

CONTAMINATED MATERIAL AND WATER MANAGEMENT WORK PLAN

For Remedial Activities Associated with the Hercules Road Property in Wilmington, Delaware

Prepared For:

Excavation and Trades Contractors

And

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Prepared By:



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INTERNAL QUALITY CONTROL SHEET

This Contaminated Material and Water Management Work Plan (CMWMWP) was prepared by BrightFields, Inc. (BrightFields) for the Hercules Road Property Project. This CMWMWP represents BrightFields' knowledge of conditions on the subject site at the time of preparation.

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FIGURES

Figure 1 Project Location/Topographic Map





CONTAMINATED MATERIAL AND WATER MANAGEMENT WORK PLAN

PROJECT OVERVIEW

SITE & LOCATION: The Hercules Road Property is located on Hercules Road, approximately 2,000 feet west of the Newport Gap Pike (State Route 41) and south of Lancaster Pike (State Route 48) in Wilmington, Delaware (Figure 1).

The site is composed of two tax parcels. The northern parcel was formerly used as a nine-hole golf course and covers an area of approximately 101 acres (tax parcel ID# 08-026.00-052 [Lot 5]). The parcel was maintained as a golf course since 1947. The southern parcel is unoccupied and wooded and is approximately 61 acres (tax parcel ID# 08-033.00-001 [Lot 10]). The surrounding land is generally residential. Toll Brothers is currently in negotiations with the current owner, Chaps 901, LLC, to purchase the property for residential development.

PURPOSE OF THIS CMWMWP: The purpose of this Contaminated Material and Water Management Work Plan (CMWMWP) is to provide guidelines for safe handling of contaminated materials on the Hercules Road Property during remediation and redevelopment.

TYPES OF INTRUSIVE ACTIVITIES: This CMWMWP covers the activities of workers under contract through Toll Brothers, Inc., for the Hercules Road Property project. Types of intrusive activities include, but are not limited to, the following activities: excavation of trenches for the removal of asbestos containing irrigation piping and arsenic contaminated soil and turf; excavation of arsenic contaminated sediment in drainage depressions; and on-site blending of arsenic contaminated soil.

SCHEDULED DATES: This CMWMWP is in effect for the duration of the remedial action activities of the project.

Note: This CMWMWP is to provide guidance for handling known environmental conditions and unknown environmental conditions that may be encountered during the construction process for the Hercules Property Project. This CMWMWP is intended to be used in conjunction with the Hercules Property Project Remedial Action Health and Safety Plan (BrightFields, March 2007) and to be reviewed and approved by a Certified Industrial Hygienist (CIH) retained by each major contractor for the project.



1.0 INTRODUCTION

The Hercules Road Property is located on Hercules Road, approximately 2,000 feet west of the Newport Gap Pike (State Route 41) and south of Lancaster Pike (State Route 48) in Wilmington, Delaware (Figure 1).

The site is composed of two tax parcels. The northern parcel was formerly used as a nine-hole golf course and covers an area of approximately 101 acres (tax parcel ID# 08-026.00-052 [Lot 5]). The parcel was maintained as a golf course since 1947. The southern parcel is unoccupied and wooded and is approximately 61 acres (tax parcel ID# 08-033.00-001 [Lot 10]). The surrounding land is generally residential. Toll Brothers is currently in negotiations with the current owner, Chaps 901, LLC, to purchase the property for residential development.

The following Contaminated Material and Water Management Work Plan (CMWMWP) shall be implemented by the remediation contractors during intrusive activities associated with the remediation and sitework activities at the Hercules Road Property project. Intrusive activities are defined as activities penetrating the existing ground surface which include, but are not limited to the following:

- Excavation and proper material management associated with trenches and pits for soil remediation
- Installation of temporary perimeter fences
- Backfilling of all excavated areas
- Management of native site soils, including stockpiling and disposal
- Stockpiling of soil consistent with this CMWMWP
- Dewatering activities

This CMWMWP is to provide guidance for handling known environmental conditions and unknown environmental conditions that may be encountered during the remediation process. Therefore this CMWMWP describes the procedures to excavate, handle, and manage the following:

1. Soil and excavated materials originating from the Hercules Road Property



2. Potentially contaminated water (e.g. ponded rainwater) if it is encountered during intrusive activities and any dewatering activities

In order to prevent the uncontrolled migration of contaminated soil and stormwater, BrightFields and the contractor will work together to implement all procedures outlined in this CMWMWP, so that the health and safety of construction workers, the public, and the environment is protected.

The contaminants of concern (COC) in site soil, dewatered stormwater, and subsurface debris on the Hercules Road Property project include pesticides (including: chlordane, 4-4' DDE, heptachlor epoxide and dieldrin) and metals (including: arsenic, lead, cadmium and mercury).



2.0 RESULTS OF ENVIRONMENTAL INVESTIGATIONS

As discussed in BrightFields' October 2004 Remedial Investigation and Feasibility Study Report, several investigations have been conducted on the Hercules Road Property. Analytical data from these environmental investigations were used to identify potential compounds of concern on the Hercules Road Property.

2.1 Summary of Soil Results

In March, April, May, and July of 2003, TriState Environmental Management Services Inc. (TriState) conducted initial and follow-up soil sampling investigations across the golf course. TriState drilled approximately 79 borings throughout the property and collected 143 soil samples. Analytical results indicated that elevated concentrations of arsenic, lead, chlordane, 4-4' DDE, heptachlor epoxide and dieldrin were present above unrestricted use URS in soil samples predominantly collected from greens, with lesser amounts in samples collected from tees and fairways.

On October 17, 2003, BrightFields personnel collected a total of four soil samples from two greens. Technical chlordane (and two of its components alpha and gamma chlordane), dieldrin, heptachlor epoxide, aldrin, arsenic, cadmium, lead and mercury were detected above unrestricted use URS in several of the soil samples collected from both greens.

In November of 2003, BrightFields conducted a remedial investigation on the property which included the collection of soil, groundwater, sediment and surface water data on the property. Twenty soil samples (10 surface and 10 subsurface) were collected from 10 locations not associated with greens, tees or fairways and were analyzed at Lancaster Laboratories for HSCA analysis for TCL VOCs, TCL SVOCs, TCL pesticides/PCBs, and TAL metals and cyanide. Soil samples collected from depths ranging from 0 to 12 feet bgs across the golf course property indicate that aluminum, barium, iron, manganese, and vanadium, are present in site soil above the unrestricted use URS. Arsenic was not detected above the Delaware default background standard of 11 mg/kg (DNREC 2004). Cyanide, SVOCs, VOCs, pesticides, and PCBs were either not detected or were detected below unrestricted URS criteria.

During the RI Investigation, BrightFields also collected 102 soil samples from the two greens that had elevated concentrations of arsenic. Based on the results of the BrightFields Greens Characterization, arsenic above the Delaware default background standard of 11 mg/kg, and mercury, cadmium, and lead were detected at concentrations above the URS in soil from the

green, fringe, and rough areas of Greens 2 and 4 from the surface to a maximum depth of 3.5 feet bgs.

The conclusion of the remedial investigation is that compounds of concern on the site are mainly associated with the greens, tees and fairways. These compounds include pesticides (including: chlordane, 4-4' DDE, heptachlor epoxide and dieldrin) and metals (including: arsenic, lead, cadmium and mercury). Specifically arsenic appears to be present to depths of 3.5 feet bgs in some greens and tees, to depths of 1.5 feet bgs in the fringe and rough areas of the greens and to 6 inches bgs in the fairways. Based on the results of the TriState and BrightFields investigations, arsenic had a high degree of correlation to elevated levels of pesticides associated with golf course greens and tees, therefore, by using arsenic as the indicator of contamination, pesticide contamination will be addressed. The cumulative risk calculations indicate that exposure to site soil that is not associated with greens, tees or fairways does not pose an unacceptable carcinogenic or non-carcinogenic risk under the unrestricted use scenario.

2.2 Summary of Groundwater Results

Ten Geoprobe[®] borings were drilled and eight groundwater samples were collected and analyzed for TCL VOCs, TCL SVOCs, TCL pesticides/PCBs, and TAL metals and cyanide. Iron, manganese, and chloroform were the only compounds detected in site groundwater above the daily water URS.

Routinely ingesting groundwater from the site may pose a carcinogenic risk. Based on the fact that groundwater from the site will not be used as drinking water, the presence of contaminants in the groundwater does not pose a risk for current or anticipated site uses. Because there is no complete pathway for groundwater ingestion, the site groundwater does not appear to pose a risk to human health under current and anticipated future use scenarios.



3.0 CONTRACTOR RESPONSIBILITIES

The following list of items will be carried out *prior* to any intrusive activities:

1. The Contractor shall not begin intrusive subsurface work until the Contractor and a Certified Industrial Hygienist has read, understood, and signed the CMWMWP and Health and Safety Plan (HASP).
2. The Contractor will notify and coordinate with BrightFields 5 days prior to any intrusive work at the site. This notification will include the type of activity being performed (i.e. excavation, dewatering, silt/sludge removal) and the area within the site where the activity will occur.
3. Contractor shall submit to BrightFields the quantity (truckloads) of soil to be excavated.
4. Contractor must notify BrightFields of any off-site fill source. Any soil used as fill, obtained from an off-site source, shall be sampled by BrightFields prior to bringing on site. BrightFields will evaluate the analytical results and determine whether it is an acceptable source of fill material.
5. The Contractor shall be prepared to provide appropriate personnel, equipment, and supplies to comply with methodology described and to meet the objectives of this CMWMWP and the site specific Health & Safety Plan, including all necessary personal protective equipment.
6. Contractor will be prepared to supply and maintain the water treatment system as described in section 4.4.
7. BrightFields Site Safety and Health Officer (SSHO) will conduct a health and safety briefing as described in the HASP. The contractor shall conduct pre-construction safety meetings with all personnel involved in the excavation activities within the project area. All personnel working on the project will review and sign the HASP.

The following list of items will be carried out *during* intrusive activities:

1. Contractor shall provide equipment and operator to load excavated soils directly into trucks for off-site disposal (live loading). If live loading is not possible, contractor shall provide equipment for transport to a contingency stockpile location as instructed by BrightFields.
2. In the event that suspicious soil or other materials are encountered during excavation activities, the contractor shall prepare a temporary soil stockpile area, as specified in this Contaminated Material and Water Management Work Plan. Soil and other materials shall not be removed or placed within the stockpile area without the approval and oversight of BrightFields.
3. Contractors will be responsible for transportation and disposal of all soil, concrete, asphalt, metal, and wood. Water (i.e., washwater) is to be collected and treated prior to discharge, using the onsite water treatment system. Debris shall be shaken to remove the majority of attached soil, if any, prior to off site disposal.
4. Contractor will maintain copies of completed non-hazardous and hazardous (if necessary) waste manifests for soil, and contaminated water transported to a BrightFields approved disposal location as specified by the owner.
5. As described in the Erosion and Sediment Control Plan, the contractor shall maintain all perimeter sediment controls in working condition to prevent sediment loss from the site. The contractor shall keep all roadways entering and leaving the project location free from soil. If necessary a tracking pad or street sweeper will be used to prevent and clean any soil tracked on roadways from trucks leaving the site.
6. Contractor shall provide necessary treatment equipment (i.e. a sediment tank) to be in compliance with any discharge permit that may be required to dispose of water in the sanitary sewer. BrightFields will obtain any necessary permits for the offsite disposal of water, if needed.



7. The Contractor shall be responsible for the security of the construction area and equipment throughout the project. The Contractor shall provide adequate security measures to prevent public exposure to possible contamination.
8. The Contractor shall perform work to insure minimum interference with vehicular traffic and other site activities.
9. The Contractor shall maintain emergency and fire routes from the site.
10. The Contractor shall prepare a secured area for parking his trailer and for storing his materials and equipment.
11. The Contractor must supply adequate water to control dust during all onsite activities. Dust suppression activities will be coordinated between the Contractor and the SSHO.
12. In the event that petroleum contaminated materials or underground storage tanks (USTs) are encountered during construction, the USTs will be properly removed by a Delaware certified tank removal contractor, and the recovered petroleum and the soils will be sampled and managed according to the Delaware Regulations Governing Underground Storage Tank Systems.

The following list of items will be carried out *after* intrusive work is completed:

1. Contractor shall properly decontaminate equipment as needed.
2. Contractor shall properly clean-out any sedimentation tanks and/or oil/water separators and dispose of materials properly in accordance with specifications as described in section 4.0 and 5.0.

4.0 EXCAVATION, HANDLING, AND MANAGEMENT OF CONTAMINATED MATERIALS

The Contractor shall use materials and equipment that are standard for soil blending, excavation, and removal activities and that comply with specification requirements set forth in this CMMWP and the HASP. The intrusive activities shall be conducted under modified Level D OSHA PPE within the project area under the supervision of BrightFields, Inc.

All contractors performing intrusive activities on the property shall have OSHA 40-hour HAZWOPER training with current 8-hour update.

4.1 Soil

It is the goal of this project to dispose of contaminated soil with an arsenic concentration greater than 37 mg/kg off site as soon as possible after it is excavated (live load). The Contractor shall notify BrightFields of schedule for trucks for soil disposal in advance of soil excavation. BrightFields' SSO will conduct photo-ionization detector (PID) and dust monitoring during soil excavation activities.

If the immediate loading of excavated soil into disposal trucks is not feasible, then the Contractor shall stockpile the soil at a designated BrightFields-approved contingency staging area on site. The soil pile shall be covered with the polyethylene at the end of each work day and shall be secured and weighted to prevent wind damage to the staging area. Dust control on the project is critical.

4.2 Debris Materials

Any debris materials (i.e., timbers, wood, asphalt and/or concrete) encountered during excavation activities will be segregated from excavated soil.

4.3 USTs, ASTs, and Piping

If USTs, ASTs, or associated piping are encountered during any of the intrusive activities at the Hercules Road Property site, they will be properly drained of liquids, removed, decontaminated, and disposed off site in accordance with the Delaware Regulations Governing Underground Storage Tank Systems.

4.4 Sludge/Silt

The Contractor shall provide labor, material and equipment for removing all sludge and silt material generated. There will be no temporary stockpile location set up for the silt/sludge. Before the removal of any sludge/silt material, the Contractor will need to sample the material before it can be transported to a disposal location approved by the owner.

4.4 Groundwater

BrightFields must be notified of any dewatering of fluid to ensure compliance with the DNREC Division of Water Resources Wastewater Discharge Permit. Pretreatment of dewatering fluid may be required before it is routed into a sanitary sewer manhole. Initial pretreatment may include a sedimentation tank and a filtration unit (if necessary) before discharging into the sewer system. Water pumped from the excavation shall be treated, as necessary, to meet the discharge concentrations specified by the wastewater discharge permit issued by DNREC Division of Water Resources.

BrightFields shall take samples during the dewatering activities to ensure that water criteria limits have not been exceeded. BrightFields will collect an initial sample of discharge water during the first day of dewatering. Some analytical results will be available within 24 hours. Because of the time it takes to process these samples for certain analytical requirements, a faster turn around time may not be possible. All analytical results will be obtained within two weeks from the date the sample is taken to the lab and will be reported to the appropriate agency. Based on the results, the Contractor may have to modify treatment methods to meet the permit's requirements for discharge.

The Contractor shall meter the instantaneous discharge rate and the cumulative discharge volume for all water discharged. The contractor shall maintain a log detailing the dates and hours of discharge, the rate of discharge in gallons per hour, and the cumulative gallons discharged. The discharge log shall remain onsite at all times.

5.0 TRANSPORTATION OF CONTAMINATED MATERIALS

This section describes the procedures to be followed during the loading and transportation of the contaminated material (soil, fill materials, and sludge/silt) to the respective off-site recycling/disposal facilities.

5.1 Soil

- A. Contaminated soil and or structurally unsuitable soil excavated from the property shall either be live loaded or temporarily stockpiled in preparation for loading into dump trucks or trailers by the Contractors, as coordinated and approved by BrightFields. BrightFields will monitor the loading and stockpiling of soil. The soil shall be transported to an approved disposal location.
- B. The trucks shall be loaded so that the solids are at least six (6) inches below the top of the trailer bed.
- C. The trucks shall be covered during transport.
- D. BrightFields, will monitor the release of dust and vapor emissions from the trucks leaving the site.
- E. The contractor shall remove accumulated material from the truck tires prior to the trucks leaving the construction site and/or the stockpile area. Soil removed from the truck tires shall be collected and managed and disposed of per the specifications of this plan.
- F. The contractor shall keep all roadways entering and leaving the project location free from soil. If necessary a tracking pad or street sweeper will be used to prevent and clean any soil tracked on roadways from trucks leaving the site.
- G. BrightFields shall prepare and provide the facility with completed required waste manifests.
- H. All manifests shall be signed by the owner's inspector, or BrightFields as their agent, prior to vehicles leaving the site.

5.2 Debris Materials

Contractors will be responsible for transportation and disposal of all concrete, asphalt, metal, and wood. Debris shall be shaken to remove the majority of attached soil, if any, prior to loading on vehicles for off site disposal.

5.3 Sludge/Silt

- A. Contaminated sludge/silt shall be sampled by BrightFields, or appropriate environmental consultant, prior to being loaded into dump trucks or VAC trucks.
- B. The trucks shall be loaded so that the solids are at least six (6) inches below the top of the trailer bed and then transported to an approved disposal location as specified by the owner.
- C. The trucks shall be covered during transport.
- D. BrightFields will monitor the release of dust and vapor emissions from the trucks leaving the site.
- E. The contractor shall remove accumulated material from the truck tires prior to the trucks leaving the construction site and/or the sludge management area. BrightFields, or appropriate environmental consultant, will monitor for excess water from washing of truck tires, as well as prevent excess water leaking from trucks while moving any soil offsite.
- F. The contractor shall keep all roadways entering and leaving the project location free from soil. If necessary a tracking pad or street sweeper will be used to prevent and clean any soil tracked on roadways from trucks leaving the site.

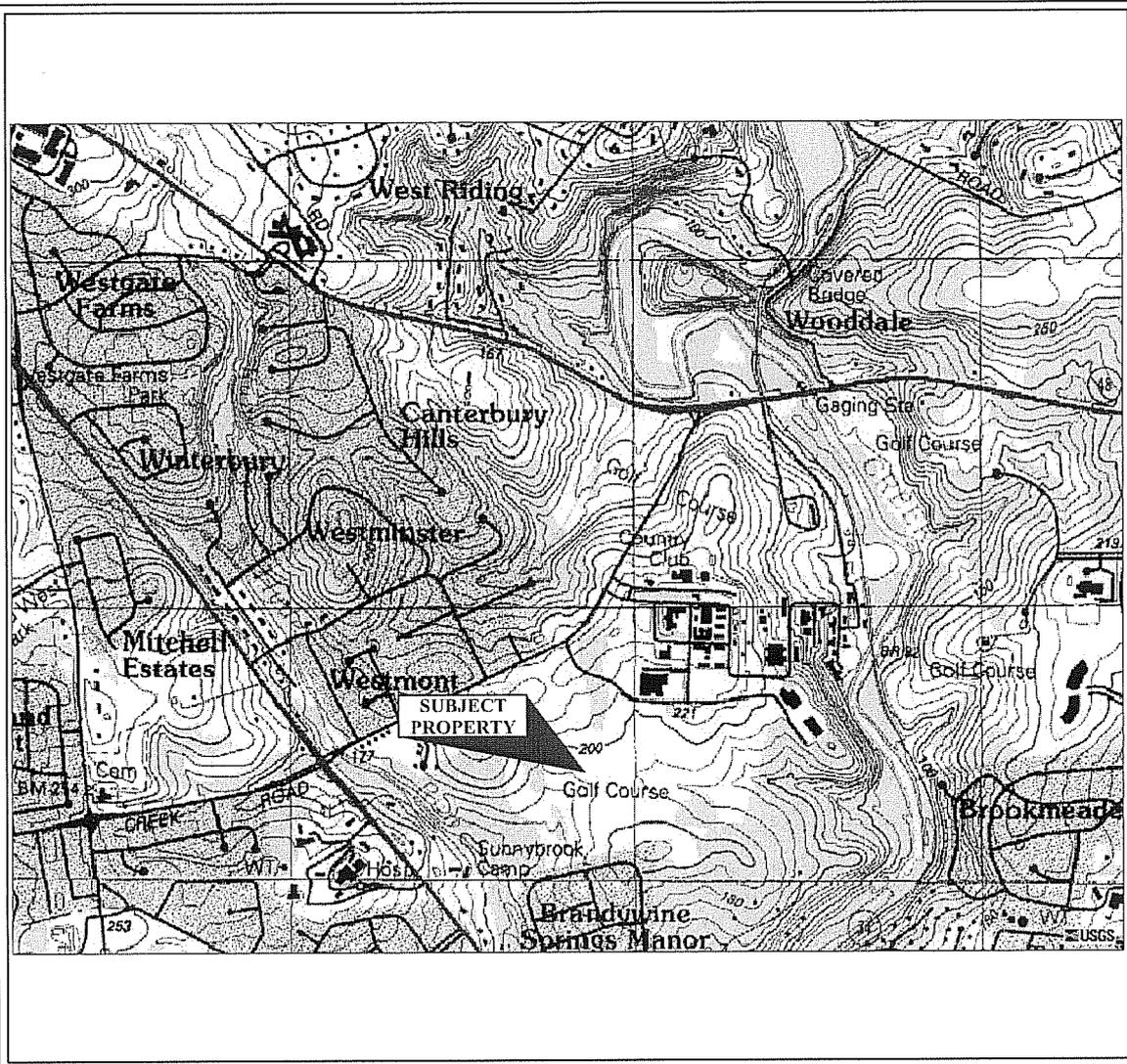


FIGURE 1 - Topographic Map

USGS Topo Map 1 Jul 1998 (downloaded from TerraServer 9/26/03)

Hercules Road Property

Wilmington, Delaware

File # 1938.03.21

0 2,000



SCALE (feet)

