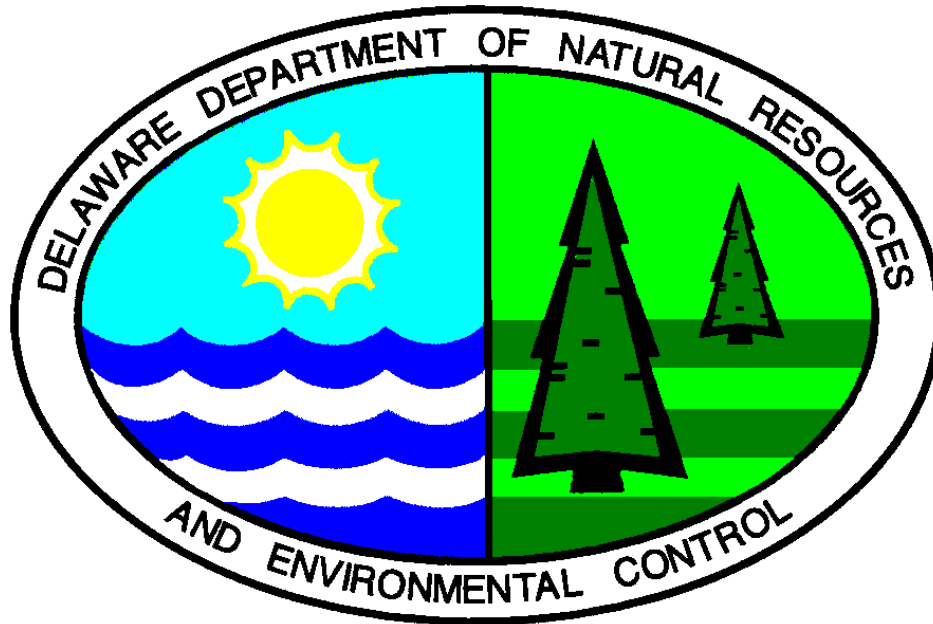


FINAL PLAN OF REMEDIAL ACTION

200 and 206 Maryland Avenue Site
Wilmington, DE

DNREC Project No. DE 1217



March 2001

Delaware Department of Natural Resources and Environmental Control
Division of Air and Waste Management
Site Investigation & Restoration Branch
391 Lukens Drive
New Castle, Delaware 19720

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I. INTRODUCTION

The 200 and 206 Maryland Avenue Site (“Site”) is located at the corner of Maryland Avenue and Lower Elm Street in Wilmington, Delaware. (Figure 1) In order to determine the potential for environmental liability prior to the purchase of the Site, the Reybold Group entered into the Department of Natural Resources and Environmental Control-Site Investigation and Restoration Branch’s (“DNREC-SIRB’s”), Voluntary Cleanup Program (“VCP”) under the provisions of the Delaware Hazardous Substance Cleanup Act, 7 Del. C. Chapter 91 (“HSCA”). Through a VCP Agreement, Reybold agreed to investigate the potential risks posed to the public health, welfare, and the environment. Reybold contracted WIK Associates, Inc. to perform a Remedial Investigation (“RI”) of the Site.

The purpose of the RI was to: 1) understand the nature and extent of any soil and/or groundwater contamination at the Site, 2) evaluate risks to public health, welfare, and the environment associated with identified contamination, and 3) perform a Feasibility Study that would identify and recommend a Remedial Action, if required by DNREC-SIRB. The potential purchaser of the property desired to obtain a Certification of Completion of Remedy from DNREC-SIRB upon completion of a remedy at the Site.

This document is the DNREC-SIRB’s Final Plan of Remedial Action (“Final Plan”) for the Site. It is based on the results of the previous investigations performed at the Site. This Final Plan is issued under the provisions of the HSCA and the Regulations Governing Hazardous Substance Cleanup (Regulations). It presents the Department’s assessment of the potential health and environmental risk posed by the Site.

As described in Section 12 of the Regulations, DNREC-SIRB provided notice to the public and an opportunity for the public to comment on the Proposed Plan. At the comment period’s conclusion, DNREC-SIRB reviews and considers all of the comments received and then issues a Final Plan. The Final Plan designates the selected remedy for the Site. The Proposed Plan, the comments received from the public, DNREC-SIRB’s responses to those comments, and the Final Plan will constitute the Remedial Decision Record.

Section II presents a summary of the site description, site history and previous investigations of the Site. Section III provides a description of the Remedial Investigation results. Section IV presents a discussion of the Remedial Action Objectives. Section V presents the Final Plan of Remedial Action. Section VI discusses public participation requirements.

II. SITE DESCRIPTION AND HISTORY

Site Setting

The site consists of 0.18 acres of land located at the corner of Maryland Avenue and Lower Elm Street in Wilmington, Delaware (See Figure 1 & 2). The 200 Maryland Avenue Property consists of approximately 0.14 acres (tax parcel number 26-042.20-015) and the 206 Maryland Avenue Property consists approximately 0.04 acres (tax parcel number 26-042.20-016). The Site contains a four story, commercial building on the larger parcel and the adjoining parcel is currently a vacant lot. The building covers the majority of the land surface of the Site.

The Site is bordered by Lower Elm Street to the east, Liberty Street to the south, a vacant lot to the west, and an alley known as Nancy Street to the north.

Site and Project History

WIK Associates, Inc., through a review of aerial photographs, United States Geologic Survey topographic maps, historical fire insurance maps and city directories investigated the historical use of the Site. Based on the information supplied by WIK, it appears that the 200 Maryland Avenue Property has been used for a combination of commercial and industrial uses since at least the 1920s.

The Site is adjacent to the Kirk Building Site (DE-1132). Both the Kirk Building Site and the 200 Maryland Avenue Property (larger parcel) were at one time owned/operated by Liberty Morocco Co., which was a leather tanning operation. A dwelling appeared to have been present on the smaller parcel (at 206 Maryland Avenue)

In order to obtain a Certification of Completion of Remedy, the prospective purchaser entered a VCP Agreement with DNREC-SIRB to perform a RI. The objectives of the RI were to evaluate the soil and groundwater quality at the Site.

III. INVESTIGATION RESULTS

Seven surface, four subsurface soil samples and two groundwater samples were collected as part of the 200 and 206 Maryland Avenue Site RI. Sampling locations are shown on Figure 2. The samples were collected and analyzed in accordance with the DNREC-SIRB approved work plan.

The samples were analyzed for contaminants listed on the Target Analyte List and the Target Compound List (TAL/TCL). The analytical results were first compared to the DNREC-SIRB Uniform Risk Based Remediation Standards (URS) in a non-critical water resource area, using the restricted use scenario. The proposed grid size and number of sampling points were determined using the Environmental Protection Agency's ("EPA's") Data Quality Objectives Process ("DQO-PRO"). The number of samples required, based on the grid unit spacing of approximately 36 feet wider and the total sampling area, is six. However, based on the Site layout, the existing building covers approximately 80% of the project area. This caused some sampling points to be greater than 35 feet apart.

Surface soil samples GP01-S001, GP02-S001 and GP06-S001, had arsenic concentrations of 4.4 milligrams per kilogram (mg/Kg), 5.8 mg/Kg and 5.1 mg/Kg, respectively, which slightly exceed the restricted URS for arsenic of 4 mg/Kg. Sample GP05-S001 had an iron concentration of 71,400 mg/Kg, which exceeds the restricted URS for iron of 61,000 mg/Kg. Sample GP01-S001 had lead concentration of 1,120 mg/Kg, which slightly exceeded the restricted URS for lead of 1,000 mg/Kg. Benzo(a)pyrene is the only semi-volatile organic compound to exceed the restricted use regulatory criteria of 0.8 mg/Kg. Benzo(a)pyrene was detected at a concentration of 1.5 mg/Kg in sample GP01-S001 and 2.1 mg/Kg in sample GP02-S001.

The results of the subsurface soil samples revealed no exceedance when compared to the restricted use URS for TAL/TCL analyses.

The results of the groundwater samples revealed that iron and manganese exceeded the groundwater regulatory criteria. The results of the ground water samples, GP06-W-001 and GP10-W001, revealed iron concentrations of 60,000 micrograms per liter ($\mu\text{g/L}$) and 47,100 $\mu\text{g/L}$ respectively which is in excess of the iron drinking water Secondary Maximum Contaminant Level (SMCL) standard of 300 $\mu\text{g/L}$. Manganese was detected in these samples with concentrations at 783 $\mu\text{g/L}$ and 1,200 $\mu\text{g/L}$ respectively, which are in excess of the manganese drinking water SMCL standard of 50 $\mu\text{g/L}$.

A risk assessment was performed to evaluate the cumulative risk associated with the exposure to soil and ingestion of groundwater on the site. The calculations were conducted using the DNREC Site-Specific Calculator for Multiple Analytes (DNREC May 2000 version) assuming a current and future restricted use scenario.

The soil cumulative risk was calculated using 95% of the upper confidence level (UCL) of the mean of the soil concentrations (EPA, 1989). The assessment indicated the cumulative risks, carcinogenic and non-carcinogenic are below $3\text{E-}06$ and below a hazard quotient of one. Therefore, the soil does not pose an unacceptable risk to human health and the environment.

The groundwater cumulative risk was calculated using the mean of the data set. The assessment indicated that the cumulative carcinogenic risk is below $7\text{E-}07$, which is below the DNREC's risk guideline of $1\text{E-}05$. However, the cumulative non-carcinogenic risk hazard quotient is 5.14, which is above the DNREC-SIRB guideline of one. However, 95% of the hazard quotient risk was attributed to iron assuming that groundwater is consumed as a primary drinking water source. However, the ground water at the Site is not used for drinking and there are no drinking water resources, including water supply wells or surface intakes, within one mile of the Property. Based, on this information, the iron concentrations in the ground water, regardless of their source, do not pose a risk to human health.

IV. REMEDIAL ACTION OBJECTIVES

According to Section 8.4 (1) of the Regulations, site-specific Remedial Action Objectives (RAO) must be established for all Plans of Remedial Action.

Qualitative objectives describe, in general terms, what the ultimate result of the Remedial Action at the facility should be. The majority of the Site is currently covered by a four-story building and is located in an urban setting. The primary receptors of contamination are humans. Therefore, the qualitative RAO for this Site is to prevent human contact such as dermal contact, inhalation, or ingestion with the groundwater.

Quantitative objectives define specific levels of Remedial Action to achieve protection of human health and the environment. Based on the qualitative objectives, the quantitative objectives will be to ensure that future site users such as site workers, construction workers, visitors, and trespassers are not exposed to groundwater containing iron contamination above the DNREC-SIRB's URS.

Based on the Site layout, some sample locations required modification from the actual spacing size recommended by EPA's DQO-PRO Hot Spot Calculator. Because uncertainty that exists regarding contaminants in the subsurface soils underneath the building (tax parcel number 26-042.20-015), DNREC-SIRB requires that a deed restriction be put in place that requires the owner to notify DNREC-SIRB, if soils beneath the building are disturbed or the building is demolished. Any of these type of actions may trigger additional investigation and if necessary a remedial action.

The only compound that poses a potential hazard in ground water is iron. Elevated iron concentrations in ground water are common in the shallow aquifer in the Wilmington, Delaware area (Woodruff, 1970; Johnson, 1973). The iron in groundwater may possibly be attributable to manmade activities as well as natural resources. However, the ground water at the Site is not used for drinking and there are no drinking water resources, including water supply wells or surface intakes, within one mile of the property. Based on this information, the iron concentrations in the ground water, regardless of their source, do not pose a risk. The study concludes that the ground water at the Site should not be used for potable water sources. If the areas were going to be developed as a source of drinking water, then ground water would have to be treated for iron due to aesthetic problems prior for distribution to public. Other HSCA Sites that are closer to Christina River, indicated presence of even higher iron concentration in the down gradient ground water as well. The impact to the surface waters if any from iron is groundwater, will be further evaluated by DNREC-SIRB in a separate study at a later date.

V. FINAL PLAN OF REMEDIAL ACTION

As stated in Section III of this Final Plan of Remedial Action, the contamination at the Site appears to be confined to the ground water. In order to meet the RAOs, DNREC-SIRB requires that an institutional control (i.e. deed restriction) be employed at the Site.

The deed restriction (a) will restrict the use of the Site to commercial and industrial uses only, (b) prohibit use of groundwater on the Site without the prior written approval of DNREC-SIRB, and (c) require written approval from DNREC-SIRB prior to any soil disturbing activities under, or demolition of, the existing building on tax parcel number 26-042.20-015. DNREC-SIRB may require an additional investigation of the area under the building, and, if necessary, a remedial action of that area if additional contamination is found.

VI. PUBLIC PARTICIPATION

The Department actively solicited public comments or suggestions on the Proposed Plan of Remedial Action and welcomed opportunities to answer questions. The comment period began on March 7, 2001 and concluded at the close of business (4:30 p.m.) on March 27, 2001. No comments from the public were received by DNREC-SIRB.

VII. DECLARATION

This Final Plan of Remedial Action for the 200 and 206 Maryland Avenue Site is protective of human health, welfare and the environment and is consistent with the requirements of the Delaware Hazardous Substance Cleanup Act ("HSCA").

William H. Hill
Acting Director, Division of Air and Waste Management

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Appendix A

Figures 1 & 2 from Remedial Investigation Report

Prepared by WIK Associates February 2001.