





The Importance of “Clean Dirt”:

Examination of the Impact of Using Contaminated Fill

Dirt – it’s a simple thing that can be more complicated than you might think – especially when it comes to construction projects and environmental impacts. Many construction sites require dirt, or “fill” for final grading of a site. Site work often involves the removal of tanks, building foundations, older roads, etc., generating voids that require fill to finish the site’s development. These voids often require importation of fill to a site. But it can’t just be any old dirt a developer can find. The fill must be “clean” so that it does not pollute the site. When finding fill for a site, it is important to monitor its quality – so how do you know when dirt is “clean”?

The only sure way to prevent contamination of a site by fill is by practicing good management of fill which requires meticulous record keeping and careful selection of service providers, as well as following a program that ensures it is truly “clean” fill. This program includes: testing, record keeping and constant surveillance.^[2] Improperly sourced or monitored fill may contain unwanted contamination, which could potentially pollute the development site. There is nothing worse than paying to remediate a site, importing “clean” fill and then finding out that the site was re-contaminated by the supposedly “clean” fill.

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<p>ABC Development purchased a former industrial site. ABC retained a consultant to perform a Phase I Environmental Site Assessment, which noted that there was a high probability of encountering diesel contaminated soil from a former underground storage tank.</p>	<p>ABC budgeted for this, but during soil excavation for an underground parking garage, discolored soil was encountered.</p>	<p>Sampling showed that the soil was contaminated with arsenic and cadmium, requiring excavation and off-site disposal.</p>	<p>The discovery of this contaminated soil greatly increased project costs, required extensive discussion with regulatory authorities, and ultimately, delayed the project.</p>

Contaminated fill poses liability for many parties, including the site developer, future site owner, fill source area owner, excavator and transporter. Additionally, use of tainted fill can result in significant costs to site developers and associated entities. The Federal CERCLA law, as well as many state and local laws, impose environmental liability of many of these parties.

SECTION I

The placement of contaminated fill at a site generates three major problems:

1. Required remediation of the site (from impacts from contaminants in the fill).

- Responsible parties (fill source owners, transporters and excavators) may be required to investigate and clean up a site, or to pay for investigation and remediation after that work was completed by others.

- Another problem that may arise is finding historic fill at the site contains contaminants requiring remediation or stabilization to allow development to proceed.

2. Legal liability incurred by several different parties.

- Disposal of contaminated fill at a project/development site places legal liability on various entities, including: ^[2]

Entity	Liability	Method
Source area owner/operator	<p>CERCLA – Joint and several liability regardless of fault</p> <p>Remediation Responsibility – Responsible parties may be required to investigate and to clean up a site or to pay for investigation and remediation after that work has been done by others</p> <p>Potentially Responsible Party – Current and past owners and operators of any facility where a hazardous waste was disposed of (does not include petroleum)</p>	<p>Statutory liability under CERCLA</p> <p>May include anyone (e.g. corporate officers) who had substantial control over the activities that lead to the release of hazardous substances. US v. Bestfoods, 524 U.S. 51 (1998)</p> <p>There are often local and state laws that prohibit the unauthorized discharge of petroleum or other hazardous materials, such as the New York Navigation Act Article 12 (aka Oil Spill Law)</p>
Site Owner/Developer	<p>Potentially Responsible Party – Even though the developer may not have done anything wrong, by developing a site that becomes contaminated by the imported fill, the developer may be named as a potentially responsible party and incur significant environmental liability</p>	<p>CERCLA – Responsible parties can be made to investigate and to clean up a site, or to pay for investigation and remediation after that work has been done by others</p> <p>Third-Party Liability – Offsite migration may result in obligation to investigate and remediate contamination. This includes personal injury, property damage, and natural resource damage</p>
Contractor/Developer	<p>Potentially Responsible Party</p>	<p>CERCLA – transporters of hazardous waste who are responsible for selecting site of disposal Tippins, Inc v. USX Corp., 37 F.3d 87 (3d. Cir. 1994)</p>

3. Significant impacts to project schedule and cost, possibly endangering future use and sale of the property.

- The discovery of contamination immediately requires the developer to focus on remediating the site in the hopes of reducing legal liability and salvaging the project schedule.
- The discovery of contamination can result in significant costs to reduce legal liability, cause potential harm to adjacent site users, and derail the project development schedule.

- It is worth noting that if the project schedule cannot be met, the developer may incur large costs due to lack of tenant income and liquidated damages under the development contract.

To avoid the above mentioned potential liabilities, it is important to know the source of the contaminated fill. The following is a primer on contaminated materials and sources.

SECTION II A

Common Sources of Contaminated Media (Fill)

Construction and Demolition Debris (Illegal or Unauthorized Disposal in Source or Development Area)

- **Concrete, brick, clay**
Source of metals, VOCs, and SVOCs, usually from coatings on these materials
- **Drywall, plaster**
Potential for ACM, metals, etc. from coatings on these materials
- **Asphalt**
Source of VOCs, PAHs, SVOCs from petroleum constituents of asphalt
- **Wood**
Source of metals from paint on wood
- **Asphalt shingles and asbestos contaminated roofing materials**
Source of ACM from ACM constituents of roofing materials; PCBs may be present in building caulk
- **Transite siding**
Source of ACM

Soil (Contaminated and Un-contaminated)

- **Historical fill**
May be impacted from prior industrial activities at source area (lead, TPH, VOCs, etc.)
- **Petroleum contaminated fill**
- **Hazardous waste**
Resulting in even higher costs to manage and dispose.
- **Agricultural impacts**
Pesticides, herbicides and metals
- **Construction and demolition debris**
Asbestos, PCBs, mercury

Prior Waste Disposal/Beneficial Use

Ash disposal – In the past, ash was routinely used to level and fill in areas. Coal and wood burning resulted in significant amounts of ash, which required disposal. Ash may contain metals and other contaminants.

Dredge spoils disposal – Dredging of ports and waterways generates dredged spoils, which are the material removed from the subsea area excavated. These spoils can be disposed of at sea or on land. If disposed on land, the dredge spoils often contain rubble, brick, objectionable solids, RCRA metals, VOCs and other contaminants. Historically, many port areas received dredge spoils, but over time, the exact area of dredge spoil disposal was forgotten or not recorded. Finding sites that accept dredge spoils is often difficult.

Waste disposal – Various wastes were disposed of over time at manufacturing sites. Prior to RCRA, this waste disposal was not recorded. Commonly disposed of manufacturing wastes include metal fines and cuttings, off-specification material, by-products, petroleum products and scrap machinery.

Contaminated fill poses liability for many parties, including the site developer, future site owner, fill source area owner, excavator and transporter.



When finding fill for a site, it is important to monitor its quality – so how do you know **when dirt is “clean”?**

SECTION II B

Identifying Potential Contamination in Fill

The following table provide some indicators that may help identify contamination in fill. “Clean” fill obtained from the following areas typically have the noted contaminants:

Source Area	Contaminant Source	Indicators
Building demolition sites	<p>Bricks and concrete blocks may contain contaminants such as lead from lead paint or CVOCs released from manufacturing processes that have leached into concrete.</p> <p>ACM, mercury, other metals and PCBs may also be present in building materials.</p> <p><i>Note: New Jersey requires sampling on concrete and concrete blocks from manufacturing buildings prior to disposal.</i></p>	<ul style="list-style-type: none"> • Paint on building materials • Powdery residue mixed in with building materials • Discolored bricks, concrete blocks, etc. (concrete blocks may appear “wet”)
Railroad yards, ash disposal areas, etc.	<p>Coal ash and wood ash, often buried or used to level sites.</p> <p>Ash from burning activities often contains SVOCs and RCRA metals higher than background levels. These contaminants may be present at levels that prevent contact with residents or site construction workers.</p> <p>Buried ash may not provide sufficient strength for certain geotechnical loads.</p>	<ul style="list-style-type: none"> • Visible ash in fill • Discolored fill • Unexpected colors in fill (orange, purple, violet and blue) • Bits of coal, brick, rebar and wood in fill
Industrial sites (especially, Aerospace, metal processing, metal plating, refineries and petroleum terminals)	<p>High potential for VOCs to be found in soil sourced from these areas. Common areas for VOCs are degreasers, grease traps, metal scrap storage areas and painting areas.</p>	<ul style="list-style-type: none"> • Sweet smell of fill • Discolored fill • Unexpected, non-earth colors in fill • Fill that smolders when dumped or excavated
Former strip and retail malls	<p>High potential for CVOCs and VOCs to be present in areas of these sites. The contaminants arising from photo processing sites, paint stores, dry cleaners and gasoline stations/auto repair facilities.</p>	<ul style="list-style-type: none"> • Sweet smell of fill • Discolored fill
Agricultural sites	<p>Potential for pesticides, herbicides and metals.</p> <p><i>Note: The presence of these contaminants is not immediately apparent to a visual observer.</i></p>	

SECTION III

Minimizing Fill Problems and Liability

How do I manage the liability from known or potential contaminated fill already on or delivered to my site?

The following are some suggestions that should, if followed, reduce liability and associated problems with fill.

“Clean” Fill Management Recommended Actions

Acceptance of “clean” fill at a site requires environmental management to ensure the quality and consistency of the entire batch of “clean” fill. The recommended actions to maintain “clean” fill management include:

Action	Purpose	Challenges
Find an acceptable source of “clean” fill	<p>Ensure fill is:</p> <ul style="list-style-type: none"> • Free of environmental contamination • Close to intended use area • Reasonably priced 	<ul style="list-style-type: none"> • “Clean” fill sources are scarce in many urban areas • Distance of “clean” fill site from project site • Unknown environmental history of a potential “clean” fill site • Lack of existing data on the environmental quality of the fill
Determine prior activities at source area	<p>Obtain or arrange for a Phase I ESA to determine the likelihood that potential contaminant-generating activities occurred at the site.</p> <p>This document may help with selecting sampling sites or areas where fill should not be obtained as the source area.</p>	<ul style="list-style-type: none"> • Scarcity of fill sites • Unwillingness of sites to allow Phase I ESA • Lack of environmental data about the source site (no Phase I, Phase II or any environmental sampling data)
Negotiate and draft a contract with owner of source area concerning the quality, testing and responsibility of “clean” fill material	<p>A contract should be obtained between the firm/owner of the source area, noting:</p> <ol style="list-style-type: none"> 1. That the “clean” fill offered is free of contaminants. 2. The buyer has the right to continually sample at the source area and at the project site. 3. If it is found that the “clean” fill contains contaminants, the seller must accept return shipments of the fill and must pay for removal of contaminated areas of the fill area. 4. The fill provided is from a named and known source area. 	<ul style="list-style-type: none"> • Difficulty in contract negotiations • Other “clean” fill potential purchasers that will work without an agreement • Difficulty in observing excavation of fill and determining the origin of trucks arriving at project site

SECTION III *continued*

Minimizing Fill Problems and Liability

Action	Purpose	Challenges
Coordinate and obtain approval for use of “clean” fill from State and Local Environmental authorities	Different areas have different regulations. The developer/contract should determine fill regulations for the area, agree to sampling and use regulations.	
Obtaining or arranging for testing of “clean” fill at Source Area	<p>In order to prevent future problems and potential contamination of the development site, it is preferable to sample potential “clean” fill sites prior to excavation and transportation to the site.</p> <p>A comprehensive sampling plan should be developed to ensure that all material excavated is “clean” prior to excavation and transportation to the development site.</p>	<ul style="list-style-type: none"> • Difficulty in arranging for third party testing of source area soils
Test “clean” fill as the “clean” fill arrives at the project sites	Because fill is often very heterogeneous, it is important to continuously sample fill to ensure that it remains contaminant free. At minimum, there should be a sampling schedule developed for incoming fill loads to the development site.	<ul style="list-style-type: none"> • Additional work force needed • Ensuring that fill arriving at the development site is from the previously arranged fill source site
Continue inspection of fill as it arrives and continues to be used at the site	Ensure that no contaminants are present in the fill. Contaminants can be introduced by excavating fill in unacceptable areas of the source site, fill provider substituting fill from another site and potential for unknown areas of contaminants to be present.	<ul style="list-style-type: none"> • Additional work force needed

SECTION IV

Source Area Fill Management

If you own or manage a fill source area, careful management is required so that you do not incur any long-term environmental liabilities.

Management of “clean” fill source areas also requires careful management of the following entities:

Entity	Management Action	Reasons	Benefit
Firms excavating and transporting fill	Need to ensure that the management of these firms is known, well-educated and experienced and that these firms are properly licensed.	Only want to work with reputable firms, properly licensed and insured that will dispose of fill in a legal, appropriate location. The eventual disposal site of fill from the source site needs to be known.	<ul style="list-style-type: none"> • No negative press • No CERCLA liability for disposal of material from your site in an inappropriate site
Management of the source fill area	<p>Need to ensure that the source area is controlled so that unauthorized dumping does not occur.</p> <p>Control and excavation of source materials should be observed and managed to prevent excavation of areas that may contain contamination.</p>	<p>Once the source area is known as a source of “clean” fill, security must be upgraded to ensure that no unauthorized dumping or removal of soil occurs.</p> <p>This is necessary to prevent unknown introduction of contaminants into a source of “clean” fill.</p>	<ul style="list-style-type: none"> • No contamination of fill • No CERCLA liability from contamination of customer sites from “clean” fill
Management and auditing of the fill	<p>Where the fill is eventually used/disposed should be determined and recorded.</p> <p>The firms removing fill, number of trucks, etc., should be determined and recorded.</p>	<p>Disposal sites from your source should be determined and recorded should a future contaminant be discovered in the source area.</p> <p>Disposal site data aids in calculated potential response costs and ensures that source materials are being disposed of in appropriate/ permitted use/disposal sites.</p>	<ul style="list-style-type: none"> • No unknown disposal areas. • No unknown users of the source fill
Coordination with environmental authorities	The source area (if possible) should be inspected and approved/permitted by the environmental authorities.	The future use of fill from the source area should be permitted by the environmental regulatory authorities.	<ul style="list-style-type: none"> • No regulatory problems • No unauthorized disposal of source material

Management and definition of “clean” fill varies by state and local area:



PENNSYLVANIA

Definition of “Clean” Fill	Special Actions/Restrictions
<p>Uncontaminated, non-water-soluble, non-decomposable inert solid material. The term includes soil, rock, stone, dredged material, used asphalt, and brick, block or concrete from construction and demolition activities that is separate from other waste and recognizable as such. (25 Pa. Code §§ 271.101 and 287.101)</p> <p>The term does not include materials placed in or on the waters of the Commonwealth unless otherwise authorized.</p>	<p>To determine if source area is “clean” fill –</p> <ul style="list-style-type: none"> a) If due diligence shows no evidence of a release of a regulated substance, the material may be managed as “clean” fill under this policy. b) If due diligence shows evidence of a release, the material must be tested to determine if it qualifies as “clean” fill. <p>A person may not blend or mix materials to become “clean” fill. Materials that contain regulated substances that are intentionally released may not be managed under this policy.</p> <p>Materials identified as regulated fill are waste and must be managed in accordance with the Department’s municipal or residual waste regulations, whichever is applicable, based on 25 Pa. Code §§ 287.2 or 271.2. Regulated fill may be beneficially used under General Permit WMGR096 (proposed) if the materials and the proposed activities for the fill meet the conditions of that permit. A person may apply for an industry-wide beneficial use general permit for the beneficial use of regulated fill in lieu of this general permit.</p> <p>Use of material as “clean” fill does not require a permit under the Solid Waste Management Act and regulations, and it may be used in an unrestricted or unregulated manner under this Act and its regulations. The use of materials as “clean” fill is still regulated under other environmental laws and regulations. A person using materials as “clean” fill under the policy is still subject to and must comply with all applicable requirements governing the placement or use of material as “clean” fill.</p> <p>Any person placing “clean” fill that has been affected by a release of a regulated substance on a property must certify the origin of the fill material and results of analytical testing to qualify the material as “clean” fill on Form FP-001. The owner of the property receiving the fill must retain form FP-001.</p> <p>“Clean” fill may not contain any free liquids based on visual inspection, and shall not create public nuisances (for example objectionable odors) to users of the receiving property or adjacent properties.</p> <p><i>Note: There are sampling requirements based on the volume of “clean” fill obtained and used.</i></p>

Information Sources: [Department of Environment Protection – Bureau of Waste Management](#); [Department of Environmental Protection – Management of Fill](#); [Department of Environmental Protection – Policies & Procedures](#)

Definition of “Clean” Fill	Special Actions/Restrictions
<p>Residential Unrestricted Use Oil and Fill Material (Category 1) -</p> <p>Soil or fill material with concentrations of hazardous substances or oil less than or equal to the residential unrestricted use screening criteria may be innovatively reused at all sites without restriction. If potential contaminant concentrations in soil or fill material exceed the Category 1 screening criteria, then a more detailed soil or fill material residential risk assessment (considering factors such as magnitude and frequency of detections, land use, exposure parameters and factors, and toxicity values) may be performed. These must meet a HQ of 1 for non-carcinogens and a lifetime cancer risk of 1x10⁻⁵ for carcinogens. When the residential risk assessment is performed and meets a HQ of 1 for non-carcinogens and a lifetime cancer risk of 1x10⁻⁵ for carcinogens the soil or fill material may be innovatively reused at all sites without soil exposure restrictions and will be considered Category 1 soil and fill material. For soil or fill material that meets the Residential Unrestricted Use Soil and Fill Material definition, a person may send such soil or fill material to any offsite location. The owner or operator of the receiving site may be required to submit written acknowledgement regarding the volume and nature of such soil or fill material to LMA prior to transporting and accepting the materials at the receiving location.</p>	<p>To segregate between Category 1, 2, 3, and 4 soils, the State of Maryland has a written sampling and criteria program. Interim guidance notes:</p> <ul style="list-style-type: none"> • Category 1 TPH screening criteria: 230 mg/kg for TPH, DRO and 230 mg/kg for TPH, GRO • Category 2 TPH screening criteria: 620 mg/kg for TPH, DRO and 620 mg/kg for TPH, GRO • Category 3 TPH screening criteria: 620 mg/kg for TPH, DRO and 620 mg/kg for TPH, GRO • Category 4 TPH screening criteria: exceeds Category 3 standard <p>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.</p> <p>All imported fill materials for properties where the land use is determined to be residential must be characterized.</p> <p>In general, the fill source area should be located in non-industrial areas, and not from sites undergoing an environmental cleanup. Nonindustrial 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 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.</p> <p>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.</p>

Information Sources: Department of the Environment – Fill Material and Soil Management; Department of the Environment – Voluntary Cleanup Program



NEW JERSEY

Definition of “Clean” Fill	Special Actions/Restrictions
<p>Please note that “clean” fill is also currently defined in the NJDEP Solid Waste Regulations (N.J.A.C. 7:26E-1.4), but this solid waste definition and its use and interpretation is not necessarily equivalent to or a substitute for the definition of “clean” fill. In the Technical Rules, the word “uncontaminated” is not defined in the solid waste definition of “clean” fill. The sampling and analytical requirements may differ from those in this technical guidance. In addition, the Solid and Hazardous Waste Management Program (SHWMP) may apply and use this definition in a manner that differs from the requirements and objectives as laid out in the Technical Rule and guidance. Please note that the use of “clean” fill does not require a CAO/BUD from SHWMP.</p> <p>New Jersey Department of Environmental Protection (NJDEP) recently published a new guidance document regarding the use of backfill material. The document (Alternative and “Clean” Fill Guidance for SRP Sites) provides very specific guidance on the use of “Alternative” and “Clean” Fill at Site Remediation Program (SRP) sites. The intent of the new guideline is to reduce the volume of disposal at landfills by allowing certain fill material to be reused onsite. This affects anyone who supplies fill (donor sources) to SRP sites, as well as site investigators including property owners, Licensed Site Remediation Professionals (LSRPs), or environmental consultants.</p> <p>Prior to the publication of this guidance document, “Clean” Fill Certification letters from off-site sources often were sufficient to satisfy the requirements of the Technical Rule. However, under the new guidelines, specific sampling frequencies are provided for both alternative and “clean” fill. In addition, the specific documentation regarding compliance with this technical guidance are expected in the Remedial Action Report (RAR).documentation regarding compliance with this technical guidance are expected in the Remedial Action Report (RAR).</p>	<p>The overall objective is for the proposed “clean” fill be thoroughly understood as to the types and concentrations of contaminants as well as to homogeneity. This will ensure the contaminated fill is not unintentionally placed as “clean” fill, which would result in additional remediation. “Clean” fill is generally required for the implementation of presumptive remedies to be protective of sensitive receptors.</p> <p>There are various protocols and criteria for sampling of the proposed “clean” fill. - Donor material proposed for use as “clean” fill on a SRP site should be thoroughly evaluated through a review of the source history and operations to develop a sampling and analysis strategy in accordance with the Technical Rules</p>

Information Sources: [Department of Environmental Protection – Site Remediation Program](#)



DELAWARE

Definition of “Clean” Fill	Special Actions/Restrictions
<p>Delaware does not have a specific definition for “clean” fill but does have a definition for marginally contaminated soils (historic fills).</p>	<p>Any soils for re-use must have no hazardous waste, no solid waste, must pose no groundwater risk.</p> <p>Materials in fill may be permitted based on a Beneficial Use Determination from the Solid and Hazardous Waste Management Branch or evaluated on a case-by-case basis.</p>

Information Sources: [Division of Waste & Hazardous Substances: Solid, Hazardous and Infectious Waste](#)



FLORIDA

Definition of “Clean” Fill	Special Actions/Restrictions
<p>Florida definition of “clean” fill includes:</p> <p>Uncontaminated inert solid material</p> <p>Includes soil, rock, stone, dredged material, used asphalt, and brick, block or concrete from C&D activities</p> <p>Uncontaminated – unaffected by spill or release, or if affected, levels are below residential SHS</p> <p>Soil, rock, stone, dredged material, used asphalt, historic fill, and brick, block or concrete from C&D activities affected by a spill or release</p> <p>Concentrations of regulated substances exceed residential SHS, but meet nonresidential SHS</p>	<p><i>Note: Each county may vary</i></p> <p>FDEP Policy:</p> <p>Used to determine if material qualifies as “clean” or regulated fill Does not apply to mine land reclamation activities subject to a permit Excavation, movement or reuse within project area or ROW does not require a SWMA permit</p> <p>Fill Determination</p> <p>Environmental due diligence</p> <p>If no evidence of release, material may be managed as “clean” fill</p> <p>If evidence of a release, material must be tested to determine if it is “clean” or regulated fill</p> <p>Analytical testing or sampling only required if evidence of a release of a regulated substance</p> <p>Management of “Clean” Fill</p> <p>Use of material as “clean” fill does not require a permit under the SWMA</p> <p>“Clean” fill may be used in an unrestricted manner</p> <p>Use of “clean” fill is still regulated under other environmental laws and regulations, e.g., Chapter 102 and Chapter 105</p> <p>Any person placing “clean” fill that has been affected by a release must certify the origin of the material and the results of analytical testing used to determine that it is “clean” fill</p> <p>BMP must be used during demolition activities to remove hazardous material from material to be used as “clean” fill</p> <p>“Clean” fill may not contain free liquids based on visual observation or create public nuisances (e.g., objectionable odors) to users of the receiving property or adjacent properties</p> <p>Management of Regulated Fill</p> <p>Materials identified as regulated fill are waste and must be managed under a permit in accordance with the municipal or residual waste regulations</p> <p>Regulated fill may be beneficially used under General Permit WMGR096 if material meets requirements of that permit</p> <p>May apply for industry-wide beneficial use permit in lieu of the general permit</p>



Definition of “Clean” Fill	Special Actions/Restrictions
<p>Virginia does not have a specific definition for “clean” fill, and they only regulate marginally contaminated soil by petroleum.</p>	<p>Marginally contaminated soil can be used for:</p> <ul style="list-style-type: none">• On-site Fill• Off-Site Fill• Road Base <p>However, VADEQ must approve the use of the marginally contaminated soil prior to use.</p> <p>Common allowable uses in Virginia include:</p> <ul style="list-style-type: none">d. Nonhazardous, contaminated soil that has been excavated as part of a construction project and that is used as backfill for the same excavation or excavations containing similar contaminants at the same site, at concentrations at the same level or higher. Excess contaminated soil from these projects is subject to the requirements of this chapter;e. Nonhazardous petroleum contaminated soil that has been treated to the satisfaction of the department in accordance with 9VAC20-81-660;f. Nonhazardous petroleum contaminated soil when incorporated into asphalt pavement products;g. Solid wastes that are approved in advance of the placement, in writing, by the department or that are specifically mentioned in the facility permit for use as alternate daily cover material or other protective materials for landfill liner or final cover system components; <p>11. Using rocks, brick, block, dirt, broken concrete, crushed glass, porcelain, and road pavement as “clean” fill.</p>

Information Sources: 9 VAC 20-80-60.D.5

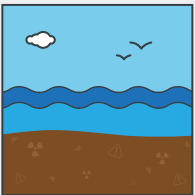
SECTION V

Contaminated Fill Case Studies



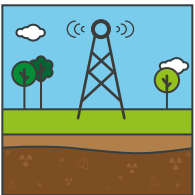
Glen Ridge Site and Surrounding Area

In the 1920s and 1930s, residents and developers accepted waste dirt and fill from a chemical company site in Essex County, New Jersey. Eventually, fill from the chemical company was used to raise the ground level at 430 residential sites and 14 municipal sites in Glen Ridge, Bloomfield, and Orange, New Jersey. In 1983, the New Jersey Department of Environmental Protection (“NJDEP”), investigating the area due to health complaints, noted that the fill contained coal ash, trash and by-products from a radium processing operation. Due to the high-level radioactivity associated with the fill from the chemical company, NJDEP required excavation and disposal of the fill in a specialized landfill that accepted radioactive wastes. Some homes required the installation of gamma radiation protection measures. The remedial work was performed under a USEPA Emergency Action cleanup.



Cliffwood Beach, New Jersey^[3]

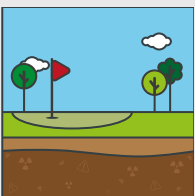
After Superstorm Sandy in 2012, extensive erosion was noticed in Cliffwood Beach in Old Bridge Township, New Jersey. A former gentle slope was transformed into a steep cliff along Raritan Bay. Affected homeowners found a supply of “clean” fill from a local construction company, who agreed to place the fill along the affected residential area along Raritan Bay. During filling of the affected area, County Commissioners noted that the supposed “clean” fill contained brick, concrete, rebar, crushed stone and other materials. NJDEP investigators tracked trucks bringing fill to the site and determined that the fill was originating from 237th Street in Bronx, New York and that the “clean” fill was actually historic fill from a building demolition project that had been determined as unacceptable for residential use. Later, after the soil was placed adjacent to homes and the Raritan Bay, testing found the fill to contain high levels of Benzo(a) pyrene, a carcinogen. Remediation was necessary and the area was capped at a cost of \$300,000 that was the responsibility of the Township of Old Bridge.



Visionstream Site Route 516 New Jersey^[3]

At this site, a trucking company and generator of a solid waste material, sold the solid waste material to the Visionstream site. The material consisted of crushed concrete aggregate mixed with asphalt shavings. The generator of this material thought the material was to be properly treated and then disposed in a landfill, but the material was actually sold to the developer of Visionstream as “clean” fill where it was used as fill in the Visionstream development sites.

After later testing found that the “clean” fill was contaminated with PAHs, a class of carcinogens, Visionstream paid to have their site remediated and capped, at a significant cost.



Hudson County Improvement Authority (Municipal Golf Course)^[3]

The Hudson County Improvement Authority (HCIA) was developing a public nine-hole golf course in Hudson County, New Jersey (Lincoln Park West). To construct the golf course, extensive fill was needed for development of greens, swales and sand traps. No testing or acceptance criteria were specified and HCIA accepted fill that contained contamination, which later required capping and removal.



Colonia (Dredge Spoils) ^[1]

In the 1990s, Colonia Oil Industries agreed to dredge a portion of a river to create a new pier and signed an agreement with Charles Gray, a nearby landowner, to dispose of the dredged spoils. Colonia agreed to dispose of “clean” fill on the land owned by Mr. Gray. The permit obtained by Colonia for disposal of the “clean” fill noted that firm, silty to gray sandy clay could be disposed. Mr. Gray expected clean sand to be disposed on his property and after placement of the dredge spoils on the property, he found that in addition to sand, bricks, wire cable and lumber were disposed.

Mr. Gray sued Colonia for improper disposal of materials that were not “clean” fill. He sued for Colonia to remove the dredge spoils from his land as they did not meet his expectation for “clean” fill and did not meet the permit requirements for quality of material to be disposed.

References

- ¹ The Pitfalls of Accepting Contaminated Fill; IRMI Jeff Slivka); <https://www.irmi.com/articles/expert-commentary/the-pit-falls-of-accepting-contaminated-fill>
- ² Mitigating Environmental Liability from Construction Debris and Contaminated Soil; Stafford; February 12, 2019
- ³ Dirty Dirt; State of New Jersey Commission of Investigation; March 2017

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