FINAL PLAN OF REMEDIAL ACTION

524 A & B South Walnut Street

Wilmington, Delaware

DNREC Project No. - DE-1235

July 2002

Department of Natural Resources and Environmental Control
Division of Air and Waste Management
Site Investigation and Restoration Branch
391 Lukens Drive
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1.0 INTRODUCTION

The 524 A & B South Walnut Street (site) is located at 524 South Walnut Street between Garasches Lane and C Street within the city limits of Wilmington, New Castle County, Delaware (Figure 1).

In order to determine the potential for environmental liability and obtain a Certificate of Completion of Remedy (COCR), and in accordance with applicable laws and regulations, 520 Venture Corporation (owner) entered into the Delaware Department of Natural Resources and Environmental Control (DNREC) Voluntary Cleanup Program (VCP) under the provisions of the Delaware Hazardous Substance Cleanup Act (HSCA), 7 Del. C. Chapter 91. Through a VCP Agreement, the owner agreed to conduct a remedial investigation (RI) to characterize the risks posed to public health, welfare and the environment. The owner contracted Tetra Tech, Inc. (Tt) to perform the RI of the site. The purpose of the RI was to: 1) understand the nature and extent of any soil contamination on the site, 2) evaluate risks to public health, welfare and the environment associated with any identified contamination, and 3), identify and recommend a remedial action, if required by DNREC.

This document is DNREC'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, the proposed plan, and any comments received. This final plan is issued under the provisions of the HSCA and the Delaware Regulations Governing Hazardous Substance Cleanup (Regulations). It presents the Department's assessment of the potential health and environmental risks posed by the site.

In June 2002, DNREC issued a proposed plan of remedial action (proposed plan) for the site based on the previous investigations. As described in Section 12 of the Regulations, DNREC provided notice to the public and an opportunity for the public to comment on the proposed plan. At the comment period's conclusion, DNREC did not receive any comments and prepared to issue this final plan. The final plan designates the selected remedy for the site. The proposed plan, all prior investigations of the site, the comments received from the public, DNREC's responses to those comments, and the final plan will constitute the remedial decision record.

Section 2.0 presents a summary of the site description, site history and previous investigations of the site. Section 3.0 provides a description of the remedial investigation results. Section 4.0 presents a discussion of the remedial objectives. Section 5.0 presents the final plan of remedial action. Section 6.0 discusses public participation requirements and Section 7.0 presents the Director's Declaration.

2.0 SITE DESCRIPTION AND HISTORY

The site is located at 524 South Walnut Street between Garasches Lane and C Street, in Wilmington, New Castle County, Delaware. The site consists of approximately 7.2 acres within one tax parcel, New Castle County tax parcel number 26-050.00-031. The site has one commercial condominium building, paved parking surfaces and a small landscaped area. The site is approximately 90 percent covered by either the building and/or paved parking areas.

The site was previously used as a junkyard from the 1930s through the early 1960s. Prior to 1988, the eastern portion of the site was owned by railroad companies, including Consolidated

Rail and the Wilmington and Northern Railroad. The building on the site was constructed sometime around 1988 and currently houses commercial tenants. The site is bounded generally by Walnut Street to the west, a vacant wooded area and unpaved driveway to the north, a drainage ditch and marshland to the east and vacant land to the south (Figure 2).

Site and Project History

Historically, the site was used as a junkyard prior to its current land use. Surrounding properties have historically been used for lumberyards, coal companies, carriage works, leather works, an incinerator, a municipal dump, shipbuilding, automotive shops, salvage yards, warehousing, oil storage and distribution, and other commercial and industrial uses. Previous investigations in the vicinity have noted significant filling to have taken place on surrounding properties. Geotechnical investigations at the site in 1973, 1974 and 1987 have confirmed that the site has been extensively filled with a variety of material including rocks, broken concrete, trash, cinders, slag, incinerated rubbish, rags, wood, glass, plastic and coal. The 1987 report suggests that, the site may have received fill as recently as 1986. The depth of the material ranged from 0 to approximately 15 feet below grade.

Tt conducted Phase I Environmental Site Assessments in December 1997 and December 2000. Tt conducted an RI at the site in the September 2001 to assess the extent and character of potential contamination of soils and historical fill material observed at the site during earlier geotechnical studies.

3.0 INVESTIGATION RESULTS

DNREC worked with Tt to develop an RI work plan to address the following:

- Determine the presence or absence of contaminants at the surface and subsurface soils and groundwater, and if present, determine if the contaminants pose any unacceptable risks to human health or the environment.

The RI work plan called for Tt to perform the following tasks:

- Sample and analyze the surface and subsurface soil and groundwater at the site;
- Conduct a deed search and gather relevant background information;
- Prepare a pathway analysis for potential contaminant pathways of concern.

The following is a brief summary of the results of the investigations for the site:

3.1 General Information

The site consists of approximately 7.2 acres and is currently occupied by one commercial condominium building, paved surfaces and a small landscaped area. The site is approximately 90 percent covered by either building and/or paved parking areas and all non-hard surfaced areas are reportedly covered with two feet of clean fill soil. All surrounding buildings and structures are currently connected to public water and sewer systems.

3.2 Site Soils

The soils at the site are mapped as made land or urban land, indicating areas that have been filled with soil material, miscellaneous fill or both. Direct-push soil sampling indicated that the subsurface materials consist of a layer of crushed rock or silty sand under asphalt or gravel underlain by fill to depths of 8 feet to 16 feet below ground surface. Fill materials consisted of rocks, broken concrete, trash, cinders, slag, incinerated rubbish, rags, wood, glass, plastic and coal.

As part of the RI conducted by Tt, ten (10) direct-push borings (Geoprobe®) were placed at representative locations around the property and a total of twenty-two (22) soil samples were collected. Soil samples were collected from 0 to 2 feet below ground surface, and between 2 and 6 feet below ground. All soil samples were then submitted for laboratory analysis of USEPA Target Compound List/Target Analyte List (TCL/TAL) parameters.

Laboratory analytical results indicated several metals and compounds exceeded the DNREC Uniform Risk-Based Standard (URS) restricted use value for soil in a non-critical water resource area in at least one sample, including the polycyclic aromatic hydrocarbons (PAHs) benzo(a)pyrene, dibenz(a,h)anthracene, benzo(b)fluoranthene, polychlorinated biphenyls (PCB) 1248, arsenic and lead. No volatile organic compounds (VOCs) were detected above the applicable URS values. Additional metals and compounds, including the PCBs - PCB-1254 and PCB-1260 and the pesticide DDT exceeded the unrestricted use value in at least one sample, but were below the restricted use URS value.

Benzo(a)pyrene (0.19 mg/kg to 6.4 mg/kg) exceeded the restricted use URS values in eight samples, dibenz(a,h)anthracene (0.038 mg/kg to 1.2 mg/kg) exceeded in two samples and benzo(b)fluoranthene (0.24 mg/kg to 8.1 mg/kg) exceeded the applicable URS values in one sample. PCB-1248 was detected greater than the restricted use URS values in one sample (14.0 mg/kg vs. 3.0 mg/kg). The data tables are shown in Apprendix 1.

Arsenic exceeded the restricted use URS value of 4.0 mg/kg in eighteen samples, however, only four samples exceeded the natural background levels (11.0 mg/kg) normally found in northern New Castle County. Arsenic concentrations in shallow samples ranged from 3.3 mg/kg to 10.4 mg/kg, with a median concentration of 4.8 mg/kg. Deep soil samples had arsenic concentrations ranging from 2.6 mg/kg to 14.6 mg/kg and had a median concentration of 9.2 mg/kg. Lead concentrations ranged from 12.5 mg/kg to 1,140 mg/kg. One sample contained lead at a concentration greater than the restricted use URS value (1,140 mg/kg vs. 1,000 mg/kg). The data tables are included in Appendix 1.

3.3 Groundwater

Ten groundwater samples were collected during the RI. One groundwater sample was collected from each sampling location using a peristaltic pump in temporary PVC screen and casing placed in the borehole. The results of shallow groundwater sampling at the site indicated that groundwater beneath the site contains concentrations of metals, most notably arsenic, semi-

volatile organic compounds (SVOCs) and some pesticides which exceed the URS value for groundwater.

SVOCs exceeding the groundwater URS values were detected at sample location DP-4. They consisted of acenaphthene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, carbazole, dibenzofuran, fluorene, indeno(1,2,3-cd)pyrene and naphthalene.

The pesticides aldrin and dieldrin were detected in sample location DP-2 at a concentration exceeding the URS value for groundwater and DDT exceeded the URS value for groundwater at DP-6.

Concentrations of metals greater than the URS value for groundwater were detected across the site. In general, concentrations of total metals were greater than dissolved metals. Eight sample locations contained barium, iron and manganese at concentrations greater than the respective groundwater URS values. Six groundwater samples exceeded the URS value for groundwater for arsenic, and one sample exceeded the URS value for aluminum.

The area is served by a public water supply system. There are no known users of local groundwater or water supply wells near the site. There is a north-south trending ditch on the eastern side of the site that likely receives groundwater discharge from the site. The ditch drains to the Christina River approximately one-quarter mile north of the site. Several wetland areas are located to the northeast, east and southeast of the site.

3.4 Summary

The results of the investigations indicated that the site contains elevated concentrations of arsenic, lead, PAHs and PCBs in the soil samples that exceeded the DNREC URS values for restricted use. Several samples contained arsenic at a concentration greater than the URS value for restricted use, and four exceeded the range of concentrations that would be expected for natural background in Delaware. A number of the soil samples also contained contaminant concentrations greater than the URS value for unrestricted use, but below the restricted use URS values.

The results of shallow groundwater sampling at the site indicated that groundwater beneath the site contains concentrations of metals, most notably arsenic, SVOCs and some pesticides which exceeded the URS value for groundwater. SVOC and pesticide exceedances were limited to a single sampling location and do not appear to be representative of groundwater beneath the entire site.

There are no known users of local groundwater or water supply wells near the site and groundwater is not considered a human health pathway of concern for this site. To evaluate the potential impact on ecological receptors, groundwater concentrations were compared to surface water URS values for protection of the environment. When a conservative dilution factor of ten, (often used by the National Oceanic and Atmospheric Administration as a screening comparison), was applied to groundwater concentrations, the majority of potential surface water exceedances were eliminated. Therefore, the potential impact to aquatic life in the Christina River is expected to be minimal.

The site is approximately 90 percent covered by a commercial building and asphalt parking lot, and landscaped areas are covered with approximately two feet of landscaped fill material, eliminating direct contact with contaminated soil, and minimizing the erosion of contaminated soil from the site.

4.0 REMEDIAL ACTION OBJECTIVES

According to Section 8.4 (1) of the Regulations, site-specific remedial action objectives must be established for all plans of remedial action. The Regulations provide that DNREC set objectives for land use, resource use, and cleanup levels that are protective of human health and the environment.

Qualitative objectives describe, in general terms, what the ultimate result of the remedial action, if necessary, should be. The following qualitative objectives are determined to be appropriate for the site:

- Control potential human exposure (dermal, inhalation and ingestion) to impacted soils;
- Control potential human exposure (ingestion and inhalation) to impacted groundwater;
- Control potential erosion of impacted soils to the Christina River; and
- Control the flow of groundwater contaminated by metals, PAHs and pesticides into the Christina River above the Delaware Surface Water Quality Standards.

These objectives are consistent with the current use of the site as non-residential use in an urban setting, and worker health and safety concerns.

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 do not come in contact with soils or groundwater that contain elevated levels of metals, PAHs, pestcides and PCBs above the established restricted use URS values, and to prevent discharge of groundwater containing elevated levels of metals, PAHs and pesticides above URS values for surface water.

Based on the qualitative objectives, the quantitative objectives are:

1. Prevent human exposure to soils and groundwater contaminated by metals, PAHs, pesticides and PCBs that would result in a carcinogenic risk exceeding 1X10E-5, a hazard index of 1.0 or lead concentrations exceeding 1,000 mg/kg.

2. Prevent erosion of surface soils contaminated above DNREC URS values for protection of the Christina River.

3. Prevent discharge of groundwater contaminated by metals, PAHs and pesticides into the Christina River above the Delaware Surface Water Quality Standards.

Concentrations of metals greater than the groundwater URS values were detected across the site. In general, concentrations of total metals were greater than dissolved metals. Eight sample locations contained barium, iron and manganese at concentrations greater than the respective URS values for groundwater. Six groundwater samples exceeded the groundwater URS values for arsenic and one sample exceeded the groundwater URS value for aluminum. SVOC and pesticide exceedances were limited to a single sampling location and do not appear to be representative of groundwater beneath the entire site. When a dilution factor of ten was applied to groundwater concentrations as a general rule of thumb, the majority of potential surface water exceedances were eliminated. Therefore, the potential impact to aquatic life in the Christina River is expected to be minimal.

The compounds that pose a potential human health hazard that were detected in groundwater are arsenic, pesticides and PAHs. There are no known users of local groundwater as a primary drinking water source in the area and no use of groundwater at the site. Based on this information, metal and organic compound concentrations in the groundwater, regardless of their source, do not pose a current risk to human health. In addition, the site is located within the boundaries of the Groundwater Management Zone (GMZ) for the City of Wilmington, established in August 2001, that will ensure that the Division of Air and Waste Management (DAWM) and the Division of Water Resources (DWR) will mutually review any water well permits at the site.

5.0 FINAL PLAN OF REMEDIAL ACTION

As stated in Section 3.0 of this Final Plan, the soils at the site contain elevated levels of some metals, PAHs, pesticides and PCBs. The site is currently developed as a commercial building and parking lot and is expected to remain under the same land use. The final plan for the 524 A & B South Walnut Street site calls for maintenance of the existing cover system (building and parking lot) and institutional controls, consisting of the following:

- Placement of a deed restriction on the site limiting the property, which is currently a commercial condominium: a) to restricted land use (non-residential uses); b) prohibiting any excavation, trenching, construction, grading, drilling, digging or other earth disturbance activities, or renovation or demolition of the existing structures on the property, or any paved surfaces in excess of 12 inches below grade on the site without prior written approval of DNREC; and prohibiting the installation of any water well on, or use of groundwater at the site without the prior written approval of DNREC. Operation and maintenance (O&M) will consist of maintaining the pavement cap and landscaped areas in good condition.
- Placement of a GMZ and associated deed restriction at the site to prevent future use of the groundwater beneath the site without prior approval of DNREC.
- Development of an O&M Plan for the site to insure future maintenance of the pavement cap, building and the cover in the landscaped areas.

6.0 PUBLIC PARTICIPATION

The Department actively solicited public comments or suggestions on the proposed plan and welcomed opportunities to answer questions. The public comment period for the proposed plan began on Monday, June 10, 2002, and concluded at the close of business Monday, July 1, 2002. No written comments or requests for a public hearing were received by DNREC.

7.0 DECLARATION

This final plan of remedial action for the 524 A & B South Walnut Street site is protective of human health, welfare and the environment and is consistent with the requirements of the Delaware Hazardous Substance Cleanup Act.

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John Blevins Date
Director, Division of Air and Waste Management

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Figure 1: Site Location Map

Figure 2: Site Detail

Appendix 1: Laboratory Data Tables