to the NPL on February 20, 1990.

Basis for Taking Action

Past operations at the Site resulted in contamination occurring in various environmental media there. Indicator chemicals (i.e., chemicals observed at the Site which are most likely to pose a threat to public health and the environment), and the media they apply to in connection with the Site are summarized below.

As part of the RI, surface soil samples were collected from nine (9) locations at the Site. In general, the surface soil samples did not show the presence of elevated concentrations of contaminants of concern. No VOCs were detected in the surface soil samples other than methylene chloride, which is most likely an analytical laboratory contaminant, and no semivolatile organic compounds (SVOCs) were found. In addition, no inorganic substances were detected in any of the surface soil samples at concentrations significantly above background levels. One of the surface soil samples, however, contained several pesticides (0.93 ug/kg dieldrin, 0.49 ug/kg lindane, 0.57 ug/kg heptachlor, 0.38 ug/kg DDE, 1.4 ug/kg DDT, and 0.91 ug/kg endrin). The presence of pesticides at this location may be attributable to the use of fill that was deposited on the property from a neighboring agricultural area. Several of the pesticides detected, including DDT, have been banned for as long as twenty years, indicating that the pesticides have resided in the soils for a considerable amount of time.

A total of 23 subsurface soil samples were collected from 10 soil borings in order to assess subsurface soil quality in the area within, adjacent to, and below the former lagoons. Volatile organic compounds were detected in 4 of the 23 subsurface soil samples analyzed. These compounds included acetone (10 to 46 ug/kg), xylene (6 to 950 ug/kg), carbon disulfide (8 ug/kg), 1,1,2-TCA (8 ug/kg), 2-butanone (22 ug/kg), and ethylbenzene (140 ug/kg). None of the VOCs of concern in the ground water (1,1-TCE, 1,1,1-TCA and 1,1-DCE) was detected. Semivolatile organic compounds were detected in 3 of the 23 samples. These compounds are 2-ethylhexyl phthalate (56 to 130 ug/kg) and diethyl phthalate (330 ug/kg). Pesticides were detected in 3 of the 23 samples including dieldrin (0.28 ug/kg), DDE (0.26 to 0.86 ug/kg), DDT (0.75 ug/kg), and DDD (0.38 ug/kg). Finally, chromium and zinc were detected at levels above background samples from 2 of the borings. Chromium concentrations ranged from 159 to 385 ug/kg and zinc concentrations ranged from 628 to 982 ug/kg.

Ground water samples were collected from 12 monitoring wells in the vicinity of the Site. Volatile organic compounds were detected in 5 of the 12 wells sampled. The highest concentrations of VOCs were 1,1,1-TCA and 1,1-DCE which were detected in monitoring well S-1 at 720 ug/l and 33 ug/l, respectively. TCE was not detected in any of the ground water samples. In addition, no vinyl chloride was detected. Low levels of SVOCs were detected in samples from 5 of the 12 wells. Low levels of pesticides were also detected in samples from 5 of the 12 wells during the RI, including dieldrin, lindane, endrin and ketone. Chromium was detected at levels above background levels in four of the twelve wells. The highest total chromium concentration detected was 87.2 ug/l. Zinc was not detected above background levels in any ground water samples collected.

The ground water and soils data presented in the RI indicated that the former lagoons were not the primary source of the 1,1,1-TCA and the 1,1-DCE detected in monitoring well S-1. Neither of these contaminants was detected in any of the soils within or below the former lagoons. In addition, the pattern of contaminants detected in the ground water suggested the existence of a source unrelated to the lagoons and located to the south and upgradient of well S-1. Finally, the increase in 1,1,1-TCA concentrations in the samples from well S-1 collected in 1988 and 1992 indicated that a release of 1,1,1-TCA may have recently occurred from a source upgradient of well S-1 or recently migrated from such an upgradient source. Since 1,1-DCE is a

breakdown product of 1,1,1-TCA, the same source is most likely responsible for the presence of both contaminants.

These conclusions are further supported by the findings of the subsequent Metal Masters RI [Metal Masters Food Services Co., Inc., Remedial Investigation Report (Groundwater Technology, June 1995)] conducted pursuant to an order with DNREC. The Metal Masters RI identified three possible source areas: 1) a loading dock where drums of TCA were received, 2) a TCA Storage Area and 3) an underground sanitary sewer holding tank. Surface and subsurface soil samples were taken from these areas. Three additional monitoring wells were installed downgradient of these areas to study the ground water. The distribution of contamination in the soil and ground water indicated that the historic source of the 1,1,1-TCA and 1,1-DCE was near the TCA Storage Area. The Metal Masters RI concluded that the TCA Storage Area does not likely represent a continuing potential source because little contamination remains in the soil and Metal Masters discontinued operations at the Site in the spring of 1995.

While elevated levels of contaminants were encountered at the Site, these investigations found that there was no elevated risk at present because all residents near the Site were receiving drinking water from the municipal water supply, and thus could not be exposed to the contaminants. The potential for a future elevated risk existed because of the possibility that drinking water wells could be installed in the future that would draw contaminated water from the Site.

IV. Remedial Actions

Remedy Selection and Implementation

Since the groundwater in the immediate vicinity of the Site is not used as a source of potable water, there are no current risks associated with the Site. Therefore, EPA determined in its May 10, 1996 ROD that "No Action (with monitoring)" was appropriate at that time to protect human health and the environment, in part because DNREC had already established a Ground Water Management Zone (GMZ) encompassing the property in February, 1996. The GMZ provides continued assurance that there is no use of and therefore no exposure to the ground water at the Site, by prohibiting the installation of any new wells within the GMZ. In addition, the ROD specified that, "an EPA-approved ground water monitoring program shall be implemented to ensure that contaminants do not migrate off-site at levels which would pose a threat to human health and the environment in the future."

System Operation/Operation and Maintenance

In 1997, EPA developed a ground water monitoring program designed to confirm that contaminants are not migrating off-site. EPA has conducted several ground water monitoring events since the issuance of the ROD. The results from these sampling events (summarized below) have confirmed that contaminants have not migrated off-site at levels which would pose a threat. Furthermore, the monitoring program documents that concentrations of contaminants in ground water on-site have declined significantly (although there still remain concentrations that do not allow for unrestricted use or exposure). The most recent of these EPA sampling events

was conducted in late November of 2001. On June 4, 2002, EPA and Metal Masters entered into an Administrative Order on Consent (AOC) whereby Metal Masters has agreed to conduct future ground water monitoring events, until such time as EPA determines that monitoring is no longer necessary.

In accordance with the EPA-approved ground water monitoring program, sampling events were conducted during both the Clark and Metal Masters Remedial Investigations (September 1992 and February 1995, respectively), and as monitoring events in March 1997, September 1997, July 1998, January 1999, November 2001, July 2003, May 2005 and September 2006.

Throughout the investigations and the monitoring program at the Site, only three contaminants have been detected in ground water at concentrations in excess of MCLs (Maximum Contaminant Levels): DCE (MCL=7 ug/L), TCA (MCL=200 ug/L), and TCE (MCL=5 ug/L). In addition, these exceedances have been limited to two shallow wells: S-1, and MM-2.

In well S-1, DCE was detected at 33ug/L in 1992, but has indicated a decrease since the 1992 sampling (3, 3.7, and 7.1 ug/L in 2003, 2005, and 2006). It was found at similar levels in well MM-2, detected at 26 ug/L in 1992, and then at 5.9, 7.7, and 3.3 ug/L (2001, 2005, and 2006). All of the recent sampling events have only found DCE at or slightly above or below the MCL.

TCA was found in well S-1 at 720 ug/L in 1992, but has only been detected below the MCL since then, most recently in 2006 at 89 ug/L. In well MM-2, TCA was found at 260 ug/L in 1992, and has similarly been below the MCL since, found at 35 ug/L in 2006.

TCE has only ever been detected at or near its MCL of 5 ug/L in wells S-1 and MM-2. In 2006, TCE was found at 4.3 ug/L in S-1 and at only 1.6 ug/L in MM-2.

Wells MM-1 and S-4 are the most down-gradient wells at the Site, and have shown no recent detections of Site contaminants. The results of the monitoring program have confirmed that contaminants are not migrating off-site and the "No Action" remedy selected in the 1996 ROD is protective.

EPA deleted this Site from the NPL effective March 29, 2004.

V. Progress Since the Last Review

No recommended follow-up actions were identified during the last five year review. The ground water monitoring program has not been followed in accordance with the terms of the June 4, 2002 AOC.

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VI. Five-Year Review Process

Administrative Components

The Tyler Refrigeration Pit Superfund Site Five-Year Review Team was led by Anthony C. Iacobone (EPA Remedial Project Manager (RPM)), with EPA technical support staff Kathy Davies (Hydrogeologist), Dawn Ioven (Toxicologist), and Carrie Dietzel (Community Involvement Coordinator (CIC)). Steve Johnson, DNREC, assisted in the review as the representative of the State of Delaware.

Community Involvement

A notice announcing that EPA was conducting a five-year review for the Site was published in *The Wilmington News Journal*, a widely-distributed local newspaper, on July 23, 2012.

Document Review

A complete list of documents reviewed can be found in Attachment 3. Documents reviewed in the process of conducting this five-year review included the last five-year review report, the ROD, and the data collected over the past several years (since the last five year review). There were no Applicable or Relevant and Appropriate Requirements (ARARs) identified in the ROD.

Data Review

The data collected to date was reviewed. No data has been collected since 2006, which is an issue discussed below.

Site Inspection

On July 2, 2012, Remedial Project Manager Anthony C. Iacobone from EPA Region III and Steve Johnson, DNREC toured the Site.

Site conditions observed were very similar to observations made during the 2005 five-year review: The layout of the Site remains the same, with a large structure, a parking lot, and a large grassy area. Monitoring wells however, have been abandoned. The manufacturing operation appears to have ceased as of the Site visit.

Interviews

No Site interviews were conducted.

VII. Technical Assessment

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

Yes, the remedy is functioning as intended to protect human health and the environment. There is no current exposure, no contaminant migrating off-site, and no potential future exposure due to the State-implemented Ground Water Management Zone. The ground water monitoring program has confirmed that contaminants are not migrating off-site at concentrations which would pose a threat to human health or the environment.

- *Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?*

Yes. The maximum contaminant levels (MCLs) for contaminants detected at the Site have not changed since the ROD was issued, however toxicity information related to those contaminants has changed. This change does not affect the protectiveness of the remedy.

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

No. Monitoring data have shown that the levels of contaminants at the Site have steadily diminished without leaving the Site and no ARARs have changed that would affect the protectiveness of the remedy.

Technical Assessment Summary

Contaminants remain at the Site above levels that would allow for unrestricted use or exposure, and therefore monitoring will continue. Since the ground water management zone (GMZ) implemented by the State prohibits the installation of wells into the contaminated area, the No Action remedy is protective of both human health and the environment. There is no other information that calls into question the protectiveness of the remedy.

VIII. Issues

This Site has not been sampled since 2006. Levels of Contaminants at the Site are predominately below MCLs with the exception of DCE. Since DCE is not below the MCL, monitoring at the Site must continue.

IX. Recommendations and Follow-up Actions

The groundwater from the Site needs to be sampled to determine if the levels of all contaminants are below their respective MCLs. If the levels have fallen below the MCLs, EPA will recommend that no further sampling occur at this Site and discontinue conducting Five-Year Reviews at the Tyler Refrigeration Site. However, if contaminants remain on site above the MCL, EPA will continue to perform Five-Year Reviews of the site and will need additional data to support the next Five-Year Review in 2017.

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X. Protectiveness Statement

The remedy is considered protective of human health and the environment in both the short term and the long term, since the ground water under the Site is not currently in use and is not migrating off-site.

Long-term protectiveness of the remedy is expected to be maintained through the continued implementation by DNREC of the Ground Water Management Zone (GMZ) over the area of the Site. The GMZ prevents the installation of wells, and therefore prevents any future exposure to ground water, thereby eliminating any future risk to human health or the environment, and thus assuring long-term protectiveness. The monitoring program will continue to verify that no contaminants are migrating off-site until EPA determines monitoring is no longer needed.

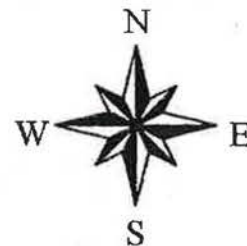
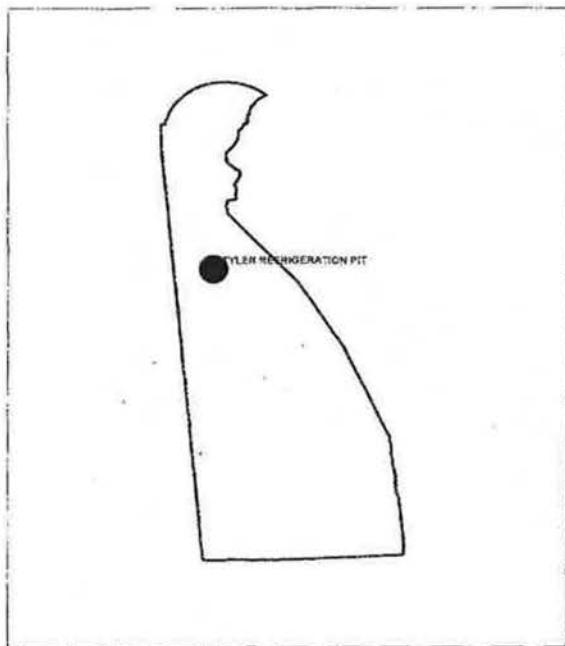
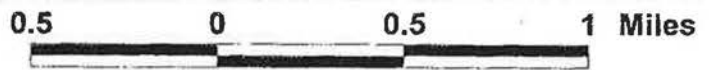
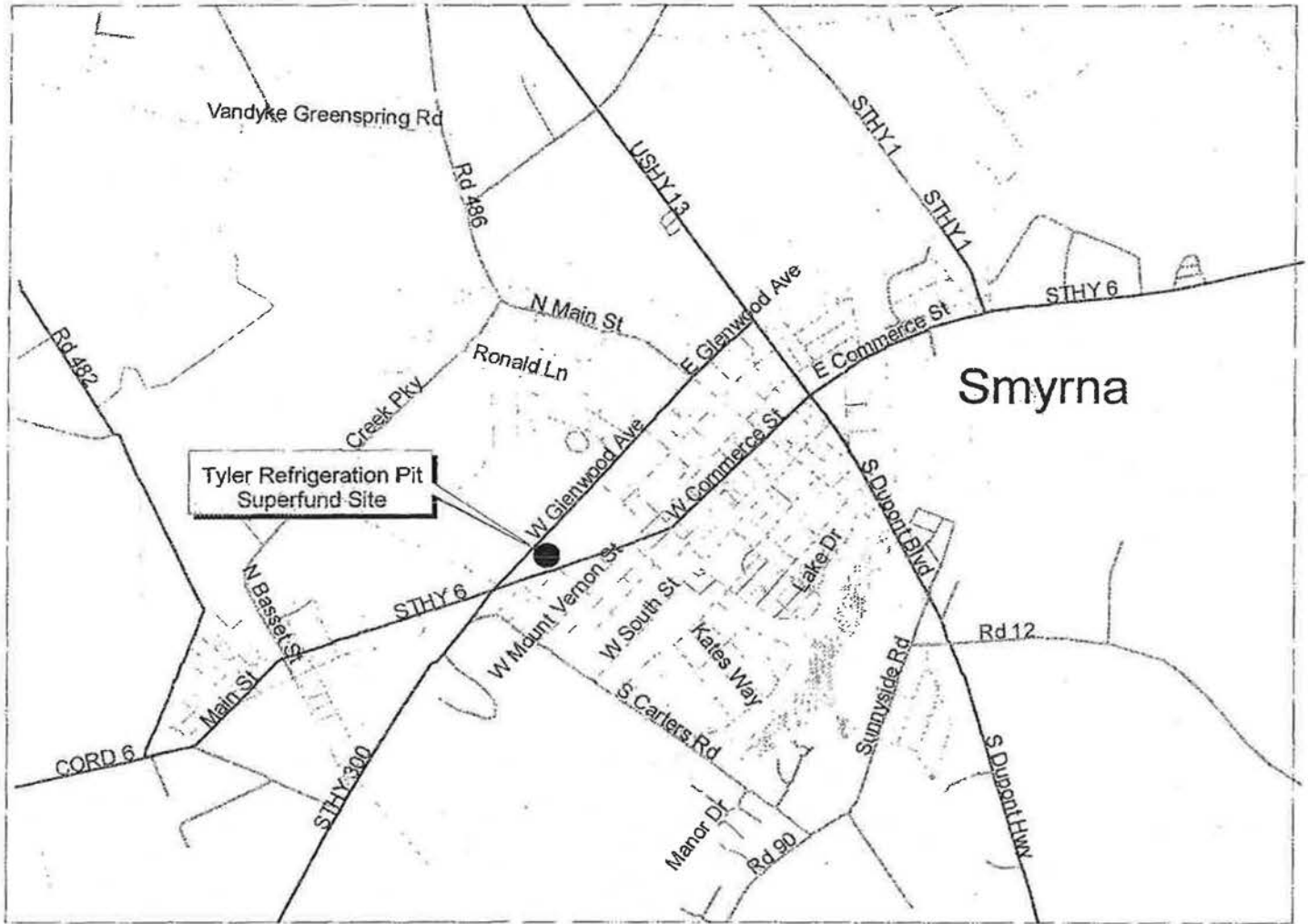
XI. Next Review

The next five-year review for the Tyler Refrigeration Pit Superfund Site is required by September 2017, five years from the date of this review.

ATTACHMENTS

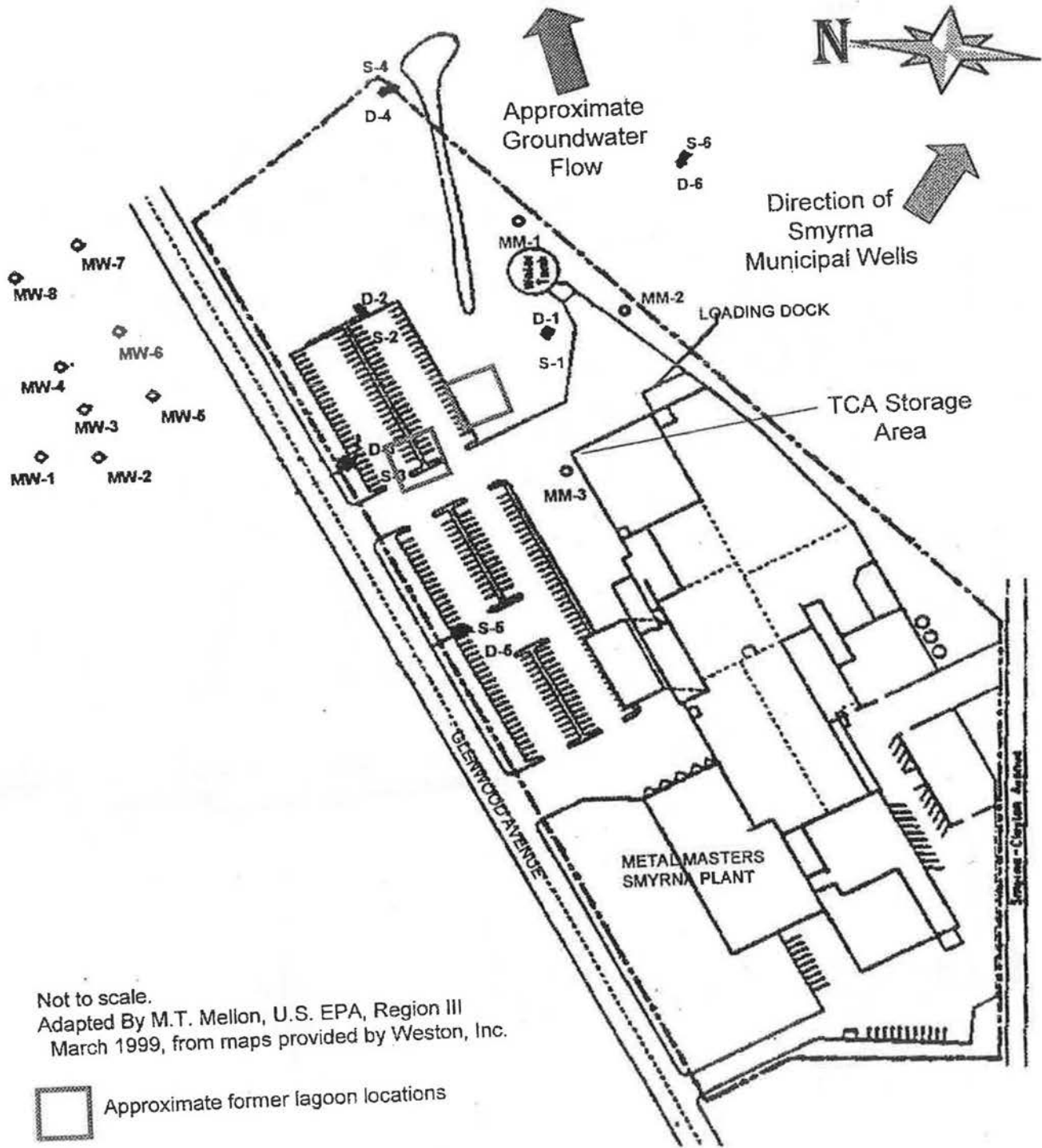
Figure 1: Site Location Map

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United States Environmental
Protection Agency - Region III
Philadelphia, Pennsylvania

Figure 2: Site Map



Not to scale.
Adapted By M.T. Mellon, U.S. EPA, Region III
March 1999, from maps provided by Weston, Inc.

 Approximate former lagoon locations

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ATTACHMENT 3: List of Documents Reviewed

Tyler Refrigeration Pit Superfund Site Record of Decision. U.S. EPA Region III; May 10, 1996.

Memorandum of Agreement, Department of Natural Resources and Environmental Control [Delaware],
Between: Division of Air and Waste Management and Division of Water Resources, For: Tyler
Refrigeration Pit Superfund Site, Smyrna, Kent County, Delaware. February 1996.

Five-Year Review Report, Tyler Refrigeration Pit Superfund Site, Smyrna, Delaware. U.S. EPA Region
III; August 16, 2002.

Sampling Reports: Malcolm Pirnie to US. EPA
October 13, 2005

Sampling Reports: Malcolm Pirnie to US EPA
October 31, 2006

Second Five-Year Review Report, Tyler Refrigeration Pit Superfund Site, Smyrna, Delaware. U.S. EPA
Region III; September 27, 2007

ATTACHMENT 4: Applicable or Relevant and Appropriate Requirements (ARARs)

[From 1996 Record of Decision]

No ARARs were identified in association with the No Action remedy selected in the May 1996 ROD.