Area 1, Phase 1
Material Handling and Management Plan

Baltimore Works Site
Baltimore, Maryland

REVISED

November 2013

By:
Environmental Resources Management, Inc.
Harbor Point Development LLC

For:
U.S. Environmental Protection Agency – Region III
Maryland Department of the Environment

TABLE OF CONTENTS

Deleted: AUGUST

LIST OF FIGURES

LIST OF APPENDICES

Formatted: Indent: Hanging: 0.5"

Deleted: ¶

Deleted: AUGUST

1.0 INTRODUCTION

This Material Handling and Management Plan ("Plan") has been prepared for inclusion with the Detailed Development Plan (DDP) for Harbor Point Area 1, Phase 1 Development ("Site"). The principal contaminant of concern (COC) identified at the Site is hexavalent chromium (CrVI).

Harbor Point is located on a peninsula in the Northwest Branch of the Patapsco River located in Baltimore, Maryland (Figure 1). The peninsula joins the mainland at the east side of the site, bounded by South Caroline Street and the Baltimore Inner Harbor. The main site area is referred to as Area 1, and the Southeast Quadrant is referred to as Area 2. Additionally, the property located midway between Wills Street and South Caroline Street North of Philpot Street is referred to as Area 3.

The approved Environmental Remediation System (ERS) is operated and maintained by Honeywell International Inc. ("Honeywell") pursuant to the Consent Decree dated April 27, 1989, as amended, among Honeywell, EPA and MDE, to contain chromium contaminated groundwater and limit exposure to impacted soil. The ERS consists of the Multimedia Cap (MMC), Hydraulic Barrier, Head Maintenance System (HMS) and Outboard Embankment.

1.1 PURPOSE

The Plan addresses the handling and management of solids (asphalt, stone aggregates, concrete and wood debris and soil) and liquids (storm water, decontamination water and groundwater) that may be encountered during the intrusive activities at the Site. For the purpose of this Plan, "intrusive activities" occur any time there is disturbance of the surface immediately below the Multimedia Cap (MMC) synthetic layers in Area 1. This Plan provides a description of the methods to be utilized for material handling, segregating, storing, waste profiling, transporting and disposing waste off-Site. The Plan will be implemented prior to the initiation of intrusive activities and will continue through the completion of all intrusive activities, including restoration of the synthetic layers of the MMC and removal of all controlled material that is disturbed by the installation of the improvements from the Site.

Deleted: AUGUST

1.2 SITE DESCRIPTION

The Site is located on a peninsula on the northeast shore of the Patapsco River of the Inner Harbor, in the Fells Point section of Baltimore City, Maryland. The former chromium chemical manufacturing facility consisted of chromium processing production buildings and numerous support buildings on an area that covered approximately 14 acres. The Site is surrounded by water on the north, west and south, the Living Classrooms facility to the north and by the Thames Street Wharf Office Building, and parking areas associated with that building to the east.

1.3 SITE USE HISTORY

The Site has been divided into Areas 1, 2, and 3. Area 1 is the principal site of Honeywell's (formerly AlliedSignal) Baltimore Works Facility (Figure 1). Chromium ore was processed in Area 1 from 1845 to 1985. The former manufacturing processes resulted in chromium impacts to soil and groundwater. An Environmental Remediation System (ERS) is maintained and operated by Honeywell International Inc. (Honeywell) to contain CrVI-impacted groundwater in Area 1 and control the potential for human exposure to affected soil. The ERS consists of a Multimedia cap (MMC), Hydraulic barrier, Head Maintenance System (HMS), a groundwater storage and transfer system, and Outboard Embankment. The HMS maintains an inward groundwater gradient to mitigate the migration of chromium-impacted groundwater from the Site.

Area 2 was mainly used for coal and raw chromium ore storage. In addition, a fertilizer warehousing and supply company operated in this area for many years.

Area 3 consists of five separate properties all with a history of industrial activity. This industrial activity included brass casing, oil blending and storage, lumber storage and coating/plastics production.

Honeywell purchased all of these properties by 1993 at which time all manufacturing was halted and subsequently all buildings and tanks were removed from these sites.

Deleted: AUGUST

1.4 PRIOR DEVELOPMENT (AREAS 2 AND 3)

During the development of the Thames Street Wharf Office Building in Areas 2 and 3, the previously approved Plan (ERM, 2007) was implemented throughout intrusive activities for the period November 2007 through August 2008, and for short durations in late 2009 and early 2010. Off-site waste disposal included Subtitle D, special waste soil (9,500 tons) and Subtitle C, D007 concrete debris (32 tons). There was no off-site disposal of contaminated water.

1.5 FUTURE DEVELOPMENT (AREA 1)

During future development the exposure pathways of concern for CrVI are via potential airborne dust from intrusive activities below the MMC resulting in incidental inhalation, ingestion or dermal contact, including contact with contaminated materials and liquids while handling during construction. The approved Material Handling and Management Plan will be implemented during future Harbor Point development and will be modified, if necessary, as part of the Development Plan approval process.

Deleted: AUGUST

2.0 ENVIRONMENTAL REQUIREMENTS

The Developer must protect the existing Environmental Remediation System (ERS). The ERS remedial components for Area 1 include the Outboard Embankment and Waterside Perimeter, the Hydraulic Barrier, the Head Maintenance System (HMS) and the Multimedia Cap, including a methane gas venting system. The Developer's design, construction, and finished improvements shall conform to the requirements of the Consent Decree and preserve and protect Honeywell's ability to comply with the Performance Standards defined in a Consent Decree between Honeywell, the USEPA and the MDE.

Specific requirements include, but are not limited to:

- All imported material must meet MDE/LRP specified standards for that material, e.g., imported soil, topsoil, and stone (See Appendix A, MDE Fact Sheet, "VCP - Clean Imported Fill Material"). The analytical results will be compared to non-residential soil standards presented in MDE's *Cleanup Standards for Soil* and *Groundwater, dated June 2008,* to determine whether the fill source is acceptable. Copies of all imported fill analyses will be provided to MDE for review, consultation and approval prior to importing fill.

- Environmental controls shall be instituted once a Cap is penetrated or removed, including perimeter air monitoring and dust suppression; and

- All Cap components must be repaired or replaced in any disrupted or penetrated area of the Cap, unless otherwise noted on the approved Detailed Development Plan for that development. All repairs must be initiated immediately upon completion of work or discovery of damage.

Formatted: Indent: Left: 0.25", Bulleted + Level: 1 + Aligned at: 0.5" + Indent at: 0.75"

Deleted: AUGUST

3.0 EXELON DEVELOPMENT

The development project consists of the Exelon Tower and Trading Floor Garage, the Central Plaza Garage, modifications to the existing Transfer Station, general site development (plaza, streets, and sidewalks) and utilities, foundations, roadways, and other related site development elements. Site access is currently limited to Dock Street. Additional access to the Site will be provided by connecting a new bridge to Central Avenue.

The majority of construction will occur in the northeast region of Area 1, located west of Wills Street and south of Dock Street (Drawing DDP-EN1.01). The new foundations (environmental concentric piles and concrete pile caps) will be constructed above, within and below the MMC (Drawing DDP-F1.60).

3.1 EXISTING CONDITIONS

The existing Environmental Remediation System consists of a multimedia cap (MMC), a hydraulic barrier and head maintenance system (HMS). The MMC is designed (i) to prevent upward migration of contaminants and limit the potential for direct exposure to contaminated soils or groundwater and (ii) to reduce infiltration to the groundwater within Area 1. MMC components are illustrated in Drawing DDP-F1.30 Detail 1.

The groundwater control measures consisting of the hydraulic barrier and HMS were installed prior to the installation of the MMC. The hydraulic barrier was placed at the perimeter of Area 1 to isolate groundwater below Area 1 from Harbor surface water and the surrounding groundwater. The hydraulic barrier reduces the amount of groundwater that must be extracted by the HMS to maintain an inward hydraulic gradient. The HMS withdraws groundwater from within Area 1 to maintain a groundwater level within the hydraulic barrier that is lower than the water table outside of the hydraulic barrier (i.e., maintain an inward groundwater gradient).

According to the Conceptual Geologic Section A:A – Harbor Point Area 1 (Drawing DDP-F1.11), the excavation zone below the MMC synthetic layers is described as fill (Stratum F), ranging in thickness from 5 to 10 feet below ground. The fill consists of medium compact to loose, gray and

Deleted: AUGUST

brown fine to coarse sand, with some silt, trace to some gravel, trace clay, and with variable amounts of brick, concrete fragments, cinders and wood.

3.2 *EROSION AND SEDIMENT CONTROLS*

Prior to the initiation of any intrusive activities, the erosion and sediment controls described on Drawing DDP-C8.00 will be installed. Additionally, erosion and sediment controls as detailed on Drawings DDP-F1.22 and F1.30 will be applied to individual excavations made for sheet pile; pipe pile; clean utility corridor; and pile cap and momentum slab installation, including storm water diversion berms to reduce or limit run-on into open excavations.

Erosion and sediment controls will include the construction of temporary decontamination pads for loading excavated soil from below the MMC synthetic layers (Drawing DDP-EN1.01). The erosion and sediment controls also include the construction of a temporary storage area that will include the ability to collect water that could potentially leak from a lined, covered, sealed roll-off container. An asphalt pad and perimeter asphalt berm will be constructed with a shallow perimeter drain to direct run-off to a sealed collection sump installed at the low point in the asphalt surface (Drawing DDP-EN1.06.01).

Run-off water collected in the sealed sump will be pumped to a nearby portable, 16,000-gallon double-wall, closed-top container ("Frac" tank). Further discussion on water handling is provided in Section 5 – Water Management.

In accordance with COMAR 23.13.03.05E, Accumulation Time, hazardous waste shall be shipped off-site within 90 days to an approved, permitted facility. Specific provisions, e.g. container labeling, secondary containment, inspection and record keeping, will be followed.

3.3 *EXCAVATION*

The excavation planned for the Exelon Tower moment slab, pile caps, concentric piles, and any other excavations through the MMC will generate clean soil/aggregate from above the MMC synthetic layers and chromium contaminated soil/debris. EPA and MDE shall be provided written notice a minimum of two weeks in advance of initiating the Exelon Tower moment slab excavation.

Deleted: AUGUST

The proposed moment slab excavation will terminate at El. +3 feet mean sea level (msl), approximately four feet below the MMC synthetic layers (DDP-EN1.60). Abandoned, concrete or wood foundation structures have been identified that will be encountered below the MMC during centric, steel pile driving and concrete pile cap construction. The abandoned structures will be removed only to the extent necessary for construction of new foundations. As such, the removed, abandoned structures will be considered contaminated debris requiring off-site disposal. Qualified, environmental personnel, familiar with chromium contamination, will be responsible for visually identifying gross chromium contamination present in the form of chromium salts or Chromium Ore Process Residue (COPR). If COPR is encountered, the Contractor will use that opportunity to train field staff to visually recognize this material. Any materials generated in response to such an occurrence of chromium salts or COPR will be managed in accordance with this Plan.

Direct-loading of excavated soil/debris into lined, sealed roll-off containers is the preferred daily excavation and transportation method. However, a controlled, temporary storage area will be constructed, as described above, for use in the event that sealed roll-off containers cannot be transported daily for off-Site disposal. Some events that might prompt the use of this temporary storage area, as a contingency, are:

- Volume limit to the daily capacity of the primary and alternate off-site disposal facilities;
- Off-site disposal facility hours of operation; and
- Limited availability of long-haul trucks.

The storage area will be located in close proximity to the excavation zone required for construction of the moment slab (west side of Limit of Disturbance) to reduce the distance for moving containers (Drawing DDP-EN1.01). The controlled area will be approximately 5,000 square feet which will provide a storage capacity of 20; 25-cubic yard lined and sealed roll-off containers or approximately 250 cubic yards of containerized soil/debris storage. Further discussion regarding soil/debris transportation and disposal is provided in Section 4 – Soil/Debris Handling and Management. As mentioned above in Section 3.2, in accordance with COMAR 23.13.03.05E, Accumulation Time, hazardous waste shall be shipped off-site within 90 days to an approved, permitted facility. Specific provisions, e.g. container labeling, secondary containment, inspection and record keeping, will be followed.

Deleted: AUGUST

3.4 *DUST CONTROL*

Excavation surfaces will be covered by geotextile as soon as practical during the excavation sequence to limit wind-blown caused dust emissions. Other soil sealing materials such as polyethylene plastic sheeting or foam spray-applied to the slopes of excavation zones may also be utilized. The bottom of the excavation zone will be further sealed by installing either clean, aggregate layer and/or mudmat, thereby allowing general construction trade workers to perform work in a clean zone (DDP-F1.30 and DDP-F.131.

Additional dust suppression will be employed by misting the excavation zone with potable water as needed to keep exposed soil surfaces moist until the controls described above are installed. The aerosolized water misting is also effective in precipitating dust emissions.

An Air Monitoring Plan has been prepared for inclusion with Appendix B of the Detailed Development Plan (DDP) for the Harbor Point Area 1, Phase 1 Development. The Air Monitoring Plan provides a description of the methods to be utilized for real-time particulate and weather data collection, air sample collection, laboratory analytical methods, and reporting to demonstrate the effectiveness of the dust control measures implemented during intrusive activities.

For the purpose of the Air Monitoring Plan, "intrusive activities" occur any time there is disturbance of the surface immediately below the synthetic layers of the existing Multimedia Cap (MMC) in Area 1. The Air Monitoring Plan will be implemented at the initiation of intrusive activities and will continue through the completion of all intrusive activities, restoration of the MMC and the removal from the Site of all soil and debris excavated from below the MMC synthetic layers. Perimeter air monitoring stations will be operated continuously, 24 hours a day, seven days a week. The Air Monitoring Plan provides details on protections that are planned for all activities that may occur, including temporary storage.

Deleted: ¶

Deleted: AUGUST

4.0 SOIL/DEBRIS HANDLING & MANAGEMENT

Materials generated from the centric pile, pile cap, slab and utility excavations will include asphalt, CR-6, 57 stone, clean soil and contaminated soil. Materials will be segregated and managed as described below. Materials may be beneficially re-used on the Site in accordance with requirements as discussed in this section.

4.1 CLEAN SOIL/AGGREGATE SEGREGATION

Clean soil/aggregate removed from above the MMC synthetic layers will be segregated from contaminated soil removed from below the MMC synthetic layers. Clean soil will be temporarily stockpiled within a designated stockpile area (Drawing DDP-EN1.01).

4.2 CONTAMINATED SOIL SEGREGATION

Contaminated soil removed from below the MMC synthetic layers will be segregated from clean soil/aggregate and loaded directly into lined, sealed roll-off containers. Empty and loaded containers that are not transported off-site daily will be sealed prior to temporarily being stored within the designated controlled area (Drawing DDP-EN1.01).

4.3 CLEAN SOIL/AGGREGATE STORAGE

Clean soil/aggregate storage areas will be located west of the Central Plaza footprint. A clean soil stockpile area will be established separate from the temporary controlled storage area. Erosion and sediment controls for these stockpile areas include the installation of a 3-inch thick asphalt pad to separate the existing surface materials from the stockpiled cover soil. Additionally, an asphalt berm will be installed around the clean soil stockpile with a perimeter drain and a collection sump to collect precipitation run-off within the stockpile area.

Deleted: AUGUST

4.4 *BENEFICIAL RE-USE*

On-site materials removed from above the MMC synthetic layers may be re-used to either backfill excavations below the MMC synthetic layers or to backfill the foundation structures above the MMC synthetic layers.

4.4.1 *Below MMC Synthetic Layers*

Aggregates and clean soil removed from above the MMC synthetic layers may be used below the new MMC synthetic layers without laboratory analyses.

4.4.2 *Above MMC Synthetic Layers*

Aggregates and soil removed from above the MMC synthetic layers will be sampled and analyzed prior to beneficial re-use above the MMC synthetic layers following the MDE Voluntary Cleanup Program (VCP) *Clean Imported Fill Material* fact sheet Tables 1 and 2 (Appendix A). The analyses to be performed are the same as those provided in Section 6.4 for Imported Soil/Aggregates.

4.5 *TRANSPORTATION AND OFF-SITE DISPOSAL*

Based upon the review of the historical analytical soil data and the prior waste profile classification as D007 for materials below the MMC, it is anticipated that contaminated soil/debris generated during excavation will be disposed of at an approved RCRA Landfill. Materials will be transported off-site for disposal following written approval of acceptance from the RCRA landfill facility's representative.

Off-site disposal of soil/debris excavated from below the MMC will be profiled as a RCRA characteristic hazardous waste D007 – Chromium per EPA 40 CFR 261, Subpart C and Code of Maryland Regulations Title 26, Subtitle 13. In accordance with COMAR 23.13.03.05E, Accumulation Time, hazardous waste shall be shipped off-site within 90 days to an approved, permitted facility. Specific provisions, e.g. container labeling, secondary containment, inspection and record keeping, will be followed.

Further discussion regarding soil/debris sampling for disposal is provided in Section 6.

Deleted: Off-site disposal of contact and groundwater removed from below the MMC is also assumed to be profiled as RCRA characteristic hazardous waste D007 – Chromium.

Deleted: and water

Deleted: AUGUST

Honeywell maintains a list of their approved Subtitle C landfill facilities and as such the addition of alternative, proposed disposal facilities must be pre-approved. The following RCRA landfill and treatment facilities are located within reasonable proximity to the Site and be may be considered, as may others with the caveat of Honeywell approval, for off-site disposal:

- Environmental Quality (EQ) [EPA ID: PAD010154045]
  730 Vogelsong Road
  York, PA 17404
  ~ 60 miles

- MAX Environmental Technologies [EPA ID: PAD004835146]
  233 Max Lane
  Yukon, PA 15698
  ~ 200 miles

- Waste Management Solutions [EPA ID: NYD049836679]
  1550 Balmer Road
  Youngstown, NY 14174
  ~ 400 miles

It is the generator's responsibility to make the appropriate waste profile determination as well as ensuring that all activities associated with waste disposal comply with State, Federal and Local regulations. Temporarily stored, containerized soil and debris will be removed from the Site within 90 days of the initial filling of each individual container.

The Developer will be responsible for maintaining and distributing all documentation regarding waste profiles and shipping manifests for off-site disposal facilities to EPA and MDE. The generator's authorized representative will be responsible for reviewing and signing the shipping manifests. The Developer's designee will ensure that the transporter signs a shipping manifest for each load upon leaving the Site; and, ensures that the disposal facility-signed acceptance copy of each manifest is received. A waste disposal tracking log will be maintained utilizing the measured net weight (tons) for each truck or roll-off container load accepted.

Waste disposal documentation including laboratory analyses, if any, Waste Profiles and Waste Acceptance will be forwarded to EPA and MDE prior to commencing off-site disposal operations. A tracking log summarizing the disposal information will be maintained by the generator's representative and will be forwarded to EPA and MDE designees at the completion of intrusive activities.

Deleted: AUGUST

5.0 WATER MANAGEMENT

As discussed in Section 3.2, erosion and sediment controls will be applied to individual excavations made for sheet pile, pile cap, momentum slab and sheer-wall installation. There are four categories of water anticipated to be managed during intrusive work, including:

- Storm water diverted from contact with contaminated material below the MMC synthetic layers;
- Storm water that comes into contact with contaminated material below the MMC synthetic layers;
- Groundwater from below the MMC; and
- Equipment decontamination water.

5.1 STORM WATER – NON-CONTACT

To minimize the quantity of water to be actively managed and treated off-site, storm water will be diverted from excavation zones by installing the required erosion and sediment controls as shown on Drawings DDP-C8.00, DDP-EN1.01 and DDP-EN1.06.01. This diverted non-contact storm water will be managed through the Erosion and Sediment Control Plan.

Should storm water that has not come into contact with contaminated material below the MMC synthetic layers pond on a controlled surface (e.g., mudmat, geotextile-supported aggregate), the standing water will be pumped to one of two double-walled Frac tanks. This non-contact storm water will be held for analytical testing results to determine proper disposal (Section 6).

Deleted: , if required

Non-contact water may be discharged to Baltimore City storm sewer if, and only if, the laboratory results justify this option when compared to City sewage discharge limits as described in Section 6. Provisions in Article 25 Sewers, Subsection 4 for self-monitoring and Sewer Discharge Limits published by Baltimore City Pollution Control Section will be followed. No discharge will be allowed to Baltimore City sanitary sewers.

Deleted: AUGUST

5.2 *STORM WATER – CONTACT WATER*

Storm water that inadvertently comes in contact with contaminated soil below the MMC synthetic layers will be collected in a sealed sump and pumped to one of two separate double-walled Frac tanks. The sump pumps will be operated as needed to dewater the rain water collected in the excavation zones. Sumps and conveyance lines will be pumped "dry" to the dedicated double-walled Frac tank for contact water. It is anticipated that contact storm water will be profiled as RCRA characteristic hazardous waste D007 – Chromium for proper off-site disposal. Contact storm water and non-contact storm water will not be commingled.

Storm water collected in the sealed sump from the perimeter drain installed at the temporary storage areas and equipment decontamination water will be pumped to a separate Frac tank. This contact water will be held for analytical testing results to ensure proper off-site disposal, presumably at the Honeywell approved EQ York, PA facility. In accordance with COMAR 23.13.03.05E, Accumulation Time, hazardous waste shall be shipped off-site within 90 days to an approved, permitted facility. Specific provisions, e.g. container labeling, secondary containment, inspection and record keeping, will be followed.

Deleted: s

Deleted: ¶

5.3 *GROUNDWATER*

As described in Section 3.3 above, the deepest excavation for the Exelon project will be for the shear wall/moment slab which is planned at Elev. +6 feet mean sea level (msl). According to historical Inside Piezometer (IP) groundwater monitoring data, the groundwater elevation the Site within the hydraulic barrier seldom rises to Elev. +3 feet msl. As such, it is not anticipated that groundwater will be encountered, nor require special handling during intrusive activities. The uninterrupted, continuous operation of the HMS, as required by the Consent Decree, will allow for monitoring and control of the groundwater elevation during construction. However, in the event of an interruption of the HMS, the SPRP (Appendix B of the DDP) specifies the actions to be taken in this unlikely event.

Deleted: AUGUST

In the event groundwater is encountered during excavation it will be collected and disposed of in a similar manner to contact water. All groundwater will require off-site disposal at the Honeywell approved EQ York, PA facility. In accordance with COMAR 23.13.03.05E, Accumulation Time, hazardous waste shall be shipped off-site within 90 days to an approved, permitted facility. Specific provisions, e.g. container labeling, secondary containment, inspection and record keeping, will be followed.

5.4 25-YEAR STORM EVENT

The storm water management plan was examined for the 25-year storm event and 100-year storm event, however the storage requirements were determined based primarily on the 25-year storm event. When a storm event occurs, the entire footprint of the excavation, including the sloped portions, was considered to receive storm water. All water that falls outside of the excavations is treated as surface runoff (i.e., non-contact storm water) because it will be diverted away from open excavations by temporary berms. Infiltration through the cover soil into the drainage net was assumed to not occur because the drainage net is sealed at the edge of each excavation.

Storm water collected from the bottom of each excavation opened below the MMC synthetic layers will be considered contact water. To address this, a sump will be installed at the lowest elevation point in each excavation to collect storm water to prevent it from rising above the capillary break gravel at the down-slope side of the excavation. The pump(s) required to dewater the excavation zone(s) will be adequately sized to manage storm water during the peak intensity rainfall rate of a 25-year storm event. This contact storm water will be managed as discussed in Section 5.2.

No discharge will be allowed to Baltimore City sanitary sewers. Provisions in Baltimore City Article 25 Sewers, Subsection 4 for self-monitoring, and Sewer Discharge Limits published by Baltimore City Pollution Control Section for discharging clean rain water to Baltimore City storm sewer will be followed. Once the non-contact storm water sample results demonstrate that none of the published Sewer Discharge Limits are exceeded, Baltimore City Department of Public Works (DPW) must be contacted to determine current capacity for discharging to the local storm sewer and provide the testing results to the DPW prior to discharge. Contact and non-contact water testing and storm sewer discharge or off-site disposal procedures are described above and in Section 6.

Deleted: impacted

Deleted: AUGUST

The total volume of impacted water generated by a 25-year storm event over 24 hours has been calculated to be approximately 107,000 gallons, based on the open excavation area computed. This volume will be contained in one 75 ft. x 75 ft. x 4 ft. "modutank" container rated at approximately 168,000 gallons. Considering it takes approximately 24 hours to sample and properly discharge impacted water, two (2) 75 ft. x 75 ft. x 4 ft. tanks will be present at the initiation of construction to store the volume of impacted water generated as well as any additional surge that may occur during the 25-year storm event at the location shown on DDP Drawing EN1.01. The storage volume provided by a single 168,000-gallon modutank storage container is approximately 57% greater than the volume of impacted water generated during a 25-year storm event, and approximately 22% greater than the volume of impacted water generated during a 100-year storm event.

Two storage containers will provide sufficient storage required to test, sample, and dispose of impacted water during a 24-hour, 25-year or 100-year frequency storm event at the site. A 120 ft. x 205 ft. x 1.5 ft. deep containment berm with 14-inches of filling capacity will provide storage sufficient to handle water stored in a single ModuTank.

5.5 SNOW AND ICE

Snow collected or ice formed inside the limits of the excavation zone that comes into contact with the contaminated zone, i.e., soil/debris below the MMC synthetic layers, will be handled as contact storm water as provided above. Snow and/or ice will be removed from the excavation zone and temporarily stored in lined, sealed containers. Melted snow and/or ice will be transferred from the lined containers to the "contact water" Frac tank for testing to determine the appropriate disposal action.

Deleted: AUGUST

6.0 *MATERIAL TESTING*

6.1 *SOIL/DEBRIS*

Soil and debris removed from below the MMC synthetic layers is assumed to be RCRA characteristic hazardous waste D007 – Chromium. However, for the purpose of waste profiling, analyses will be performed per the landfill facility requirements for written acceptance of the characterized waste. Waste characterization analyses will include, at a minimum:

- pH
- Moisture
- Ignitability
- Reactivity for Cyanide
- Reactivity for Sulfide
- TCLP Metals

6.2 *WATER – NON-CONTACT*

The Consent Decree establishes a surface water performance standard of no more than 50 parts per billion (ppb) of total chromium. With the exception of total chromium, the provisions in Baltimore City Article 25 Sewers, Subsection 4 for self-monitoring, and Sewer Discharge Limits published by Baltimore City Pollution Control Section will be followed. The following sewage discharge limits will be used to determine whether non-contact water can be discharged to Baltimore City storm sewer:

Pollutants	**Limits**
Cadmium	0.21 mg/L
Chromium	0.05 mg/L (per Consent Decree)
Copper	6.59 mg/L
Cyanide	1.9 mg/L
Lead	0.01 mg/L
Mercury	0.01 mg/L
Nickel	2.82 mg/L
Silver	1.2 mg/L
Zinc	17.85 mg/L

Deleted: As such, material removed from below the MMC synthetic layers will not be tested for the purpose of waste profiling.

Deleted: the following

Deleted: may

Deleted: sanitary

Deleted: AUGUST

Pollutants	Limits
Fat/Oil	100.0 mg/L
Total Toxic Organics	2.13 mg/L
pH range	6.0 to 10.0 pH units

No discharge will be allowed to Baltimore City sanitary sewers. Non-contact water will be properly disposed of off-site at Environmental Quality should any of the above sewer discharge limits be exceeded.

6.3 *WATER- CONTACT AND GROUNDWATER*

Contact water will be tested and the results compared to the sewer discharge limits as described above for non-contact water. No discharge will be allowed to Baltimore City sanitary sewers. Contact water will be properly disposed of off-site at Environmental Quality should any of the above sewer discharge limits be exceeded.

Groundwater removed from below the MMC synthetic layers is assumed to be RCRA characteristic hazardous waste D007 – Chromium based on the current waste profile for groundwater recovered by the Head Maintenance System. As such, groundwater removed from below the MMC synthetic layers will not be tested for the purpose of waste profiling unless the Environmental Quality facility requires updated analyses.

6.4 *IMPORTED SOIL/AGGREGATES*

In order to minimize the potential of introducing unacceptable materials onto the Site, it will be necessary to verify through documentation that the material source is appropriate and/or to have the material analyzed for potential contaminants based on the location and history of the source area. It is anticipated that imported materials will be provided by commercial suppliers, only. Commercial suppliers shall provide a certification letter stating the environmentally acceptable historical use(s) of the material source property.

Fill documentation should include detailed information on the previous use of the land from where the fill is taken, whether an environmental site assessment was performed and its findings, and the results of any testing performed as described in the MDE Voluntary Cleanup Program (VCP) *Clean Imported Fill Material* fact sheet (Appendix A). If the selected commercial supplier maintains records of the source of the selected materials and has implemented a testing program meeting the

Deleted: and

Deleted: g

Deleted:

Deleted: AUGUST

requirements of the MDE VCP fact sheet, a description of the sampling plan and analytical results may be used to meet the imported material requirements of this plan.

If there are no analytical results from testing performed by the commercial supplier, and prior to importing soil from any source, the material will be sampled and tested based on the requirements of the MDE VCP *Clean Imported Fill Material* fact sheet Tables 1 and 2 (Appendix A). For example, the testing requirements for residential or acceptable commercial fill source material include:

- VOCs (EPA Method 5035)
- SVOCs (EPA method 8270C)
- TPH (modified EPA method 8015)
- PCBs (EPA method 8082)
- Heavy Metals including lead (EPA methods 6010B and 7471A)
- Hexavalent Chromium: EPA method 3060A.
- Asbestos (OSHA Method ID-191)

The analytical results will be compared to non-residential soil standards presented in MDE's *Cleanup Standards for Soil* and *Groundwater, dated June 2008,* to determine whether the fill source is acceptable. Copies of all imported fill analyses will be provided to MDE for review, consultation and approval prior to importing fill.

Deleted: most current tables of the *Generic Numeric*

Deleted: *Groundwater and*

Deleted: AUGUST

Figures

Figure 1
Site Location Map

Appendix A
Referenced Documents

MARYLAND
Department of the Environment

Facts About...

VCP - Clean Imported Fill Material

The purpose of the Voluntary Cleanup Program (VCP) is to encourage the cleanup and redevelopment of properties throughout Maryland. In many cases, fill materials are imported onto a property as part of the redevelopment process. As more properties are relying upon the use of imported fill materials, the VCP has prepared this guidance document for assisting participants who anticipate using imported fill material at VCP sites.

Introduction

No one wants to introduce new contamination onto a VCP site through the importation of fill material that is believed to be clean. This document was developed specifically for VCP participants who seek guidance on steps to take to minimize the possibility of importing contaminated fill onto VCP sites.

Overview

Because fill material may come from a variety of sources, it is important to determine that any material brought onto a VCP site not only meets engineering specifications for a particular use, but that it also passes some level of screening to ensure that it is, in fact, clean.

Residential or Commercial / Industrial Scenario

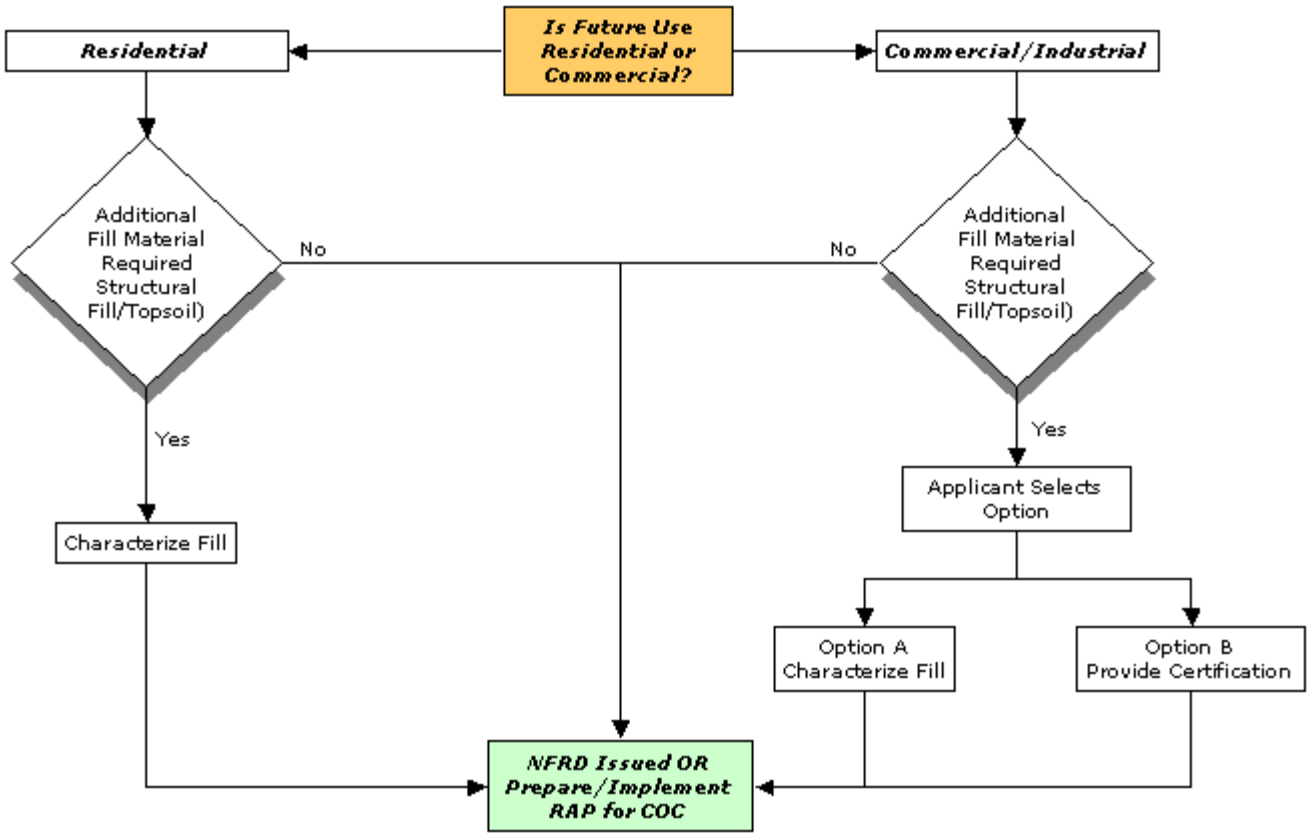
Depending upon the land use scenario, a VCP participant may be required to characterize the fill or provide a certification stating that the imported fill is not contaminated. As indicated in Exhibit 1, all imported fill materials for properties where the land use is determined to be residential must be characterized. In limited circumstances, the VCP may allow a participant to use imported fill material that has not been characterized for areas where no pathway will exist between the fill material and the property's end-users. In such circumstances, a Phase I Environmental Site Assessment conducted within a year from the date of scheduled delivery of fill material documenting that no recognized environmental conditions are present must be submitted to the VCP.

For commercial or industrial land uses, a VCP participant has the option of either characterizing the imported fill material or relying upon an affidavit from the vendor stating that the imported material has not been contaminated by controlled hazardous substances or oil. A template of the affidavit is attached to this guidance.

Selecting Fill Material

In general, the fill source area should be located in non-industrial areas, and not from sites undergoing an environmental cleanup. Non-industrial sites include those that were previously undeveloped, or used solely for residential or agricultural purposes. If the source is from an agricultural area, care should be taken to insure that the fill does not include pesticides, herbicides or metals. Unacceptable sources of fill material include industrial and/or commercial sites where

Exhibit 1: Use of Fill Material for Residential or Commercial/Industrial Decision Tree



hazardous materials were used, handled or stored as part of the business operations, or unpaved parking areas where petroleum hydrocarbons could have been spilled or leaked into the soil. Commercial sites to avoid include former gasoline service stations, retail strip malls that contained dry cleaners or photographic processing facilities, paint stores, auto repair and/or painting facilities, and agricultural supply stores. Industrial facilities to avoid include metal processing shops, manufacturing facilities, aerospace facilities, oil refineries, waste treatment plants, or other similar facilities.

Alternatives to using fill from construction sites include the use of fill material obtained from a commercial supplier of fill material or from soil pits in rural or suburban areas. However, care should be taken to ensure that those materials are also uncontaminated.

Table 1: Potential Contaminants Based on the Fill Source Area	
Fill Source	*Target Compounds/Recommended Analyses**
Land near to an existing highway	• Lead (EPA method 6020 [Rev 0 – 9/9]) • PAHs (EPA method 8270C [Rev 3 – 12/96)
Land near a mining area or rock quarry	• Heavy Metals (EPA method 6020 [Rev 0 – 9/9]) • Asbestos (polarized light microscopy) • pH
Agricultural land	• Pesticides (Organochlorine Pesticides: EPA method 8081A or 8080A; Organophosphorus Pesticides: EPA method 8141A; Chlorinated Herbicides: EPA method 8151A [Rev 1 – 12/96]) • Heavy Metals (EPA method 6020 [Rev 0 – 9/9])
Residential/acceptable commercial land	• VOCs (EPA Method 8260B (Rev 2 - 12/96); Note: The soil and sediment collection method has changed to EPA Method 5035) • SVOCs (EPA method 8270C) • TPH (modified EPA method 8015) • PCBs (EPA method 8082) • Heavy Metals including lead (EPA methods 6010B and 7471A) • Asbestos (OSHA Method ID-191)
*The recommended analyses should be performed in accordance with USEPA SW-846 methods (1996). Other possible analyses include Hexavalent Chromium: EPA method 3060A.	

Documentation and Analysis

In order to minimize the potential of introducing unacceptable fill material onto a site, it is necessary to verify through documentation that the fill source is appropriate and/or to have the fill material analyzed for potential contaminants based on the location and history of the source area. Fill documentation should include detailed information on the previous use of the land from where the fill is taken, whether an environmental site assessment was performed and its findings, and the results of any testing performed. It is recommended that an environmental professional, as defined by ASTM, should sign any such documentation. If such documentation is not available or is inadequate, samples of the fill material should be chemically analyzed. Analysis of the fill material should be based on the source of the fill and knowledge of the prior land use. The Department recommends using the analytical methods in Table 1 to determine whether potential contaminants are present in fill source areas.

Detectable amounts of compounds of concern within the fill material should be evaluated for risk in accordance with the *Soil and Groundwater Cleanup Guidance Document, August 2001*. A standard laboratory data package, including a summary of the QA/QC (Quality Assurance/Quality Control) sample results should also accompany all analytical reports. When possible, representative samples should be collected at the borrow area while the potential fill material is still in place, and analyzed prior to removal from the borrow area. In addition to performing the appropriate analyses of the fill material, an appropriate number of samples should also be determined based on the approximate volume or area of soil to be used as fill material. Table 2 can be used as a guide to determine the number of samples needed to adequately characterize the fill material when sampled at the borrow site.

Alternative Sampling

A Phase I environmental site assessment may be conducted prior to sampling to determine whether the borrow area may have been impacted by previous activities on the property. After the property has been evaluated, any sampling that may be required can be determined during a meeting with MDE. However, if it is not possible to analyze the fill material at the borrow area or determine that it is appropriate for use via a Phase I, it is recommended that the participant use Table 2 to determine the fill material sampling schedule. (See chart on Potential Contaminants Based on the Fill Source Area for appropriate analyses).

This sampling frequency may be modified upon consultation with the MDE if all of the fill material is derived from a common borrow area. However, fill material that is not characterized at the borrow area will need to be stockpiled either on or off-site until the analyses have been completed. In addition, should contaminants exceeding the criteria in *Soil and Groundwater Cleanup Guidance Document, August 2001* be identified in the stockpiled fill material, that material will be deemed unacceptable and new fill material will need to be obtained, sampled and analyzed. Therefore, MDE recommends that all sampling and analyses should be completed prior to delivery to the site to ensure the soil is free of contamination, and to eliminate unnecessary transportation charges for unacceptable fill material.

Composite sampling for fill material characterization may or may not be appropriate, depending on quality and homogeneity of source/borrow area, and compounds of concern. It is not acceptable to composite samples for volatile and semi-volatile constituents. Composite sampling for heavy metals, pesticides, herbicides or PAH's from unanalyzed stockpiled soil is also unacceptable, unless it is stockpiled at the borrow area and originates from the same source area. In addition, if samples are composited, they should be from the same soil layer, and not from different soil layers.

When very large volumes of fill material are anticipated, or when larger areas are being considered as borrow areas, MDE recommends that a Phase I be conducted on the area to ensure that the borrow area has not been impacted by previous activities on the property. After the property has been evaluated, any sampling that may be required can be determined during a meeting with MDE.

Table 2: Recommended Fill Material Sampling Schedule

Area of Individual Borrow Area	*Sampling Requirements*
2 acres or less	Minimum of 4 samples
2 to 4 acres	Minimum of 1 sample every 1/2 acre
4 to 10 acres	Minimum of 8 samples
Greater than 10 acres	Minimum of 8 locations with 4 sub samples per location
Volume of Borrow Area Stockpile	*Samples per Volume*
Up to 1,000 cubic yards	1 sample per 250 cubic yards
1,000 to 5,000 cubic yards	4 samples for first 1000 cubic yards +1 sample per each additional 500 cubic yards
Greater than 5,000 cubic yards	12 samples for first 5,000 cubic yards + 1 sample per each additional 1,000 cubic yards