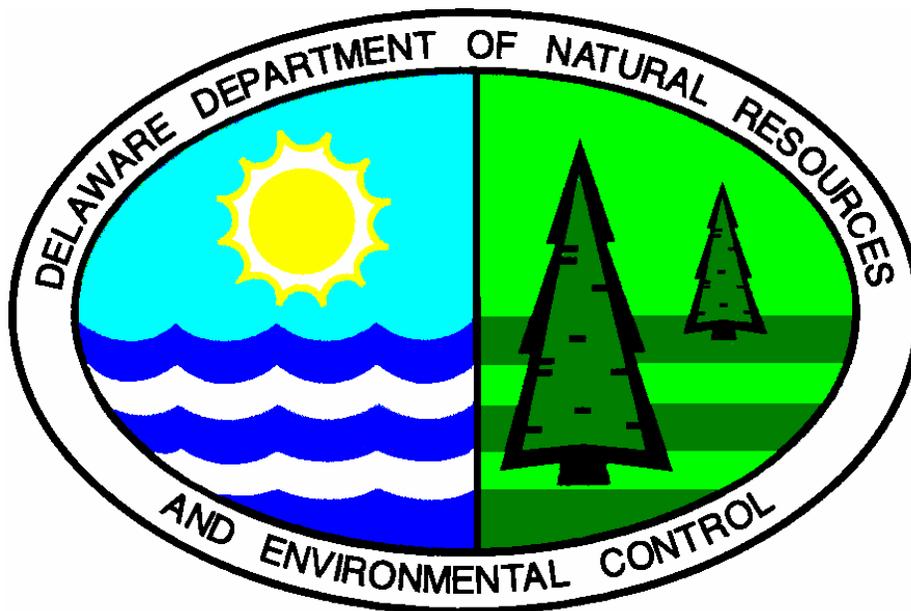


PROPOSED PLAN OF REMEDIAL ACTION

**Jackson Pit – Operable Unit 1
Lewes, Delaware**

DE - 0149



November 2002

**Delaware Department of Natural Resources & Environmental Control
Division of Air and Waste Management
Site Investigation and Restoration Branch**

TABLE OF CONTENTS

| | | |
|------------|---|----------|
| 1.0 | INTRODUCTION..... | 1 |
| 2.0 | SITE DESCRIPTION AND HISTORY..... | 1 |
| 2.1 | SITE AND PROJECT HISTORY | 2 |
| 3.0 | INVESTIGATION RESULTS..... | 2 |
| 3.1 | PRELIMINARY ASSESSMENT | 2 |
| 3.2 | SITE INVESTIGATION | 2 |
| 3.3 | FACILITY EVALUATION..... | 3 |
| 3.3.1 | <i>Soils</i> | 3 |
| 3.3.2 | <i>Groundwater</i> | 3 |
| 3.3.3 | <i>Summary</i> | 3 |
| 3.4 | ADDITIONAL GROUNDWATER SAMPLING..... | 4 |
| 3.5 | RISK EVALUATION..... | 4 |
| 4.0 | REMEDIAL ACTION OBJECTIVES | 4 |
| 5.0 | PROPOSED PLAN OF REMEDIAL ACTION | 5 |
| 6.0 | PUBLIC PARTICIPATION..... | 5 |

LIST OF FIGURES

| | |
|---|----------|
| FIGURE 1: SITE LOCATION | 7 |
| FIGURE 2: AERIAL PHOTOGRAPH..... | 8 |
| FIGURE 3: SAMPLE LOCATION MAP..... | 9 |

APPENDICIES

| | |
|--------------------|--|
| APPENDIX A: | JACKSON PIT: MW – 1 |
| APPENDIX B: | JACKSON PIT: MW – 2 |
| APPENDIX C: | DNREC SITE- SPECIFIC CALCULATOR FOR MULTIPLE ANALYTES |

1.0 INTRODUCTION

Jackson Pit is located southwest of the town of Lewes in Sussex County, Delaware (Figure 1). This proposed plan of remedial action (proposed plan) will address a 5.05 acre portion of the 21.54 acre lot, which DNREC is referring to as operable unit 1 (OU-1). Mr. Mark Slaughter recently purchased OU-1 (site). The adjacent parcel, which includes the actual borrow pit and waste disposal areas, will be referred to as operable unit 2 (OU-2), and will be addressed separately at a later date. OU-1 is bordered by Route 276 to the northwest, OU-2 to the west, and crop land and wooded area to the south.

DNREC performed a facility evaluation (FE) on the site in November 1997. The purpose of the FE was to: 1) collect additional information from the site and review information from previous environmental investigations, 2) understand the nature and extent of any soil and/or groundwater contamination at the site, and 3) evaluate risks to public health, welfare and the environment associated with any identified contamination. Mr. Mark Slaughter desires to obtain a Certification of Completion of Remedy (COCR) from DNREC upon completion of all required tasks for OU-1.

This document is the Department's proposed plan for the site. It is based on the results of the previous investigations performed at the site. This proposed plan is issued under the provisions of the Hazardous Substance Cleanup Act, 7 Del. C. Chapter 91 (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 will provide notice to the public and an opportunity for the public to comment on the proposed plan. At the comment period's conclusion, DNREC will review and consider all the comments received and issue a final plan of remedial action (final plan). The final plan shall designate the selected remedy, if required, for the site. All prior investigations of the site, the proposed plan, the comments received from the public, DNREC's responses to those comments, and the final plan will constitute the remedial decision record.

Section 2 presents a summary of the site description, site history and previous investigations of the site. Section 3 provides a description of the remedial investigation results. Section 4 presents a discussion of the remedial objectives. Section 5 presents the proposed plan of remedial action for OU-1. Section 6 discusses public participation requirements.

2.0 SITE DESCRIPTION AND HISTORY

This site is located southwest of the Town of Lewes in Sussex County, Delaware and is accessible from Route 275 heading southeast from Five Points. The site occupies approximately 5.05 acres of land and consists of one parcel, Sussex County tax parcel #378.09. It is bordered by Route 276 to the northwest, an adjacent parcel, which includes the actual borrow pit and waste disposal areas to the west and crop land and wooded area to the south (Figure 2). Fill dirt, tree stumps and vegetative material had been placed on the site. DNREC's Solid Waste Branch gave permission to store this material temporarily on-site. Adjacent to OU-1 is a borrow pit and open area containing piles of wood debris, asphalt, and concrete. There is also a landfill area

located on OU-2. On-site toward the north, a low, wet area is apparent with no visible debris present.

The nearest water supply well is located approximately 400 feet to the southwest. Residential homes with domestic wells are located along Route 276, approximately 1,000 feet northwest of the landfill area. A public water supply well for a residential development is located approximately 1,500 feet southwest of the landfill area. The Town of Lewes operates five municipal wells located along Route 9, approximately one mile northeast of the site.

2.1 Site and Project History

Mr. Harland Jackson acquired the 21.54-acre lot (OU-1 and OU-2) during the early 1960s. He operated a garbage dump, on the adjacent parcel, for many years after the site was used as a borrow pit. Dumping occurred from at least the 1970s until 1982. Numerous debris fires occurred at the dumpsite during the late 1970s. Department approval was given to dispose of tree stumps, lumber and masonry materials until 1993. Specific areas contain buried household waste. During operation, sewage disposal trucks were witnessed entering the site landfill area by local residents. In recent years, the owners have maintained minimal security to restrict illegal dumpers, however, only a limited amount of dumping has occurred.

In 2002, Mark Slaughter contacted DNREC, and performed additional groundwater monitoring on OU-1, and submitted the results to DNREC. Mr. Slaughter intends to redevelop the property for townhouses.

3.0 INVESTIGATION RESULTS

DNREC conducted an extensive review of past investigations prepared for the property (OU-1 and OU-2), as discussed below.

3.1 Preliminary Assessment

In October 1986, a preliminary assessment (PA) was performed by the DNREC. No environmental samples were collected during the PA. Based on the results of the PA, no further action was recommended.

3.2 Site Investigation

In September 1988, NUS Corporation conducted a site inspection (SI) under contract from the U.S. Environmental Protection Agency (EPA). The SI report indicates that during the 1970s, only household garbage, wood, and brick debris was dumped at the site. Glass bottles, cans, plastics, and various household trash items were exposed in an area approximately 100 feet long by 25 feet wide. According to a DNREC representative, prior to the SI, approximately 15 to 18 feet of fill material was placed at the property. At the time, the property was leveled from sand and gravel disposal and grading that had occurred.

Only one background soil sample (CK 249/MCJ 125) was taken on the site referred to as OU-1, but additional soil sampling did occur on the adjacent parcel, OU-2. The analytical results from

the SI indicated that the results for the background soil sample identified the presence of 1,1-dichloroethane (0.006 milligrams per kilogram or mg/kg) and toluene (0.009 mg/kg), but at concentrations that are well below the current Uniform Risk Standards (URS) for unrestricted use (i.e., residential use) of the property, of 780 mg/kg and 650 mg/kg, respectively.

3.3 Facility Evaluation

A facility evaluation (FE) was conducted by DNREC in November 1997. The FE work plan called for DNREC to perform the following tasks:

- Install shallow, groundwater monitoring wells and collect groundwater samples from the unconfined aquifer; and
- Excavate test pits of the waste disposal areas and collect soil/waste samples, including one background soil sample.

3.3.1 Soils

On OU1, DNREC excavated seven test pits and took soil samples for laboratory analysis (Figure 3). In test pit number 11 (TP-11), benzo(a)pyrene (0.37 mg/kg) and iron (2,660 mg/kg) exceeded the unrestricted URS of 0.09 mg/kg and 2,300 mg/kg, respectively, for subsurface soil in samples collected at depths of 3-10 feet below ground surface. There were no other exceedences found in the soil samples from the remaining test pits.

3.3.2 Groundwater

On OU-1, DNREC installed one monitoring well from which was collected one groundwater sample. Manganese (234 micrograms per liter or $\mu\text{g/L}$), aluminum (417 $\mu\text{g/L}$), and total chromium (14.3 $\mu\text{g/L}$), exceeded the URS of 50 $\mu\text{g/L}$, 200 $\mu\text{g/L}$, and 11 $\mu\text{g/L}$, respectively, for groundwater in monitoring well number one (MW-1).

3.3.3 Summary

The results of the investigations indicated contaminants were detected on OU-1 at levels exceeding the URS based on unrestricted land use. Specifically, in TP-11, benzo(a)pyrene and iron exceeded the standards for subsurface soil in the soil samples collected at depths of 3-10 feet below ground surface.

Manganese, aluminum, and total chromium exceeded the URS for groundwater in MW-1. It is important to note that aluminum and manganese are naturally occurring elements in Delaware's groundwater and their URS values found in DNREC's remediation standards guidance documents are based on National Secondary Drinking Water Regulations (NSDWR). NSDWRs are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water, and do not pose a human health risk.

3.4 Additional Groundwater Sampling

At the request of Mark Slaughter, Environmental Solutions Group, Inc. (ESG) collected additional groundwater samples from the monitoring wells located at OU-1. Prior to sampling, ESG consulted DNREC on the contaminants of concern in the groundwater found on this property. These included: chromium, pesticides and PCBs. Initial samples taken from MW-1 and MW-2 on March 6, 2002, were analyzed by Lancaster Laboratories, Inc. of Lancaster, PA. The only contaminants detected in the groundwater samples were: total chromium and the pesticide, p,p- DDD. An elevated level of total chromium was also detected in MW-1. Both groundwater wells were resampled to speciate the concentrations of trivalent and hexavalent chromium. The results from this round of sampling showed no evidence in either well of elevated levels of hexavalent or trivalent chromium. MW-2 was found to contain a detectable level of p,p-DDD. However, the concentration of the pesticide found was 0.036 µg/L, which is below the URS value of 0.30 µg/L. PCBs were present in the samples at or below their detection limits. The results from the second round of sampling were used in DNREC's risk analysis.

3.5 Risk Evaluation

Based on applying DNREC's Site Specific Risk Calculator, using the highest soil contaminant concentrations which were found in soil sample TP-11, OU-1 does not pose a risk to human health that would require a remedial action under the HSCA program. The calculated risk was 2.89×10^{-6} , which is less than 1×10^{-5} , the accepted risk allowed by the Department's HSCA Regulations. Therefore, remedial action for soils is not necessary.

The Site Specific Risk Calculator was also used for an evaluation of the risk posed by the contaminants present in the groundwater in MW-1 and MW-2. The results were based on the highest concentration of each contaminant found in either of the two wells and were shown to present a cancer risk greater than 1×10^{-5} . The calculated cancer risk posed was 2.21×10^{-6} , which is less than the acceptable level of risk of 1×10^{-5} . The calculated non-carcinogenic risk posed was 0.11, which does not exceed the Hazard Index of 1.0. PCBs were not detected above their respective detection limits and were not considered a contaminant of concern in the risk evaluation.

In addition, DNREC has determined that marginal degradation of groundwater quality exists in the unconfined aquifer that may be attributable to background or naturally occurring conditions. This conclusion is different from the conclusion in the 1997 FE report, that the buried debris was the likely source of degradation of groundwater quality. As questions remain concerning the oxidation state of chromium in the groundwater, DNREC intends to restrict groundwater use in the area as a precautionary measure.

4.0 REMEDIAL ACTION OBJECTIVES

According to Section 8.4(1) of the Regulations, site-specific remedial action objectives (RAOs) 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 objective is determined to be appropriate for the site:

- Prevent human exposure to groundwater which may be contaminated due to the uncertainty associated with detections of chromium and p, p- DDD.

This objective is consistent with the proposed use of the site for townhouses, Sussex County zoning policies, state regulations governing water supply, and worker health and safety.

Quantitative objectives define specific levels of remedial action to achieve protection of human health and the environment. Based on the above qualitative objectives, the quantitative objectives will be to ensure that future site users such as residents, construction workers, visitors, and trespassers do not come in contact with soils and groundwater that contain constituents which exceed a cumulative cancer risk of 1×10^{-5} .

5.0 PROPOSED PLAN OF REMEDIAL ACTION

Based on DNREC's evaluation of the site information and the above remedial action objectives, the recommended action for the site will include the following:

- DNREC will establish a groundwater management zone (GMZ) within six weeks of adopting the final plan. The GMZ will prohibit groundwater withdrawals at this site;
- The property owner shall place a deed restriction on OU-1, no longer than ninety days following DNREC's adoption of the final plan. The deed restriction will prohibit the installation of any water wells on, or groundwater usage at the site without prior written approval of DNREC, and will identify OU-1 as located within a GMZ; and
- DNREC recommends that the property owner remove any non-hazardous solid waste found on the property during regrading activities on OU-1. However, if any evidence of soil contamination and/or hazardous substances/wastes are identified during the site clearing and regrading, then the owner must notify DNREC pursuant to 7 Del. C. § 6028. If a release of a hazardous substance is found, further action pursuant to the regulations governing hazardous substance cleanup may be required.

6.0 PUBLIC PARTICIPATION

The Department actively solicits public comments or suggestions on the proposed plan of remedial action and welcomes opportunities to answer questions. Please direct written comments to:

Department of Natural Resources and Environmental Control
Site Investigation and Restoration Branch
391 Lukens Drive
New Castle, Delaware 19720
Attn: Lindsay J. Hall

The public comment period for this proposed plan begins on Thursday, January 2, 2003 and ends at the close of business (4:30 p.m.) Tuesday, January 21, 2003. If so requested, a public hearing will be held on the proposed plan. The meeting time and place will be announced if said hearing is requested.

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Figure 1: SITE LOCATION

Figure 2: AERIAL PHOTOGRAPH

Figure 3: SAMPLE LOCATION MAP

John Blevins, Director
Division of Air and Waste Management

Date of Review of Proposed Plan