THIRD FIVE-YEAR REVIEW REPORT FOR HAVILAND COMPLEX SUPERFUND SITE DUTCHESS COUNTY, NEW YORK





Prepared by

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LIST OF ABBREVIATIONS

COC Contaminant of Concern

DCDOH Dutchess County Department of Health

EPA United States of Environmental Protection Agency

FS Feasibility Study

HPF Hyde Park Fire and Water District

MCL Maximum Contaminant Level

NPL National Priorities List

NYSDOH New York State Department of Health

NYSDEC New York Department of Environmental Conservation

NYCRR New York Code of Rules and Regulations

O&M Operation and Maintenance

OU Operable Unit

ppb Parts per Billion

PRP Potentially Responsible Party

RA Remedial Action

RD Remedial Design

RI/FS Remedial Investigation/Feasibility Study

ROD Record of Decision

RPM Remedial Project Manager

VOC Volatile Organic Compound

EXECUTIVE SUMMARY

This is the third five-year review for the Haviland Complex Superfund Site. The site is located in the Town/Village of Hyde Park, Dutchess County, New York. The site remedy was found to be functioning as intended by the decision documents in protecting public health and the environment. The implemented remedy for the Haviland Complex Superfund Site protects human health and the environment. There are currently no exposure pathways that could result in unacceptable exposure to site-related contamination.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site Name: Haviland Complex Superfund Site

EPA ID: NYD980785661

Region: 2 **State:** NY **City/County:** Hyde Park, Dutchess County

SITE STATUS

NPL Status: Final

Multiple OUs? Has the site achieved construction completion?

No Yes

REVIEW STATUS

Lead agency: Environmental Protection Agency

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

text.

Author name (Federal or State Project Manager): Kevin Willis

Author affiliation: Remedial Project Manager

Review period: 7/30/2007 to 6/30/2012

Date of site inspection: 4/8/2012

Type of review: Policy

Review number: 3

Triggering action date: 9/27/2007

Due date (five years after triggering action date): 9/27/2012

Five-Year Review Summary Form (continued)

The table below is for the purpose of the summary form and associated data entry and does not replace the two tables required in Section VIII and IX by the FYR guidance. Instead, data entry in this section should match information in Section VII and IX of the FYR report.

Issues/Recommendations

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

Source Control and Natural Attenuation of Aquifer

To add additional issues/recommendations here, copy and paste the above table as many times as necessary to document all issues/recommendations identified in the FYR report.

Protectiveness Statement(s)

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

Operable Unit: Protectiveness Determination:

Source Control and Protective Addendum Due Date Groundwater (if applicable):

Remediation via Click here to enter date.

Natural Attenuation

Protectiveness Statement:

The source control and groundwater remediation via natural attenuation remedies for the Haviland Complex Superfund Site protect human health and the environment. There are currently no exposure pathways that could result in unacceptable exposure to site-related contamination.

Sitewide Protectiveness Statement (if applicable)

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

Protectiveness Determination:

Addendum Due Date (if applicable):

Click here to enter date.

I. Introduction

This five-year review was conducted by Kevin Willis, U.S. Environmental Protection Agency (EPA) Remedial Project Manager (RPM). This review was conducted in accordance with the Comprehensive Five-Year Review Guidance, OSWER Directive 9355.7-03B-P (June 2001). The purpose of a five-year review is to ensure that implemented remedies are protective of public health and the environment and that they function as intended by the decision documents. This document will become part of the site file.

This is the third five-year review for the Haviland Complex site. The trigger for this five-year review is the signature date of the first five-year review report, which was September 27, 2007. This site was addressed through a remedy including source control and natural attenuation for the groundwater contamination.

II. Site Chronology

Table 1, attached, summarizes the site-related events from discovery to the present.

III. Background

Site Location

The site mainly consists of a plume of contaminated groundwater found in the vicinity of a 275-acre area which includes the Haviland Complex Apartments, the Hyde Park Middle School, the Smith School, the Haviland Shopping Center, and approximately 35 residences and small businesses located east of Route 9G in the Village of Hyde Park, New York (Figure 1). The Village of Hyde Park has an estimated population of 21,000 residents. Of these residents, most are served by a public water supply system. A small percentage of the population obtains their water from residential wells. Groundwater in the study area flows southeasterly and discharges into Fall Kill Creek.

Site Characteristics

The site is located within the Village of Hyde Park. The Village is largely residential, with some small businesses in the community. A municipal water system serves the area, as well as a portion of Dutchess County from Poughkeepsie northward to Hyde Park.

Site Geology/Hydrology

The subsurface geology of the area shows glacial deposits overlaying eroded bedrock. The bedrock surface consists of southerly dipping trenches that control the groundwater flow before being influenced by Fall Kill Creek. Bedrock is exposed immediately north of the site and dips downwardly to the south. Outwash/till overlays the bedrock which constitutes the aquifer which individual home water wells utilize in the area.

History of Contamination

The Dutchess County Department of Health (DCDOH) began receiving complaints concerning groundwater quality in the site area in October 1981. A sampling program and septic system survey of the Haviland Complex area was initiated by DCDOH in December 1981. The results indicated that the Haviland Laundromat and Dry Cleaner and the Haviland Car Wash septic systems were not functioning adequately. Consequently, the car wash installed a new septic tank and the laundromat installed a pretreatment system and a new tile field as corrective measures.

IV. Remedial Actions

Initial Response

In December 1982, New York State Department of Health (NYSDOH) began sampling the Haviland area groundwater for contamination. The sampling data indicated that levels of tetrachloroethylene (PCE) and dichloroethene (DCE) in the septic discharge from the laundromat exceeded standards. As a result, in 1983, the laundromat was ordered to disconnect the dry cleaning operation from the septic system and to dispose of all spent dry cleaning fluids at a pre-approved disposal facility. All residents in the area were notified of the situation and were advised to use bottled water. Water treatment units were installed on wells servicing the Haviland Apartments and the laundromat in 1984 and 1985, respectively, to remove organic contaminants. In February 1989, the New York State Department of Environmental Conservation (NYSDEC) installed individual activated-carbon treatment systems on homes with well water which exceeded drinking water standards.

Basis for Taking Action

In 1988, EPA retained the services of Ebasco, Inc. to conduct a Summary of Groundwater Investigations at the site, which was completed in March 1991. Analysis of groundwater at the site indicated groundwater was contaminated primarily by PCE. Chlorobenzene was observed at elevated levels but it was determined that it was not a site-related contaminant. The results of the baseline risk assessment indicated that, if used as a supply of household water, the groundwater at the site posed unacceptable risks to human health and the environment.

Remedy Selection

Based on the results of the RI/FS, a ROD was signed on September 30, 1987, identifying the following remedy:

- clean the contaminated septic systems identified as the source of contamination
- extend public water from the nearby Harbourd Hills Water District to the residents on private wells (EPA would enter into an agreement with the Town of Hyde Park to upgrade this system to meet New York State drinking water standards) and

• extract and treat contaminated groundwater.

Subsequent to the ROD, there was difficulty in agreeing on the source of the alternate water supply. On several occasions, Town of Hyde Park officials requested that EPA reevaluate the source of the drinking water supply to be utilized for the drinking water system. In addition, since the signing of the ROD, levels of groundwater contamination had decreased significantly. Residential well sampling data also indicated that levels of contaminants entering impacted residential wells decreased. It was determined that additional sampling and modeling of the groundwater regime was warranted. Consequently, EPA and NYSDEC decided to reevaluate the need for an alternate supply of public water in the area and the need for a groundwater extraction and treatment system. Studies found that the extraction and treatment of groundwater and the provision of a public water system did not need to be implemented to ensure the protection of human health and the environment.

Subsequently, a Record of Decision Amendment was issued in September 1997. The major components of the modification to the selected remedy include:

- Continued use of existing whole-house groundwater treatment systems on affected residences to prevent exposure to low level groundwater contamination.
- Maintenance of filters and semi-annual monitoring of homes affected by low level contamination present in the aquifer until three consecutive years of sampling indicate that the well water meets Federal and State drinking water standards.
- Elimination of the public water supply system portion of the 1987 selected remedy.
- Natural attenuation of contaminants in the aquifer to below Federal and State drinking water standards.
- Elimination of the groundwater extraction and treatment system portion of the 1987 selected remedy.
- Implementation of a groundwater monitoring program.

Remedial Action Objectives

- . The remedial action objectives for the remedy were first formally identified in the ROD Amendment as follows:
 - protect human health by ensuring residents are not exposed to contaminated groundwater,
 - reduce groundwater contamination levels to drinking water standards, and
 - protect human health by ensuring residents are not exposed to contaminated residential well water.

Remedial Action Implementation

The septic tanks at the Haviland Complex and the Haviland Middle School were cleaned by EPA in 1991. This action was described in a 1991 Remedial Action Report.

In 1997, EPA issued the Record of Decision Amendment, as described above. In response to requests by local residents made during the public comment period before the ROD Amendment was signed, monitoring wells were installed by EPA in 1998 to observe any changes in the aquifer before the groundwater reached the potable wells. These wells have been sampled by EPA annually since their installation.

Operation and Maintenance

In spring 1998, DCDOH acquired the public water portion of Hyde Park Fire and Water District (HPF). DCDOH determined that it would be appropriate to connect the Town of Poughkeepsie public water system to the HPF system. By December 1998, DCDOH decided that the Harbourd Hills Water District would also benefit from connecting into the larger system. The Request for Bids (RFB) to design the water system construction was sent out immediately thereafter and the RFB for the construction was issued in July 2001. Construction of the system began September 2001 and was completed in August 2002.

NYSDEC was informed that the DCDOH would be constructing a public water system into the site area in August 2001 and that all of the homeowners who had NYSDEC-maintained activated-carbon treatment systems had requested that they be connected into the new public water system. Consequently, NYSDEC decided that it would be cost-effective to provide the connection to the system and remove the carbon units. NYSDEC connected the site-affected homes to the public water system on August 30, 2002. Thereafter maintenance and semi-annual monitoring of homes affected by low level contamination was no longer needed.

An annual monitoring well sampling plan has been in place during the past ten years. Six monitoring wells are sampled to assure that groundwater contamination at the site follows the expected trends. Annual sampling costs are presented in Table 3.

Institutional Controls Implementation

The 1997 ROD Amendment did not call for the placement of institutional controls. However, the DCDOH has extended a county-wide public water system into the site area and all residents have been connected. Local groundwater is no longer used as a potable water supply. In addition, there are extra layers of protection provided by local government. Any well drilling in the area is governed by the Dutchess County Sanitary Code: Article XVI, Sec. 16.4. Also, New York State Sanitary Code 10 NYCRR Part 5, Subpart 5-2 states that "No person shall construct or abandon any water well unless a permit has first been secured from the permit issuing official."

V. Progress Since the Last Review

This is the third five-year review for this site. The last five-year review was completed in September 2007. The five-year review found the implemented remedy was protective of human health and the environment. Although there were not issues that impacted remedy protectiveness, the following items were identified during the review:

• During the site inspection on June 14, 2007 an old monitoring well, MW-12, was found in the residential area. Since residents are connected to the municipal public supply line, drinking water from the site is not an issue. However, this well should be sampled to determine current VOC concentrations in groundwater under the residential area.

This monitoring well was added into the annual sampling program. The analysis from this well consistently shows results well below drinking water standards.

• During the site inspection on June 14, 2007, several of the groundwater monitoring wells could not be located and some that were located were in a state of disrepair (i.e., cap broken on MW-86-26). All wells should be located and repaired if necessary. However, if any monitoring well has been compromised and can no longer provide valid results, it should be properly sealed according to state and local requirements.

Monitoring wells were all accounted for during the site walkover. Two monitoring wells (MW-07 and MW-86-26) were decommissioned by the school during construction of a new parking lot.

• Future sampling reports need to compare groundwater sampling results to Federal and State (NYSDEC) MCLs. The last report compared results to Federal and NYSDOH standards.

All results have been compared to Federal and NYSDEC MCLs.

VI. Five-Year Review Process

Administrative Components

The five-year review team consisted of: Rebecca Ofrane and Julie McPherson, Risk Assessors, and Kevin Willis, Remedial Project Manager and Hydrogeologist.

Community Notification and Involvement

The EPA Community Involvement Coordinator for this site, Cecilia Echols, arranged for a notice to be published in a local newspaper, <u>The Poughkeepsie Journal</u> on March 25, 2012. This notice indicated that a five-year review is underway and comments on the

remedy or the site were welcome. The notice also identified the local information repositories.

Document Review

The relevant documents and reports which were reviewed in the process of completing this five-year review are included in Table 3.

Data Review

The source removal is documented in a Remedial Action Report. The septic tank cleanout effort showed nonhazardous levels of contamination at the Haviland Complex and that the septic waste from the Haviland Middle School contained hazardous contaminants; these wastes were disposed at appropriate off-site facilities.

The groundwater monitoring network includes monitoring wells installed in the overburden zone of the aquifer. Since 1998, groundwater monitoring has been conducted at the site to assure that the remedy remains protective.

The primary groundwater contaminants at the site have historically been PCE, trichloroethylene (TCE), 1,2-DCE, vinyl chloride, and chlorobenzene. The contamination observed in the site monitoring wells has continually been diminishing and the TCE, DCE, vinyl chloride and chlorobenzene has not been detected in any wells above Federal Maximum Contaminant Levels (MCLs) since 1991. Chlorobenzene has been observed over NYSDEC MCLs, but this contaminant has been determined to not be site related. Only two of the monitoring wells, MW-86-24A and MW-99-02, continue to show PCE sporadically at levels above the Federal and NYS MCL of 5 ug/l.

Over the past five years, PCE levels have been fluctuating slightly above or below its MCL in these two wells. Since the contaminant concentrations in the aquifer within the study area continue to diminish, natural attenuation is occurring at the site. The general trend continues to be downward and sampling will continue until all contamination is observed to remain below MCLs for multiple consecutive rounds of sampling.

Typically, EPA prefers to see that biological activity is the natural mechanism operating at a site where Monitored Natural Attenuation is the chosen remedy, but if biologic activity was a major factor in the study area, breakdown products of the PCE would be observed. Since these breakdown products have not been observed, physical processes are occurring to remediate the site. Once it has been determined that Natural Attenuation has remediated the contamination, the site can then be deleted from the National Priorities List.

Site Inspection

A site inspection was conducted on March 22, 2012. The following members of the review team were present: Julie McPherson and Rebecca Ofrane, Risk Assessors, and

Kevin Willis, Remedial Project Manager. During the site inspection, it was noted that two monitoring wells, MW-86-07 and MW-86-26, were destroyed by the installation of a new parking lot at the school.

Interviews

James Heubel, Supervisor of Buildings and Grounds at the Haviland Middle School was interviewed and he had no specific concerns about the site.

Institutional Controls Verification and Effectiveness

There are no institutional controls that were selected as part of the remedial action and none are needed during the time period of groundwater remediation. The connection of all buildings above the contaminated plume to a public water supply provides an adequate protection against exposure. Local groundwater is no longer used as a potable water supply. In addition, there are extra layers of protection provided by local government. Any well drilling in the area is governed by the Dutchess County Sanitary Code: Article XVI, Sec. 16.4. Also, New York State Sanitary Code 10 NYCRR Part 5, Subpart 5-2 states that "No person shall construct or abandon any water well unless a permit has first been secured from the permit issuing official."

VII. Technical Assessment

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

The August 1, 1997 ROD called for natural attenuation of groundwater contamination to below State and Federal drinking water standards. For this review period, contaminant concentrations have decreased in the wells sampled as part of the long-term groundwater monitoring program. In the most recent round of sampling conducted on May 22, 2012, all Contaminants of Concern (COCs) were below MCLs. This round of sampling included an additional monitoring well on the eastern portion of the study area to assure the Team that the site conditions had not changed. In the previous sampling round conducted on November 22, 2011, PCE at 5.6 and 6.1 ppb, in these same two monitoring wells (MW-99-02 and MW-86-24A, respectively) exceeded the Federal and/or State MCL of 5.0 ppb. This followed a previous sampling event which showed all COCs to be below MCLs in all wells. Figure 2 provides a summary of PCE concentrations in MW-99-01, MW-99-02, and MW-86-24A. (Note that PCE was not detected above the MCLs at any other monitoring well within the study area since the last five-year review.) The groundwater concentrations have been decreasing, so there is evidence of natural attenuation. Although PCE in these two wells has been observed above the MCL, there is no complete exposure route since the nearby residents are connected to public water. Therefore, the groundwater remedy is currently functioning as intended by the ROD.

Question B: Are the (a) exposure assumptions, (b) toxicity data (c) cleanup levels and (d) remedial action objectives used at the time of the remedy still valid?

There have been no other physical changes to the site that would adversely affect the protectiveness of the remedy. Land use assumptions, exposure assumptions and pathways, and remedial action objectives considered in the decision documents remain valid. Although specific parameters may have changed since the time the risk assessment was completed, the process that was used remains valid and is not expected to affect the remedy. Recently, EPA's IRIS program released an updated toxicological profile for TCE and PCE. However, the MCL remains the same at 5 ug/L (or 5 ppb). The exposure assumptions, toxicity data, cleanup levels, and remedial action objectives identified for the site remain valid.

The risk assessment process has changed somewhat since the original risk assessment was performed in 1996. In order to account for changes in toxicity values and exposure assumptions since the baseline human health risk assessment was performed, the maximum detected concentrations of the COCs identified during the last five years of sampling were compared to their respective Regional Screening Levels (RSLs), New York State Department of Environmental Conservation Water Quality Regulations Parts 700-706, and National Primary Drinking Water Standard MCLs (Table 4). The MCL is the highest level of contaminant that is allowed in drinking water. MCLs are promulgated standards that apply to public water systems and are intended to protect human health by limiting the levels of contaminants in drinking water. RSLs are a human health risk-based value that is equivalent to a cancer risk of 1 x 10⁻⁶ or a hazard index of 1 (Table 4).

The results indicate that chloroform, bromodichloromethane, TCE, PCE, 1,4-dichlorobenzene and chlorobenzene have exceeded their respective screening criteria in groundwater in the past. However, in the most recent round of sampling (May 2012), none of these contaminants exceeded their respective Federal MCLs. PCE was detected above its Federal MCL in the previous round of sampling (November 2011).

Soil vapor intrusion was evaluated as a potential future exposure pathway in the 2002 Five-Year Review. It was determined at that time and again in the 2007 Five-Year Review Report that the risks associated with this exposure pathway were not of concern. In order to confirm the protectiveness of this decision, the maximum detected concentrations of the contaminants of concern in the groundwater were compared to the vapor intrusion screening criteria. The concentrations of the volatile chemicals detected in the groundwater sampling events since 2007 have not exceeded the screening levels, indicating vapor intrusion is currently not an issue at the site.

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

No. However, it should be noted that two wells (MW-88-07 and MW-86-26) were found

to be destroyed during construction of a new parking lot at the school. Based on data trends, these groundwater wells do not need to be relocated or reinstalled at the site.

Technical Assessment Summary

The unrestricted use of the groundwater will be achieved once the groundwater contaminant levels are below MCLs for multiple consecutive sampling events. In the interim, all residents are connected to a public water supply.

Table 5 summarizes suggestions stemming from this review.

VIII. Issues, Recommendations and Follow-up Actions

This report does not identify any issue or recommend any action at this site needed to protect public health and/or the environment that is not addressed by the remedy selected in the site decision documents as routinely operated, modified, maintained and adjusted over time. The following suggestions concerning operations, maintenance and monitoring are summarized below:

Two monitoring wells have still shown levels of PCE slightly above the MCL in the recent past. All monitoring wells, including these two, showed concentrations of contamination to be below MCLs during the last round of sampling. EPA will continue to observe the site conditions until the groundwater contamination is shown to remain below MCLs for multiple consecutive sampling events. At that point, EPA will determine whether the remediation goals at the site have been attained.

IX. Protectiveness Statement

The implemented remedy for the Haviland Complex Superfund Site protects human health and the environment. There are currently no exposure pathways that could result in unacceptable exposure to site-related contamination.

X. Next Review

The next five-year review for the Haviland Complex Superfund Site should be completed within five years of the date of this five-year review.

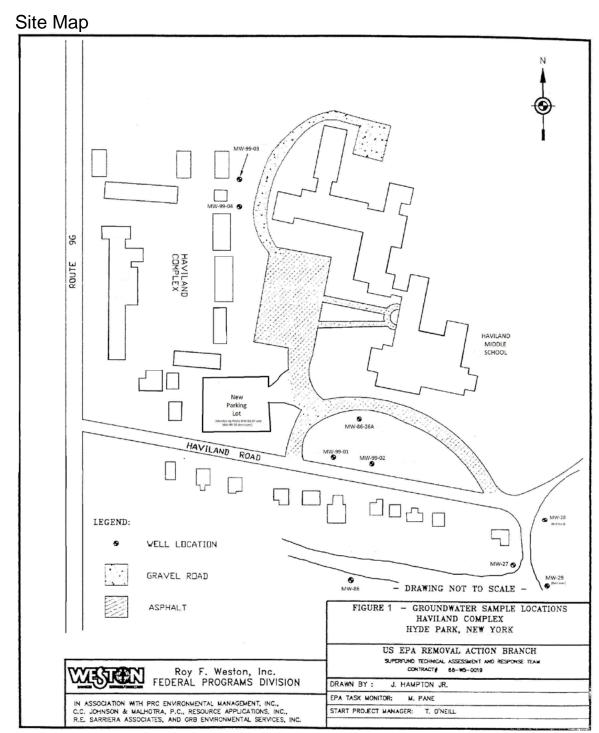


Figure 1

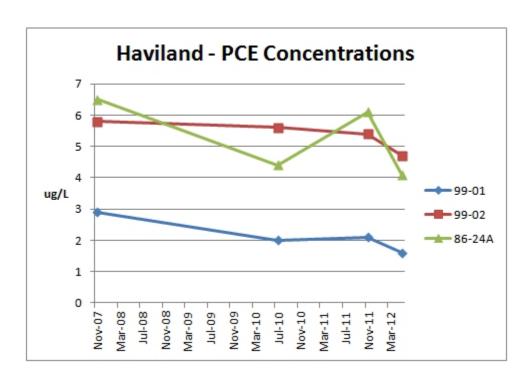


Figure 2

Table 1: Chronology of Site Events Event Date Volatile organic compounds detected at Haviland Complex 1982 Site placed on National Priorities List 1986 Record of Decision 1987 1988 Remedial Design started Residential water treatment units installed 1989 Septic system cleaning 1991 Record of Decision Amendment 1997 Installation of additional monitoring wells 1998 County installs public water system 2002 NYSDEC connects Haviland Road residents to Public water 2002 system and removes carbon filters First five-year review 2002 Second five-year review 2007

Table 2: Annual System Operations/O&M Costs

	Cost per Year
Groundwater Monitoring, Sampling, and Analysis	\$20,000
Data Management and Reporting	\$30,000
Total Estimated Cost	\$50,000

Table 3: Documents, Data, and Information Reviewed in Completing the Five-Year Review

Document Title, Author	Submittal Date
Remedial Investigation/Feasibility Study	1987
Record of Decision, EPA	1987
Record of Decision Amendment, EPA	1997
Groundwater data collected by EPA/ERT/DESA	2002 -2012
EPA guidance for conducting five-year reviews and other EPA guidances and regulations to determine if any new Applicable or Relevant and Appropriate Requirements relating to the protectiveness of the remedy were developed since EPA issued the ROD.	

Table 4 – Site Contaminant Maximum Detections During Review Period						
сос	Maximum Detected Concentration (ug/l)	Region 9 Preliminary Remediation Goal (ug/l) Cancer risk = 1 x 10 ⁻⁶ Non-cancer hazard = 1	National Primary Drinking Water Standard (ug/l)	NYSDEC Groundwater Quality Criteria (ug/l)	Location	Date
Cis-1,2-DCE	2.4	61 (nc)	70	5	99-02	2007
Chlorobenzene	21	110 (nc)	100	5	99-01	2010
PCE	6.5	0.1 (c)	5	5	86-24A	2007
TCE	2.0	0.028 (c)	5	5	86-24A	2007
Chloroform	5	0.17 (c)		7	86-24A	2010
1,2-Dichlorobenzene	4.1	370 (nc)	600	4.7	99-01	2007
1,3-Dichlorobenzene	3.5	180 (nc)		5	99-01	2010
1,4-Dichlorobenzene	2.9	0.5 (c)	75	5	99-01	2010

Table 5 - Issues, Recommendations and Follow-Up Actions			
Issue	Recommendations/Follow-Up Actions		
None	None		