Five-Year Review Report

Fourth Five-Year Review Report for the Pristine, Inc. Superfund Site Reading, Hamilton County, Ohio

August 2011

PREPARED BY:

United States Environmental Protection Agency
Region 5
Chicago, Illinois

Approved by:

Richard C. Karl, Director
Superfund Division
United States Environmental Protection Agency, Region 5

Date:

8/19/11

This page left intentionally blank.

Table of Contents

Section		Page
List of Acronyms		iv
Executive Summary		vi
Five-Year Review Summary Form		vii
I.	INTRODUCTION	1
II.	SITE CHRONOLOGY	2
III.	BACKGROUND	3
	A. Physical Characteristics	3
	B. Land and Resource Use	3
	C. History of Contamination and Initial Response	4
	D. Basis for Taking Action	4
IV.	REMEDIAL ACTIONS	5
	A. Remedy Selection	5
	B. Remedy Implementation	7
	C. Operation and Maintenance	8
	D. Institutional Controls	9
V.	PROGRESS SINCE THE LAST FIVE-YEAR REVIEW	15
	A. Protectiveness Statement from the Last Five-Year Review Report	15
	B. Status of Implementing Recommendations from the Last Five-Year Review Report	15
VI.	FIVE-YEAR REVIEW PROCESS	17
	A. Administrative Components	17
	B. Community Notification	17
	C. Document Review	17
	D. Data Review	17
	E. Site Inspection	37
	F. Interviews	38
VII.	TECHNICAL ASSESSMENT	39
VIII.	ISSUES	42
IX.	RECOMMENDATIONS AND FOLLOW-UP ACTIONS	42
X.	PROTECTIVENESS STATEMENT	42
XI.	NEXT REVIEW	42

Tables

Table 1: Chronology of Site Events 2

Table 2: Current Restricted Areas and Corresponding IC Objectives: 11

Table 3: Groundwater Cleanup Levels vs. Latest Sampling Results in the Lower Aquifer - VOCs 18

Table 4: Estimated Mass of VOCs Removed per Year 22

Table 5: Groundwater Cleanup Levels and Latest Sampling Results - Groundwater CSVOCs/Pesticides/PCBs/Inorganics in the Lower Aquifer 24

Table 6: Number of Detections and Maximum Concentrations of Soil Vapor Levels in Baseline 1997 Sampling and 2009 Sampling 29

Table 7: Soil gas rebound monitoring, October 26, 2009 – July 30, 2010 30

Table 8: List of Primary ARARs 41

Figures

Figure 1: Pristine, Inc. Site Location in Relation to the Cincinnati, Ohio Area 43

Figure 2: Pristine, Inc. Site in Relation to Nearby Facilities 44

Figure 3: Pristine, Inc. Site Map Showing Zone A and Zone B 45

Figure 4: 1,2-DCA Concentrations, Lower Aquifer Monitoring wells 46

Figure 5: Detail of 1,2-DCA Concentrations, Lower Aquifer Monitoring Wells 47

Figure 6: 1,2-DCA, Extraction wells 48

Figure 7: Comparison of 1,2-DCA Groundwater Plume in 1999 and 2009 49

Figure 8: TCE Concentrations, Lower Aquifer monitoring wells south and west of the plume . 50

Attachments

Attachment 1: August 2009 Environmental Covenant 51

Attachment 2: Five-Year Review Newspaper Ads 70

Attachment 3: List of Documents Reviewed 72

Attachment 4: Ohio EPA Compendium for Cumulative Risk Levels 73

List of Acronyms and Abbreviations

ARAR	Applicable or Relevant and Appropriate Requirement
CD	Consent Decree
CDS	Cincinnati Drum Services
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
CRA	Conestoga-Rovers & Associates (the PRP technical consultant)
1,2-DCA	1,2-Dichloroethane
EC	Environmental Covenant
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FYR	Five-Year Review
FYRR	Five-Year Review Report
G.E.	The General Electric Company
GPM	Gallons Per Minute
IC	Institutional Control
ISVE	In-situ Vapor Extraction
MSDGC	Metropolitan Sewer District of Greater Cincinnati
NCP	National Contingency Plan
NPL	National Priorities List
OAC	Ohio Administrative Code
Ohio EPA	Ohio Environmental Protection Agency
O&M	Operation and Maintenance
ORC	Ohio Revised Code

PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PCOR	Preliminary Close-Out Report
PHHRA	Preliminary Human Health Risk Assessment
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
RD/RA	Remedial Design and Remedial Action
RI/FS	Remedial Investigation and Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SVOC	Semi-volatile Organic Compound
TCE	Trichloroethene
UECA	Uniform Environmental Covenants Act
USGS	United States Geological Survey
UU/UE	Unlimited Use/Unrestricted Exposure
VOC	Volatile Organic Compound

Executive Summary

The remedy for the Pristine, Inc. Superfund Site in Reading, Ohio "Site" includes demolition of Site structures, thermal treatment of soil, construction of a soil cap, installation and operation of a groundwater pump-and-treat system, installation and operation of an in-situ soil vapor extraction system, groundwater and soil vapor monitoring, and institutional controls. The Site achieved construction completion with the signing of the Preliminary Close-Out Report on September 30, 1998. The trigger for this five-year review is the issuance date of the last Five-Year Review Report of September 19, 2006.

The assessment of this five-year review found that the remedy was constructed in accordance with the requirements of the Record of Decision (ROD), ROD Amendment, and the three Explanation of Significant Differences for the site. The groundwater pump-and-treat system and the in-situ soil vapor extraction system have been functioning as designed, although the ISVE system is currently shut down. The remedy is protective of human health and the environment. All immediate threats at the Site have been addressed; there is no evidence of exposure to Site-related contaminants; and the existing Site and groundwater uses are consistent with the objectives in the remedy and Environmental Covenant (EC).

Five-Year Review Summary Form

Site name *(from CERCLIS)*: Pristine, Inc. Superfund Site		
EPA ID *(from CERCLIS)*: OHD076773712		
Region: 5	State: OH	City/County: Reading/Hamilton County
NPL status: ■ Final □ Deleted □ Other (specify)		
Remediation status (choose all that apply): □ Under Construction ■ Operating □ Complete		
Multiple Operable Units (OU)? □ Yes ■ No		Construction completion date: September 30, 1998
Has site been put into reuse? □ Yes ■ No		
Lead agency: ■ EPA □ State □ Tribe □ Other Federal Agency		
Author name: Leslie Patterson		
Author title: Remedial Project Manager		Author affiliation: EPA Region 5
Review period: September 2010 to August 2011		
Date of site inspection: March 31, 2011		
Type of review: ■ Post-SARA □ Pre-SARA □ NPL-Removal only □ Non-NPL Remedial Action Site □ NPL State/Tribe-lead □ Regional Discretion		
Review number: □ 1 (first) □ 2 (second) □ 3 (third) ■ 4 (fourth)		
Triggering action: □ Actual RA On-site Construction at OU # ___ □ Actual RA Start at OU# ___ □ Construction Completion ■ Previous Five-Year Review Report □ Other (specify)		
Triggering action date *(from CERCLIS)*: September 19, 2006		
Due date *(five years after triggering action date)*: *September 19, 2011*		

Issues:

No issues were identified that would affect the protectiveness of the remedy.

Recommendations and Follow-up Actions:

There are no recommendations or follow-up actions that affect current or future protectiveness.

One follow-up action that does not affect current or future protectiveness is to evaluate the progress of the MNA Pilot Program. When the pilot program is completed, EPA will determine whether to include MNA as part of the remedy, and, if so, issue the appropriate decision.

Protectiveness Statement:

The remedy is protective of human health and the environment. All immediate threats at the Site have been addressed; there is no evidence of exposure to Site-related contaminants; and the existing Site and groundwater uses are consistent with the objectives in the remedy and Environmental Covenant (EC).

Other Comments:

Since the last Five-Year Review, the Site property has been limited to industrial use only. The exposure assumptions therefore changed with respect to soil contaminants. EPA issued an ESD on July 1, 2011, which changed soil cleanup levels based on this new end-use scenario and updated groundwater clean-up standards.

Environmental Indicators Summary (from CERCLIS):

Date of last Regional review of Human Exposure Indicator (from CERCLIS): 7/22/2011

Human Exposure Survey Status (from CERCLIS): Current Human Exposure Controlled and Protective Remedy in Place.

Date of last Regional review of Groundwater Migration Indicator (from CERCLIS): 7/22/2011

Groundwater Migration Survey Status (from CERCLIS): Contaminated Groundwater Migration Under Control.

PRISTINE, INC. SUPERFUND SITE
READING, OHIO
FIVE-YEAR REVIEW REPORT

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 (FYRR). In addition, FYRRs identify issues found during the review, if any, and identify recommendations to address them.

The United States Environmental Protection Agency (EPA) prepared this FYRR 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.*

EPA interpreted this requirement further in the NCP. Title 40 of the Code of Federal Regulations (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.*

EPA Region 5 conducted the FYR of the remedy implemented at the Pristine, Inc. Superfund Site in Reading, Ohio. This review was conducted for the entire Site from September 2010 to August 2011 by a review team headed by EPA, and including the Ohio Environmental Protection Agency (Ohio EPA) and the United States Geological Survey (USGS). This report documents the results of the review.

This is the fourth FYR for the Pristine, Inc. Superfund Site. The triggering action for this statutory review is the issuance date of the last FYRR of September 19, 2006, as shown in EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database. This FYR is required due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

II. SITE CHRONOLOGY

Table 1: Chronology of Site Events

EVENT	DATE
Site used for sulfuric acid and fertilizer manufacturing	before 1974
Site used for liquid waste disposal	1974 - 1981
Permit obtained to operate a liquid waste incinerator	1977
Site accepts bulk and drummed waste	1977 - 1981
Drummed waste removed under a Consent Decree between Ohio EPA and Pristine, Inc.	1980 - 1983
Site closed due to permit violations	1981
EPA proposes Site for National Priorities List (NPL)	12/30/1982
Final Listing on EPA NPL	09/08/1983
Sludges and contaminated soils removed under an Administrative Order on Consent between EPA and Potentially Responsible Parties (PRPs)	1984
EPA conducts the RI/FS	09/1984 - 12/1987
Record of Decision (ROD)	12/1987
ROD Amendment to change treatment of on-site soils from in-situ vitrification to thermal incineration and in-situ vapor extraction (ISVE)	03/1990
RD/RA Consent Decree (CD) issued by EPA	09/1990
Site structures demolished	01/1992
ESD to change soil treatment from incineration to thermal desorption and to revise cleanup levels for PAHs in soils	07/1993
Treatment of soil by thermal desorption	1993 - 1994
Reading, Ohio well field closed as a result of Ohio EPA administrative proceedings that documented groundwater contamination	03/1994
Construction of the ISVE system and construction of the soil cap over Zone A	09/1994 - 08/1996
ESD to waive Ohio EPA anti-degradation rule from applying to discharge limits from the treatment plant to Mill Creek	07/1996
EPA issues first FYRR	05/1997
EPA issues Preliminary Close-Out Report (PCOR) documenting construction completion	09/30/1998
Start-up of the 300 gpm groundwater pump-and-treat system	10/1998
New standards for the pump-and-treat system effluent into Mill Creek take effect	10/2000

EVENT	DATE
EPA issues second FYRR	09/2001
EPA approves a reduction in the groundwater pumping rate from 450 gpm to 375 gpm*	03/2002
EPA approves the Preliminary Human Health Risk Assessment	01/2006
EPA approves a second reduction in the groundwater pumping rate from 375 gpm to 150 gpm*	03/2006
EPA issues third FYRR	09/2006
EPA approved a reconfiguration of the groundwater extraction system to minimize interference from off-site, lower aquifer groundwater plumes	11/2008
Environmental covenant (EC) that restricts non-remedial Site use to industrial only recorded in the local Recorder's Office	08/2009
EPA approves a temporary shutdown of the ISVE system	10/2009
EPA designates the Site as "Site-wide Ready for Anticipated Use"	08/2010
EPA approves the PRPs' MNA Pilot Program Work Plan	10/2010
ESD for revised soil and groundwater cleanup goals	07/2011

* These values refer to design flow rates for the combined 150 gpm and 300 gpm treatment systems. The average flow rates for the water pumped from the lower aquifer are less than the design values. The pumping rate reductions were preceded by Force Majeure notifications from CRA to EPA dated April 2, 2002 and March 16, 2005.

III. BACKGROUND

A. Physical Characteristics

The Pristine, Inc. Site occupies approximately three acres and is located in an industrial area within the City of Reading, Hamilton County, Ohio (Figure 1). The Site is underlain by the Mill Creek bedrock valley. Mill Creek eventually empties into the Ohio River. The lower outwash aquifer above this bedrock valley contains the majority of the contaminant plume and flows to the south-southwest. It was formerly the primary source of water supply for the area, including the water supply for the City of Reading. There is a separate upper aquifer in some parts of the bedrock valley, but below the Site, groundwater is present only in a number of interconnected lenses above the lower outwash aquifer. Mill Creek flows from north to south approximately 600 feet west of the Site. Mill Creek is not used for drinking or recreation other than for occasional fishing.

B. Land and Resource Use

The Site is zoned as heavy industry. Immediately west of the Site and between the Site and Mill Creek is CDS, a drum recycler (Figure 2). CAPA Property Management, LLC, and Jeffrey D. Long own the 13-acre parcel that includes the Site. The land to the north of the Site is owned by the City of Reading and occupied by a sewage holding and treatment facility of the Metropolitan Sewer District of Greater Cincinnati (MSDGC). South of the Site is a Rohm and Haas facility

that manufactures synthetic stabilizers and plasticizers, and is subject to a corrective action agreement under the EPA Resource Conservation and Recovery Act (RCRA) program. Railroad tracks owned by the Southwest Ohio Regional Transit Authority are to the east of the Site. A grain elevator is located east of the railroad tracks. Other industrial facilities are active in Mill Creek Valley, including a G.E. aircraft engine facility west of Mill Creek. G.E. is another site subject to a corrective action agreement under the EPA RCRA program. There are no residences near the Site.

Several forms of Institutional Controls (ICs) exist at the Site for soils and groundwater. These ICs are discussed more thoroughly below in the Section titled Institutional Controls.

C. History of Contamination and Initial Response

The Site was used as a liquid waste disposal facility from 1974 to 1981. Prior to 1974, the Site had been used for the manufacturing of sulfuric acid and fertilizer. In 1977, Pristine, Inc. obtained a permit to incinerate liquid waste on-site and accepted both bulk and drummed waste for incineration. The Site was closed in 1981 due to numerous permit violations and, at the time of closure, more than 10,000 drums and several hundred thousand gallons of bulk liquids were on-site. The chemicals of concern have included the following:

- Polychlorinated biphenyls (PCBs);
- Pesticides such as dichlorodiphenyltrichloroethane (DDT), aldrin and dieldrin;
- Volatile Organic Compounds (VOCs) such as 1,2-dichlorethane, methylene chloride, chloroform, benzene, vinyl chloride, tetrachloroethene and trichloroethene (TCE);
- Semi-volatile organic compounds (SVOCs) such as polycyclic aromatic hydrocarbons (PAH), phenol and bis(2-ethylhexyl)phthalate;
- Metals such as cadmium, lead and mercury; and
- 2,3,7,8-tetrachlorodibenzodioxin (TCDD) in the Pristine incinerator ash.

From 1980 to 1983, most of the drummed material was removed under a CD between Ohio EPA and Pristine, Inc. In September 1983, the Site was formally added to the National Priorities List. In 1984, sludges and highly contaminated soils were removed from the Site under an Administrative Order on Consent between EPA and a group of private parties. The removal actions taken from 1980 through 1984 addressed the immediately hazardous Site conditions but did not address the long-term risks associated with contamination in the subsurface soils or groundwater.

D. Basis for Taking Action

In 1984, EPA initiated a Remedial Investigation and Feasibility Study (RI/FS) to define the extent and magnitude of the remaining contamination at the Site, to characterize threats to human health and the environment, and to evaluate remedial alternatives. The RI included sampling of surface and subsurface soils, incinerator residues, sediments, surface water, and groundwater.

The sampling results showed that the subsurface soils and Site groundwater were highly contaminated. The RI/FS demonstrated that the potential human health risk from contact with contaminated soils and groundwater was unacceptable. In addition, the potential for migration of groundwater contamination from the Site presented an unacceptable potential risk of contamination to the City of Reading water supply.

On December 31, 1987, EPA issued a ROD that addressed contaminated soil and groundwater. The remedial action goal for soil was defined as the adequate protection of the environment and public health from inhalation, absorption, or ingestion of potentially hazardous substances. The remedial action goal for groundwater was defined as the adequate protection of public health from inhalation (of vapors), adsorption, or ingestion of potentially hazardous and carcinogenic substances. The selected remedy consisted of the following components:

- Excavation and on-site consolidation of 1,725 cubic yards of sediment and soil;
- In-situ vitrification of contaminated soil to an average depth of ten feet across the Site;
- Installation of a french drain along the eastern Site boundary;
- Extraction of groundwater from the lower outwash lens/lower aquifer using at least one extraction well;
- On-site treatment of groundwater using an air stripper with discharge to Mill Creek;
- Demolition, decontamination and removal of all on-site structures;
- Access and deed restrictions; and
- Groundwater monitoring.

IV. REMEDIAL ACTIONS

A. Remedy Selection

In November 1987, more than 130 parties were notified of their liability at the Pristine, Inc. Site and invited to negotiate with EPA for the design and construction of the final remedy. Negotiations with the parties ended on March 29, 1988, without an agreement. On March 31, 1988, a group of private parties proposed to use ISVE instead of in-situ vitrification, claiming equivalent performance. EPA reviewed the proposal and determined that ISVE would treat the VOCs but not the pesticides and PAHs in the soil. EPA agreed to reopen negotiations if the parties included thermal treatment (incineration) with ISVE to treat the soil and maintain the groundwater pump and treatment system as described in the December 1987 ROD, using the same cleanup standards. The negotiations were reopened and an agreement reached, which is documented in a Remedial Design and Remedial Action (RD/RA) CD signed by 111 parties and EPA. The CD was entered by the Southern District Court of Ohio on October 23, 1990, and EPA issued a ROD Amendment on March 30, 1990 to document modification of the remedy. The parties to the CD formed the Pristine Trust to implement work under the CD. Subsequently, all work under the CD, including sampling, evaluations, design, construction, and operation and

maintenance (O&M) has been under the direction of the Pristine Trust with oversight by EPA and Ohio EPA. The Pristine Trust has retained the firm of Conestoga-Rovers & Associates (CRA) to conduct investigations, design, construction, and O&M functions.

The RD/RA CD includes the following IC restrictions to "prevent interference with the performance of remedial action and with long term maintenance of the remedy." All of the following restrictions run with the land:

- No obstruction, delay, or interference with the performance of the work required by the CD;
- No extraction from the Site of water from the lower aquifer for consumptive or other use, except as required by the Remedial Action Plan (RAP), as appended to the CD;
- No residential or commercial use of the Site;
- No use that would allow continued presence of humans at the Site, other than presence necessary for the implementation of the remedial action; and
- No installation, construction, removal, or use of any buildings, wells, pipes, roads, ditches, or any other structures at the Site except as consistent with the CD.

The March 30, 1990 ROD Amendment changed the soil component portion of the remedy to the following:

- On-site incineration included the top one foot of soil across Zone A of the Site (Figure 3) and defined sediment areas, and all other soils from ground surface to four feet below ground surface that contain SVOCs and pesticides in excess of soil performance goals. The first Explanation of Significant Differences (ESD), dated July 30, 1993, changed the thermal treatment from incineration to thermal desorption and relaxed the target soil concentration for individual PAHs to 1,000 μg/kg, because it was impracticable to detect PAHs at the previous target concentration of 14 μg/kg;
- Placement of incinerator residues under a soil cap, which covers Zone A, if the residues meet the substantive RCRA delisting criteria;
- Dewatering the upper 12 feet of soil under Zone A and dewatering the Magic Pit portion of Zone B (see Figure 3), so that these soils can be treated by an ISVE system;
- ISVE of on-site soil to a depth of approximately 12 feet below the original ground surface over Zone A and within the Magic Pit area of Zone B;
- Construction of an off-gas control system for air emissions from the ISVE system;
- Treatment of the upper aquifer water from the ISVE system using carbon adsorption; and
- Establish cleanup levels for benzene, 1,2-dichloroethane (1,2-DCA), and TCE.

The City of Reading well field, which supplied water to more than 15,000 people, included a number of wells located in three areas: 1) north of the Cincinnati Drum Services (CDS) facility and east of Mill Creek (about 400 feet northwest of the Site); 2) south of the General Electric (G.E.) facility, on the west side of Mill Creek; and 3) in the north end of Koenig Park, located south of the Site, CDS, Rohm and Haas, and G.E. In March 1994, the well field was closed as a result of Ohio EPA administrative proceedings that documented groundwater contamination. The City of Reading's municipal water is now supplied by the City of Cincinnati; however, the City of Reading is taking steps to obtain its water from the Village of Lockland, Ohio.

B. Remedy Implementation

Construction of the remedy for the Pristine, Inc. Site was conducted in five phases. The first phase, demolition of on-site structures, was described in the 1987 ROD and completed in January 1992. During the demolition, a large portion of the metal from the facility was decontaminated and recycled. Debris from the facility demolition was disposed off-site in an EPA-approved landfill.

The second phase, thermal treatment of soil by thermal desorption technology, was incorporated into the remedy in the 1993 ESD, and conducted in 1993 and 1994. Approximately 13,000 tons of contaminated soil were treated and placed back on-site. The treated soil was delisted prior to on-site placement. Extensive compliance testing occurred during the operation of the thermal desorption unit, and compliance was maintained throughout the life of the project.

The third phase, conducted in 1994 through 1998, was initiated with the 1990 ROD Amendment and included construction of an ISVE system and cap. The ISVE system contains a series of trenches and wells to remediate the soil and groundwater in the upper zones of the Site. The ISVE system removes approximately 5 gallons per minute (gpm) of groundwater and 1,000 cubic feet per minute of soil gas for subsequent treatment. The ISVE system was constructed by 1996 but did not initiate operation until October 1997, when the 150 gpm pump and treatment system initiated operation. EPA issued a second ESD in April 1996 that waived Ohio's anti-degradation discharge rule (OAC 3745-1-05), based on a determination that it would be technically impracticable to achieve the anti-degradation-based discharge limits for discharge to Mill Creek from the treatment system. The delay in the ISVE system start up was because the ISVE and 150 gpm treatment systems use the same air emission control equipment, which included catalytic oxidation and scrubbing. Continuous operation of the south branch of the ISVE system was further delayed until February 1998, because there was concern that high concentrations of fluorinated VOCs would result in poisoning the catalyst. To address this concern, a carbon adsorption unit was installed to treat soil gas from the south branch before the gas went to the catalytic oxidizer. The ISVE system was expected to operate for up to 10 years.

The fourth phase, construction of the 150 gpm pump and treatment system, was conducted in 1997 and started operation in October 1997. The 1987 ROD defined the remedy as including a groundwater extraction and treatment system. The 150 gpm system treats groundwater extracted from on-site lower aquifer extraction well EW1 (30-35 gpm), the ISVE shallow groundwater system (5 gpm), and off-site, lower aquifer extraction wells EW2 (35 gpm) and EW3 (80 gpm). The treatment train for the groundwater consists of metals precipitation, air stripping and carbon adsorption. A supplemental air stripper (Air Stripper 1A) was added in 1998 to aid in the

removal of VOCs from the Site groundwater. The two air strippers operate in series to treat VOCs down to a concentration of 5 µg/l or less (with the exception of methyl ethyl ketone, which is not amenable to stripping). The off-gas from Air Stripper 1 was treated by the same catalytic oxidizer and scrubber used to treat the ISVE emissions, but in August 2001, EPA approved deactivation of the catalytic oxidizer because the influent concentrations had been reduced to acceptable levels.

The fifth and final phase, construction of the 300 gpm system, was conducted in 1998 and initiated operation in October 1998. The 300 gpm system expanded the existing pump and treat system, and was designed to clean up and treat groundwater from the lower aquifer farther downgradient from the Site. While the system was being constructed, an extensive investigation was conducted to delineate the contamination within the lower aquifer. The 300 gpm system includes extraction wells EW4 (150 gpm) and EW5 (150 gpm). The treatment train consists of metals precipitation and air stripping. The air stripping tower is designed to treat all VOCs down to a concentration of 5 µg/l or less with the exception of methyl ethyl ketone. Groundwater pumped and treated in the 300 gpm system is combined with the treated groundwater from the 150 gpm system and discharged to Mill Creek. The combined discharge was designed to meet final effluent limitations and monitoring requirements that went into effect in June and October of 2000. Ohio EPA later issued a revised discharge authorization in October 2003 that includes less stringent discharge limitations for arsenic, copper, lead, and nickel, based on the results of the Dissolved Metals Translator Study prepared by a Pristine Trust consultant in July, 2002.

On September 30, 1998, EPA issued a PCOR to document that all construction activity had been completed at the Site. The Site is now in its 14th year of O&M activities.

C. Operation and Maintenance

In March 2002, at the request of EPA, the Pristine Trust lowered the overall groundwater pumping rate from 450 gpm to 375 gpm. EPA requested this pumping rate reduction because the pump and treat system had been drawing in TCE contamination from a plume southwest of the Site and 1,2-dichloroethene contamination west of the Site, neither of which appear to be related to the Site.

In January 2006, EPA approved CRA's Preliminary Human Health Risk Assessment (PHHRA). EPA requested that the Pristine trust perform this risk assessment because one of the findings of the 2001 FYR was that certain chemicals such as vinyl chloride were found in the soil but did not have cleanup goals identified in the ROD. For future industrial and construction worker pathways and for current and future trespasser pathways, the PHHRA concluded that there is no significant risk from on-site soil. The PHHRA will be finalized after soil VOC concentrations have been verified when the ISVE system is shut down.

In March 2006, EPA approved a second groundwater pumping rate reduction from 375 gpm to 150 gpm, due to a VOC plume from the G.E. facility west of the Site. At 375 gpm, the zone of influence for the Pristine pump and treat system had extended to the area of the G.E. plume.

In November 2008, EPA approved a reconfiguration of the groundwater extraction system to minimize interference from off-site, lower aquifer groundwater plumes that EPA does not consider to be Site-related.

In August 2009, EPA approved the deactivation of Air Stripper 1A in the groundwater pump-and-treat plant.

In August 2009, an EC for the Site property was filed with the Hamilton County, Ohio Recorder's Office (Attachment 1). This EC states that the Site shall be used for industrial activities only and prohibits consumptive use of Site groundwater. EPA is one of the parties for this EC, and obtained enforcement rights under the covenant.

In October 2009, EPA approved a temporary shutdown of the ISVE system. The PRPs requested this shutdown to determine if soil vapor levels will increase if the system is shut down. The system remained shut down in 2010 to continue measuring this rebound effect. EPA will continue to review the soil vapor data collected, and will use the data to determine whether the ISVE system should be restarted.

In November 2010, EPA approved CRA's Monitored Natural Attenuation (MNA) Pilot Program Work Plan. Implementation of this work plan will determine whether MNA can become a component of the remedy, along with the existing pump and treat system, to remediate groundwater. CRA has begun the initial steps of implementing the MNA Pilot Program. The MNA Pilot Program includes deactivating all off-site, lower aquifer extraction wells and reducing the groundwater pumping rate from 150 gpm to approximately 50 gpm.

According to the 2010 Annual Financial Report for the Pristine Facility Trust Fund (submitted by the Pristine Trustees to the Remedial Project Manager (RPM) on January 13, 2011), the cost to implement the remedy for calendar year (CY) 2010 was $1,187,238, including $36,874 in federal oversight costs. This is the lowest annual cost to implement the remedy in the last five years. (The annual cost for the 2006-2009 period ranged from $1,236,267 in CY 2008 to $1,507,644 in CY 2007.) The lower cost for CY 2010 is due to lower groundwater pumping rates, a conversion to high-efficiency lighting for the treatment plant, the shutdown of Air Stripper 1A, and the shutdown of the ISVE blowers.

D. Institutional Controls

1. Purpose

ICs are non-engineered instruments such as administrative and legal controls that help to minimize the potential for exposure to contamination and protect the integrity of the remedy. ICs are required to assure long-term protectiveness for any areas that do not allow for unlimited use or unrestricted exposure.

Relative to the Site, ICs are required where waste is left in place (i.e., under the soil cap) and where groundwater and soil cleanup levels exceed health-based standards. The groundwater pump-and-treat and ISVE remedy components require protection by the ICs to ensure successful, ongoing implementation. Areas with restricted use are shown on maps in the August 2009 EC,

which was completed under Ohio's version of the Uniform Environmental Covenants Act (UECA), and are listed in Table 2, along with their objectives.

To assure that the remedy remains protective, effective ICs must be implemented and long-term stewardship of the site must be assured. Soil cleanup goals for the Site are based on limited industrial use, including containment, and the Site is zoned for industrial use. Groundwater cleanup goals are based on eventual UU/UE, and use of the groundwater on-site is currently restricted. Contaminants in groundwater are declining off-site and the footprint of the plume is shrinking.

The Pristine Trust is responsible for monitoring the ICs, while federal, state, and local entities have enforcement authority as described below. As a result of an August 10, 2005 request from EPA to the Pristine Trust to conduct an IC study, the Trust's legal representative submitted a study to EPA on October 13, 2005. The study includes a February 15, 2006 addendum showing the Site survey and a July 12, 2006 addendum showing a copy of the deed restrictions filed with the Recorder of Hamilton County. EPA considers the deed restrictions to be more of the nature of a deed notice, which serves as an informational IC rather than a proprietary IC that "runs with the land." The document labeled and purported to be a "Deed Restriction" does not satisfy Ohio requirements for an EC or easement because the document does not identify a grantee endowed with the right to enforce the restrictions delineated in the document. Because of the enforceability issues surrounding the document, EPA will hereinafter refer to the document labeled and purported to be a "Deed Restriction" as a "deed notice."

Based on the IC study, the Pristine Trust prepared a draft IC Action Plan (ICAP) in March, 2007, which was finalized in April, 2008. The ICAP recommended several action items, all of which have been completed. Most importantly, the deed notices have been replaced with the 2009 EC, a proprietary institutional control under the 2005 Ohio Uniform Environmental Covenants Act (UECA). The UECA specifically provides that an owner of property may enter into a restrictive covenant and also be a "holder" of the covenant, with the right to enforce it against a third party even after it sells the property. The ECs will ensure that the restrictions are enforceable and run with the land to bind future owners to the necessary restrictions to help to ensure long-term Site stewardship.

2. Current Institutional Controls at the Site

The Site is subject to all four types of ICs defined in EPA guidance: governmental controls, enforcement and permit controls, proprietary controls, and informational device controls. These are described in this section.

1) Governmental controls:

- Ohio Revised Code (ORC) §3734.02(H) prohibits filling, grading, excavating, building, drilling, or mining on a former hazardous waste or solid waste facility without authorization from the Director;

Table 2: Current Restricted Areas and Corresponding IC Objectives:

Media, Engineered Controls, and Areas that Do Not Support UU/UE Based on Current Conditions	**IC Objective**	**Title of IC Instrument Implemented (note if planned)**
Entire Site (13.327 acres depicted in Exhibit C-1 to the IC)	Non-interference with the remedial action.	Environmental Covenant (EC) executed at liber 11219 page 1959 at the Hamilton County recorder's office on August 19, 2009.
	Site shall be used for industrial uses only–no commercial or residential uses are allowed.	The Site is zoned for industrial use.
	No filling, grading, excavating, building, drilling, or mining without prior authorization.	ORC §3734.02(H) prohibits filling, grading, excavating, building, drilling, or mining on a former hazardous waste or solid waste facility without authorization from the Director
Property–The 2.5374 acres of the Site (Zones A and B, as depicted on Exhibits C-1 and C-2 to the EC) where soil is being remediated to ROD cleanup levels and where a soil cap remains. Note: Zones A & B are the areas where soil is being remediated to ROD cleanup levels and is also depicted on Figure 3.	Restricted area shall be used for industrial uses only.	EC executed at liber 11219 page 1959 and filed at the Hamilton County's recorder's office on August 19, 2009.
	Prohibit commercial, residential use or other prohibited activities at the site.	The Site is zoned for industrial use.
	Prohibit consumptive use of groundwater; non-interference with remedy components.	Deed notice was recorded with the Hamilton County Recorder's Office on January 24, 2006.
	Prohibit filling, grading, excavating, building, drilling, or mining without prior authorization.	ORC §3734.02(H) prohibits filling, grading, excavating, building, drilling, or mining on a former hazardous waste or solid waste facility without authorization from the Director.

Media, Engineered Controls, and Areas that Do Not Support UU/UE Based on Current Conditions	IC Objective	Title of IC Instrument Implemented (note if planned)
Site remedial components, including groundwater pump-and-treat system and ISVE system.	Prohibit interference with the remedial systems.	Included in the 2009 EC noted above.
Area of the Site and downgradient areas where the groundwater plume exceeds the cleanup goals. Note: a map comparing the 2009 concentrations to the extent of the 1,2-DCA plume in 1999 is shown in Figure 7.	Prohibit consumption of groundwater affected by the contaminant plume until cleanup goals are achieved.	OAC Chapter 3701-28, et seq. prohibits installing, modifying, or closing private wells without a permit.

- OAC Chapter 3701-28, et seq. prohibits installing, modifying, or closing private wells without a permit;
- City of Reading and Ohio Zoning Codes classify the Site location in a zone where permitted use is heavy industrial, and Ohio Basic Building Code requires a permit to erect building improvements to real property; and
- Ohio Common Law prohibits trespass.

2) Enforcement and permit controls:

- The EPA RD/RA CD contains governmental controls as Applicable or Relevant and Appropriate Requirements (ARARs) that restrict land and groundwater use, set applicable cleanup standards, incorporate IC requirements, and identify violations subject to federal court and statutory sanctions;
- The State of Ohio CD between Ohio EPA and Pristine, Inc. documents enforcement for violations of State law, subject to federal court and State statutory sanctions;
- The City of Reading closed its municipal well field in March 1994, as a result of an Ohio EPA mandate (the City's compliance being subject to Ohio EPA and State of Ohio court enforcement); and
- The City of Reading's police power enforces the prohibition of trespassing on private property.

3) Proprietary Institutional Controls:

- The 2009 EC, which contains the following activity and use restrictions on the Site:

    - No drilling, digging, or building; or the installation, construction, removal, or use of any buildings, wells, pipes, roads, ditches, or any other structures is allowed unless the written consent of EPA to such use or activity is first obtained;

    - No commercial or residential use is allowed, including, but not limited to, the construction, installation, or use of any structures or buildings for residential or commercial purposes, or the use of the property for the storage of drums;

    - No consumptive use of Site groundwater is allowed until cleanup goals are achieved; and

    - No interference with the Site remedial components is allowed.

4) Informational Device Controls:

- The deed notice, recorded with the Hamilton County Recorder's Office on January 24, 2006;

- One consistent legal description of the Site is used in the deed notice, the Access Agreement, the EC, and in the deeds to the property. The Site survey, which is part of the IC study, has been revised to identify encumbrances;

- The RD/RA CD (recorded with the Hamilton County Recorder's Office on August 28, 2006) requires deed restrictions;

- The CD requires that the CD and deed restrictions be recorded in the Hamilton County Recorder's Office;

- Site history and status is available through the Freedom of Information Act and the Ohio Public Document request procedures;

- Site history and status is easily available by accessing the websites maintained by EPA and Ohio EPA;

- Environmental Site Assessments (Phase I) locate relevant information about the Site (e.g., 42 U.S.C. §9601(35)(B)); and

- Easements shown in the Site survey impact the Site. The recorded access agreement between the property owners and the Trustees shows the existence of the deed notice.

3. Monitoring of Institutional Controls

The Pristine Trust is responsible for assessing the effectiveness of ICs. Section 4 of the ICAP states that the Pristine Trust will assess ICs on an annual basis, and provide a report to EPA. This section also includes a communications plan for initiating and maintaining communications with the parties that are involved with and/or affected by an IC.

The Pristine Trust conducted a title commitment on February 10, 2006 as part of the IC study. The title commitment and Site survey show the current status of the title, and land and groundwater restrictions. The following are significant findings identified in the title commitment:

- Right-of-way easements exist on and near the Site to provide ingress and egress for utilities;
- The Site is part of a larger parcel of 13.3 acres owned by the same owners that own the Site property;
- Access agreements are in place to implement the RA; and
- Encumbrances are identified that impact existing land and groundwater restrictions:
    - Utility easements predate listing the Site on the NPL;
    - There are no mortgages on the 13-acre property and no foreclosure history; and
    - Consideration should be given to seeking subordination agreements from the utilities. EPA later agreed that a notice letter to easement holders was acceptable, rather than a subordination agreement.

4. EPA's Assessment of Institutional Controls

- Compliance with land and groundwater restrictions:

  EPA is unaware of any noncompliance by the owners or instances of unauthorized entry. The Site is secured and is managed by CRA, according to the EPA-approved O&M Plan.

- Effectiveness of ICs at preventing exposure:

  The Pristine Trust and/or CRA conduct an annual assessment of the effectiveness of the ICs in place, including that of the 2009 EC, for EPA review. As part of this assessment, the Pristine Trust and/or CRA meet with local officials, such as those with the City of Reading and Hamilton County, to obtain information to determine IC effectiveness. These assessments have shown that the land and groundwater restrictions are effective in preventing exposure.

- Land or resource use change since the ROD:

Land and resource use of the Site has not changed since the ROD. North of the Site, the Reading well field was shut down and a sanitary sewer overflow system constructed. Also, the adjacent CDS facility has been demolished.

- Potential plans to sell or transfer the property:

  For future land use, it is anticipated that the Site will continue to be occupied and maintained by the Pristine Trust for the duration of the remedial program to implement the CD. ICs will continue to be used to control access and future use of the Site as required by the CD and EC.

- Relation of current land and resource uses to exposure assumptions and risk calculations:

  CRA has worked with EPA and Ohio EPA to ensure that the Human Health Risk Assessment is up to date. The August, 2009 EC provides an enforceable restriction of "industrial use only" for the Site.

- Unintended consequences from a particular restriction:

  EPA is unaware of any unintended consequences of a particular restriction.

5. Summary of Institutional Controls

Several ICs are in place for the Site. They appear to be protective of human health and the environment. The implementation of the EC in 2009 that "runs with the land" ensures enforceability of the ICs over time, includes EPA as a party, and gives EPA and several other parties, such as the Pristine Trust and the local unit of government, enforcement rights. EPA believes that the current IC monitoring program by CRA is satisfactory.

V. PROGRESS SINCE THE LAST FIVE-YEAR REVIEW

A. Protectiveness Statement from the Last Five-Year Review Report

The following protectiveness statement was taken from the September 19, 2006 FYRR.

> The remedy is currently protective of human health and the environment. All immediate threats at the Site have been addressed; there is no evidence of exposure to Site-related contaminants; and the existing Site and groundwater uses are consistent with the objectives in the remedy and deed notice. Long-term protectiveness requires groundwater and soil cleanup goals to be achieved, continued operation of the remedy, compliance with use restrictions described in the deed notice, and implementation of additional ICs that "run with the land" along with additional assurances that ICs are monitored.

B. Status of Implementing Recommendations from the Last Five-Year Review Report

The following recommendations were taken from the September 19, 2006 FYRR. Each recommendation is followed by an italicized description of the progress made to implement the recommendation since EPA issued the report.

1. Cleanup levels in the ROD for Site contaminants that reflect current risk assessment practice and current toxicology should be evaluated. Conclusions in the Preliminary Human Health Risk Assessment should be considered to determine their effect on current soil cleanup levels. If groundwater and soil cleanup levels are developed that appreciably affect the extent of cleanup at the Site, a ROD Amendment or ESD may be necessary.

In July, 2011, EPA issued an ESD to revise soil and groundwater cleanup goals at the Site. Individual soil cleanup goals were not included in the ESD; however, a cumulative risk level for carcinogens was set at 10^{-5}, and for noncarcinogens, a cumulative risk level of a Hazard Index of less than or equal to one. These cleanup levels apply to an industrial-use-only scenario. For groundwater, EPA used Safe Drinking Water Act (SDWA) maximum contaminant levels (MCLs) as cleanup goals (or November 2010 Regional Screening Levels (RSLs) or SDWA action levels (ALs) where MCLs did not exist). In addition to the groundwater cleanup standards for individual contaminants, the cumulative risk from all carcinogenic contaminants in groundwater must not exceed 10^{-4}, and the cumulative hazard index from all noncarcinogenic contaminants in groundwater must not exceed one.

2. Prepare an IC Plan that includes the following:

   - Consideration of implementing additional ICs at the Site such as an EC that "runs with the land" pursuant to the UECA;
   - Preparation of maps (paper and electronic versions) of all areas that require land and groundwater use restrictions;
   - Evaluation of the adequacy of governmental controls; and
   - Provision for revision to the O&M Plan to include mechanisms to ensure regular inspection of ICs at the Site, annual certification, and a communications plan.

In April, 2008, Pristine, Inc. finalized the ICAP that includes the provisions described above. As a result of this IC Plan, the following actions have been completed or are ongoing:

- *In August 2009, an EC that "runs with the land" was recorded in the Hamilton County Recorder's Office. EPA is a party to this EC, and obtained enforcement rights under the EC. The EC includes text and corresponding maps that define land use restrictions on the Site and overall property.*
- *The Pristine Trust submitted maps depicting areas where groundwater exceeds cleanup standards (that do not allow UU/UE). These maps are updated on an ongoing basis.*

- *In September 2007, the PRPs submitted a plan to assess site ICs and conduct related communications. It includes a communications plan to ensure that all parties involved with or affected by the ICs are aware of IC-related issues and developments at the Site.*

- *The PRPs assess the adequacy of the ICs in place at the Site annually.*

VI. FIVE-YEAR REVIEW PROCESS

A. Administrative Components

EPA notified Ohio EPA, USGS, the Pristine Trustees, and CRA of the initiation of the FYR process in the spring of 2010.

The review schedule included the following components:

- Community Notification;
- Document Review;
- Data Review;
- Site Inspection;
- Interviews; and
- FYRR Development and Review.

B. Community Notification

In November 2010, EPA placed ads in the Cincinnati Hometown Enquirer and Cincinnati Tri-County Press announcing that the FYR was in progress and requesting that any interested parties contact EPA for more information (Attachment 2).

Since the ads were issued, no members of the community have expressed an interest in the FYR.

C. Document Review

This FYR consisted of a review of relevant documents, including O&M monitoring reports and monitoring data, the 1987 ROD, 1990 ROD Amendment, ESDs, and other Site-related reports (Attachment 3). The regulatory team also reviewed applicable cleanup standards as listed and revised in the 2011 ESD.

D. Data Review

1. Groundwater VOC Data

Table 3 shows the results of the most recent (2010) sampling of VOCs in the lower aquifer monitoring wells, with exceedances of the cleanup standards in bold. Most VOC concentrations

Table 3: Groundwater Cleanup Levels vs. Latest Sampling Results in the Lower Aquifer - VOCs (from Table 5.1 in *Round 32 Monitoring Report*)

Constituent	Units	Cleanup Standard	Groundwater Well and Sample Date									
			MW68	MW69	MW70	MW71	MW72	MW73	MW74	MW75	MW76	MW77
			7/28/10	7/21/10	7/28/10	7/21/10	7/21/10	7/19/10	7/16/10	7/20/10	7/19/10	7/20/10
1,1,1-Trichloroethane	µg/L	200	ND (25)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1-Dichloroethene	µg/L	7	ND (25)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dichlorobenzene	µg/L	600	6.7*	1.5	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dichloroethane	µg/L	5	830	1.9	0.68*	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Benzene	µg/L	5	**13***	ND (1.0)	ND (1.0)	0.48	ND (2.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Chlorobenzene	µg/L	100	6.0*	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Chloroform	µg/L	80	13*	0.36*	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Ethylbenzene	µg/L	700	ND (25)	ND (1.0)	ND (1.0)	ND (1.0)	ND (2.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Tetrachloroethene	µg/L	5	**12***	0.37*	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Toluene	µg/L	1,000	ND (25)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	0.29*	ND (1.0)	0.33*	ND (1.0)
Trichloroethene	µg/L	5	ND (25)	0.64*	ND (1.0)	ND (1.0)	4.8	1.2	0.70*	0.73*	2.1	ND (1.0)
Vinyl Chloride	µg/L	2	**7.5***	ND (1.0)	1.5	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)

*estimated
Bold type indicates a cleanup standard exceedance.
ND – not detected at the limit indicated in parentheses.

Table 3, continued

Constituent	Units	Cleanup Standard	Groundwater Well and Sample Date									
			MW78	MW79	MW80	MW81	MW82	MW83	MW84	MW-85	MW-86	MW-87
			7/20/10	7/20/10	7/20/10	7/23/10	7/29/10	7/22/10	7/22/10	7/22/10	7/22/10	7/22/10
1,1,1-Trichloroethane	µg/L	200	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	0.33*	ND (1.0)	1.3	ND (1.7)	ND (1.0)
1,1-Dichloroethene	µg/L	7	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	0.19*	0.41*	0.83*
1,2-Dichlorobenzene	µg/L	600	ND (1.0)	ND (1.0)	ND (1.0)	2.8	0.67*	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.7)	ND (1.0)
1,2-Dichloroethane	µg/L	5	0.29	1.1	0.64*	1.9	1.8	**6.3**	**9.0**	**7.4**	**46**	**9.8**
Benzene	µg/L	5	ND (1.0)	ND (1.0)	ND (1.0)	1.3	ND (1.0)	ND (1.0)	0.45*	ND (1.0)	4.9	ND (1.0)
Chlorobenzene	µg/L	100	ND (1.0)	ND (1.0)	ND (1.0)	0.23	ND (1.0)	0.47*	ND (1.0)	ND (1.0)	ND (1.7)	ND (1.0)
Chloroform	µg/L	80	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	0.34*	ND (1.0)	0.53*	0.92*	ND (1.0)
Ethylbenzene	µg/L	700	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.7)	ND (1.0)
Tetrachloroethene	µg/L	5	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	0.75*	ND (1.0)	ND (1.0)	ND (1.7)	ND (1.0)
Toluene	µg/L	1,000	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.7)	ND (1.0)
Trichloroethene	µg/L	5	4.7	2.9	0.58*	0.92*	1.0	0.65*	0.57*	0.61*	ND (1.7)	ND (1.0)
Vinyl Chloride	µg/L	2	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.7)	ND (1.0)

*estimated
Bold type indicates a cleanup standard exceedance.
ND – not detected at the limit indicated in parentheses.

Table 3, continued

Constituent	Units	Cleanup standard	Groundwater Well and Sample Date									
			MW88	MW89	MW90	MW91	MW92	MW93	MW94	MW95	MW96	MW97
			7/22/2010	7/22/2010	7/26/2010	7/27/2010	7/21/2010	7/21/2010	7/16/2010	7/27/2010	7/15/2010	7/15/2010
1,1,1-Trichloroethane	µg/L	200	ND (1.0)	ND (1.0)	ND (4.0)	ND (1.7)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1-Dichloroethene	µg/L	7	2.0	ND (1.0)	ND (4.0)	0.57*	1.1	ND (1.0)	ND (1.0)	1.0	ND (1.0)	ND (1.0)
1,2-Dichlorobenzene	µg/L	600	ND (1.0)	ND (1.0)	ND (4.0)	ND (1.7)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dichloroethane	µg/L	5	**6.2**	2.1	ND (4.0)	0.91*	ND (1.0)	ND (1.0)	1.9	**10**	ND (1.0)	ND (1.0)
Benzene	µg/L	5	ND (1.0)	0.28*	ND (4.0)	ND (1.7)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Chlorobenzene	µg/L	100	ND (1.0)	0.22*	ND (4.0)	ND (1.7)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Chloroform	µg/L	80	ND (1.0)	ND (1.0)	ND (4.0)	ND (1.7)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	0.17*
Ethylbenzene	µg/L	700	ND (1.0)	ND (1.0)	ND (4.0)	ND (1.7)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Tetrachloroethene	µg/L	5	ND (1.0)	ND (1.0)	ND (4.0)	ND (1.7)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Toluene	µg/L	1,000	ND (1.0)	ND (1.0)	ND (4.0)	ND (1.7)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Trichloroethene	µg/L	5	0.49*	3.2	**23**	**17**	ND (1.0)	ND (1.0)	ND (1.0)	2.0	ND (1.0)	ND (1.0)
Vinyl Chloride	µg/L	2	ND (1.0)	ND (1.0)	**5.9**	**3.3**	**5.4**	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)

*estimated
Bold type indicates a cleanup standard exceedance.
ND – not detected at the limit indicated in parentheses.

Table 3, continued

Constituent	Units	Cleanup standard	Groundwater Well and Sample Date							
			MW98	MW99	MW100	MW101	MW102	MW103	MW104	MW105
			7/27/2010	7/21/2010	7/15/2010	7/20/2010	7/20/2010	7/16/2010	7/27/2010	7/21/2009
1,1,1-Trichloroethane	µg/L	200	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,1-Dichloroethene	µg/L	7	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	0.21*	ND (1.0)
1,2-Dichlorobenzene	µg/L	600	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
1,2-Dichloroethane	µg/L	5	0.65*	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	0.31*	ND (1.0)
Benzene	µg/L	5	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Chlorobenzene	µg/L	100	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Chloroform	µg/L	80	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Ethylbenzene	µg/L	700	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Tetrachloroethene	µg/L	5	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	0.88*	ND (1.0)	ND (1.0)
Toluene	µg/L	1,000	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Trichloroethene	µg/L	5	**16**	ND (1.0)	ND (1.0)	ND (1.0)	0.36*	ND (1.0)	**22**	1.4
Vinyl Chloride	µg/L	2	**3.8**	ND (1.0)	0.27*	ND (1.0)	ND (1.0)	ND (1.0)	**3.8**	ND (1.0)

*estimated
Bold type indicates a cleanup standard exceedance.
ND – not detected at the limit indicated in parentheses.

are near or below cleanup standards. As in previous years, the highest and most frequent exceedances are 1,2-DCA, with exceedances of TCE and vinyl chloride also detected. TCE and vinyl chloride have a source off-site, and PRP and USGS documents have identified the 1,2-DCA plume as the most extensive Site-related contaminant plume, so 1,2-DCA is used as an indicator of cleanup progress.

Figure 4 shows 1,2-DCA contaminant levels over time for those lower aquifer monitoring wells in which 1,2-DCA has frequently been detected. Levels have decreased to 1% or less of their original concentrations, and with the exception of two wells that are in the central, most concentrated section of the plume, concentrations are currently near or below the cleanup standard. This indicates that the pump-and-treat system has been effective over time at reducing the 1,2-DCA contaminant plume and that progress is being made toward the achievement of the groundwater cleanup standard.

Since the EPA-approved reduction in the groundwater pumping rate in March 2006, the pump-and-treat system has continued to decrease 1,2-DCA concentrations in many wells, but at a much slower rate. For other wells, concentrations are roughly stable at their 2006 levels, but have not been further reduced. The stabilization of 1,2-DCA levels in these wells since early 2006 is illustrated in Figure 5. Most concentrations are below the cleanup standard, but six locations have persisted at levels above the standard.

The overall trend of effective reductions in 1,2-DCA, followed by stabilization of the 1,2-DCA concentrations after 2006, is also seen in samples collected from the extraction wells (Figure 6). 1,2-DCA concentrations in two of the five extraction wells were lower in 2010 than in 2006, and concentrations in all samples were above the cleanup standard in 2010.

Figure 7 illustrates the extent of the 1,2-DCA groundwater plume in 1999, and the 1,2-DCA concentrations measured in monitoring and extraction wells in 2011 (concentrations less than 5 µg/L are not shown). The extent of the 1,2-DCA plume has decreased significantly over time. Many wells in the area within which the 1999 concentration of 1,2-DCA was greater than 1,000 µg/L now have concentrations of approximately 10 µg/L. High concentrations, ranging from 230 to 330 µg/L continue in some locations.

Figure 8 shows TCE concentrations over time in the lower aquifer monitoring wells west of the Site. Based on a review of sampling results over time, EPA believes that this TCE contamination is not Site-related.

Table 4 shows the estimated mass of VOCs removed per year by the 150 gpm treatment system, the 300 gpm treatment system, and the ISVE. The total estimated mass removed from 1997 to 2010 is 15,565 pounds. The mass of VOCs removed per year has greatly decreased over time, indicating that the pump-and-treat system has been effective at shrinking the contaminant plume and removing VOCs from the groundwater.

Table 4: Estimated Mass of VOCs Removed per Year

Year	Amount of VOCs removed, pounds			
	150 gpm system	300 gpm system	ISVE	Total
1997	298.2*	NA	129.5*	427.7
1998	4618.2	18.4*	880.3	5517.0
1999	3475.4	540.1	85.0	4100. 6
2000	1589.9	705.9	93.2	2389.0
2001	867.8	353.0	119.2	1340.1
2002**	417.8	104.6	99.7	622.1
2003	244.7	69. 7	77.9	392.2
2004	198.6	45.3	44.1	288.1
2005	128.0	28.8	36.3	193.1
2006**	70.2	8.7	12.2	91.4
2007	46.5	7.2	11.4	65.1
2008	44.2	15.3	21.6	81.1
2009	19.5	8.3	5.9	33.7
2010	16.7	7.1	0	23.9

*Partial year of operation.
**Reduced pumping rates were approved in 2002 and 2006.

Table 5 shows the most recent monitoring results (2007) for SVOCs, pesticides, PCBs, inorganic constituents, and dioxin in the lower aquifer monitoring wells. Exceedances of the cleanup standards, all of which are for arsenic, are in bold. Information on background arsenic levels in the area indicates that background arsenic concentrations may be above the groundwater cleanup standard of 10 µg/L. However, EPA has requested that additional site-specific data be collected to make this determination. If the site-specific background level is above 10 µg/L, EPA will revise the cleanup standard accordingly.

With the exception of arsenic, all values in the lower aquifer monitoring wells were either not detected, or are below the cleanup standard. Therefore, non-VOC contaminant levels in groundwater are generally not an issue. However, the reported detection limit for four contaminants—pentachlorophenol, aldrin, dieldrin, and beryllium—has been greater than the cleanup standard. EPA cannot determine whether cleanup standards have been achieved for these contaminants until analyses with lower detection limits are conducted.

2. In-situ Soil Vapor Extraction Data

The ISVE system addresses VOC contamination by collecting and treating soil vapors extracted from below the Site cap in Zone A and from the former magic pit area in Zone B. Table 4 shows the estimated pounds of VOCs removed by the ISVE system over time. The decreasing trend of pounds of VOCs removed per year is consistent with the decreasing trend of pounds of VOCs removed per year from the groundwater, and indicates lower levels of remaining VOCs at the site.

Table 5: Groundwater Cleanup Levels and Latest Sampling Results - Groundwater CSVOCs/Pesticides/PCBs/Inorganics in the Lower Aquifer

Constituent	Cleanup Standard µg/L	Groundwater Well and Sample Date							
		MW68	MW69	MW70	MW71	MW72	MW73	MW74	MW75
		7/28/10	7/21/10	7/28/10	7/21/10	7/21/10	7/19/10	7/16/10	7/20/10
Semivolatiles									
Benzo(a)pyrene	0.20	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Pentachlorophenol	1	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Phenol	11,000	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Pesticides									
4,4'-DDT	0.20	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Aldrin	0.0040	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Dieldrin	0.0042	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Inorganics									
Arsenic	10	**18**	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Barium	2,000	ND(200)	ND(200)	ND(200)	ND(200)	ND(200)	ND(200)	ND(200)	ND(200)
Beryllium	4	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Cadmium	5	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Chromium	100	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Copper	1,300	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)
Fluoride	4,000	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)
Lead	15	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	5.9	ND(3.0)	ND(3.0)
Mercury	2	ND(0.00020)	ND(0.00020)	ND(0.00020)	ND(0.00020)	ND(0.00020)	ND(0.00020)	ND(0.00020)	ND(0.00020)
Dioxin									
2,3,7,8-TCDD	0.00003	ND(.0095)	-	-	ND(.0010)	-	-	ND(.0010)	-

Table 5, continued

Constituent	Cleanup Standard, µg/L	Groundwater Well and Sample Date							
		MW76	MW77	MW78	MW79	MW80	MW81	MW82	MW84
		7/19/10	7/20/10	7/26/2007	7/23/2007	7/26/2007	8/6/2007	7/30/2007	8/3/2007
Semivolatiles									
Benzo(a)pyrene	0.20	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Pentachlorophenol	1	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Phenol	11,000	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Pesticides									
4,4'-DDT	0.20	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Aldrin	0.0040	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Dieldrin	0.0042	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Inorganics									
Arsenic	10	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Barium	2,000	ND(200)	ND(200)	ND(200)	ND(200)	ND(200)	ND(200)	ND(200)	ND(200)
Beryllium	4	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Cadmium	5	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Chromium	100	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Copper	100	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)
Fluoride	1,300	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)
Lead	4,000	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Mercury	15	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Dioxin									
2,3,7,8-TCDD	0.00003	-	ND(.0010)	-	-	-	-	-	ND(.0095)

Table 5, continued

Constituent	Cleanup Standard, µg/L	Groundwater Well and Sample Date							
		MW85	MW86	MW87	MW88	MW89	MW90	MW91	MW92
		7/30/2007	8/2/2007	8/7/2007	8/7/2007	8/3/2007	7/31/2007	8/2/2007	8/8/2007
Semivolatiles									
Benzo(a)pyrene	0.20	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Pentachlorophenol	1	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Phenol	11,000	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Pesticides									
4,4'-DDT	0.20	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Aldrin	0.0040	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Dieldrin	0.0042	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Inorganics									
Arsenic	10	ND(10)	ND(10)	ND(10)	ND(10)	**20**	**17**	**21**	ND(10)
Barium	2,000	ND(200)	ND(200)	ND(200)	ND(200)	ND(200)	210	ND(200)	290
Beryllium	4	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Cadmium	5	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Chromium	100	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Copper	100	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)
Fluoride	1,300	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)
Lead	4,000	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Mercury	15	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	0.21	ND(0.20)	ND(0.20)	ND(0.20)
Dioxin									
2,3,7,8-TCDD	0.00003	-	-	-	-	-	-	-	-

Table 5, continued

Constituent	Cleanup Standard, µg/L	Groundwater Well and Sample Date							
		MW93	MW94	MW95	MW96	MW97	MW98	MW99	MW100
		8/8/2007	7/27/2007	8/1/2007	7/18/2007	7/18/2007	8/1/2007	7/31/2007	7/19/2007
Semivolatiles									
Benzo(a)pyrene	0.20	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Pentachlorophenol	1	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Phenol	11,000	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Pesticides									
4,4'-DDT	0.20	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Aldrin	0.0040	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Dieldrin	0.0042	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Inorganics									
Arsenic	10	**22**	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	**11**	ND(10)
Barium	2,000	ND(200)	ND(200)	ND(200)	ND(200)	ND(200)	ND(200)	330	ND(200)
Beryllium	4	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Cadmium	5	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Chromium	100	11	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Copper	100	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)
Fluoride	1,300	1,000	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)
Lead	4,000	3.3	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Mercury	15	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Dioxin									
2,3,7,8-TCDD	0.00003	-	-	-	-	-	-	-	-

Table 5, continued

Constituent	Cleanup Standard, µg/L	Groundwater Well and Sample Date					
		MW101	MW102	MW103	MW104	MW105	MW106
		7/23/2007	7/27/2007	7/24/2007	8/6/2007	7/31/2007	7/19/2007
Semivolatiles							
Benzo(a)pyrene	0.20	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Pentachlorophenol	1	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)	ND(2.0)
Phenol	11,000	ND(10)	ND(10)	ND(10)	ND(10)	23	ND(10)
Pesticides							
4,4'-DDT	0.20	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Aldrin	0.0040	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Dieldrin	0.0042	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
Inorganics							
Arsenic	10	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	**13**
Barium	2,000	310	ND(200)	ND(200)	ND(200)	380	ND(200)
Beryllium	4	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Cadmium	5	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)	ND(5.0)
Chromium	100	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)	ND(10)
Copper	100	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)	ND(25)
Fluoride	1,300	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)	ND(1,000)
Lead	4,000	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)	ND(3.0)
Mercury	15	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)	ND(0.20)
Dioxin							
2,3,7,8-TCDD	0.00003	-	-	-	-	-	-

Table 6: Number of Detections and Maximum Concentrations of Soil Vapor Levels in Baseline 1997 Sampling and 2009 Sampling

Constituent	Soil Gas Action Level, µg/L	1997 Baseline		2009		
		Number of Detections	Maximum Concentration, µg/L	Number of Detections	Number of Exceedances	Maximum Concentration, µg/L
Benzene	14.8	8	590	5	1[1]	34
Chloroform	294.69	24	2,300	8	0	60
1,2-Dichloroethane	1.55	4	230	4	4[2]	85
Tetrachloroethene	484.77	36	24,000	24	2	5,200
Trichloroethene	25.02	29	300	1	0[3]	0.51
1,1-Dichloroethene	261.28	16	200	1	0	11

[1] For an additional four samples, the contaminant was not detected but the detection limit was larger than the soil gas action level.
[2] For an additional 12 samples, the contaminant was not detected but the detection limit was larger than the soil gas action level.
[3] For two samples, the contaminant was not detected but the detection limit was larger than the soil gas action level.

Table 7, continued

Table 7: Soil gas rebound monitoring, October 26, 2009 – July 30, 2010

	10/26/09	10/30/09	11/06/09	11/13/09	11/20/09	11/27/09	12/07/09	12/18/09	01/04/10	01/04/10	01/22/10
Probe ID	**FID**	**FID**	**FID**	**FID**	**FID**	**FID**	**FID**	**FID**	**FID**	**PID**	FID
ZONE A SOUTH											
SG-A2	27.7*	0	0	0	0	0	0	0	0	0	0
SG-A3	16.5	0	0	0	0	0	0	0	0	0	0
SG-A4	38.4*	0	0	0	0	0	0	0	0	0	0
SG-A5	0	0	0	0	0	0	0	0	0	0	0
SG-A6	2.1	1.8	1	3.7	0	1.9	0	0	0	0	0
SG-A7	3884	3834	4015	4079	3190*	4153*	4295*	3194*	2185*	41	0
SG-A8	0	38.8*	0	0	0	0	0	0	0	Pump fail	0
SG-A9	0	6.6	0	0	0	0	0	0	0	0	0
SG-A10	0	8.5	0	0	0	0	0	0	0	0	-
SG-A11	8.9	0	0	0	0	0	0	0	0	0	0
SG-N1(AA)	0	0	0	0	0	0	0	0	0	0	0*
SG-N1(BB)	0	0	0	0	0	0	0	0	0	0	0*
SG-N2(AA)	40	0	0	1.3	0	0	0	0	0	0	0
SG-N2(BB)	80.2	0.9	9.2	11	0	9.2	4.4	0	0	0	-
SG-N2(CC)	0	8.3	0	12	2.7	1.5	1.2	0	0	0	5.2
SG-N3(AA)	0	0	0	0	25.7	33.5	3.8	0	0	36	1.1
SG-N3(BB)	48.2	1836.9	175.7	1002	3190	4143	0	0	0*	Pump fail	0
SG-N3(CC)	242.1	126.1*	1147.3	1655	5.6	2.5	10.1*	0	0	2.1	0
SG-N4(AA)	Water	0	28.6*	Water in probe	0	0	0.5	446*	12.6*	Pump fail	0
SG-N4(BB)	0	0	0	2.3	0	0	0	9.9*	0*	Pump fail	0
SG-N4(CC)	0	0	0	0	0	0	0	0	0	0	0
SG-N5(AA)	9.8	0	14.7*	80	5.6	17.4	6.9	0	0	20.9	8.7
SG-N5(BB)	0	0	0	4	0.4	2.1	0	0	0	22.5	17.5
SG-N5(CC)	0	11.5*	0	0	0	0	0	0	0	0	0
SG-N6(AA)	682	1332*	3313*	2700	439*	164*	0	63.7*	0*	0	0
SG-N6(BB)	0	44.7*	98.7*	136	149*	143*	58*	94.6*	196*	11.6	0
SG-N6(CC)	20.5	0	0	0	0	4.1*	0	0	0	19.2	Low oxygen
SG-N7(AA)	87.5	0.9	0	6.1	429*	2290*	4321*	1745*	0*	Pump fail	41.5
SG-N7(BB)	0	2414*	1821*	0	0	21.8*	1.8*	0	0*	Pump fail	-
SG-N7(CC)	0	456.4*	2714*	1615	101*	11.1*	7.5*	500.6*	0*	Pump fail	-
SG-N8(AA)	24.7	0	0	0	0	0	0	0	0	0	-

Table 7, continued

	10/26/09	10/30/09	11/06/09	11/13/09	11/20/09	11/27/09	12/07/09	12/18/09	01/04/10	01/04/10	01/22/10
Probe ID	**FID**	**FID**	**FID**	**FID**	**FID**	**FID**	**FID**	**FID**	**FID**	**PID**	FID
SG-N8(BB)	0	11.2*	0	0	0	0	0	0	0	0	-
SG-N8(CC)	0	0	0	0	0	0	0	0	0	0	0
SG-N9(AA)	2.3	0	0	0.4	0	0	0	0	0	Pump fail	-
SG-N9(BB)	0	128.2	5.9	11.2	0	2	7.9	9.5	0	32	0
SG-N9(CC)	0	0	0	0	0	0	0	0	0	Pump fail	0
SG-N10(AA)	0	0	0	0	0	0	0	0	0	0.4	2.3*
SG-N10(BB)	0	0	0	0	0	0	0	0	0	Pump fail	0
SG-N10(CC)	19.7	0	0	0	0	0	6.9*	0	0	0	0
ZONE A CENTRAL											
SG-A12	0	0	0	0	0	0	0	0	0	0	-
SG-A13	0	0	0	0	0	0	0	0	0	0	0
SG-A14	0	0	0	0	0	0	0	0	0	0	0
SG-A15	0	0	0	0	0	0	0	0	0	0	0
SG-A16	0	1.3	0	11.1	0	5.9	4.2	0	0	5.3	-
SG-A17	0.8	51.4*	0	0	0	0	0	0	0	0	-
SG-A18	0	0	0	0	0	0	0	0	0	0	-
SG-A19	0	0	0	0	0	0	0	0	0	0	0
SG-A20	0	0	0	0	0	0	0	0	0	0	-
SG-A21	0	0	0	0	0	0	0	0	0	0	-
SG-A22	0	0	0	0	0	0	0	0	0	0	0
SG-A43	0	1.1*	0	0	0	0	0	0	0	0	-
SG-N11(AA)	136.2	146.8*	280.4*	105.3	144.7*	233*	164*	239*	347.4*	321.1	-
SG-N11(BB)	3834	3834	4016*	9.1	3190*	3334*	4295*	2660*	3094*	806.3	207.3
SG-N11(CC)	184	32.6	55.1*	0	0	0	0	0	0	2.5	-
SG-N12(AA)	0	6.4	0	0	0	0	0	0	0	0	0
SG-N12(BB)	3.4	25.4*	94.1*	0.8	0	0	0	0	0	0	-
SG-N12(CC)	0	0	0	7.7	0	9	6.5	0	0	0	-
SG-N13(AA)	3872	1855*	4016*	2245	2224*	1844*	1311*	2931*	3295*	161.1	-
SG-N13(BB)	3834	3554*	3551*	1770	3190*	3334*	2842*	2660*	18.9	311.4	-
SG-N13(CC)	27.3	649*	65.4*	0	3	7.9*	5.6*	0	0	4.8	0
SG-N14(AA)	246	1833*	74.7*	209	284.3*	135*	120.8*	91.6*	65.4*	35.1	-
SG-N14(BB)	0	31.9	11.8*	18.5	35.7*	41.2*	31.9*	9.1*	0	38.4	-
SG-N14(CC)	0	0	0	0	0	0	0	0	0	Pump Fail	-
SG-N15(AA)	0	0	0	0	0	1.6	0.5*	0	0	0	0
SG-N15(BB)	Plugged	0	0	0	0	0	0	0	0	0	-

Table 7, continued

	10/26/09	10/30/09	11/06/09	11/13/09	11/20/09	11/27/09	12/07/09	12/18/09	01/04/10	01/04/10	01/22/10
Probe ID	**FID**	**FID**	**FID**	**FID**	**FID**	**FID**	**FID**	**FID**	**FID**	**PID**	FID
SG-N15(CC)	0	0	0	0	0	0	0	0	0	0	-
SG-N16(AA)	57.3	70.6*	85.6*	44.2	68.1*	83.9*	81*	90.7*	78*	Pump Fail	-
SG-N16(BB)	0	0	487.3*	114.8	275.8*	294*	230*	349.4*	292*	Pump Fail	-
SG-N16(CC)	0	0	0	0	0	0	0	0	0	0	-
ZONE A NORTH											
SG-A23	1.4	0.3*	7.9	6.2	1.8	3.2	13.1*	0	0*	Pump fail	0
SG-A24	0	0	0	0	0	0	0	0	0	1.4	0
SG-A25	0	0	0	0	0	0	0	0	0	0	0
SG-A26	0	0	0	0	0	0	0	0	0	0	0
SG-A27	11	5.5 - 2.5	0	0.7	0	6.1	0	0	0*	Pump fail	0
SG-A28	0	0	0	0	0	0	0	0	0	3.9	0
SG-A29	0	0	0	0	0	0	0	0	0	0	0
SG-A30	0	0	0	0	0	0	0	0	0*	Pump fail	-
SG-A31	0	0	0	0	0	0	0	0	0	6	0
SG-A32	0	0	0	0	0	0	0	0	0*	Pump fail	-
SG-N17(AA)	0	0	0	Water in probe	0	0	0	0	0	Pump fail	Water in probe
SG-N17(BB)	0	0	0	0	0	0	0	0	0	Pump fail	Water in probe
SG-N18(AA)	3.1	0	0	0	0	0	0	0	0	0	-
SG-N18(BB)	6.5	0	0	0	0	0	0	0	0*	2.8	-
SG-N18(CC)	0	0	0	0	0	0	0	0	0	Pump fail	-
SG-N19(AA)	0	0	0	0	0	0	0	0	0	0	0
SG-N19(BB(	0	0	0	0	0	0	0	0	0	Pump fail	-
SG-N19(CC)	-	-	-	-	-	-	-	-	0	0	-
SG-N20(AA)	0	0	0	0	0	0	0	0	0	0	-
SG-N20(BB)	0	4.2*	0	0	0	0	0	0	0	Pump fail	-
SG-N21(AA)	0	0	0	0	0	0	0	0	0	0	-
SG-N21(BB)	0	0	0	0	0	0	0	0	0	0	0
SG-N22(AA)	0	0	0	0	0	0	0	0	0	Pump fail	0
SG-N22(BB)	0	6.2*	0	0	0	0	0	0	0	5.7	-
SG-N23(AA)	0	0	0	0	0	0	0	0	0	0	-
SG-N23(BB)	0	0	0	0	0	0	0	0	0	Pump fail	-
SG-N23(CC)	0	0	0	0	0	0	0	0	0	0	0
SG-N23(DD)	0	0	0	0	0	0	0	0	0	0	0
ZONE B											
SG-A33	4.9	1.4	0	0	0	0	0	0	0	0	0

Table 7, continued

	10/26/09	10/30/09	11/06/09	11/13/09	11/20/09	11/27/09	12/07/09	12/18/09	01/04/10	01/04/10	01/22/10
Probe ID	**FID**	**FID**	**FID**	**FID**	**FID**	**FID**	**FID**	**FID**	**FID**	**PID**	FID
SG-A34	3700	3834	4016	9.5	1934*	909*	3128*	2985*	1824*	Pump fail	-
SG-A35	0	0	2.9	31.3	0	0	0	6.9*	0	3.5	0
SG-A36	1812	1924*	3489*	0.6	2179*	780*	867*	922*	0	Pump fail	-
SG-A37	0	37.3 - 0.0	0	0	0	0	0	0	0	Pump fail	-
SG-A38	15	0	0	0	0	0	0	0	0	1.6	0
SG-A39	814.2	3114*	417.0*	1023	2419*	1908*	1871*	3689*	320*	26.8	248.8*
SG-A40	36.2	31.4*	22.0*	0	0	0	0	0	0*	Pump fail	-
SG-A41	474	80.5*	48.6*	0	0	0	0	0	0*	Pump fail	-
SG-A42	0	8.5*	48.6*	0	11.1*	29.6*	24.8*	19.6*	0*	Pump fail	0

	01/22/10	02/04/10	02/25/10	03/24/10	03/24/10	05/07/10	06/16/10	06/16/10	07/30/10	07/30/10
Probe ID	**PID**	**FID**	**FID**	**FID**	**PID**	**PID**	**FID**	**PID**	**FID**	**PID**
ZONE A SOUTH										
SG-A2	0	0	0	0	0		N/A	N/A	N/A	N/A
SG-A3	0	0	0	0	0	0	N/A	N/A	N/A	N/A
SG-A4	0	0	0	0	0	0	N/A	N/A	N/A	N/A
SG-A5	0	Low oxygen	Low oxygen	0	0	0	N/A	N/A	N/A	N/A
SG-A6	0	0	0	2.41	0	0	0.79	0.88	0	0.36
SG-A7	0	Low oxygen	Low oxygen	9.03	12.8	29.2	191	71	74.28	7.51
SG-A8	0	Low oxygen	Low oxygen	0	0	0	N/A	N/A	0	2
SG-A9	0	0	0	0	0	0	N/A	N/A	N/A	N/A
SG-A10	1.1	Low oxygen	Low oxygen	0	0	0	N/A	N/A	N/A	N/A
SG-A11	0	0	0	0	0	0	N/A	N/A	N/A	N/A
SG-N1(AA)	0	Low oxygen	Low oxygen	0*	0	0	N/A	N/A	N/A	N/A
SG-N1(BB)	0	0	0	0	0	0	N/A	N/A	N/A	N/A
SG-N2(AA)	0	0	0	0	0	0	N/A	N/A	N/A	N/A
SG-N2(BB)	0	Low oxygen	Low oxygen	0*	0	0	N/A	N/A	N/A	N/A
SG-N2(CC)	18.5	0	0	3.16	8.2	0.2	N/A	N/A	0	2.5
SG-N3(AA)	9.4	1	0	0	1.8	0	N/A	N/A	*	8.7
SG-N3(BB)	0	0	0	0	0	0	N/A	N/A	N/A	N/A
SG-N3(CC)	0	0	0	0	0	0	N/A	N/A	N/A	N/A
SG-N4(AA)	0	223.1	0	N/A	N/A	2.7	*	2.2	*	0.2
SG-N4(BB)	0	Low oxygen	Low oxygen	1.74	0	0	Plugged	Plugged	*	0.02

Table 7, continued

	01/22/10	02/04/10	02/25/10	03/24/10	03/24/10	05/07/10	06/16/10	06/16/10	07/30/10	07/30/10
Probe ID	**PID**	**FID**	**FID**	**FID**	**PID**	**PID**	**FID**	**PID**	**FID**	**PID**
SG-N4(CC)	0	Low oxygen	Low oxygen	N/A	0	0	N/A	N/A	N/A	N/A
SG-N5(AA)	8.7	16.4	3.4	10.19	1.4	1.4	46.2	5.2	59.47	11.18
SG-N5(BB)	6.7	10.9	0	15.02	8.2	0.1	53.4	18.92	44.25	22.41
SG-N5(CC)	0	Plugged	Plugged	0	0	0	N/A	N/A	N/A	N/A
SG-N6(AA)	0.6	Low oxygen	Low oxygen	N/A	39.3	19.2	900	51.52	792	68.7
SG-N6(BB)	0	Low oxygen	Low oxygen	N/A	17	2.6	32.4*	15.2	0	2.21
SG-N6(CC)	10.1	Low oxygen	Low oxygen	N/A	7.3	0.2	48.21	16.2	3.29	5.73
SG-N7(AA)	9.4	0	0	Water in probe	Water in probe	0	N/A	N/A	N/A	N/A
SG-N7(BB)	0	Plugged	Plugged	N/A	N/A	0	N/A	N/A	N/A	N/A
SG-N7(CC)	0	Plugged	Plugged	N/A	N/A	0	N/A	N/A	N/A	N/A
SG-N8(AA)	1.7	Plugged	Plugged	N/A	N/A	0	N/A	N/A	N/A	N/A
SG-N8(BB)	0	Plugged	Plugged	N/A	N/A	0	N/A	N/A	N/A	N/A
SG-N8(CC)	0	Plugged	Plugged	N/A	N/A	0	N/A	N/A	N/A	N/A
SG-N9(AA)	0	0	0	1.2		0	*	4.12	0	1.37
SG-N9(BB)	0	0	0	0	0.8	0	0	1.7	Plugged	Plugged
SG-N9(CC)	0	Plugged	Plugged	N/A	0	0	0	2.73	0	0
SG-N10(AA)	2.2	0	0	0	0	0	N/A	N/A	0	0
SG-N10(BB)	2	0	0	0	0	0	N/A	N/A	N/A	N/A
SG-N10(CC)	2.6	Low oxygen	Low oxygen	9.4	0	0	0	0	0	0
ZONE A CENTRAL										
SG-A12	0	0	0	N/A	0	0	N/A	N/A	N/A	N/A
SG-A13	0.7	0	0	0	0	0	N/A	N/A	N/A	N/A
SG-A14	0.1	Low oxygen	Low oxygen	0	0	0	N/A	N/A	N/A	N/A
SG-A15	0.3	Low oxygen	Low oxygen	0	0	0	N/A	N/A	N/A	N/A
SG-A16	4.6	Low oxygen	Low oxygen	N/A	2.7	0	2.35	Low oxygen	0	1.1
SG-A17	0	0	0	N/A	0	0	N/A	N/A	N/A	N/A
SG-A18	0	Low oxygen	Low oxygen	N/A	2.5	0	*	N/A	0	0.05
SG-A19	0	Low oxygen	Low oxygen	0	0	0	N/A	N/A	N/A	N/A
SG-A20	0	Low oxygen	Low oxygen	N/A	384.2	0	*	Low oxygen	*	0.08
SG-A21	0	0	0	N/A	0	0	N/A	N/A	N/A	N/A
SG-A22	0	0	0	N/A	0	0	N/A	N/A	N/A	N/A
SG-A43	0	Low oxygen	Low oxygen	N/A	Water in probe	0	N/A	N/A	N/A	N/A

Table 7, continued

	01/22/10	02/04/10	02/25/10	03/24/10	03/24/10	05/07/10	06/16/10	06/16/10	07/30/10	07/30/10
Probe ID	**PID**	**FID**	**FID**	**FID**	**PID**	**PID**	**FID**	**PID**	**FID**	**PID**
SG-N11(AA)	12.4	Plugged	Plugged	25.3	N/A	2.9	52.2*	3.84	0	0
SG-N11(BB)	2000	3197	3.6	700	773.2	170.4	*	830	1521	78.2
SG-N11(CC)	Pump Fail	Plugged	Plugged	N/A	N/A	7.5	N/A	N/A	Plugged	Plugged
SG-N12(AA)	0	0	0	0	23.4	0	0	0	0	0
SG-N12(BB)	Pump Fail	Plugged	Plugged	N/A	N/A	0	N/A	N/A	N/A	N/A
SG-N12(CC)	0	Low oxygen	Low oxygen	N/A	11.9	0	0	0	0	0
SG-N13(AA)	143.3	Plugged	Plugged	N/A	N/A	11.7	N/A	N/A	32.8	10.19
SG-N13(BB)	76	Plugged	Plugged	N/A	N/A	34.6	N/A	N/A	43.27	1.44
SG-N13(CC)	0	Plugged	Plugged	N/A	N/A	0	N/A	N/A	0	0
SG-N14(AA)	27.8	Low oxygen	Low oxygen	N/A	22.6	2.1	41.21	7.15	9.91	4.32
SG-N14(BB)	20.3	Low oxygen	Low oxygen	N/A	26.6	2	28.12	13.75	0	0
SG-N14(CC)	Pump Fail	Plugged	Plugged	N/A	N/A	0	N/A	N/A	N/A	N/A
SG-N15(AA)	10.2	Plugged	Plugged	N/A	N/A	0	N/A	N/A	N/A	N/A
SG-N15(BB)	0	Low oxygen	Low oxygen	N/A	0	0	N/A	N/A	N/A	N/A
SG-N15(CC)	0	Low oxygen	Low oxygen	N/A	0	0	N/A	N/A	N/A	N/A
SG-N16(AA)	0	Low oxygen	Low oxygen	N/A	10.5	2	14.5	4.8	0	0
SG-N16(BB)	0	Low oxygen	Low oxygen	N/A	15.1	0.3	86.2	0	12.4	0.41
SG-N16(CC)	0	Plugged	Plugged	N/A	N/A	0	N/A	N/A	N/A	N/A
ZONE A NORTH										
SG-A23	0	0	0	0	0	0	N/A	N/A	N/A	N/A
SG-A24	0	0	0	0	15.4	0	0	0.38	0	0
SG-A25	0	0	0	0	0	0	N/A	N/A	N/A	N/A
SG-A26	0	0	0	0	0	0	N/A	N/A	N/A	N/A
SG-A27	0	0	0	1.94	0	0	*	Low oxygen	0	0.1
SG-A28	4.7	0	0	0	25.3	0	*	5.78	0	1.1
SG-A29	0	0	0	0	0	0	N/A	N/A	N/A	N/A
SG-A30	0	Low oxygen	Low oxygen	N/A	0	0	N/A	N/A	N/A	N/A
SG-A31	3.7	0	0	0	0	0	N/A	N/A	0	4.08
SG-A32	0	Low oxygen	Low oxygen	0	0	0	N/A	N/A	N/A	N/A
SG-N17(AA)	Water in probe	Water in probe	Water in probe	0	0	0	N/A	N/A	N/A	N/A
SG-N17(BB)	Water in probe	Water in probe	Water in probe	0	0	0	N/A	N/A	N/A	N/A
SG-N18(AA)	0	Low oxygen	Low oxygen	N/A	0	0	N/A	N/A	0	0.8
SG-N18(BB)	26	Low oxygen	Low oxygen	N/A	0	1.4	N/A	N/A	N/A	N/A

Table 7, continued

	01/22/10	02/04/10	02/25/10	03/24/10	03/24/10	05/07/10	06/16/10	06/16/10	07/30/10	07/30/10
Probe ID	**PID**	**FID**	**FID**	**FID**	**PID**	**PID**	**FID**	**PID**	**FID**	**PID**
SG-N18(CC)	Pump fail	Low oxygen	Low oxygen	N/A	0	0	N/A	N/A	N/A	N/A
SG-N19(AA)	3	Low oxygen	Low oxygen	0	0	1.4	N/A	N/A	0	1.29
SG-N19(BB(	Pump fail	Low oxygen	Low oxygen	N/A	N/A	0	N/A	N/A	N/A	N/A
SG-N19(CC)	Pump fail	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SG-N20(AA)	0	Low oxygen	Low oxygen	0	0	0	N/A	N/A	N/A	N/A
SG-N20(BB)	Pump fail	Plugged	Plugged	N/A	N/A	0	N/A	N/A	N/A	N/A
SG-N21(AA)	Pump fail	0	0	N/A	N/A	0	N/A	N/A	N/A	N/A
SG-N21(BB)	18	0	0	0	6.5	0	N/A	N/A	N/A	N/A
SG-N22(AA)	0	0	0	0	0	0	16.5	16.42	0	9.78
SG-N22(BB)	Pump fail	Plugged	Plugged	N/A	N/A	0	N/A	N/A	0	2.61
SG-N23(AA)	0	Low oxygen	Low oxygen	N/A	0	2.4	N/A	N/A	N/A	N/A
SG-N23(BB)	Pump fail	Plugged	Plugged	N/A	N/A	0	N/A	N/A	N/A	N/A
SG-N23(CC)	0	0	0	0	0	0	N/A	N/A	N/A	N/A
SG-N23(DD)	1.1	0	0	0	0	0	N/A	N/A	N/A	N/A
ZONE B										
SG-A33	0	Low oxygen	Low oxygen	0	0	0	N/A	N/A	N/A	N/A
SG-A34	Pump fail	Plugged	Plugged	N/A	N/A	0	N/A	N/A	Plugged	Plugged
SG-A35	1.3	0	0	290.2	200.2	72.4	4.1	3000	Water in probe	Water in probe
SG-A36	Pump fail	Plugged	Plugged	N/A	N/A	134.5	N/A	N/A	Plugged	Plugged
SG-A37	Pump fail	Plugged	Plugged	N/A	N/A	0	N/A	N/A	N/A	N/A
SG-A38	0	0	0	50.31	5.2	0	12.1	1.8	0	0.4
SG-A39	257.7	Low oxygen	Low oxygen	N/A	32.4	0	600	80	2115.7*	161
SG-A40	Pump fail	Plugged	Plugged	N/A	N/A	19.6	N/A	N/A	Plugged	Plugged
SG-A41	Pump fail	Plugged	Plugged	N/A	N/A	0	N/A	N/A	N/A	N/A
SG-A42	0	0	0	N/A	N/A	0.6	N/A	N/A	N/A	N/A

"*" – Flame out during reading.
Plugged – Gas probe could be plugged with water or soil.
Water in probe – Moisture in the soil gas probe causes flame outs in the FID.
Low oxygen – Low oxygen conditions in the air column causes a flame out in the FID.
N/A – Sampling at probe was discontinued due to low previous readings.
Pump fail – The PID pump failed to draw enough volume for testing
"-" – Operators did not attempt testing due to either plugged gas probe or low oxygen levels in probe.

During the remedial design phase in 1997, soil gas action levels were established for six VOCs. These vapor action levels correspond to concentrations within the soil, through the theoretical partitioning of the contaminants between soil and vapor. Table 6 summarizes the number of times that the six VOCs with soil gas action levels were detected during the most recent sampling event in 2009, and their maximum concentrations. Approximately 50 wells were sampled in 2009, so the most frequently detected contaminant, tetrachloroethene, was detected in about half of the samples.

Table 6 also compares the 2009 results with the baseline results, collected in 1997. The maximum concentrations and the frequency of detection decreased between 1997 and 2009, providing further support that the remedy is reducing levels of VOCs in soil.

In October, 2009, the ISVE system blowers were turned off and monitoring of the rebound of the organic vapor levels began. The results of the monitoring between October, 2009 and July, 2010 are presented in Table 7.

E. Site Inspection

EPA, Ohio EPA, and USGS conducted a Site inspection on March 31, 2011. CRA and the Pristine Trustees accompanied and assisted the regulatory team in the inspection. The purpose of the inspection was to assess the protectiveness of the remedy, including the condition of fencing to restrict access, the integrity of the cap, the condition of the monitoring and extraction wells and other physical devices associated with the remedy, and the condition and operation of the treatment plant. The inspection revealed that the physical aspects of the remedy were operating properly and/or in good condition. The following summarizes the main topics covered during the inspection:

- Manuals, logs, and records, such as the Health and Safety Plan, O&M Manual, maintenance logs, and training records, were properly filed in the treatment plant.
- Spare parts were properly stored in cabinets and in the maintenance area.
- High-efficiency lighting was installed in the treatment plant in 2009.
- The computer system in the treatment plant that alerts the plant operator of security or out-of-range plant conditions was operating properly.
- No vandalism or trespassing was evident or recorded at the Site.
- The flocculators, clarifier, pre-treatment tank, filter press, pH analyzer, carbon vessels, and air stripper in the treatment plant were functioning properly. A leaky effluent tank was in the process of being repaired.
- Aerator tanks, flowmeters, and optimizers (to remove iron) were functioning properly.
- The waste cap was properly vegetated and mowed.

- Dewatering, extraction, and monitoring wells were functioning and not damaged.
- Perimeter fencing was not damaged.
- The effluent discharge to Mill Creek operation was functioning properly.
- Access roads were in good condition.

F. Interviews

The RPM interviewed the Pristine Trustees (Martha Farr, Dave Ross, and Bob Fremont) and the Pristine Trustees' Project Manager, CRA (Henry Cooke), at the West Chester, Ohio office. On the same day, the RPM also interviewed Ohio EPA (Scott Glum) and USGS (Rob Darner) on March 31, 2011, at the West Chester office.

After talking to Scott Glum and others, the RPM decided not to interview the following entities for the following reasons:

- There are no nearby community residents, and there has been no community interest in recent years in the Site or Site operations.
- There have been no local officials involved with any aspects of the Site operations in recent years.
- While, over the years, the Site owners have granted access to the Site property for various activities and recorded the 2009 EC, the Site owners are not involved in the daily operations of the remedy, so they were not interviewed.

All interviewees felt that the remedy was working properly. Ohio EPA and USGS felt that CRA performed the O&M activities effectively and that CRA shares the results of its O&M activities effectively with the agencies. During the March 31, 2011 interviews, the interviewees provided the following information on the Site and remedy implementation:

<u>The Pristine Trustees and CRA</u>

- EPA recently approved the system modifications needed to begin implementation of the MNA Pilot Study. The reduced groundwater pumping rate of 50 gpm is now in effect. The new air stripper will be installed during maintenance shutdown in mid-May. [As of the date of this report, no suitable air stripper has been found. The existing one will continue to be used for the foreseeable future.]
- For the soil gas rebound study (for which the ISVE system remains shut down), EPA approval is needed for another round of soil gas sampling. [EPA has since approved this additional round of sampling.]
- The area-wide hydraulic monitoring event is scheduled in May. CRA participates with G.E., Rohm and Haas, EPA, Ohio EPA, and USGS to obtain area-wide water level measurements. [The May shutdown and monitoring event occurred as scheduled].

- The CDS drum recycling that formerly operated adjacent to the Site, is no longer in operation. The structures have been partially demolished.

- Levels of 1,2-DCA continue to decrease in the lower aquifer, as do contaminant levels in general in the lower aquifer.

- Discussions with local officials have indicated that no one is using lower aquifer water or applying for a water permit.

- Discharges to Mill Creek from the neighboring MSDGC sewer overflow holding tanks cause foaming in the creek. CRA has reported this to Ohio EPA. CRA has also reported raw sewage entering the creek from a manhole which may be on MSDGC property.

- There have been no effluent discharge exceedances in the last five years.

- EPA-approved groundwater pumping rate reductions have occurred in 2006 and 2008 because non-site-related VOCs were being drawn from groundwater to the west of the Site. Groundwater pumping rates were also reduced to not draw in the TCE plume from the southwest.

- G.E. has been cooperative in providing information to CRA and in participating in water level measurement events. However, G.E. believes that groundwater contamination in its OSMW1 well is from a non-G.E. source.

- The Trustees requested that EPA look into decreasing the frequency of analytical reporting.

Ohio EPA and USGS

- Ohio EPA supports the recently-approved treatment system modifications and the MNA Pilot Study.

- The Region should issue the ESD for revised cleanup levels [this ESD was issued in July, 2011].

- After extraction well EW-5 is shut down, there needs to be an emphasis on monitoring nearby groundwater.

VII. TECHNICAL ASSESSMENT

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

Yes.

Review of the documents, ARARs, risk assumptions, monitoring data, and the results of the Site inspection indicate that the remedy is functioning as intended by the ROD, ROD Amendment, and ESDs. Since the last FYR, there have been no changes in the physical conditions of the Site that would adversely affect the protectiveness of the remedy. The soil cap, the groundwater

pump-and-treat system, and the ISVE system are all functioning as intended, although the ISVE system is currently shut down to evaluate the effect of the shutdown on soil vapor levels. The data review section of this report indicates that remedy implementation is expeditiously progressing toward attainment of Remedial Action Objectives (RAOs).

Access controls such as fencing, locks, and alarms are in place to prevent exposure. Several ICs are in place for the Site. The deed notice and CD have been recorded with the local Recorder's Office, as has the August 2009 EC. They are protective of human health and the environment. The Pristine Trust and/or CRA will continue to perform annual assessments of the effectiveness of the ICs for EPA review.

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

Yes.

1. Exposure Assumptions

Although the City of Reading's well field has been closed since 1994, the likelihood of an exposure pathway to Site contaminants through consumption of groundwater has been further reduced by the 2009 EC. However, EPA still considers the aquifer to be a Class II aquifer (currently or potentially used for drinking water), which is unchanged since the ROD. MCLs continue to be ARARs for groundwater and are specified as groundwater cleanup standards in the July, 2011 ESD.

The 2009 EC limited the Site property to industrial use only, rather than allowing residential or unrestricted use. The exposure assumptions therefore changed with respect to soil contaminants, and a 2006 PHHRA was conducted assuming an industrial end-use scenario. The July, 2011 ESD changed soil cleanup levels based on the 2006 PHHRA.

There have been no changes in risk assessment methods since the last FYR. However, the July, 2011 ESD changed the cumulative risk level for carcinogens in soils from 10^{-6} to 10^{-5}, consistent with EPA and Ohio EPA policy (Attachment 4). The ESD also set the cumulative risk level for noncarcinogens in soil equal to a Hazard Index of no greater than 1, consistent with EPA and Ohio EPA policies.

2. Toxicity Data

Since EPA issued the ROD, pentachlorophenol and ethylbenzene were reclassified from noncarcinogens to carcinogens. Beryllium and 1,1-dichloroethene were reclassified from carcinogens to noncarcinogens. The July, 2011 ESD reflects these changes.

3. Changes in Cleanup Levels

A list of the primary ARARs is included in Table 8. There have been no changes in these ARARs, but the July, 2011 ESD revised the cleanup goals for individual groundwater contaminants to consistently apply the SDWA MCLs. The maximum cumulative carcinogenic risk for groundwater was changed from 10^{-6} to 10^{-4}.

Table 8: List of Primary ARARs

□Ąscription of ARAR	Reference
Federal	
Hazardous waste management	40 CFR 260-271
Groundwater Maximum Contaminant Levels	Safe Drinking Water Act, 40 CFR 141
RCRA groundwater protection standards	40 CFR 264.94
Water Quality Criteria	40 CFR Parts 303,304
Clean Closure and Landfill Closure	RCRA Subtitle C
Releases from Solid Waste Management Units	40 CFR 264 Subpart F
Disposal or decontamination of equipment, structures and soils	40 CFR 264.114
Survey plat	40 CFR 264.116
Security, and post-closure care and use of property	40 CFR 264.14 and 264.117(b) and (c)
Corrective Action	RCRA Subchapter III, 42 U.S.C. 6921-6939b
Health and Safety	29 CFR 1910
National Pollution Discharge Elimination System requirements	Clean Water Act Section 402, 40 CFR 122, 125 and 131
State	
Limits for effluent discharges	ORC Chapter 6111; OAC 3745
Naturally occurring and accelerator-produced radioactive materials	Ohio Department of Health
Solid and Hazardous Wastes	ORC Chapter 3734
Hazardous Waste regulations	OAC Chapters 3745-50 to 69
Air Pollution Control	ORC Chapter 3704; OAC Chapters 3745-15 to 25
Water Pollution Control	ORC Chapter 6111; OAC Chapters 3745-1 to 9
Safe Drinking Water	ORC Chapter 6109; OAC Chapters 3745-81 to 99

4. Changes in the RAOs

Site RAOs have not changed.

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

No.

No other events have affected the protectiveness of the remedy, and there is no other information that calls into question the protectiveness of the remedy.

Technical Assessment Summary

The Pristine, Inc. Site remedy is functioning as intended, and progress is being made toward meeting Site soil and groundwater cleanup levels. The exposure assumptions and cleanup levels have been updated to address earlier inconsistencies and errors. There is no additional information that would adversely affect the protectiveness of the remedy.

There is no other available information that calls into question the protectiveness of the remedy.

VIII. ISSUES

No issues were identified during this five-year review that would affect current or future protectiveness.

IX. RECOMMENDATIONS AND FOLLOW-UP ACTIONS

There are no recommendations or follow-up actions that affect current or future protectiveness.

One follow-up action that does not affect current or future protectiveness is to evaluate the progress of the MNA Pilot Program. When the pilot program is completed, EPA will determine whether to include MNA as part of the remedy, and, if so, issue the appropriate decision.

X. PROTECTIVENESS STATEMENT

The remedy is protective of human health and the environment. All immediate threats at the Site have been addressed; there is no evidence of exposure to Site-related contaminants; and the existing Site and groundwater uses are consistent with the objectives in the remedy and Environmental Covenant (EC).

XI. NEXT REVIEW

The next FYR for the Pristine, Inc. Superfund Site is required by August 2016, within five years from the date of this review.

FIGURES

Figure 1: Pristine, Inc. Site Location in Relation to the Cincinnati, Ohio Area

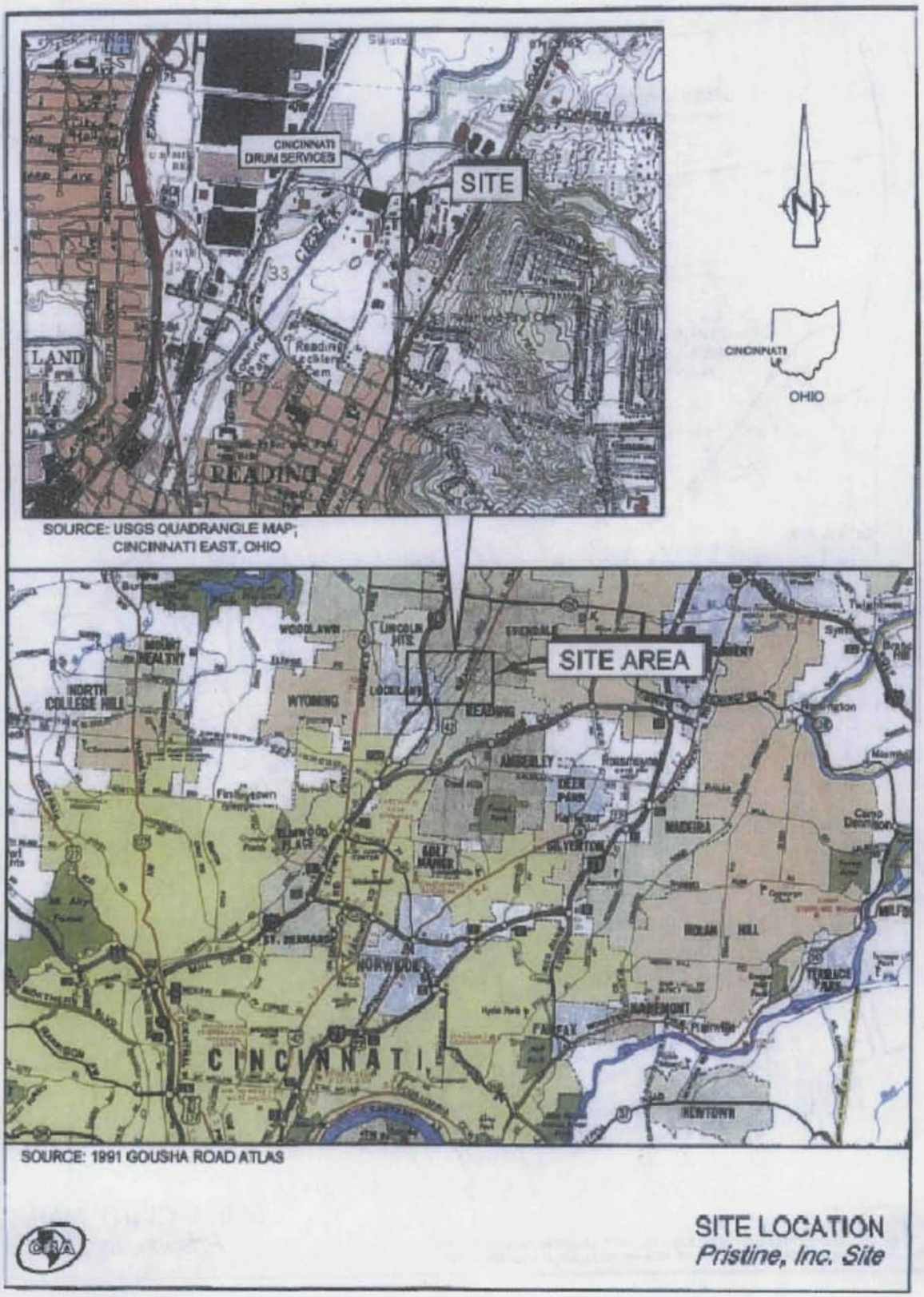


Figure 2: Pristine, Inc. Site in Relation to Nearby Facilities

Figure 3: Pristine, Inc. Site Map Showing Zone A and Zone B

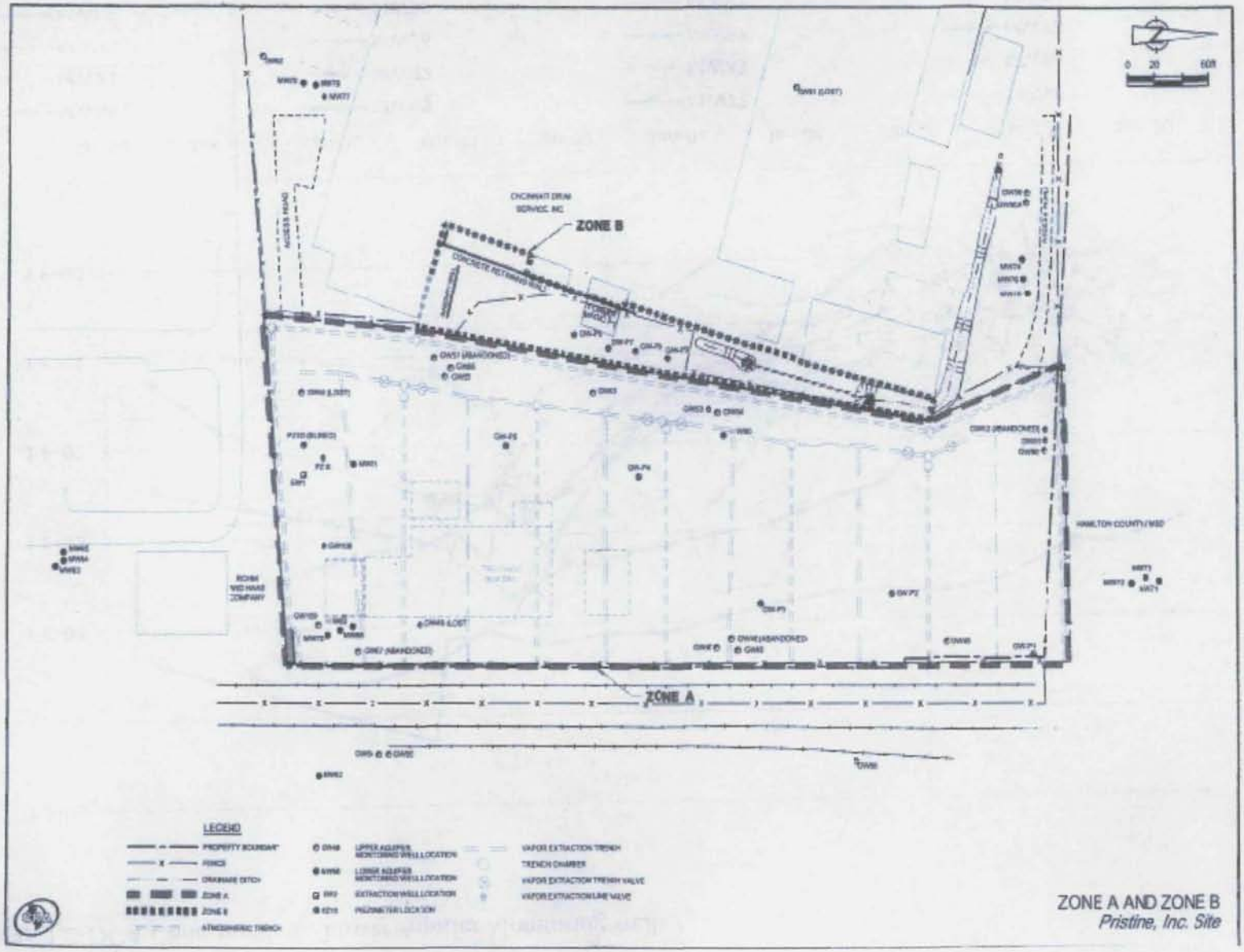


Figure 4: 1,2-DCA Concentrations, Lower Aquifer Monitoring wells

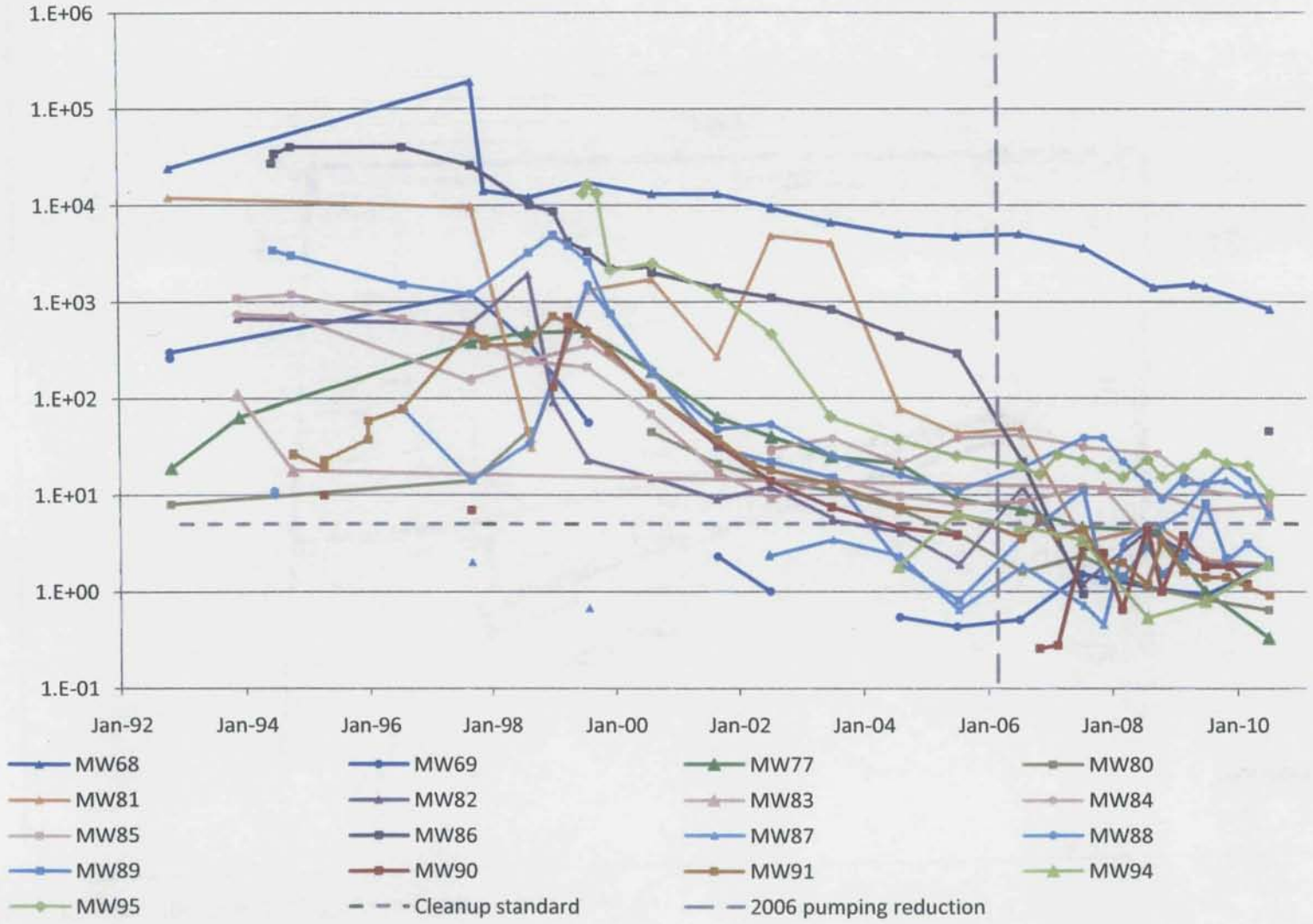


Figure 5: Detail of 1,2-DCA Concentrations, Lower Aquifer Monitoring Wells

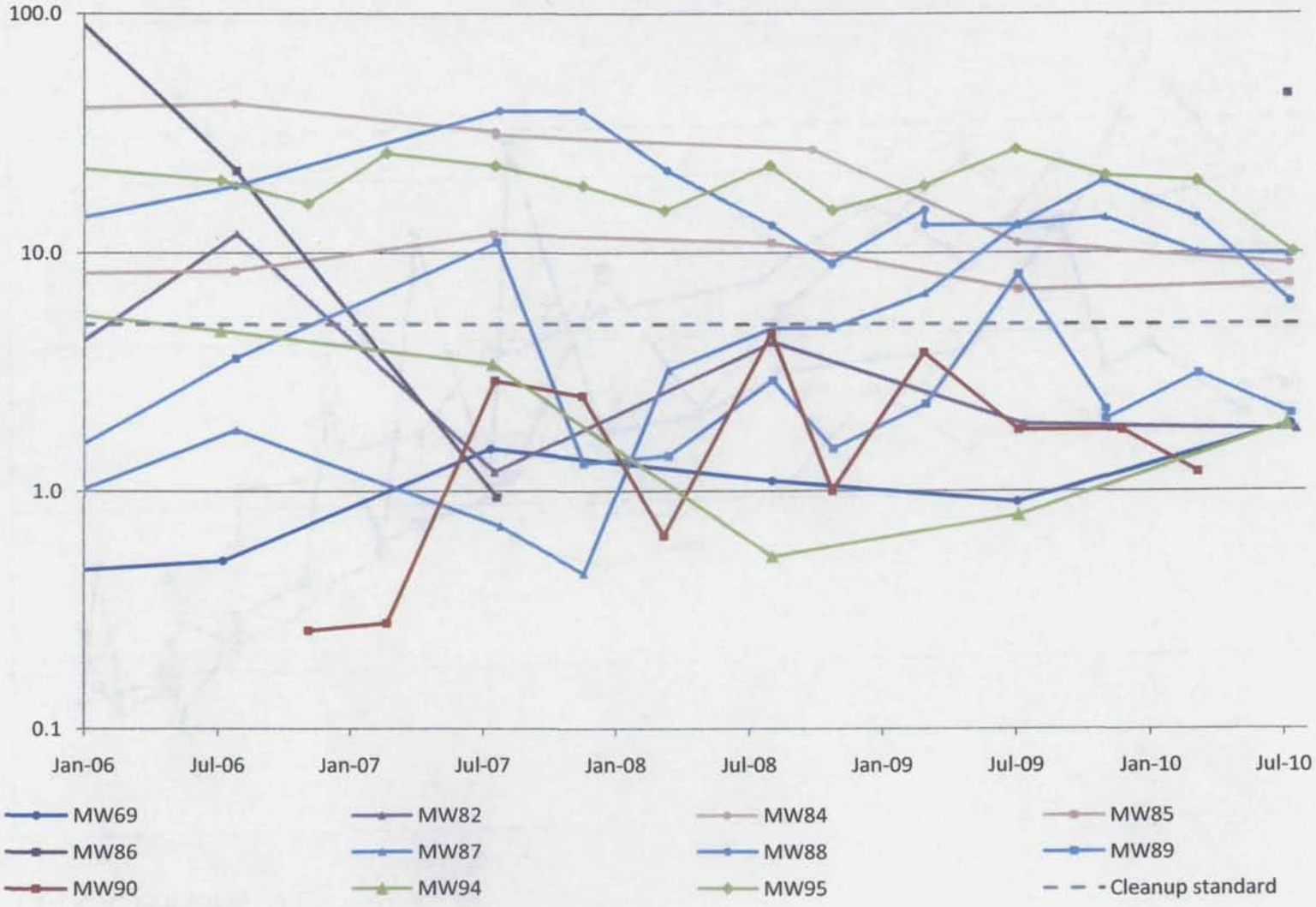


Figure 6: 1,2-DCA, Extraction wells

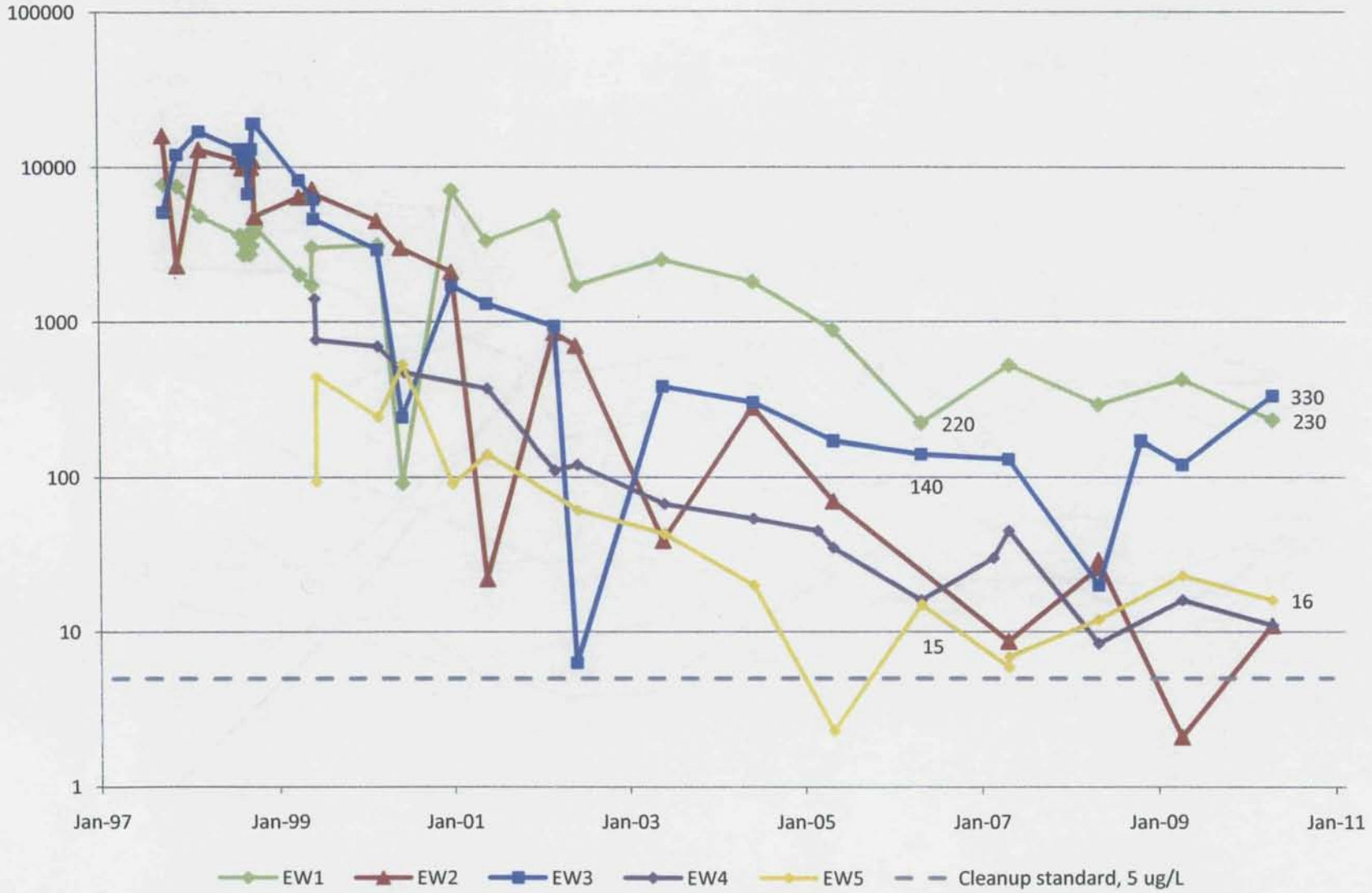


Figure 7: Comparison of 1,2-DCA Groundwater Plume in 1999 and 2009

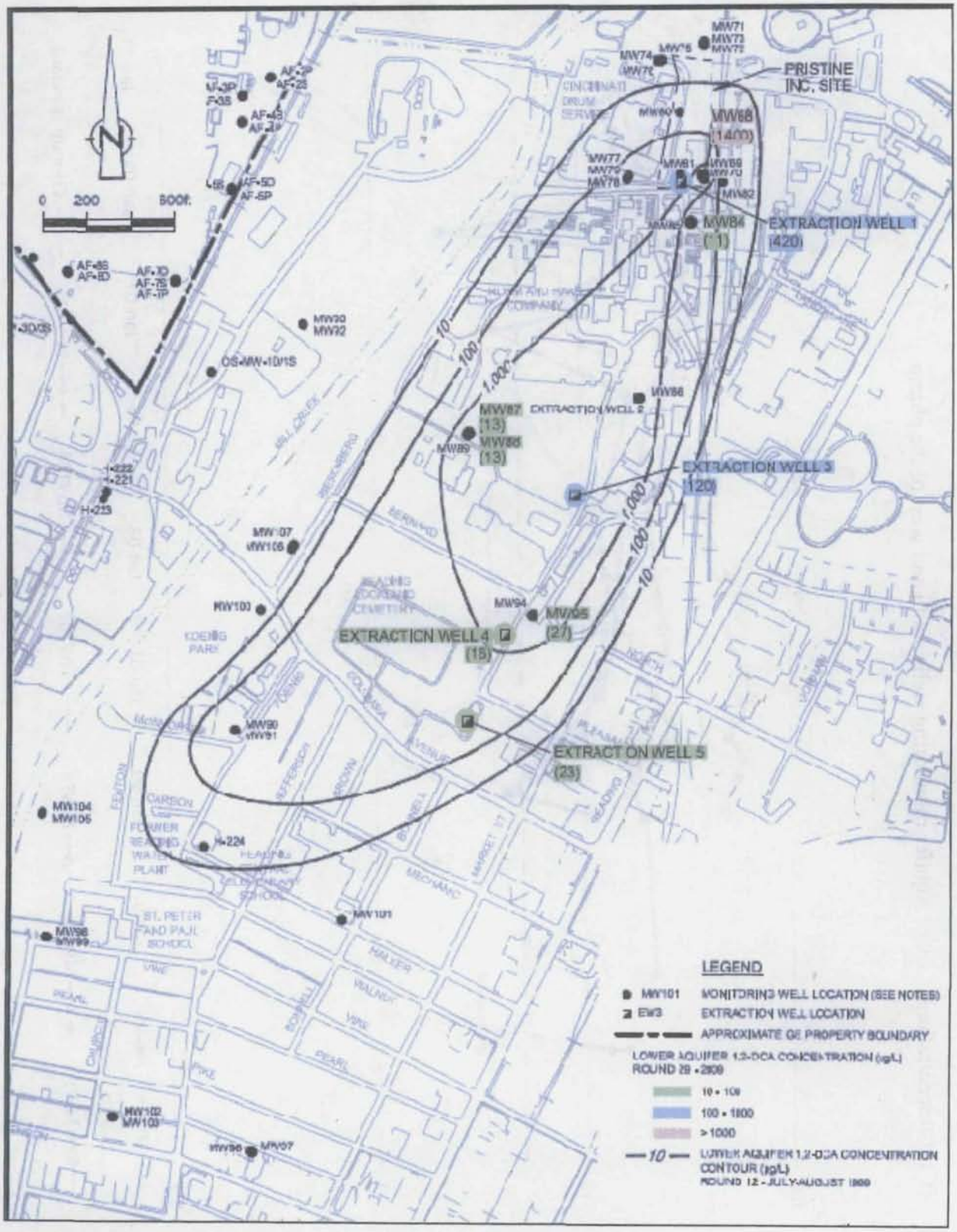
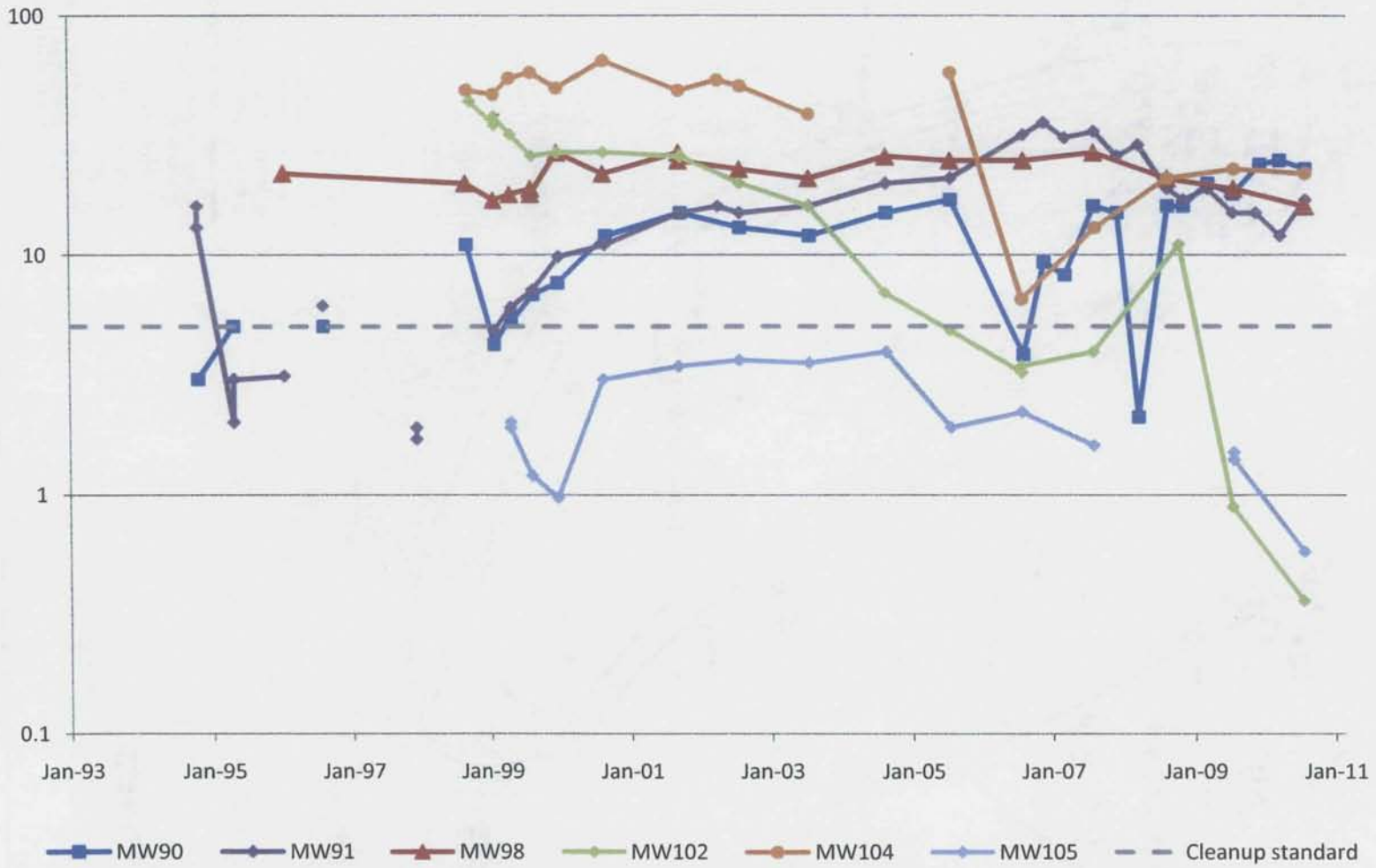


Figure 8: TCE Concentrations, Lower Aquifer monitoring wells south and west of the plume



Attachment 1: August 2009 Environmental Covenant

Environmental Covenant

To be recorded with Deed Records - ORC § 317.08

MAY 12, 2009

ENVIRONMENTAL COVENANT

This Environmental Covenant is made as of the 26th day of MAY, 2009, by and among Owners/Holders CAPA Property Management, LLC; and Jeffrey D. Long (as further identified below); pursuant to Ohio Revised Code ("ORC") §§ 5301.80 to 5301.92 for the purpose of subjecting the Site and the Restricted Area (described below) to the Activity and Use Limitations and to the rights of access described below.

Whereas, pursuant to Section 105 of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), 42 U.S.C. § 9605, the United States Environmental Protection Agency ("U.S. EPA" or "the Agency") placed the Pristine, Inc. Site ("Site") on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B, by publication in the *Federal Register*, 48 *Fed Reg.* 40658 (September 8, 1983); and

Whereas, in a Remedial Action/Feasibility Study (RI/FS) completed on July 23, 1987, U.S. EPA found the following contaminants had been released into the soil at the Site: polychlorinated biphenyls, DDT, aldrin, dieldrin, 1,2-dichlorethane, methylene chloride, chloroform, benzene, vinyl chloride, tetrachloroethene, trichloroethene, polycyclic aromatic hydrocarbons, phenol, bis(2-ethylhexyl)phthalate, cadmium, lead, mercury, 2,3,7,8-tetrachlorodibenzodioxin; and

Whereas, U.S. EPA issued a final Record of Decision (ROD) on December 31, 1987, which called for excavation and on-site consolidation of 1,725 cubic yards of sediment and soil; in-situ vitrification of contaminated soil to an average depth of ten feet across the Site; installation of a french drain along the eastern Site boundary; extraction of groundwater from the lower outwash lens/lower aquifer using at least one extraction well; on-site treatment of groundwater using an air stripper with discharge to Mill Creek; demolition, decontamination and removal of all on-site structures; access and deed restrictions, and groundwater monitoring; and

Whereas on March 30, 1990, U.S. EPA issued a ROD Amendment to change treatment of on site soils from in situ vitrification to thermal incineration and in situ vapor extraction, and whereas U.S. EPA entered a Remedial Design/Remedial Action Consent Decree on October 23, 1990 (United States District Court for the Southern District of Ohio, Western Division, Civil Action No., C-1-89-837), which provided for the implementation of the remedial alternative selected in the December 1987 ROD, as amended by the March 1990 ROD Amendment, and whereas with the exception of achieving groundwater and soil cleanup goals and implementing all institutional controls, the remedial action has been implemented at the Site; and

Whereas, the parties hereto have agreed: 1) to grant a permanent right of access over the Site to the Access Grantees (as hereafter defined) for purposes of implementing,

TRANSFER NOT NECESSARY
DUSTY RHODES
COUNTY AUDITOR

Hamilton County Recorders Office
Doc #: 09-0113422 Type: MI
Filed: 05/19/09 03:14:54 PM $172.00
Off.Rec.: 11219 01959 F 124.00 418

11219 1959

facilitating and monitoring the remedial action, and 2) to impose on the Site Activity and Use Limitations as covenants that will run with the land for the purpose of protecting human health and the environment; and

Now therefore, Owners and U.S. EPA agree to the following:

1. Environmental Covenant. This instrument is an environmental covenant executed and delivered pursuant to §§ 5301.80 to 5301.92 of the ORC. U.S. EPA is the Agency, as defined by ORC 5301.80(B), that approved the environmental response project pursuant to which this environmental covenant is created. Pursuant to ORC 5301.81(B), any right of U.S. EPA under this environmental covenant is not an interest in real property.

2. Site; Restricted Area. The one (1) parcel of real property which contains 13.327 acres located in the City of Reading, Hamilton County, Ohio (the "Site") which is subject to the environmental covenants set forth herein is described on **Exhibit A** attached hereto and hereby by reference incorporated herein. The property address is 400 Cavett Avenue; Reading, Ohio. The Rohm and Haas Site is immediately south of the property. Immediately north of the property, the Metropolitan Sewer District of Greater Cincinnati operates a sewage holding and treatment facility. Railroad tracks owned by the Southwest Ohio Regional Transit Authority are east of the property. Mill Creek and General Electric Company property are generally west of the property. Part of the Site which is subject to additional Activity and Use Limitations in Paragraph 5 below is described on **Exhibit B** attached hereto and hereby incorporated herein, and is hereafter referred to as the "Restricted Area." The Restricted Area is the property upon which Pristine, Inc. conducted operations in Reading, Ohio, the adjacent ditches and the structure referred to as the Magic Pit, which is located on Cincinnati Drum Service property, as depicted in the map attached as Appendix 10 to the Consent Decree. The Site is outlined by the heavy black line on the copy of the Hamilton County, Ohio, Auditor's tax map (the "Map") attached hereto as **Exhibit C-1**, and the Restricted Area is shown on the copy of the Map attached hereto as **Exhibit C-2.**

3. Owner. CAPA Property Management, LLC, whose registered agent's address is R. Warner Office, 255 East Fifth Street, Suite 1900, Cincinnati, Ohio 45202; and Jeffrey D. Long, whose address is Cincinnati Drum Services, Inc., One Louise Ave., P.O. Box 16141, Ludlow, Kentucky 41016-0141 (collectively "Owners") are the owners of the Site. Owners are the Settling Owner/Operator Defendants, or their successors, named in the Consent Decree described in the first page of this Environmental Covenant.

4. Holders. CAPA Property Management, LLC; and Jeffrey D. Long, whose addresses appear in Paragraph 3 above.

5. Activity and Use Limitations on the Restricted Area and on the Site.

(a). Owners agree for themselves and their successors in title not to permit the Site, including the Restricted Area, to be used in any manner that would interfere with or adversely affect the integrity or protectiveness of the remedial action which has been implemented or which will be implemented pursuant to the Consent Decree unless the written consent of the U.S. EPA to such use is first

obtained. Owners' agreement to restrict the use of the Restricted Area shall include, but not be limited to, not permitting any drilling, digging, building, or the installation, construction, removal or use of any buildings, wells, pipes, roads, ditches, or any other structures in the Restricted Area unless the written consent of U.S. EPA to such use or activity is first obtained.

(b) Owners covenant for themselves and their successors and assigns, that the Restricted Area shall be used solely for industrial activities only in accordance with a U.S. EPA-approved plan for re-use of the Restricted Area, and that the Restricted Area shall not be used for commercial or residential purposes, including, but not limited to, the construction, installation, or use of any structures or buildings for residential or commercial purposes. This prohibition includes the use of the property for the storage of drums. Residential uses that are prohibited include single and multi-family dwelling units (including those occupied by the owner(s) of the unit(s) and by the renter(s)); day-care centers; hotels, motels, and rooming houses; correctional facilities and detention centers; transient or other residential facilities; elementary and secondary schools; and hospitals. Owners acknowledge and agree that the Restricted Area has been remediated only for industrial uses.

(c) Owners covenant for themselves and their successors and assigns that there shall be no consumptive use of the Site groundwater, including the Restricted Area, either on or off the Site, until cleanup goals are achieved.

(d) Owners covenant for themselves and their successors and assigns that there shall not be any interference with Site remedial components, including groundwater pump and treatment systems and in-situ vapor extraction systems.

6. Running with the Land. This Environmental Covenant shall be binding upon the Owners and all assigns and successors in interest, including any Transferee, and shall run with the land, pursuant to ORC § 5301.85, subject to amendment or termination as set forth herein. The term "Transferee," as used in this Environmental Covenant, shall mean any future owner of any interest in the Site or any portion thereof, including, but not limited to, owners of an interest in fee simple, mortgagees, easement holders, and/or lessees.

7. Requirements for Notice to U.S. EPA Following Transfer of a Specified Interest in, or Concerning Proposed Changes in the Use of, Applications for Building Permits for, or Proposals for any Site Work Affecting Contamination on the Restricted Area. Neither Owners nor any Holder shall transfer any interest in the Restricted Area or make proposed changes in the use of the Restricted Area, or make applications for building permits for, or proposals for any work in the Restricted Area without first providing notice to U.S. EPA and obtaining any approvals thereto that are required under the Consent Decree.

8. Access to the Site. Pursuant to Section X of the Consent Decree, Owners agree that U.S. EPA and Settling Defendants, their successors and assigns, and their respective officers, employees, agents, contractors and other invitees (collectively, "Access Grantees") shall have and hereby grants to each of them an unrestricted right of access to the Site

to undertake the Permitted Uses described in Paragraph 9 below and, in connection therewith, to use all roads, drives and paths, paved or unpaved, located on the Site or off the Site ("off-site") and rightfully used by Owners and Owners' invitees for ingress to or egress from portions of the Site (collectively, "Access Roads"). The right of access granted under this Paragraph 8 shall be irrevocable while this Covenant remains in full force and effect. The Settling Defendants are named on **Exhibit D** attached hereto.

9. Permitted Uses. The right of access granted under Paragraph 8 of this Environmental Covenant shall provide Access Grantees with access to the Site, or such other property, for the purpose of conducting any activity related to the Consent Decree or the purchase of the Site, including, but not limited to, the following activities:

a) Monitoring the Work;

b) Verifying any data or information submitted to the United States or the State;

c) Conducting investigations relating to contamination at or near the Site;

d) Obtaining samples;

e) Assessing the need for, planning, or implementing response actions at or near the Site;

f) Implementing the Work pursuant to the Consent Decree;

g) Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by Owners or their agents, consistent with Section XV (Retention and Availability of Information) of the Consent Decree;

h) Assessing Settling Defendants' compliance with the Consent Decree;

i) Determining whether the Site or other property is being used in a manner that is prohibited or restricted or that may need to be prohibited or restricted by or pursuant to the Consent Decree;

j) Surveying and making soil tests of the Site, locating utility lines, and assessing the obligations which may be required of a prospective purchaser by U.S. EPA under the Consent Decree; and

k) Enforcing and maintaining compliance with this Environmental Covenant.

10. Administrative Record. Copies of the U.S. EPA administrative record for the Pristine, Inc. Site are maintained at the following locations: U.S. EPA Region 5; Superfund Records Center (7th Floor); 77 W. Jackson; Chicago, Illinois 60604; and the Public Library of Cincinnati and Hamilton County, Reading Branch; 9001 Reading Road; Cincinnati, Ohio 45215.

11219 1962

11. Notice upon Conveyance. Each instrument hereafter conveying any interest in the Site or Restricted Area or any portion of the Site or Restricted Area shall contain a notice of the Activity and Use Limitations, and grants of access set forth in the Environmental Covenant, and provide the recorded location of this Environmental Covenant. For instruments conveying any interest in the Site or any portion thereof other than the Restricted Area, the notice shall be substantially in the form set forth in **Exhibit E**. For instruments conveying any interest in the Restricted Area or any portion thereof, the notice shall be substantially in the form set forth in **Exhibit F**.

12. Amendments; Early Termination. This Environmental Covenant may be modified, amended or terminated while Owners own the property only by a writing signed by Owners and U.S. EPA with the formalities required for the execution of a deed in Ohio which is recorded in the Office of the Recorder of Hamilton County, Ohio. Upon transfer of all or any portion of the Site, Owners waive any rights that they might otherwise have under Section 5301.90 of the ORC to withhold their consent to any amendments, modifications, or termination of this Environmental Covenant, to the extent that they have transferred their interest in that portion of the Site affected by said modification, amendment or termination. The rights of Owners' successors in interest as to a modification, amendment or termination of this Environmental Covenant are governed by the provisions of Section 5301.90 of the ORC.

13. Other Matters.

(a) Representations and Warranties of Owner. Owners represent and warrant; that Owners are the only owners of the Site; that Owners hold fee simple title to the Site which is free, clear and unencumbered except for the Consent Decree; that Owners have the power and authority to make and enter into this Agreement as Owners and Holders, to grant the rights and privileges herein provided and to carry out all obligations of Owners and Holders hereunder; that this Agreement has been executed and delivered pursuant to the Consent Decree; and, that this Agreement will not materially violate or contravene or constitute a material default under any other agreement, document or instrument to which Owners are a party or by which Owners may be bound or affected.

(b) Right to Enforce Agreement against Owners; Equitable Remedies. In the event that Owners or any other person should attempt to deny the rights of access granted under Paragraph 8 or should violate the restrictions on use of the Site set forth in Paragraph 5; then, in addition to any rights which U.S. EPA may have under the Consent Decree, U.S. EPA or any Settling Defendant that is adversely affected by each denial (for example, any Settling Defendant that is prevented from conducting its remedial obligations under the Consent Decree) or by such violation shall have the right to immediately seek an appropriate equitable remedy and any court having jurisdiction is hereby granted the right to issue a temporary restraining order and/or preliminary injunction prohibiting such denial of access or use in violation of restrictions upon application by U.S. EPA or

11219 1963

by such adversely affected Settling Defendant without notice or posting bond. Owners and each subsequent owner of the Site by accepting a deed thereto or to any part thereof waive all due process or other constitutional right to notice and hearing before the grant of a temporary restraining order and/or preliminary injunction pursuant to this Subsection 13(b).

(c) Future Cooperation; Execution of Supplemental Instruments. Owners agree to cooperate fully with U.S. EPA and/or the Settling Defendants and to assist them in implementing the rights granted them under this Environmental Covenant and, in furtherance thereof, agree to execute and deliver such further documents as may be requested by U.S. EPA to supplement or confirm the rights granted hereunder.

(d) Cumulative Remedies; No Waiver. All of the rights and remedies set forth in this Environmental Covenant or otherwise available at law or in equity are cumulative and may be exercised without regard to the adequacy of, or exclusion of, any other right, remedy or option available hereunder or under the Consent Decree or at law. The failure to exercise any right granted hereunder, to take action to remedy any violation by Owners of the terms hereof or to exercise any remedy provided herein shall not be deemed to be a waiver of any such right or remedy, and no forbearance on the part of U.S. EPA and no extension of the time for performance of any obligations of Owners hereunder shall operate to release or in any manner affect U.S. EPA's rights hereunder.

(e) Severability. If any provision of this Environmental Covenant is found to be unenforceable in any respect, the validity, legality, and enforceability of the remaining provisions shall not in any way be affected or impaired.

(f) Recordation. Within thirty (30) days after the date of the final required signature upon this Environmental Covenant, Owners shall file this Environmental Covenant for recording, in the same manner as a deed to the Site, with the Hamilton County Recorder's Office.

(g) Effective Date. The effective date of this Environmental Covenant shall be the date upon which the fully executed Environmental Covenant has been recorded as a deed record for the Site with the Hamilton County Recorder.

(h) Distribution of Environmental Covenant/Other Notices. The Owners shall distribute a file-stamped and date-stamped copy of the recorded Environmental Covenant to: Ohio EPA, Hamilton County, each person holding a recorded interest in the Site, and the Settling Defendants. All notices, requests, demands or other communications required or permitted under this Environmental Covenant shall be given in the manner and with the effect set forth in the Consent Decree.

11219 1964

(i) Notices – All notices, requests, demands or other communications required or permitted under this Environmental Covenant shall be directed to the following individuals:

As to the United States or U.S. EPA:

1) Pristine, Inc. Site Attorney
U.S. Environmental Protection Agency
Office of Regional Counsel
77 W. Jackson Blvd., C-14J
Chicago, IL 60604

2) Pristine, Inc. Remedial Project Manager
U.S. Environmental Protection Agency
77 W. Jackson Blvd., SR-6J
Chicago, IL 60604

3) Assistant Attorney General
U.S. Department of Justice
Land & Natural Resources Division
10th & Pennsylvania Avenue, NW
Washington, D.C. 20530

As to the State of Ohio:

Pristine, Inc. Site Coordinator
Ohio Environmental Protection Agency
SWDO, DERR
401 E. Fifth St.
Dayton, OH 45402-2911

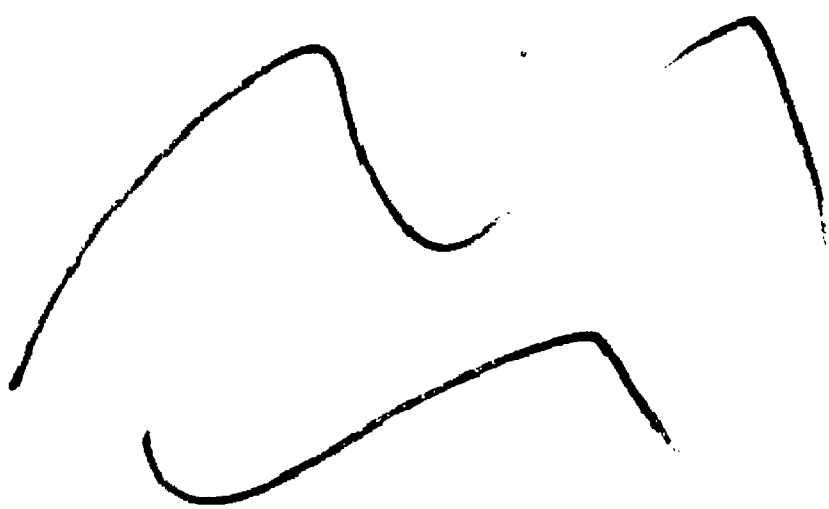
(j) Governing Law. This Environmental Covenant shall be construed according to and governed by the laws of the State of Ohio and the United States of America. Except as provided herein, the laws of the State of Ohio shall be the governing law. Federal law shall govern issues related to environmental remediation; the adequacy of the institutional controls to protect human health and the environment; and issues involving or relating to U.S. EPA. The federal court for the appropriate judicial district shall have jurisdiction of any action involving the U.S. EPA.

(k) Captions. All paragraph captions are for convenience of reference only and shall not affect the construction of any provision of this Environmental Covenant.

(l) Time of the Essence. Time is of the essence of each and every performance obligation of Owners under this Environmental Covenant.

11219 1965

[SIGNATURE PAGES TO FOLLOW]



11219 1966

IN WITNESS WHEREOF, Owner and U.S. EPA have executed and delivered this Environmental Covenant as of the date first above written.

OWNER

CAPA Property Management, LLC

KENTUCKY
STATE OF ~~OHIO~~)
) SS.
COUNTY OF Hanton)

The foregoing instrument was acknowledged before me this 26th day of May, 2009, by CAPA Property Management, LLC.

Notary Public
Exp: 12/13/12

11219 1967

IN WITNESS WHEREOF, Owners and U.S. EPA have executed and delivered this Environmental Covenant as of the date first above written.

UNITED STATES OF AMERICA
On behalf of the Administrator of the
United States Environmental Protection Agency

By: Richard C Karl
Richard C. Karl, Director
Superfund Division, Region 5

STATE OF ILLINOIS)
) SS.
COUNTY OF COOK)

The foregoing instrument was acknowledged before me this 9TH day of JULY, 2009, by Richard C. Karl, Director, Superfund Division, Region 5 of the United States Environmental Protection Agency, on behalf of the United States of America.

OFFICIAL SEAL
JOHN V FAGIOLO
NOTARY PUBLIC - STATE OF ILLINOIS
MY COMMISSION EXPIRES

John V Fagiolo
Notary Public

11219 1969

EXHIBIT A

Legal Description of the "Site"

Starting at a steel post in the Northeast corner of said Section 33; thence Southwardly in the east line of said section a distance of 1249.38 feet to a point; thence North 86 degrees 20 minutes 47 seconds West, a distance of 784.50 feet to a concrete monument in the West Right-of-way Line of the Phil. Bait, and Washington Railroad; and the Place of Beginning of the Tract of land herein described; thence South 0 degrees 09 minutes 23 seconds West; a distance of 450.00 feet to a point; thence South 85 degrees 08 minutes 15 seconds West, a distance of 200.00 feet to an iron pin; thence South 85 degrees 08 minutes 15 seconds West, a distance of 991.03 feet to a concrete monument; thence North- 3 degrees 47 minutes 23 seconds East, a distance of 61.33 feet to a concrete monument; thence North 73 degrees 17 minutes 45 seconds East, a distance of 204.00 feet to an iron pin; thence North 63 degrees 13 minutes 45 seconds East, a distance of 70.00 feet to an iron pin; thence North 43 degrees 44 minutes 38 seconds East, a distance 144.22 feet to an iron pin; thence North 8 degrees 51 minutes 45 seconds East, a distance of 158.11 feet to an iron pin; thence North 64 degrees 16 minutes 15 seconds West, a distance of 226.00 feet to a concrete monument; thence North 65 degrees 11 minutes 15 seconds West, a distance of 100.00 feet to an iron pin; thence North 70 degrees 43 minutes 39 seconds West, a distance of 100.06 feet to an iron pin; thence North 80 degrees 21 minutes 15 seconds West, a distance of 100.00 feet to an iron pin; thence North 86 degrees 47 minutes 48 seconds West, a distance of 55.10 feet to a concrete monument; thence North 3 degrees 45 minutes 45 seconds East, a distance of 34.76 feet to a point; thence South 86 degrees 14 minutes 15 seconds East, a distance of 551.74 feet to an iron pin in the center of the East Branch of Mill Creek; thence with the centerline of said creek North 47 degrees 53 minutes 45 seconds East, a distance of 137.56 feet to an iron pin; thence leaving the centerline of said creek south 86 degrees 20 minutes 47 seconds East, a distance of 685.17 feet to an iron pin in the West Right-of-Way Line of the aforesaid railroad; thence with the West line of said railroad South 0 degrees 09 minutes 23 seconds West, a distance of 100.32 feet to a concrete monument; thence South 85 degrees 17 minutes 20 seconds East 6.00 feet to the point of beginning, containing 13.327 Acres of land, more or less.

11219 1970

EXHIBIT B

Legal Description of the "Restricted Area"

Situated in the Section 33, Town 4, Entire Range 1, Sycamore Township, City of Reading, Hamilton County, Ohio and being more particularly described as follows:

BEGINNING at the southeast corner of a tract of land conveyed to CAPA Property Management, LLC (undivided one half interest) recorded in O.R. 9781, Pg. 2994 of the Hamilton County Recorder's Office and Jeffrey D. Long, Tr. as recorded in D.B. 6048, Pg. 1022 of the Hamilton County Recorder's Office.

Thence along the lines and through the lands of said CAPA Property Management, LLC and Jeffrey D. Long, Tr. the following sixteen courses:

1. South 85°08'15" West, 222.68 feet;
2. North 05°20'36" East, 26.01 feet;
3. North 07°19'05" East, 114.31 feet;
4. North 47°10'15" West, 28.41 feet;
5. North 05°50'14" West, 57.74 feet;
6. North 13°24'40" East, 102.68 feet;
7. South 75°46'46" East, 24.20 feet;
8. North 09°52'05" East, 177.82 feet;
9. North 16°41'26" West, 57.43 feet;
10. North 64°21'49" West, 15.28 feet;
11. North 00°05'49" West, 20.12 feet;
12. North 02°58'11" West, 14.31 feet;
13. South 86°20'47" East, 180.80 feet;
14. South 00°09'23" West, 100.32 feet;
15. South 85°17'20" East, 6.00 feet;
16. South 00°09'23" West, 450.00 feet to the **POINT OF BEGINNING**.

CONTAINING 2.5374 ACRES. Subject to legal highways and easements of record.

Being part of the property conveyed to CAPA Property Management, LLC (undivided one half interest) recorded in O.R. 9781, Pg. 2994 of the Hamilton County Recorder's Office and Jeffrey D. Long, Tr. as recorded in D.B. 6048, Pg. 1022 of the Hamilton County Recorder's Office.

The bearings are based on Official Record 9781, Page 2994 of the Hamilton County Recorder's Office

11219 1971

EXHIBIT C-1

Drawing of Site

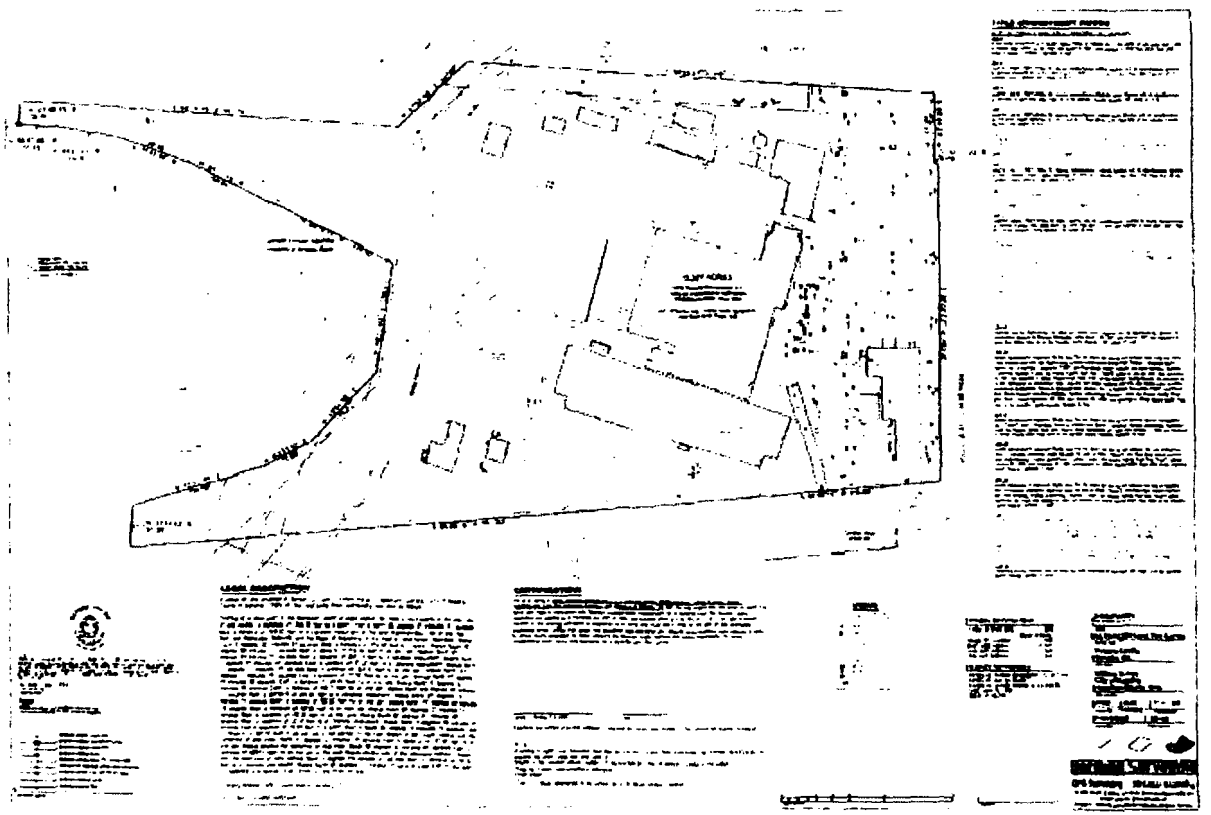
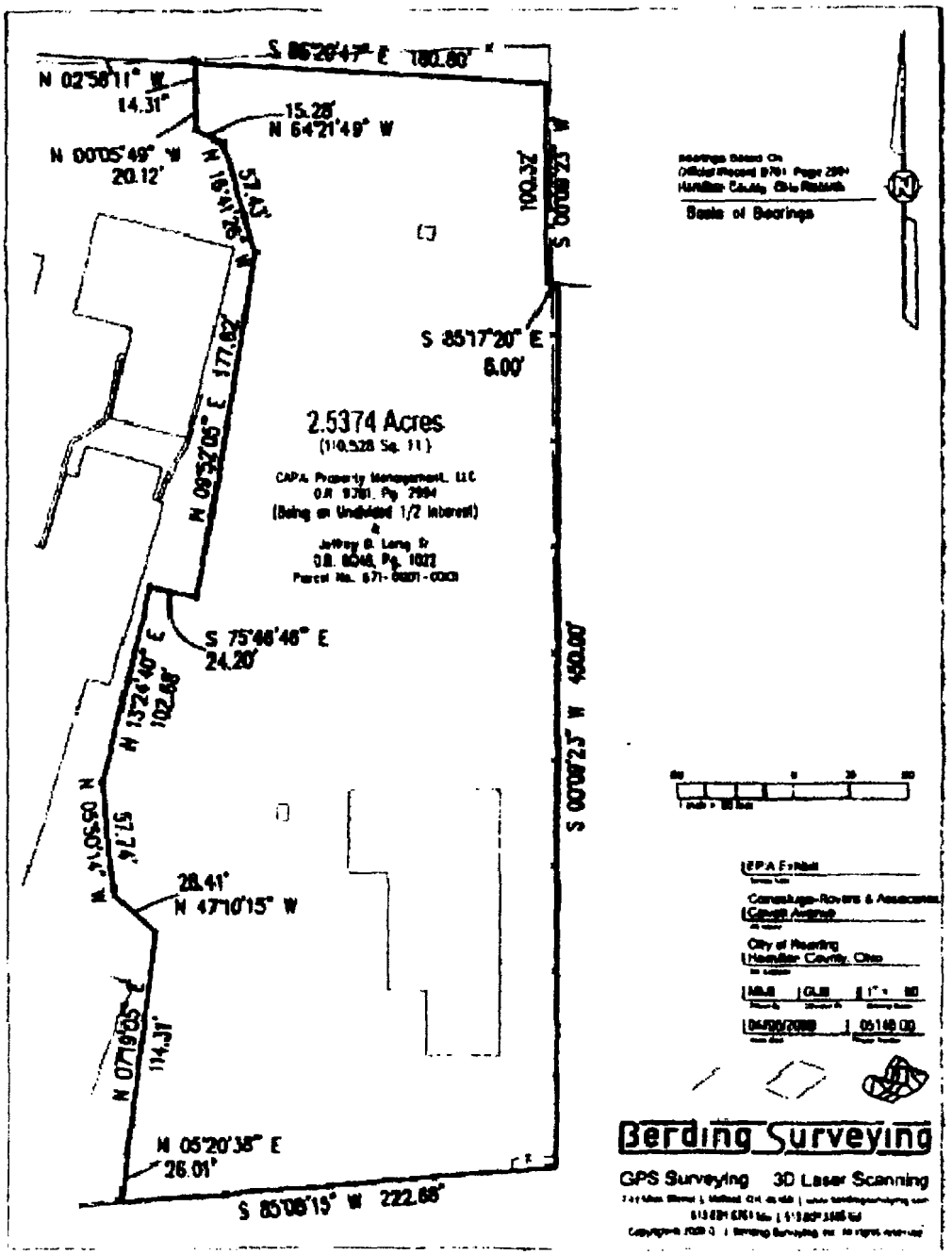


EXHIBIT C-2

Drawing of Restricted Area



11219 1973

EXHIBIT D

List of Settling Defendants

ELI LILLY AND COMPANY
FORMICA CORPORATION
PROCTER & GAMBLE
BORDEN, INC.
GENERAL MOTORS CORPORATION
AMSCO SOLVENTS AND CHEMICAL COMPANY
NATICO, INC.
IBM CORPORATION
CROWN ZELLERBACH CORPORATION
SENCO PRODUCTS
BROWNING FERRIS INDUSTRIES/CECOS (NEWCO)
MONSANTO RESEARCH CORPORATION
LYNN SOLVENTS / VAN WALTERS & ROGERS
GENERAL ELECTRIC CO. (EVENDALE)
AMERICAN GREETINGS CORP.
EMERY INDUSTRIES, INC.
PROTECTIVE TREATMENTS, INC.
SUPERIOR SOLVENTS & CHEMICALS
FRYE COPY SYSTEMS, INC.
KENNER PRODUCTS
KOENIGKRAMER, F. AND F., DIVISION
BRULIN & COMPANY
LIEBEL-FLARSHEIM
VELSICOL CHEMICAL CORPORATION
CHEMICAL LEAMAN TANK LINES, INC.
U.S. INDUSTRIAL CHEMICALS
S. ROSENTHAL & CO., INC.
OREN LONG
JANE LONG
PAULINE LONG
LONG REAL ESTATE
JEFFREY LONG
BARRY LONG
GEOFFREY LONG
JON LONG
GREGORY LONG
DENNIS LONG
CINCINNATI DRUM SERVICE, INC.

11219 1974

EXHIBIT E

Notice upon Conveyance of Site or any Portion thereof other than the Restricted Area

THE INTEREST CONVEYED HEREBY IS SUBJECT TO A CONSENT DECREE DATED OCTOBER 23, 1990, WHICH WAS RECORDED IN THE OFFICE OF THE HAMILTON COUNTY RECORDER, **OR BOOK _____, Pages _____**, AND WHICH RESTRICTS THE INTEREST CONVEYED AS SET FORTH IN THIS NOTICE AND AN ENVIRONMENTAL COVENANT, DATED _____, 2009, RECORDED IN THE DEED OR OFFICIAL RECORDS OF THE HAMILTON COUNTY RECORDER ON _____, 2009, in BOOK _____, Page _____. THE ENVIRONMENTAL COVENANT CONTAINS THE FOLLOWING ACTIVITY AND USE LIMITATIONS AND ACCESS RIGHTS:

Activity and Use Limitations on the Site.

(a) The Site shall not be used in any manner that would interfere with or adversely affect the integrity or protectiveness of the remedial action which has been implemented or which will be implemented pursuant to the Consent Decree unless the written consent of U.S. EPA to such use is first obtained.

(b) There shall not be any interference with Site remedial components, including groundwater pump and treatment systems and in-situ vapor extraction systems.

Access to the Site. Pursuant to Section X of the Consent Decree and the Environmental Covenant, U.S. EPA and the Settling Defendants, their successors and assigns, and their respective officers, employees, agents, contractors and other invitees (collectively, "Access Grantees") shall have an unrestricted right of access to the Site to undertake the Permitted Uses described below and, in connection therewith, to use all roads, drives and paths, paved or unpaved, located on the Site or off the Site ("off-site"). The right of access set forth above shall be irrevocable while the Environmental Covenant remains in full force and effect. The Settling Defendants are named on **Exhibit D** of the Environmental Covenant.

Permitted Uses. The right of access granted under the Environmental Covenant shall provide Access Grantees with access to the Site, or such other property, for the purpose of conducting any activity related to the Consent Decree or the purchase of the Site, including, but not limited to, the following activities:

a) Monitoring the Work;

b) Verifying any data or information submitted to the United States or the State;

c) Conducting investigations relating to contamination at or near the Site;

11219 1975

d) Obtaining samples;

e) Assessing the need for, planning, or implementing response actions at or near the Site;

f) Implementing the Work pursuant to the Consent Decree;

g) Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by Owners or their agents, consistent with Section XV (Retention and Availability of Information) of the Consent Decree;

h) Assessing Settling Defendants' compliance with the Consent Decree;

i) Determining whether the Site or other property is being used in a manner that is prohibited or restricted or that may need to be prohibited or restricted by or pursuant to the Consent Decree;

j) Surveying and making soil tests of the Site, locating utility lines, and assessing the obligations which may be required of a prospective purchaser by U.S. EPA under the Consent Decree; and

k) Enforcing and maintaining compliance with the Environmental Covenant.

11219 1976

EXHIBIT F

Notice upon Conveyance of Restricted Area or any Portion thereof

THE INTEREST CONVEYED HEREBY IS SUBJECT TO A CONSENT DECREE DATED OCTOBER 23, 1990, WHICH WAS RECORDED IN THE OFFICE OF THE HAMILTON COUNTY RECORDER, **OR BOOK** _____, **Pages** _____, AND WHICH RESTRICTS THE INTEREST CONVEYED AS SET FORTH IN THIS NOTICE, AND AN ENVIRONMENTAL COVENANT, DATED _____, 2009, RECORDED IN THE OFFICIAL RECORDS OF THE HAMILTON COUNTY RECORDER ON _____, 2009, in BOOK _____, Page _____. THE ENVIRONMENTAL COVENANT CONTAINS THE FOLLOWING ACTIVITY AND USE LIMITATIONS AND ACCESS RIGHTS:

Activity and Use Limitations on the Restricted Area.

(a) The Restricted Area shall not be used in any manner that would interfere with or adversely affect the integrity or protectiveness of the remedial action which has been implemented or which will be implemented pursuant to the Consent Decree unless the written consent of the U.S. EPA to such use is first obtained. There shall be no drilling, digging, building, or the installation, construction, removal or use of any buildings, wells, pipes, roads, ditches, or any other structures on the Restricted Area unless the written consent of EPA to such use or activity is first obtained.

(b) The Restricted Area shall be used solely for industrial activities in accordance with an EPA-approved plan for re-use of the Restricted Area as required under Paragraph 5(a) and the Restricted Area shall not be used for commercial, residential, or other prohibited activities. The Restricted Area has been remediated only for industrial uses.

(c) There shall be no consumptive use of Restricted Area groundwater, either on or off the Restricted Area, until cleanup goals are achieved.

(d) There shall not be any interference with Restricted Area remedial components, including groundwater pump and treatment systems and in-situ vapor extraction systems.

Requirements for Notice to U.S. EPA Following Transfer of a Specified Interest in, or Concerning Proposed Changes in the Use of, Applications for Building Permits for, or Proposals for any Site Work Affecting Contamination on, the Restricted Area. No transferee in interest may make changes in the use of the Restricted Area, or may make applications for building permits for, or proposals for any work in the Restricted Area without first providing notice to U.S. EPA and obtaining any approvals thereto which are required under the Consent Decree.

11219 1977

Access to the Restricted Area. Pursuant to Section X of the Consent Decree and the Environmental Covenant, U.S. EPA and the Settling Defendants, their successors and assigns, and their respective officers, employees, agents, contractors and other invitees (collectively, "Access Grantees") shall have an unrestricted right of access to the Restricted Area to undertake the Permitted Uses described below. The right of access granted under this Paragraph shall be irrevocable while this Environmental Covenant remains in full force and effect. The Settling Defendants are named on **Exhibit D** of the Environmental Covenant.

Permitted Uses. The right of access granted under the Environmental Covenant shall provide Access Grantees with access to the Restricted Area, or such other property, for the purpose of conducting any activity related to the Consent Decree or the purchase of the Restricted Area, including, but not limited to, the following activities:

a) Monitoring the Work;

b) Verifying any data or information submitted to the United States or the State;

c) Conducting investigations relating to contamination at or near the Restricted Area;

d) Obtaining samples;

e) Assessing the need for, planning, or implementing response actions at or near the Restricted Area;

f) Implementing the Work pursuant to the Consent Decree;

g) Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by Owner or her agents, consistent with Section XV (Retention and Availability of Information) of the Consent Decree;

h) Assessing Settling Defendants' compliance with the Consent Decree;

i) Determining whether the Restricted Area or other property is being used in a manner that is prohibited or restricted or that may need to be prohibited or restricted by or pursuant to the Consent Decree;

j) Surveying and making soil tests of the Restricted Area, locating utility lines, and assessing the obligations which may be required of a prospective purchaser under the Consent Decree; and

k) Enforcing and maintaining compliance with the Environmental Covenant.

11219 1978

Attachment 2: Five-Year Review Newspaper Ads

The Enquirer YOUR HOMETOWN NW Thursday, November 25, 2010 5

SPRINGDALE

Group appeals to residents' spirit

A Springdale organization that reaches out to families in need is asking its residents to help provide coats, cash and other contributions during the holiday season.

Springdale Offering Support, or SOS, has identified 41 families in need this year.

Mayor Doyle Webster told City Council at its Nov. 17 meeting that only 25 sponsors have come forward.

"I'm making a plea to anyone who wants to sponsor a family to call 346-5725," the mayor said.

Donors also can call Police Officer Marsha Bemmes at 346-5774 with contributions of money or food, he said.

Webster said the group also identified 16 children who need coats, hats and gloves, and asked the residents of Springdale for help.

"We're not going to wait to get coats to those kids," he said. "We're going to find money in the SOS Christmas fund if we have to.

"But we don't want the children to go to school cold," Webster said.

Also during the meeting:

■ The final leg of the selection process for a new police chief is coming to a conclusion.

Webster said the city expects to announce a new chief at the Dec. 1 meeting.

Chief Michael Lange will be retiring in 2011.

■ Clerk of Courts Kathy McNear was selected to represent the city at the Ohio Kentucky Indiana Regional Council of Governments, OKI.

McNear has been Springdale's representative for the past several years.

■ Council voted it down, 4-2, an ordinance that would have accepted a bid for a road project at state Route 4 and Crescentville Road.

Budget concerns quashed the ordinance.

Councilwoman Kelly Emerson and Council President Marjorie Harlow had voted for the project.

"It would make the city more appealing to businesses," Emerson said of the road upgrades.

But Councilman Steve Galster said he wanted to see the upcoming year's budget before deciding on whether the city should spend the money.

The ordinance would have accepted a bid by Barrett Paving for $469,782. That was the lowest bid.

City Administrator Derrick Parham reported that the city's portion of the project would be $124,182, which was 27 percent of the cost of the project.

Council also passed a subsequent resolution rejecting all other bids, with a 6-0 vote. Councilman Tom Vanover was not present at the meeting.

Members agreed to wait for more information on the budget and options before making a decision on the project.

— Kelly McBride, Community Press

FINNEYTOWN

Alumni Association forming

We are looking for you. The Finneytown Local School District is in the process of creating an Alumni Association. A formation meeting will be held on Monday, 7 p.m. in the Finneytown High School Media Center (8916 Fontainebleau Terrace).

The purpose:

■ To inform alumni through the publication of a newsletter and updates to website.

■ To provide assistance for classes with their events, activities, reunions, etc.

■ Each class has a representative which acts as a liaison with the Alumni Association. These class reps have access to their fellow members through our computer's data bank, which provides addresses, phone numbers, e-mails, etc. The Alumni Association can also serve as a resource for planning reunions, as we have a booklet containing information on hall/banquet facilities, food catering groups and music/entertainment.

■ To select, recognize and honor distinguished Finneytown Alumni and educators through representation with the Hall of Fame.

"I am excited to be a part of the formation of the Alumni Association," said Allyson Berlon, Finneytown High School Class of 2005 and Alumni Association President Pro Tem. "Finneytown has an extensive history of talented and passionate alumni and this is going to be a great resource to keep everyone connected to our wonderful community."

The Communications Office has just launched a database program to compile Alumni Information. Any alum of Finneytown can add their information to the secure database by going to the district's website http://finneytown.org/alumni.aspx.

"We've been working on this for years in cooperation with the Finneytown Schools Education Foundation," says Sharon Moss, Communications Coordinator for the district. "We've had many alums asking for contact information but until now we weren't able to provide that."

If you would like to be a part of the formation committee, contact Allyson Berlon, Alumni Association President Pro Tem at 513-917-8229 or email aberlon@finneytown.org.

If anyone is planning for a class reunion, contact the communications office.

— Sharon Moss, Finneytown Local School District

EPA Begins Review of Pristine Inc. Superfund Site

Reading, Ohio

U.S. Environmental Protection Agency is conducting a five-year review of the Pristine Inc. Superfund site at 410 Court Ave. in Reading. The Superfund law requires regular checkups of sites that have been cleaned up – with waste managed onsite – to make sure the cleanup continues to protect people and the environment.

EPA's cleanup consisted of thermally treating soil to take out volatile organic chemicals, constructing a soil cap, installing a ground water pump-and-treat system, installing an in-place soil vapor extraction system, monitoring groundwater and soil vapor and restricting land use. The review should be completed by June, 2011.

More information is available at the Cincinnati and Hamilton County Public Library, Reading Branch, 9001 Reading Rd., Cincinnati, Ohio and at www.epa.gov/region5/sites/pristine. The five-year review is an opportunity for you to tell EPA about site conditions and any concerns you have. You may contact:

Patricia Krause	Ronald Murawski
Community Involvement Coordinator	Remedial Project Manager
312-886-9506	312-886-2940
krause.patricia@epa.gov	murawski.ronald@epa.gov

You may call Region 5 toll-free at 800-621-8431, 9:30 a.m. to 5:30 p.m., weekdays.

EPA Region 5
77 W. Jackson Blvd.
Chicago, IL 60604

Home Emporium opens Springdale store

Index

Helping others get help

TRI-COUNTY PRESS

To place an ad in Community Classified, call 242-4000.

HOLIDAY GIVING

Cookies for a cause

Attachment 3: List of Documents Reviewed

Consent Decree (for Remedial Design and Remedial Action); EPA; September 1990

Declaration for the Record of Decision; Pristine, Inc. Site; EPA; December 31, 1987

Explanation of Significant Differences for the Pristine, Inc. Superfund Site; EPA; April 24, 1996

Explanation of Significant Differences for the Pristine, Inc. Superfund Site; EPA; July 30, 1993

Explanation of Significant Differences for the Pristine, Inc. Superfund Site; June, 2011

Hydrogeology and Groundwater Quality, Reading and Lockland, Ohio; United States Geological Survey; 2004

ISVE Round 11 Soil Gas Sampling and Analysis; Pristine, Inc. Site; CRA; October 17, 2005

Interim Five-Year Review; Pristine, Inc. Site; September 28, 2001

Preliminary Close-Out Report for the Pristine, Inc. Superfund Site; EPA; September 30, 1998

Record of Decision Amendment for the Pristine, Inc. Superfund Site; EPA; March 30, 1990

Round Nineteen Monitoring Well Sampling Results; Pristine, Inc. Site; CRA; October 26, 2005

Year Eight Operation and Maintenance Annual Report; Pristine, Inc. Site; CRA; February 2006

Attachment 4: Ohio EPA Compendium for Cumulative Risk Levels

Ohio EPA
Division of Emergency and Remedial Response
Assessment, Cleanup & Reuse Section, Remedial Response Program

TECHNICAL DECISION COMPENDIUM

Title: Human Health Cumulative Carcinogenic Risk and Non-carcinogenic Hazard Goals for the DERR Remedial Response Program

Date: 21 August 2009

Key Words: Risk goal, hazard goal, excess lifetime cancer risk, cumulative risk, remediation goals, hazard index

Purpose: The purpose of this decision document is to identify the human health cumulative excess lifetime cancer risk goal and the non-cancer hazard goal for the Remedial Response Program and the Federal Facilities Section of the Division of Emergency and Remedial Response (DERR).

Background: To date, the DERR Remedial Response program has utilized the acceptable exposure level, or "risk goal", defined within the National Contingency Plan (NCP) for site enforcement and cleanup decisions. The NCP defines the acceptable excess upper lifetime cancer risk as generally a range between 1E-6 and 1E-4, with a point of departure of 1E-6 for determining remediation goals. For non-carcinogens, the cumulative hazard index (HI) should not exceed 1.

Many Divisions and Programs within Ohio EPA are currently operating using a fixed human health risk goal, rather than the risk range provided in the NCP. The Division of Hazardous Waste Management and the Division of Surface Water have adopted a fixed carcinogenic risk goal of 1E-5. In addition, the DERR Voluntary Action Program (VAP) has a carcinogenic risk goal for the development of generic numerical standards of 1E-5 and a non-cancer hazard index of 1 for all land uses. The use of a risk range for the cumulative carcinogenic risk goal by DERR Remedial Response has caused some confusion among internal and external stakeholders, and has contributed to some delays in the cleanup of sites.

Decision: The DERR Remedial Response program has adopted a human health cumulative excess lifetime carcinogenic risk goal of 1E-5 and a cumulative non-cancer hazard goal equal to a hazard index (HI) of 1, for all receptors and land uses. These goals are to be used as both the level of acceptable excess cancer risk or non-cancer hazard and for the development of remediation goals for a site.

The defined risk and hazard goals should be applied as a *goal*, recognizing the need to retain flexibility during the evaluation and selection of remedial alternatives.

Rationale: The adoption of a single risk goal will help ensure consistency in site evaluation, remedy selection, and site cleanup, and is within the NCP acceptable risk range.

Contact: Brian Tucker, Central Office, 614-644-3120