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JAN 18 2005
File# DE1103
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STATE OF DELAWARE

DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
SITE INVESTIGATION AND RESTORATION BRANCH

FINAL PLAN OF REMEDIAL ACTION

January 2005

Meco Drive Site
Wilmington, Delaware **DNREC Project No. DE-1103**

This final plan of remedial action (final plan) presents the Department of Natural Resources and Environmental Control-Site Investigation and Restoration Branch (DNRECs) preferred cleanup alternative for the remediation at the Meco Drive project (site) (also known as the Wayman Fire Protection project and the Boxwood Road project).

This final plan summarizes the findings of the 2000 Remedial Investigation (RI) and the 2002 Feasibility Study (FS) with a 2004 FS Addendum, and the administrative record file upon which this final plan is based. Copies of site-related documents can be obtained or viewed at locations listed at the end of this document.

The final plan is identical to the proposed plan of remedial action (proposed plan), which was advertised for a public participation period from December 13, 2004 through January 3, 2005; no comments were received from the public.

INTRODUCTION

The Meco Drive project consists of seven (7) adjacent properties along Meco Drive, in Wilmington, Delaware. Site properties include 401, 403, 404, 406, 407, 408, and 410 Meco Drive, but exclude 402, 405, and 409 Meco Drive. DNREC was tasked to conduct a Sampling Site Inspection (SSI) and a Feasibility Study (FS) of the property to investigate the potential risks posed to public health, welfare, and the environment at the site under the provisions of the Delaware Hazardous Substance Cleanup Act (HSCA), 7 Del. C. Chapter 91. A DNREC contractor, Tetra Tech, Inc., performed the investigation and the FS on the site.

SITE DESCRIPTION AND HISTORY

The site consists of seven (7) separate parcels totaling approximately seven (7) acres in New Castle County, Delaware southwest of the City of Wilmington. Meco Drive lies north of Interstate 95 and southeast of Maryland Avenue, immediately west of the Little Mill Creek. The site is the source of an oily free product in the subsurface which discharges nearly continuously into a drainage culvert and intermittently into Little Mill Creek.

From 1930 to 1958, Elizabeth Tavani owned the entire site area. From 1955 to about 1971, various construction companies owned the parcels, including Pullela and Baldini (1955-1971), Ashley Construction (1956-1971), Maykut Construction (1968-1971), and DeSeta/Ates Industries (1971-1979). DNREC's contractor, Tetra Tech, was told that the area was used as a dump in the 1960's. Tetra Tech performed a review of aerial photography that showed various dirt access roads and bare and disturbed soil areas in the 1954 and 1961 photographs. No evidence has been uncovered to link the presence of the subsurface oil with any particular past property owner or business operator.

In December of 1986, a complaint initiated the identification of a seep of oily materials issuing from the vicinity of a drainage pipe on the eastern side of Meco Drive, which was discharging into Little Mill Creek. The seep was characterized as intermittent, and DNREC was unable to discover the source of the oil product. In March of 1988, DNREC performed a preliminary assessment of the site, and recommended that further inspection be performed. In 1990, 1991, and 1992, the Division of Air and Waste Management's Emergency Response Team, citing the appearance of oil slicks or oily material on the Little Mill Creek in the site vicinity, completed three (3) incident reports. In 1991, DNREC began placing sorbent "boom" materials into the drainage ditch to absorb the oily discharge, and this interim action remains ongoing.

In December of 1998, DNREC tasked their contractor, Tetra Tech, to perform a sampling site investigation (SSI) to attempt to identify the source of the oily free product, to perform the ongoing maintenance of the sorbent boom interim remedy, and to determine whether the site posed any risks to human health and the environment.

INVESTIGATION RESULTS

The SSI was performed in the summer and fall of 1999. It included the performance of 41 direct push test borings and the associated sampling of surface and subsurface soils and the subsequent completion of 36 of the borings as 1-inch diameter groundwater monitoring wells. The results of the SSI are summarized below.

Soils

The soil boring program demonstrated the occurrence of two (2) subsurface units in the site area; (1) an approximately 10-foot thick layer of variable fill materials including granular and fine-grained soils intermingled with asphalt, concrete, angular rock (crusher run), brick fragments, paper products, wood scrap, and highly variable amounts of an oily light nonaqueous phase liquid (LNAPL) product, and (2) underlying the fill was a layer of dark gray organic silt interpreted as recent (Holocene) tidal marsh deposits.

The areal extent of the oily material was delineated; it was encountered in laterally discontinuous locations in 19 of the 41 soil borings. The source of the LNAPL product was determined to likely have been illegal dumping of waste petroleum products into the construction debris fill either before or during the fill placement. No discrete source of petroleum products was identified in the vicinity either by historic records or by site contaminant distribution.

Laboratory analysis of the soil samples showed high concentrations of the oily product as indicated by analysis of gasoline-range organics (GRO) and diesel-range organics (DRO). Other organic compounds were present only at low levels in a few of the samples, including PCBs, carcinogenic polynuclear aromatic hydrocarbons (PAHs), and gasoline constituents benzene, ethylbenzene, toluene, and xylenes. The metals analysis did not reveal elevated levels of any of the Target Analyte List metals in the soil samples.

The SIRB chemist performed a "Fingerprint" analysis to attempt to identify the chemical constituents of the LNAPL oily product. The product did not match with any of the known petroleum hydrocarbon standards (it was not typical gasoline, heating oil, or diesel fuel, etc.), but he did conclude that the product was aged at least 20 to 30 years, and consisted of two separate phases, a lighter mineral spirits or Stoddard Solvent (C9-C10), mixed in varying proportions with a heavier motor oil or lubricating fluid (C19-C36). Additional samples of the product were analyzed for RCRA hazardous waste characteristics and for Toxicity Characteristic Leaching Procedures, but the material did not qualify as hazardous based upon the laboratory results.

None of the soil contaminants identified to be present were present at concentrations exceeding DNREC SIRB's Uniform Risk Standard (URS) concentrations for restricted land uses. Because the site is (and likely will remain) zoned commercial/industrial, the site soils do not present risks to human receptors.

The SIRB chemist evaluated all the site data and determined that the solvent in the oily product consists of substituted benzenes, which are listed compounds under HSCA. The presence of this solvent material exacerbates the dissolution of any soluble contaminants present in the soils (including the carcinogenic PAHs) into the groundwater, and permits their migration into nearby surface water bodies where they could pose risks to aquatic receptors.

Groundwater

Thirty-six 1-inch diameter wells were installed over the site in July of 1999, at which time nine (9) wells contained a measurable thickness of LNAPL oil product floating on top of the water table. This number increased over time to 18 wells containing oil product by January of 2000. The oil ranged in thickness from just detectable (0.01 inch) to greater than six (6) feet. Surveyed groundwater elevation data showed that the flow of groundwater was radial at the site, with the highest elevation at the locations of greatest product thickness, decreasing towards the Little Mill Creek and the drainage ditch. The analysis of groundwater samples supported the soil data; very few volatile or semivolatile organic compounds were identified, although high concentrations of oily product (both aromatic and aliphatic hydrocarbons) were present.

Groundwater beneath the Meco Drive site is not currently used for drinking water, nor is it able to be used in the future because the site lies within the Groundwater Management Zone (GMZ)

established for the City of Wilmington. The risks associated with the site groundwater are related to the discharge of groundwater and the overlying LNAPL product to surface water bodies of the drainage ditch and the Little Mill Creek.

Sediment and Surface Water

In February of 2001, Tetra Tech performed the collection and analysis of four (4) samples of surface water, and sediment from the drainage ditch leading to the Little Mill Creek for chemical characterization of the habitat and to evaluate the potential for risks to ecological receptors. Several of the semivolatile PAHs in the soils were present at concentrations above the URS for the Protection of the Environment. The surface water samples did not contain contaminants above action levels.

REMEDIAL ACTION OBJECTIVES

According to HSCA Regulation 8-4 (1), remedial action objectives (RAOs) must be established for all plans of remedial action. The regulations require that DNREC set objectives for land use, resource use, and cleanup levels that are protective of human health and environment.

The following RAOs were determined to be appropriate for the Meco Drive site:

- To prevent the current and future human ingestion of groundwater containing contaminants at concentrations above the HSCA risk levels by continuing the use of public water for all purposes at the site properties and in the surrounding area.
- To prevent environmental impacts to Little Mill Creek, and to the drainage ditch that serves as a tributary to Little Mill Creek, resulting from the offsite migration of LNAPL site contaminants through subsurface soils on top of the groundwater table.

These objectives are consistent with continued commercial/industrial site use, Wilmington zoning policies, and state regulations governing drinking water supply.

Based upon the RI results and the RAOs, Tetra Tech conducted a focused feasibility study (FFS) for the site in February of 2002. The FFS evaluated remedial alternatives by which to eliminate the current and future exposures to site contaminants present in subsurface soil and on the groundwater surface at concentrations above regulatory levels. The FFS evaluated several remedial action alternatives, including: (1) no action; (2) a limited action consisting of the continuation of the interim remedial action using sorbent booms and intermittent product pumping from recovery wells; and (3) several containment options using different materials for containing the product, coupled with LNAPL recovery by skimming. An additional alternative, to use a containment trench with an Oil/Water Separator, was discussed in several site meetings, and was evaluated and presented to SIRB in a FFS Addendum dated August 2004.

FINAL PLAN OF REMEDIAL ACTION

The FFS evaluation determined that the "Passive Collection Trench with Discharge through an Oil/Water Separator" was the most cost-effective alternative by which to attain the identified site RAOs. The Remedial Action will be implemented as described below:

1. A trench will be excavated to intercept the down gradient flow of the LNAPL and contaminated groundwater and divert it prior to its discharge into the existing drainage swale. Oily soil removed from the trench excavation shall be disposed at an offsite, permitted facility. The trench will house a 24-inch diameter perforated corrugated pipe, and will be backfilled with clean crushed stone. The LNAPL and groundwater collected within the trench will gravity-feed to a terminal Oil/Water Separator. After treatment, the water will flow to a permitted discharge point at the terminus of the drainage ditch prior to it's confluence with Little Mill Creek.
2. A written deed restriction shall be placed upon the deeds of the site properties within 90 days following DNREC's adoption of the final plan of remedial action. The deed restriction will prohibit all land disturbing activities (including, but not limited to, digging, drilling, and excavating) on the property without the prior written approval of the DNREC SIRB. In addition, the deed notation will limit future site use to a restricted (commercial or industrial) land use to maintain the assumptions of the Human Health Risk Assessment, (which is also in accordance with current zoning).
3. The Meco Drive site is already included within the City of Wilmington's groundwater management zone (GMZ), which is an internal DNREC document restricting the use of groundwater in the City. Deed restrictions shall also be placed upon the deeds of the site properties within 90 days following DNREC's adoption of the final plan of remedial action to prohibit the installation of any water well on, or use of groundwater at, the site without the prior written approval of DNREC, as well as to note that the site is located within a GMZ.

If you have any questions or concerns regarding the Meco Drive site, or if you would like to review the reports or other information regarding the site, please contact the project manager, Elizabeth Rogers, 391 Lukens Drive, New Castle, Delaware 19720, or at 302.395.2600.

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1/12/05
Date of Review

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