BEST MANAGEMENT PRACTICES FOR HIGHWAY AND EARTHWORK CONSTRUCTION UNDER THE PA DEP FILL POLICY AND GENERAL PERMIT PROGRAM

Prepared on behalf of:

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Forward

This document presents Best Management Practices (BMPs) used in earthwork and highway construction projects in Pennsylvania. Pennsylvania has state-specific protocols for a number of important construction practices involving processing and placement of materials, and determining whether or not materials are considered clean fill or waste. Those involved in earthwork and highway construction in Pennsylvania are advised to become familiar with Pennsylvania protocols and beneficial reuse of materials such as pavement millings/RAP, slag and other materials which can be safely reused and recycled so long as the protocols are followed.

For more information on construction practices and use of materials, the Pennsylvania Asphalt Pavement Association (PAPA) provides technical assistance through the Association's office.

- Pennsylvania Asphalt Pavement Association
- Office Contact: 717-657-1881
- Website: http://www.pa-asphalt.org/

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pennsylvania
DEPARTMENT OF ENVIRONMENTAL
PROTECTION

January 17, 2017

CERTIFIED MAIL NO. 70031010000310245221

Gary Brown
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Re: Best Management Practices for Highway and Earthwork Construction

Dear Gary:

The Department of Environmental Protection ("Department") has reviewed the December 2016 "Best Management Practices for Highway and Earthwork Construction Under the PA DEP Fill Policy and General Permit Program" and revisions received in January 2017 prepared by RT Environmental Services, Inc. on behalf of the Pennsylvania Asphalt Pavement Association. While the Department does not issue approval for documents that are generated by industry organizations, we acknowledge that this document would serve as a helpful reference to the industry in complying with the Management of Fill Policy (258-2182-773PO) and General Permit Number WMGR096 (the beneficial use of regulated fill).

Sincerely,

Scott E. Walters

Scott E. Walters, Chief
Permits Section
Division of Municipal and Residual Waste

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1.0 INTRODUCTION AND BACKGROUND

This Best Management Practices document describes the management of materials at construction sites.

In April, 2004, the Pennsylvania Department of Environmental Protection issued a Management of Fill Policy. The Policy determines whether material excavated at a site is "Clean Fill", or, "Regulated Fill". Under the Policy, regulated fill must be managed under a Waste Permit (General Permit for the beneficial use of regulated fill). Material which is heavily contaminated, or which otherwise meets the definition of municipal, hazardous, or residual waste, may have to be managed as waste, and is not Clean Fill or Regulated Fill.

Clean Fill may be used in an unrestricted manner. However, Clean Fill may only be placed in contact with the surface waters or groundwater if other environmental programs authorize such use.

To determine whether material is uncontaminated and therefore qualifies as Clean Fill, due diligence and in most cases testing, may be needed. If there is evidence of a release of regulated substances, or if the material itself is not soil, the material may not qualify as Clean Fill and may have to be managed under the General Permit.

Non soil and soil like materials frequently cannot be managed under this Policy. Asphalt materials, land clearing materials, and concrete are also separately regulated. See the following attachments for more information:

Attachment	Contents
6	Frequently Asked Questions
9	Best Management Practices for Land Clearing Waste
10	Information on Management of Used Asphalt and Reclaimed Asphalt Pavement.

1.1 Definitions

Key definitions are as follows:

- *Clean fill* - Uncontaminated, nonwater-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 §§ 287.101, 271.101) The term does not include materials placed in or on the waters of the Commonwealth unless otherwise authorized.

- *Environmental due diligence* - Investigative techniques, including, but not limited to, visual property inspections, electronic data base searches, review of ownership and use history of property, Sanborn maps, environmental questionnaires, transaction screens, analytical testing, environmental assessments and audits.

- *Historic fill* - Material (excluding landfills, waste piles and impoundments) used to bring an area to grade prior to 1988 that is a conglomeration of soil and residuals, such as ashes from the residential burning of wood and coal, incinerator ash, coal ash, slag, dredged material and construction and demolition waste. The term does not include iron or steel slag that is separate from residuals if it meets the coproduct definition and the requirements of 25 Pa. Code Section 287.8. The term does not include coal ash that is separate from residuals if it is beneficially used in accordance with 25 Pa. Code sections 287.661 - 287.666.

- *Regulated fill* - Soil, rock, stone, dredged material, used asphalt, historic fill and brick, block or concrete from construction and demolition activities that is separate from other waste and recognizable as such that has been affected by a spill or release and the concentrations of regulated substances exceed the values in Tables FP-1 a and b.

- *Regulated substance* - The term shall include hazardous substances and contaminants regulated under the Hazardous Sites Cleanup Act, and substances

covered by the Clean Streams Law, the Air Pollution Control Act, the Solid Waste Management Act, the Infectious and Chemotherapeutic Waste Law, and the Storage Tank and Spill Prevention Act.

- *Release* - Spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing of a regulated substance into the environment in a manner not authorized by the Department of Environmental Protection. The term includes the abandonment or discarding of barrels, containers, vessels and other receptacles containing a regulated substance.

- *Uncontaminated material* - Material unaffected by a spill or release of a regulated substance, or if affected by a spill or release, the concentrations of regulated substances are below the concentrations specified in Tables FP-1 a and b. (See the YELLOW PAGES in Attachment 3.)

- *Reclaimed Asphalt Pavement (RAP)* - RAP is formed of small particles, typically up to less than an inch in size, of bitumen and inorganic materials produced by the mechanical grinding of bituminous pavement surfaces that have not been subject to a spill or release of regulated substances or mixed with other solid waste. RAP is not the equivalent of used asphalt, which is typically in the form of chunks, typically greater than one inch in size, and thus is not considered to be clean fill under the Department's Management of Fill Policy.

- *Co-Product* – A material generated by a manufacturing or production process, or a spent material, of a physical character and chemical composition that is consistently equivalent to the physical character and chemical composition of an intentionally manufactured product or produced raw material, if the use of the material presents no greater threat of harm to human health and the environment than the use of the product or raw material. A coproduct determination only applies to materials that will be applied to the land or used to produce products that are applied to the land, including the placement of roadway aggregate, pipe bedding or construction materials. The PA DEP has issued Industry-Wide Co-Product #1 for RAP; see Attachment 10 of this BMP for more information.

2.0 THE MANAGEMENT OF FILL GUIDANCE POLICY

The actual language of the Technical Guidance is as follows:

Fill Documentation

1) To determine whether fill is clean or regulated, a person must perform environmental due diligence[1].

   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. Testing must be performed in accordance with DEP Appendix A. (See the GREEN PAGES in Attachment 7).

      i) If testing reveals that the material concentrations of regulated substances that are below the residential limits in Table FP-1a and b, the material must be managed as clean fill.

      ii) If testing reveals that the material contains concentrations of regulated substances that exceed the limits in Table FP-1a and b, the material must be managed as regulated fill.

2) 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.

1 Analytical assessment, testing or sampling is only required if visual inspection or reviews of historic property use indicates evidence of a regulated substance

Management of Regulated Fill

- Regulated fill can be used as a construction material on certain commercial and industrial sites that have construction approval, if a General Permit approval is obtained in advance from PA DEP.

- Materials identified as regulated fill are waste and must be managed in accordance with the 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 (April 13, 2004) 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.

- Regulated fill may not be placed on a greenfield property not planned for development, or on a property currently in residential use or planned for residential use unless otherwise authorized.

- Fill containing concentrations of regulated substances that exceed the values in Table GP-1 a and b may not be managed under the provisions of this policy or General Permit WMGR096, but must be otherwise managed in accordance with the provisions of the Department's municipal or residual waste regulations.

- In addition, a general permit is not required for remediation activities undertaken entirely on an Act 2 site pursuant to the requirements of Section 902 of the Land Recycling and Environmental Remediation Standards Act. A general permit is also not required if regulated fill from an Act 2 site is used as construction material at a receiving site that is being remediated to attain an Act 2 standard as long as the procedural and substantive requirements of Act 2 are met. Regulated substances contained in the regulated fill must be incorporated into the notice of intent to remediate and the final report. Movement of regulated fill between Act 2 sites must be documented in both the sending and receiving sites' cleanup plans and final

reports. Placement of the regulated fill may not cause the receiving site undergoing remediation to exceed the selected Act 2 standard.

Management of Clean Fill

- 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, such as Chapter 102 (Erosion and Sediment Control) and Chapter 105 (Dam Safety and Waterway Management).

- Any person placing clean fill which 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. Form FP-001 must be retained by the owner of the property receiving the fill. (See DEP Appendix B in Attachment 7).

- Best Management Practices (BMP) must be followed prior to demolition activities to remove materials like lead-based paint, friable asbestos and hazardous materials such as mercury switches, PCB ballasts and fluorescent light bulbs from a building if the brick, block, or concrete is used as clean fill.

- 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.

2.1 Due Diligence

Due diligence refers to the review of historical or recent uses of a property to determine whether soils at the site are impacted by spills or releases, or to determine if other human or industrial

activity has caused releases of regulated substances into soil, rock, stone, dredged material, used asphalt, brick, block, or concrete at a site. Typical questions asked as part of due diligence can be found in Table 1. In general, environmental managers or environmental consultants should be completing the due diligence work, which usually includes:

- A site inspection.
- An interview with the person with 10 years knowledge of the property.
- A review of "regulatory database" information; site specific or area/corridor study. In the area/corridor study regulatory database, information is provided along a specific geographic corridor or project area. This corridor study is typically used when the project boundary is several miles in length.
- A review of historical ownership information.

At the current time, researching typical 10 to 20 acre site historical environmental information, constituting current environmental due diligence practice costs approximately $2,100. The approximate cost to complete the area/corridor study is $750 per mile of project.

Due diligence, by itself, cannot reveal whether or not soils at a site are contaminated, or, whether waste materials have been buried at a site. The reason for this, is that in general, prior to 1970, when there were spills or releases they did not have to be reported. Further, prior to 1970, landfills which were operated in the state, did not have to be registered, as to fill locations.
Due diligence also will not reveal whether soils are impacted by either natural background conditions, or historical atmospheric emissions. Attachment 1 has a map which shows areas of the state which may contain natural elevated levels of arsenic in soils. Attachment 2 has a map which has a map of areas of the state which are urbanized prior to 1960, when coal burning was more common. Both of these maps should be taken into account prior to determining whether or not testing is needed at a site.

TABLE 1
TYPICAL DUE DILIGENCE QUESTIONS

- In what year was the property first developed?
- Has there been any industrial ownership or use of the property and/or neighboring properties?
- Were there any reported or otherwise known spills or releases on the property? If so, where were they located?
- Were any non-soil materials ever buried at the property? If so, where were they located?
- Were there any petroleum or chemical storage tanks ever present on the property and/or neighboring properties?
- Were motor vehicles ever serviced or maintained on the property?
- Was the property ever in agricultural use? If so, were there ever orchards or crops where herbicides or pesticides were applied?
- Were any land clearing materials ever buried on the property?
- Was any sewage sludge ever spread on the property?
- If any fill was ever brought onto the property, is the source of the fill known?
- Were any structures ever demolished and the remains left on the property and covered?
- Where are the locations of any spills, releases or non-native soils other non-native materials on the property?
- Were there any other issues of an environmental nature ever reported at the property?

2.2 Testing

The decision of whether or not to test at a site, and the type of testing required is recommended to be determined by a qualified environmental manager or consultant. As some of the residential Statewide Health Standards in Pennsylvania are relatively low (including arsenic at 12 mg/kg), most sites will require some level of testing. Most consultants elect to conduct initial "screening" testing, which typically involves testing soil either on a random, or biased basis, and checking for typical inorganic (metal) or organic parameters which indicate releases due to urbanization, commercialization, industrialization, and/or historic filling. A typical compound screening list used by consultants can be found in Attachment 5 (this screening list is only the minimum; those testing must add other suspected constituents which result from the due diligence review).

The testing being discussed is called "screening" testing, and results are typically compared with DEP Table FP-1 and GP-1 Limits, for Clean Fill and Regulated Fill, which can be found in Attachment 3. If the screening testing reveals that concentrations, are, or may be above the Clean Fill Concentration Limits or if there are detections in the data set which indicate material may be impacted by a spill or release, then further testing is typically required to determine what portions of the site, or, areas to be excavated have to be managed as regulated fill, or waste.

It is recommended that screening testing consist of initial identification of potential contamination impacts in the area to be excavated, and, implementation of a screening sampling strategy taking such potential contamination impacts into account.

In general, the number of samples obtained for screening samples should be 10% of the required number of samples as required by DEP if the material had to be sampled as Regulated Fill. There should be a minimum of four samples for any parameter group (5% may be an adequate number of screening samples if the excavated material quantity is $\geq$ 100,000 CY.) The sampling strategy should be biased, as appropriate, to include sample locations such as:

- surface soils with atmospheric deposition impacts;
- surface soils with herbicide/pesticide application;
- subsurface soils along waterways or in flood plains with potential historic fill;
- below or beneath tanks, industrial discharge vents or roof leaders or current/former

industrial buildings or petroleum/chemical loading or unloading areas.

- in fill areas where the source of the fill material is unknown;
- in the areas of former structures, to see if building materials were buried in place;
- in areas of former basins or lagoons.

Data from soil screening should be carefully reviewed to see if the material qualifies as Clean Fill. If only some of the material fails to qualify, further delineation should be conducted so that the extent of material that qualifies as Clean Fill is better defined. Other management methods can then be identified for the materials which do not qualify as Clean Fill.

2.3 Arsenic Limit

For certain construction materials, DEP allows a limit of 20 mg/kg, so long as "direct contact" is addressed as part of the construction activity. This means that soils that have an arsenic concentration higher than 12 mg/kg, but below 20 mg/kg, cannot be left exposed at the end of the project.

Three general options are available to prevent direct contact:

- The area can be paved, or, covered with concrete.
- The area can be covered with geotextile and stone (if this option is used, the stone needs to be placed over a geotextile, and be at least 6 inches thick).

- The area can be covered by other fill, and/or top soil, so long as the layer above the impacted soil is at least 12 inches thick.

The following materials qualify to be used as construction materials under this portion of the Policy:

- Newly mined rock or aggregate materials, where the average concentration of arsenic is less than 20 mg/kg.

- For excavated materials, where sampling, conducted per the Act 2 Technical Guidance

Manual[2], shows that arsenic concentrations less than 20 mg/kg are a "natural background" condition, and did not result from a spill or release.

- Where soils, after being characterized per the Act 2 Technical Guidance Manual, show discrete soil sample concentrations of arsenic between 12 and 20 mg/kg, but, an obvious potential source, such as, either atmospheric deposition or historical use of arsenical pesticides/herbicides is not present in surface soils.

When characterizing soils under this BMP using discrete samples for arsenic, the "75%/2X" Rule may be used to determine if the soil meets the 20 mg/kg limit for arsenic. When characterizing soils using the composite sampling technique, the measured concentration shall be less than or equal to the 20 mg/kg limit. None of the measured arsenic concentrations in the composite samples analyzed may exceed 20 mg/kg, but subsequent discrete sampling demonstrating attainment of the 75%/2X Rule may be used to demonstrate attainment of the 20 mg/kg limit.

It is recommended that where actual arsenic releases have occurred, such as from atmospheric deposition, or use of lead arsenate or similar arsenical based pesticides, that such impacted soils be addressed under the Act 2 Land Recycling Program, and not be managed under the Final DEP Fill Policy, as on-site management of materials under the Act 2 program tends to be a cost-effective approach.

DEP may also issue site specific approvals if environmental issues associated with reuse of specific materials are addressed.

(2) DEP will include a future revision to the Act 2 Technical Guidance Manual to address how to sample sites to determine whether arsenic present is from natural background, atmospheric deposition, application of lead arsenate or other spill or release. See DEP Land Recycling Question and Answer Web Page for the current protocol.

3.0 GENERAL PERMIT FOR BENEFICIAL USE OF REGULATED FILL

3.1 What is a General Permit?

A General Permit, as referred to herein, is a permit issued by the Department of Environmental Protection, which has a standard set of terms and conditions under which a person can conduct a regulated activity involving processing and/or beneficial use of a residual waste. The full text of the General Permit under which Regulated Fill must be managed, is found in Attachment 4. General Permits for Regulated Fill are issued by DEP Regional offices. To operate under the General Beneficial Use Permit for Regulated Fill (WMGR 096), a number of steps must be followed:

- Testing must be completed to determine the volume of materials which will be managed as Regulated Fill.

- A Permit Application has to be prepared and submitted to the appropriate DEP Regional Office.

- A description of receiving site information must be provided to DEP, along with other notices.

- A deed acknowledgment must be placed at the receiving site.

Further information on specific General Permit requirements can be found in the following Sections.

3.2 Who Should Prepare the Application?

In most instances, an environmental manager or consultant should be preparing the Permit Application. The reason for this is that materials must be managed such that any materials which do not qualify as regulated fill and/or waste must be separated out, which requires environmental management expertise. In addition, engineering information will typically be required to be

submitted for the receiving site, including information that appropriate permits have been obtained, that Erosion and Sedimentation Control Plans are in effect, and any other additional that the DEP may require. In many instances, the project owner's or sponsor's environmental consultant will prepare the application, in which case the earthwork or highway contractor will not need to prepare a second application.

3.3 Managing Material at Act 2 Remediation Sites

At Act 2 Brownfield sites, use of the General Permit may not be required. Regulated substances in the fill material, however, must be in the Act 2 notice documents, cleanup plan, Final Report and/or other documents. The environmental consultant who is managing the Act 2 site should be contacted to see if movement of soil to an Act 2 Brownfields site is possible. Testing and notices to DEP and the municipality are still required.

3.4 Procedures for Use of General Permit

Here are the key General Permit conditions:

- The beneficial use of Regulated Fill is restricted to use as a construction material for approved construction projects at a property that is zoned for commercial or industrial uses. Parks, playgrounds, nursing homes, child-care facilities, schools, or other residential-style facilities or recreational areas do not qualify.

- *Permitted Activities.* The approval herein granted is limited to the beneficial use of regulated fill when moved offsite or received onsite. Regulated fill may only be moved to a property that is zoned and used exclusively for commercial and industrial uses or to a property that is unzoned but is exclusively used for commercial and industrial uses (excluding parks, playgrounds, nursing homes, child care facilities, schools or other residential-style facilities or recreation areas). This permit does not authorize blending or processing of material to meet concentration limits in Table GP-1.

- *Definitions.* The following terms, when used in this permit, have the following meanings:

- *"Regulated Fill"* is soil, rock, stone, dredged material, used asphalt, historic fill, and brick, block or concrete from construction and demolition activities that is separate from other waste and recognizable as such that has been affected by a spill or release of a regulated substance and the concentrations of regulated substances exceed the values in Table FP-1 of the Department's fill policy.

- *"Historic Fill"* is material (excluding landfills, waste piles and impoundments) used to bring an area to grade prior to 1988 that is a conglomeration of soil and residuals, such as ashes from the residential burning of wood and coal, incinerator ash, coal ash, slag, dredged material and construction and demolition waste. The term does not include iron or steel slag that is separate from residuals if it meets the coproduct definition and the requirements of 25 Pa. Code § 287.8. The term does not include coal ash that is separate from residuals if it is beneficially used in accordance with 25 Pa. Code § 287.661 - 287.666.

- The fill may not exceed the following:

  - *Concentration limits.* Regulated fill may not exceed the values in Table GP-1.

  - For chlorides, in dredged material from tidal streams, regulated fill shall meet 250 mg/l based on an SPLP analysis. (This is the only situation where SPLP analysis may be used under the General Permit.)

  - Fill that is hazardous waste under 25 PA Code Section 261(a) (relating to identification and listing of hazardous waste) may not be used under this permit. 25 PA Code Section 288.623(a)(1) and (2) describes requirements that cannot be exceeded, i.e. - material cannot be moved as regulated fill if it is a hazardous waste. (See Attachment 11).

- *Proper management of fill.* Regulated fill may not be placed on a greenfield property not planned for development, or on a property currently used for or planned for residential

use. Material containing concentrations of regulated substances that exceed the values in Table GP-1 may not be moved under the provisions of this general permit, but must be managed in accordance with the provisions of the municipal or residual waste regulations.

- *Proper management of dredged materials.* In addition to meeting the values in Table GP-1, regulated fill consisting of dredged material from tidal streams shall meet 250 mg/l for chlorides based on an SPLP analysis.

- *Proper management of fill materials containing metals.* Regulated fill containing metals may be moved to a site if those metals concentrations meet either the concentration limits for metals in Table GP-1 or the background concentration, whichever is higher. Fill that exceeds the concentration limits must be placed as part of an approved construction project in such a manner that all direct contact exposure pathways are eliminated. The background concentration is defined as the concentration of a substance that is present at the site before beneficial use activities occur under this permit. Background concentrations may be determined by taking a representative number of samples, based on the size of the site, from each of the receiving site and the fill proposed for beneficial use. The average concentration in the receiving site samples becomes the background concentration.

- If the size of the receiving site, where the beneficial use takes place, is greater than or equal to one acre, proof that a Pennsylvania Natural Diversity Inventory (PNDI) review at the site has been completed. This review should be in accordance with the Department's policy #400-0200-001, "Policy for Pennsylvania Natural Diversity Inventory Coordination During Permit Review and Evaluation" (Jan. 18, 2003) and all known occurrences must be resolved with the jurisdictional agency. If a PNDI review has been completed at the receiving site under another Department program, the report of that review and approval may be submitted to the Department to satisfy this permit application requirement.

A person that registers for coverage under this general permit shall submit:

- A copy of the General Permit registration be submitted to each municipality in

which the beneficial use activities will be located 30 days prior to initiating operations.

- *Sampling and analysis.* Prior to the beneficial use, the permittee shall perform chemical analysis on representative samples of regulated fill for the appropriate parameters in accordance with the protocol in Appendix A to the Fill Policy. The chemical analyses required in this condition shall be performed by a laboratory accredited or registered for accreditation under the Pennsylvania Environmental Laboratory Accreditation Act of 2002.

- *Deed Acknowledgment for beneficial use of regulated fill.* The permittee shall provide to the Department proof of a recorded deed notice that includes the exact location of the fill placed on the property, including latitude and longitude descriptions, and a description of the types of fill identified by sampling and analysis. The location and description shall be made a part of the deed for all future conveyances or transfers of the subject property.

Siting Limitations (DEP Condition 11)

Regulated fill shall not be beneficially used under this permit:

- in the 100-year flood plain;

- within 100 feet of a sinkhole or area draining into a sinkhole;

- within 50 feet of a property line unless the owner has provided a written waiver consenting to the facility being closer than 50 feet;

- within 100 feet of a perennial stream;

- within 300 feet of a water source unless the owner has provided a written waiver consenting to the beneficial use being closer than 300 feet;

- within 300 feet of an exceptional value wetland, an exceptional value water or a high quality water.

- The 100 year floodplain siting limitation is not applicable to the placement of regulated fill at a brownfield site provided the placement is in accordance with all other applicable requirements.

Water Quality

- Regulated fill shall not be placed in the waters of the Commonwealth.

Nuisances

- Regulated fill shall not contain any free liquids based on visual inspection, and shall not create public nuisances (for example objectionable odors).

Construction Material

- The construction activity shall be conducted promptly but no later than one year from the date the regulated fill is placed for beneficial use. The areas shall be promptly vegetated to minimize and control erosion or capped to minimize infiltration if the construction activity is not undertaken within 30 days of fill placement.

- The regulated fill may not be mixed with other types of solid waste unless approved by the Department.

- Storage and transportation shall comply with the DEP regulations of 25 Pa. Code Chapters 285 or 299 (relating to storage, collection and transportation of municipal waste and residual waste).

- An erosion and sedimentation control plan shall be implemented at the receiving site.

Record Keeping

Records shall be maintained as follows:

- Records of analytical evaluations conducted on the regulated fill under this permit shall be kept by the permittee at the permittee's place of business and shall be available to the Department for inspection. This waste analysis information shall be retained by the permittee for 5 years.

- Those operating under the General Permit will also be consenting to DEP standard right of entry provisions common to all DEP waste permits.

- Persons or municipalities that propose to beneficially use regulated fill by operating under the terms and conditions of this general permit after the date of permit issuance shall register for each location of beneficial use. The request shall be sent to the Department's appropriate regional office that has jurisdiction for waste-related activities in the County where the regulated fill will be beneficially used. *The registration package will generally cost $2,500-$3,250 to prepare, which does not include the cost of testing. There will also be a $250 DEP registration fee.*

- For persons or municipalities that propose to beneficially use regulated fill on nonresidential brownfields, the activities may commence after 15 working days from the date the Registration application is submitted to the Department, unless otherwise instructed by the Department. "Brownfields" is defined as real property where contaminants have been released and remain present.

- For persons or municipalities that propose to beneficially use regulated fill on the following:

- on non-residential greenfields that are planned for development; (the development plans need to be approved prior to use)

- on properties where the area subject to regulated fill placement is larger than 10 acres; or

- on properties where waiver or modification of a siting limitation in Condition 11 has been requested, the activities may commence after 60 working days from the date the Registration application is submitted to the Department, unless otherwise instructed by the Department

- A "Greenfields" is defined as real property that is not brownfields.

- If new sources of regulated fill are to be included at the approved beneficial use location, the permittee shall notify the Department in writing by submitting information in accordance with subparts (a.)-(f.) of Condition 26 (DEP's permit application requirements). A permittee may commence with beneficial use of the new source after 10 working days from the date the information is submitted to the Department, unless otherwise instructed by the Department.

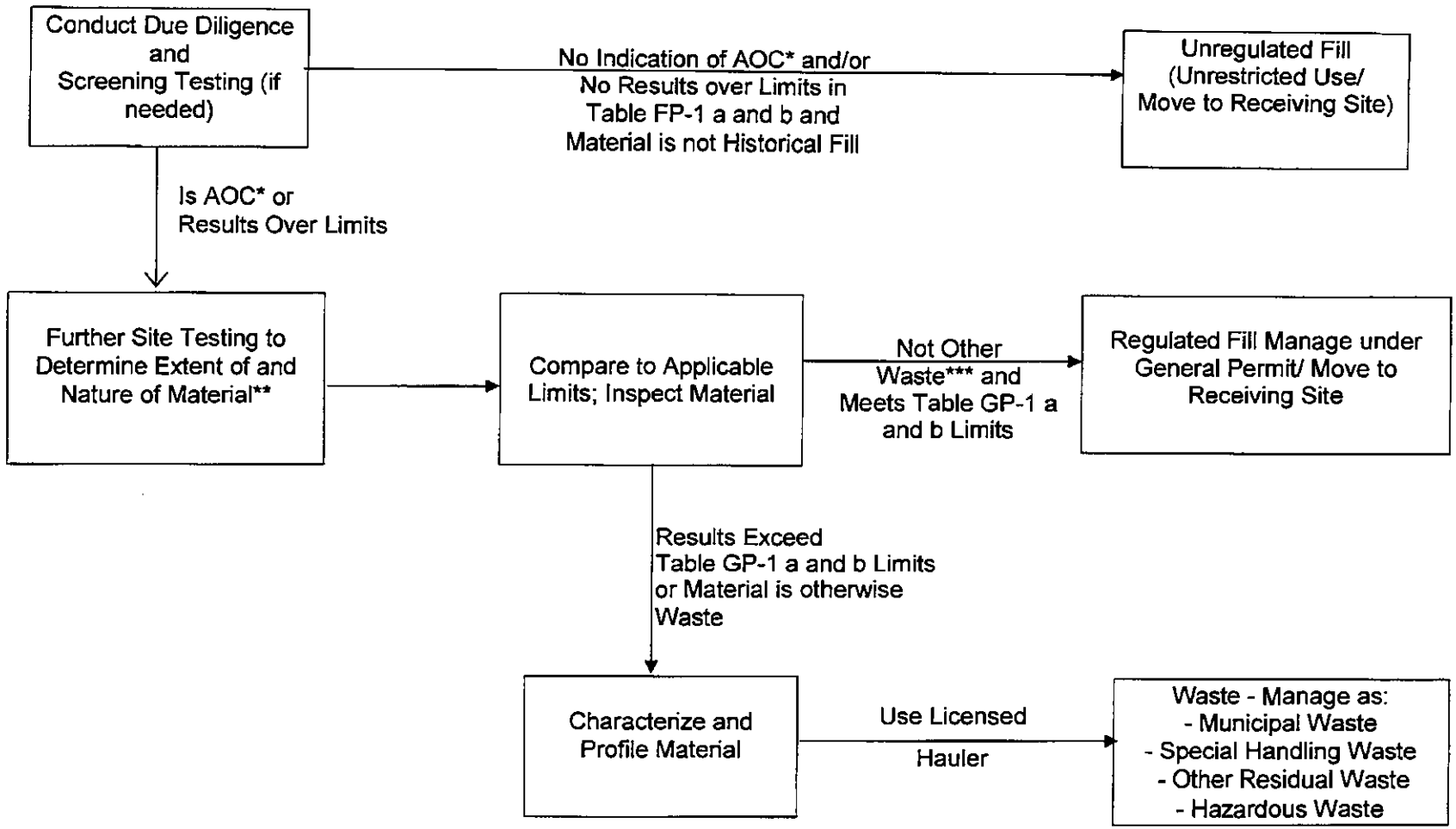
Determining that Material is No Longer Waste

- Regulated fill that meets all the terms and conditions of this permit and that does not exceed concentration limits in Table GP-1 shall cease to be waste once the regulated fill is beneficially used as construction material as part of a construction project.

In addition, the Flow Chart in Figure 1 and Attachment 7, a summary of the Fill Policy contain more information and both the process of determining whether or not materials are Clean Fill. The GREEN PAGES in Attachment 7 contain sampling requirements. The YELLOW PAGES in Attachment 3 contain the limits for Clean Fill and Regulated Fill.

FIGURE 1

FILL POLICY FLOW CHART



* Area of Concern
** If Construction Materials, follow Best Management Practices Plan
*** The Policy cannot be used for materials other than those listed in the Policy.

Flowchart Prepared by: RT Environmental Services, Inc. Furnished Courtesy of the Pennsylvania Asphalt Pavement Association

4.0 FINDING UNEXPECTED MATERIALS DURING CONSTRUCTION

Regardless of the level of advance due diligence work and testing conducted, at some sites, unexpected materials will sometimes still be found during construction. The reason for this is that there is a long history of human activity on earth, and modern methods of due diligence and testing cannot reveal all of the places that soils may have been impacted, or materials may have been buried.

4.1 Identifying and Characterizing Hazardous, Municipal, Special Handling and Other Residual Wastes

Contractors need to be most careful whenever they are managing materials which are not soils. In cases where they're excavating materials which are wastes, it is essential that they know what type of waste the material is. Hazardous waste is material which is defined by state and federal regulation for special management, from the point of excavation, to the point of ultimate disposal. Only workers trained for hazardous wastes site work under OSHA regulations should be excavating materials which are hazardous waste. Hazardous wastes are toxic, or present a significant threat to health, safety, or the environment, due their high concentrations of constituents of concern, or other characteristics. Some hazardous waste are "listed", and other hazardous waste are identified after testing. Hazardous waste must be properly labeled, and must be properly manifested, and not hauled from an individual site. In general, if there is a question as to whether or not materials are hazardous waste, work should generally stop, and qualified environmental firms should conduct appropriate testing to see if the material is or is not hazardous waste. If it is hazardous waste, qualified environmental management firms should be managing the materials, unless the earthwork or general contractor has staff and equipment which can manage the waste per state and federal environmental regulations.

Municipal waste generally consists of household residues, although there are other categories of municipal waste, including construction and demolition materials. Municipal waste has to be managed per state regulations, which include labeling of vehicles, and following appropriate procedures during storage and transportation. In general, municipal waste, unless there is a specific exemption which applies, can only be disposed of at a municipal waste processing or

disposal facility. Nearly all municipal wastes cannot be managed under the General Permit, the only exceptions being clean and uncontaminated brick, block, stone, concrete, and/or used asphalt that has resulted from construction and demolition activities.

Special handling wastes are a subcategory of municipal and residual waste; these wastes cannot be managed as part of the General Permit under any circumstances. These include asbestos/AHERA waste, dead animals, and sewage sludge. There are additional federal requirements, as well, which apply to asbestos waste. There are no special handling waste which are allowed to be managed under the General Permit.

Residual waste from industrial or other sources, also may be present at an excavation site. Residual waste, in some instances, can be mixed with historical fill. Historical fill, as defined in the Fill Management Policy includes a conglomeration of materials, which can include coal ash, small quantities of wood, and brick/block/concrete materials, commonly found in urban areas, including areas along rivers, which were historically placed as fill before DEP required landfill permits. Historical fill can be managed as regulated fill, but if large quantities of residual waste are present from industry, or if there is residual waste present in the historic fill deposits, which was generated since 1988, the material cannot be managed under the General Permit. Residual waste characterization requirements can be found at 25 PA Code 288.623 (a)(1); you should refer to these if you are not going to manage materials under the Policy or General Permit.

Due diligence can help identify where the materials were recently placed at a site. Aerial photographs, particular, can provide probable information on when fill was placed at a site. If a site is being excavated which has areally extensive historic fill, oversight by a full time environmental inspector is recommended as material conditions can sometimes change, which only become apparent as the material is excavated, as test pits and borings installed in advance can only provide a picture of a small percentage of the overall materials present at a site, particularly at the site which has had extensive fill.

4.2 Managing Impacted Soil or Other Materials Found During Construction

In the event of unexpected finding of a release at a site being excavated:

Unexpected Releases

- The release shall be characterized following Act 2 of 1995 Land Recycling Program regulations and the Technical Guidance Manual, if the release is to be managed under the Act 2 Program by keeping it on a remediated site or moving it under the exemption provided by the Fill Management Policy (Section 4 in the Management of Regulated Fill Section in the Technical Guidance) to another site going under the Act 2 remediation. If moving to a non-Act 2 site, it must be moved under the General Permit.

- Full delineation per Act 2 protocols should be completed promptly to assure that impacted materials are not moved offsite over DEP FP-1 limits. The General Permit may not be used to move recent release impacted materials offsite.

- Mixing of impacted soils with releases or historic fill with clean or unimpacted soils, municipal waste, hazardous waste or other residual waste is not permitted. Mixing of soils may sometime be permitted, but only under the Act 2 process, under an approved Remediation Plan.

Reported Releases

- Where already reported releases exist at sites which are to be excavated, no excavation of the area impacted by the release shall be undertaken unless:

    - the release is entered into the Act 2 of 1995 Land Recycling Program and managed under that program

    - the release area is fully delineated.

The DEP will generally not approve movement of materials impacted by a spill or release above Table FP-1 limits.

4.3 Remote Stockpiling During Characterization

Where suspect impacted materials or historic fill excavated materials are removed from excavation sites where there is no suitable location for stockpiling and characterization, the point of generation for material found to be waste shall be at an Owner or Contractor "Designated Location", material may be moved to that location provided that:

- the "Designated Location" is under the supervision of the Owner responsible for, or the Contractor performing the excavation work; and,
- wind and/or water dispersal is not permitted to occur at the stockpiling location; and,
- the material shall not remain at the "Designated Location", if it is a waste for longer than 90 days; and,
- all applicable state and federal waste management regulations shall be complied with at the point of generation, including management of the materials under the General Permit.

The recommended method of preventing wind and water dispersal is to place a tarp beneath the material and to place a tarp over the material. Tarps should be secured by covering the edges to prevent wind uplift, or, for large piles, to build a "web" of rope and tires to prevent wind uplift.

5.0 OTHER MATERIAL MANAGEMENT OPTIONS

In addition to operating under the Fill Policy, other material management options exist for the management of excavated soils. A number of these are presented below:

5.1 Landfill Disposal

Whether or not materials are contaminated, they can typically be managed by landfill disposal. To determine whether landfill disposal is a viable alternative, the best approach is to contact the landfill facility, to determine pricing, and to determine what testing they may require before the material can be received at the landfill. Individual landfills also have requirements to fill out paperwork, called "Waste Profile Information". A DEP "Form U" may also need to be submitted to DEP by the landfill to receive the waste in an individual facility. Once the nature of the material is determined, the landfill can then confirm pricing, and arrangements can be made to move the material to landfill.

5.2 Reclamation Fill

DEP allows certain materials to be used as reclamation fill in surface mines. Due diligence is required and materials must be tested to see if they can be used as Reclamation Fill. Different material receipt criteria apply, depending on whether material is to be placed above or below the reclaimed post-mining water table. Each surface mine has a pre-acceptance protocol which must be followed to gain approval to ship materials to the surface mine. Contact the Surface Mine Environmental Representative for further information on the pre-acceptance approval process.

Attachment 12 contains more information on DEP's Reclamation Fill Program.

5.3 Keeping the Material Onsite Under Act 2

Pennsylvania also has an Award Winning "Land Recycling" Brownfields Site Program, under which impacted soils or other materials can be kept onsite, and managed under the Act 2 process. The Act 2 process as applicable to a given site is typically determined by an environmental consultant. In some instances, materials can be moved between Act 2 sites, if they are of a similar

character and nature. Where there are large areas of soils impacted by spills or releases at a site, large quantities of historic fill, or large quantities of other impacted materials, Act 2 is typically the most cost effective option, because if has a flexible set of cleanup standards. The Owner's environmental consultant is typically the official who would determine whether Act 2 is viable option, where large quantities of impacted soils are found during excavations at individual sites.

Statewide Health Standards used under the Act 2 Land Recycling Program can be found in Attachments 13 and 14 to this BMP document.

5.4 Beneficial Use Permits

Under the Department of Environmental Protection Waste Program, General Beneficial Use Permits have been issued, most since 1992. These Beneficial Use Permits allow use of certain materials which would otherwise be waste, as construction materials (or for uses as otherwise stated in each General Permit). See Attachment 11 for information on General Permits.

Examples of such materials include:

- Certain steel slag.
- Certain recycled concrete.
- Certain processed top soil.
- Baghouse fines and scrubber pond residues from asphalt plants.
- Reclaimed Asphalt Pavement

The Clean Fill and Regulated Fill Concentration Limits do not apply to any of the General Permits issued prior to WMGR096 because each General Beneficial Use Permit issued by the Pennsylvania Department of Environmental Protection has specific limits for contaminant concentrations for that material. Persons using beneficial use materials are required to be given instruction on what can and cannot be done with the beneficial use materials involved.

Before using any beneficial use materials, it is recommended that you obtain a copy of the complete General Permit, so that if you use materials, that you use them only in a manner for which DEP has approved the use of that particular beneficial use material.

6.0 RECLAIMED ASPHALT PAVEMENT (MILLINGS)

Reclaimed Asphalt Pavement (RAP) is produced when asphalt surfaces are milled. It is common that milled asphalt pavement is mixed with aggregate and binder and becomes a recycled pavement ingredient in newly produced hot mix, cold mix or warm mix asphalt pavement.

When millings are mixed directly back into asphalt as an ingredient, no special environmental measures may be needed, except for proper stockpile management and erosion/sedimentation control. RAP cannot be accumulated speculatively. RAP pile storage times are generally two construction seasons or less, but time periods may be extended due to the number of paving projects underway in the asphalt plant service area or other specification-related limitations, which together may cause piles to grow larger or smaller.

PA DEP considers asphalt to be a coproduct and has issued Industry-Wide Coproduct #1 Reclaimed Asphalt Pavement (RAP). The Coproduct states that "...the use of RAP, including mixtures of RAP and clean fill from milling of edge of roadway shoulders, shall be managed according to the conditions specified [in the Coproduct Determination]. The use of RAP includes its transportation, placement and storage incidental to use." One of the key conditions of the Coproduct Determination is that storage of RAP is limited to no more than two construction seasons. Also, there are no provisions in the Coproduct Determination which allow for processing of the RAP prior to use.

Asphalt plant operations, quarries and laydown contractors may also choose to operate under General Permits issued by the PA DEP for RAP. The General Permits available have varying conditions; however, key provisions of select permits allow for processing of RAP and storage longer than two construction seasons with PA DEP approval. These additional provisions in General Permits may offer more operational flexibility to the Contractors involved with RAP usage.

It is recommended that where RAP is processed offsite from the Asphalt Production Plant, that a Contingency Plan be prepared, for the temporary operation. Attachment 10 has information on this.

Attachment 10 contains more information on RAP and millings. A recommended Letter for reporting beneficial uses to the DEP Regional Office can be found in the Attachment. So long as appropriate Erosion and Sediment control measures are used where there are RAP piles, there are few environmental concerns. Most plants and quarries where asphalt is produced and/or RAP is stored, include RAP storage in the Stormwater BMPs and Preparedness Prevention and Contingency Plan documents to assure proper implementation of RAP Stockpile BMPs on an ongoing basis.

7.0 CONCLUSION

The intent of the DEP Fill Policy is to help DEP staff make a determination of what soils are sufficiently contaminated, such that they would have to be considered and managed as waste. The General Beneficial Use Permit for Regulated Fill, which is a related document to the DEP Fill Policy, allows for soil materials, historic fill, and other materials impacted by spills or releases to be moved from site to site, so long as DEP is noticed, and certain terms and conditions are followed.

In general, materials should be sufficiently characterized, that the Specifications and Plans for individual projects show how materials should be managed, as per Clean Fill, Regulated Fill, or Waste categories. If contractors are awarded work at sites to conduct excavations, where this has not been done, care should be taken to not move impacted materials, from sites, so appropriate due diligence and testing work should be completed, as soon as possible. Where questionable materials are encountered, unexpectedly, appropriate procedures should then be implemented to characterize the materials, and manage them in accordance with either the DEP Fill Policy, or Pennsylvania's Waste Management Regulations.

Technical assistance is available from contractor trade associations, who have, as members, qualified environmental managers and consultants. If your company does not have an in-house environmental manager, it is recommended that you contact a qualified consultant, and not move materials between sites which may be waste, which might have to be excavated in the future at considerable cost, and taken to a landfill, when they could have been managed correctly according to the DEP Fill Policy and Waste Regulations, in the first place.

8.0 LIMITATIONS

This Best Management Practices Plan contains approaches for managing clean fill and distinguishing clean fill from regulated fill and other wastes. Specific applicability to sites and materials is at the sole discretion of the user of this Guide. As the degree of due diligence and testing needed is based on the professional judgement of the user, based on the site specific situation, neither RT Environmental Services nor the PA Asphalt Pavement Association accept any liability in the event material classifications or management techniques are found to be incorrect. Users are advised to consult with qualified environmental consultants, legal counsel and/or the PA Department of Environmental Protection in situations where the status and/or classification of materials is questionable or unclear.

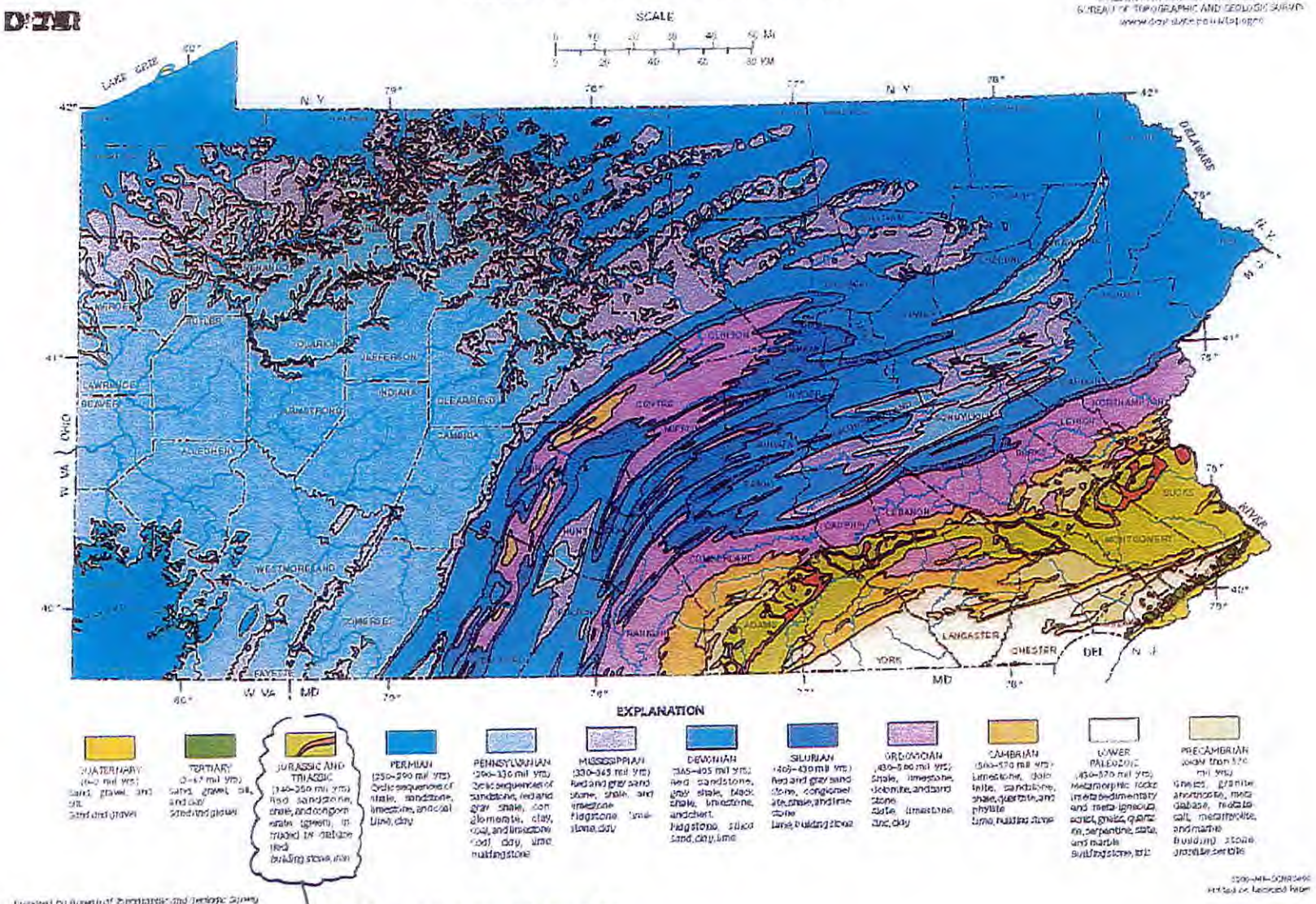
ATTACHMENTS

ATTACHMENT 1

AREAS WITH NATURAL ELEVATED ARSENIC IN SOILS

MAP 7

GEOLOGIC MAP OF PENNSYLVANIA



AREAS WITH NATURAL ELEVATED ARSENIC IN SOILS

ATTACHMENT 2

URBAN AREAS PRIOR TO 1960


Erie
Youngstown
Pittsburgh
McKeesport
Scranton
Wilkes-Barre
Williamsport
Harrisburg
York
Lancaster
Reading
Allentown
Bethlehem
Philadelphia
Camden
Wilmington
Chester
Norristown
Hanover

ATTACHMENT 3

CLEAN FILL LIMITS AND GENERAL PERMIT LIMITS

Table FP-1a
Clean Fill Concentration Limits for Organics

		Clean Fill
PARAMETER	CASRN	Total Analysis
		mg/kg
ACENAPHTHENE	83-32-9	2700
ACENAPHTHYLENE	208-96-8	2500
ACEPHATE	30560-19-1	0.9
ACETALDEHYDE	75-07-0	0.23
ACETONE	67-64-1	41
ACETONITRILE	75-05-8	1.9
ACETOPHENONE	98-86-2	200
ACETYLAMINOFLUORENE, 2- (2AAF)	53-96-3	0.069
ACROLEIN	10-702-8	0.00062
ACRYLAMIDE	79-06-1	0.00057
ACRYLIC ACID	79-10-7	0.051
ACRYLONITRILE	107-13-1	0.0087
ALACHLOR	15972-60-8	0.077
ALDICARB	116-06-3	0.12
ALDRIN	309-00-2	0.10
ALLYL ALCOHOL	107-18-6	0.58
AMINOBIPHENYL, 4-	92-67-1	0.0012
AMITROLE	61-82-5	0.029
AMMONIA	7664-41-7	360
AMMONIUM SULPHAMATE	7773-06-0	24
ANILINE	62-53-3	0.16
ANTHRACENE	120-12-7	350
ATRAZINE	1912-24-9	0.13
BAYGON (PROPOXUR)	114-26-1	0.057
BENOMYL	17804-35-2	880.00
BENTAZON	25057-89-0	16
BENZENE	71-43-2	0.13
BENZIDINE	92-87-5	0.078
BENZO[A]ANTHRACENE	56-55-3	25
BENZO[A]PYRENE	50-32-8	2.5
BENZO[B]FLUORANTHENE	205-99-2	25
BENZO[GHI]PERYLENE	191-24-2	180
BENZO[K]FLUORANTHENE	207-08-9	250
BENZOIC ACID	65-85-0	2900
BENZOTRICHLORIDE	98-07-7	0.012
BENZYL ALCOHOL	100-51-6	400
BENZYL CHLORIDE	100-44-7	0.051
BHC, ALPHA-	319-84-6	0.046
BHC, BETA-	319-85-7	0.22
BHC, DELTA-	319-86-8	11
BHC, GAMMA (LINDANE)	58-89-9	0.072
BIPHENYL, 1,1-	92-52-4	790
BIS(2-CHLOROETHYL)ETHER	111-44-4	0.0039
BIS(2-CHLORO-ISOPROPYL)ETHER	108-60-1	8.0
BIS(CHLOROMETHYL)ETHER	542-88-1	0.00001
BIS[2-ETHYLHEXYL] PHTHALATE	117-81-7	130
BISPHENOL A	80-05-7	700
BROMACIL (BROMAX)	314-40-9	2
BROMOCHLOROMETHANE	74-97-5	1.6
BROMODICHLOROMETHANE	75-27-4	3.40
BROMOMETHANE	74-83-9	0.54
BROMOXYNIL	1689-84-5	63
BROMOXYNIL OCTANOATE	1689-99-2	360
BUTADIENE, 1,3-	106-99-0	0.0062
BUTYL ALCOHOL, N-	71-36-3	12.00
BUTYLATE	2008-41-5	51.0
BUTYLBENZENE, N-	104-51-8	950
BUTYLEBENZENE, SEC-	135-98-8	350
BUTYLEBENZENE, TERT-	98-06-6	270
BUTYLBENZYL PHTHALATE	85-68-7	10000
CAPTAN	133-06-2	12
CARBARYL	63-25-2	41
CARBAZOLE	86-74-8	21
CARBOFURAN	1563-66-2	0.87
CARBON DISULFIDE	75-15-0	160

Table FP-1a
Clean Fill Concentration Limits for Organics

		Clean Fill
PARAMETER	CASRN	Total Analysis
		mg/kg
CARBON TETRACHLORIDE	56-23-5	0.26
CARBOXIN	5234-68-4	53
CHLORAMBEN	133-90-4	1.6
CHLORDANE	57-74-9	49
CHLORO-1, 1-DIFLUOROETHANE, 1-	75-68-3	2300
CHLORO-1-PROPENE, 3- (ALLYL CHLORIDE)	107-05-1	0.065
CHLOROACETOPHENONE, 2-	532-27-4	0.0093
CHLOROANILINE, P-	106-47-8	19.00
CHLOROBENZENE	108-90-7	6.1
CHLOROBENZILATE	510-15-6	1.60
CHLORBUTANE, 1-	109-69-3	2300
CHLORODIBROMOMETHANE	124-48-1	3.20
CHLORODIFLUOROMETHANE	75-45-6	2.6
CHLOROETHANE	75-00-3	5.00
CHLOROFORM	67-66-3	2.50
CHLORONAPHTHALENE, 2-	91-58-7	6200
CHLORO[DI]NITROBENZENE, [2-]P-	100-00-5	4.9
CHLOROPHENOL, 2-	95-57-8	4.40
CHLOROPRENE	126-99-8	0.45
CHLROPROPANE, 2-	75-29-6	21
CHLOROTHALONIL	1897-45-6	15
CHLOROTOLUENE, O-	95-49-8	20
CHLORPYRIFOS	2921-88-2	23
CHLORSULFURON	64902-72-3	25
CHLORTHAL-DIMETHYL (DACTHAL) (DCPA)	1861-32-1	650
CHRYSENE	218-01-9	230
CRESOL(S)	1319-77-3	3.1
CRESOL, O-(METHYLPHENOL, 2-)	95-48-7	64
CRESOL, M-(METHYLPHENOL, 3-)	108-39-4	36
CRESOL, P-(METHYLPHENOL, 4-)	106-44-5	4.2
CRESOL, P-CHLORO-M-	59-50-7	37
CROTONALDEHYDE	4170-30-3	0.00099
CROTONALDEHYDE, TRANS-	123-73-9	0.00099
CUMENE (ISOPROPYL BENZENE)*	98-82-8	780
CYCLOHEXANONE	108-94-1	1400
CYFLUTHRIN	68359-37-5	33
CYROMAZINE	66215-27-8	84
DDD, 4,4'-	72-54-8	6.8
DDE, 4,4'-	72-55-9	41
DDT, 4,4'-	50-29-3	53
DI(2-ETHYLHEXYL)ADIPATE	103-23-1	10000
DIALLATE	2303-16-4	0.15
DIAMINOTOLUENE, 2,4-	95-80-7	0.0042
DIAZINON	333-41-5	0.082
DIBENZO[A,H]ANTHRACENE	53-70-3	2.50
DIBROMO-3-CHLOROPROPANE, 1,2-	96-12-8	0.0092
DIBROMOBENZENE, 1,4-	106-37-6	150
DIBROMOETHANE, 1,2- (ETHYLENE DIBROMIDE)	106-93-4	0.0012
DIBROMOMETHANE	74-95-3	3.7
DI-N-BUTYLPHTHALATE, N-	84-74-2	1500
DICHOLOR-2-B[Y]UTENE, 1,4-	764-41-0	0.0009
DICHLOROBENZENE, 1,2-	95-50-1	59
DICHLOROBENZENE, 1,3-	541-73-1	61
DICHLOROBENZENE, P-	106-46-7	10
DICHLOROBENZIDINE, 3,3'-	91-94-1	8.3
DICHLORODIFLUOROMETHANE (FREON 12)	75-71-8	100
DICHLOROETHANE, 1,1-	75-34-3	0.65
DICHLOROETHANE, 1,2-	107-06-2	0.10
DICHLOROETHYLENE, 1,1-	75-35-4	0.19
DICHLOROETHYLENE, CIS-1,2-*	156-59-2	1.6
DICHLOROETHYLENE, TRANS-1,2-	156-60-5	2.3
DICHLOROMETHANE (METHYLENE CHLORIDE)	75-09-2	0.076
DICHLOROPHENOL, 2,4-	120-83-2	1
DICHLOROPHENOXYACETIC ACID, 2,4- (2,4-D)	94-75-7	1.8

Table FP-1a
Clean Fill Concentration Limits for Organics

PARAMETER	CASRN	Clean Fill Total Analysis mg/kg
DICHLOROPROPANE, 1,2-	78-87-5	0.11
DICHLOROPROPENE, 1,3-	542-75-6	0.12
DICHLOROPROPIONIC ACID (DALAPON), 2,2-	75-99-0	5.30
DICHLORVOS	62-73-7	0.012
DICYCLOPENTADIENE	77-73-6	0.12
DIELDRIN	60-57-1	0.11
DIETHYL PHTHALATE	84-66-2	160
DIFLUBENZIRON	35367-38-5	52
DIMETHOATE	60-51-5	0.28
DIMETHOXYBENZIDINE, 3,3-	119-90-4	16
DIMETHYLAMINOAZOBENZENE, P-	60-11-7	0.037
DIMETHYLANILINE, N,N-	121-69-7	4.1
DIMETHYLBENZIDINE, 3,3-	119-93-7	0.4
DIMETHYLPHENOL, 2,4-	105-67-9	32
DINITROBENZENE, 1,3-	99-65-0	0.049
DINITROPHENOL, 2,4-	51-28-5	0.21
DINITROTOLUENE, 2,4-	121-14-2	0.050
DINITROTOLUENE, 2, 6,- (2,6-DNT)	606-20-2	1.10
DINOSEB	88-85-7	0.290
DIOXANE, 1,4-	123-91-1	0.073
DIPHENAMID	957-51-7	12
DIPHENYLAMINE	122-39-4	12
DIPHENYLHYDRAZINE, 1,2-	122-66-7	0.15
DIQUAT	85-00-7	0.24
DISULFOTON	298-04-4	0.078
DIURON	330-54-1	0.86
ENDOSULFAN	115-29-7	30.00
ENDOSULFAN I (ALPHA)	959-98-8	110
ENDOSULFAN II (BETA)	33213-65-9	130
ENDOSULFAN SULFATE	1031-07-8	70
ENDOTHALL	145-73-3	4.1
ENDRIN	72-20-8	5.5
EPICHLOROHYDRIN	106-89-8	0.056
ETHEPHON	16672-87-0	2.1
ETHION	563-12-2	39
ETHOXYETHANOL, 2- (EGEE)	110-80-5	7.80
ETHYL ACETATE	141-78-6	220
ETHYL ACRYLATE	140-88-5	0.12
ETHYL BENZENE	100-41-4	46
ETHYL DIPROPYL THIOCARBAMATE, S- (EPTC)	759-94-4	65
ETHYL ETHER	60-29-7	53
ETHYLMETHACRYLATE	97-63-2	14
ETHYLENE GLYCOL	107-21-1	170
ETHYLENE THIOUREA (ETU)	96-45-7	0.034
ETHYL P-NITROPHENYL PHENYLPHOSPHOROTHIOATE	2104-64-5	0.12
FENAMIPHOS	22224-92-6	0.17
FENVALERATE (PYDRIN)	51630-58-1	94
FLUOMETURON (FLUORNETRON IN EPA FEB 96)	2164-17-2	2.5
FLUORANTHENE	206-44-0	3200
FLUORENE	86-73-7	3000
FLUOROTROCHLOROMETHANE (FREON 11)	75-69-4	87
FONOFOS	944-22-9	2.9
FORMALDEHYDE	50-00-0	12
FORMIC ACID	64-18-6	210
FOSETYL-AL	039148-24-8	9700
FURAN	110-00-9	0.42
FURFURAL	98-01-1	1.4
GLYPHOSATE	1071-83-6	620
HEPTACHLOR	76-44-8	0.68
HEPTACHLOR EPOXIDE	1024-57-3	1.1
HEXACHLOROBENZENE	118-74-1	0.96
HEXACHLOROBUTADIENE	87-68-3	1.20
HEXACHLOROCYCLOPENTADIENE	77-47-4	91
HEXACHLOROETHANE	67-72-1	0.560

Table FP-1a
Clean Fill Concentration Limits for Organics

		Clean Fill
PARAMETER	CASRN	Total Analysis
		mg/kg
HEXANE	110-54-3	500
HEXYTHIAZOX (SAVEY)	78587-05-0	820
HYDRAZINE/HYDRAZINE SULFATE	302-01-2	0.000098
HYDROQUINONE	123-31-9	20
INDENO[1,2,3-CD]PYRENE	193-39-5	25
IPRODIONE	36734-19-7	430
ISOBUTYL ALCOHOL	78-83-1	76
ISOPHORONE	78-59-1	1.90
KEPONE	143-50-0	0.56
MALATHION	121-75-5	34
MALEIC HYDRAZIDE	123-33-1	47
MANEB	12427-38-2	2
MERPHOS OXIDE	78-48-8	6.6
METHACRYLONITRILE	126-98-7	0.031
METHAMIDOPHOS	10265-92-6	0.022
METHANOL	67-56-1	58.00
METHOMYL	16752-77-5	3.20
METHOXYCHLOR	72-43-5	630
METHOXYETHANOL, 2-	109-86-4	0.41
METHYL ACETATE	79-20-9	690
METHYL ACRYLATE	96-33-3	27
METHYL CHLORIDE	74-87-3	0.038
METHYL ETHYL KETONE (2-BUTANONE)	78-93-3	54
METHYL ISOBUTYL KETONE	108-10-1	2.90
METHYL METHACRYLATE	80-62-6	26.0
METHYL METHANESULFONATE	66-27-3	0.083
METHYL PARATHION	298-00-0	0.42
METHYL STYRENE (MIXED ISOMERS)	25013-15-4	120
METHYL TERT-BUTYL ETHER (MTBE)	1634-04-4	0.28
METHYLENE BIS(2-CHLOROANILINE), 4,4'-	101-14-4	3.9
METHYLNAPHTHALENE, 2-	91-57-6	2900
METHYLSTYRENE, ALPHA	98-83-9	120
NAPHTHALENE*	91-20-3	25
NAPHTHYLAMINE, 1-	134-32-7	0.30
NAPHTHYLAMINE, 2-	91-59-8	0.01
NAPROPAMIDE	15299-99-7	860
NITROANILINE, M-	99-09-2	0.033
NITROANILINE, O-	88-74-4	0.038
NITROANILINE, P-	100-01-6	0.031
NITROBENZENE	98-95-3	0.79
NITROPHENOL, 2-	88-75-5	5.90
NITROPHENOL, 4-	100-02-7	4.1
NITROPROPANE, 2-	79-46-9	0.000260
NITROSODIETHYLAMINE, N-	55-18-5	0.000018
NITROSODIMETHYLAMINE, N-	62-75-9	0.000041
NITROSO-DI-N-BUTYLAMINE, N-	924-16-3	0.0033
NITROSODI-N-PROPYLAMINE, N-	621-64-7	0.0013
NITROSODIPHENYLAMINE, N-	86-30-6	20.00
NITROSO-N-ETHYLUREA, N-	759-73-9	0.000054
OCTYL PHTHALATE, DI-N-	117-84-0	4400
OXAMYL (VYDATE)	23135-22-0	2.60
PARATHION	56-38-2	130
PCB-1016 (AROCLOR)	12674-11-2	15
PCB-1221 (AROCLOR)	11104-28-2	0.63
PCB-1232 (AROCLOR)	11141-16-5	0.50
PCB-1242 (AROCLOR)	53469-21-9	16
PCB-1248 (AROCLOR)	12672-29-6	9.90
PCB-1254 (AROCLOR)	11097-69-1	4.40
PCB-1260 (AROCLOR)	11096-82-5	30
PEBULATE	1114-71-2	300
PENTACHLOROBENZENE	608-93-5	180
PENTACHLORONITROBENZENE	82-68-8	5.00
PENTACHLOROPHENOL	87-86-5	5.00
PHENACETIN	62-44-2	12.00

Table FP-1a
Clean Fill Concentration Limits for Organics

PARAMETER	CASRN	Clean Fill Total Analysis mg/kg
PHENANTHRENE	85-01-8	10000
PHENOL	108-95-2	66.00
PHENYLENEDIAMINE, M-	108-45-2	3.10
PHENYLPHENOL, 2-	90-43-7	490
PHORATE	298-02-2	0.41
PHTHALIC ANHYDRIDE	85-44-9	2300
PICLORAM	1918-02-1	7.4
PRONAMIDE	23950-58-5	3.1
PROPANIL	709-98-8	9.2
PROPHAM	122-42-9	17
PROPYLBENZENE, N-	103-65-1	290
PROPYLENE OXIDE	75-56-9	0.049
PYRENE	129-00-0	2200
PYRIDINE	110-86-1	0.11
QUINOLINE	91-22-5	0.018
QUIZALOFOP (ASSURE)	76578-14-8	47
RONNEL	299-84-3	280
SIMAZINE	122-34-9	0.15
STRYCHNINE	57-24-9	0.89
STYRENE	100-42-5	24
TEBUTHIURON	34014-18-1	83
TERBACIL	5902-51-2	2.2
TERBUFOS	13071-79-9	0.12
TETRACHLOROBENZENE, 1,2,4,5-	95-94-3	5.1
TETRACHLORODIBENZO-P-DIOXIN, 2,3,7,8- (TCDD)	1746-01-6	0.00012
TETRACHLOROETHANE, 1,1,1,2-	630-20-6	18
TETRACHLOROETHANE, 1,1,2,2-	79-34-5	0.0093
TETRACHLOROETHYLENE (PCE)	127-18-4	0.43
TETRACHLOROPHENOL, 2,3,4,6-	58-90-2	450.00
TETRAETHYL LEAD	78-00-2	0.0046
TETRAETHYLDITHIOPYROPHOSPHATE	3689-24-5	0.73
THIOFANOX	39196-18-4	0.12
THIRAM	137-26-8	47
TOLUENE	108-88-3	44
TOLUIDINE, M-	108-44-1	0.13
TOLUIDINE, O-	95-53-4	0.32
TOLUIDINE, P-	106-49-0	0.32
TOXAPHENE	8001-35-2	1.20
TRIALLATE	2303-17-5	240
TRIBROMOMETHANE (BROMOFORM)	75-25-2	4.4
TRICHLORO-1,2,2-TRIFLUOROETHANE, 1,1,2-	76-13-1	26000
TRICHLOROBENZENE, 1,2,4-	120-82-1	27
TRICHLOROBENZENE, 1,3,5-	108-70-3	31
TRICHLOROETHANE, 1,1,1-	71-55-6	7.20
TRICHLOROETHANE, 1,1,2-	79-00-5	0.15
TRICHLOROETHYLENE (TCE)	79-01-6	0.17
TRICHLOROPHENOL, 2,4,5-	95-95-4	2300
TRICHLOROPHENOL, 2,4,6-	88-06-2	3.1
TRICHLOROPHENOXYACETIC ACID, 2,4,5- (2,4,5-T)	93-76-5	1.50
TRICHLOROPHENOXYPROPIONIC ACID, 2,4,5- (2,4,5-TP)(SILV	93-72-1	22
TRICHLOROPROPANE, 1,1,2-	598-77-6	3.1
TRICHLOROPROPANE, 1,2,3-	96-18-4	1.6
TRICHLOROPROPENE, 1,2,3-	96-19-5	11
TRIFLURALIN	1582-09-8	0.96
TRIMEHTYLBENZENE, 1,3,4- (TRIMETHYLBENZENE, 1,2,4-)	95-63-6	9
TRIMETHYLBENZENE, 1,3,5-	108-67-8	2.8
TRINITROTOLUENE, 2,4,6-	118-96-7	0.023
VINYL ACETATE	108-05-4	6.50
VINYL BROMIDE (BROMOMETHANE)	593-60-2	0.068
VINYL CHLORIDE	75-01-4	0.03
WARFARIN	81-81-2	2.60
XYLENES (TOTAL)	1330-20-7	990
ZINEB	12122-67-7	29

Table FP-1b

Clean Fill Concentration Limits For Metals and Inorganics

PARAMETER	Unregulated Fill Total Analysis mg/kg
ANTIMONY	27
ARSENIC[1]	12
BARIUM AND COMPOUNDS	8,200
BERYLLIUM	320
BORON AND COMPOUNDS	6.7
CADMIUM	38
CHLORIDES	na
CHROMIUM III	190,000
CHROMIUM VI	94
COBALT	8.1
COPPER	8,200
CYANIDE FREE	200
LEAD	450
MANGANESE	31,000
MERCURY	10
NICKEL	650
NITRATE NITROGEN	na
NITRITE NITROGEN	na
SELENIUM	26
SILVER	84
SULFATE	na
THALLIUM	14
TIN	240
VANADIUM	1,500
ZINC	12,000

[1] The limit of 12 mg/kg applies to all releases of arsenic. A limit of 20 mg/kg applies to certain construction materials not subject to direct contact upon completion of construction. The limit of 20 mg/kg can only be used if a Department approved Best Management Practices Plan for Earthwork and General Construction is followed by all parties involved in supplying and using materials on the construction project.

Table GP-1a
Regulated Fill Concentration Limits for Organics

PARAMETER	CASRN	Regulated Fill Total analysis mg/kg
ACENAPHTHENE	83-32-9	4700
ACENAPHTHYLENE	208-96-8	6900
ACEPHATE	30560-19-1	3.6
ACETALDEHYDE	75-07-0	0.63
ACETONE	67-64-1	110
ACETONITRILE	75-05-8	3.9
ACETOPHENONE	98-86-2	540
ACETYLAMINOFLUORENE, 2- (2AAF)	53-96-3	0.28
ACROLEIN	10-702-8	0.0014
ACRYLAMIDE	79-06-1	0.0024
ACRYLIC ACID	79-10-7	0.11
ACRYLONITRILE	107-13-1	0.037
ALACHLOR	15972-60-8	0.077
ALDICARB	116-06-3	0.12
ALDRIN	309-00-2	0.44
ALLYL ALCOHOL	107-18-6	1.2
AMINOBIPHENYL, 4-	92-67-1	0.0046
AMITROLE	61-82-5	0.12
AMMONIA	7664-41-7	360
AMMONIUM SULFAMATE	7773-06-0	24
ANILINE	62-53-3	0.34
ANTHRACENE	120-12-7	350
ATRAZINE	1912-24-9	0.13
BAYGON (PROPOXUR)	114-26-1	0.057
BENOMYL	17804-35-2	970
BENTAZON	25057-89-0	45
BENZENE	71-43-2	0.13
BENZIDINE	92-87-5	0.34
BENZO[A]ANTHRACENE	56-55-3	110
BENZO[A]PYRENE	50-32-8	11
BENZO[B]FLUORANTHENE	205-99-2	110
BENZO[GHI]PERYLENE	191-24-2	180
BENZO[K]FLUORANTHENE	207-08-9	610
BENZOIC ACID	65-85-0	7800
BENZOTRICHLORIDE	98-07-7	0.048
BENZYL ALCOHOL	100-51-6	1100
BENZYL CHLORIDE	100-44-7	0.22
BHC, ALPHA	319-84-6	0.19
BHC, BETA-	319-85-7	0.82
BHC, DELTA-	319-86-8	30
BHC, GAMMA (LINDANE)	58-89-9	0.072
BIPHENYL, 1,1-	92-52-4	2200
BIS(2-CHLOROETHYL)ETHER	111-44-4	0.017
BIS(2-CHLORO-ISOPROPYL)ETHER	108-60-1	8
BIS(CHLOROMETHYL)ETHER	542-88-1	0.000044
BIS[2-ETHYLHEXYL] PHTHALATE	117-81-7	130
BISPHENOL A	80-05-7	2000
BROMACIL	314-40-9	2
BROMOCHLOROMETHANE	74-97-5	1.6
BROMODICHLOROMETHANE	75-27-4	3.4
BROMOMETHANE	74-83-9	0.54
BROMOXYNIL	1689-84-5	170
BROMOXYNIL OCTANOATE	1689-99-2	360
BUTADIENE, 1,3-	106-99-0	0.027
BUTYL ALCOHOL, N-	71-36-3	24
BUTYLATE	2008-41-5	51
BUTYLBENZENE, N-	104-51-8	2600
BUTYLBENZENE, SEC-	135-98-8	960
BUTYLBENZENE, TERT-	98-06-6	740
BUTYLBENZYL PHTHALATE	85-68-7	10000

Table GP-1a
Regulated Fill Concentration Limits for Organics

PARAMETER	CASRN	Regulated Fill Total analysis mg/kg
CAPTAN	133-06-2	31
CARBARYL	63-25-2	41
CARBAZOLE	86-74-8	83
CARBOFURAN	1563-66-2	0.87
CARBON DISULFIDE	75-15-0	350
CARBON TETRACHLORIDE	56-23-5	0.26
CARBOXIN	5234-68-4	53
CHLORAMBEN	133-90-4	1.6
CHLORDANE	57-74-9	49
CHLORO-1,1-DIFLUOROETHANE, 1-	75-68-3	4800
CHLORO-1-PROPENE, 3- (ALLYL CHLORIDE)	107-05-1	0.13
CHLOROACETOPHENONE, 2-	532-27-4	0.026
CHLOROANILINE, P-	106-47-8	52
CHLOROBENZENE	108-90-7	6.1
CHLOROBENZILATE	510-15-6	6.3
CHLOROBUTANE, 1-	109-69-3	6400
CHLORODIBROMOMETHANE	124-48-1	3.2
CHLORODIFLUOROMETHANE	75-45-6	2.6
CHLOROETHANE	75-00-3	19
CHLOROFORM	67-66-3	2.5
CHLORONAPHTHALENE, 2-	91-58-7	18000
CHLORONITROBENZENE, P-	100-00-5	18
CHLOROPHENOL, 2-	95-57-8	4.4
CHLOROPRENE	126-99-8	0.97
CHLOROPROPANE, 2-	75-29-6	44
CHLOROTHALONIL	1897-45-6	61
CHLOROTOLUENE, O-	95-49-8	20
CHLORPYRIFOS	2921-88-2	23
CHLORSULFURON	64902-72-3	71
CHLORTHAL-DIMETHYL (DACTHAL) (DCPA)	1861-32-1	650
CHRYSENE	218-01-9	230
CRESOL(S)	1319-77-3	8.9
CRESOL, O- (METHYLPHENOL, 2-)	95-48-7	180
CRESOL, M (METHYLPHENOL, 3-)	108-39-4	100
CRESOL, P (METHYLPHENOL, 4-)	106-44-5	12
CRESOL, P-CHLORO-M-	59-50-7	110
CROTONALDEHYDE	4170-30-3	0.0043
CROTONALDEHYDE, TRANS-	123-73-9	0.0043
CUMENE	98-82-8	1600
CYCLOHEXANONE	108-94-1	2800
CYFLUTHRIN	68359-37-5	33
CYROMAZINE	66215-27-8	240
DDD, 4,4'-	72-54-8	30
DDE, 4,4'-	72-55-9	170
DDT, 4,4'-	50-29-3	230
DI(2-ETHYLHEXYL)ADIPATE	103-23-1	10000
DIALLATE	2303-16-4	0.59
DIAMINOTOLUENE, 2,4-	95-80-7	0.016
DIAZINON	333-41-5	0.082
DIBENZO[A,H]ANTHRACENE	53-70-3	11
DIBROMO-3-CHLOROPROPANE, 1,2-	96-12-8	0.0092
DIBROMOBENZENE, 1,4-	106-37-6	410
DIBROMOETHANE, 1,2- (ETHYLENE DIBROMIDE)	106-93-4	0.0012
DIBROMOMETHANE	74-95-3	7.7
DIBUTYL PHTHALATE, N-	84-74-2	4100
DICHLORO-2-BUTENE, 1,4-	764-41-0	0.0039
DICHLOROBENZENE, 1,2-	95-50-1	59
DICHLOROBENZENE, 1,3-	541-73-1	61
DICHLOROBENZENE, P-	106-46-7	10
DICHLOROBENZIDINE, 3,3'-	91-94-1	32

Table GP-1a
Regulated Fill Concentration Limits for Organics

PARAMETER	CASRN	Regulated Fill Total analysis mg/kg
DICHLORODIFLUOROMETHANE (FREON 12)	75-71-8	100
DICHLOROETHANE, 1,1-	75-34-3	2.7
DICHLOROETHANE, 1,2-	107-06-2	0.1
DICHLOROETHYLENE, 1,1-	75-35-4	0.19
DICHLOROETHYLENE, CIS-1,2-	156-59-2	1.6
DICHLOROETHYLENE, TRANS-1,2-	156-60-5	2.3
DICHLOROMETHANE (METHYLENE CHLORIDE)	75-09-2	0.076
DICHLOROPHENOL, 2,4-	120-83-2	1
DICHLOROPHENOXYACETIC ACID, 2,4- (2,4-D)	94-75-7	1.8
DICHLOROPROPANE, 1,2-	78-87-5	0.11
DICHLOROPROPENE, 1,3-	542-75-6	0.46
DICHLOROPROPIONIC ACID (DALAPON), 2,2-	75-99-0	5.3
DICHLORVOS	62-73-7	0.052
DICYCLOPENTADIENE	77-73-6	0.26
DIELDRIN	60-57-1	0.44
DIETHYL PHTHALATE	84-66-2	160
DIFLUBENZURON	35367-38-5	52
DIMETHOATE	60-51-5	0.77
DIMETHOXYBENZIDINE, 3,3-	119-90-4	64
DIMETHYLAMINOAZOBENZENE, P-	60-11-7	0.15
DIMETHYLANILINE, N,N-	000121-69-7	11
DIMETHYLBENZIDINE, 3,3-	000119-93-7	1.5
DIMETHYLPHENOL, 2,4-	105-67-9	87
DINITROBENZENE, 1,3-	99-65-0	0.049
DINITROPHENOL, 2,4-	51-28-5	0.46
DINITROTOLUENE, 2,4-	121-14-2	0.2
DINITROTOLUENE, 2,6- (2,6-DNT)	606-20-2	3
DINOSEB	88-85-7	0.29
DIOXANE, 1,4-	123-91-1	0.31
DIPHENAMID	957-51-7	12
DIPHENYLAMINE	122-39-4	12
DIPHENYLHYDRAZINE, 1,2-	122-66-7	0.58
DIQUAT	85-00-7	0.24
DISULFOTON	298-04-4	0.078
DIURON	330-54-1	0.86
ENDOSULFAN	115-29-7	61
ENDOSULFAN I (ALPHA)	959-98-8	260
ENDOSULFAN II (BETA)	33213-65-9	260
ENDOSULFAN SULFATE	1031-07-8	70
ENDOTHALL	145-73-3	4.1
ENDRIN	72-20-8	5.5
EPICHLOROHYDRIN	106-89-8	0.12
ETHEPHON	16672-87-0	5.9
ETHION	563-12-2	110
ETHOXYETHANOL, 2- (EGEE)	110-80-5	17
ETHYL ACETATE	141-78-6	470
ETHYL ACRYLATE	140-88-5	0.5
ETHYL BENZENE	100-41-4	46
ETHYL DIPROPYLTHIOCARBAMATE, S- (EPTC)	759-94-4	180
ETHYL ETHER	60-29-7	120
ETHYL METHACRYLATE	97-63-2	30
ETHYLENE GLYCOL	107-21-1	170
ETHYLENE THIOUREA (ETU)	96-45-7	0.034
ETHYLP-NITROPHENYL PHENYLPHOSPHOROTHIOATE	2104-64-5	0.31
FENAMIPHOS	22224-92-6	0.17
FENVALERATE (PYDRIN)	51630-58-1	94
FLUOMETURON	2164-17-2	2.5
FLUORANTHENE	206-44-0	3200
FLUORENE	86-73-7	3800
FLUOROTRICHLOROMETHANE (FREON 11)	75-69-4	87

Table GP-1a
Regulated Fill Concentration Limits for Organics

PARAMETER	CASRN	Regulated Fill Total analysis mg/kg
FONOFOS	944-22-9	2.9
FORMALDEHYDE	50-00-0	12
FORMIC ACID	64-18-6	460
FOSETYL-AL	39148-24-8	27000
FURAN	110-00-9	0.87
FURFURAL	98-01-1	3.7
GLYPHOSATE	1071-83-6	620
HEPTACHLOR	76-44-8	0.68
HEPTACHLOR EPOXIDE	1024-57-3	1.1
HEXACHLOROBENZENE	118-74-1	0.96
HEXACHLOROBUTADIENE	87-68-3	1.2
HEXACHLOROCYCLOPENTADIENE	77-47-4	91
HEXACHLOROETHANE	67-72-1	0.56
HEXANE	110-54-3	1100
HEXYTHIAZOX (SAVEY)	78587-05-0	820
HYDRAZINE/HYDRAZINE SULFATE	302-01-2	0.00042
HYDROQUINONE	123-31-9	55
INDENO[1,2,3-CD]PYRENE	193-39-5	110
IPRODIONE	36734-19-7	1200
ISOBUTYL ALCOHOL	78-83-1	160
ISOPHORONE	78-59-1	1.9
KEPONE	143-50-0	2.2
MALATHION	121-75-5	34
MALEIC HYDRAZIDE	123-33-1	47
MANEB	12427-38-2	5.8
MERPHOS OXIDE	78-48-8	41
METHACRYLONITRILE	126-98-7	0.067
METHAMIDOPHOS	10265-92-6	0.063
METHANOL	67-56-1	120
METHOMYL	16752-77-5	3.2
METHOXYCHLOR	72-43-5	630
METHOXYETHANOL, 2-	109-86-4	1.1
METHYL ACETATE	79-20-9	1900
METHYL ACRYLATE	96-33-3	77
METHYL CHLORIDE	74-87-3	0.038
METHYL ETHYL KETONE	78-93-3	110
METHYL ISOBUTYL KETONE	108-10-1	6.3
METHYL METHACRYLATE	80-62-6	56
METHYL METHANESULFONATE	66-27-3	0.32
METHYL PARATHION	298-00-0	0.42
METHYL STYRENE (MIXED ISOMERS)	25013-15-4	340
METHYL TERT-BUTYL ETHER (MTBE)	1634-04-4	0.28
METHYLENE BIS(2-CHLOROANILINE), 4,4'-	101-14-4	15
METHYLNAPHTHALENE, 2-	91-57-6	8000
METHYLSTYRENE, ALPHA	98-83-9	250
NAPHTHALENE	91-20-3	25
NAPHTHYLAMINE, 1-	134-32-7	1.1
NAPHTHYLAMINE, 2-	91-59-8	0.046
NAPROPAMIDE	15299-99-7	2300
NITROANILINE, M-	99-09-2	0.091
NITROANILINE, O-	88-74-4	0.1
NITROANILINE, P-	100-01-6	0.086
NITROBENZENE	98-95-3	2.2
NITROPHENOL, 2-	88-75-5	17
NITROPHENOL, 4-	100-02-7	4.1
NITROPROPANE, 2-	79-46-9	0.0011
NITROSODIETHYLAMINE, N-	55-18-5	0.000076
NITROSODIMETHYLAMINE, N-	62-75-9	0.00017
NITROSO-DI-N-BUTYLAMINE, N-	924-16-3	0.014
NITROSODI-N-PROPYLAMINE, N-	621-64-7	0.0051

Table GP-1a
Regulated Fill Concentration Limits for Organics

PARAMETER	CASRN	Regulated Fill Total analysis mg/kg
NITROSODIPHENYLAMINE, N-	86-30-6	83
NITROSO-N-ETHYLUREA, N-	759-73-9	0.00022
OCTYL PHTHALATE, DI-N-	117-84-0	10000
OXAMYL (VYDATE)	23135-22-0	2.6
PARATHION	56-38-2	360
PCB-1016 (AROCLOR)	12674-11-2	200
PCB-1221 (AROCLOR)	11104-28-2	2.5
PCB-1232 (AROCLOR)	11141-16-5	2
PCB-1242 (AROCLOR)	53469-21-9	62
PCB-1248 (AROCLOR)	12672-29-6	44
PCB-1254 (AROCLOR)	11097-69-1	44
PCB-1260 (AROCLOR)	11096-82-5	130
PEBULATE	1114-71-2	860
PENTACHLOROBENZENE	608-93-5	660
PENTACHLORONITROBENZENE	82-68-8	20
PENTACHLOROPHENOL	87-86-5	5
PHENACETIN	62-44-2	46
PHENANTHRENE	85-01-8	10000
PHENOL	108-95-2	66
PHENYLENEDIAMINE, M-	108-45-2	8.6
PHENYLPHENOL, 2-	90-43-7	1900
PHORATE	298-02-2	0.88
PHTHALIC ANHYDRIDE	85-44-9	6200
PICLORAM	1918-02-1	7.4
PRONAMIDE	23950-58-5	3.1
PROPANIL	709-98-8	26
PROPHAM	122-42-9	48
PROPYLBENZENE, N-	103-65-1	780
PROPYLENE OXIDE	75-56-9	0.19
PYRENE	129-00-0	2200
PYRIDINE	110-86-1	0.22
QUINOLINE	91-22-5	0.074
QUIZALOFOP (ASSURE)	76578-14-8	47
RONNEL	299-84-3	800
SIMAZINE	122-34-9	0.15
STRYCHNINE	57-24-9	2.5
STYRENE	100-42-5	24
TEBUTHIURON	34014-18-1	83
TERBACIL	5902-51-2	2.2
TERBUFOS	13071-79-9	0.12
TETRACHLOROBENZENE, 1,2,4,5-	95-94-3	14
TETRACHLORODIBENZO-P-DIOXIN, 2,3,7,8- (TCDD)	1746-01-6	0.00053
TETRACHLOROETHANE, 1,1,1,2-	630-20-6	18
TETRACHLOROETHANE, 1,1,2,2-	79-34-5	0.0093
TETRACHLOROETHYLENE (PCE)	127-18-4	0.43
TETRACHLOROPHENOL, 2,3,4,6-	58-90-2	950
TETRAETHYL LEAD	78-00-2	0.012
TETRAETHYLDITHIOPYROPHOSPHATE	3689-24-5	1.5
THIOFANOX	39196-18-4	0.34
THIRAM	137-26-8	130
TOLUENE	108-88-3	44
TOLUIDINE, M-	108-44-1	0.51
TOLUIDINE, O-	95-53-4	1.2
TOLUIDINE, P-	106-49-0	1.3
TOXAPHENE	8001-35-2	1.2
TRIALLATE	2303-17-5	660
TRIBROMOMETHANE (BROMOFORM)	75-25-2	4.4
TRICHLORO-1,2,2-TRIFLUOROETHANE, 1,1,2-	76-13-1	53000
TRICHLOROBENZENE, 1,2,4-	120-82-1	27
TRICHLOROBENZENE, 1,3,5-	108-70-3	31

Table GP-1a
Regulated Fill Concentration Limits for Organics

PARAMETER	CASRN	Regulated Fill Total analysis mg/kg
TRICHLOROETHANE, 1,1,1-	71-55-6	7.2
TRICHLOROETHANE, 1,1,2-	79-00-5	0.15
TRICHLOROETHYLENE (TCE)	79-01-6	0.17
TRICHLOROPHENOL, 2,4,5-	95-95-4	6100
TRICHLOROPHENOL, 2,4,6-	88-06-2	8.9
TRICHLOROPHENOXYACETIC ACID, 2,4,5- (2,4,5-T)	93-76-5	1.5
TRICHLOROPHENOXYPROPIONIC ACID, 2,4,5- (2,4,5-TP)	93-72-1	22
TRICHLOROPROPANE, 1,1,2-	598-77-6	8.7
TRICHLOROPROPANE, 1,2,3-	96-18-4	0.82
TRICHLOROPROPENE, 1,2,3-	96-19-5	30
TRIFLURALIN	1582-09-8	0.96
TRIMETHYLBENZENE, 1,3,4- (TRIMETHYLBENZENE, 1,2,4-)	95-63-6	20
TRIMETHYLBENZENE, 1,3,5-	108-67-8	6.2
TRINITROTOLUENE, 2,4,6-	118-96-7	0.023
VINYL ACETATE	108-05-4	14
VINYL BROMIDE (BROMOETHENE)	593-60-2	0.28
VINYL CHLORIDE	75-01-4	0.027
WARFARIN	81-81-2	7.4
XYLENES (TOTAL)	1330-20-7	990
ZINEB	12122-67-7	81

Table GP-1b

Regulated Fill Concentration Limits for Metals and Inorganics

PARAMETER	CASRN	Regulated Fill Total Analysis mg/kg
ALUMINUM	7429-90-5	190000
ANTIMONY	7440-36-0	27
ARSENIC	7440-38-2	53
BARIUM AND COMPOUNDS	7440-39-3	8200
BERYLLIUM	7440-41-7	320
BORON AND COMPOUNDS	7440-42-8	6.7
CADMIUM	7440-43-9	38
CHROMIUM III	16065-83-1	190000
CHROMIUM VI	18540-29-9	190
COBALT	7440-48-4	22
COPPER	7440-50-8	36000
CYANIDE, FREE	57-12-5	200
IRON	7439-89-6	190000
LEAD	7439-92-1	450
MANGANESE	7439-96-5	190000
MERCURY	7439-97-6	10
NICKEL	7440-02-0	650
NITRATE NITROGEN	14797-55-8	na
NITRITE NITROGEN	14797-65-0	na
SELENIUM	7782-49-2	26
SILVER	7440-22-4	84
THALLIUM	7440-28-0	14
TIN	7440-31-5	680
VANADIUM	7440-62-2	72000
ZINC	7440-66-6	12000

ATTACHMENT 4

GENERAL PERMIT - FULL TEXT AND SAMPLING REQUIREMENTS

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

General Permit
For
Processing/Beneficial Use of Residual Waste

Permit No. WMGR096 **Date Amended** December 23, 2013

Date Issued December 23, 2013 **Date Expires** December 23, 2018

The Department of Environmental Protection, Bureau of Waste Management, Division of Municipal and Residual Waste hereby approves the:

☒ Beneficial Use ☐ Processing prior to Beneficial Use ☐ Other

of: regulated fill as defined in Guidance Document 258-2182-773 (Management of Fill)

for use as: construction material.

This approval is granted to: Eligible persons or municipalities qualifying for the general permit.

subject to the attached conditions and may be revoked or suspended for any project which the Department of Environmental Protection determines to have a substantial risk to public health, the environment, or cannot be adequately regulated under the provisions of this permit.

The processing of wastes not specifically identified in the documentation submitted for this approval, or the beneficial use of wastes not approved in this permit, is prohibited without the written permission of the Department.

This permit is issued under the authority of the Solid Waste Management Act (35 P.S. §§6018.101-6018.1003), The Pennsylvania Used Oil Recycling Act (58 P.S. §§471-480), The Clean Streams Law (35 P.S. §§691.1-691.1001), Sections 1905-A, 1917-A and 1920-A of the Administrative Code of 1929 (71 P.S. §§510-5, 510-17 and 510-20) and the Municipal Waste Planning, Recycling and Waste Reduction Act (53 P.S. §§4000.101-4000.1904).

This approval is granted: By: _____

☒ Statewide ☐ Regional Title: Environmental Program Manager

THIS PERMIT IS NON-TRANSFERABLE

1. *Permitted Activities.* The approval herein granted is limited to the beneficial use of regulated fill as a construction material when moved offsite or received onsite. Regulated fill may only be moved to a property that is approved for construction and that is zoned and used exclusively for commercial and industrial uses or that is unzoned but is exclusively used for commercial and industrial uses (excluding parks, playgrounds, nursing homes, child care facilities, schools or other residential-style facilities or recreation areas). This permit does not authorize blending or processing of material to meet concentration limits in Table GP-1.

2. *Definitions.* The following terms, when used in this permit, have the following meanings:

   "Regulated fill" is soil, rock, stone, dredged material, used asphalt, historic fill, and brick, block or concrete from construction and demolition activities that is separate from other waste and recognizable as such that has been affected by a spill or release of a regulated substance and the concentrations of regulated substances exceed the values in Table FP-1 of the Department's fill policy.

   "Historic fill" is material (excluding landfills, waste piles and impoundments) used to bring an area to grade prior to 1988 that is a conglomeration of soil and residuals, such as ashes from the residential burning of wood and coal, incinerator ash, coal ash, slag, dredged material and construction and demolition waste. The term does not include iron or steel slag that is separate from residuals if it meets the coproduct definition and the requirements of 25 Pa. Code § 287.8. The term does not include coal ash that is separate from residuals if it is beneficially used in accordance with 25 Pa. Code Chapter 290.

3. *Concentration limits.* Regulated fill may not exceed the values in Table GP-1.

4. *Hazardous waste prohibited.* Material that is hazardous waste under Chapter 261a (relating to identification and listing of hazardous waste) may not be used under this permit.

5. *Proper management of fill.* Regulated fill may not be placed on a greenfield property not planned for development, or on a property currently used for or planned for residential use. Material containing concentrations of regulated substances that exceed the values in Table GP-1 may not be moved under the provisions of this general permit, but must be managed in accordance with the provisions of the Department's municipal or residual waste regulations.

6. *Proper management of dredged materials.* In addition to meeting the values in Table GP-1, regulated fill consisting of dredged material from tidal streams shall meet 250 mg/l for chlorides based on an SPLP analysis.

7. *Proper management of fill materials containing metals.* Regulated fill containing metals may be moved to a site if those metals concentrations meet either the concentration limits for metals in Table GP-1 or the background concentration, whichever is higher. Fill that exceeds the concentration limits must be placed as part of an approved construction project in such a manner that all direct contact exposure pathways are eliminated. The background concentration is defined as the concentration of a substance that is present at the site before beneficial use activities occur under this permit. Background concentrations may be determined by taking a representative number of samples, based

on the size of the site, from each of the receiving site and the fill proposed for beneficial use. The average concentration in the receiving site samples becomes the background concentration.

8. *Notice to municipalities.* A person that applies for coverage under this general permit shall submit a copy of the determination of applicability application to each municipality in which the beneficial use activities will be located a minimum of 60 days prior to initiating operations.

9. *Sampling and analysis.* Prior to the beneficial use, the permittee shall perform chemical analysis on representative samples of regulated fill for the appropriate parameters in accordance with the protocol in Appendix A to the Fill Policy. The chemical analyses required in this condition shall be performed by a laboratory accredited or registered for accreditation under the Pennsylvania Environmental Laboratory Accreditation Act of 2002. The operator of the facility shall inspect all incoming waste to insure that the receipt of the waste is consistent with the permit.

10. *Deed Acknowledgment for beneficial use of regulated fill.* The permittee shall provide to the Department proof of a recorded deed notice that includes the exact location of the fill placed on the property, including longitude and latitude descriptions, and a description of the types of fill identified by sampling and analysis. The location and description shall be made a part of the deed for all future conveyances or transfers of the subject property. This deed notice may be provided as an ongoing part of the project or at the end of the completed project.

11. *Siting limitations.* Regulated fill shall not be beneficially used under this permit unless authorized in writing by the Department:

    a. in the 100-year floodplain;

    b. within 100 feet of a sinkhole or area draining into a sinkhole;

    c. within 50 feet of a dwelling unless the owner has provided a written waiver consenting to the beneficial use being closer than 50 feet;

    d. within 100 feet of a perennial stream;

    e. within 300 feet of a water source unless the owner has provided a written waiver consenting to the beneficial use being closer than 300 feet;

    f. within 300 feet of an exceptional value wetland, an exceptional value water or a high quality water.

    g. The siting limitations in paragraph 11(a) are not applicable to the placement of regulated fill at a brownfield site provided the placement is in accordance with all other applicable requirements.

12. *Water quality.* Regulated fill shall not be placed in the waters of the Commonwealth.

13. *Nuisances.* Regulated fill shall not contain any free liquids based on visual inspection, and shall not create public nuisances (for example objectionable odors)and shall minimize the generation of fugitive dust emissions related to operation of the facility.

14. Stabilization Upon completion of areas where regulated fill is beneficially used, the areas shall be promptly vegetated or otherwise stabilized to minimize and control erosion if the construction activity is not undertaken within 30 days of fill placement.

15. *Mixing prohibited.* The regulated fill may not be mixed with other types of solid waste unless otherwise approved by the Department.

16. *Storage and transportation.* The storage and transportation of regulated fill shall be in a manner that does not create a nuisance or be harmful to the public health, safety or the environment. Storage and transportation shall comply with the requirements of 25 Pa. Code Chapters 285 or 299 (relating to storage, collection and transportation of municipal waste and residual waste), whichever is applicable to the waste type being stored or transported.

17. *Discharge of waste prohibited.* This permit does not authorize and shall not be construed as an approval to discharge any other waste, wastewater or runoff from the site where regulated fill originated or the site where regulated fill is beneficially used, to the land or waters of the Commonwealth.

18. *Fugitive emissions.* The permittee shall comply with any applicable fugitive emissions standards adopted under 25 Pa. Code §123.1 and 123.2.

19. *Erosion and sedimentation control.* An erosion and sedimentation control plan shall be implemented that is consistent with the applicable requirements of Chapter 102 (relating to erosion and sedimentation control). A copy of the approved stormwater management, and erosion and sedimentation control plans shall be maintained onsite during construction activities.

20. *Recordkeeping.* Records of analytical evaluations conducted on the regulated fill under this permit, daily records of the weight or volume of the regulated fill received, the placement locations, and the approved construction plans shall be kept onsite by the permittee and at the permittee's place of business. This information shall be available to the Department for inspection and submitted to the Department upon request. This waste analysis information shall be retained by the permittee for a minimum of 5 years.

21. *Relationship to local law.* Nothing in this permit shall be construed to supersede, amend, or authorize a violation of any of the provisions of any valid and applicable local law, ordinance, or regulation, providing that said local law, ordinance, or regulation is not preempted by the Solid Waste Management Act, 35 PS §6018.101 et seq.; and the Municipal Waste Planning, Recycling and Waste Reduction Act of 1988, 53 P.S. §4000.101 et seq.

22. *Inspections.* As a condition of this permit and of the permittee's authority to conduct the activities authorized by this permit, the person receiving the fill hereby authorizes and consents to allow authorized employees or agents of the Department, without advance notice or search warrant, upon presentation of appropriate credentials and without delay, to have access to and to inspect all areas on

which solid waste management activities are being, will be, or have been conducted. This authorization and consent shall include consent to collect samples of waste, soils, water, or gases; to take photographs; to perform measurements, surveys, and other tests; to inspect any monitoring equipment; to inspect the methods of operation; and to inspect and/or copy documents, books, and papers required by the Department to be maintained. This permit condition is referenced in accordance with Sections 608 and 610(7) of The Solid Waste Management Act, 35 P.S. § 6018.608 and 6018.610(7). This condition in no way limits any other powers granted under the Solid Waste Management Act.

23. *Prevention of harm or threat of harm.* The activities authorized by this permit shall not harm or present a threat of harm to the health, safety, or welfare of the people or environment. The Department may modify, suspend, revoke, or reissue the authorization granted in this permit if it deems necessary to prevent harm or the threat of harm to the public health, the environment, or if the activities cannot be adequately regulated under the conditions of this permit.

24. *Individual permits.* The permittee shall comply with the terms and conditions of this general permit and with the environmental protection acts to the same extent as if the activities were covered by an individual permit. The Department may require the permittee to apply for, and obtain an individual permit or cease operation if the permittee is not in compliance with the conditions of this general permit or is conducting an activity that harms or presents a threat of harm to the health, safety or welfare of the people or the environment.

25. *Incorporation of application.* All activities conducted under the authorization granted in this permit shall be conducted in accordance with the permittee's application. Except to the extent that the permit states otherwise, the permittee shall use the regulated fill as described in the approved application.

26. *Permit application requirements.* Persons or municipalities that propose to beneficially use regulated fill by operating under the terms and conditions of this general permit after the date of permit issuance shall submit a determination of applicability application for each location of beneficial use. The application shall be sent to the Department's appropriate regional office that has jurisdiction for waste-related activities in the county where the regulated fill will be beneficially used. At a minimum, the following determination of applicability information shall be submitted on application forms provided by the Department:

    a. Name and street address of the applicant;

    b. Names, addresses, and locations of known or potential sources of regulated fill and estimated source weights or volumes;

    c. Name, location, area and ownership of the location of beneficial use;

    d. Documentation including laboratory analytical results and a certification by the permittee that the regulated fill meets the conditions of this general permit;

    e. Number and title of the general permit;

f. Proof that the beneficial use management activities are consistent with the general permit.

g. A description of the activities that will take place and an estimated schedule for placement of regulated fill.

h. If the size of the receiving site, where the beneficial use takes place, is greater than or equal to one acre, proof that a Pennsylvania Natural Diversity Inventory (PNDI) review at the site has been completed. This review should be in accordance with the Department's policy #400-0200-001, "Policy for Pennsylvania Natural Diversity Inventory Coordination During Permit Review and Evaluation" (Jan. 18, 2003) and all known occurrences must be resolved with the jurisdictional agency. If a PNDI review has been completed at the receiving site under another Department program, the report of that review and approval may be submitted to the Department to satisfy this permit application requirement.

i. Signed and notarized statement by the person who seeks the "determination of applicability" to accept all conditions and operate under the terms and conditions of this general permit;

j. Proof that copies of the "determination of applicability" have been submitted to each municipality, county, county planning agency and county health department where the beneficial use is located;

k. Proof that the applicant has legal right to enter the land where the beneficial use will occur and perform the activities approved in Condition 1 of this permit and an irrevocable written consent from the landowner giving the Department permission to enter upon land where the applicant will be conducting waste management activities;

l. Information that identifies the applicant (i.e. individual, corporation, partnership, government agency, association, etc.) and related parties, including the names and addresses of every officer who has a financial interest in or controls the facility operation;

m. Evidence must be provided by persons operating under this general permit of noncompliance with state and federal environmental laws and regulations;

n. Independent contractors retained by the applicant to perform any activities authorized under this permit must comply with state and federal laws and regulations relating to environmental protection and transportation safety; and

o. The non-refundable fee for a determination of applicability fee, as specified in the residual waste management regulations, payable to the "Commonwealth of Pennsylvania."

27 *Commencement of activities.* For persons or municipalities that propose to beneficially use regulated fill on nonresidential brownfields, the activities may commence after 60 working days from the date the determination of applicability application is submitted to the Department, unless otherwise instructed by the Department. A "brownfield" is defined as real property where regulated substances have been released and remain present. For persons or municipalities that propose to beneficially use regulated fill for one of the following, the activities may commence after 60 working days from the

date the determination of applicability application is submitted to the Department, unless otherwise instructed by the Department:

a. on nonresidential greenfields;

b. on properties where the area subject to regulated fill placement is larger than 10 acres; or

c. on properties where waiver or modification of a siting limitation in Condition 11 has been requested.

A "greenfield" is defined as real property that is not a brownfield.

28. *New sources of fill.* If new sources of regulated fill are to be included at the approved beneficial use location, the permittee shall notify the Department in writing by submitting information in accordance with subparts (b) and (d) of Condition 26 above. A permittee may commence with beneficial use of the new source after 10 working days from the date the information is submitted to the Department, unless otherwise instructed by the Department.

29. *Expansions.* If the placement of additional regulated fill will be expanded beyond the permitted area, the permittee shall notify the Department in writing by submitting information in accordance with subparts (a)-(h) and (j) – (k) of Condition 26 above. If additional regulated fill volumes are needed for the approved construction activities within the existing permitted area, the permittee shall submit a letter notifying the appropriate Department regional office. The letter shall include a description of the proposed changes and identify the additional volumes necessary.

30. *Notification of changes in operator.* Any person who is operating under the provisions of this permit shall immediately notify, in writing, the waste program Operations Manager of the appropriate regional office of the Department (address in attached list) within 30 days via certified mail of any changes in: the company name, address, owners, operators, and/or responsible officials of the company; the generator(s) of the regulated fill; the compliance status (e.g., violations) of any permit issued by the Department or federal government under the environmental protection acts

31. *Determination that material is no longer waste.* Regulated fill that meets all the terms and conditions of this permit and that does not exceed concentration limits in Table GP-1 shall cease to be waste once the regulated fill is placed. If dewasted regulated fill is subsequently excavated or moved beyond the area permitted for fill placement, it will then be subject to applicable requirements for the use of regulated fill.

32. *Revocation or suspension.* Failure of the measures herein approved to be performed as intended, or as designed, or in compliance with the applicable laws, rules and regulations, and terms and conditions of this permit, for any reason, shall be grounds for the revocation or suspension of the permittee's approval to operate under this permit.

Table GP-1a
Regulated Fill Concentration Limits For Organics

PARAMETER	CASRN	Regulated Fill Total analysis mg/kg
ACENAPHTHENE	83-32-9	4700
ACENAPHTHYLENE	208-96-8	6900
ACEPHATE	30560-19-1	3.6
ACETALDEHYDE	75-07-0	0.63
ACETONE	67-64-1	110
ACETONITRILE	75-05-8	3.9
ACETOPHENONE	98-86-2	540
ACETYLAMINOFLUORENE, 2- (2AAF)	53-96-3	0.28
ACROLEIN	10-702-8	0.0014
ACRYLAMIDE	79-06-1	0.0024
ACRYLIC ACID	79-10-7	0.11
ACRYLONITRILE	107-13-1	0.037
ALACHLOR	15972-60-8	0.077
ALDICARB	116-06-3	0.12
ALDRIN	309-00-2	0.44
ALLYL ALCOHOL	107-18-6	1.2
AMINOBIPHENYL, 4-	92-67-1	0.0046
AMITROLE	61-82-5	0.12
AMMONIA	7664-41-7	360
AMMONIUM SULFAMATE	7773-06-0	24
ANILINE	62-53-3	0.34
ANTHRACENE	120-12-7	350
ATRAZINE	1912-24-9	0.13
BAYGON (PROPOXUR)	114-26-1	0.057
BENOMYL	17804-35-2	970
BENTAZON	25057-89-0	45
BENZENE	71-43-2	0.13
BENZIDINE	92-87-5	0.34
BENZO[A]ANTHRACENE	56-55-3	110
BENZO[A]PYRENE	50-32-8	11
BENZO[B]FLUORANTHENE	205-99-2	110
BENZO[GHI]PERYLENE	191-24-2	180
BENZO[K]FLUORANTHENE	207-08-9	610
BENZOIC ACID	65-85-0	7800
BENZOTRICHLORIDE	98-07-7	0.048
BENZYL ALCOHOL	100-51-6	1100
BENZYL CHLORIDE	100-44-7	0.22
BHC, ALPHA	319-84-6	0.19
BHC, BETA-	319-85-7	0.82
BHC, DELTA-	319-86-8	30
BHC, GAMMA (LINDANE)	58-89-9	0.072
BIPHENYL, 1,1-	92-52-4	2200
BIS(2-CHLOROETHYL)ETHER	111-44-4	0.017
BIS(2-CHLORO-ISOPROPYL)ETHER	108-60-1	8

Table GP-1a
Regulated Fill Concentration Limits For Organics

PARAMETER	CASRN	Regulated Fill Total analysis mg/kg
BIS(CHLOROMETHYL)ETHER	542-88-1	0.000044
BIS[2-ETHYLHEXYL] PHTHALATE	117-81-7	130
BISPHENOL A	80-05-7	2000
BROMACIL	314-40-9	2
BROMOCHLOROMETHANE	74-97-5	1.6
BROMODICHLOROMETHANE	75-27-4	3.4
BROMOMETHANE	74-83-9	0.54
BROMOXYNIL	1689-84-5	170
BROMOXYNIL OCTANOATE	1689-99-2	360
BUTADIENE, 1,3-	106-99-0	0.027
BUTYL ALCOHOL, N-	71-36-3	24
BUTYLATE	2008-41-5	51
BUTYLBENZENE, N-	104-51-8	2800
BUTYLBENZENE, SEC-	135-98-8	960
BUTYLBENZENE, TERT-	98-06-6	740
BUTYLBENZYL PHTHALATE	85-68-7	10000
CAPTAN	133-06-2	31
CARBARYL	63-25-2	41
CARBAZOLE	86-74-8	83
CARBOFURAN	1563-66-2	0.87
CARBON DISULFIDE	75-15-0	350
CARBON TETRACHLORIDE	56-23-5	0.26
CARBOXIN	5234-68-4	53
CHLORAMBEN	133-90-4	1.6
CHLORDANE	57-74-9	49
CHLORO-1,1-DIFLUOROETHANE, 1-	75-68-3	4800
CHLORO-1-PROPENE, 3- (ALLYL CHLORIDE)	107-05-1	0.13
CHLOROACETOPHENONE, 2-	532-27-4	0.026
CHLOROANILINE, P-	106-47-8	52
CHLOROBENZENE	108-90-7	6.1
CHLOROBENZILATE	510-15-6	6.3
CHLOROBUTANE, 1-	109-69-3	6400
CHLORODIBROMOMETHANE	124-48-1	3.2
CHLORODIFLUOROMETHANE	75-45-6	2.6
CHLOROETHANE	75-00-3	19
CHLOROFORM	67-66-3	2.5
CHLORONAPHTHALENE, 2-	91-58-7	18000
CHLORONITROBENZENE, P-	100-00-5	18
CHLOROPHENOL, 2-	95-57-8	4.4
CHLOROPRENE	126-99-8	0.97
CHLOROPROPANE, 2-	75-29-6	44
CHLOROTHALONIL	1897-45-6	61
CHLOROTOLUENE, O-	95-49-8	20
CHLORPYRIFOS	2921-88-2	23

Table GP-1a
Regulated Fill Concentration Limits For Organics

PARAMETER	CASRN	Regulated Fill Total analysis mg/kg
CHLORSULFURON	64902-72-3	71
CHLORTHAL-DIMETHYL (DACTHAL) (DCPA)	1861-32-1	650
CHRYSENE	218-01-9	230
CRESOL(S)	1319-77-3	8.9
CRESOL, O- (METHYLPHENOL, 2-)	95-48-7	180
CRESOL, M (METHYLPHENOL, 3-)	108-39-4	100
CRESOL, P (METHYLPHENOL, 4-)	106-44-5	12
CRESOL, P-CHLORO-M-	59-50-7	110
CROTONALDEHYDE	4170-30-3	0.0043
CROTONALDEHYDE, TRANS-	123-73-9	0.0043
CUMENE	98-82-8	1600
CYCLOHEXANONE	108-94-1	2800
CYFLUTHRIN	68359-37-5	33
CYROMAZINE	66215-27-8	240
DDD, 4,4'-	72-54-8	30
DDE, 4,4'-	72-55-9	170
DDT, 4,4'-	50-29-3	230
DI(2-ETHYLHEXYL)ADIPATE	103-23-1	10000
DIALLATE	2303-16-4	0.59
DIAMINOTOLUENE, 2,4-	95-80-7	0.016
DIAZINON	333-41-5	0.082
DIBENZO[A,H]ANTHRACENE	53-70-3	11
DIBROMO-3-CHLOROPROPANE, 1,2-	96-12-8	0.0092
DIBROMOBENZENE, 1,4-	106-37-6	410
DIBROMOETHANE, 1,2- (ETHYLENE DIBROMIDE)	106-93-4	0.0012
DIBROMOMETHANE	74-95-3	7.7
DIBUTYL PHTHALATE, N-	84-74-2	4100
DICHLORO-2-BUTENE, 1,4-	764-41-0	0.0039
DICHLOROBENZENE, 1,2-	95-50-1	59
DICHLOROBENZENE, 1,3-	541-73-1	61
DICHLOROBENZENE, P-	106-46-7	10
DICHLOROBENZIDINE, 3,3'-	91-94-1	32
DICHLORODIFLUOROMETHANE (FREON 12)	75-71-8	100
DICHLOROETHANE, 1,1-	75-34-3	2.7
DICHLOROETHANE, 1,2-	107-06-2	0.1
DICHLOROETHYLENE, 1,1-	75-35-4	0.19
DICHLOROETHYLENE, CIS-1,2-	156-59-2	1.6
DICHLOROETHYLENE, TRANS-1,2-	156-60-5	2.3
DICHLOROMETHANE (METHYLENE CHLORIDE)	75-09-2	0.076
DICHLOROPHENOL, 2,4-	120-83-2	1
DICHLOROPHENOXYACETIC ACID, 2,4- (2,4-D)	94-75-7	1.8
DICHLOROPROPANE, 1,2-	78-87-5	0.11
DICHLOROPROPENE, 1,3-	542-75-6	0.46
DICHLOROPROPIONIC ACID (DALAPON), 2,2-	75-99-0	5.3

Table GP-1a
Regulated Fill Concentration Limits For Organics

PARAMETER	CASRN	Regulated Fill Total analysis mg/kg
DICHLORVOS	62-73-7	0.052
DICYCLOPENTADIENE	77-73-6	0.26
DIELDRIN	60-57-1	0.44
DIETHYL PHTHALATE	84-66-2	160
DIFLUBENZURON	35367-38-5	52
DIMETHOATE	60-51-5	0.77
DIMETHOXYBENZIDINE, 3,3-	119-90-4	64
DIMETHYLAMINOAZOBENZENE, P-	60-11-7	0.15
DIMETHYLANILINE, N,N-	000121-69-7	11
DIMETHYLBENZIDINE, 3,3-	000119-93-7	1.5
DIMETHYLPHENOL, 2,4-	105-67-9	87
DINITROBENZENE, 1,3-	99-65-0	0.049
DINITROPHENOL, 2,4-	51-28-5	0.46
DINITROTOLUENE, 2,4-	121-14-2	0.2
DINITROTOLUENE, 2,6- (2,6-DNT)	606-20-2	3
DINOSEB	88-85-7	0.29
DIOXANE, 1,4-	123-91-1	0.31
DIPHENAMID	957-51-7	12
DIPHENYLAMINE	122-39-4	12
DIPHENYLHYDRAZINE, 1,2-	122-66-7	0.58
DIQUAT	85-00-7	0.24
DISULFOTON	298-04-4	0.078
DIURON	330-54-1	0.86
ENDOSULFAN	115-29-7	61
ENDOSULFAN I (ALPHA)	959-98-8	260
ENDOSULFAN II (BETA)	33213-65-9	260
ENDOSULFAN SULFATE	1031-07-8	70
ENDOTHALL	145-73-3	4.1
ENDRIN	72-20-8	5.5
EPICHLOROHYDRIN	106-89-8	0.12
ETHEPHON	16672-87-0	5.9
ETHION	563-12-2	110
ETHOXYETHANOL, 2- (EGEE)	110-80-5	17
ETHYL ACETATE	141-78-6	470
ETHYL ACRYLATE	140-88-5	0.5
ETHYL BENZENE	100-41-4	46
ETHYL DIPROPYLTHIOCARBAMATE, S- (EPTC)	759-94-4	180
ETHYL ETHER	60-29-7	120
ETHYL METHACRYLATE	97-63-2	30
ETHYLENE GLYCOL	107-21-1	170
ETHYLENE THIOUREA (ETU)	96-45-7	0.034
ETHYLP-NITROPHENYL PHENYLPHOSPHOROTHIOATE	2104-64-5	0.31
FENAMIPHOS	22224-92-6	0.17
FENVALERATE (PYDRIN)	51630-58-1	94

Table GP-1a
Regulated Fill Concentration Limits For Organics

PARAMETER	CASRN	Regulated Fill Total analysis mg/kg
FLUOMETURON	2164-17-2	2.6
FLUORANTHENE	206-44-0	3200
FLUORENE	86-73-7	3800
FLUOROTRICHLOROMETHANE (FREON 11)	75-69-4	87
FONOFOS	944-22-9	2.9
FORMALDEHYDE	50-00-0	12
FORMIC ACID	64-18-6	460
FOSETYL-AL	39148-24-8	27000
FURAN	110-00-9	0.87
FURFURAL	98-01-1	3.7
GLYPHOSATE	1071-83-6	620
HEPTACHLOR	76-44-8	0.68
HEPTACHLOR EPOXIDE	1024-57-3	1.1
HEXACHLOROBENZENE	118-74-1	0.96
HEXACHLOROBUTADIENE	87-68-3	1.2
HEXACHLOROCYCLOPENTADIENE	77-47-4	91
HEXACHLOROETHANE	67-72-1	0.56
HEXANE	110-54-3	1100
HEXYTHIAZOX (SAVEY)	78587-05-0	820
HYDRAZINE/HYDRAZINE SULFATE	302-01-2	0.00042
HYDROQUINONE	123-31-9	55
INDENO[1,2,3-CD]PYRENE	193-39-5	110
IPRODIONE	36734-19-7	1200
ISOBUTYL ALCOHOL	78-83-1	160
ISOPHORONE	78-59-1	1.9
KEPONE	143-50-0	2.2
MALATHION	121-75-5	34
MALEIC HYDRAZIDE	123-33-1	47
MANEB	12427-38-2	5.8
MERPHOS OXIDE	78-48-8	41
METHACRYLONITRILE	126-98-7	0.067
METHAMIDOPHOS	10265-92-6	0.063
METHANOL	67-56-1	120
METHOMYL	16752-77-5	3.2
METHOXYCHLOR	72-43-5	630
METHOXYETHANOL, 2-	109-86-4	1.1
METHYL ACETATE	79-20-9	1900
METHYL ACRYLATE	96-33-3	77
METHYL CHLORIDE	74-87-3	0.038
METHYL ETHYL KETONE	78-93-3	110
METHYL ISOBUTYL KETONE	108-10-1	6.3
METHYL METHACRYLATE	80-62-6	56
METHYL METHANESULFONATE	66-27-3	0.32
METHYL PARATHION	298-00-0	0.42

Table GP-1a
Regulated Fill Concentration Limits For Organics

PARAMETER	CASRN	Regulated Fill Total analysis mg/kg
METHYL STYRENE (MIXED ISOMERS)	25013-15-4	340
METHYL TERT-BUTYL ETHER (MTBE)	1634-04-4	0.28
METHYLENE BIS(2-CHLOROANILINE), 4,4'-	101-14-4	15
METHYLNAPHTHALENE, 2-	91-57-6	8000
METHYLSTYRENE, ALPHA	98-83-9	250
NAPHTHALENE	91-20-3	25
NAPHTHYLAMINE, 1-	134-32-7	1.1
NAPHTHYLAMINE, 2-	91-59-8	0.046
NAPROPAMIDE	15299-99-7	2300
NITROANILINE, M-	99-09-2	0.091
NITROANILINE, O-	88-74-4	0.1
NITROANILINE, P-	100-01-6	0.086
NITROBENZENE	98-95-3	2.2
NITROPHENOL, 2-	88-75-5	17
NITROPHENOL, 4-	100-02-7	4.1
NITROPROPANE, 2-	79-46-9	0.0011
NITROSODIETHYLAMINE, N-	55-18-5	0.000076
NITROSODIMETHYLAMINE, N-	62-75-9	0.00017
NITROSO-DI-N-BUTYLAMINE, N-	924-16-3	0.014
NITROSODI-N-PROPYLAMINE, N-	621-64-7	0.0051
NITROSODIPHENYLAMINE, N-	86-30-6	83
NITROSO-N-ETHYLUREA, N-	759-73-9	0.00022
OCTYL PHTHALATE, DI-N-	117-84-0	10000
OXAMYL (VYDATE)	23135-22-0	2.6
PARATHION	56-38-2	360
PCB-1016 (AROCLOR)	12674-11-2	200
PCB-1221 (AROCLOR)	11104-28-2	2.5
PCB-1232 (AROCLOR)	11141-16-5	2
PCB-1242 (AROCLOR)	53469-21-9	62
PCB-1248 (AROCLOR)	12672-29-6	44
PCB-1254 (AROCLOR)	11097-69-1	44
PCB-1260 (AROCLOR)	11096-82-5	130
PEBULATE	1114-71-2	860
PENTACHLOROBENZENE	608-93-5	660
PENTACHLORONITROBENZENE	82-68-8	20
PENTACHLOROPHENOL	87-86-5	5
PHENACETIN	62-44-2	46
PHENANTHRENE	85-01-8	10000
PHENOL	108-95-2	66
PHENYLENEDIAMINE, M-	108-45-2	8.6
PHENYLPHENOL, 2-	90-43-7	1900
PHORATE	298-02-2	0.88
PHTHALIC ANHYDRIDE	85-44-9	6200
PICLORAM	1918-02-1	7.4
PRONAMIDE	23950-58-5	3.1

Table GP-1a
Regulated Fill Concentration Limits For Organics

PROPANIL	709-98-8	26
PROPHAM	122-42-9	48
PARAMETER	CASRN	Regulated Fill Total analysis mg/kg
PROPYLBENZENE, N-	103-65-1	780
PROPYLENE OXIDE	75-56-9	0.19
PYRENE	129-00-0	2200
PYRIDINE	110-86-1	0.22
QUINOLINE	91-22-5	0.074
QUIZALOFOP (ASSURE)	76578-14-8	47
RONNEL	299-84-3	800
SIMAZINE	122-34-9	0.15
STRYCHNINE	57-24-9	2.5
STYRENE	100-42-5	24
TEBUTHIURON	34014-18-1	83
TERBACIL	5902-51-2	2.2
TERBUFOS	13071-79-9	0.12
TETRACHLOROBENZENE, 1,2,4,5-	95-94-3	14
TETRACHLORODIBENZO-P-DIOXIN, 2,3,7,8- (TCDD)	1746-01-6	0.00053
TETRACHLOROETHANE, 1,1,1,2-	630-20-6	18
TETRACHLOROETHANE, 1,1,2,2-	79-34-5	0.0093
TETRACHLOROETHYLENE (PCE)	127-18-4	0.43
TETRACHLOROPHENOL, 2,3,4,6-	58-90-2	950
TETRAETHYL LEAD	78-00-2	0.012
TETRAETHYLDITHIOPYROPHOSPHATE	3689-24-5	1.5
THIOFANOX	39196-18-4	0.34
THIRAM	137-26-8	130
TOLUENE	108-88-3	44
TOLUIDINE, M-	108-44-1	0.51
TOLUIDINE, O-	95-53-4	1.2
TOLUIDINE, P-	106-49-0	1.3
TOXAPHENE	8001-35-2	1.2
TRIALLATE	2303-17-5	660
TRIBROMOMETHANE (BROMOFORM)	75-25-2	4.4
TRICHLORO-1,2,2-TRIFLUOROETHANE, 1,1,2-	76-13-1	53000
TRICHLOROBENZENE, 1,2,4-	120-82-1	27
TRICHLOROBENZENE, 1,3,5-	108-70-3	31
TRICHLOROETHANE, 1,1,1-	71-55-6	7.2
TRICHLOROETHANE, 1,1,2-	79-00-5	0.15
TRICHLOROETHYLENE (TCE)	79-01-6	0.17
TRICHLOROPHENOL, 2,4,5-	95-95-4	6100
TRICHLOROPHENOL, 2,4,6-	88-06-2	8.9
TRICHLOROPHENOXYACETIC ACID, 2,4,5- (2,4,5-T)	93-76-5	1.5
TRICHLOROPHENOXYPROPIONIC ACID, 2,4,5- (2,4,5-TP) (SILVEX)	93-72-1	22
TRICHLOROPROPANE, 1,1,2-	598-77-6	8.7
TRICHLOROPROPANE, 1,2,3-	96-18-4	0.82

Table GP-1a
Regulated Fill Concentration Limits For Organics

PARAMETER	CASRN	Regulated Fill Total analysis mg/kg
TRICHLOROPROPENE, 1,2,3-	96-19-5	30
TRIFLURALIN	1582-09-8	0.96
TRIMETHYLBENZENE, 1,3,4- (TRIMETHYLBENZENE, 1,2,4-)	95-63-6	20
TRIMETHYLBENZENE, 1,3,5-	108-67-8	6.2
TRINITROTOLUENE, 2,4,6-	118-96-7	0.023
VINYL ACETATE	108-05-4	14
VINYL BROMIDE (BROMOETHENE)	593-60-2	0.28
VINYL CHLORIDE	75-01-4	0.027
WARFARIN	81-81-2	7.4
XYLENES (TOTAL)	1330-20-7	990
ZINEB	12122-67-7	81

Table GP-1b
Regulated Fill Concentration Limits For Metals and Inorganics

PARAMETER	CASRN	Regulated Fill Total analysis mg/kg
ALUMINUM	7429-90-5	190000
ANTIMONY	7440-36-0	27
ARSENIC	7440-38-2	53
BARIUM AND COMPOUNDS	7440-39-3	8200
BERYLLIUM	7440-41-7	320
BORON AND COMPOUNDS	7440-42-8	6.7
CADMIUM	7440-43-9	38
CHROMIUM III	16065-83-1	190000
CHROMIUM VI	18540-29-9	190
COBALT	7440-48-4	22
COPPER	7440-50-8	38000
CYANIDE, FREE	57-12-5	200
IRON	7439-89-6	190000
LEAD	7439-92-1	450
MANGANESE	7439-96-5	190000
MERCURY	7439-97-6	10
NICKEL	7440-02-0	650
NITRATE NITROGEN	14797-55-8	na
NITRITE NITROGEN	14797-65-0	na
SELENIUM	7782-49-2	26
SILVER	7440-22-4	84
THALLIUM	7440-28-0	14
TIN	7440-31-5	680
VANADIUM	7440-62-2	72000
ZINC	7440-66-6	12000

Department of Environmental Protection Regional Offices
(and Counties Served)

I. Bucks, Chester, Delaware, Montgomery, Philadelphia.

Southeast Regional Office
2 East Main Street
Norristown, PA 19401
Phone: (484) 250 - 5960

II. Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne, Wyoming.

Northeast Regional Office
2 Public Square
Wilkes-Barre, PA 18701-1915
Phone: (570) 826 – 2511

III. Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry, York.

Southcentral Regional Office
909 Elmerton Avenue
Harrisburg, PA 17110-8200
Phone: (717) 705 – 4706

IV. Bradford, Cameron, Centre, Clearfield, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga, Union.

Northcentral Regional Office
208 West 3rd Street - Suite 101
Williamsport, PA 17701
Phone: (570) 327 – 3653

V. Allegheny, Armstrong, Beaver, Cambria, Fayette, Greene, Indiana, Somerset, Washington, Westmoreland.

Southwest Regional Office
400 Waterfront Drive
Pittsburgh, PA 15222-4745
Phone: (412) 442 – 4000

VI. Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango, Warren.

Northwest Regional Office
230 Chestnut Street
Meadville, PA 16335-3481
Phone: 814-332-6848

ATTACHMENT 5

SCREENING PARAMETER LIST

ATTACHMENT 5
SCREENING PARAMETER LIST

Aldrin	Anthracene
Benzene	Benzo(a)anthracene
Benzo(a)pyrene	Benzo(b)fluoranthene
Benzo(ghi)perylene	Chrysene
Cumene (Isopropyl benzene)	DDD, 4,4
DDE, 4,4	DDT, 4,4
Dichloroethylene, cis-1,2-	Dieldrin
Ethylbenzene	Fluorene
Indeno(1,2,3-cd)pyrene	Napthalene
PCB-1254 (Aroclor)	Phenanthrene
Pyrene	Toluene
Trichloroethane, 1,1,1-	Trichloroethylene (TCE)
Xylenes (Total)	Arsenic
Barium	Cadmium
Chromium	Lead
Mercury	Selenium
Silver	

ATTACHMENT 6

FREQUENTLY ASKED QUESTIONS

FREQUENTLY ASKED CLEAN FILL QUESTIONS

What is "Due Diligence"?

"Due Diligence" refers to reviewing prior knowledge and records to see if there are any environmental concerns evident at a subject property. The most commonly used environmental Due Diligence practice in the United States is the Phase I Environmental Site Assessment Guidance issued by the American Society for Testing and Materials. A Phase I Environmental Site Assessment consists of a regulatory database review, site inspection, and an interview with a "most knowledgeable person", who has at least 10 years knowledge of the subject property. A deed search to determine current and prior ownership is included as well. The definition of "Due Diligence" in the Fill Policy should also be referred to.

Who should perform the Due Diligence?

It is generally recommended that a qualified environmental manager or consultant perform the due diligence work. The reason for this is some potential environmental problems will only be apparent to an experienced environmental professional who may recognize prior uses, management practices or historical ownership names which may require further investigation.

Is testing required?

Although soil testing is not required under the DEP FILL POLICY, most qualified environmental firms will recommend testing because soils, particularly those in urban areas, can be impacted by historic atmospheric emissions from coal burning, or, in many instances, clear information on the historical uses of property cannot always be accurately determined through due diligence processes. The reason for this is that spills and releases of hazardous substances only started to be reported in the 1970s. "Screening testing", for a select group of parameters will therefore be recommended at many Pennsylvania sites as to check to see that material qualify as CLEAN FILL. In developed areas of the Commonwealth, only 60% of materials, when tested, clearly qualify as CLEAN FILL. Because 40% of the materials do not tend to qualify as CLEAN FILL, it is important to test before moving the material.

What should be tested for?

As part of an earlier proposed rulemaking which was later withdrawn, DEP had issued a list of organic parameters which represent the most common contaminants present in soil as a result of human activity. This list is also available in the Technical Guidance Manual. In addition, the most common metals contaminants are known as RCRA-8 metals. Most environmental managers and consultants recommend using this list for "screening" sampling, to see if there are any further concerns. This suggested list can be found in Attachment 5 of this BMP. If due diligence indicates a spill or release, or if there are known industrial activities additional constituents above and beyond the screening list must be analyzed for.

Who should identify the contaminated material?

To avoid project disruptions, owners contracting for excavation or site work should conduct appropriate due diligence and testing in advance of contracting, using qualified environmental managers and consultants. In this manner, there are fewer surprises, during the excavation and

material movement process. In any case, appropriate work must be done, before materials are excavated and moved across property lines. In the case of finding actual waste materials, appropriate testing work must be completed promptly upon finding such materials, and waste should never be re-disposed of onsite, as there are major civil and criminal penalties for illegal disposal of waste or creating an illegal unpermitted landfill in the Commonwealth.

Who should be the waste generator if the material must be managed as waste?

State and federal environmental law is usually applied such that the person who contracted for the work, has to act as the generator of any waste material to be hauled from a site. Earthwork and highway construction contractors generally should not act as waste generators, unless they have appropriate contracts in-place, and also have appropriate environmental insurance. To avoid future liability associated with disposal sites, it is recommended that contractors hold owners responsible for acting as waste generators, and accept all liabilities associated with placement of their materials in landfills, or for processing at ultimate disposal facilities.

What is atmospheric deposition contamination?

Pennsylvania has a long history of coal burning, as do many urban areas. Unfortunately, coal burning produces atmospheric particulate fallout, which can impact soil with arsenic and benzo(a)pyrene. These may be present above residential Statewide Health Standard many miles from where the coal was burned, particularly, in the case of electric generating stations, or from major powerhouses at industrial facilities. Fuel burning in motor vehicles can also add to such contamination of soils. When such contamination is present throughout an urban area, it is known as "anthropogenic".

How do I manage HISTORICAL FILL?

In most cases, HISTORICAL FILL should only be managed as REGULATED FILL or waste. The reason for this is that historical fill may contain other waste, and has to be carefully managed and tested either before or during the process of preparing to move it offsite. HISTORICAL FILL can also contain coal ash material, as when coal was burned extensively throughout the Commonwealth, in residences, prior to World War II, municipalities typically would collect ashes from throughout the municipality, and fill in low areas along rivers, in stream flood plains or wetlands or at the end of town. If you encounter historical fill, it is important that you conduct appropriate testing, to make sure that it is only HISTORICAL FILL, and does not also contain industrial waste.

Why is it that historical fill until only 1988 qualifies as REGULATED FILL?

In 1988, Pennsylvania Waste Management Laws and Regulations became more stringent. If material was placed after 1988, it is considered illegal disposal, and does not qualify as REGULATED FILL.

What is REGULATED FILL?

REGULATED FILL is a new category of material which has been impacted by spills or releases, is HISTORICAL FILL, or limits exceed Clean Fill Table FP-1 criteria, but are less than Regulated Fill Table GP-1 criteria. To move REGULATED FILL, you must register the receiving sit for the General Permit and follow the General Permit provisions. There are limits on sites which qualify

- REGULATED FILL can only be moved as a construction material to commercial and industrial sites approved for construction.

How do you analyze used asphalt and concrete?

Asphalt and concrete usually are considered uncontaminated and do not require testing. In most instances, total analysis is not appropriate for analyzing asphalt, to see if it is contaminated. Instead, "leachable" analyses should be utilized. It is not recommended that you analyze asphalt in the laboratory for semi-volatile organics, because the semi-volatile organics are a prime component in the asphalt itself, and are not of further concern when the asphalt is hardened.

Is used asphalt CLEAN FILL?

Uncontaminated, broken used asphalt itself is considered CLEAN FILL when used as a construction material below ground, under the DEP fill management policy. This material can only be stored above grade for up to one year.

What about reclaimed asphalt pavement (RAP) /"Millings"?

RAP, also known as millings, is never considered CLEAN FILL. This is because when asphalt is milled, lead, which was present in gasoline for several generations, can leach from the milled material. RAP/millings can be used under the terms of a general permit and/or under PA DEP Industry-Wide Co-Product #1 Reclaimed Asphalt Pavement (RAP). Acceptable beneficial uses, which may be implemented are as subbase, as shoulder backup (with surface sealing), as a construction material or as an ingredient in hot or cold mix products. The first preference is for all RAP/millings to be taken back to the asphalt plant, for remanufacture into hot mix products. As this is direct recycling, so no permits are needed. See Attachment 10 of this BMP for more information.

Is used concrete CLEAN FILL?

Uncontaminated (which also means unpainted) used concrete, can be considered CLEAN FILL. If the concrete is from building demolition, other wastes including mercury switches, PCB ballasts, and other wastes have to be separated prior to demolition. If this is not done all of the resulting crushed concrete has to be managed as waste.

What about rebar in concrete?

If rebar is not cut from concrete, it is not considered CLEAN FILL. This is because the metal itself is considered a waste. Only short stubs of rebar should be protruding from any concrete chunks used as CLEAN FILL. Many DEP inspectors use a "10%" rule, meaning that the surface area of the outside perimeter of protruding rebar should not be more than an additional 10% of the surface area of the concrete chunk itself, on any side.

When is a percentage of material so small in a mixture of materials that DEP will not be concerned?

Many DEP inspectors defer to PENNDOT criteria, which state that there cannot be more than 1% "deleterious material", in construction materials. In this context, "deleterious material" does not refer to contaminants, but instead refers to extraneous items such as bits of plastic, vegetative,

or wood materials. It should be noted that it is never permissible to have significant quantities of wood in the beneficial use materials, and crushed dimensional wood, is strictly forbidden. The reason for this is that wood which may have been pressure treated and contain arsenic or it can decompose, causing settlement. More than 1% wood is considered unacceptable in recycled material mixes used for construction purposes.

What is elevated "natural background"?

Elevated "natural background" refers to situations where, for example, higher concentrations of arsenic (above the residential Statewide Health Standard) are present due to natural conditions, and not resulting from any spill or release or human or industrial impact. In some parts of the Commonwealth, arsenic has been measured well above the residential Statewide Health Standard of 12 mg/kg. Where this is natural, it has generally been found to not be "bioavailable" or "leachable", meaning even if contacted, or ingested, or subject to rainwater infiltration, the arsenic is bound up in the soil, and does not present a threat to groundwater or present a health hazard. The CLEAN FILL program recognizes this condition, but it may be necessary to follow appropriate procedures regarding REGULATED FILL and deed notices where elevated natural background conditions are encountered. See Section 2.3 of the BMP for more information.

Can I mix soil to meet the limits?

It is not permissible to mix soil to meet Table FP-1 or Table GP-1 Fill Limits. In Pennsylvania, mixing of soils to meet limits would be considered "waste processing", which cannot be conducted without an individual permit. An individual Waste Processing Facility Permit under the Waste Management Program cost tens of thousands of dollars, typically takes six months or a year to obtain. There are alternatives under the Act 2 of 1995 Land Recycling Program for onsite soil blending which is part of a remedial project; the site must be under the Act 2 Program to use this option.

What about oil drips?

Small, individual oil drips, only a few inches in diameter, are not considered to be of concern, and are considered to be a "*de-minimis*", a minor condition not of further concern. However, if there is oil staining present near tanks, in vehicle fueling areas, or in vehicle servicing or maintenance areas, which are significant in horizontal and vertical dimension, they have to be handled as a spill/release, and may also have to be reported to DEP and remediated.

What if I find unexpected waste or other suspicious materials during excavation?

If you find unexpected wastes, HISTORIC FILL, or other suspicious materials during excavation, contact a qualified environmental manager or consultant to assess the situation, and decide how to proceed. In many instances, quick decisions can be made to keep the project moving, particularly if the materials are localized, and other parts of the project can be worked on. It is not recommended that you move any suspicious materials from the site, until they are properly tested. In addition, any excavated materials which may be waste, should be properly protected from wind and water erosion. More detail on different types of waste, and how to manage and characterize waste, are presented in this Best Management Practices Manual. Procedures for remote stockpiling of materials, where stockpiling at the excavation location (for example, in public right-of-ways), is included as well.

For small projects, are there more cost effective alternatives than having to do due diligence and testing?

Landfill cover use and surface mine reclamation sites may offer more cost effective alternatives than management under the General Permit. Contractors wishing to use this option should contact the facility to determine pricing and what testing may be required for their particular project.

Can land clearing materials be buried?

It is no longer legal to bury land clearing materials in Pennsylvania. See Attachment 9 of the BMP for Best Management Practices for Land Clearing Waste.

How should I manage shoulder materials-soil mixed with RAP/millings?

If small granular pieces of asphalt have been mixed with soil, the material can be considered contaminated soil, but there are two options available:

- Manage the material under a RAP General Permit or PA DEP Industry-Wide Coproduct #1 RAP;
- Return the soil/granular asphalt mixture to the asphalt plant for use as a hot mix asphalt ingredient.

Soil impacted with semi-volatile organics from poorly maintained roads should not be moved as CLEAN FILL.

TECHNICAL ASSISTANCE

Leading trade organizations including Pennsylvania Asphalt Pavement Association, Pennsylvania Aggregates and Concrete Association, Pennsylvania Utility Contractors Association and Associated Pennsylvania Constructors maintain a list of qualified environmental consultants who may be able to help, if unexpected materials are encountered. These consultants are available to consult with owners or project developers, who may be requesting excavation contractors to manage materials inappropriately. In some instances, you may also need legal representation. Contact any of the Association's offices for more information on who can help.

ATTACHMENT 7

FILL POLICY SUMMARY

PA DEP FILL POLICY

Includes 2010 Updates – Green Pages and Fill Limits and FP-001 Forms

INTRODUCTION

A Final "Fill Guidance Document" was issued by the DEP on April 13, 2004. A General Permit was also issued to allow for the management of some soils with high arsenic levels, soils impacted by spills or releases and other soils with levels of constituents of concern above "Clean Fill Concentration Limits". The purpose of the new approach is to have a simplified regulatory approach to determine which soils are considered Clean Fill, Regulated Fill or Waste.

Listed below are the key provisions of the policy:

- There is a new category of material called "Regulated Fill". Regulated fill can be used under a General Permit as a construction material to grade areas. Maximum concentration standards for Regulated Fill are to be the Act 2 Statewide Health Standards (Non-Residential). The actual limits are in Table GP-1A and B the General Permit.

- To determine if Fill is contaminated, environmental due diligence should be performed. In most cases, testing will also be required, if the quantities is ≥ 125 C.Y.

- Material which is above Regulated Fill Numeric Concentrations must be managed as waste.

- Regulated Fill materials moved to Act 2 Brownfields sites do not have to apply for General Permit applicability.

- A DEP Form must be used to document the receipt of Clean Fill which has been affected by a spill or release.

Key provisions of the Fill Policy and General Permit follow.

KEY DEFINITIONS

Key definitions are as follows:

- *Clean fill* - Uncontaminated, nonwater-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 §§ 287.1, 271.1) The term does not include materials placed in or on the waters of the Commonwealth unless otherwise authorized.

- *Environmental due diligence* - Investigative techniques, including, but not limited to, visual property inspections, electronic data base searches, review of ownership and use history of property, Sanborn maps, environmental questionnaires, transaction screens, analytical testing, environmental assessments and audits.

- *Historic fill* - Material (excluding landfills, waste piles and impoundments) used to bring an area to grade prior to 1988 that is a conglomeration of soil and residuals, such as ashes from the residential burning of wood and coal, incinerator ash, coal ash, slag, dredged material and construction and demolition waste. The term does not include iron or steel slag that is separate from residuals if it meets the coproduct definition and the requirements of 25 Pa. Code Section 287.8. The term does not include coal ash that is separate from residuals if it is beneficially used in accordance with 25 Pa. Code sections 287.661 - 287.666.

- *Regulated fill* - Soil, rock, stone, dredged material, used asphalt, historic fill and brick, block or concrete from construction and demolition activities that is separate from other waste and recognizable as such that has been affected by a spill or release and the concentrations of regulated substances exceed the values in Tables FP-1 A and B.

- *Regulated substance* - The term shall include hazardous substances and contaminants regulated under the Hazardous Sites Cleanup Act, and substances covered by the Clean Streams Law, the Air Pollution Control Act, the Solid Waste Management Act, the Infectious and Chemotherapeutic Waste Law, and the Storage Tank and Spill Prevention Act.

- *Release* - Spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing of a regulated substance into the environment in a manner not authorized by the Department of Environmental Protection. The term includes the abandonment or discarding of barrels, containers, vessels and other receptacles containing a regulated substance.

- *Uncontaminated* - Unaffected by a spill or release, or if affected by a spill or release, the concentrations of regulated substances are below the concentrations specified in Tables FP-1 A and B.

GUIDANCE

The actual language of the Technical Guidance is as follows:

Fill Documentation

1) To determine whether fill is clean or regulated, a person must perform environmental due diligence[1].

   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. Testing must be performed in accordance with
   Appendix A.

      i) If testing reveals that the material concentrations of regulated substances that are below the residential limits in Table FP-1a and b, the material must be managed as clean fill.

ii) If testing reveals that the material contains concentrations of regulated substances that exceed the limits in Table FP-1a and b, the material must be managed as regulated fill.

2) 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.

Management of Regulated Fill

- Materials identified as regulated fill are waste and must be managed in accordance with the 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.

- Regulated fill may not be placed on a greenfield property not planned for development, or on a property currently in residential use or planned for residential use unless otherwise authorized.

- Fill containing concentrations of regulated substances that exceed the values in Table GP-1 a and b may not be managed under the provisions of this policy or General Permit WMGR096, but must be otherwise managed in accordance with the provisions of the Department's municipal or residual waste regulations.

- In addition, a general permit is not required for remediation activities undertaken entirely on an Act 2 site pursuant to the requirements of Section 902 of the Land Recycling and Environmental Remediation Standards Act. A general permit is also not required if regulated fill from an Act 2 site is used as construction material at a receiving site that is being remediated to attain an Act 2 standard as long as the procedural and substantive requirements of Act 2 are met. Regulated substances contained in the regulated fill must be incorporated into the notice of intent to remediate and the final report. Movement of regulated fill between Act 2 sites must be documented in both the sending and receiving sites' cleanup plans and final reports. Placement of the regulated fill may not cause the receiving site undergoing remediation to exceed the selected Act 2 standard.

MANAGEMENT OF CLEAN FILL

- 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, such as Chapter 102 (Erosion and Sediment Control) and Chapter 105 (Dam Safety and Waterway Management).

- Any person placing clean fill which 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. Form FP-001 must be retained by the owner of the property receiving the fill. (See Appendix B)

- Best Management Practices (BMP) must be followed prior to demolition activities to remove materials like lead-based paint surface, friable asbestos and hazardous materials such as mercury switches, PCB ballasts and flourescent light bulbs from a building if the brick, block, or concrete is used as clean fill.

- 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.

GENERAL PERMIT FOR REGULATED FILL

Here are the key General Permit conditions:

- The beneficial use of Regulated Fill is for use as a Construction Material.

- *Permitted Activities.* The approval herein granted is limited to the beneficial use of regulated fill when moved offsite or received onsite. Regulated fill may only be moved to a property that is zoned and used exclusively for commercial and industrial uses or to a property that is unzoned but is exclusively used for commercial and industrial uses (excluding parks, playgrounds, nursing homes, child care facilities, schools or other residential-style facilities or recreation areas). This permit does not authorize blending or processing of material to meet concentration limits in Table GP-1.

- *Definitions.* The following terms, when used in this permit, have the following meanings:

    - *"Regulated Fill"* is soil, rock, stone, dredged material, used asphalt, historic fill, and brick, block or concrete from construction and demolition activities that is separate from other waste and recognizable as such that has been affected by a spill or release of a regulated substance and the concentrations of regulated substances exceed the values in Table FP-1 of the Department's fill policy.

    - *"Historic Fill"* is material (excluding landfills, waste piles and impoundments) used to bring an area to grade prior to 1988 that is a conglomeration of soil and residuals, such as ashes from the residential burning of wood and coal, incinerator ash, coal ash, slag, dredged material and construction and demolition waste. The term does not include iron or steel slag that is separate from residuals if it meets the coproduct definition and the requirements of 25 Pa. Code § 287.8. The term does not include coal ash that is separate from residuals if it is beneficially used in accordance with 25 Pa. Code § 287.661 - 287.666.

- The fill may not exceed the following:

    - *Concentration limits.* Regulated fill may not exceed the values in Table GP-1.

- For chlorides, in dredged material from tidal streams, regulated fill shall meet 250 mg/l based on an SPLP analysis.

- Fill that is hazardous waste under Chapter 261a (relating to identification and listing of hazardous waste) may not be used under this permit.

- *Proper management of fill.* Regulated fill may not be placed on a greenfield property not planned for development, or on a property currently used for or planned for residential use. Material containing concentrations of regulated substances that exceed the values in Table GP-1 may not be moved under the provisions of this general permit, but must be managed in accordance with the provisions of the municipal or residual waste regulations.

- *Proper management of dredged materials.* In addition to meeting the values in Table GP-1, regulated fill consisting of dredged material from tidal streams shall meet 250 mg/l for chlorides based on an SPLP analysis.

- *Proper management of fill materials containing metals.* Regulated fill containing metals may be moved to a site if those metals concentrations meet either the concentration limits for metals in Table GP-1 or the background concentration, whichever is higher. Fill that exceeds the concentration limits must be placed as part of an approved construction project in such a manner that all direct contact exposure pathways are eliminated. The background concentration is defined as the concentration of a substance that is present at the site before beneficial use activities occur under this permit. Background concentrations may be determined by taking a representative number of samples, based on the size of the site, from each of the receiving site and the fill proposed for beneficial use. The average concentration in the receiving site samples becomes the background concentration.

- If the size of the receiving site, where the beneficial use takes place, is greater than or equal to one acre, proof that a Pennsylvania Natural Diversity Inventory (PNDI) review at the site has been completed. This review should be in accordance with the Department's policy #400-0200-001, "Policy for Pennsylvania Natural Diversity Inventory Coordination During Permit Review and Evaluation" (Jan. 18, 2003) and all known occurrences must be resolved with the jurisdictional agency. If a PNDI review has been completed at the receiving site under another Department program, the report of that review and approval may be submitted to the Department to satisfy this permit application requirement.

A person that registers for coverage under this general permit shall submit:

- A copy of the General Permit registration be submitted to each municipality in which the beneficial use activities will be located 30 days prior to initiating operations.

- *Sampling and analysis.* Prior to the beneficial use, the permittee shall perform chemical analysis on representative samples of regulated fill for the appropriate parameters in accordance with the protocol in Appendix A to the Fill Policy. The chemical analyses required in this condition shall be performed by a laboratory accredited or registered for accreditation under the Pennsylvania Environmental Laboratory Accreditation Act of 2002.

- *Deed Acknowledgment for beneficial use of regulated fill.* The permittee shall provide to the Department proof of a recorded deed notice that includes the exact location of the fill placed on the property, including latitude and longitude descriptions, and a description of the types of fill identified by sampling and analysis. The location and description shall be made a part of the deed for all future conveyances or transfers of the subject property.

Siting Limitations

Regulated fill shall not be beneficially used under this permit:

- in the 100-year flood plain;

- within 100 feet of a sinkhole or area draining into a sinkhole;

- within 50 feet of a property line unless the owner has provided a written waiver consenting to the facility being closer than 50 feet;

- within 100 feet of a perennial stream;

- within 300 feet of a water source unless the owner has provided a written waiver consenting to the beneficial use being closer than 300 feet;

- within 300 feet of an exceptional value wetland, an exceptional value water or a high quality water.

- The floodplain siting limitation is not applicable to the placement of regulated fill at a brownfield site provided the placement is in accordance with all other applicable requirements.

Water Quality

- Regulated fill shall not be placed in the waters of the Commonwealth.

Nuisances

- Regulated fill shall not contain any free liquids based on visual inspection, and shall not create public nuisances (for example objectionable odors).

Construction Material

- The construction activity shall be conducted promptly but no later than one year from the date the regulated fill is placed for beneficial use. The areas shall be promptly vegetated

to minimize and control erosion or capped to minimize infiltration if the construction activity is not undertaken within 30 days of fill placement.

- The regulated fill may not be mixed with other types of solid waste unless approved by the Department.

- Storage and transportation shall comply with the DEP regulations of 25 Pa. Code Chapters 285 or 299 (relating to storage, collection and transportation of municipal waste and residual waste).
- An erosion and sedimentation control plan shall be implemented at the receiving site.

Record Keeping

Records shall be maintained as follows:

- Records of analytical evaluations conducted on the regulated fill under this permit shall be kept by the permittee at the permittee's place of business and shall be available to the Department for inspection. This waste analysis information shall be retained by the permittee for 5 years.

- Those operating under the General Permit will also be consenting to DEP standard right of entry provisions common to all DEP waste permits.

- Persons or municipalities that propose to beneficially use regulated fill by operating under the terms and conditions of this general permit after the date of permit issuance shall Register for each location of beneficial use. The request shall be sent to the Department's appropriate regional office that has jurisdiction for waste-related activities in the County where the regulated fill will be beneficially used. *The registration package will generally cost $2,500-$3,250 to prepare, which does not include the cost of testing. There will also be a $250 DEP registration fee.*

- For persons or municipalities that propose to beneficially use regulated fill on nonresidential brownfields, the activities may commence after 15 working days from the date the Registration application is submitted to the Department, unless otherwise instructed by the Department. "Brownfields" is defined as real property where contaminants have been released and remain present.

- For persons or municipalities that propose to beneficially use regulated fill on the following:

    - on non-residential greenfields;

    - on properties where the area subject to regulated fill placement is larger than 10 acres; or

    - on properties where waiver or modification of a siting limitation in Condition 11 has been requested, the activities may commence after 60 working days from the date the Registration application is submitted to the Department, unless otherwise instructed by the Department

- A "Greenfields" is defined as real property that is not brownfields.

- If new sources of regulated fill are to be included at the approved beneficial use location, the permittee shall notify the Department in writing by submitting information in accordance with subparts (a.)-(f.) of Condition 26 (DEP's permit application requirements). A permittee may commence with beneficial use of the new source after 10 working days from the date the information is submitted to the Department, unless otherwise instructed by the Department.

Determining that Material is No Longer Waste

- Regulated fill that meets all the terms and conditions of this permit and that does not exceed concentration limits in Table GP-1 shall cease to be waste once the regulated fill is placed. If dewasted regulated fill is subsequently excavated or moved beyond the area permitted for fill placement, it will then be subject to applicable requirements for the use of regulated fill

SELECTED COMMON METALS TOTAL ANALYSIS LIMITS FOR FILL
(FOR OTHER METALS AND ORGANIC CONSTITUENT LIMITS - VISIT THE DEP WEBSITE)

PARAMETER	Clean Fill Table FP-1 (mg/kg) Limits	Regulated Fill (mg/kg) Table GP-1 Limits
ANTIMONY	27	27
ARSENIC(1)	12	53
BARIUM AND COMPOUNDS	8,200	8,200
BERYLLIUM	320	320
BORON AND COMPOUNDS	6.7	6.7
CADMIUM	38	38
CHLORIDES	NA	--
CHROMIUM III	190,00	190,000
CHROMIUM VI	94	190
COBALT	8.1	22
COPPER	8,200	36,000
CYANIDE FREE	200	200
LEAD	450	450
MANGANESE	31,000	190,000
MERCURY	10	10
NICKEL	650	650
SELENIUM	26	26
SILVER	84	84
SULFATE	NA	--
THALLIUM	14	14
TIN	240	680
VANADIUM	1,500	72,000
ZINC	12,000	12,000

NA - Not Applicable

(1)The limit of 12 mg/kg applies to all releases of arsenic. A limit of 20 mg/kg applies to certain construction materials not subject to direct contact upon completion of construction. The limit of 20 mg/kg can only be used if a Department approved Best Management Practices Plan for Earthwork and General

APPENDICES

A) SAMPLING REQUIREMENTS

B) CERTIFICATION OF ORIGIN FOR CLEAN FILL

Appendix A

Sampling and Analyses for Regulated Material to be Used as Fill:

Sampling of regulated material proposed to be used as fill shall be done either by composite samples or by discrete samples. Sampling in either case shall be random and representative of the fill material being sampled. Sampling shall be in accordance with the most current version of the EPA RCRA Manual, SW-846 *(Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. Office of Solid Waste and Emergency Response).*

(a) Sampling based on composite sampling procedures shall include the following:

(i) For volumes of material equal to or less than 125 cubic yards, a total of eight samples shall be collected and analyzed as follows:

(A) For analysis of all substances other than volatile organic compounds (VOCs), the samples shall be analyzed in two composites of four samples each, in accordance with the most current version of the USEPA Manual, SW-846 *(Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. Office of Solid Waste and Emergency Response).*

(B) Two samples shall be selected from the 8 samples for analysis of VOCs. The samples shall be based on field screening of the eight samples to select those samples that are most likely to contain the highest concentrations of VOCs.

(C) Two grab samples shall be taken from the same areas in the material from which the two samples used for field screening of VOCs were taken, in accordance with Method 5035 from the most current version of the USEPA Manual, SW-846 *(Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. Office of Solid Waste and Emergency Response).*

(ii) For volumes of material greater than 125 cubic yards and less than or equal to 3,000 cubic yards, a total of 12 samples shall be collected and analyzed as follows:

(A) For analysis of all substances other than VOCs, the samples shall be analyzed in three composites of four samples each.

(B) Three samples shall be selected from the 12 samples for analysis of VOCs. The samples shall be based on field screening of the 12 samples to select those samples that are most likely to contain the highest concentrations of VOCs.

(C) Three grab samples shall be taken from the same areas in the material from which the three samples used for field screening of VOCs were taken, in accordance with EPA Method 5035, referenced in subparagraph (i)(C).

(iii) For each additional 3,000 cubic yards of material or part thereof over the initial 3,000 cubic yards, 12 additional samples shall be collected and analyzed as follows:

(A) For analysis of all substances other than VOCs, the samples shall be analyzed in three composites of four samples each.

(B) Three samples for analysis of VOCs shall be selected from the 12 samples for analysis of VOCs. The samples shall be based on field screening of the 12 samples to select those samples that are most likely to contain the highest concentrations of VOCs.

(C) Three grab samples shall be taken from the same areas in material from which the three samples used for field screening of VOCs were taken, in accordance with EPA Method 5035, referenced in subparagraph (i)(C).

(b) Sampling based on discrete sampling procedures shall include the following:

(i) For volumes of material equal to or less than 125 cubic yards, a minimum of eight samples shall be collected and analyzed. For volumes of material greater than 125 cubic yards and less than or equal to 3,000 cubic yards, a minimum of 12 samples shall be collected and analyzed. For each additional 3,000 cubic yards of material or part thereof over the initial 3,000 cubic yards, a minimum of 12 additional samples shall be collected and analyzed.

(ii) For VOCs analysis, grab sampling procedures shall be the procedures described in subsection (a), for the equivalent volumes of material sampled.

(c) Analyses of results:

(i) For a composite sample taken in accordance with subsection (a), the measured numeric value for a parameter shall be less than or equal to the concentration limit listed in Table FP-1a or b for that parameter in order for the material to qualify as clean fill, or in Table GP-1a or b for that parameter in order for the fill material to qualify as regulated fill.

(ii) For a grab sample, taken in accordance with subsections (a) and (b), the measured numeric value for a parameter shall be less than or equal to the concentration limit listed in Table FP-1a or b for that parameter in order for the material to qualify as clean fill, or in Table GP-1a or b for that parameter for the fill material to qualify as regulated fill.

(iii) For discrete samples required in subsection (b), the measured numeric values for a substance in 75% of the discrete samples shall be equal to or less than the concentration limit listed in Table FP-1a or b, or in Table GP-1a or b for that parameter with no single sample exceeding more than twice the concentration limit for a parameter.

(d) In lieu of subsection (c), a person may use 95% Upper Confidence Limit (UCL) of the arithmetic mean to determine whether a fill material meets the appropriate concentration limits for use as clean or regulated fill. The calculated 95% UCL of the arithmetic mean must be below the appropriate concentration limit for clean or regulated fill. Sampling shall be random and

representative of the material being sampled. The minimum number of samples shall be determined in accordance with EPA approved methods on statistical analysis of environmental data, as identified in 25 PA. Code, §250.707(e) (relating to statistical tests). The application of the 95% UCL of the arithmetic mean shall comply with the following performance standards:

(i) The null hypotheses (Ho) shall be that the true fill arithmetic average concentration is at or above the regulated fill appropriate concentration limit, and the alternative hypothesis (Ha) shall be that the true fill arithmetic average concentration is below the regulated fill appropriate concentration limit.

(ii) The underlying assumptions of the statistical method shall be met, such as data distribution.

(iii) Compositing cannot be used for volatile organic compounds.

(iv) The censoring level for each nondetect shall be the assigned value randomly generated that is between zero and the limit related to the PQL.

(v) Tests shall account for spatial variability, unless otherwise approved by the Department.

(vi) Statistical testing shall be done individually for each parameter present in the fill.

(vii) Where a fill has distinct physical, chemical or biological characteristics, or originates from different areas, the statistical testing shall be done separately.

(viii) The following information shall be documented:

(A) A description of the original areas of the fill, and physical, chemical and biological characteristics of the fill.

(B) A description of the underlying assumptions of the statistical method.

(C) Documentation showing that the sample data set meets the underlying assumptions of the statistical method.

(D) Documentation of input and output data for the statistical test, presented in tables or figures, or both, as appropriate.

(E) An interpretation and conclusion of the statistical test.

(e) The Synthetic Precipitation Leaching Procedure (SPLP, per *Technical Guidance Manual*, 253-0300-100/ May 4, 2002 /Page II-26-27), is listed below:

The value for the SPLP is the concentration of a regulated substance in soil at the site that does not produce a leachate in which the concentration of the regulated substance exceeds the groundwater MSC. Since this test must be conducted on the actual site soil, no values for the SPLP could be published in the tables of MSCs in the regulations. The following procedure should be used to determine the alternative soil-to-groundwater value based upon the SPLP:

(i) During characterization, the remediator should obtain a minimum of ten samples from within the impacted soil area. The four samples with the highest total concentration of the regulated substance should be submitted for SPLP analysis. Samples obtained will be representative of the soil type and horizon impacted by the release of the regulated substance.

(ii) Determine the lowest total concentration (TC) that generates a failing SPLP result. The alternative soil-to-groundwater standard will be the next lowest TC.

(iii) If all samples result in a passing SPLP level, the alternative soil-to-groundwater standard will be the TC corresponding to the highest SPLP result. The remediator has the option of obtaining additional samples.

(iv) If none of the samples generates a passing SPLP, the remediator can obtain additional samples and perform concurrent TC/SPLP analyses to satisfy the above requirements for establishing an alternative soil-to-groundwater standard.

APPENDIX B

FORM FP-001 - CERTIFICATION OF CLEAN FILL

2600-FM-BWM0008 Rev. 8/2010

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

FORM FP-001 - CERTIFICATION OF CLEAN FILL

Prior to completing this form and signing this certification, please review the entire Management of Fill policy (#258-2182-773), including the certification requirements. Please note that historic fill, as defined in the Management of Fill policy, may meet the definition of clean fill if the material is limited to uncontaminated 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.

Instructions: Sections 1 and 2 of this form must be completed by the person making the determination of clean fill at the site of origin. Section 3 must be completed by the person using the material as clean fill. Both the person determining clean fill and the user of the clean fill are responsible for maintaining copies of this completed form on site for a period of five (5) years for Department inspection.

Section 1: Person Determining Clean Fill

Name (Print): _____ Title: _____ Date: _____

Company Name: _____

Street Address: _____ City: _____ State: _____ Zip Code: _____

Telephone Number: _____ E-mail Address: _____

Clean Fill Material originated on the following property:

Site Name: _____

Street Address: _____ City: _____ State: _____ Zip Code: _____

Section 2: Site Characterization

Check the following that applies:

☐ **A. IF the site of origin for the fill material has undergone or is undergoing cleanup or remediation pursuant to a local state or federal regulatory program that requires site characterization, provide the following information along with a copy of the entire site characterization and laboratory analysis for the material to be used as clean fill.**

Name of local, state, or federal agency: _____

Identification number assigned to the project: _____

Name of the local, state, or federal contact person: _____

Telephone Number: _____ E-mail Address: _____

Name of the Laboratory that conducted the analysis: _____

Laboratory Accreditation Number: _____

☐ **B. IF the material proposed to be used as clean fill has otherwise been subject to analytical testing or other procedure identified in the definition of "environmental due diligence" contained in the Management of Fill policy, provide or attach the following:**

Copies of ALL lab analytical testing performed as part of environmental due diligence (see Management of Fill policy, #258-2182-773).

Name of the Laboratory that conducted the analysis: _____

Laboratory Accreditation Number: _____

☐ C. IF the proposed material to be used as clean fill was subject to environmental due diligence procedures as defined in the Management of Fill policy other than those listed in A and B, describe those procedures.

_____

_____

I, the undersigned, certify under penalty of law (18 Pa. C.S.A. §4904) that the information provided in Sections 1 and 2 of this form is true and correct to the best of my knowledge, information and belief.

Signature: _____

Section 3: Person Receiving or Placing Clean Fill

Name and address of person completing this form:

Name (Print): _____ Date: _____

Mailing Address: _____ City: _____ State: _____ Zip Code: _____

Telephone Number: _____ E-mail Address: _____

Fill material that has been determined to be clean fill will be placed on the following property solely for property improvement or construction purposes:

Property Address: _____ City: _____ State: _____ Zip Code: _____

Current Owner of Property: _____

Telephone Number: _____ E-mail Address: _____

The quantity of clean fill to be placed on the property is:

☐ <3,000 cubic yards ☐ 3,000 cubic yards to 20,000 cubic yards ☐ >20,000 cubic yards

I, the undersigned, certify under penalty of law (18 Pa. C.S.A. §4904) that the information provided is true and correct to the best of my knowledge, information and belief.

Signature: _____

* * * * *

Prior to placement of the clean fill, the owner of the property receiving fill material shall provide a copy of this completed form and attachments to the DEP Regional Office serving the county in which the receiving site is located. If a property receives fill from multiple sources, a separate Form FP-001 is required for each source.

ATTACHMENT 8

FACT SHEET FILL POLICY

FACT SHEET SUMMARY
PA DEP FILL PROGRAM

In 1996, the DEP issued a "Clean Fill Guidance Document" which determined when soils, are considered so contaminated as to become wastes. The levels of contaminants were set too low in this document, in many instances, below background. It has been impossible to tell what is and is not "Contaminated". The "Clean Fill Guidance" limits have been selectively enforced, sometimes with disastrous financial results for site owners and for earthwork contractors.

A final Fill Policy Guidance Document, issued on April 13, 2004 now requires demolition materials to be separated from other wastes. The proposed takes a revised approach for determining what is CLEAN FILL AND REGULATED FILL based on numerical limits derived from the Act 2 Land Recycling Statewide Health Standards (SWHS).

New requirements will be:

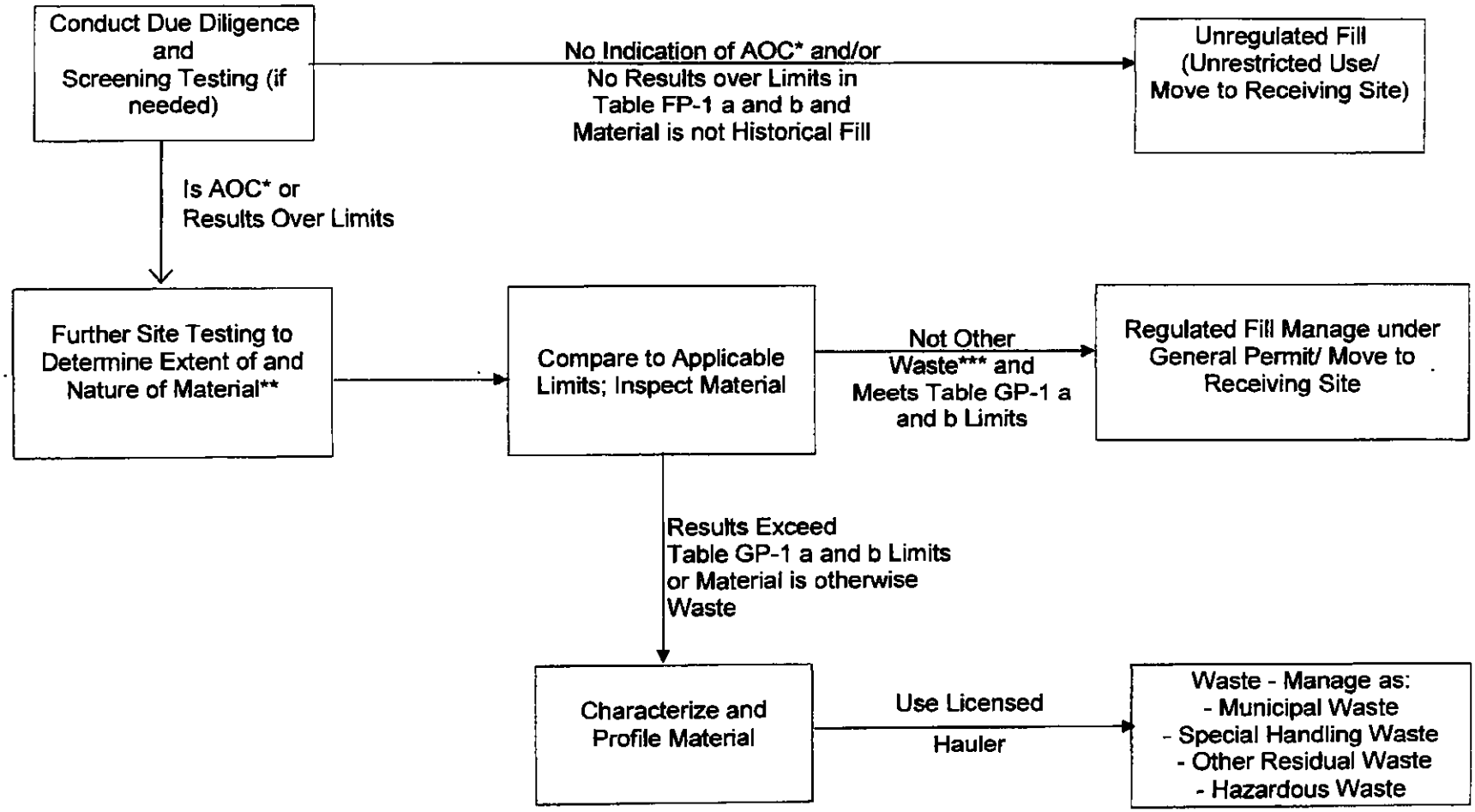
- Due Diligence will be required at most sites to check historical and other information to see if the soils at a site might be contaminated. Contamination can come from:
  - tank and other spills
  - historic use of herbicides\pesticides
  - historic coal burning in the aree
  - historic use of leaded gasoline.
- At some sites, HISTORIC FILL is present (coal ash or industrial waste was used to create land from former wetland and stream areas). There is a new definition for historic fill, which had to be placed before 1988.
- Most sites will require due diligence and at least "screening testing" before it is determined whether or not the soil is or is not "contaminated".
- There are several new material classifications:
  - Material which is "CLEAN FILL" (unrestricted), is material which has not been mixed and meets Unregulated Fill Concentration Limits.
  - Material which is REGULATED FILL, is contaminated includes material impacted by a spill or release and HISTORIC FILL; this cannot exceed non-residential SWHS limits.
- The attached Flow Chart shows the process.
- A Best Management Practices Manual is being prepared by RT to help Contractors implement the program in the field.
- A General Permit is also available to move REGULATED FILL. It will be necessary to apply to the DEP to use the General Permit and complete testing. A Registration Application and fee will need to be submitted to DEP and a Deed Notice will need to be placed on the receiving site. There will be restrictions on which sites the materials can and cannot be placed.
- It is also now necessary to track fill materials received at sites as to origin DEP has included the form in the Policy Document.
- Those found by DEP to be illegally moving or receiving site owners using waste can be subject to major liabilities, including, potentially, criminal penalties. RT is advising all of those involved in earthwork contracting and construction to follow this new program, which is effective during this 2004 construction season.

See the Fill Policy Flow Chart on the following page! For more information, call Gary Brown at 800-725-0593, Ext. 34.

4/19/04

FIGURE 1

FILL POLICY FLOW CHART



* Area of Concern
** If Construction Materials, follow Best Management Practices Plan
*** The Policy cannot be used for materials other than those listed in the Policy.

ATTACHMENT 9

BEST MANAGEMENT PRACTICES FOR LAND CLEARING WASTE

AN RT REGULATIONS SUMMARY 3-03
KEY PROVISIONS

BEST MANAGEMENT PRACTICES FOR THE MANAGEMENT OF WASTE FROM LAND CLEARING, GRUBBING, AND EXCAVATION (LCGE)

Applicability

This final DEP guidance applies to persons, municipalities, and counties who own or manage an on-site LCGE operation, or operate an off-site LCGE material processing or temporary storage facility.* This was published in the PA Bulletin on 3/1/03.

Purpose

The Pennsylvania Municipal Waste Regulations, 25 Pa. Code Section 271.101(b)(5), state that "The DEP will prepare a manual for the management of waste from land clearing, grubbing, and excavation, including trees, brush, stumps and vegetative material which identifies best management practices and may approve additional best management practices on a case-by-case basis". This manual addresses the best management practices (BMP) for on-site management and off-site temporary storage and processing of LCGE plant materials. **LCGE plant material includes trees, brush, stumps and vegetative material that are appropriately managed or processed. Processing may include chipping or shredding for mulch, or recycling for manufacturing of other products, etc. Tree trunks used to produce logs, lumber or firewood, if they are not abandoned or disposed and if managed in a timely fashion, are not considered LCGE wastes for the purposes of this manual**

Certain on-site storage and disposal operations, and off-site storage and processing operations, as defined within the provisions of this manual, may be exempt from requiring a general or an individual permit if the applicable BMP included in this manual are implemented. If a person or municipality fails to implement the BMP for LCGE material, DEP may require the person or municipality to obtain a general or an individual permit. The Department may also require compliance with the applicable municipal waste disposal, composting, recycling, transportation, storage and processing regulations of 25 Pa. Code Chapters 271 (Municipal Waste Management General Provisions), 273 (Municipal Waste Landfills), 279 (Transfer Facilities), 281 (Composting Facilities), 283 (Resource Recovery and Other Processing Facilities), and 285 (Storage Collection and Transportation of Municipal Waste).

Both the regulations and the BMP specified in this manual are intended to address past problems and prevent future problems associated with mismanagement of LCGE plant materials. Typical problems include illegal disposal, uncontrolled fires, methane gas generation, pest infestations and other nuisances, and surface water contamination.

DEP encourages reuse and recycling of LCGE plant material wherever possible, and discourages burning, except for energy recovery, of such material.

It is the responsibility and obligation of the owner and operator of municipal waste disposal or processing facility to ensure that

*RT has bolded the most important provisions.

LCGE plant material storage, processing, etc., activities and/or materials cause no adverse impacts on the public health, welfare, safety and the environment, and that potential nuisances are controlled. In the event of pollution, nuisance, or other hazards, the owner and operator must take immediate corrective action to resolve any existing or potential impacts on public health, welfare, safety and environment, and that nuisances are corrected. Nuisances may include vectors, dust, odors, noise, traffic hazards, etc.

This Manual Addresses the Following Practices:

In this manual, the term "on-site" is used to refer to activities that occur on the same site where the LCGE plant material was generated. The term "off-site" is used to refer to activities that occur at a site where LCGE plant materials are accepted either for processing, or temporary storage prior to processing, into beneficially reusable material.

Plant materials from LCGE operations that are covered by this manual include trees, brush, stumps, and vegetative materials. This manual no longer applies when these and other wastes fail to meet the provisions of 25 Pa. Code 271.101(b)(5). The manual would not allow the mixing or processing of LCGE material with other wastes. This document also does not apply to composting of yard wastes, food wastes, and residual wastes such as spent mushroom substrate or any other organic wastes (Sections 271.103 and 287.101).

The provisions of this manual are applicable for mobile processors of LCGE material. Mobile processors may operate at either an on-site location (e.g. along roadways clearing overhead tree branches away from power lines; a ten acre parcel of land being cleared fro a housing development, etc.) or an off-site location (areas which store/process material received from the types of on-site areas described above). Due to the nature of mobile processing operations that work along roadways, not all the provisions under Chapter 3(On-Site Management of LGCE Plant Materials) will apply however, the owner/operator must adhere to the relevant provisions when conducting these operations.

DEP will not permit any future off-site disposal of LCGE wastes in Pennsylvania. Accordingly, all *existing* off-site LCGE waste disposal facilities must implement one of the following: (1) cease operations and remove all wastes or manage the wastes according to this manual within a year from the date of the final publication of this BMP manual; (2) obtain a general or an individual permit; or (3) comply with the requirements (with certain exceptions, as indicated in Chapter 3, Section 3.4 relating to isolation distances for existing facilities) **of this manual. The Department may authorize, through a general permit, various non-disposal beneficial uses of LCGE waste. Off-site disposal areas would require an individual permit for continued operation.**

The Solid Waste Management Act prohibits open burning of waste without a permit.

This Manual Does Not Address the Following Practices:

The BMP presented in this manual do not apply to mining facilities, both coal and industrial (non-coal), operating under a DEP permit. These facilities may process and dispose of LCGE plant materials from off-site sources in order to promote wild life enhancement and habitat protection. The appropriate DEP Mining District Office approves these activities as a condition of the industrial or coal mining operation permit.

The BMP also do not apply to oil and gas well operations covered under the Oil and Gas Act . The manual does apply, however, if the site is part of a processing or disposal facility for LCGE waste from other types of operations.

Organizations, municipalities, counties or other parties interested in utilizing brush piles at their sites for wildlife habitat enhancement are required to contact the Pennsylvania Game Commission for information on the applicable requirements.

LCGE plant materials, rock, stone, etc., left on site as part of an officially approved wildlife habitat enhancement practice or plan (as denoted by DEP or the Pennsylvania *Game Commission*), are not considered LCGE wastes for purposes of this manual.

Waste materials such as rock, stone, gravel, brick, block, concrete, plastics, etc., are not considered LCGE wastes, as defined in 25 Pa. Code 271.101(b)(5). Accordingly, these wastes are not covered under this manual. **When transported to a LCGE plant material processing facility, these wastes must be separated from the LCGE materials and removed from the facility within one (1) week. These segregated, non-LCGE materials may be qualified for certain uses as defined by the Safe Fill Regulations.** Vegetative plant materials containing contaminated soils, construction and demolition waste, yard waste, plastic or other wastes must be managed in accordance with the applicable municipal, residual and hazardous waste regulations.

This BMP Manual does not authorize the storage of LCGE or LCGE-derived material for more than one (1) year prior to beneficial use unless the Department authorizes additional storage time in writing prior to the end of one (1) year storage. Storage for more than one (1) year without clear and convincing evidence to the contrary is defined as disposal per the definition of "storage" in Chapter 271.1.

The Department has two separate programs that specifically regulate the burning of land clearing and grubbing wastes: Air Quality and Municipal Waste. A person who is planning to burn land clearing and grubbing wastes must comply with the regulatory requirements of both programs. The Air Quality regulations differentiate between clearing and grubbing materials that are burned inside or outside of an air basin. The Municipal Waste regulations apply to the management of all clearing and grubbing materials, whether the materials are burned inside or outside of an air basin.

The Air Quality regulations for open burning operations are found at 25 Pa. Code Section 129.14. Unless otherwise exempt under Section 129.14(c), the Air Quality regulations allow clearing and grubbing wastes to be burned inside or outside of an air basin subject to certain limitations set forth in the regulations.
Section 129.14(d)(2) allows clearing and grubbing wastes to be burned ***inside of an air basin***, subject to the following requirements:

a. Air curtain desturctors shall be used when burning clearing and grubbing wastes.

b. Each proposed use of air curtain destructors must be reviewed and approved by the Department in writing with respect to equipment arrangement, design and existing environmental conditions prior to commencement of burning. Proposals approved under this subparagraph need not obtain plan approval or operating permit under 25 Pa. Code, Chapter 127 (relating to construction, modification, reactivation and operation of sources).

c. Approval for use of an air curtain destructor at one site may be granted for a specified period not to exceed three (3) months, but may be extended for additional limited periods upon further approval by the Department.

d. The Department reserves the right to rescind approval granted if a determination by the Department indicates that an air pollution problem exists.

Section 129.14(d)(3) allows clearing and grubbing wastes to be burned ***outside of an air basin***, subject to the following limitations:

a. Upon receipt of a complaint or determination by the Department that an air pollution problem exists, the Department may order that the open burning cease or comply with 25 Pa. Code Section 129.14(b).

b. Authorization for open burning under this paragraph does not apply to clearing and grubbing wastes transported form an air basin for disposal outside of an air basin.

Section 129.14(b) provides that no person may permit the open burning of material in an area outside of air basins in a manner that:

a. The emissions are visible, at any time, at the point such emissions pass outside the property of the person on whose land the open burning is being conducted.

b. Malodorous air contaminants from the open burning are detectable outside the property of the person on whose land the open burning is being conducted.

c. The emissions interfere with the reasonable enjoyment of life or property.

d. The emissions cause damage to vegetation or property.

e. The emissions are or may be deleterious to human or animal health.

The applicable Municipal Waste regulations are found at Pa. Code Section 271.101(b)(5). Section 271.101(b)(5) requires that a person managing waste from land clearing, grubbing and excavation shall implement best management practices as outlined in a manual prepared by the Department. For purposes of this manual, the Department considers the burning of LCGE materials to be a best management practice under the Municipal Waste regulations only if the materials are burned on-site in accordance with the requirements of the Air Quality regulations at Section 129.14(d)(2) and 129.14(b), whether ***inside or outside*** or an air basin. Because the Department does not consider off-site burning of LCGE materials to be a best management practice, the materials should not be transported anywhere, inside or outside of an air basin, from the are upon which they were generated.

ON-SITE MANAGEMENT OF LCGE PLANT MATERIALS

"On-site", as used in this manual, refers to activities that occur on the same site where the LCGE plant material was generated. **The BMP described in this chapter apply to accumulation, processing, disposal, or utilization of LCGE materials at the site where they are generated. Owners and/or operators of mobile processors of LCGE materials must contact the Air Quality Program in the appropriate DEP Regional Office and request a determination if their operation would require a plan approval.**

On-Site Accumulation and Processing of LCGE Plant Materials

On-site temporary storage may include accumulating unprocessed LCGE materials at the on-site location prior to removal from the site to an off-site facility for processing and reuse. If processing occurs at the on-site location, such as grinding, shredding, chipping, etc., these LCGE materials may also be stored on site prior to either the on-site utilization/disposal described in this Chapter, or before removal to an off-site facility for additional processing and reuse.

Accumulation and storage of LCGE plant materials in excess of one year constitutes disposal of the wastes under DEP's municipal waste regulations and a permit would be required. In certain instances, the Department may approve a longer period in writing, prior to the end of one year of storage (refer to Municipal Waste Regulation Subchapter 285.113 – Duration of storage)

This BMP manual does not prescribe limits on stockpile height for on-site operations; however, their dimensions should be based on several considerations. Storage of LCGE materials for extended periods may foster spontaneous combustion and fire in a larger pile, especially if the pile is not turned or aerated periodically. The potential for spontaneous combustion will increase as the stockpile expands. Although long-term storage is not routine due to the nature of on-site operations, operators anticipating accumulation and/or storage of materials in larger stockpiles for longer than sixty days should consider implementing these practices to reduce hot spots.

Tree trunks, roots, brush, stumps, vegetative materials, rocks, and other grubbing and excavation materials may be left on the site as part of an officially approved wildlife habitat enhancement practice or plan. These materials, when approved by the Pennsylvania Game Commission, may be used as a structure for wildlife habitat enhancement, and will not be considered LCGE wastes for the purposes of this manual. Persons, municipalities, or counties interested in utilizing brush piles on-site for wildlife habitat enhancement are required to contact the Pennsylvania Game Commission for additional information and complete requirements

The landowner, or the landowner's authorized agents such as contractors or developers, may conduct limited on-site processing of the LCGE materials, such as sizing, shaping, sorting, grinding, chipping, shredding, and screening, without a permit or permit-by-rule. If non-LCGE materials such as rocks, concrete, etc., are also processed, or if other methods of processing of LCGE materials such as composting (other than homeowner composting) are proposed, DEP should be contacted in regard to general permit or permit-by-rule options.

The Department recommends that LCGE materials not be stored in excessive volumes. Ideally, the materials should be either processed or utilized within a few weeks to minimize potential nuisances, unsightliness, and potential harms from the decompoaition of the plant materials. In addition, the LCGE materials must not be situated in a way that causes adverse impacts and nuisances on adjacent receptors and surrounding environmental media.

On-Site Utilization of Processed Material

The DEP strongly encourages the use of certain alternatives, including re-use and recycling of LCGE materials wherever possible. Accordingly, the DEP limits the management of LCGE plant materials by disposal and prohibits the burning of LCGE materials, except as specified in Chapter 2, Section 2.1 D - Air Pollution and Burning. The LCGE plant materials must be processed (shredded, ground, chipped, etc.) prior to distribution and disposal at the site, except as provided for homeowners. The BMP prohibits the utilization of brush, trunks, stumps, etc., on the site unless they have been processed and disposed as described below, or qualify for the alternate uses as previously described.

Processed materials produced from shredding or chipping of LCGE materials may be placed in the holes formed by stump removal. These materials may also be used to fill in other existing small-scale depressions on the site to bring an area to grade, or used for landscaping. Utilization of processed LCGE materials in the above manners is considered an acceptable on-site disposal option. However, the processed or unprocessed LCGE materials may not be used to fill in larger-scale, low-lying areas and depressions on the site, or areas where future building or construction activities would occur. This would include ravines, valleys, excavated areas, etc. These limitations may also be subject to the siting restrictions related to wetlands and surface waters. Pits or holes may not be excavated in order to bury LCGE materials, and mounds or permanent piles of materials, which raise the prevailing grade of the land, may not be constructed. This restriction does not apply for processed LCGE material used as a berm, as part of a site run-on or run-off control measure.

LCGE materials should not be accepted from outside the property. Within the property boundary, the volume of shredded or chipped material used to bring an area to grade or spread in an area must not exceed the original volume of LCGE material generated from that area (except for

premises of a structure occupied solely as a dwelling by two families or less). If processed stumps and other LCGE materials are disposed on site, it must be disposed in the same general area of the site where the land-clearing activity occurred and must not be concentrated in a corner of the site. The processed material may not be situated in a way that causes adverse impacts and nuisances on adjacent receptors and surrounding environmental media.

Siting Restrictions and Isolation Distances

On-site operations must be managed in an environmentally responsible manner. Although specific isolation distances for stockpiles, disposal areas, etc., are not prescribed, owing to the duration and operational dynamics of these operations, they may not be situated in a way that cause adverse impacts and nuisances on adjacent receptors and surrounding environmental media. These factors must be considered when stockpiles, disposal areas and other features are positioned relative to property boundaries, floodplains, surface waters, water sources, occupied dwellings, etc.

Burning of LCGE Plant Materials

LCGE materials may not be sent off-site for burning, unless the materials will be burned for energy recovery.

Run-on and Run-off Controls

Run-off from these sites must be minimized to control such nuisances and pollution. In addition, on-site owners and operators must comply with the erosion and sediment control requirements in 25 Pa. Code, Chapter 102.

OFF-SITE TEMPORARY STORAGE AND PROCESSING OF LCGE PLANT MATERIALS

Introduction

- **Only clean, untreated wood from pallets or wood packing crates is accepted, free of glues, resins, adhesives, paints and other additives.**
- **Processing of this wood is limited to the same processing as occurs with LCGE material, with the exception to separation/removal of nails and other metal fastening agents.**
- **Pallets must be actively used in the production of a finished product, and my neither be disposed nor accumulated speculatively, as defined in the DEP's Residual Waste Regulations, Section 287.1 - Definitions.**

For a LCGE material storage and processing facility becoming operational after the effective date of this manual, to operate under the provisions of this manual, the appropriate DEP Regional Office must be notified in writing, at least thirty (30) days prior to initiation of activities at the site. Additionally, operators of such facility must submit the following Forms and information, specified in items #1 through #11 below. Sites with unresolved compliance problems do not qualify to operate

2. Unless the operator owns the property, a completed Form E - Contractual Consent of Landowner should be submitted. This form may be obtained from the Department or from the above DEP web site.

The term "off-site", as used in this manual, refers to activities that occur at a site where LCGE plant materials are accepted for processing, or temporary storage prior to and following processing. The incoming LCGE materials were generated at another site (an "on-site" location, as previously defined), and may be accepted into the off-site facility as unprocessed or semi-processed (ground, shredded, chipped, etc.) plant material. The BMP presented in this chapter applies to storage prior to and following processing, and the actual processing, of these LCGE materials.

As defined in the Municipal Waste Regulations (Section 271.1 - Definitions), the term *facility* includes "land, structures and other appurtenances or improvements where municipal waste disposal, processing or beneficial use is permitted or takes place". While an off-site LCGE *facility* is not restricted to an acreage limit, **actual *storage and processing operation areas within the facility* are limited to twenty-five (25) acres or less to qualify for using this BMP manual.**

If a LCGE material storage and processing area(s) exceeds 25 acres, the owner/operator must obtain either a general or an individual permit from DEP before initiating any operation. Note that office buildings, equipment storage areas, etc as well as any storage areas of packaged product (e.g. 50 Lb. bags of shredded mulch ready for sale/use) are not to be included as part of the 25-acre area.

Some off-site facilities currently accept clean pallets, and lesser quantities of wood packing crates for grinding in addition to LCGE materials. This material is used as a feedstock component with LCGE materials in the production of a finished product, e.g. 60-70% LCGE material blended with 30-40% ground pallet material, or, due to its physical characteristics, as a separate finished product. This practice falls within the provisions of this BMP manual only if the following apply:

- **A coproduct determination has been made for these materials, as defined under Section 287.7 of the DEP's Residual Waste Regulations.**

Any processing of the LCGE materials other than sizing, shaping, sorting, grinding, chipping, shredding and screening may require a permit. A general or an individual permit must be obtained from the DEP if mixing with any other waste except wood as defined in this BMP. Contact the DEP's Regional Office for further information.

Notification and Recordkeeping Requirements

under the provisions of this manual, unless written Department approval for the proposed facility areas and activities has been obtained.

1. A completed General Information Form (GIF). The GIF may be obtained from the Department or from the following DEP web site.
   http://www.dep.state.pa.us/dep/efacts/departmentpermits.htm
3. A drawing showing the relationship of the storage and/or processing areas to the facility and adjacent property boundaries, surface water management controls, access roads/controls and any of the applicable manual setback distances.

4. Hours and days of facility operation.

5. Type of processing, proposed end use and proposed turnaround time for the raw and processed materials.

6 Identification of the host municipality and county, and phone numbers for the local police and fire department.

7. Nuisance and fire control measures including available sources of water.

8. A plan that addresses the potential for both dissolved and particulate-contaminated run-off. This may include some form of filtering system and/or plans for potential aeration of impoundments.

9. A Preparedness and Prevention Control Plan (PPC). The PPC should be based on the latest plan guidelines (refer to Section 3.8.A – Fire and Emergency Plan for further information).

10. Approximate amount of raw and processed material to be managed at the site.

11. Total area and location of the processing and storage facility, including directions to the facility from a nearby highway intersection or town.

For an *existing* LCGE material storage and processing facility to qualify for operation under the provisions of this manual, the Department must be notified, in writing. within 90 days of final publication of this manual. The notification must include the Forms and information, specified in items #1 through #11 above.

Records need to be maintained to identify the volume of LCGE received and the volume of finished product shipped from the site, on daily basis. Daily records should also include the dates of raw and/or processed material delivery, material processing, and when raw and/or processed materials are rotated, turned and/or aerated, etc. This information is not required to be reported to DEP, but must be maintained for at least three (3) years after the final date processed material is shipped from the site. The records should be available to DEP inspectors at the site upon request. In addition, records must also be provided to DEP Regional Office for review if requested.

Access Control Measures

All facilities must indicate, and legibly display, both the days and hours the facility is in operation, and the hours that LCGE plant material will be accepted at the site.

Appropriate measures to restrict site access are required to discourage unauthorized site entry, prevent illegal dumping of other materials, and decrease the risk of fire, nuisances or personal injury.

LCGE material storage and processing facilities located in populated areas, including residential and commercial units on nearby or adjacent properties should use perimeter fencing and gates across road entrances to control access. If an operator or security guard is present at the site at all times, the fencing and gates may not be required. Where required, the fencing and gate(s) must be at least six (6) feet in height. Durable, weather-resistant signs must be posted at the gate and around the perimeter fencing to indicate "Danger - Do Not Enter", "No Trespassing" or similar language, to make it clear that the fencing is intended to protect individuals from potential hazards at the site. If the site is located in a more remote area, then gates with posted signs may be sufficient, unless local requirements specify fencing or other additional measures. In any case, the site owner and/or operator is responsible for site security and maintenance, to prevent illegal dumping, injury, fire or other unwanted occurrences.

If the site will be unattended, gates controlling access to the site must be locked; however, access must be provided to emergency personnel and vehicles at all times. This entails planning and coordination with area emergency response authorities.

Waste Types

The BMP applies only to LCGE plant materials. If a facility will be accepting waste types other than the LCGE, the owner and/or operator must submit an application for either an individual or a general permit prior to conducting any site operations. An exception is provided for clean wood from pallets and packing crates used as a component in a finished product. Use of this material is subject to the provisions and restrictions incorporated herein.

Plant material delivered to a facility must be inspected before accepting these materials to prevent receipt of unauthorized components. Unauthorized materials include, but are not limited to, yard waste (leaves, grass clippings, garden residue, tree trimmings, chipped shrubbery and other related vegetative materials); wood from construction/demolition projects or industry; all type of plastics (bags, containers, etc.); pallets, particle boards, etc. (processed or unprocessed); and concrete, rocks, bricks, etc. Material loads of any type, which exhibit evidence of contamination or contain unusual odors, must be rejected by the facility. In these later cases, the facility owner or operator must notify the DEP.

Material must also be inspected and pre-screened prior to processing. Any unauthorized material mixed with the LCGE plant material must be separated and removed from the site within one (1) week.

Siting Restrictions and Isolation Distances

The following restrictions and isolation distances listed below apply to new off-site LCGE facilities. For existing facilities, the DEP Regional Office will evaluate the applicability of these restrictions and isolation distances on a case-by-case basis.

Wetlands

Off-site processing and storage areas must be located at least 100 feet from a wetland other than an exceptional value wetland and at least 300 feet from an exceptional value wetland (as defined in §105.17 and §281.202).

Floodplains

Off-site processing and storage areas must not be located in the 100-year floodplain of the waters of this Commonwealth, unless it is demonstrated that the facility will be protected during flooding.

Property Boundaries

Off-site processing and storage areas must be located at least 50 feet from all property boundaries, unless the current owner of the adjacent property provides a written waiver consenting to a lesser distance.

Perennial Streams

Off-site processing and storage areas must be located at least 100 feet from a perennial stream. No adverse impacts to the perennial stream or other surface waters may occur.

Occupied Dwellings

Off-site processing and storage areas must be located at least 300 feet from an occupied dwelling unless the owner provides a written waiver consenting to a lesser distance.

School, Park or Playground

Off-site processing and storage areas must be at least 300 yards from a school, park or playground, unless the owner provides a written waiver consenting to a lesser distance.

Water Table

Off-site processing and storage areas may not be in contact with the seasonal high water table or a perched water table.

Water Source

Off-site processing and storage areas may not be within 1/4 mile upgradient and within 300 feet downgradient of a public or private water source.

Storage and Processing of LCGE Materials

Processing and storage of LCGE material must be performed on a prepared surface area to prevent leachate infiltration. Leachate is considered a "wastewater" and is required to be recycled or collected, treated and properly managed. An NPDES permit is required if the treated leachate is discharged into waters of the Commonwealth. The surface area should be prepared to facilitate site operations and must be accessible in all weather conditions. LCGE material may be stored at the site using stockpiles and/or windrows prior to processing.

If the windrows consist of raw plant material, the material should be processed within 60 days of the acceptance date. If the raw windrow material will be stored for greater than 60 days, the material must be rotated, turned and/or aerated within 60 days of the acceptance date, to help prevent hot spots and the risk of spontaneous combustion, as well as minimize nuisance odors and insect infestations. This "mixing" must be repeated at a minimum, every 60 days up until the raw material is processed.

LCGE material may be managed and stored in the form of a stockpile, extended stockpile or windrow. Size limitations are imponant factors in the prevention of, and in the response to, fires that may occur in the stockpile or windrow. This is especially true with raw material. Heterogeneous conditions in a raw material stockpile or windrow contribute to an increased risk of spontaneous combustion, compared to those containing processed product. Due to the fire potential, it is critical that t raw LCGE material be processed within 60 days of the acceptance date, or be rotated, turned and/or aerated within 60 days, and every 60 days thereafter, until the material is processed.

Single-shredded material in a pile, in turn, has a significantly higher potential for spontaneous combustion (SC) than final product (double-shredded and higher). This is due to the particle size of the single-shredded material normally over four (4) inches long) and the air distribution level within the pile. The air distribution level within a pile of single-shredded LCGE material generally does not allow sufficient air circulation to dissipate the heat, yet is not deficient enough to prevent SC. Single-shredded plant material should be turned, mixed, aerated and sprayed with water, preferably once a week, to prevent SC if the material will not be processed into its final product size within this time frame. Single-shredded material is often processed into a final product size while adding/spraying water to ensure proper and uniform moisture distribution throughout the pile and prevent spontaneous combustion.

LCGE materials that have undergone final processing often are stockpiled at the time of processing where they continue to undergo additional composting into the final product. If processing is properly implemented, the material will exhibit a uniform moisture content and consist of a relatively homogeneous particle size. Adding/spraying water on the LCGE material as it undergoes processing, as mentioned above, is one preferred method to ensure proper moisture content and its uniform distribution throughout he LCGE stockpile. This method is more efficient than adding water to the top of a stockpile after the material has been processed, since this later method may selectively channel water and not achieve uniform moisture distribution. Some operators also process LCGE material during rainy conditions, which also helps to evenly distribute moisture. The inconsistencies inherent to rainfall, however, suggest spraying water should serve as the primary method of adding moisture to the material. Although this final processed material may still generate temperatures of 150□F to 160□F, the uniform moisture distribution and consistency of the material will hinder the development of the higher temperatures common to raw and partially processed stockpiles, and subsequently should pose a lower risk of fires resulting from internal spontaneous combustion.

Stockpiles and windrows of processed, finished product should still be monitored for signs of hot spots and nuisance conditions. Turning/mixing/aeration of this material, and adding water when necessary, is also recommended practice. This helps ensure uniform moisture content and eliminates the precursors of spontaneous combustion. This practice is especially recommended if water was not previously added at the time of final processing. This mixing should be performed every sixty (60) days until the material leaves the site for its intended application. Temperatures in the pile should also be monitored using a heat detection device with a long probe such as pyromoter at several locations around the stockpile.

After final processing, the LCGE material may be stored at the off-site facility for up to one year, as long as the material does not impact public health and safety, cause nuisances or result in environmental degradation. Storage for periods greater than one year constitutes disposal, as defined by the DEP's Municipal Waste Regulations, and is prohibited unless the Department has specifically approved a longer period in writing (see Chapter 285.113 - Duration of Storage). An individual or a general permit

may also be required if the one-year period will be exceeded.

The following table lists the applicable maximum dimensions of the stockpiles or windrows of raw, partially processed and final product to limit the risk of fire and other unwanted impacts from these structures.

Stockpile and Windrow Size Limitations

	Raw LCGE Material (ft)	Partially Processed (Single Shredded) (ft)	Double/Final Shredded (ft)
Windrow Height	12	12	20
Windrow Width	30	40	50
Stockpile Height	20	20	25
Stockpile Width	50	50	60

For final product stockpiles and windrows, the DEP may consider certain exceptions to these dimensions on a case-by-case basis. Operators maintaining stockpiles and/or windrows exceeding these dimensions, or anticipating such structures, must demonstrate, through the Notification requirements, that adequate fire control measures, water sources, equipment and monitoring provisions exist to address any adverse conditions. This requirement does not relieve an operator of similarly addressing fire and nuisance control measures for stockpiles and windrows within the above dimensions; rather, it requires additional safeguards inherent to the operation and storage of larger piles and windrows.

A "first-in/first-out" approach for managing plant materials is required to process and remove the material component from the facility.

Run-on and Run-off Controls

Operations at a LCGE facility must not cause or allow a point or non-point source pollution discharge to any surface waters of the Commonwealth. Also, collection and storage of run-off from a pile or windrow must comply with the Municipal Waste Regulations in 25 Pa Code, Chapter 285.

Controlling Run-on

Site run-on must be controlled in order to minimize both leachate generation and erosion and sedimentation. This may be accomplished by diverting storm water flow around the off-site LCGE plant material processing and storage facility. Another technique is to create earthen berms, or protective hills formed with earth around the base of the piles.

Controlling Run-off

On-site storm water run-off must be directed to either a properly sized vegetated filter area for treatment, or a properly sized temporary storage impoundment or tank for later reuse, recycle, or disposal. The run-off control measures may require some form of filtering system, potential aeration of impoundments, etc. A storm water discharge permit may be required before the run-off is discharged into surface waters of the Commonwealth. For more information on managing run-off, contact the appropriate County Conservation District and DEP Regional Offices for further assistance.

In addition, an adequate Erosion and Sedimentation (E&S) Control Plan must be prepared and implemented, if the off-site storage and processing facility involves an earth disturbance area of 5,000 square feet or greater. The E&S plan should be retained at the site and must be available to the Department for review and inspection. All best management practice components of the plan should be maintained. Also, it must be determined whether the site requires a permit under the National Pollutant Discharge Elimination System (NPDES) program for the discharge of storm water from a construction site. An NPDES permit is required if the LCGE material site involves an earth disturbance.

Access Roads

Access roads must be constructed in a manner that prevents erosion and sedimentation run-off to streams. Access roads crossing any streams and wetlands must use bridges, culverts, or similar structures. The access roads should have a drainage system compatible with the natural drainage system of the area. Also, access roads must be surfaced with a material suitable for dust and erosion control and maintained accordingly.

Fire Prevention Requirements

Fire control objectives should be to keep the processed materials homogenous (to prevent dry or wet pockets) and fairly moist, avoid insulating conditions, and promote air movement through the pile to remove heat faster than it is generated.

Conditions Contributing to Spontaneous Combustion (SC)

The following conditions may contribute to spontaneous combustion in LCGE materials:

- The key conditions that contribute to spontaneous combustion in LCGE stockpiles include biological activity, relatively dry materials or dry pockets of material, large insulated piles, limited airflow, short circuiting of airflow (creating a pocket), non-uniform materials, poor moisture distribution, difficulty in knowing temperatures throughout a pile, and a lapse of oversight in monitoring. These conditions should carefully be monitored in curing and storage areas.
- The critical moisture range that supports SC is roughly 20 to 45 percent. Above 45 percent, there is enough moisture available for evaporation to hold the temperature down. In small or well-ventilated piles, cooling occurs even at low moisture levels. In a large pile with moist materials, evaporation helps keep the temperature at reasonable levels, at least as long as moisture is available to evaporate. However, the combination of low moisture, large piles and little air exchange readily contributes to SC.

  Below 20 percent, there is not enough moisture to sustain the biological activity that initiates the temperature rise.

- In an active composting system, the possibility of SC increases over time because the compost dries. Adding water reduces this possibility. However, dry pockets may exist because it is difficult to evenly distribute added water. It is difficult to achieve uniform moisture in large piles without agitating or turning the material.
- Pile size is an important factor in SC. Large piles slow both heat loss and air movement. Heat generation is determined by volume, while heat loss is mostly determined by surface area. As a pile grows in size, there is less surface area per unit volume, so more of the generated heat is retained and the temperature subsequently increases.
- Large piles are difficult to monitor for signs of hot spots. Large, undisturbed piles of partially dry, decomposing materials pose the
- The most important consideration in preventing fire during mulch production is to suppress the amount of this biological activity in the pile. This primarily means limiting the amount of green vegetation in a pile or ensuring that the green vegetation in a pile has dried out before adding more raw materials to it. This also indicates the importance of maintaining a consistent blend of material in the stockpile to reduce pockets in the interior of the pile, which serve as a source area for biological heating and potential spontaneous combustion.
- A method for preventing fires is a layering technique, which builds the height of a pile slowly rather than all at once. If the materials in a pile are allowed to dry, the potential for SC is reduced.
- In a heterogeneous stockpile, there is an intermixture of dry and damp materials, a condition favorable to differential heating of the material. The damper pockets (especially those within the critical moisture range) generate heat due to the biological/thermophilic activity. Nearby dryer areas may then begin to smolder. Therefore, the potential for spontaneous combustion will be reduced as the homogeneity of the stockpile material increases.
- When receiving raw LCGE materials at the facility, they should be separated into brush, stumps, roots, etc., before storage prior to processing and/or aging. This will help to homogenize the individual piles and reduce the risk of fires.
- Moisture content of the LCGE material is also a critical factor in a spontaneous fire. If the material is very wet, any rise in temperature is offset by evaporation. If the material is too dry, the biological action is inhibited and heat generation is minimized. It is a self-regulating process. In either case, a spontaneous fire would be unlikely. However, if the moisture content is between 20 to 45 percent, the risk of SC will increase.
- Mixing the raw materials by shredding, before storing for aging will help homogenize the materials. This in turn helps reduce hot spots, increases aeration to dissipate heat, and decreases the chance of spontaneous combustion. Raw LCGE materials should be processed within 60 days from the date of acceptance at the site, or be rotated, turned, and/or aerated to prevent hot spots every 60 days until procesing occurs. Stockpiles of processed or semi-processed materials must also be rotated, turned, and aerated as often as necessary, depending on the type and size of the material, to prevent hot spots. Water should be sprayed on the material during the shredding process to keep them cool and insure uniform moisture distribution. The shredded material should also occasionally be rotated, turned, aerated and sprayed with water to dissipate excessive internal heat. Water spraying also assists with the aging of the mulch to produce a desirable end product. Rotating, turning and aerating may be performed during a rainfall to supplement this process.
- Fine plant materials, such as grass and sawdust, should not be added to stockpiles of bulk LCGE plant material. Heavy machinery should not be operated on top of the stockpile. This will avoid compaction and decrease the risk of heat build-up.
- If a layer of snow or ice accumulates on the pile, remove as much as practical to allow heat to dissipate. Pile temperature should be monitored, and stockpiles routinely inspected for signs of smell, smoke and unusual appearance such as fissures of steam and wet spots on the pile surface.

greatest risks. With diligent monitoring, however, the beginnings of a fire can be detected and reversed. Operators should check for hot spots by looking for evidence of aeration vents in piles and then regularly measure the temperature near those vents. Fissures of steam and wet spots on the pile surface indicate likely vent locations.

Stockpile Material Management and Fire Prevention

Many of the best management practices described in this section will reduce the risk of fire at an off-site land-clearing facility and help to control a fire if one starts. These fire control measures are listed below:

- Smoking and fire must not be permitted around the plant material storage and processing area. Use of heavy equipment around stockpiles, or maintenance/repair of equipment using methods that may accidentally contribute to ignition of materials (such as welding), should be restricted to the earlier part of a work shift (e.g. before lunch), to allow any smoldering material to be discovered and properly handled during the same work shift and before the site is left unattended for an extended period..

- All materials delivered to the storage and processing area must be inspected. Loads that contain unauthorized materials, which could contaminate the stockpiles, increase the chance of fire, and decrease the quality and value of end-product produced from the LCGE material, must be rejected.

- Raw LCGE materials should be processed within 60 days from the date of acceptance at the site, or be rotated, turned, and/or aerated to prevent hot spots every 60 days until processing occurs.

- Stockpiles of processed or semi-processed materials must be rotated, turned, and aerated as often as necessary, depending on the type and size of the material, to prevent hot spots.

- The height of piles and windrows must be controlled (see previous table). A minimum of ten (10) foot access area must be maintained between each pile and windrow, respectively, unless DEP approves an alternate distance in writing.

- Limiting particle size in processed materials to less than four (4) inches significantly reduces void spaces for air, which in turn may diminish the risk of spontaneous combustion.

- A mulch processing facility should not be located in an area prone to high wind. A facility in a wind prone area should be cautioned to place the stockpile in a direction to prevent spread of fire by the wind into the pile or to other areas of the site, if one starts. It is advised that the top of the pile be dome-shaped to reduce the chance of fire by wind.

Monitoring

LCGE storage piles must be monitored to detect excessive heat build-up and to prevent spontaneous combustion. As a result, monitoring pile temperature through visual observation and by noting the pile's odor is often the most effective and practical method.

Personnel must be aware that an odor of smoke is often the first sign of a developing hot spot. If this occurs, they must take action immediately, and should not wait until smoke or flame is visible.

Fires and Related Emergency Response

Fire and Emergency Plan

The Department's Municipal Waste Regulations require all applicable industrial and commercial facilities having the potential to cause pollution of air, land or water, or endanger public health and safety, to maintain a Preparedness, Prevention and Contingency Plan (PPC).

This requirement extends to off-site LCGE facilities covered under the provisions of this manual.

Fire Fighting

Facility personnel must be knowledgeable on the characteristics of LCGE materials and know how to treat the processed or unprocessed materials in case they catch fire.

Front loaders, excavators, dozers and high lifts are some examples of fire-fighting equipment that may be used at a LCGE facility. Reliable water sources include fire hydrants, tanker trucks, water wells, impoundments, lakes or other surface waters, etc. Smaller-scale operators may find a 5,000-gallon tanker truck with backup from a reliable water supply source and re-circulating pond is sufficient. In any case, all operations must have access to an adequate water supply and application systems for their facility for any fire emergency that may occur. The adequacies of water supply sources and application systems depend on the maximum volume of processed and unprocessed LCGE materials residing at the site. These adequacies must be planned and determined by engineering estimates.

Fire Fighting Readiness

An effective and timely response to a fire or other emergency at a LCGE processing operation site will rely on proper coordination with local emergency response personnel/authorities. This will ensure these responders have access to the facility during an emergency situation if the gates are locked and/or the site is unattended. The DEP requires that facility owners and operators arrange an on-site meeting with these authorities, to provide them with information needed during an actual emergency response.

All stockpiles and windrows must be accessible to fire-fighting equipment. As previously indicated, at least ten (10) feet of access space must be maintained between stockpiles and windrows, respectively, to facilitate an emergency response, unless the Department has approved an alternate distance, in writing. Access roads, paths, etc. at the site must be capable of supporting the fire-fighting vehicles to within 150 feet of the storage and processing areas. Also, fire-fighting equipment must have unobstructed vehicle clearances of at least fourteen (14) feet.

Additional fire fighting BMPs are included in the DEP Manual.

Closure

- When storage and processing operations at the LCGE facility have ceased, **the owner and/or operator must close the site properly**, and at a minimum, implement the following:

- Except for a limited amount of mulch utilized for the landscaping purposes at the site, all LCGE materials must be removed from the site. Properly closing access roads, grading the storage and processing areas to prevent ponding and erosion, and establishing a vegetative cover must be implemented.

- Disposal of any remaining processed or unprocessed material at the site is prohibited.

- **The Department must be notified when closure is completed. The Department will then inspect the site to verify that the facility has been properly closed, without any outstanding nuisance or odor problems.**

RT recommends that all Contractors and Companies involved in land clearing, land development wood and mulch processing and tree limb cutting carefully review their operations and determine what is needed to get in compliance with these new BMP provisions. Notice must be given to DEP and appropriate plans prepared to comply with this Manual by late May 2003. Many Companies, who also recycle concrete and asphalt, may find it more efficient to operate under an individual General Beneficial Use Permit. Call Gary Brown at (800) 725-0593 Ext. 34 for more information.

ATTACHMENT 10
INFORMATION ON MANAGEMENT OF ASPHALT AND RECLAIMED ASPHALT PAVEMENT

- PAPA Letter
- Asphalt Materials and Classification
- General Beneficial Use Permits
- DEP Industry-Wide Coproduct Determination #1
- Offsite Processing and Storage of RAP – Contingency Plan
- Beneficial Use – Annual Report to DEP

Pennsylvania Asphalt Pavement Association
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Email: cgoodhart@pa-asphalt.org • www.pa-asphalt.org

Charles C. Goodhart
Executive Director

January 13, 2017

To Whom It May Concern:

The Pennsylvania Asphalt Pavement Association (PAPA) represents companies who produce asphalt products, and pave highways, within the Commonwealth of Pennsylvania. As you may be aware, asphalt is the most recycled material in the United States. The Pennsylvania Asphalt Pavement Association has worked with both the Pennsylvania Department of Environmental Protection and Pennsylvania Department of Transportation to clearly define what management methods are allowed under Pennsylvania environmental law and regulations for recycled asphalt products.

The simplest approach to managing millings, Reclaimed Asphalt Pavement (RAP), is to return the material to the asphalt plant where it is recycled back into hot or warm mix asphalt. This activity does not require a permit. However, when RAP is not directly recycled, it is subject to Pennsylvania's Solid Waste Management Act and regulations. RAP is considered waste and cannot be stockpiled, used as fill or for any other purpose, without following Pennsylvania Department of Environmental Protection requirements. Those who manage RAP by placing it in piles, spreading it on land, or using it as fill, which constitutes illegal disposal, may be subject to fines, for as long as the waste remains in place. Additional penalties can apply related to transportation, runoff, etc.

The DEP does allow some beneficial uses of RAP, but only if those conducting the beneficial uses implement procedures to prevent wind and water dispersal and only if the RAP is not abandoned or illegally disposed of. These uses can be considered approved under DEP's coproduct determination. Where contractors mix and crush asphalt with concrete or other materials, operating under a General Beneficial Use Permit is recommended.

If you are a Municipal Official, Property Owner, Engineer or other person involved in contracting for or directing asphalt pavement milling or reconstruction operations, it is illegal for you to direct any Contractor to manage materials in a manner which is inconsistent with Pennsylvania's Solid Waste management Act and regulations issued thereunder. We are advising our members that wherever they are directed to, or actually required by contract to manage materials in a stockpile by an entity who does not follow DEP Coproduct or General Beneficial Use Permit requirements, that the Contractor should obtain an indemnification, and hold harmless agreement from that entity. Parties who direct Contractors to not follow Pennsylvania's Solid Waste Management Act and regulations should also understand that they could incur personal liability in the event that Pennsylvania DEP finds that illegal stockpiling of waste or illegal disposal of waste has occurred.

Where Contractors process RAP at the jobsite, a Preparedness Prevention and Contingency Plan should be prepared, to include a narrative attachment on stockpiling and stormwater management measures. If required, an air permit or Request for Determination should be completed where needed to assure environmentally appropriate material processing.

Sincerely,

Charles C. Goodhart
Executive Director

CCG:grb

ASPHALT MATERIALS IN PENNSYLVANIA

A SUMMARY

MATERIAL	CLASSIFICATION
Hot and Warm Mix Asphalt – Used	Product
Hot and Warm Mix Asphalt – Unused	Waste Material – Can be Recycled through Plant
Broken Used Asphalt	Clean Fill
RAP/Millings	Coproduct/can also be Beneficially Reused Under General Beneficial Use Permit/Can be Recycled through Hot or Warm Mix Asphalt Plant with no Permit
RAP Piles	Follow BMP Recommendations
RAP Offsite Processing	Prepare PPC Plan; Follow BMP Recommendations

RAP General Beneficial Use Permits Available for Use as of 11/8/16

WMGM019 (pdf)	Processing and beneficial use of concrete, asphalt, hardwood timber as mulch and uncontaminated soil as construction material, and topsoil for commercial purposes.
WMGM022 (pdf)	Processing and beneficial use of waste concrete, brick, aggregate previously used as sub-grade or sub-base material in roadway construction, shot rock, roof ballast, and waste asphalt to produce a roadway or parking lot construction material, and/or substitute for PennDOT approved aggregate; and Processing and beneficial use of timber waste (i.e., tree stumps, limbs, clean wood, untreated and unpainted lumber, shrubs, clean pallets, clean skids and packing crates), and leaf and yard waste (i.e., source segregated leaf and yard waste, grass clippings) to produce bedding material for livestock.
WMGM024 (pdf)	Processing and beneficial use of concrete and asphalt waste as: an aggregate, sub-grade or sub-base material for roadway construction; cold-mix or hot-mix construction material for compacted roadway applications covered with a pavement; or construction material for compacted roadway shoulder applications covered with a sealer.
WMGM035 (pdf)	1. Crushing, grinding, and screening of uncontaminated waste concrete, unpainted brick, unpainted block, waste asphalt and reclaimed asphalt pavement (RAP) from roadways, curbs, sidewalks for beneficial use as: (a) An aggregate, a sub-grade or a sub-base material for roadway or parking lot construction; (b) A construction material for compacted roadway shoulder applications covered with a sealer (i.e., a thin bituminous coating intended to limit the reclaimed asphalt pavement materials from washing and leaching); and/or (c) Blending with other virgin aggregate as a roadway sub-base for roadway construction use. 2. Shredding, grinding and screening of timber waste (i.e., tree stumps, limbs, roots, rubbing materials, and shrubs) for beneficial use as: (a) a mulch material for landscaping purposes; (b) wholesale purposes; and/or (c) further processing off-site in the production of mulch material.
WMGR101 (pdf)	Processing and beneficial use of steel slag, iron slag, and refractory bricks that were co-disposed with slag, reclaimed asphalt pavement materials (RAP) in quantities greater than 10 cubic yards and uncontaminated brick, block and concrete from sidewalk and highway projects as a construction material.
WMGR138 (pdf)	a. Processing of yard waste for beneficial use as finished mulch for landscaping purposes. b. Processing of land clearing and grubbing waste for beneficial use as compost for landscaping purposes. c. Processing by crushing, grinding, and screening concrete and asphalt waste for beneficial use as a construction material in roadway and parking area construction. d. Processing, including sorting and screening only, for recycling of residential construction and demolition waste including clean wood, gypsum board, stone, brick, concrete block, cardboard, particle board, drywall, scrap metal, plastic waste and glass. e. Processing of pre-consumer (i.e., imperfections, tabs, trimming scraps, etc. generated in the manufacturing of new asphalt shingles and damaged, unused shingles) and post-consumer (tear-offs) asphalt shingles for beneficial use when added to materials in Condition A (c) above. The processing is limited to sorting, screening, grinding and magnetic removal of ferrous metal.

Industry-Wide Coproduct #1

RECLAIMED ASPHALT PAVEMENT (RAP) INDUSTRY-WIDE COPRODUCT DETERMINATION

Note

Prior to operation under this Industry-Wide Coproduct Determination, the user of the RAP or mixtures of RAP and clean fill from the milling of edge of roadway shoulder as a coproduct must be in compliance with the requirements and limitations that are specified in this document. The Department of Environmental Protection (Department) reserves the right to inspect all areas where RAP or mixtures of RAP and clean fill from the milling of edge of roadway shoulder will be used or stored under this Industry-Wide Coproduct Determination.

Definition

For the purpose of this Industry-Wide Coproduct Determination and in accordance with 25 Pa Code, Chapter 287.9 (relating to industry-wide coproduct determinations), RAP is formed of small particles, typically up to less than an inch in size, of bitumen and inorganic materials produced by the mechanical grinding of bituminous pavement surfaces that have not been subject to a spill or release of regulated substances or mixed with other solid waste. RAP is not the equivalent of used asphalt, which is typically in the form of chunks, typically greater than one inch in size, and thus is not considered to be clean fill under the Department's Management of Fill Policy.

Determination

The Department has determined on an industry-wide basis that RAP, including mixtures of RAP and clean fill from the milling of the edge of roadway shoulders, is a coproduct in accordance with 25 Pa Code, Chapter 287.9 when used as follows:

a. As an aggregate, a sub-grade or a sub-base material for roadway construction, when used alone or blended with other materials in a manner that complies with PennDOT Specifications as outlined in Publication #408 for roadway construction directly beneath, and contained by a road surface paved with Portland cement concrete or bituminous pavement;

b. As a construction material for compacted roadway shoulder applications, including compacted shoulder pothole patching material in roadway or driveway apron applications as long as the material is covered with a thin bituminous coating (sealer) prior to the end of the construction season that placement occurred. The bituminous coating must comply with PennDOT Specifications as outlined in Publication #408;

c. As a construction material for compacted shoulder backup applications (the compacted area adjacent to the shoulder);

d. As a construction material to construct or repave needed roadway or vehicle use areas such as parking lots or driveways if such application is performed when the RAP contains enough asphalt or additional binder to keep the material in place after compaction by mechanized rolling;

e. As a hot or cold mix product meeting applicable industry hot or cold mix product specifications;

As a coproduct in accordance with the Department's determination, the use of RAP, including mixtures of RAP and clean fill from the milling of edge of roadway shoulders, shall be managed according to the conditions specified below. The use of RAP includes its transportation, placement, and storage incidental to use.

a. In a manner that complies with the Solid Waste Management Act, 35 P.S. 6018.101 – 6018.1003, the Air Pollution Control Act (35 P.S. §§4001 – 4015), Clean Streams Law (35 P.S. §§691.1 – 691.1001), the residual waste regulations, 25 Pa. Code, Article IX, Chapters 287 – 299 and any other applicable environmental laws and regulations promulgated thereunder;

b. In a manner that does not create a nuisance or is harmful or presents a threat of harm to the public health, safety or the environment.

c. In a manner that prevents wind and water dispersal.

d. In a manner that does not involve storage of RAP for more than two construction seasons prior to use.

Revocation

The Department may revoke its determination that RAP and mixtures of RAP and clean fill from the milling of edge of roadway shoulders are coproducts for the uses specified in this determination if it finds that one or more of the criteria used as a basis for the Department's determination was incorrect, or new information has become available that invalidates the determination.

PROCESSING AND STORAGE OF RAP – CONTINGENCY PLAN

As part of Beneficial Use activities, and under Coproduct provisions, asphalt may be processed by crushing and stockpiling for reuse at or near jobsites. When this occurs, a Contingency Plan incorporating the following elements is to be prepared in advance of the work, and a copy given to the landowner, contractor or contractors involved with a copy kept at the jobsite.

Contingency Plan sections include:

- Site location map
- Site layout map (with Processing location area and Stockpile location area shown)
- Duration of Activity
- Stormwater Best Management Practices – RAP Pile(s)
- Narrative, Inspection Plan and duration of stockpile presence (not to exceed one year)
- Appendix A – Contact Information for:
    - Contractor(s)
    - Landowner
    - Project Sponsor (if applicable)

The Contingency Plan with attachments is to be available upon request by DEP at the time of a site visit.

NOTE: ***Annual Reports are only required under certain General Permits and not under the Industry-wide Coproduct Determination for RAP. If not specified in your General Permit to submit to PA DEP, these reports should be maintained on file and provided to PA DEP upon request.***

[DATE]

Pennsylvania Department of Environmental Protection
Waste Management
[Regional Office Address]

RE: ANNUAL REPORT ON BENEFICIAL USE ACTIVITIES
[ANY TOWN ASPHALT PLANT]

Dear _____:

We are pleased to submit the Annual Report on Beneficial Use Activities for the *[Any Town]*, Pennsylvania Asphalt Plant. Beneficial uses of materials completed in *[reporting year]* include:

	Beneficial Use (Tons/Year)	Stockpile as of 12/31 (Tons)
Asphalt millings (RAP)		
Asphalt Millings (RAP)/Concrete Mixture *[if applicable]*		
Broken Concrete *[if applicable]*		

For the legacy stockpiles present on site and during *[reporting year]*, we sent for beneficial use offsite _____ tons. *[if applicable]*

Please call (___) ___-____if any questions.

Very truly yours,

_____
Asphalt Plant Operator Name

ATTACHMENT 11

INFORMATION ON GENERAL PERMITS

RESIDUAL WASTE PERMITS

PERMITTING IN PENNSYLVANIA

Operators of waste disposal and processing facilities in Pennsylvania must have permits from the Department of Environmental Protection (DEP) to build, operate, expand, and close facilities. Permitted operators must conduct periodic tests (such as waste and water analyses), maintain records and transmit data to DEP (such as types of waste and tonnages received), and operate in compliance with DEP regulations. Permitting enables DEP and the operator to work together to promote waste management goals and protect human health and the environment.

RESIDUAL WASTE/FACILITIES

Pennsylvania industry produces about 38 million tons of solid residual waste annually, and more in liquid form. Waste materials range from substances such as concrete that pose little threat to the environment, to materials such as steel pickle liquor that are near-hazardous. Some residual waste is processed and/or disposed of at commercial landfills, incinerators and agricultural utilization facilities. Most, however, is processed/ disposed of on the site where it is generated; private waste operations conducted by manufacturers or other industries that generate waste are known as captive facilities. All facilities, both commercial and captive, must be permitted.

TYPES OF PERMITS

While the sheer volume of residual wastes presents a challenge to waste management, it is the diversity--the wide range of materials, the methods used to process or dispose of them, and the impact these materials and handling methods could have on the environment and human health--that presents the greater permitting challenge. Permitting must respond to these differences. The basic types of permits are as follows:

1. An **INDIVIDUAL PERMIT** is issued to a specific facility to cover all waste handling operations at that site. No other facility can be covered under it.

2. A **GENERAL PERMIT** is issued for a specific reuse of a specific type of waste. Any other facility in Pennsylvania that performs the same kind of operation can be covered under the same permit.
3. **PERMIT-BY-RULE.** If the operator complies with the regulations, he or she is deemed to have a permit. Generally, permit-by-rule is granted to processing facilities that pose little or no threat to the environment, or to operations already permitted under other environmental laws, such as the state's Clean Streams Act.
4. **NO PERMIT/NO AUTHORIZATION.** This category is comprised of coal ash beneficial use.

INDIVIDUAL PERMITS

A facility must have an individual permit unless it is eligible for a general permit, permit-by-rule, or beneficial use of coal ash. DEP evaluates permit applications and sets operating requirements on a case-by-case basis, taking into consideration such factors as the waste's chemical content, site location, and type of processing.

GENERAL PERMITS

A general permit is issued for a specific reuse of a particular type of waste, such as using fuel-contaminated soil for the manufacture of asphalt. If facility operations comply with the general permit, the operator does not need an individual permit.

DEP may issue a general permit when:

1. the wastes are generated by similar operations and have similar physical and chemical characteristics,
2. the wastes are proposed for similar beneficial use or processing operations, and
3. the operations can be regulated with standard conditions.

An application may be filed by a single applicant for one beneficial use or processing activity, or by a trade association or other organization for many proposed beneficial use or processing activities. There is no limit to the number of facilities or activities that could operate under a single general permit.

If the application contains complete information, DEP will publish notice in the Pennsylvania Bulletin. Operators who wish to be included after the permit is issued may either register or request a determination of applicability, depending upon the terms of the permit:

- **DETERMINATION OF APPLICABILITY.** Some general permits may require a determination of applicability, whereby each operator must apply to operate under the general permit. An example is direct placement of waste on land, including construction material, soil additive, soil substitute, or antiskid material.

- **REGISTRATION.** Some general permits merely require operators to register. Such operations may begin immediately upon registration. An example is the reuse of a waste material as a substitute for a raw material in a manufacturing process, which presents few environmental and health risks.

Before operating under the permit, these operators will be required to submit basic information to DEP showing how the waste and the activity fit within the general permit.

PERMIT-BY-RULE

A facility that is subject to permit-by-rule does not require an individual permit unless it is creating an environmental or public health problem or violating the conditions of the permit-by-rule.

In general, permit-by-rule is limited to processing facilities that present relatively little environmental risk. Examples are incinerators that are too small to be regulated under the Air Pollution Control Act, beneficial uses approved before July 4, 1992, certain waste oil energy recovery facilities, and captive processing facilities that meet certain requirements.

ATTACHMENT 12
RECLAMATION FILL

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Mining Programs

DOCUMENT NUMBER: 563-2000-301

TITLE: Use of Reclamation Fill at Active Noncoal Sites

EFFECTIVE DATE: December 19, 2015

AUTHORITY: Solid Waste Management Act (35 P.S. §§ 6018.101 *et seq.*), Noncoal Surface Mining Conservation and Reclamation Act (52 P.S. §§ 3301 *et seq.*), Clean Streams Law (35 P.S. §§ 691.1 *et seq.*), Land Recycling and Environmental Remediation Standards Act (35 P.S. §§ 6026.101 *et seq.*), and Sections 1915-A and 1917-A of the Administrative Code (71 P.S. §§ 510-15 and 17).

POLICY: The Department of Environmental Protection (DEP or Department) may permit the use of certain fill materials obtained from an off-site source for use by the operator in the reclamation of active noncoal mine sites if the fill material qualifies as Reclamation Fill in accordance with this guidance, and the use of Reclamation Fill Material is expressly authorized by the mining permit.

PURPOSE: This policy establishes the Department's procedures and standards for using Reclamation Fill for reclamation at active permitted noncoal mine sites.

APPLICABILITY: This policy applies to the use of Reclamation Fill for reclamation purposes at active permitted noncoal mine sites.

DISCLAIMER: The policies and procedures outlined in this guidance document are intended to supplement existing requirements. Nothing in the policies or procedures will affect regulatory requirements.

The policies and procedures herein are not an adjudication or a regulation. There is no intent on the part of the Department to give these rules that weight or deference. This document establishes the framework, within which DEP will exercise its administrative discretion in the future. DEP reserves the discretion to deviate from this policy statement if circumstances warrant.

PAGE LENGTH: 20 pages

DEFINITIONS

Environmental due diligence - Investigative techniques, including, but not limited to, visual property inspections, electronic database searches, review of ownership and use history of property, Sanborn maps, environmental questionnaires, transaction screens, analytical testing, environmental assessments and audits.

Incidental Asphalt - Uncontaminated asphalt that is encountered in small amounts that cannot be readily separated for recycling, or the quantities are so small as to make recycling impractical. Incidental asphalt cannot constitute the bulk of the material (over 50%) in any truck or overall from a source.

Incidental Volumes - Insignificant quantities of reclamation fill that will not alter the reclamation plan or land use. The quantities depend on the size of the operation.

Reclamation Fill - Soil, rock, stone, incidental asphalt, or unpainted brick, block or concrete from construction and demolition activities imported to a site for reclamation purposes, where a demonstration has been made that the material is uncontaminated, non-water-soluble, non-decomposable, inert and recognizable as such. "Uncontaminated" means that the fill material does not contain any of the materials listed below or regulated substances in concentrations exceeding the concentration levels specified in Appendix A. The following materials are specifically excluded from this definition and may not be considered as reclamation fill under any circumstances:

(a) Tile, glass, plaster, pipe, wire, shingles, wallboard or other construction material not in the above definition.

(b) Discarded home or medical items and trash.

(c) Unused asphalt, such as that left over from construction jobs and cleaning up around asphalt plants.

(d) Soil from industrial or commercial sites with known spill events or contaminant storage, sites with underground storage tanks, Act 2 clean-up sites, and superfund sites unless the Department approves use after characterization of the site.

(e) Painted building materials or other materials with rebar or other metal protruding greater than 2 inches.

(f) Materials that test positive for organic vapors.

(g) Fill that may produce public nuisances (for example: objectionable odors) to users of the receiving property or adjacent properties.

(h) Materials that contain free liquids based on visual inspection.

(i) Contaminated materials mixed with uncontaminated material to improve the overall quality.

(j) Materials that exceed the mine site background radiation.

(k) Any other substance that the Department determines may pose an environmental, safety or health risk.

BACKGROUND

On August 7, 2010, the Department's Bureau of Waste Management finalized Technical Guidance Document 258-2182-773, Management of Fill. The Waste Management Technical Guidance Document provides procedures for determining whether a material constitutes "clean fill" or "regulated fill" and for proper management of clean and regulated fill. However, that document expressly *does not apply to mine land reclamation activities subject to a mining permit*. This guidance, Use of Reclamation Fill at Active Noncoal Sites, was prompted by industry requests to standardize a process for importing fill for reclamation use at noncoal quarry sites.

This guidance describes the standard criteria for approving reclamation fill at an active noncoal site, what material is appropriate, for which sites it can be used, and how it may be used. It provides for a default approach that is generally acceptable to the Department for meeting the requirements of Chapter 77, Section 77.126. Many of the guidelines discussed are actively applied under Pennsylvania's noncoal mining program and have successfully prevented pollution and resulted in improved reclamation.

Alternatives to the guidelines herein will be considered by the Department if the methods are as effective as or more effective than the methods described herein. If an applicant chooses to deviate from the guidance, the applicant should contact the Department for approval. Failure to follow these guidelines or to obtain approval for an alternate approach may result in denial of an application to beneficially use reclamation fill or a significant delay in review. All permitting decisions are site-specific and depend on factors such as local geology, hydrologic setting, resources to be protected and reclamation goals. The ultimate decision as to whether an approval is granted for each mine site to incorporate reclamation fill depends on whether the site proposal and the material comply with regulatory requirements. Please note that conforming with the standards of this guidance does not guarantee approval.

A permittee is required to comply with 25 Pa. Code §§ 77.462 and 77.591-77.595 regarding reclamation and the minimum requirements for slopes WITHOUT the use of imported material. Reclamation fill is to be used to enhance the minimum reclamation and can also be used to reclaim pre-act areas that the permittee is not obliged to reclaim to make for an overall improved result for future land uses. Reclamation fill may be considered in order to achieve minimal reclamation requirements in rare cases, particularly with regards to safety, such as to create a safe slope that cannot be achieved by conventional means.

STANDARD CRITERIA FOR APPROVAL

For a noncoal mining permit to be issued, the applicant must demonstrate compliance with all applicable regulatory requirements including the criteria for permit approval as specified in 25 Pa. Code Chapter 77 (in particular, § 77.126). Two specific criteria are pertinent to the reclamation fill process. They are:

1. The applicant has demonstrated that the mining activities can be accomplished as required under the operation and reclamation plan contained in the application.

and

2. The applicant has demonstrated that there is no presumptive evidence of potential pollution of the waters of this Commonwealth.

Noncoal mining permits are issued with approved reclamation plans with a designated post-mining land use (§ 77.462). **The fill placement should be in accordance and consistent with the reclamation plan.** Existing overburden MUST be used from the site for reclamation purposes, not sold. That is, importation of fill material will not be allowed if usable excess overburden is removed from the site (see Final Slopes, § 77.594).

The mining regulations do not address large-scale importation of material to the site to use in reclamation. These facilities are permitted as mines, not as disposal sites. The operator should demonstrate that the imported material can enhance reclamation. That is, under § 77.462(b)(2)(iii)(B)(I)(-d-), the operator must demonstrate that the land will be restored to "a condition of supporting uses equal to or higher and better than the premining uses." Consequently, in cases where the importation of reclamation fill negatively impacts site restoration by extending the reclamation timeline, ideally, the applicant will demonstrate that the use of reclamation fill will likely result in a significant enhancement to the final reclamation grade.

Because mine pits can accommodate large volumes of fill material, the Department considers the cumulative impacts of the use of imported fill, the quality of the materials, and the potential for contamination of nearby groundwater and surface water resources in order to assure compliance with § 77.126. In order to prevent contamination, the site operator must provide assurances, chemical tests, and other evidence as needed to document fill quality, and needs to conduct monitoring adequate to demonstrate ongoing compliance with environmental statutes and Department regulations. The site operator may also be required to update geologic and hydrologic information in order to completely characterize water flow and potential pollution pathways. This may involve additional tests or studies, dependent upon local geological characteristics and water uses.

Because of these criteria, the Department recommends any site operator planning to add reclamation fill as part of the reclamation plan to contact the Department to schedule a meeting to discuss the proposal at least six months in advance of an application submittal to the Department.

STANDARD PROCESS OF APPROVAL

There are two forms of approval for reclamation fill which are dependent upon the volumes of material imported to the site. "Incidental volumes" are minor amounts of material that may be accommodated on site. The larger volume category, "reclamation volumes," is for those amounts that significantly affect onsite reclamation. As such, the approval process for the latter is more involved.

Incidental volumes

To be considered incidental, the amount of material should not exceed 3,000 cubic yards per year per permit site. Small noncoal permit sites (77.108) are limited to no more than 125 tons of material (1 cubic yard is approximately equivalent to 1.8 tons) per year.

Any request for incidental volumes from any source must be made in writing and will, in most instances, be considered a minor permit revision [25 Pa. Code §§ 77.104; 77.141] which does not require public notice unless otherwise determined by the Department. There is no specific application form for this

request. The request should include a description of the source of the material, a demonstration and assurance that the material meets the definition of reclamation fill, volumes to be used, a timetable of use, identification of the area where the material will be placed and how it will be received and placed onsite. A signed affidavit attesting to the requirement that proper environmental due diligence was completed and a signature of approval from the mine site permittee and landowner to accept this material is required [25 Pa. Code §§ 77.126(a)(3); 77.462(b)(2)(iii)(B)(I)(-c-)]. (Form 5600-FM-BMP0478 can be used.)

The material needs to be placed in a manner consistent with the approved reclamation plan and not stored in piles on site for later incorporation or for other uses offsite. It should not be placed below the groundwater table or in standing water. Because of the smaller volumes and placement above the water table, mine sites receiving incidental volumes of reclamation fill will typically be assigned less stringent testing requirements than sites receiving larger quantities of reclamation fill. However, a Source Documentation Record, form 5600-FM-BMP0145, needs to be submitted for each source brought to the site.

Reclamation volumes

Approval to import reclamation fill for an active noncoal mine site has two-parts: a site approval and a source approval. The site approval includes a thorough site characterization and integrated reclamation plan. Much of this information likely exists in the permit files if the permit was recently issued or revised. However, supplemental information may be necessary as part of the reclamation fill request. If site approval is granted, then each source must be approved for use at that site to assure compliance with 25 Pa. Code § 77.126(a)(3). Source approval will, in almost all cases, be a shorter process than the site approval provided all necessary information is submitted by the operator.

Site approval

This is an approval authorized through the noncoal mining permit to allow for reclamation fill to be used at the particular site, and as such, verbal authority or other records such as inspection reports are not acceptable.

1. Use of reclamation fill should be expressly authorized by the mining permit. Reclamation fill will not be authorized under a general permit for mining (25 Pa. Code 77 Subchapter J). Use of reclamation fill will likely not be considered under a new permit application—where mining has not yet occurred—unless the proposed use applies to reclamation of existing abandoned mine lands. Because importation of fill material constitutes a change in the reclamation plan, an existing permit must typically undergo a major permit revision to authorize its use (25 Pa. Code §§ 77.101; 77.103; 77.104). This requires public notice which must also note if the final land use is being changed in accordance with reclamation fill use. [Example: "The approved final land use is being changed from "x" to "y" with this revision."]

2. Landowner consent to import reclamation fill must accompany the request for authorization [25 Pa. Code § 77.462]. See Appendix B.

3. The permittee should demonstrate, to the extent possible, that the use of reclamation fill material will enhance reclamation. This can be accomplished by citing maps, plans and appropriate permit modules (see item 5).

4. An approved groundwater (and possibly surface water) monitoring plan is needed unless the applicant can demonstrate that the material will be placed in such a way that it will not come in contact with groundwater or be subject to offsite runoff that may potentially contaminate surface waters. The sampling plan should include the location of existing or proposed monitoring wells or surface water sampling points, details of wells, sampling schedule and background data collected. For placement below the groundwater table, hydrologic characterization, a groundwater monitoring plan, and demonstrations related to protection of hydrologic balance will be required [25 Pa. Code § 77.457].

5. For an existing permit, all appropriate permit application sections must be updated or completed to reflect the use of the reclamation fill. These sections include modules for the following: erosion and sedimentation plan, hydrology, operations plan, reclamation plan, final land use and vegetation, operations map and reclamation map. Also, cross sections showing intermediate grades and plan for placement must be submitted [25 Pa. Code § 77.141].

As with any major revision, the Department reserves the right to ask for additional information to update the permit information as necessary. This may include engineering assessments demonstrating that the placement of reclamation fill will not adversely impact slope stability.

The applicant should submit a request for use of reclamation fill on the appropriate DEP permit application modules supplemented with maps, plans, reports and addendums to fully characterize the site conditions, reclamation plans, potential pollution, best management practices to be used, timetables and final configurations.

Placement below the groundwater table

To obtain approval for use of a reclamation fill source below the final groundwater elevation, the applicant must provide the following [25 Pa. Code §§ 77.457; 77.126]:

1. Hydrologic characterization of the site and the surrounding area including updating information via the most recent version of permit application modules 7: Geology and 8: Hydrology along with map Exhibits in Module 6, 9 and 18;

2. Groundwater monitoring plan;

3. Demonstration that the placement of material will be done in a way to minimize disturbance to the hydrologic balance [25 Pa. Code § 77.521].

To demonstrate that the use of reclamation fill is not causing pollution, the mine site permittee will be required to submit a groundwater monitoring plan. Wells or surface water sampling points are established in the application and installed prior to commencing placement of reclamation fill. In order to characterize the site, the wells must be properly constructed and finished at the proper depth and locations. Background samples from these points must also be submitted prior to commencing placement.

Background sampling includes, at a minimum, those parameters listed in Appendix A Table 1. No less than six monthly samples should be submitted in support of the reclamation fill permit request. The sample results should not be older than two years. Use of reclamation fill should not commence until the background sampling is completed to the Department's satisfaction. For example, any problematic

sample results should be addressed and resolved prior to reclamation fill use to assure environmental protection.

Groundwater monitoring parameters should include those constituents shown in Appendix A Table 1. The operator is free to test for additional parameters and to submit these to the Department for added documentation. Samples ought to be taken at least on a quarterly basis and continued for a period of at least 12 months (quarterly) following completion of the reclamation.

Use of the fill will be authorized through a noncoal surface mining permit and appropriate conditions for use will be included.

Source approval

In general, the greater the volume coming from a source, the greater the degree of evaluation for approval is needed. That is, for small sources (those with volumes of 3,000 cubic yards or less), preapproval by the Department is not necessary as long as the permittee provides suitable due diligence and notification to the Department. For a source of greater volume, testing and preapproval by the Department will likely be required.

Material that has been impacted by a spill or release which exceeds applicable standards is not suitable for use at a mine site. To use the uncontaminated material on a site that has been impacted by spills and/or releases, the applicant must provide a characterization of the spill area and indicate how materials will be properly separated with only suitable material sent for mine reclamation.

The process of approval of each source of fill includes the following steps:

1. Environmental due diligence and Self Certification by permittee (see section below);

2. Material Testing as outlined in this document;

3. Review by Department District Mining Office staff and authorization for those sources requiring preapproval.

After approval, suitability of the fill is monitored by periodic testing of the material at the source and/or mine site.

Permittee Responsibility

The mine site permittee assumes the primary responsibility for what is taken in and used on a permitted mine site. If an environmental problem is identified, the permittee should perform the necessary investigation and remediation. If remediation is not undertaken, the permittee risks bond forfeiture related to the site and revocation of its mining license related to all the permittee's sites [25 Pa. Code § 77.242(g)(1)(iii)].

The permittee is responsible for obtaining the necessary approvals as outlined in this guidance and in conjunction with the application process undertaken through the District Mining Office in the jurisdiction where the mine site is located. As part of the approval, the permittee certifies under penalty of law that the material being brought into the site, according to the best available information, meets the

conditions imposed by the issued permit. The permittee is responsible for following best management practices and permit conditions related to operations, record keeping, monitoring and reporting.

DUE DILIGENCE AND SELF CERTIFICATION

Due diligence refers to the review of historical and recent uses of a property to determine if the material that is to be repurposed as reclamation fill has been subject to spills or releases or other means of potential contamination by regulated substances and provides assurance that the reclamation fill is of acceptable quality and does not contain contaminants with the potential to cause pollution. A qualified and experienced environmental professional should be making this determination. The due diligence process includes site inspection, review of historical records, review of regulatory databases and interviews with people familiar with the property as described in the definition for environmental due diligence.

Often, the due diligence includes screening of the material—a process in which random or targeted samples are tested for typical inorganic and organic contaminants. This provides an initial indication if and where contamination is present. A typical screening list is included as Appendix C: Screening Parameter List. However, testing should include any parameters that are suspected to be present based on the historical review and records.

Because the ultimate responsibility for any contamination resides with the mine site permittee, the permittee undertakes a process whereby it attests that proper due diligence and screening has been carried out to demonstrate that the material to be used for reclamation fill meets the definition in this document and is suitable for the intended use. That is, there is no evidence that it will cause pollution and that the use of reclamation fill will likely enhance reclamation on the site. A Self-Certification form (5600-FM-BMP0478) provided by the Department is to be completed by the applicant for each source request.

To apply for approval for any source, the mine operator completes the Self-Certification form. As part of this form, the applicant provides a summary of the due diligence process and sampling results that were reviewed to make the determination for self-certification. This sampling data should be in a spreadsheet format. All supporting data and documents, including lab sheets and reports, should be provided on portable digital format (CD, DVD, removable drive, etc.) with the source approval request. If adequate and correct information is not provided within the summary of the self-certification process for Department review, the Department may return the request unapproved.

The requirements for all digital forms of data can be waived for incidental volumes of fill, but documentation of due diligence should still be provided. Because of the low volumes in cases of incidental fill and for small sources (3,000 cubic yards or less), due diligence requirements may be lessened. The operator is advised to consult with the District Mining Office regarding the extent of due diligence that will be adequate for approval [25 Pa. Code § 77.126].

The Department will provide written approval to the permittee for a specific source in order to begin importing reclamation fill from that source to the mine site.

MATERIAL TESTING

The following sections describe the procedures for adequate testing under due diligence and the limits of the material to be certified for use as reclamation fill.

Factors for determining approval

If the due diligence process identified no contamination issues, laboratory testing of the material is the next step to be completed. The applicant needs to determine the appropriate number of samples to adequately characterize the material. This testing must be described as part of the documentation presented to the Department with the source approval request. Appendix A: Sampling and Analyses for Material to be Used as Reclamation Fill provides the testing instructions [25 Pa. Code §§ 77.126; 77.532(b)].

Testing of the material must sufficiently demonstrate that the material will not cause pollution when used as reclamation fill. Materials meeting the limits as described in Appendix A, will generally be deemed suitable as reclamation fill that is presumed to not cause pollution.

If a problem is noted with a particular constituent (or constituents), the applicant can retest or reanalyze just for the constituents of concern as long as the applicant provides a rationale for the selection of constituents and provides this to the Department with the results.

POST APPROVAL TESTING AND PROCEDURES

Documentation of each load

Documentation needs to be maintained at the site to account for all imported reclamation fill material. This documentation should contain the following:

- The origin of each load,
- An estimate of the amount of material (in cubic yards) in the delivery,
- The name of the firm bringing in the material,
- Results of the visual inspection,
- Results of the organic vapor analyzer (OVA) or photo ionization detector (PID) testing, and
- If a load is refused, the reason why it was rejected for use.

Department Form 5600-FM-BMP0145 (Source Documentation Record) has been developed to record the information needed for each load. The mine operator should maintain these records for at least one (1) year on site, making them available to Department personnel upon request. In addition, the mine site operator is responsible for keeping the records for at least five years after the site has been reclaimed. In the event an unexpected pollution incident occurs, perhaps several years later, the operator may be asked to produce evidence that all material used for reclamation fill was accounted for by source, volume and quality.

Operational testing

To ensure the material continues to meet quality standards, testing during operations is essential.

A standard example of operational testing protocol is as follows:

- The mine operator visually inspects each load to assure that the materials are as described and suitable for use.
- The mine operator scans each load of proposed material with an OVA or PID.

- If the visual inspection reveals unsuitable material and/or OVA or PID testing reveals that the load does not qualify (i.e., an OVA or PID reading is significantly above background) the load is refused.
- A rejected load is promptly removed from the permitted mine site and the generator is notified.
- If more than one load from the same source triggers a rejection within a 30-day window, the mine site operator needs to notify the Department and determine a cause of the problem. Within 30 days, the operator should provide an explanation of the problem and of actions that the operator plans to undertake to prevent this issue from reoccurring.

Periodic grab samples from loads

The default frequency for pulling grab samples for testing should be **no less than one random sample every 70 truckloads** for the parameters in Appendix C: Screening Parameters. The mine site operator can suggest an alternative sampling frequency and procedure in the application request, but the Department will most likely make the determination for greater or lesser frequency based on the source and the overall volumes used. These requirements are typically stated in the permit conditions.

The mine operator should submit the chemical analysis results upon completion to the District Mining Office that has issued the permit. The Department may determine the format for submittal through forms or electronic submission but each analysis must contain proper identification of the material, a signed affidavit, and a copy of the lab sheets from the sample results [25 Pa. Code § 77.104]. As mentioned previously, because unexpected pollution problems may arise at a later date, the mine site operator is responsible for demonstrating that the material used was of acceptable quality. Therefore, a copy should be kept on file by the company for at least five years after the site has been reclaimed.

BEST MANAGEMENT PRACTICES

Upon approval for use of reclamation fill, the operator is expected to adhere to best management practices (BMPs). These include proper testing and monitoring general practices (such as sample collection, preparation and chain of custody), prompt submission and reporting to the Department (including identification of potential problems), and careful record keeping. In addition, BMPs apply to operational procedures such as handling and placement of material and regular data assessment to ensure pollution is not occurring.

Reclamation

The mining regulations (25 Pa. Code Chapter 77) indicate that fill can only be used in accordance with the reclamation plan to achieve the post-mining land use. Accordingly, reclamation fill imported to the site may not, in most instances, be stockpiled but should immediately be used for reclamation unless otherwise approved by the Department.

Upon commencement of using reclamation fill materials, the permittee should show the progress of reclamation regularly to the Department by reporting volumes of material used as reclamation fill from each source and updated reclamation grades. Reporting requirements such as representative cross-sections of the pit and instructions for reporting the total volumes and/or weight of materials used in a year will be specified in the permit conditions [25 Pa. Code § 77.131].

Water testing

To demonstrate that the use of reclamation fill is not causing pollution, the mine site permittee needs to submit a groundwater monitoring plan to be carried out during reclamation fill operations.

Wells or surface water sampling points may be established in the application and installed prior to commencing placement of reclamation fill. In order to characterize the site, the wells must be properly constructed and finished at the proper depth and locations. Background samples from these points must also be submitted prior to commencing placement. Department approved sampling protocols should be followed in order to produce reliable data.

Background sampling should include, at a minimum, those parameters listed in Appendix A Table 1. No less than six monthly samples ought to be collected and analyzed prior to approval for placement of reclamation fill material at the mine site.

Groundwater monitoring at the mine site should include, at a minimum, those constituents shown in Appendix A Table 1. Samples ought to be submitted to the District Mining Office that issued the mining permit on a quarterly basis and continued for a period of 12 months following completion of the reclamation.

The permittee assumes the responsibility to demonstrate that any pollution event is not a result of the placement of the fill. If water quality impacts are observed either by the permittee or by the Department, the permittee should address the issue by submitting an assessment plan to the Department. If it is determined that the pollution has occurred as a result of the reclamation fill use, the permittee needs to submit an abatement plan. The Department may ask for additional information during such an event including increased sampling, re-sampling, hydrogeological tests, additional monitoring points, studies and evaluation of the groundwater regime [25 Pa. Code § 77.532].

TRANSITION OF APPROVED SITES

Sites currently importing fill for reclamation purposes should request continued use under this guidance. In some cases, a correction letter may be issued to revise the existing file information in order to meet the specifications in this document. The operator should receive an updated set of permit conditions incorporated into the permit.

ATTACHMENTS

- Appendix A: Sampling and Analyses for Material to be Used as Reclamation Fill
- Appendix B: Landowner consent sample wording
- Appendix C: Screening Parameters

ASSOCIATED DOCUMENTS

- Form 5600-FM-BMP0145: Source Documentation Record
- Form 5600-FM-BMP0478: Self-Certification Form

APPENDIX A

Sampling and Analyses for Material to be Used as Reclamation Fill

The sampling methods and acceptable contaminant concentration limits outlined below are the default methods acceptable to the Department. Mine operators may propose and use other methods if they can demonstrate to the Department and receive approval from the Department that the alternate method is as effective as or an improvement over the methods described below, and will comply with 25 Pa. Code Chapter 77, § 77.126(a)(3).[1]

If a fill material does not meet the chemical criteria limits provided, that material will be deemed to have failed the demonstration of no presumptive evidence of pollution as stated in 25 Pa. Code Chapter 77, § 77.126, unless the applicant has demonstrated through an alternate method acceptable to the Department that the fill material will meet the requirements of § 77.126. Unless prior approval from the Department has been received, deviations from the methods and contaminant concentration limits described below may fail to meet § 77.126(a)(3).

Sampling of material proposed to be used as fill shall be done either by composite samples or by discrete samples. Sampling in either case shall be random and representative of the fill material being sampled. Sampling is to be in accordance with the most current version of the US EPA Resource Conservation and Recovery Act (RCRA) Manual, SW-846 *(Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. Office of Solid Waste and Emergency Response).*

(a) Sampling based on composite sampling procedures shall include the following:

(i) For volumes of material equal to or less than 125 cubic yards, a total of eight samples shall be collected and analyzed as follows:

(A) For analysis of all substances other than volatile organic compounds (VOCs), the samples shall be analyzed in two composites of four samples each, in accordance with the most current version of the US EPA Manual, SW-846 *(Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. Office of Solid Waste and Emergency Response).*

(B) Two samples shall be selected from the eight samples for analysis of VOCs. The samples shall be based on field screening of the eight samples to select those samples that are most likely to contain the highest concentrations of VOCs.

(C) Two grab samples shall be taken from the same areas in the material from which the two samples used for field screening of VOCs were obtained, then sampled and analyzed in accordance with Method 5035 from the most current version of the US EPA Manual, SW-846 *(Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. Office of Solid Waste and Emergency Response).*

[1] § 77.126(a) states "A permit, permit renewal or revised permit application will not be approved, unless the application affirmatively demonstrates and the Department finds in writing, on the basis of the information in the application or from information otherwise available, that the following apply: (3) The applicant has demonstrated that there is no presumptive evidence of potential pollution of the waters of this Commonwealth."

(ii) For volumes of material greater than 125 cubic yards and less than or equal to 3,000 cubic yards, a total of 12 samples shall be collected and analyzed as follows:

(A) For analysis of all substances other than VOCs, the samples shall be analyzed in three composites of four samples each.

(B) Three samples shall be selected from the 12 samples for analysis of VOCs. The samples shall be based on field screening of the 12 samples to select those samples that are most likely to contain the highest concentrations of VOCs.

(C) Three grab samples shall be taken from the same areas in the material from which the three samples used for field screening of VOCs were obtained, then sampled and analyzed in accordance with EPA Method 5035, referenced in subparagraph (i)(C).

(iii) For each additional 3,000 cubic yards of material or part thereof over the initial 3,000 cubic yards, 12 additional samples shall be collected and analyzed as follows:

(A) For analysis of all substances other than VOCs, the samples shall be analyzed in three composites of four samples each.

(B) Three samples for analysis of VOCs shall be selected from the 12 samples for analysis of VOCs. The samples shall be based on field screening of the 12 samples to select those samples that are most likely to contain the highest concentrations of VOCs.

(C) Three grab samples shall be taken from the same areas in material from which the three samples used for field screening of VOCs were obtained, then sampled and analyzed in accordance with EPA Method 5035, referenced in subparagraph (i)(C).

(b) Sampling based on discrete sampling procedures shall include the following:

(i) For volumes of material equal to or less than 125 cubic yards, a minimum of eight samples shall be collected and analyzed. For volumes of material greater than 125 cubic yards and less than or equal to 3,000 cubic yards, a minimum of 12 samples shall be collected and analyzed. For each additional 3,000 cubic yards of material or part thereof over the initial 3,000 cubic yards, a minimum of 12 additional samples shall be collected and analyzed.

(ii) For VOCs analysis, grab sampling procedures shall be the procedures described in subsection (a), for the equivalent volumes of material sampled.

(c) Analyses of results:

(i) For a composite sample taken in accordance with subsection (a), the measured numeric value for a parameter shall be less than or equal to the concentration limit listed under the Statewide health standards (see Figure 1) for that parameter in order for the material to qualify as reclamation fill.

(ii) For a grab sample, taken in accordance with subsections (a) and (b), the measured numeric value for a parameter shall be less than or equal to the concentration limit listed under the Statewide health standards for that parameter in order for the material to qualify as reclamation fill.

(iii) For discrete samples required in subsection (b), the measured numeric values for a substance shall be equal to or less than the concentration limit listed under the Statewide health standard for that parameter, with no single sample exceeding more than 10 times the concentration limit for a parameter, and 75% of the samples collected for each 3,000 cubic yards will not exceed the Medium Specific Concentrations (MSCs) selected using the procedures described in § 250.305 for selecting MSCs for soil under the Statewide health standard.

Chemical criteria for placement of reclamation fill relative to the groundwater table

Chemical limits for reclamation fill have been established using the MSCs under Act 2 and Chapter 250, Subchapter C. Tables 1, 2, 3A, 3B, 4A and 4B in Appendix A of Chapter 250 provide the numeric value used to determine the MSCs for groundwater and soil.

The MSCs tables are regularly updated based on current scientific findings and recommendations by the US EPA. Operators should consult the latest values (as published in the *Pennsylvania Bulletin*) when assessing new source approvals for reclamation fill and as criteria for quality of samples from existing approved sources.

In the event that a change in constituent value results in any reclamation source no longer meeting criteria, the operator should notify the Department of the situation. This may result in additional testing of the parameter in question and/or halting the importation of this source for reclamation fill at previously approved mine sites.

The Department will generally accept the limits as described below as demonstrating that a material will meet the requirements of 25 Pa. Code Chapter 77 § 77.126(3). If an alternate criteria is proposed it is the responsibility of the mine operator to demonstrate to the Department that the alternate method and criteria will meet the requirements of 25 Pa. Code Chapter 77 § 77.126(3).

For purposes of this guidance, groundwater table is defined as the top of the saturated zone. The term includes the regional groundwater table, perched water tables, seasonal high water table and mine pools. The term "smear zone" takes into account seasonal groundwater fluctuations.

Leaching limits are derived by the Synthetic Precipitation Leaching Procedure (SPLP). The SPLP test is the Department's normally accepted test method because it more closely simulates a mine environment than the TCLP method. Alternative methods may be considered if it can be demonstrated to the Department that the alternate method is as good as or better than the SPLP test method.

Total and leachate testing will be required from most sites. Those planning to take samples should allow for sufficient volumes to be collected and sent to the laboratory to allow for both phases of testing without resampling. If the laboratory detection limit exceeds any of the levels, the operator should provide an explanation for the difference. Constituent detection limits may vary based on the sample matrix and laboratory analytical method used.

The chemical criteria for approval varies depending on the location of placement of the reclamation fill material – above or below the groundwater table. Groundwater fluctuation is taken into account by requiring more stringent "below groundwater" values to be applied at least 10 feet above the smear zone.

Below Groundwater

For the zone "below groundwater" there are two options for meeting the quality requirements for reclamation fill.

Option 1: Sample results must be less than or equal to 10% (0.1) of the generic soil to groundwater values for all parameters listed in Tables 3B (organic regulated substances) and 4B (inorganic regulated substances). If the material meets this standard, no leaching tests are required.

Option 2: Sample results must be less than or equal to the values for all parameters listed in Tables 3B (organic regulated substances) and 4B (inorganic regulated substances) **and** leaching tests results must be less than or equal to values for all parameters in Tables 1 and 2 [Used aquifer, TDS less than or equal to 2,500, residential exposure].

Above Groundwater

For the zone "above groundwater", the quality requirements are as follows with the exception of the near surface cover (see next section): Sample results must be obtained for all parameters listed in Appendix C of this guidance and compared to the Chapter 250 soil to groundwater numeric value tables (3B for organic regulated substances and 4B for inorganic regulated substances). If any individual constituent result is greater than the generic values in those tables, then the operator must include a leaching test for at least that constituent. The leaching result must not be higher than the respective value in the Chapter 250 groundwater numeric value tables 1 (organic regulated substances) and 2 (inorganic related substances) [Used aquifer, TDS less than or equal to 2,500, residential exposure].

Near Surface (0-15 below surface)

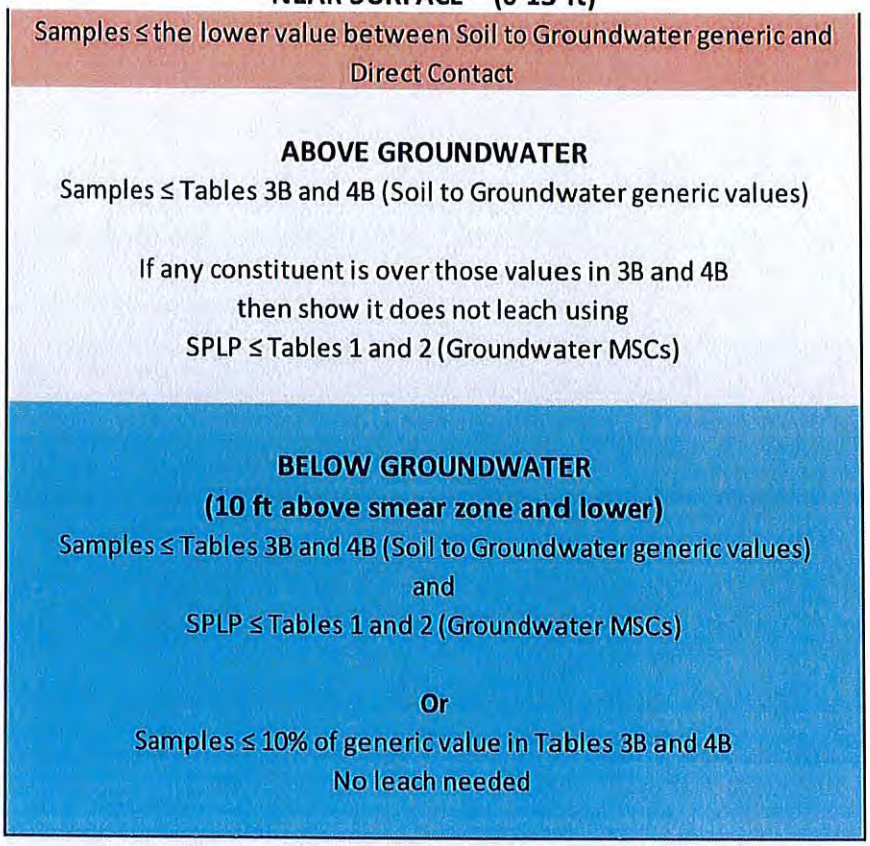
Quality criteria changes when fill is placed near the surface. Values are dependent upon residential or non-residential uses proposed for the land which have different sets of limits in the tables. Future residential use requires limits for material placed 0-15' below surface. Non-residential use includes limits for the material 0-2' below surface and another set of limits for material 2-15' below surface. Dependent upon the reclamation plan indication of residential versus non-residential use, the top 15 feet of material requires quality criteria to be chosen as follows:

- Compare the soil to groundwater values described in the "Above Groundwater" section with the appropriate direct contact values for all parameters in Tables 3A and 4A.
- Take the lower of these two values.

When approaching final reclamation grades, the operator should consult with the Department to ensure that appropriate material is being utilized in order to not preclude approval of final reclamation requirements and the release of bonds.

Figure 1 shows a general visual representation of the zones of placement and their respective requirements.

Figure 1



Tables referenced are the soil and groundwater Medium Specific found in Chapter 250, Appendix A of the Land Recycling & Environmental Remediation Standards Act (Act 2)
Also see Chapter 250, Subchapter C, Statewide Health Standards (§§ 250.304 - 305)

All values are derived from "Used aquifer, TDS ≤ 2500, Residential"

** Near surface values are dependent upon residential or non-residential use. See Appendix A: "Near Surface" section for specific criteria.*

Table 1. List of Groundwater Monitoring Parameters

pH
Acidity
Alkalinity
Aluminum
Ammonia
Arsenic
Barium
Cadmium
Calcium
Chloride
Chromium
Copper
Fluoride
Iron
Lead
Magnesium
Manganese
Mercury
Nickel
Nitrate (as N)
Selenium
Silver
Sulfate
Zinc
Biochemical Oxygen Demand
Chemical Oxygen Demand
Conductivity
Methylene Blue Active Substance (Mbas)
Semi-Volatile Organic Compounds
Total Dissolved Solids
Total Suspended Solids
Volatile Organic Compounds

APPENDIX B
Suggested Wording for Land Use Approval

(I) (We), the undersigned, are the owner(s) of _____ acres of land located in _____ (County),

_____ (Township, Borough, City) as described in the deed(s) recorded in the Recorder of Deeds Office, Book(s) and Page(s) _____, and shown by crosshatched lines on the attached map which is signed in the original by the landowner (the Land).

_____ (Name of Mining Operator) (the Operator) proposes to engage in use of imported reclamation fill activities on the Land, and the Operator has applied to the Department of Environmental Protection for permission to engage in such activities. This consent will be made a part of the Operator's application.

WE DO HEREBY ACKNOWLEDGE THAT THE OPERATOR HAS THE RIGHT TO ENTER UPON AND USE THE LAND FOR THE PURPOSE OF USING IMPORTED RECLAMATION FILL.

(I) (We), the undersigned, also irrevocably grant to the Operator and to the Commonwealth of Pennsylvania, the right to enter upon the Land for the purposes of inspecting, studying, collecting samples, and performing other activities related to regulation of reclamation fill activities under applicable statutes, the Department's regulations, and the provisions of any permit(s) issued to the Operator. (I) (We), the undersigned, grant this right of entry for a period of one year prior to commencement of the importation of reclamation fill on the Land described above, during the period of placement of reclamation fill on the Land, and for a period of ten (10) years after completion of the importation of reclamation fill on the Land. (I) (We) also grant to the Commonwealth, for the same period of time, a right of entry across any adjoining or contiguous lands owned by (me) (us) in order to have access to the Land.

It is specifically agreed and understood that this contractual consent gives the Commonwealth the right to enter, inspect, study, obtain samples, and perform other activities related to the regulation of reclamation fill required by law, but does not obligate the Commonwealth to do so and does not constitute any ownership interest by the Commonwealth in the Land.

This Consent shall not be construed to impair any contractual agreement between the Operator and the landowner (the Land).

In witness whereof and intending to legally bind (myself) (ourselves), (my) (our) heirs, successors and assigns, (I) (we) have set (my) (our) hand(s) and seal this _____ day of _____, _____.

_____
LANDOWNER (Print Name)

By:_____
(Signature) (Seal)

By:_____
(Signature)

_____
(Print Name)

ACKNOWLEDGEMENT OF INDIVIDUALS OR PARTNERS

LANDOWNER

STATE OF :
: ss
COUNTY OF :

On _____, before me, the undersigned Notary, personally appeared

_____
(Name (s))

known to me (or satisfactorily proven) to be the person whose name is subscribed to this instrument, and who acknowledged that (he, she or they) executed the same and desires it to be recorded.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

(SEAL) _____ My Commission Expires: _____
(Notary Public) (Date)

ACKNOWLEDGEMENT OF CORPORATIONS

LANDOWNER

STATE OF :
: ss
COUNTY OF :

On _____, before me, the undersigned Notary, personally appeared

_____,
(Name (s))

who acknowledged (herself) (himself) to be the _____ of
(Title of Person)

_____, a
(Name of Corporation)

corporation, and that (she) (he), as such officer, being authorized to do so, executed the foregoing instrument on behalf of the said corporation and desires that this instrument be recorded.

IN WITNESS WHEREOF, I have hereunder set my hand and official seal.

(SEAL) _____ My Commission Expires: _____
(Notary Public) (Date)

This instrument has been recorded in _____
County, Pennsylvania, this _____ day of _____,
_____ (year), at Book _____, Page(s) _____.

_____
(Signed) + (Print Name)

_____
(Seal)

Appendix C
SCREENING PARAMETERS

Aldrin	Anthracene
Benzene	Benzo(a)anthracene
Benzo(a)pyrene	Benzo(b)fluoranthene
Benzo(ghi)perylene	Chrysene
Cumene (Isopropyl benzene)	DDD, 4,4
DDE, 4,4	DDT, 4,4
Dichloroethylene, cis-1,2-	Dieldrin
Ethylbenzene	Fluorene
Indeno(1,2,3-cd)pyrene	Napthalene
PCB-1254 (Aroclor)	Phenanthrene
Pyrene	Toluene
Trichloroethane, 1,1,1-	Trichloroethylene (TCE)
Xylenes (Total)	Arsenic
Barium	Cadmium
Chromium	Lead
Mercury	Selenium
Silver	

ATTACHMENT 13

STATEWIDE HEALTH STANDARDS – METALS

APPENDIX A

Table 2 - Medium-Specific Concentrations (MSCs) for Inorganic Regulated Substances in Groundwater

Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500		TDS > 2500			
		R	NR	R	NR	R	NR
ANTIMONY	7440-36-0	6 M	6 M	600 M	600 M	6,000 M	6,000 M
ARSENIC	7440-38-2	10 M	10 M	1,000 M	1,000 M	10,000 M	10,000 M
ASBESTOS (fibers/L)	12001-29-5	7,000,000 M	7,000,000 M	7,000,000 M	7,000,000 M	7,000,000 M	7,000,000 M
BARIUM AND COMPOUNDS	7440-39-3	2,000 M	2,000 M	200,000 M	200,000 M	2,000,000 M	2,000,000 M
BERYLLIUM	7440-41-7	4 M	4 M	400 M	400 M	4,000 M	4,000 M
BORON AND COMPOUNDS	7440-42-8	6,000 H	6,000 H	600,000 H	600,000 H	6,000,000 H	6,000,000 H
CADMIUM	7440-43-9	5 M	5 M	500 M	500 M	5,000 M	5,000 M
CHROMIUM (TOTAL)	7440-47-3	100 M	100 M	10,000 M	10,000 M	100,000 M	100,000 M
COBALT	7440-48-4	13 G	35 G	1,300 G	3,500 G	13,000 G	35,000 G
COPPER	7440-50-8	1,000 M	1,000 M	100,000 M	100,000 M	1,000,000 M	1,000,000 M
CYANIDE, FREE	57-12-5	200 M	200 M	20,000 M	20,000 M	200,000 M	200,000 M
FLUORIDE	16984-48-8	4,000 M	4,000 M	400,000 M	400,000 M	4,000,000 M	4,000,000 M
LEAD	7439-92-1	5 M	5 M	500 M	500 M	5,000 M	5,000 M
LITHIUM	7439-93-2	83 G	230 G	8,300 G	23,000 G	83,000 G	230,000 G
MANGANESE	7439-96-5	300 H	300 H	30,000 H	30,000 H	300,000 H	300,000 H
MERCURY	7439-97-6	2 M	2 M	200 M	200 M	2,000 M	2,000 M
MOLYBDENUM	7439-98-7	40 H	40 H	4,000 H	4,000 H	40,000 H	40,000 H
NICKEL	7440-02-0	100 H	100 H	10,000 H	10,000 H	100,000 H	100,000 H
NITRATE NITROGEN	14797-55-8	10,000 M	10,000 M	1,000,000 M	1,000,000 M	10,000,000 M	10,000,000 M
NITRITE NITROGEN	14797-65-0	1,000 M	1,000 M	100,000 M	100,000 M	1,000,000 M	1,000,000 M
PERCHLORATE	7790-98-9	15 H	15 H	1,500 H	1,500 H	15,000 H	15,000 H
SELENIUM	7782-49-2	50 M	50 M	5,000 M	5,000 M	50,000 M	50,000 M
SILVER	7440-22-4	100 H	100 H	10,000 H	10,000 H	100,000 H	100,000 H

APPENDIX A

Table 2 - Medium-Specific Concentrations (MSCs) for Inorganic Regulated Substances in Groundwater

STRONTIUM	7440-24-6	4,000 H	4,000 H	400,000 H	400,000 H	4,000,000 H	4,000,000 H
THALLIUM	7440-28-0	2 M	2 M	200 M	200 M	2,000 M	2,000 M
TIN	7440-31-5	25,000 G	70,000 G	2,500,000 G	7,000,000 G	25,000,000 G	70,000,000 G
VANADIUM	7440-62-2	2.9 G	8.2 G	290 G	820 G	2,900 G	8,200 G
ZINC AND COMPOUNDS	7440-66-6	2000 H	2000 H	200000 H	200000 H	2000000 H	2000000 H

SECONDARY CONTAMINANTS			
REGULATED SUBSTANCE	**CASRN**	**SMCL**	**UNITS**
ALUMINUM	7429-90-5	200	µg/L
CHLORIDE	7647-14-5	250,000	µg/L
COPPER	7440-50-8	1000	µg/L
FLUORIDE	7681-49-4	2,000	µg/L
IRON	7439-89-6	300	µg/L
MANGANESE	7439-96-5	50	µg/L
SULFATE	7757-82-6	250,000	µg/L

All concentrations in ug/L (except asbestos)
M = Maximum Contaminant Level
H = Lifetime Health Advisory Level
SMCL = Secondary Maximum Contaminant Level
G = Ingestion
N = Inhalation

APPENDIX A

Table 4 - Medium-Specific Concentrations (MSCs) for Inorganic Regulated Substances in Soil
A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential MSC 0-15 feet		Nonresidential MSCs			
				Surface Soil 0-2 feet		Subsurface Soil 2-15 feet	
ALUMINUM	7429-90-5	190000	C	190000	C	190000	C
ANTIMONY	7440-36-0	88	G	1300	G	190000	C
ARSENIC	7440-38-2	12	G	61	G	190000	C
BARIUM AND COMPOUNDS	7440-39-3	44000	G	190000	C	190000	C
BERYLLIUM	7440-41-7	2	G	11	G	190000	C
BORON AND COMPOUNDS	7440-42-8	44000	G	190000	C	190000	C
CADMIUM	7440-43-9	1.2	G	6	G	190000	C
CHROMIUM III	16065-83-1	190000	C	190000	C	190000	C
CHROMIUM VI	18540-29-9	4	G	220	G	20000	N
COBALT	7440-48-4	66	G	960	G	190000	N
COPPER	7440-50-8	8100	G	120000	G	190000	C
CYANIDE, FREE	57-12-5	130	G	1900	G	190000	C
FLUORIDE	16984-48-8	8800	G	130000	G	190000	C
IRON	7439-89-6	150000	G	190000	C	190000	C
LEAD	7439-92-1	500	U	1000	S	190000	C
LITHIUM	7439-93-2	440	G	6400	G	190000	C
MANGANESE	7439-96-5	10000	G	150000	G	190000	C
MERCURY	7439-97-6	35	G	510	G	190000	C
MOLYBDENUM	7439-98-7	1100	G	16000	G	190000	C
NICKEL	7440-02-0	4400	G	64000	G	190000	C
PERCHLORATE	7790-98-9	150	G	2200	G	190000	C
SELENIUM	7782-49-2	1100	G	16000	G	190000	C
SILVER	7440-22-4	1100	G	16000	G	190000	C
STRONTIUM	7440-24-6	130000	G	190000	C	190000	C
THALLIUM	7440-28-0	2	G	32	G	190000	C
TIN	7440-31-5	130000	G	190000	C	190000	C
VANADIUM	7440-62-2	15	G	220	G	190000	C
ZINC	7440-66-6	66000	G	190000	C	190000	C

All concentrations in mg/kg
R - Residential
NR - Non-Residential
G - Ingestion
N - Inhalation
C - Cap
U - UBK Model
S - SEGH Model

APPENDIX A

Table 4 - Medium-Specific Concentrations (MSCs) for Inorganic Regulated Substances in Soil

B. Soil to Groundwater Numeric Values[1]

REGULATED SUBSTANCE	CASRN	Used Aquifers								Nonuse Aquifers				Soil Buffer Distance
		TDS < = 2500				TDS > 2500								
		R		NR		R		NR		R		NR		
		100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	(feet)
ANTIMONY	7440-36-0	0.6	27	0.6	27	60	2700	60	2700	600	27000	600	27000	15
ARSENIC	7440-38-2	1	29	1	29	100	2900	100	2900	1000	29000	1000	29000	15
BARIUM AND COMPOUNDS	7440-39-3	200	8200	200	8200	20000	190000	20000	190000	190000	190000	190000	190000	15
BERYLLIUM	7440-41-7	0.4	320	0.4	320	40	32000	40	32000	400	190000	400	190000	10
BORON AND COMPOUNDS	7440-42-8	600	1900	600	1900	60000	190000	60000	190000	190000	190000	190000	190000	30
CADMIUM	7440-43-9	0.5	38	0.5	38	50	3800	50	3800	500	38000	500	38000	15
CHROMIUM (III)	16065-83-1	10	190000	10	190000	1000	190000	1000	190000	10000	190000	10000	190000	5
CHROMIUM (VI)	18540-29-9	10	190	10	190	1000	19000	1000	19000	10000	190000	10000	190000	15
COBALT	7440-48-4	1	59	4	160	130	5900	350	16000	1300	59000	3500	160000	15
COPPER	7440-50-8	100	43000	100	43000	10000	190000	10000	190000	100000	190000	100000	190000	10
CYANIDE, FREE	57-12-5	20	200	20	200	2000	20000	2000	20000	20000	190000	20000	190000	20
FLUORIDE	16984-48-8	400	44	400	44	40000	4400	40000	4400	190000	44000	190000	44000	NA
LEAD	7439-92-1	0.5	450	0.5	450	50	45000	50	45000	500	190000	500	190000	10
LITHIUM	7439-93-2	8	2500	23	6900	830	190000	2300	190000	8300	190000	23000	190000	10
MANGANESE	7439-96-5	30	2000	30	2000	3000	190000	3000	190000	30000	190000	30000	190000	15
MERCURY	7439-97-6	0.2	10	0.2	10	20	1000	20	1000	200	10000	200	10000	15
MOLYBDENUM	7439-98-7	4	650	4	650	400	65000	400	65000	4000	190000	4000	190000	15
NICKEL	7440-02-0	10	650	10	650	1000	65000	1000	65000	10000	190000	10000	190000	15
PERCHLORATE	7790-98-9	1.5	0.17	1.5	0.17	150	17	150	17	1500	170	1500	170	NA
SELENIUM	7782-49-2	5	26	5	26	500	2600	500	2600	5000	26000	5000	26000	20
SILVER	7440-22-4	10	84	10	84	1000	8400	1000	8400	10000	84000	10000	84000	20
STRONTIUM	7440-24-6	400	44	400	44	40000	4400	40000	4400	190000	44000	190000	44000	NA
THALLIUM	7440-28-0	0.2	14	0.2	14	20	1400	20	1400	200	14000	200	14000	15
TIN	7440-31-5	2500	190000	7000	190000	190000	190000	190000	190000	190000	190000	190000	190000	10
VANADIUM	7440-62-2	0.29	290	0.82	820	29	29000	82	82000	290	190000	820	190000	5
ZINC	7440-66-6	200	12000	200	12000	20000	190000	20000	190000	190000	190000	190000	190000	15

[1] For other options see Section 250.308

All concentrations in mg/kg

R - Residential

NR - Non-Residential

G - Ingestion

H - Inhalation

C - Cap

U - UBK Model

S - SEGH Model

NA - Not Applicable

ATTACHMENT 14

STATEWIDE HEALTH STANDARDS - ORGANICS

APPENDIX A

TABLE 1 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN GROUNDWATER

Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500		TDS > 2500			
		R	NR	R	NR	R	NR
ACENAPHTHENE	83-32-9	2500 G	3800 S	3800 S	3800 S	3800 S	3800 S
ACENAPHTHYLENE	208-96-8	2500 G	7000 G	16000 S	16000 S	16000 S	16000 S
ACEPHATE	30560-19-1	84 G	390 G	8400 G	39000 G	84 G	390 G
ACETALDEHYDE	75-07-0	19 N	79 N	1900 N	7900 N	19 N	79 N
ACETONE	67-64-1	38000 G	110000 G	3800000 G	11000000 G	380000 G	1100000 G
ACETONITRILE	75-05-8	130 N	530 N	13000 N	53000 N	1300 N	5300 N
ACETOPHENONE	98-86-2	4200 G	12000 G	420000 G	1200000 G	4200 G	12000 G
ACETYLAMINOFLUORENE, 2- (2AAF)	53-96-3	0.19 G	0.89 G	19 G	89 G	190 G	890 G
ACROLEIN	107-02-8	0.042 N	0.18 N	4.2 N	18 N	0.42 N	1.8 N
ACRYLAMIDE	79-06-1	0.19 N	2.5 N	19 N	250 N	0.19 N	2.5 N
ACRYLIC ACID	79-10-7	2.1 N	8.8 N	210 N	880 N	210 N	880 N
ACRYLONITRILE	107-13-1	0.72 N	3.7 N	72 N	370 N	72 N	370 N
ALACHLOR	15972-60-8	2 M	2 M	200 M	200 M	2 M	2 M
ALDICARB	116-06-3	3 M	3 M	300 M	300 M	3000 M	3000 M
ALDICARB SULFONE	1646-88-4	2 M	2 M	200 M	200 M	2 M	2 M
ALDICARB SULFOXIDE	1646-87-3	4 M	4 M	400 M	400 M	4 M	4 M
ALDRIN	309-00-2	0.43 G	0.2 G	4.3 G	20 G	20 S	20 S
ALLYL ALCOHOL	107-18-6	0.21 N	0.88 N	21 N	88 N	21 N	88 N
AMETRYN	834-12-8	60 H	60 H	6000 H	6000 H	60 H	60 H
AMINOBIPHENYL, 4-	92-67-1	0.035 G	0.16 G	3.5 G	16 G	35 G	160 G
AMITROLE	61-82-5	0.78 G	3.6 G	78 G	360 G	780 G	3600 G
AMMONIA	7664-41-7	30000 H	30000 H	3000000 H	3000000 H	30000 H	30000 H
AMMONIUM SULFAMATE	7773-06-0	2000 H	2000 H	200000 H	200000 H	2000 H	2000 H
ANILINE	62-53-3	2.1 N	8.8 N	210 N	880 N	2.1 N	8.8 N
ANTHRACENE	120-12-7	66 S	66 S	66 S	66 S	66 S	66 S
ATRAZINE	1912-24-9	3 M	3 M	300 M	300 M	3 M	3 M
AZINPHOS-METHYL (GUTHION)	86-50-0	130 G	350 G	13000 G	32000 S	130 G	350 G
BAYGON (PROPOXUR)	114-26-1	3 H	3 H	300 H	300 H	3000 H	3000 H
BENOMYL	17804-35-2	2000 S	2000 S	2000 S	2000 S	2000 S	2000 S
BENTAZON	25057-89-0	200 H	200 H	20000 H	20000 H	200 H	200 H
BENZENE	71-43-2	5 M	5 M	500 M	500 M	500 M	500 M
BENZIDINE	92-87-5	0.00098 G	0.015 G	0.098 G	1.5 G	0.98 G	15 G
BENZO[A]ANTHRACENE	56-55-3	0.32 G	4.9 G	11 S	11 S	11 S	11 S
BENZO[A]PYRENE	50-32-8	0.2 M	0.2 M	3.8 S	3.8 S	3.8 S	3.8 S

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TABLE 1 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN GROUNDWATER

Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500		TDS > 2500			
		R	NR	R	NR	R	NR
BENZO[B]FLUORANTHENE	205-99-2	0.19 G	1.2 S	1.2 S	1.2 S	1.2 S	1.2 S
BENZO[GHI]PERYLENE	191-24-2	0.26 S	0.26 S	0.26 S	0.26 S	0.26 S	0.26 S
BENZO[K]FLUORANTHENE	207-08-9	0.19 G	0.55 S	0.55 S	0.55 S	0.55 S	0.55 S
BENZOIC ACID	65-85-0	170000 G	470000 G	2700000 S	2700000 S	170000 G	470000 G
BENZOTRICHLORIDE	98-07-7	0.056 G	0.26 G	5.6 G	26 G	56 G	260 G
BENZYL ALCOHOL	100-51-6	4200 G	12000 G	420000 G	1200000 G	4200 G	12000 G
BENZYL CHLORIDE	100-44-7	1 N	5.1 N	100 N	510 N	100 N	510 N
BETA PROPIOLACTONE	57-57-8	0.012 N	0.063 N	1.2 N	6.3 N	0.12 N	0.63 N
BHC, ALPHA-	319-84-6	0.12 G	0.54 G	12 G	54 G	120 G	540 G
BHC, BETA-	319-85-7	0.41 G	1.9 G	41 G	100 S	100 S	100 S
BHC, GAMMA (LINDANE)	58-89-9	0.2 M	0.2 M	20 M	20 M	200 M	200 M
BIPHENYL, 1,1-	92-52-4	91 G	430 G	7200 S	7200 S	7200 S	7200 S
BIS(2-CHLOROETHOXY)METHANE	111-91-1	130 G	350 G	13000 G	35000 G	130 G	350 G
BIS(2-CHLOROETHYL)ETHER	111-44-4	0.15 N	0.76 N	15 N	76 N	15 N	76 N
BIS(2-CHLORO-ISOPROPYL)ETHER	108-60-1	300 H	300 H	30000 H	30000 H	30000 H	30000 H
BIS(CHLOROMETHYL)ETHER	542-88-1	0.00079 N	0.004 N	0.079 N	0.4 N	0.079 N	0.4 N
BIS[2-ETHYLHEXYL] PHTHALATE	117-81-7	6 M	6 M	290 S	290 S	290 S	290 S
BISPHENOL A	80-05-7	2100 G	5800 G	120000 S	120000 S	120000 S	120000 S
BROMACIL	314-40-9	70 H	70 H	7000 H	7000 H	70 H	70 H
BROMOCHLOROMETHANE	74-97-5	90 H	90 H	9000 H	9000 H	90 H	90 H
BROMODICHLOROMETHANE	75-27-4	80 M	80 M	8000 M	8000 M	80 M	80 M
BROMOMETHANE	74-83-9	10 H	10 H	1000 H	1000 H	1000 H	1000 H
BROMOXYNIL	1689-84-5	830 G	2300 G	83000 G	130000 S	830 G	2300 G
BROMOXYNIL OCTANOATE	1689-99-2	80 S	80 S	80 S	80 S	80 S	80 S
BUTADIENE, 1,3-	106-99-0	0.21 G	1 G	21 G	100 G	21 G	100 G
BUTYL ALCOHOL, N-	71-36-3	4200 G	12000 G	420000 G	1200000 G	42000 G	120000 G
BUTYLATE	2008-41-5	400 H	400 H	40000 H	40000 H	400 H	400 H
BUTYLBENZENE, N-	104-51-8	2100 G	5800 G	15000 S	15000 S	2100 G	5800 G
BUTYLBENZENE, SEC-	135-98-8	4200 G	12000 G	17000 S	17000 S	4200 G	12000 G
BUTYLBENZENE, TERT-	98-06-6	4200 G	12000 G	30000 S	30000 S	4200 G	12000 G
BUTYLBENZYL PHTHALATE	85-68-7	380 G	1800 G	2700 S	2700 S	2700 S	2700 S
CAPTAN	133-06-2	320 G	500 S	500 S	500 S	500 S	500 S
CARBARYL	63-25-2	4200 G	12000 G	120000 S	120000 S	120000 S	120000 S
CARBAZOLE	86-74-8	37 G	170 G	1200 S	1200 S	37 G	170 G

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TABLE 1 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN GROUNDWATER

Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500		TDS > 2500			
		R	NR	R	NR	R	NR
CARBOFURAN	1563-66-2	40 M	40 M	4000 M	4000 M	40 M	40 M
CARBON DISULFIDE	75-15-0	1500 N	6200 N	150000 N	620000 N	1500 N	6200 N
CARBON TETRACHLORIDE	56-23-5	5 M	5 M	500 M	500 M	50 M	50 M
CARBOXIN	5234-68-4	700 H	700 H	70000 H	70000 H	700 H	700 H
CHLORAMBEN	133-90-4	100 H	100 H	10000 H	10000 H	100 H	100 H
CHLORDANE	57-74-9	2 M	2 M	56 S	56 S	56 S	56 S
CHLORO-1,1-DIFLUOROETHANE, 1-	75-68-3	110000 N	440000 N	1400000 S	1400000 S	110000 N	440000 N
CHLORO-1-PROPENE, 3- (ALLYL CHLORIDE)	107-05-1	2.1 N	8.8 N	210 N	880 N	210 N	880 N
CHLOROACETALDEHYDE	107-20-0	2.4 G	11 G	240 G	1100 G	2.4 G	11 G
CHLOROACETOPHENONE, 2-	532-27-4	1.3 G	3.5 G	130 G	350 G	1300 G	3500 G
CHLOROANILINE, P-	106-47-8	3.7 G	17 G	370 G	1700 G	3.7 G	17 G
CHLOROBENZENE	108-90-7	100 M	100 M	10000 M	10000 M	10000 M	10000 M
CHLOROBENZILATE	510-15-6	6.6 G	31 G	660 G	3100 G	6600 G	13000 S
CHLOROBUTANE, 1-	109-69-3	1700 G	4700 G	170000 G	470000 G	1700 G	4700 G
CHLORODIBROMOMETHANE (THM)	124-48-1	80 M	80 M	8000 M	8000 M	8000 M	8000 M
CHLORODIFLUOROMETHANE	75-45-6	110000 N	440000 N	2900000 S	2900000 S	110000 N	440000 N
CHLOROETHANE	75-00-3	250 G	1200 G	25000 G	120000 G	25000 G	120000 G
CHLOROFORM (THM)	67-66-3	80 M	80 M	8000 M	8000 M	800 M	800 M
CHLORONAPHTHALENE, 2-	91-58-7	3300 G	9300 G	12000 S	12000 S	3300 G	9300 G
CHLORONITROBENZENE, P-	100-00-5	42 G	120 G	4200 G	12000 G	42 G	120 G
CHLOROPHENOL, 2-	95-57-8	40 H	40 H	4000 H	4000 H	40 H	40 H
CHLOROPRENE	126-99-8	0.16 N	0.83 N	16 N	83 N	16 N	83 N
CHLOROPROPANE, 2-	75-29-6	210 N	880 N	21000 N	88000 N	210 N	880 N
CHLOROTHALONIL	1897-45-6	240 G	600 S	600 S	600 S	240 G	600 S
CHLOROTOLUENE, O-	95-49-8	100 H	100 H	10000 H	10000 H	100 H	100 H
CHLOROTOLUENE, P-	106-43-4	100 H	100 H	10000 H	10000 H	100 H	100 H
CHLORPYRIFOS	2921-88-2	2 H	2 H	200 H	200 H	2 H	2 H
CHLORSULFURON	64902-72-3	2100 G	5800 G	190000 S	190000 S	2100 G	5800 G
CHLORTHAL-DIMETHYL (DACTHAL) (DCPA)	1861-32-1	70 H	70 H	500 S	500 S	500 S	500 S
CHRYSENE	218-01-9	1.9 G	1.9 S	1.9 S	1.9 S	1.9 S	1.9 S
CRESOLS	1319-77-3	1300 N	5300 N	130000 N	530000 N	130000 N	530000 N
CRESOL, DINITRO-O-,4,6-	534-52-1	3.3 G	9.3 G	330 G	930 G	3300 G	9300 G
CRESOL, O- (METHYLPHENOL, 2-)	95-48-7	2100 G	5800 G	210000 G	580000 G	210000 G	580000 G
CRESOL, M (METHYLPHENOL, 3-)	108-39-4	2100 G	5800 G	210000 G	580000 G	2100000 G	2500000 S

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Regulated Substance	CASRN	Used Aquifers								Nonuse Aquifers			
		TDS ≤ 2500				TDS > 2500							
		R		NR		R		NR		R		NR	
CRESOL, P (METHYLPHENOL, 4-)	106-44-5	210	G	580	G	21000	G	58000	G	210000	G	580000	G
CRESOL, P-CHLORO-M-	59-50-7	4200	G	12000	G	420000	G	1200000	G	4200	G	12000	G
CROTONALDEHYDE	4170-30-3	0.38	G	1.8	G	38	G	180	G	38	G	180	G
CROTONALDEHYDE, TRANS-	123-73-9	0.38	G	1.8	G	38	G	180	G	38	G	180	G
CUMENE (ISOPROPYL BENZENE)	98-82-8	840	N	3500	N	50000	S	50000	S	50000	S	50000	S
CYANAZINE	21725-46-2	1	H	1	H	100	H	100	H	1	H	1	H
CYCLOHEXANE	110-82-7	13000	N	53000	N	55000	S	55000	S	13000	N	53000	N
CYCLOHEXANONE	108-94-1	1500	N	6200	N	150000	N	620000	N	1500	N	6200	N
CYFLUTHRIN	68359-37-5	1	S	1	S	1	S	1	S	1	S	1	S
CYROMAZINE	66215-27-8	310	G	880	G	31000	G	88000	G	310	G	880	G
DDD, 4,4'-	72-54-8	3	G	14	G	160	S	160	S	160	S	160	S
DDE, 4,4'-	72-55-9	2.1	G	10	G	40	S	40	S	40	S	40	S
DDT, 4,4'-	50-29-3	2.1	G	5.5	S	5.5	S	5.5	S	5.5	S	5.5	S
DI(2-ETHYLHEXYL)ADIPATE	103-23-1	400	M	400	M	40000	M	40000	M	200000	S	200000	S
DIALLATE	2303-16-4	12	G	56	G	1200	G	5600	G	12000	G	40000	S
DIAMINOTOLUENE, 2,4-	95-80-7	0.18	G	0.85	G	18	G	85	G	180	G	850	G
DIAZINON	333-41-5	1	H	1	H	100	H	100	H	1	H	1	H
DIBENZO[A,H]ANTHRACENE	53-70-3	0.055	G	0.6	S	0.6	S	0.6	S	0.6	S	0.6	S
DIBENZOFURAN	132-64-9	42	G	120	G	4200	G	4500	S	4500	S	4500	S
DIBROMO-3-CHLOROPROPANE, 1,2-	96-12-8	0.2	M	0.2	M	20	M	20	M	20	M	20	M
DIBROMOBENZENE, 1,4-	106-37-6	420	G	1200	G	20000	S	20000	S	420	G	1200	G
DIBROMOETHANE, 1,2- (ETHYLENE DIBROMIDE)	106-93-4	0.05	M	0.05	M	5	M	5	M	5	M	5	M
DIBROMOMETHANE	74-95-3	8.4	N	35	N	840	N	3500	N	840	N	3500	N
DIBUTYL PHTHALATE, N-	84-74-2	4200	G	12000	G	400000	S	400000	S	400000	S	400000	S
DICAMBA	1918-00-9	4000	H	4000	H	400000	H	400000	H	4000	H	4000	H
DICHLOROACETIC ACID (HAA)	79-43-6	60	M	60	M	6000	M	6000	M	60	M	60	M
DICHLORO-2-BUTENE, 1,4-	764-41-0	0.012	N	0.06	N	1.2	N	6	N	0.012	N	0.06	N
DICHLORO-2-BUTENE, TRANS-1,4-	110-57-6	0.012	N	0.06	N	1.2	N	6	N	0.012	N	0.06	N
DICHLOROBENZENE, 1,2-	95-50-1	600	M	600	M	60000	M	60000	M	60000	M	60000	M
DICHLOROBENZENE, 1,3-	541-73-1	600	H	600	H	60000	H	60000	H	60000	H	60000	H
DICHLOROBENZENE, P-	106-46-7	75	M	75	M	7500	M	7500	M	7500	M	7500	M
DICHLOROBENZIDINE, 3,3'-	91-94-1	1.6	G	7.6	G	160	G	760	G	1600	G	3100	S
DICHLORODIFLUOROMETHANE (FREON 12)	75-71-8	1000	H	1000	H	100000	H	100000	H	100000	H	100000	H
DICHLOROETHANE, 1,1-	75-34-3	31	N	160	N	3100	N	16000	N	310	N	1600	N

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Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500		TDS > 2500			
		R	NR	R	NR	R	NR
DICHLOROETHANE, 1,2-	107-06-2	5 M	5 M	500 M	500 M	50 M	50 M
DICHLOROETHYLENE, 1,1-	75-35-4	7 M	7 M	700 M	700 M	70 M	70 M
DICHLOROETHYLENE, CIS-1,2-	156-59-2	70 M	70 M	7000 M	7000 M	700 M	700 M
DICHLOROETHYLENE, TRANS-1,2-	156-60-5	100 M	100 M	10000 M	10000 M	1000 M	1000 M
DICHLOROMETHANE (METHYLENE CHLORIDE)	75-09-2	5 M	5 M	500 M	500 M	500 M	500 M
DICHLOROPHENOL, 2,4-	120-83-2	20 H	20 H	2000 H	2000 H	20000 H	20000 H
DICHLOROPHENOXYACETIC ACID, 2,4- (2,4-D)	94-75-7	70 M	70 M	7000 M	7000 M	70000 M	70000 M
DICHLOROPROPANE, 1,2-	78-87-5	5 M	5 M	500 M	500 M	50 M	50 M
DICHLOROPROPENE, 1,3-	542-75-6	7.3 G	34 G	730 G	3400 G	730 G	3400 G
DICHLOROPROPIONIC ACID, 2,2- (DALAPON)	75-99-0	200 M	200 M	20000 M	20000 M	20000 M	20000 M
DICHLORVOS	62-73-7	2.5 G	12 G	250 G	1200 G	2.5 G	12 G
DICYCLOPENTADIENE	77-73-6	0.63 N	2.6 N	63 N	260 N	0.63 N	2.6 N
DIELDRIN	60-57-1	0.046 G	0.21 G	4.6 G	21 G	46 G	170 S
DIETHYL PHTHALATE	84-66-2	33000 G	93000 G	1100000 S	1100000 S	1100000 S	1100000 S
DIFLUBENZURON	35367-38-5	200 S	200 S	200 S	200 S	200 S	200 S
DIISOPROPYL METHYLPHOSPHONATE	1445-75-6	600 H	600 H	60000 H	60000 H	600 H	600 H
DIMETHOATE	60-51-5	8.3 G	23 G	830 G	2300 G	8300 G	23000 G
DIMETHOXYBENZIDINE, 3,3-	119-90-4	0.46 G	2 G	46 G	210 G	460 G	2100 G
DIMETHRIN	70-38-2	36 S	36 S	36 S	36 S	36 S	36 S
DIMETHYLAMINOAZOBENZENE, P-	60-11-7	0.16 G	0.74 G	16 G	74 G	160 G	740 G
DIMETHYLANILINE, N,N-	121-69-7	83 G	230 G	8300 G	23000 G	8300 G	23000 G
DIMETHYLBENZIDINE, 3,3-	119-93-7	0.066 G	0.31 G	6.6 G	31 G	66 G	310 G
DIMETHYL METHYLPHOSPHONATE	756-79-6	100 H	100 H	10000 H	10000 H	100 H	100 H
DIMETHYLPHENOL, 2,4-	105-67-9	830 G	2300 G	83000 G	230000 G	830000 G	2300000 G
DINITROBENZENE, 1,3-	99-65-0	1 H	1 H	100 H	100 H	1000 H	1000 H
DINITROPHENOL, 2,4-	51-28-5	83 G	230 G	8300 G	23000 G	83000 G	230000 G
DINITROTOLUENE, 2,4-	121-14-2	2.4 G	11 G	240 G	1100 G	2400 G	11000 G
DINITROTOLUENE, 2,6- (2,6-DNT)	606-20-2	0.49 G	2 G	49 G	230 G	490 G	2300 G
DINOSEB	88-85-7	7 M	7 M	700 M	700 M	7000 M	7000 M
DIOXANE, 1,4-	123-91-1	6.4 N	32 N	640 N	3200 N	64 N	320 N
DIPHENAMID	957-51-7	200 H	200 H	20000 H	20000 H	200 H	200 H
DIPHENYLAMINE	122-39-4	1000 G	2900 G	100000 G	290000 G	300000 S	300000 S
DIPHENYLHYDRAZINE, 1,2-	122-66-7	0.91 G	4.3 G	91 G	250 S	250 S	250 S
DIQUAT	85-00-7	20 M	20 M	2000 M	2000 M	20 M	20 M

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Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500		TDS > 2500			
		R	NR	R	NR	R	NR
DISULFOTON	298-04-4	0.7 H	0.7 H	70 H	70 H	700 H	700 H
DITHIANE, 1,4-	505-29-3	80 H	80 H	8000 H	8000 H	80 H	80 H
DIURON	330-54-1	83 G	230 G	8300 G	23000 G	83 G	230 G
ENDOSULFAN	115-29-7	250 G	480 S	480 S	480 S	480 S	480 S
ENDOSULFAN I (APLHA)	959-98-8	250 G	500 S	500 S	500 S	250 G	500 S
ENDOSULFAN II (BETA)	33213-65-9	250 G	450 S	450 S	450 S	250 G	450 S
ENDOSULFAN SULFATE	1031-07-8	120 S	120 S	120 S	120 S	120 S	120 S
ENDOTHALL	145-73-3	100 M	100 M	10000 M	10000 M	100 M	100 M
ENDRIN	72-20-8	2 M	2 M	200 M	200 M	2 M	2 M
EPICHLOROHYDRIN	106-89-8	2.1 N	8.8 N	210 N	880 N	210 N	880 N
ETHEPHON	16672-87-0	210 G	580 G	21000 G	58000 G	210 G	580 G
ETHION	563-12-2	21 G	58 G	850 S	850 S	21 G	58 G
ETHOXYETHANOL, 2- (EGEE)	110-80-5	420 N	1800 N	42000 N	180000 N	42000 N	180000 N
ETHYL ACETATE	141-78-6	150 G	620 G	15000 G	62000 G	15000 G	62000 G
ETHYL ACRYLATE	140-88-5	15 G	70 N	1500 G	7000 N	1500 G	7000 N
ETHYL BENZENE	100-41-4	700 M	700 M	70000 M	70000 M	70000 M	70000 M
ETHYL DIPROPYLTHIOCARBAMATE, S- (EPTC)	759-94-4	1000 G	2900 G	100000 G	290000 G	1000 G	2900 G
ETHYL ETHER	60-29-7	8300 G	23000 G	830000 G	2300000 G	8300 G	23000 G
ETHYL METHACRYLATE	97-63-2	630 N	2600 N	63000 N	260000 N	630 N	2600 N
ETHYLENE CHLORHYDRIN	107-07-3	830 G	2300 G	83000 G	230000 G	830 G	2300 G
ETHYLENE GLYCOL	107-21-1	14000 H	14000 H	1400000 H	1400000 H	1400000 H	1400000 H
ETHYLENE THIOUREA (ETU)	96-45-7	3.3 G	9.3 G	330 G	930 G	3300 G	9300 G
ETHYLP-NITROPHENYL PHENYLPHOSPHOROTHIOATE	2104-64-5	0.42 G	1 G	42 G	120 G	0.42 G	1.2 G
FENAMIPHOS	22224-92-6	0.7 H	0.7 H	70 H	70 H	0.7 H	0.7 H
FENVALERATE (PYDRIN)	51630-58-1	85 S	85 S	85 S	85 S	85 S	85 S
FLUOMETURON	2164-17-2	90 H	90 H	9000 H	9000 H	90 H	90 H
FLUORANTHENE	206-44-0	260 S	260 S	260 S	260 S	260 S	260 S
FLUORENE	86-73-7	1700 G	1900 S	1900 S	1900 S	1900 S	1900 S
FLUOROTRICHLOROMETHANE (FREON 11)	75-69-4	2000 H	2000 H	200000 H	200000 H	200000 H	200000 H
FONOFOS	944-22-9	10 H	10 H	1000 H	1000 H	10 H	10 H
FORMALDEHYDE	50-00-0	1000 H	1000 H	100000 H	100000 H	100000 H	100000 H
FORMIC ACID	64-18-6	0.63 N	2.6 N	63 N	260 N	6.3 N	26 N
FOSETYL-AL	39148-24-8	130000 G	350000 G	13000000 G	35000000 G	130000 G	350000 G
FURAN	110-00-9	42 G	120 G	4200 G	12000 G	4200 G	12000 G

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Regulated Substance	CASRN	Used Aquifers								Nonuse Aquifers			
		TDS ≤ 2500				TDS > 2500							
		R		NR		R		NR		R		NR	
FURFURAL	98-01-1	110	N	350	G	11000	N	35000	G	110	N	350	G
GLYPHOSATE	1071-83-6	700	M	700	M	70000	M	70000	M	700	M	700	M
HEPTACHLOR	76-44-8	0.4	M	0.4	M	40	M	40	M	180	S	180	S
HEPTACHLOR EPOXIDE	1024-57-3	0.2	M	0.2	M	20	M	20	M	200	M	200	M
HEXACHLOROBENZENE	118-74-1	1	M	1	M	6	S	6	S	6	S	6	S
HEXACHLOROBUTADIENE	87-68-3	9.4	G	44	G	940	G	2900	S	2900	S	2900	S
HEXACHLOROCYCLOPENTADIENE	77-47-4	50	M	50	M	1800	S	1800	S	1800	S	1800	S
HEXACHLOROETHANE	67-72-1	1	H	1	H	100	H	100	H	100	H	100	H
HEXANE	110-54-3	1500	N	6200	N	9500	S	9500	S	1500	N	6200	N
HEXAZINONE	51235-04-2	400	H	400	H	40000	H	40000	H	400	H	400	H
HEXYTHIAZOX (SAVEY)	78587-05-0	500	S	500	S	500	S	500	S	500	S	500	S
HMX	2691-41-0	400	H	400	H	5000	S	5000	S	400	H	400	H
HYDRAZINE/HYDRAZINE SULFATE	302-01-2	0.01	N	0.051	N	1	N	5.1	N	0.1	N	0.51	N
HYDROQUINONE	123-31-9	12	G	57	G	1200	G	5700	G	12000	G	57000	G
INDENO[1,2,3-CD]PYRENE	193-39-5	0.19	G	2.8	G	19	G	62	S	62	S	62	S
IPRODIONE	36734-19-7	1700	G	4700	G	13000	S	13000	S	1700	G	4700	G
ISOBUTYL ALCOHOL	78-83-1	13000	G	35000	G	1300000	G	3500000	G	1300000	G	3500000	G
ISOPHORONE	78-59-1	100	H	100	H	10000	H	10000	H	100000	H	100000	H
ISOPROPYL METHYLPHOSPHONATE	1832-54-8	700	H	700	H	70000	H	70000	H	700	H	700	H
KEPONE	143-50-0	0.073	G	0.34	G	7.3	G	34	G	73	G	340	G
MALATHION	121-75-5	500	H	500	H	50000	H	50000	H	140000	S	140000	S
MALEIC HYDRAZIDE	123-33-1	4000	H	4000	H	400000	H	400000	H	4000	H	4000	H
MANEB	12427-38-2	210	G	580	G	21000	G	23000	S	210	G	580	G
MERPHOS OXIDE	78-48-8	1.3	G	3.5	G	130	G	350	G	1.3	G	3.5	G
METHACRYLONITRILE	126-98-7	4.2	G	12	G	420	G	1200	G	4.2	G	12	G
METHAMIDOPHOS	10265-92-6	2.1	G	5.8	G	210	G	580	G	2.1	G	5.8	G
METHANOL	67-56-1	8400	N	35000	N	840000	N	3500000	N	840000	N	3500000	N
METHOMYL	16752-77-5	200	H	200	H	20000	H	20000	H	200	H	200	H
METHOXYCHLOR	72-43-5	40	M	40	M	45	S	45	S	45	S	45	S
METHOXYETHANOL, 2-	109-86-4	42	N	180	N	4200	N	18000	N	42	N	1800	N
METHYL ACETATE	79-20-9	42000	G	120000	G	4200000	G	12000000	G	42000	G	120000	G
METHYL ACRYLATE	96-33-3	42	N	180	N	4200	N	18000	N	4200	N	18000	N
METHYL CHLORIDE	74-87-3	30	H	30	H	3000	H	3000	H	3000	H	3000	H
METHYL ETHYL KETONE	78-93-3	4000	H	4000	H	400000	H	400000	H	400000	H	400000	H

APPENDIX A

TABLE 1 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN GROUNDWATER

Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500		TDS > 2500			
		R	NR	R	NR	R	NR
METHYL HYDRAZINE	60-34-4	0.042 N	0.18 N	4.2 N	18 N	0.42 N	1.8 N
METHYL ISOBUTYL KETONE	108-10-1	3300 G	9300 G	330000 G	930000 G	330000 G	930000 G
METHYL ISOCYANATE	624-83-9	2.1 N	8.8 N	210 N	880 N	2.1 N	8.8 N
METHYL N-BUTYL KETONE	591-78-6	63 N	260 N	6300 N	26000 N	63 N	260 N
METHYL METHACRYLATE	80-62-6	1500 N	6200 N	150000 N	620000 N	150000 N	620000 N
METHYL METHANESULFONATE	66-27-3	7.4 G	34 G	740 G	3400 G	7.4 G	34 G
METHYL PARATHION	298-00-0	1 H	1 H	100 H	100 H	1000 H	1000 H
METHYL STYRENE (MIXED ISOMERS)	25013-15-4	84 N	350 N	8400 N	35000 N	84 N	350 N
METHYL TERT-BUTYL ETHER (MTBE)	1634-04-4	20	20	2,000	2,000	200	200
METHYLCHLOROPHENOXYACETIC ACID (MCPA)	94-74-6	30 H	30 H	3000 H	3000 H	30000 H	30000 H
METHYLENE BIS(2-CHLOROANILINE), 4,4'-	101-14-4	2.3 G	34 G	230 G	3400 G	2.3 G	34 G
METHYLNAPHTHALENE, 2-	91-57-6	170 G	470 G	17000 G	25000 S	170 G	470 G
METHYLSTYRENE, ALPHA	98-83-9	2900 G	8200 G	290000 G	560000 S	2900 G	8200 G
METOLACHLOR	51218-45-2	700 H	700 H	70000 H	70000 H	700 H	700 H
METRIBUZIN	21087-64-9	70 H	70 H	7000 H	7000 H	70 H	70 H
MONOCHLOROACETIC ACID	79-11-8	60 H	60 H	6000 H	6000 H	60 H	60 H
NAPHTHALENE	91-20-3	100 H	100 H	10000 H	10000 H	30000 S	30000 S
NAPHTHYLAMINE, 1-	134-32-7	0.41 G	1.9 G	41 G	190 G	410 G	1900 G
NAPHTHYLAMINE, 2-	91-59-8	0.41 G	1.9 G	41 G	190 G	410 G	1900 G
NAPROPAMIDE	15299-99-7	4200 G	12000 G	70000 S	70000 S	4200 G	12000 G
NITROANILINE, O-	88-74-4	420 G	1200 G	42000 G	120000 G	420 G	1200 G
NITROANILINE, P-	100-01-6	37 G	170 G	3700 G	17000 G	37 G	170 G
NITROBENZENE	98-95-3	83 G	230 G	8300 G	23000 G	83000 G	230000 G
NITROGUANIDINE	556-88-7	700 H	700 H	70000 H	70000 H	700 H	700 H
NITROPHENOL, 2-	88-75-5	330 G	930 G	33000 G	93000 G	330000 G	930000 G
NITROPHENOL, 4-	100-02-7	60 H	60 H	6000 H	6000 H	60000 H	60000 H
NITROPROPANE, 2-	79-46-9	0.018 N	0.093 N	1.8 N	9.3 N	0.18 N	0.93 N
NITROSODIETHYLAMINE, N-	55-18-5	0.00045 N	0.0058 N	0.045 N	0.58 N	0.0045 N	0.058 N
NITROSODIMETHYLAMINE, N-	62-75-9	0.0014 N	0.018 N	0.14 N	1.8 N	0.014 N	0.18 N
NITROSO-DI-N-BUTYLAMINE, N-	924-16-3	0.14 G	0.63 G	14 G	63 G	140 G	630 G
NITROSODI-N-PROPYLAMINE, N-	621-64-7	0.1 G	0.49 G	10 G	49 G	100 G	490 G
NITROSODIPHENYLAMINE, N-	86-30-6	150 G	690 G	15000 G	35000 S	35000 S	35000 S
NITROSO-N-ETHYLUREA, N-	759-73-9	0.0084 G	0.13 G	0.84 G	13 G	8.4 G	130 G
OCTYL PHTHALATE, DI-N-	117-84-0	420 G	1200 G	3000 S	3000 S	3000 S	3000 S

APPENDIX A

TABLE 1 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN GROUNDWATER

Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500		TDS > 2500			
		R	NR	R	NR	R	NR
OXAMYL (VYDATE)	23135-22-0	200 M	200 M	20000 M	20000 M	200 M	200 M
PARAQUAT	1910-42-5	30 H	30 H	3000 H	3000 H	30 H	30 H
PARATHION	56-38-2	250 G	700 G	20000 S	20000 S	250 G	700 G
PCB-1016 (AROCLOR)	12674-11-2	0.37 G	1.7 G	37 G	170 G	0.37 G	1.7 G
PCB-1221 (AROCLOR)	11104-28-2	0.37 G	1.7 G	37 G	170 G	0.37 G	1.7 G
PCB-1232 (AROCLOR)	11141-16-5	0.37 G	1.7 G	37 G	170 G	0.37 G	1.7 G
PCB-1242 (AROCLOR)	53469-21-9	0.37 G	1.7 G	37 G	100 S	0.37 G	1.7 G
PCB-1248 (AROCLOR)	12672-29-6	0.37 G	1.7 G	37 G	54 S	0.37 G	1.7 G
PCB-1254 (AROCLOR)	11097-69-1	0.37 G	1.7 G	37 G	57 S	0.37 G	1.7 G
PCB-1260 (AROCLOR)	11096-82-5	0.37 G	1.7 G	37 G	80 S	0.37 G	1.7 G
PEBULATE	1114-71-2	2100 G	5800 G	92000 S	92000 S	2100 G	5800 G
PENTACHLOROBENZENE	608-93-5	33 G	93 G	740 S	740 S	740 S	740 S
PENTACHLOROETHANE	76-01-7	8.1 G	38 G	810 G	3800 G	8.1 G	38 G
PENTACHLORONITROBENZENE	82-68-8	2.8 G	13 G	280 G	440 S	440 S	440 S
PENTACHLOROPHENOL	87-86-5	1 M	1 M	100 M	100 M	1000 M	1000 M
PHENACETIN	62-44-2	330 G	1500 G	33000 G	150000 G	330000 G	760000 S
PHENANTHRENE	85-01-8	1100 S	1100 S	1100 S	1100 S	1100 S	1100 S
PHENOL	108-95-2	2000 H	2000 H	200000 H	200000 H	200000 H	200000 H
PHENYL MERCAPTAN	108-98-5	42 G	120 G	4200 G	12000 G	42 G	120 G
PHENYLENEDIAMINE, M-	108-45-2	250 G	700 G	25000 G	70000 G	250000 G	700000 G
PHENYLPHENOL, 2-	90-43-7	380 G	1800 G	38000 G	180000 G	380000 G	700000 S
PHORATE	298-02-2	8.3 G	23 G	830 G	2300 G	8.3 G	23 G
PHTHALIC ANHYDRIDE	85-44-9	83000 G	230000 G	6200000 S	6200000 S	6200000 S	6200000 S
PICLORAM	1918-02-1	500 M	500 M	50000 M	50000 M	500 M	500 M
POLYCHLORINATED BIPHENYLS (PCBS)	1336-36-3	0.5 M	0.5 M	50 M	50 M	0.5 M	0.5 M
PROMETON	1610-18-0	400 H	400 H	40000 H	40000 H	400 H	400 H
PRONAMIDE	23950-58-5	3100 G	8800 G	15000 S	15000 S	3100 G	8800 G
PROPANIL	709-98-8	210 G	580 G	21000 G	58000 G	210 G	580 G
PROPANOL, 2- (ISOPROPYL ALCOHOL)	67-63-0	420 N	1800 N	42000 N	180000 N	420 N	1800 N
PROPAZINE	139-40-2	10 H	10 H	1000 H	1000 H	10 H	10 H
PROPHAM	122-42-9	100 H	100 H	10000 H	10000 H	100 H	100 H
PROPYLBENZENE, N-	103-65-1	2100 N	8800 N	52000 S	52000 S	2100 N	8800 N
PROPYLENE OXIDE	75-56-9	3 G	14 G	300 G	1400 G	3 G	14 G
PYRENE	129-00-0	130 S	130 S	130 S	130 S	130 S	130 S

APPENDIX A

TABLE 1 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN GROUNDWATER

Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500		TDS > 2500			
		R	NR	R	NR	R	NR
PYRIDINE	110-86-1	42 G	120 G	4200 G	12000 G	420 G	1200 G
QUINOLINE	91-22-5	0.24 G	1.1 G	24 G	110 G	240 G	1100 G
QUIZALOFOP (ASSURE)	76578-14-8	300 S	300 S	300 S	300 S	300 S	300 S
RDX	121-82-4	2 H	2 H	200 H	200 H	2 H	2 H
RESORCINOL	108-46-3	83000 G	230000 G	8300000 G	23000000 G	83000 G	230000 G
RONNEL	299-84-3	2100 G	5800 G	40000 S	40000 S	2100 G	5800 G
SIMAZINE	122-34-9	4 M	4 M	400 M	400 M	4 M	4 M
STRYCHNINE	57-24-9	13 G	35 G	1300 G	3500 G	13000 G	35000 G
STYRENE	100-42-5	100 M	100 M	10000 M	10000 M	10000 M	10000 M
TEBUTHIURON	34014-18-1	500 H	500 H	50000 H	50000 H	500 H	500 H
TERBACIL	5902-51-2	90 H	90 H	9000 H	9000 H	90 H	90 H
TERBUFOS	13071-79-9	0.4 H	0.4 H	40 H	40 H	0.4 H	0.4 H
TETRACHLOROBENZENE, 1,2,4,5-	95-94-3	13 G	35 G	580 S	580 S	580 S	580 S
TETRACHLORODIBENZO-P-DIOXIN, 2,3,7,8- (TCDD)	1746-01-6	0.00003 M	0.00003 M	0.003 M	0.003 M	0.019 S	0.019 S
TETRACHLOROETHANE, 1,1,1,2-	630-20-6	70 H	70 H	7000 H	7000 H	7000 H	7000 H
TETRACHLOROETHANE, 1,1,2,2-	79-34-5	0.84 N	4.3 N	84 N	430 N	84 N	430 N
TETRACHLOROETHYLENE (PCE)	127-18-4	5 M	5 M	500 M	500 M	50 M	50 M
TETRACHLOROPHENOL, 2,3,4,6-	58-90-2	1300 G	3500 G	130000 G	180000 S	180000 S	180000 S
TETRAETHYL LEAD	78-00-2	0.0042 G	0.012 G	0.42 G	1 G	4.2 G	12 G
TETRAETHYLDITHIOPYROPHOSPHATE	3689-24-5	21 G	58 G	2100 G	5800 G	21 G	58 G
TETRAHYDROFURAN	109-99-9	26 N	130 N	2600 N	13000 N	26 N	130 N
THIOFANOX	39196-18-4	13 G	35 G	1300 G	3500 G	13 G	35 G
THIRAM	137-26-8	210 G	580 G	21000 G	30000 S	210 G	580 G
TOLUENE	108-88-3	1000 M	1000 M	100000 M	100000 M	100000 M	100000 M
TOLUIDINE, M-	108-44-1	46 G	210 G	4600 G	21000 G	46 G	210 G
TOLUIDINE, O	95-53-4	46 G	210 G	4600 G	21000 G	46000 G	210000 G
TOLUIDINE, P-	106-49-0	24 G	110 G	2400 G	11000 G	24 G	110 G
TOXAPHENE	8001-35-2	3 M	3 M	300 M	300 M	3 M	3 M
TRIALLATE	2303-17-5	540 G	1500 G	4000 S	4000 S	540 G	1500 G
TRIBROMOMETHANE (BROMOFORM)	75-25-2	80 M	80 M	8000 M	8000 M	8000 M	8000 M
TRICHLORO-1,2,2-TRIFLUOROETHANE, 1,1,2-	76-13-1	63000 N	170000 S	170000 S	170000 S	170000 S	170000 S
TRICHLOROACETIC ACID	76-03-9	60 M	60 M	6000 M	6000 M	60 M	60 M
TRICHLOROBENZENE, 1,2,4-	120-82-1	70 M	70 M	7000 M	7000 M	44000 S	44000 S
TRICHLOROBENZENE, 1,3,5-	108-70-3	40 H	40 H	4000 H	4000 H	40 H	40 H

APPENDIX A

TABLE 1 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN GROUNDWATER

Regulated Substance	CASRN	Used Aquifers				Nonuse Aquifers	
		TDS ≤ 2500		TDS > 2500			
		R	NR	R	NR	R	NR
TRICHLOROETHANE, 1,1,1-	71-55-6	200 M	200 M	20000 M	20000 M	2000 M	2000 M
TRICHLOROETHANE, 1,1,2-	79-00-5	5 M	5 M	500 M	500 M	50 M	50 M
TRICHLOROETHYLENE (TCE)	79-01-6	5 M	5 M	500 M	500 M	50 M	50 M
TRICHLOROPHENOL, 2,4,5-	95-95-4	4200 G	12000 G	420000 G	1000000 S	1000000 S	1000000 S
TRICHLOROPHENOL, 2,4,6-	88-06-2	42 G	120 G	4200 G	12000 G	42000 G	120000 G
TRICHLOROPHENOXYACETIC ACID, 2,4,5- (2,4,5-T)	93-76-5	70 H	70 H	7000 H	7000 H	70000 H	70000 H
TRICHLOROPHENOXYPROPIONIC ACID, 2,4,5- (2,4,5-TP)	93-72-1	50 M	50 M	5000 M	5000 M	50 M	50 M
TRICHLOROPROPANE, 1,1,2-	598-77-6	210 G	580 G	21000 G	58000 G	210 G	580 G
TRICHLOROPROPANE, 1,2,3-	96-18-4	40 H	40 H	4000 H	4000 H	4000 H	4000 H
TRICHLOROPROPENE, 1,2,3-	96-19-5	0.63 N	2.6 N	63 N	260 N	0.63 N	2.6 N
TRIETHYLAMINE	121-44-8	15 N	62 N	1500 N	6200 N	15 N	62 N
TRIETHYLENE GLYCOL	112-27-6	83000 G	230000 G	8300000 G	23000000 G	83000 G	230000 G
TRIFLURALIN	1582-09-8	10 H	10 H	1000 H	1000 H	10 H	10 H
TRIMETHYLBENZENE, 1,3,4- (TRIMETHYLBENZENE, 1,2,4-	95-63-6	15 N	62 N	1500 N	6200 N	1500 N	6200 N
TRIMETHYLBENZENE, 1,3,5-	108-67-8	420 G	1200 G	42000 G	49000 S	420 G	1200 G
TRINITROGLYCEROL (NITROGLYCERIN)	55-63-0	5 H	5 H	500 H	500 H	5 H	5 H
TRINITROTOLUENE, 2,4,6-	118-96-7	2 H	2 H	200 H	200 H	2 H	2 H
VINYL ACETATE	108-05-4	420 N	1800 N	42000 N	180000 N	420 N	1800 N
VINYL BROMIDE (BROMOETHENE)	593-60-2	1.5 N	7.8 N	150 N	780 N	15 N	78 N
VINYL CHLORIDE	75-01-4	2 M	2 M	200 M	200 M	20 M	20 M
WARFARIN	81-81-2	13 G	35 G	1300 G	3500 G	13000 G	17000 S
XYLENES (TOTAL)	1330-20-7	10000 M	10000 M	180000 S	180000 S	180000 S	180000 S
ZINEB	12122-67-7	2100 G	5800 G	10000 S	10000 S	2100 G	5800 G

All concentrations in µg/L
R = Residential
NR = Non-Residential
M = Maximum Contaminant Level
H = Lifetime health advisory level
G = Ingestion
N = Inhalation
S = Aqueous solubility cap

THMs – The values listed for trihalomethanes (THMs) are the total for all THMs combined.

HAAs – The values listed for haloacetic acids (HAAs) are the total for all HAAs combined.

APPENDIX A
TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL
A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential	Non-Residential	
			Surface Soil	Subsurface Soil
		0-15 feet	0-2 feet	2-15 feet
ACENAPHTHENE	83-32-9	13000 G	190000 C	190000 C
ACENAPHTHYLENE	208-96-8	13000 G	190000 C	190000 C
ACEPHATE	30560-19-1	880 G	10000 G	190000 C
ACETALDEHYDE	75-07-0	170 N	720 N	830 N
ACETONE	67-64-1	10000 C	10000 C	10000 C
ACETONITRILE	75-05-8	1100 N	4800 N	5500 N
ACETOPHENONE	98-86-2	10000 C	10000 C	10000 C
ACETYLAMINOFLUORENE, 2- (2AAF)	53-96-3	4.9 G	24 G	190000 C
ACROLEIN	107-02-8	0.38 N	1.6 N	1.8 N
ACRYLAMIDE	79-06-1	1.7 N	22 N	26 N
ACRYLIC ACID	79-10-7	19 N	79 N	91 N
ACRYLONITRILE	107-13-1	6.6 N	33 N	38 N
ALACHLOR	15972-60-8	330 G	1600 G	190000 C
ALDICARB	116-06-3	220 G	3200 G	190000 C
ALDICARB SULFONE	1646-88-4	220 G	3200 G	190000 C
ALDICARB SULFOXIDE	1646-87-3	220 G	3200 G	190000 C
ALDRIN	309-00-2	1.1 G	5.4 G	190000 C
ALLYL ALCOHOL	107-18-6	1.9 N	8 N	9.1 N
AMETRYN	834-12-8	2000 G	29000 G	190000 C
AMINOBIPHENYL, 4-	92-67-1	0.89 G	4.3 G	190000 C
AMITROLE	61-82-5	20 G	97 G	190000 C
AMMONIA	7664-41-7	1900 N	8000 N	9100 N
AMMONIUM SULFAMATE	7773-06-0	44000 G	190000 C	190000 C
ANILINE	62-53-3	19 N	79 N	91 N
ANTHRACENE	120-12-7	66000 G	190000 C	190000 C
ATRAZINE	1912-24-9	81 G	400 G	190000 C
AZINPHOS-METHYL (GUTHION)	86-50-0	680 G	9600 G	190000 C
BAYGON (PROPOXUR)	114-26-1	880 G	13000 G	190000 C
BENOMYL	17804-35-2	11000 G	160000 G	190000 C
BENTAZON	25057-89-0	6600 G	96000 G	190000 C
BENZENE	71-43-2	57 N	290 N	330 N
BENZIDINE	92-87-5	0.018 G	0.4 G	190000 C
BENZO[A]ANTHRACENE	56-55-3	6 G	130 G	190000 C
BENZO[A]PYRENE	50-32-8	0.58 G	12 G	190000 C
BENZO[B]FLUORANTHENE	205-99-2	3.5 G	76 G	190000 C
BENZO[GHI]PERYLENE	191-24-2	13000 G	190000 C	190000 C
BENZO[K]FLUORANTHENE	207-08-9	4 G	76 G	190000 C
BENZOIC ACID	65-85-0	190000 C	190000 C	190000 C
BENZOTRICHLORIDE	98-07-7	1.4 G	7 G	10000 C
BENZYL ALCOHOL	100-51-6	10000 C	10000 C	10000 C
BENZYL CHLORIDE	100-44-7	9 N	45 N	52 N
BETA PROPIOLACTONE	57-57-8	0.11 N	0.56 N	0.64 N
BHC, ALPHA	319-84-6	3 G	14 G	190000 C
BHC, BETA-	319-85-7	10 G	51 G	190000 C
BHC, GAMMA (LINDANE)	58-89-9	17 G	83 G	190000 C
BIPHENYL, 1,1-	92-52-4	2300 G	11000 G	190000 C
BIS(2-CHLOROETHOXY)METHANE	111-91-1	660 G	9600 G	10000 C
BIS(2-CHLOROETHYL)ETHER	111-44-4	1.3 N	6.7 N	7.7 N
BIS(2-CHLORO-ISOPROPYL)ETHER	108-60-1	44 N	220 N	250 N
BIS(CHLOROMETHYL)ETHER	542-88-1	0.0072 N	0.036 N	0.041 N
BIS[2-ETHYLHEXYL] PHTHALATE	117-81-7	1300 G	6500 G	10000 C
BISPHENOL A	80-05-7	11000 G	160000 G	190000 C
BROMACIL	314-40-9	22000 G	190000 C	190000 C
BROMOCHLOROMETHANE	74-97-5	770 N	3200 N	3600 N
BROMODICHLOROMETHANE	75-27-4	12 N	60 N	69 N
BROMOMETHANE	74-83-9	96 N	400 N	460 N

APPENDIX A
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A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential	Non-Residential	
			Surface Soil	Subsurface Soil
		0-15 feet	0-2 feet	2-15 feet
BROMOXYNIL	1689-84-5	4400 G	64000 G	190000 C
BROMOXYNIL OCTANOATE	1689-99-2	4400 G	64000 G	190000 C
BUTADIENE, 1,3-	106-99-0	5.5 G	27 G	85 N
BUTYL ALCOHOL, N-	71-36-3	10000 C	10000 C	10000 C
BUTYLATE	2008-41-5	10000 C	10000 C	10000 C
BUTYLBENZENE, N-	104-51-8	10000 C	10000 C	10000 C
BUTYLBENZENE, SEC-	135-98-8	10000 C	10000 C	10000 C
BUTYLBENZENE, TERT-	98-06-6	10000 C	10000 C	10000 C
BUTYLBENZYL PHTHALATE	85-68-7	9800 G	10000 C	10000 C
CAPTAN	133-06-2	8100 G	40000 G	190000 C
CARBARYL	63-25-2	22000 G	190000 C	190000 C
CARBAZOLE	86-74-8	930 G	4600 G	190000 C
CARBOFURAN	1563-66-2	1100 G	16000 G	190000 C
CARBON DISULFIDE	75-15-0	10000 C	10000 C	10000 C
CARBON TETRACHLORIDE	56-23-5	74 N	370 N	430 N
CARBOXIN	5234-68-4	22000 G	190000 C	190000 C
CHLORAMBEN	133-90-4	3300 G	48000 G	190000 C
CHLORDANE	57-74-9	53 G	260 G	190000 C
CHLORO-1,1-DIFLUOROETHANE, 1-	75-68-3	10000 C	10000 C	10000 C
CHLORO-1-PROPENE, 3- (ALLYL CHLORIDE)	107-05-1	19 N	80 N	91 N
CHLOROACETALDEHYDE	107-20-0	62 G	300 G	10000 C
CHLOROACETOPHENONE, 2-	532-27-4	190000 C	190000 C	190000 C
CHLOROANILINE, P-	106-47-8	93 G	460 G	190000 C
CHLOROBENZENE	108-90-7	960 N	4000 N	4600 N
CHLOROBENZILATE	510-15-6	170 G	830 G	190000 C
CHLOROBUTANE, 1-	109-69-3	8800 G	10000 C	10000 C
CHLORODIBROMOMETHANE	124-48-1	17 N	82 N	95 N
CHLORODIFLUOROMETHANE	75-45-6	10000 C	10000 C	10000 C
CHLOROETHANE	75-00-3	6400 G	10000 C	10000 C
CHLOROFORM	67-66-3	19 N	97 N	110 N
CHLORONAPHTHALENE, 2-	91-58-7	18000 G	190000 C	190000 C
CHLORONITROBENZENE, P-	100-00-5	220 G	3200 G	190000 C
CHLOROPHENOL, 2-	95-57-8	1100 G	10000 C	10000 C
CHLOROPRENE	126-99-8	1.5 N	7.4 N	8.5 N
CHLOROPROPANE, 2-	75-29-6	1900 N	8000 N	9100 N
CHLOROTHALONIL	1897-45-6	3300 G	29000 G	190000 C
CHLOROTOLUENE, O-	95-49-8	4400 G	10000 C	10000 C
CHLOROTOLUENE, P-	106-43-4	4400 G	10000 C	10000 C
CHLORPYRIFOS	2921-88-2	220 G	3200 G	190000 C
CHLORSULFURON	64902-72-3	11000 G	160000 G	190000 C
CHLORTHAL-DIMETHYL (DACTHAL) (DCPA)	1861-32-1	2200 G	32000 G	190000 C
CHRYSENE	218-01-9	35 G	760 G	190000 C
CRESOL(S)	1319-77-3	10000 C	10000 C	10000 C
CRESOL, 4,6-DINITRO-O-	534-52-1	18 G	260 G	190000 C
CRESOL, O- (2-METHYLPHENOL)	95-48-7	11000 G	160000 G	190000 C
CRESOL, M- (3-METHYLPHENOL)	108-39-4	10000 C	10000 C	10000 C
CRESOL, P- (4-METHYLPHENOL)	106-44-5	1100 G	16000 G	190000 C
CRESOL, P-CHLORO-M-	59-50-7	22000 G	190000 C	190000 C
CROTONALDEHYDE	4170-30-3	9.8 G	48 G	10000 C
CROTONALDEHYDE, TRANS-	123-73-9	9.8 G	48 G	10000 C
CUMENE (ISOPROPYL BENZENE)	98-82-8	7700 N	10000 C	10000 C
CYANAZINE	21725-46-2	22 G	110 G	190000 C
CYCLOHEXANE	110-82-7	10000 C	10000 C	10000 C
CYCLOHEXANONE	108-94-1	10000 C	10000 C	10000 C
CYFLUTHRIN	68359-37-5	5500 G	80000 G	190000 C
CYROMAZINE	66215-27-8	1700 G	24000 G	190000 C

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A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential	Non-Residential	
			Surface Soil	Subsurface Soil
		0-15 feet	0-2 feet	2-15 feet
DDD, 4,4'-	72-54-8	78 G	380 G	190000 C
DDE, 4,4'-	72-55-9	55 G	270 G	190000 C
DDT, 4,4'-	50-29-3	55 G	270 G	190000 C
DI(2-ETHYLHEXYL)ADIPATE	103-23-1	10000 C	10000 C	10000 C
DIALLATE	2303-16-4	300 G	1500 G	10000 C
DIAMINOTOLUENE, 2,4-	95-80-7	4.7 G	23 G	190000 C
DIAZINON	333-41-5	150 G	2200 G	10000 C
DIBENZO[A,H]ANTHRACENE	53-70-3	1 G	22 G	190000 C
DIBENZOFURAN	132-64-9	220 G	3200 G	190000 C
DIBROMO-3-CHLOROPROPANE, 1,2-	96-12-8	0.029 N	0.37 N	0.43 N
DIBROMOBENZENE, 1,4-	106-37-6	2200 G	32000 G	190000 C
DIBROMOETHANE, 1,2- (ETHYLENE DIBROMIDE)	106-93-4	0.74 N	3.7 N	4.3 N
DIBROMOMETHANE	74-95-3	77 N	320 N	370 N
DIBUTYL PHTHALATE, N-	84-74-2	10000 C	10000 C	10000 C
DICAMBA	1918-00-9	6600 G	96000 G	190000 C
DICHLOROACETIC ACID	79-43-6	370 G	1800 G	10000 C
DICHLORO-2-BUTENE, 1,4-	764-41-0	0.11 N	0.53 N	0.61 N
DICHLORO-2-BUTENE, TRANS-1,4-	110-57-6	0.1 N	0.52 N	0.6 N
DICHLOROBENZENE, 1,2-	95-50-1	3800 N	10000 C	10000 C
DICHLOROBENZENE, 1,3-	541-73-1	10000 C	10000 C	10000 C
DICHLOROBENZENE, P-	106-46-7	40 N	200 N	230 N
DICHLOROBENZIDINE, 3,3'-	91-94-1	41 G	200 G	190000 C
DICHLORODIFLUOROMETHANE (FREON 12)	75-71-8	1900 N	8000 N	9100 N
DICHLOROETHANE, 1,1-	75-34-3	280 N	1400 N	1600 N
DICHLOROETHANE, 1,2-	107-06-2	17 N	86 N	98 N
DICHLOROETHYLENE, 1,1-	75-35-4	3800 N	10000 C	10000 C
DICHLOROETHYLENE, CIS-1,2-	156-59-2	440 G	6400 G	10000 C
DICHLOROETHYLENE, TRANS-1,2-	156-60-5	1100 N	4800 N	5500 N
DICHLOROMETHANE (METHYLENE CHLORIDE)	75-09-2	1300 G	10000 C	10000 C
DICHLOROPHENOL, 2,4-	120-83-2	660 G	9600 G	190000 C
DICHLOROPHENOXYACETIC ACID, 2,4- (2,4-D)	94-75-7	2200 G	32000 G	190000 C
DICHLOROPROPANE, 1,2-	78-87-5	45 N	220 N	260 N
DICHLOROPROPENE, 1,3-	542-75-6	110 N	560 N	640 N
DICHLOROPROPIONIC ACID, 2,2- (DALAPON)	75-99-0	6600 G	10000 C	10000 C
DICHLORVOS	62-73-7	64 G	310 G	10000 C
DICYCLOPENTADIENE	77-73-6	6 N	24 N	27 N
DIELDRIN	60-57-1	1.2 G	6 G	190000 C
DIETHANOLAMINE	111-42-2	440 G	6400 G	10000 C
DIETHYL PHTHALATE	84-66-2	10000 C	10000 C	10000 C
DIFLUBENZURON	35367-38-5	4400 G	64000 G	190000 C
DIISOPROPYL METHYLPHOSPHONATE	1445-75-6	10000 C	10000 C	10000 C
DIMETHOATE	60-51-5	44 G	640 G	190000 C
DIMETHOXYBENZIDINE, 3,3-	119-90-4	1300 G	6500 G	190000 C
DIMETHRIN	70-38-2	66000 G	190000 C	190000 C
DIMETHYLAMINOAZOBENZENE, P-	60-11-7	4 G	20 G	190000 C
DIMETHYLANILINE, N,N-	121-69-7	440 G	6400 G	10000 C
DIMETHYLBENZIDINE, 3,3-	119-93-7	1.7 G	8.3 G	190000 C
DIMETHYL METHYLPHOSPHONATE	756-79-6	10000 C	10000 C	10000 C
DIMETHYLPHENOL, 2,4-	105-67-9	4400 G	10000 C	10000 C
DINITROBENZENE, 1,3-	99-65-0	22 G	320 G	190000 C
DINITROPHENOL, 2,4-	51-28-5	440 G	6400 G	190000 C
DINITROTOLUENE, 2,4-	121-14-2	60 G	290 G	190000 C
DINITROTOLUENE, 2,6- (2,6-DNT)	606-20-2	12 G	61 G	190000 C
DINOSEB	88-85-7	220 G	3200 G	190000 C
DIOXANE, 1,4-	123-91-1	58 N	290 N	330 N
DIPHENAMID	957-51-7	6600 G	96000 G	190000 C

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REGULATED SUBSTANCE	CASRN	Residential	Non-Residential	
			Surface Soil	Subsurface Soil
		0-15 feet	0-2 feet	2-15 feet
DIPHENYLAMINE	122-39-4	5500 G	80000 G	190000 C
DIPHENYLHYDRAZINE, 1,2-	122-66-7	23 G	110 G	190000 C
DIQUAT	85-00-7	480 G	7000 G	190000 C
DISULFOTON	298-04-4	8.8 G	130 G	10000 C
DITHIANE, 1,4-	505-29-3	2200 G	32000 G	190000 C
DIURON	330-54-1	440 G	6400 G	190000 C
ENDOSULFAN	115-29-7	1300 G	19000 G	190000 C
ENDOSULFAN I (ALPHA)	959-98-8	1300 G	19000 G	190000 C
ENDOSULFAN II (BETA)	33213-65-9	1300 G	19000 G	190000 C
ENDOSULFAN SULFATE	1031-07-8	1300 G	19000 G	190000 C
ENDOTHALL	145-73-3	4400 G	64000 G	190000 C
ENDRIN	72-20-8	66 G	960 G	190000 C
EPICHLOROHYDRIN	106-89-8	19 N	79 N	91 N
ETHEPHON	16672-87-0	1100 G	16000 G	190000 C
ETHION	563-12-2	110 G	1600 G	10000 C
ETHOXYETHANOL, 2- (EGEE)	110-80-5	3900 N	10000 C	10000 C
ETHYL ACETATE	141-78-6	1300 N	5600 N	6400 N
ETHYL ACRYLATE	140-88-5	150 N	640 N	730 N
ETHYL BENZENE	100-41-4	180 N	890 N	1000 N
ETHYL DIPROPYLTHIOCARBAMATE, S- (EPTC)	759-94-4	5500 G	10000 C	10000 C
ETHYL ETHER	60-29-7	10000 C	10000 C	10000 C
ETHYL METHACRYLATE	97-63-2	5700 N	10000 C	10000 C
ETHYLENE CHLORHYDRIN	107-07-3	4400 G	10000 C	10000 C
ETHYLENE GLYCOL	107-21-1	7700 N	10000 C	10000 C
ETHYLENE THIOUREA (ETU)	96-45-7	18 G	260 G	190000 C
ETHYLP-NITROPHENYL PHENYLPHOSPHOROTHIOATE	2104-64-5	2.2 G	32 G	190000 C
FENAMIPHOS	22224-92-6	55 G	800 G	190000 C
FENVALERATE (PYDRIN)	51630-58-1	5500 G	10000 C	10000 C
FLUOMETURON	2164-17-2	2900 G	42000 G	190000 C
FLUORANTHENE	206-44-0	8800 G	130000 G	190000 C
FLUORENE	86-73-7	8800 G	130000 G	190000 C
FLUOROTRICHLOROMETHANE (FREON 11)	75-69-4	10000 C	10000 C	10000 C
FONOFOS	944-22-9	440 G	6400 G	10000 C
FORMALDEHYDE	50-00-0	34 N	170 N	200 N
FORMIC ACID	64-18-6	6 N	24 N	27 N
FOSETYL-AL	39148-24-8	190000 C	190000 C	190000 C
FURAN	110-00-9	220 G	3200 G	10000 C
FURFURAL	98-01-1	660 G	4000 N	4500 N
GLYPHOSATE	1071-83-6	22000 G	190000 C	190000 C
HEPTACHLOR	76-44-8	4 G	20 G	190000 C
HEPTACHLOR EPOXIDE	1024-57-3	2 G	10 G	190000 C
HEXACHLOROBENZENE	118-74-1	12 G	57 G	190000 C
HEXACHLOROBUTADIENE	87-68-3	220 G	1200 G	10000 C
HEXACHLOROCYCLOPENTADIENE	77-47-4	1300 G	10000 C	10000 C
HEXACHLOROETHANE	67-72-1	44 N	220 N	260 N
HEXANE	110-54-3	10000 C	10000 C	10000 C
HEXAZINONE	51235-04-2	7300 G	110000 G	190000 C
HEXYTHIAZOX (SAVEY)	78587-05-0	5500 G	80000 G	190000 C
HMX	2691-41-0	11000 G	160000 G	190000 C
HYDRAZINE/HYDRAZINE SULFATE	302-01-2	0.09 N	0.45 N	0.52 N
HYDROQUINONE	123-31-9	310 G	1500 G	190000 C
INDENO[1,2,3-CD]PYRENE	193-39-5	3.5 G	76 G	190000 C
IPRODIONE	36734-19-7	8800 G	130000 G	190000 C
ISOBUTYL ALCOHOL	78-83-1	10000 C	10000 C	10000 C
ISOPHORONE	78-59-1	10000 C	10000 C	10000 C
ISOPROPYL METHYLPHOSPHONATE	1832-54-8	10000 C	10000 C	10000 C

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REGULATED SUBSTANCE	CASRN	Residential	Non-Residential	
			Surface Soil	Subsurface Soil
		0-15 feet	0-2 feet	2-15 feet
KEPONE	143-50-0	1.9 G	9.1 G	190000 C
MALATHION	121-75-5	4400 G	10000 C	10000 C
MALEIC HYDRAZIDE	123-33-1	110000 G	190000 C	190000 C
MANEB	12427-38-2	1100 G	16000 G	190000 C
MERPHOS OXIDE	78-48-8	6.6 G	96 G	10000 C
METHACRYLONITRILE	126-98-7	22 G	320 G	2800 N
METHAMIDOPHOS	10265-92-6	11 G	160 G	190000 C
METHANOL	67-56-1	10000 C	10000 C	10000 C
METHOMYL	16752-77-5	5500 G	80000 G	190000 C
METHOXYCHLOR	72-43-5	1100 G	16000 G	190000 C
METHOXYETHANOL, 2-	109-86-4	380 N	1600 N	1800 N
METHYL ACETATE	79-20-9	10000 C	10000 C	10000 C
METHYL ACRYLATE	96-33-3	380 N	1600 N	1800 N
METHYL CHLORIDE	74-87-3	250 N	1200 N	1400 N
METHYL ETHYL KETONE	78-93-3	10000 C	10000 C	10000 C
METHYL HYDRAZINE	60-34-4	0.38 N	1.6 N	1.8 N
METHYL ISOBUTYL KETONE	108-10-1	10000 C	10000 C	10000 C
METHYL ISOCYANATE	624-83-9	19 N	79 N	91 N
METHYL N-BUTYL KETONE (2-HEXANONE)	591-78-6	570 N	2400 N	2800 N
METHYL METHACRYLATE	80-62-6	10000 C	10000 C	10000 C
METHYL METHANESULFONATE	66-27-3	190 G	920 G	10000 C
METHYL PARATHION	298-00-0	55 G	800 G	190000 C
METHYL STYRENE (MIXED ISOMERS)	25013-15-4	770 N	3200 N	3600 N
METHYL TERT-BUTYL ETHER (MTBE)	1634-04-4	1700 N	8600 N	9900 N
METHYLCHLOROPHENOXYACETIC ACD (MCPA)	94-74-6	110 G	1600 C	190000 C
METHYLENE BIS(2-CHLOROANILINE), 4,4'-	101-14-4	42 G	910 G	190000 C
METHYLNAPHTHALENE, 2-	91-57-6	880 G	13000 G	190000 C
METHYLSTYRENE, ALPHA	98-83-9	10000 C	10000 C	10000 C
METOLACHLOR	51218-45-2	10000 C	10000 C	10000 C
METRIBUZIN	21087-64-9	5500 G	80000 G	190000 C
MONOCHLOROACETIC ACID	79-11-8	440 G	6400 G	190000 C
NAPHTHALENE	91-20-3	160 G	760 G	190000 C
NAPHTHYLAMINE, 1-	134-32-7	10 G	51 G	190000 C
NAPHTHYLAMINE, 2-	91-59-8	10 G	51 G	190000 C
NAPROPAMIDE	15299-99-7	22000 G	190000 C	190000 C
NITROANILINE, O-	88-74-4	2200 G	32000 G	190000 C
NITROANILINE, P-	100-01-6	880 G	4600 G	190000 C
NITROBENZENE	98-95-3	440 G	6400 G	10000 C
NITROGUANIDINE	556-88-7	22000 G	190000 C	190000 C
NITROPHENOL, 2-	88-75-5	1800 G	26000 G	190000 C
NITROPHENOL, 4-	100-02-7	1800 G	26000 G	190000 C
NITROPROPANE, 2-	79-46-9	0.16 N	0.82 N	0.94 N
NITROSODIETHYLAMINE, N-	55-18-5	0.0041 N	0.051 N	0.059 N
NITROSODIMETHYLAMINE, N-	62-75-9	0.012 N	0.16 N	0.18 N
NITROSO-DI-N-BUTYLAMINE, N-	924-16-3	3.4 G	17 G	10000 C
NITROSODI-N-PROPYLAMINE, N-	621-64-7	2.7 G	13 G	10000 C
NITROSODIPHENYLAMINE, N-	86-30-6	3800 G	19000 G	190000 C
NITROSO-N-ETHYLUREA, N-	759-73-9	0.16 G	3.4 G	190000 C
OCTYL PHTHALATE, DI-N-	117-84-0	2200 G	10000 C	10000 C
OXAMYL (VYDATE)	23135-22-0	5500 G	80000 G	190000 C
PARAQUAT	1910-42-5	990 G	14000 G	190000 C
PARATHION	56-38-2	1300 G	10000 C	10000 C
PCB-1016 (AROCLOR)	12674-11-2	9 G	46 G	10000 C
PCB-1221 (AROCLOR)	11104-28-2	9 G	46 G	10000 C
PCB-1232 (AROCLOR)	11141-16-5	9 G	46 G	10000 C
PCB-1242 (AROCLOR)	53469-21-9	9 G	46 G	10000 C

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A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential	Non-Residential	
			Surface Soil	Subsurface Soil
		0-15 feet	0-2 feet	2-15 feet
PCB-1248 (AROCLOR)	12672-29-6	9.3 G	46 G	10000 C
PCB-1254 (AROCLOR)	11097-69-1	4.4 G	46 G	10000 C
PCB-1260 (AROCLOR)	11096-82-5	9 G	46 G	190000 C
PEBULATE	1114-71-2	10000 C	10000 C	10000 C
PENTACHLOROBENZENE	608-93-5	180 G	2600 G	190000 C
PENTACHLOROETHANE	76-01-7	210 G	1000 G	10000 C
PENTACHLORONITROBENZENE	82-68-8	72 G	350 G	190000 C
PENTACHLOROPHENOL	87-86-5	47 G	230 G	190000 C
PHENACETIN	62-44-2	8500 G	41000 G	190000 C
PHENANTHRENE	85-01-8	66000 G	190000 C	190000 C
PHENOL	108-95-2	3800 N	16000 N	18000 N
PHENYL MERCAPTAN	108-98-5	220 G	3200 G	10000 C
PHENYLENEDIAMINE, M-	108-45-2	1300 G	19000 G	190000 C
PHENYLPHENOL, 2-	90-43-7	9800 G	48000 G	190000 C
PHORATE	298-02-2	44 G	640 G	10000 C
PHTHALIC ANHYDRIDE	85-44-9	190000 C	190000 C	190000 C
PICLORAM	1918-02-1	15000 G	190000 C	190000 C
PROMETON	1610-18-0	3300 G	48000 G	190000 C
PRONAMIDE	23950-58-5	17000 G	190000 C	190000 C
PROPANIL	709-98-8	1100 G	16000 G	190000 C
PROPANOL, 2- (ISOPROPYL ALCOHOL)	67-63-0	3800 N	10000 C	10000 C
PROPAZINE	139-40-2	4400 G	10000 C	10000 C
PROPHAM	122-42-9	4400 G	64000 G	190000 C
PROPYLBENZENE, N-	103-65-1	10000 C	10000 C	10000 C
PROPYLENE OXIDE	75-56-9	78 G	380 G	690 N
PYRENE	129-00-0	6600 G	96000 G	190000 C
PYRIDINE	110-86-1	220 G	3200 G	10000 C
QUINOLINE	91-22-5	6 G	30 G	10000 C
QUIZALOFOP (ASSURE)	76578-14-8	2000 G	29000 G	190000 C
RDX	121-82-4	170 G	830 G	190000 C
RESORCINOL	108-46-3	190000 C	190000 C	190000 C
RONNEL	299-84-3	11000 G	160000 G	190000 C
SIMAZINE	122-34-9	160 G	760 G	190000 C
STRYCHNINE	57-24-9	66 G	960 G	190000 C
STYRENE	100-42-5	10000 C	10000 C	10000 C
TEBUTHIURON	34014-18-1	15000 G	190000 C	190000 C
TERBACIL	5902-51-2	2900 G	42000 G	190000 C
TERBUFOS	13071-79-9	5.5 G	80 G	10000 C
TETRACHLOROBENZENE, 1,2,4,5-	95-94-3	66 G	960 G	190000 C
TETRACHLORODIBENZO-P-DIOXIN, 2,3,7,8- (TCDD)	1746-01-6	0.00014 G	0.0007 G	190000 C
TETRACHLOROETHANE, 1,1,1,2-	630-20-6	60 N	300 N	340 N
TETRACHLOROETHANE, 1,1,2,2-	79-34-5	7.7 N	38 N	44 N
TETRACHLOROETHYLENE (PCE)	127-18-4	770 N	3200 N	3600 N
TETRACHLOROPHENOL, 2,3,4,6-	58-90-2	6600 G	96000 G	190000 C
TETRAETHYL LEAD	78-00-2	0.022 G	0.32 G	10000 C
TETRAETHYLDITHIOPYROPHOSPHATE	3689-24-5	110 G	1600 G	10000 C
TETRAHYDROFURAN	109-99-9	240 N	1200 N	1400 N
THIOFANOX	39196-18-4	66 G	960 G	190000 C
THIRAM	137-26-8	1100 G	16000 G	190000 C
TOLUENE	108-88-3	10000 C	10000 C	10000 C
TOLUIDINE, M-	108-44-1	1200 G	5700 G	10000 C
TOLUIDINE, O-	95-53-4	1200 G	5700 G	10000 C
TOLUIDINE, P-	106-49-0	620 G	3000 G	190000 C
TOXAPHENE	8001-35-2	17 G	83 G	190000 C
TRIALLATE	2303-17-5	2900 G	10000 C	10000 C
TRIBROMOMETHANE (BROMOFORM)	75-25-2	410 N	2000 N	2300 N

APPENDIX A
TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL
A. Direct Contact Numeric Values

REGULATED SUBSTANCE	CASRN	Residential	Non-Residential	
			Surface Soil	Subsurface Soil
		0-15 feet	0-2 feet	2-15 feet
TRICHLORO-1,2,2-TRIFLUOROETHANE, 1,1,2-	76-13-1	10000 C	10000 C	10000 C
TRICHLOROACETIC ACID	76-03-9	270 G	1300 G	190000 C
TRICHLOROBENZENE, 1,2,4-	120-82-1	640 G	3100 G	10000 C
TRICHLOROBENZENE, 1,3,5-	108-70-3	1300 G	19000 G	190000 C
TRICHLOROETHANE, 1,1,1-	71-55-6	10000 C	10000 C	10000 C
TRICHLOROETHANE, 1,1,2-	79-00-5	4 N	16 N	18 N
TRICHLOROETHYLENE (TCE)	79-01-6	38 N	160 N	180 N
TRICHLOROPHENOL, 2,4,5-	95-95-4	22000 G	190000 C	190000 C
TRICHLOROPHENOL, 2,4,6-	88-06-2	220 G	3200 G	190000 C
TRICHLOROPHENOXYACETIC ACID, 2,4,5- (2,4,5-T)	93-76-5	2200 G	32000 G	190000 C
TRICHLOROPHENOXYPROPIONIC ACID, 2,4,5- (2,4,5-TP)(SILVEX)	93-72-1	1800 G	26000 G	190000 C
TRICHLOROPROPANE, 1,1,2-	598-77-6	1100 G	10000 C	10000 C
TRICHLOROPROPANE, 1,2,3-	96-18-4	0.14 G	3 G	28 N
TRICHLOROPROPENE, 1,2,3-	96-19-5	5.7 N	24 N	27 N
TRIETHYLAMINE	121-44-8	130 N	560 N	640 N
TRIETHYLENE GLYCOL	112-27-6	10000 C	10000 C	10000 C
TRIFLURALIN	1582-09-8	1700 G	12000 G	190000 C
TRIMETHYLBENZENE, 1,3,4- (TRIMETHYLBENZENE, 1,2,4-)	95-63-6	130 N	560 N	640 N
TRIMETHYLBENZENE, 1,3,5-	108-67-8	2200 G	10000 C	10000 C
TRINITROGLYCEROL (NITROGLYCERIN)	55-63-0	22 G	320 G	10000 C
TRINITROTOLUENE, 2,4,6-	118-96-7	110 G	1600 G	190000 C
VINYL ACETATE	108-05-4	3900 N	10000 C	10000 C
VINYL BROMIDE (BROMOETHENE)	593-60-2	14 N	70 N	80 N
VINYL CHLORIDE	75-01-4	0.9 G	61 G	280 N
WARFARIN	81-81-2	66 G	960 G	190000 C
XYLENES (TOTAL)	1330-20-7	1900 N	8000 N	9100 N
ZINEB	12122-67-7	11000 G	160000 G	190000 C

All concentrations in mg/kg
G - Ingestion
N - Inhalation
C - Cap

APPENDIX A

TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL

B. Soil to Groundwater Numeric Values[1]

REGULATED SUBSTANCE	CASRN	Used Aquifers								Nonuse Aquifers				Soil Buffer Distance (feet)
		TDS ≤ 2500				TDS > 2500								
		Residential		Nonresidential		Residential		Nonresidential		Residential		Nonresidential		
		100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	
ACENAPHTHENE	83-32-9	250	3100 E	360	4700 E	360	4700 E	380	4700 E	380	4700 E	380	4700 E	15
ACENAPHTHYLENE	208-96-8	250	2800 E	700	8000 E	1600	18000 E	1600	18000 E	1600	18000 E	1600	18000 E	15
ACEPHATE	30560-19-1	8.4	1.0 E	39	4.6 E	840	100 E	3900	460 E	8.4	1.0 E	39	4.6 E	NA
ACETALDEHYDE	75-07-0	1.9	0.23 E	7.9	0.96 E	190	23 E	790	96 E	1.9	0.23 E	7.9	0.96 E	NA
ACETONE	67-64-1	3600	430 E	10000	1200 E	10000	10000 C	10000	10000 C	10000	4300 E	10000	10000 C	NA
ACETONITRILE	75-05-8	13	1.5 E	53	6 E	1300	150 E	5300	600 E	130	15 E	530	60 E	NA
ACETOPHENONE	98-86-2	420	230 E	1200	640 E	10000	10000 C	10000	10000 C	420	230 E	1200	640 E	NA
ACETYLAMINOFLUORENE, 2- (2AAF)	53-96-3	0.019	0.08 E	0.069	0.37 E	1.9	8 E	6.9	37 E	19	78 E	69	370 E	20
ACROLEIN	107-02-8	0.0042	0.00047 E	0.018	0.002 E	0.42	0.047 E	1.8	0.2 E	0.042	0.0047 E	0.18	0.02 E	NA
ACRYLAMIDE	79-06-1	0.019	0.0033 E	0.25	0.043 E	1.9	0.33 E	25	4.3 E	0.019	0.0033 E	0.25	0.043 E	NA
ACRYLIC ACID	79-10-7	0.21	0.039 E	0.88	0.16 E	21	3.9 E	88	16 E	21	3.9 E	88	16 E	NA
ACRYLONITRILE	107-13-1	0.072	0.01 E	0.37	0.051 E	7.2	1 E	37	5.1 E	7.2	1 E	37	5.1 E	NA
ALACHLOR	15972-60-8	0.2	0.077 E	0.2	0.077 E	20	7.7 E	20	7.7 E	0.2	0.077 E	0.2	0.077 E	NA
ALDICARB	116-06-3	0.3	0.05 E	0.3	0.05 E	30	5 E	30	5 E	300	50 E	300	50 E	NA
ALDICARB SULFONE	1646-88-4	0.2	0.027 E	0.2	0.027 E	20	2.7 E	20	2.7 E	0.2	0.027 E	0.2	0.027 E	NA
ALDICARB SULFOXIDE	1646-87-3	0.4	0.045 E	0.4	0.045 E	40	4.5 E	40	4.5 E	0.4	0.045 E	0.4	0.045 E	NA
ALDRIN	309-00-2	0.0043	0.52 E	0.02	2.4 E	0.43	52 E	2.0	240 E	2	240 E	2	240 E	10
ALLYL ALCOHOL	107-18-6	0.021	0.0025 E	0.088	0.01 E	2.1	0.25 E	9	1 E	2.1	0.25 E	9	1 E	NA
AMETRYN	834-12-8	6	6.5 E	6	6.5 E	600	650 E	600	650 E	6	6.5 E	6	6.5 E	NA
AMINOBIPHENYL, 4-	92-67-1	0.0035	0.0014 E	0.016	0.0062 E	0.35	0.14 E	1.6	0.62 E	3.5	1.4 E	16	6.2 E	NA
AMITROLE	61-82-5	0.078	0.032 E	0.36	0.15 E	8	3.2 E	36	15 E	78	32 E	360	150 E	NA
AMMONIA	7664-41-7	3000	360 E	3000	360 E	10000	10000 C	10000	10000 C	3000	360 E	3000	360 E	NA
AMMONIUM SULFAMATE	7773-06-0	200	24 E	200	24 E	20000	2400 E	20000	2400 E	200	24 E	200	24 E	NA
ANILINE	62-53-3	0.21	0.12 E	0.88	0.52 E	21	12 E	88	52 E	0.21	0.12 E	0.88	0.52 E	NA
ANTHRACENE	120-12-7	6.6	350 E	6.6	350 E	6.6	350 E	6.6	350 E	6.6	350 E	6.6	350 E	10
ATRAZINE	1912-24-9	0.3	0.13 E	0.3	0.13 E	30	13 E	30	13 E	0.3	0.13 E	0.3	0.13 E	NA
AZINPHOS-METHYL (GUTHION)	86-50-0	13	15 E	35	40 E	1300	1500 E	3200	3600 E	13	15 E	35	40 E	NA
BAYGON (PROPOXUR)	114-26-1	0.3	0.057 E	0.3	0.057 E	30	5.7 E	30	5.7 E	300	57 E	300	57 E	NA
BENOMYL	17804-35-2	200	970 E	200	970 E	200	970 E	200	970 E	200	970 E	200	970 E	20
BENTAZON	25057-89-0	20	2.9 E	20	2.9 E	2000	290 E	2000	290 E	20	2.9 E	20	2.9 E	NA
BENZENE	71-43-2	0.5	0.13 E	0.5	0.13 E	50	13 E	50	13 E	50	13 E	50	13 E	NA
BENZIDINE	92-87-5	0.000098	0.13 E	0.0015	2 E	0.0098	13 E	0.15	200 E	0.098	130 E	1.5	2000 E	5
BENZO(A)ANTHRACENE	56-55-3	0.032	26 E	0.49	430 E	1.1	960 E	1.1	960 E	1.1	960 E	1.1	960 E	5
BENZO(A)PYRENE	50-32-8	0.02	46 E	0.02	46 E	0.38	860 E	0.38	860 E	0.38	860 E	0.38	860 E	5
BENZO(B)FLUORANTHENE	205-99-2	0.019	26 E	0.12	170 E	0.12	170 E	0.12	170 E	0.12	170 E	0.12	170 E	5
BENZO(GHI)PERYLENE	191-24-2	0.026	180 E	0.026	180 E	0.026	180 E	0.026	180 E	0.026	180 E	0.026	180 E	5
BENZO(K)FLUORANTHENE	207-08-9	0.019	210 E	0.055	610 E	0.055	610 E	0.055	610 E	0.055	610 E	0.055	610 E	5
BENZOIC ACID	65-85-0	17000	3200 E	47000	9000 E	190000	52000 E	190000	52000 E	17000	3200 E	47000	9000 E	NA
BENZOTRICHLORIDE	98-07-7	0.0056	0.014 E	0.026	0.063 E	0.56	1.4 E	3	6.3 E	5.6	14 E	26	63 E	30
BENZYL ALCOHOL	100-51-6	420	150 E	1200	430 E	10000	10000 C	10000	10000 C	420	150 E	1200	430 E	NA
BENZYL CHLORIDE	100-44-7	0.1	0.059 E	0.51	0.3 E	10	5.9 E	51	30 E	10	5.9 E	51	30 E	NA
BETA PROPIOLACTONE	57-57-8	0.0012	0.00015 E	0.0063	0.00076 E	0.1	0.015 E	0.63	0.076 E	0.012	0.0015 E	0.063	0.0076 E	NA

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TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL

B. Soil to Groundwater Numeric Values[1]

REGULATED SUBSTANCE	CASRN	Used Aquifers								Nonuse Aquifers				Soil Buffer Distance (feet)
		TDS ≤ 2500				TDS > 2500								
		Residential		Nonresidential		Residential		Nonresidential		Residential		Nonresidential		
		100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	
BHC, ALPHA	319-84-6	0.012	0.055 E	0.054	0.25 E	1	5.5 E	5.4	25 E	12	55 E	54	250 E	20
BHC, BETA-	319-85-7	0.041	0.24 E	0.19	1.1 E	4.1	24 E	10	59 E	10	59 E	10	59 E	15
BHC, GAMMA (LINDANE)	58-89-9	0.02	0.072 E	0.02	0.072 E	2	7.2 E	2	7.2 E	20	72 E	20	72 E	20
BIPHENYL, 1,1-	92-52-4	9.1	40 E	43	190 E	720	3100 E	720	3100 E	720	3100 E	720	3100 E	20
BIS(2-CHLOROETHOXY)METHANE	111-91-1	13	3.4 E	35	9.2 E	1300	340 E	3500	920 E	13	3.4 E	35	9.2 E	NA
BIS(2-CHLOROETHYL)ETHER	111-44-4	0.015	0.0045 E	0.076	0.023 E	1.5	0.45 E	7.6	2.3 E	1.5	0.45 E	7.6	2.3 E	NA
BIS(2-CHLORO-ISOPROPYL)ETHER	108-60-1	30	8 E	30	8 E	3000	800 E	3000	800 E	3000	800 E	3000	800 E	NA
BIS(CHLOROMETHYL)ETHER	542-88-1	0.000079	0.000012 E	0.0004	0.00006 E	0.0079	0.001 E	0.04	0.006 E	0.0079	0.001 E	0.04	0.006 E	NA
BIS[2-ETHYLHEXYL] PHTHALATE	117-81-7	0.6	130 E	0.6	130 E	29	6300 E	29	6300 E	29	6300 E	29	6300 E	10
BISPHENOL A	80-05-7	210	810 E	580	2200 E	12000	46000 E	12000	46000 E	12000	46000 E	12000	46000 E	20
BROMACIL	314-40-9	7	1.8 E	7	1.8 E	700	180 E	700	180 E	7	1.8 E	7	1.8 E	NA
BROMOCHLOROMETHANE	74-97-5	9	1.6 E	9	1.6 E	900	160 E	900	160 E	9	1.6 E	9	1.6 E	NA
BROMODICHLOROMETHANE	75-27-4	8	2.7 E	8	2.7 E	800	270 E	800	270 E	8	2.7 E	8	2.7 E	NA
BROMOMETHANE	74-83-9	1	0.54 E	1	0.54 E	100	54 E	100	54 E	100	54 E	100	54 E	NA
BROMOXYNIL	1689-84-5	83	71 E	230	200 E	8300	7100 E	13000	11000 E	83	71 E	230	200 E	NA
BROMOXYNIL OCTANOATE	1689-99-2	8	360 E	8	360 E	8	360 E	8	360 E	8	360 E	8	360 E	15
BUTADIENE, 1,3-	106-99-0	0.021	0.0086 E	0.1	0.041 E	2.1	0.86 E	10	4.1 E	2.1	0.86 E	10	4.1 E	NA
BUTYL ALCOHOL, N-	71-36-3	420	50 E	1200	140 E	10000	5000 E	10000	10000 C	4200	500 E	10000	1400 E	NA
BUTYLATE	2008-41-5	40	58 E	40	58 E	4000	5800 E	4000	5800 E	40	58 E	40	58 E	30
BUTYLBENZENE, N-	104-51-8	210	1300 E	580	3700 E	1500	9500 E	1500	9500 E	210	1300 E	580	3700 E	15
BUTYLBENZENE, SEC-	135-98-8	420	980 E	1200	2800 E	1700	4000 E	1700	4000 E	420	980 E	1200	2800 E	30
BUTYLBENZENE, TERT-	98-06-6	420	760 E	1200	2200 E	3000	5400 E	3000	5400 E	420	760 E	1200	2200 E	30
BUTYLBENZYL PHTHALATE	85-68-7	36	3200 E	180	10000 C	270	10000 C	270	10000 C	270	10000 C	270	10000 C	10
CAPTAN	133-06-2	32	20 E	50	31 E	50	31 E	50	31 E	50	31 E	50	31 E	NA
CARBARYL	63-25-2	420	250 E	1200	700 E	12000	7000 E	12000	7000 E	12000	7000 E	12000	7000 E	NA
CARBAZOLE	86-74-8	3.7	24 E	17	110 E	120	760 E	120	760 E	4	24 E	17	110 E	15
CARBOFURAN	1563-66-2	4	0.87 E	4	0.87 E	400	87 E	400	87 E	4	0.87 E	4	0.87 E	NA
CARBON DISULFIDE	75-15-0	150	130 E	620	530 E	10000	10000 C	10000	10000 C	150	130 E	620	530 E	NA
CARBON TETRACHLORIDE	56-23-5	0.5	0.26 E	0.5	0.26 E	50	26 E	50	26 E	5	2.6 E	5	2.6 E	NA
CARBOXIN	5234-68-4	70	53 E	70	53 E	7000	5300 E	7000	5300 E	70	53 E	70	53 E	NA
CHLORAMBEN	133-90-4	10	1.6 E	10	1.6 E	1000	160 E	1000	160 E	10	1.6 E	10	1.6 E	NA
CHLORDANE	57-74-9	0.2	49 E	0.2	49 E	5.6	1400 E	5.6	1400 E	5.6	1400 E	5.6	1400 E	10
CHLORO-1,1-DIFLUOROETHANE, 1-	75-68-3	10000	1800 E	10000	7300 E	10000	10000 C	10000	10000 C	10000	1800 E	10000	7300 E	NA
CHLORO-1-PROPENE, 3- (ALLYL CHLORIDE)	107-05-1	0.21	0.049 E	0.68	0.2 E	21	4.9 E	86	20 E	21	4.9 E	86	20 E	NA
CHLOROACETALDEHYDE	107-20-0	0.24	0.029 E	1.1	0.13 E	24	2.9 E	110	13 E	0.24	0.029 E	1.1	0.1 E	NA
CHLOROACETOPHENONE, 2-	532-27-4	0.13	0.039 E	0.35	0.11 E	13	3.9 E	35	11.0 E	130	39 E	350	110 E	NA
CHLOROANILINE, P-	106-47-8	0.37	0.47 E	1.7	2.1 E	37	47 E	170	210 E	0.37	0.47 E	1.7	2.1 E	NA
CHLOROBENZENE	108-90-7	10	6.1 E	10	6.1 E	1000	610 E	1000	610 E	1000	610 E	1000	610 E	NA
CHLOROBENZILATE	510-15-6	0.66	4.4 E	3.1	20 E	66	440 E	310	2000 E	550	4400 E	1300	8500 E	15
CHLOROBUTANE, 1-	109-69-3	170	270 E	470	730 E	10000	10000 C	10000	10000 C	170	270 E	470	730 E	30
CHLORODIBROMOMETHANE	124-48-1	8	2.5 E	8	2.5 E	800	250 E	800	250 E	800	250 E	800	250 E	NA
CHLORODIFLUOROMETHANE	75-45-6	10000	2800 E	10000	10000 C	10000	10000 C	10000	10000 C	10000	2800 E	10000	10000 C	NA

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TABLE 3 - MEDIUM-SPECIFIC CONCENTRATIONS (MSCs) FOR ORGANIC REGULATED SUBSTANCES IN SOIL

B. Soil to Groundwater Numeric Values[1]

REGULATED SUBSTANCE	CASRN	Used Aquifers								Nonuse Aquifers				Soil Buffer Distance (feet)
		TDS ≤ 2500				TDS > 2500								
		Residential		Nonresidential		Residential		Nonresidential		Residential		Nonresidential		
		100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	
CHLOROETHANE	75-00-3	25	5.4 E	120	26 E	2500	540 E	10000	2600 E	2500	540 E	10000	2600 E	NA
CHLOROFORM	67-66-3	8	2 E	8	2 E	800	200 E	800	200 E	80	20 E	80	20 E	NA
CHLORONAPHTHALENE, 2-	91-58-7	330	7000 E	930	20000 E	1200	26000 E	1200	26000 E	330	7000 E	930	20000 E	15
CHLORONITROBENZENE, P-	100-00-5	4.2	5.5 E	12	16 E	420	550 E	1200	1600 E	4.2	5.5 E	12	16 E	NA
CHLOROPHENOL, 2-	95-57-8	4	4.4 E	4	4.4 E	400	440 E	400	440 E	4	4.4 E	4	4.4 E	NA
CHLOROPRENE	126-99-8	0.016	0.0038 E	0.083	0.02 E	1.6	0.38 E	8.3	2 E	1.6	0.38 E	8.3	2 E	NA
CHLOROPROPANE, 2-	75-29-6	21	16 E	88	67 E	2100	1600 E	8800	6700 E	21	16 E	88	67 E	NA
CHLOROTHALONIL	1897-45-6	24	61 E	60	150 E	60	150 E	60	150 E	24	61 E	60	150 E	30
CHLOROTOLUENE, O-	95-49-8	10	20 E	10	20 E	1000	2000 E	1000	2000 E	10	20 E	10	20 E	30
CHLOROTOLUENE, P-	106-43-4	10	10 E	10	10 E	1000	1000 E	1000	1000 E	10	10 E	10	10 E	NA
CHLORPYRIFOS	2921-88-2	0.2	2.3 E	0.2	2.3 E	20	230 E	20	230 E	0.2	2.3 E	0.2	2.3 E	15
CHLORSULFURON	64902-72-3	210	29 E	580	80 E	19000	2600 E	19000	2600 E	210	29 E	580	80 E	NA
CHLORTHAL-DIMETHYL (DACTHAL) (DCPA)	1861-32-1	7	110 E	7	110 E	50	820 E	50	820 E	50	820 E	50	820 E	15
CHRYSENE	218-01-9	0.19	230 E	0.19	230 E	0.19	230 E	0.19	230 E	0.19	230 E	0.19	230 E	5
CRESOL(S)	1319-77-3	130	23 E	530	92 E	10000	2300 E	10000	9200 E	10000	2300 E	10000	9200 E	NA
CRESOL, 4,6-DINITRO-O-	534-52-1	0.33	0.25 E	0.93	0.7 E	33	25 E	93	70 E	330	250 E	930	700 E	NA
CRESOL, O- (2-METHYLPHENOL)	95-48-7	210	35 E	560	96 E	21000	3500 E	56000	9600 E	21000	3500 E	56000	9600 E	NA
CRESOL, M- (3-METHYLPHENOL)	108-39-4	210	41 E	560	110 E	10000	4100 E	10000	10000 C	10000	10000 C	10000	10000 C	NA
CRESOL, P- (4-METHYLPHENOL)	106-44-5	21	4.9 E	58	14 E	2100	490 E	5800	1400 E	21000	4900 E	58000	14000 E	NA
CRESOL, P-CHLORO-M-	59-50-7	420	870 E	1200	2500 E	42000	87000 E	120000	190000 C	420	870 E	1200	2500 E	30
CROTONALDEHYDE	4170-30-3	0.038	0.0048 E	0.18	0.023 E	3.8	0.48 E	18	2.3 E	3.8	0.48 E	18	2.3 E	NA
CROTONALDEHYDE, TRANS-	123-73-9	0.038	0.0048 E	0.18	0.023 E	3.8	0.48 E	18	2.3 E	3.8	0.48 E	18	2.3 E	NA
CUMENE (ISOPROPYL BENZENE)	98-82-8	84	600 E	350	2500 E	5000	10000 C	5000	10000 C	5000	10000 C	5000	10000 C	15
CYANAZINE	21725-46-2	0.1	0.061 E	0.1	0.061 E	10	6.1 E	10	6.1 E	0.1	0.061 E	0.1	0.061 E	NA
CYCLOHEXANE	110-82-7	1300	1700 E	5300	6900 E	5500	7200 E	5500	7200 E	1300	1700 E	5300	6900 E	NA
CYCLOHEXANONE	108-94-1	150	41 E	620	170 E	10000	4100 E	10000	10000 C	150	41 E	620	170 E	NA
CYFLUTHRIN	68359-37-5	0.1	33 E	0.1	33 E	0.1	33 E	0.1	33 E	0.1	33 E	0.1	33 E	10
CYROMAZINE	66215-27-8	31	96 E	88	270 E	3100	9600 E	8800	27000 E	31	96 E	88	270 E	20
DDD, 4,4'-	72-54-8	0.3	33 E	1.4	150 E	16	1800 E	16	1800 E	16	1800 E	16	1800 E	10
DDE, 4,4'-	72-55-9	0.21	46 E	1	220 E	4	870 E	4	870 E	4	870 E	4	870 E	10
DDT, 4,4'-	50-29-3	0.21	130 E	0.55	330 E	0.55	330 E	0.55	330 E	0.55	330 E	0.55	330 E	5
DI(2-ETHYLHEXYL)ADIPATE	103-23-1	40	10000 C	40	10000 C	4000	10000 C	4000	10000 C	10000	10000 C	10000	10000 C	5
DIALLATE	2303-16-4	1.2	0.7 E	5.6	3.3 E	120	70 E	560	330 E	1200	700 E	4000	2300 E	NA
DIAMINOTOLUENE, 2,4-	95-80-7	0.018	0.0036 E	0.085	0.017 E	1.8	0.36 E	8.5	1.7 E	18	3.6 E	85	17 E	NA
DIAZINON	333-41-5	0.1	0.14 E	0.1	0.14 E	10	14 E	10	14 E	0.1	0.14 E	0.1	0.14 E	30
DIBENZO(A,H)ANTHRACENE	53-70-3	0.0055	25 E	0.06	270 E	0.06	270 E	0.06	270 E	0.06	270 E	0.06	270 E	5
DIBENZOFURAN	132-64-9	4.2	110 E	12	310 E	420	11000 E	450	12000 E	450	12000 E	450	12000 E	15
DIBROMO-3-CHLOROPROPANE, 1,2-	96-12-8	0.02	0.0092 E	0.02	0.0092 E	2	0.92 E	2	0.92 E	2	0.92 E	2	0.92 E	NA
DIBROMOBENZENE, 1,4-	106-37-6	42	170 E	120	490 E	2000	8200 E	2000	8200 E	42	170 E	120	490 E	20
DIBROMOETHANE, 1,2- (ETHYLENE DIBROMIDE)	106-93-4	0.005	0.0012 E	0.005	0.0012 E	0.5	0.12 E	0.5	0.12 E	0.5	0.12 E	0.5	0.12 E	NA
DIBROMOMETHANE	74-95-3	0.84	0.32 E	3.5	1.4 E	84	32 E	350	140 E	84	32 E	350	140 E	NA
DIBUTYL PHTHALATE, N-	84-74-2	420	1700 E	1200	4900 E	10000	10000 C	10000	10000 C	10000	10000 C	10000	10000 C	20

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REGULATED SUBSTANCE	CASRN	Used Aquifers								Nonuse Aquifers				Soil Buffer Distance (feet)
		TDS ≤ 2500				TDS > 2500								
		Residential		Nonresidential		Residential		Nonresidential		Residential		Nonresidential		
		100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	
DICAMBA	1918-00-9	400	45 E	400	45 E	40000	4500 E	40000	4500 E	400	45 E	400	45 E	NA
DICHLOROACETIC ACID	79-43-6	6	0.79 E	6	0.79 E	600	79 E	600	79 E	6	0.79 E	6	0.79 E	NA
DICHLORO-2-BUTENE, 1,4-	764-41-0	0.0012	0.00067 E	0.006	0.0034 E	0.12	0.07 E	0.6	0.34 E	0.0012	0.0007 E	0.006	0.0034 E	NA
DICHLORO-2-BUTENE, TRANS-1,4-	110-57-6	0.0012	0.00078 E	0.006	0.0039 E	0.12	0.078 E	0.6	0.39 E	0.0012	0.00078 E	0.006	0.0039 E	NA
DICHLOROBENZENE, 1,2-	95-50-1	60	59 E	60	59 E	6000	5900 E	6000	5900 E	6000	5900 E	6000	5900 E	NA
DICHLOROBENZENE, 1,3-	541-73-1	60	61 E	60	61 E	6000	6100 E	6000	6100 E	6000	6100 E	6000	6100 E	NA
DICHLOROBENZENE, P-	106-46-7	7.5	10 E	7.5	10 E	750	1000 E	750	1000 E	750	1000 E	750	1000 E	30
DICHLOROBENZIDINE, 3,3'-	91-94-1	0.16	8.8 E	0.76	42 E	16	880 E	76	4200 E	160	8800 E	310	17000 E	10
DICHLORODIFLUOROMETHANE (FREON 12)	75-71-8	100	100 E	100	100 E	10000	10000 C	10000	10000 C	10000	10000 C	10000	10000 C	NA
DICHLOROETHANE, 1,1-	75-34-3	3.1	0.75 E	16	3.9 E	310	75 E	1600	390 E	31	7.5 E	160	39 E	NA
DICHLOROETHANE, 1,2-	107-06-2	0.5	0.1 E	0.5	0.1 E	50	10 E	50	10 E	5	1 E	5	1 E	NA
DICHLOROETHYLENE, 1,1-	75-35-4	0.7	0.19 E	0.7	0.19 E	70	19 E	70	19 E	7	1.9 E	7	1.9 E	NA
DICHLOROETHYLENE, CIS-1,2-	156-59-2	7	1.6 E	7	1.6 E	700	160 E	700	160 E	70	16 E	70	16 E	NA
DICHLOROETHYLENE, TRANS-1,2-	156-60-5	10	2.3 E	10	2.3 E	1000	230 E	1000	230 E	100	23 E	100	23 E	NA
DICHLOROMETHANE (METHYLENE CHLORIDE)	75-09-2	0.5	0.076 E	0.5	0.076 E	50	7.6 E	50	7.6 E	50	7.6 E	50	7.6 E	NA
DICHLOROPHENOL, 2,4-	120-83-2	2	1 E	2	1 E	200	100 E	200	100 E	2000	1000 E	2000	1000 E	NA
DICHLOROPHENOXYACETIC ACID, 2,4- (2,4-D)	94-75-7	7	1.8 E	7	1.8 E	700	180 E	700	180 E	7000	1800 E	7000	1800 E	NA
DICHLOROPROPANE, 1,2-	78-87-5	0.5	0.11 E	0.5	0.11 E	50	11 E	50	11 E	5	1.1 E	5	1.1 E	NA
DICHLOROPROPENE, 1,3-	542-75-6	0.73	0.13 E	3.4	0.61 E	73	13 E	340	61 E	73	13 E	340	61 E	NA
DICHLOROPROPIONIC ACID, 2,2- (DALAPON)	75-99-0	20	5.3 E	20	5.3 E	2000	530 E	2000	530 E	2000	530 E	2000	530 E	NA
DICHLORVOS	62-73-7	0.25	0.059 E	1.2	0.28 E	25	5.9 E	120	28 E	0.25	0.059 E	1.2	0.28 E	NA
DICYCLOPENTADIENE	77-73-6	0.063	0.13 E	0.26	0.56 E	6	13 E	26	56 E	0.1	0.1 E	0.3	1 E	30
DIELDRIN	60-57-1	0.0045	0.13 E	0.021	0.58 E	0.46	13 E	2.1	58 E	4.6	130 E	17	470 E	15
DIETHYL PHTHALATE	84-66-2	3300	1000 E	9300	2900 E	10000	10000 C	10000	10000 C	10000	10000 C	10000	10000 C	NA
DIFLUBENZURON	35367-38-5	20	52 E	20	52 E	20	52 E	20	52 E	20	52 E	20	52 E	20
DIISOPROPYL METHYLPHOSPHONATE	1445-75-6	60	8.2 E	60	8.2 E	6000	820 E	6000	820 E	60	8.2 E	60	8.2 E	NA
DIMETHOATE	60-51-5	0.83	0.32 E	2.3	0.89 E	83	32 E	230	89 E	830	320 E	2300	890 E	NA
DIMETHOXYBENZIDINE, 3,3-	119-90-4	0.046	0.15 E	0.21	0.71 E	5	15 E	21	71 E	46	150 E	210	710 E	20
DIMETHRIN	70-38-2	3.6	240 E	3.6	240 E	3.6	240 E	3.6	240 E	3.6	240 E	3.6	240 E	10
DIMETHYLAMINOAZOBENZENE, P-	60-11-7	0.016	0.042 E	0.074	0.19 E	1.6	4.2 E	7.4	19 E	16	42 E	74	190 E	20
DIMETHYLANILINE, N,N-	121-69-7	8.3	4.7 E	23	13 E	830	470 E	2300	1300 E	830	470 E	2300	1300 E	NA
DIMETHYLBENZIDINE, 3,3-	119-93-7	0.0066	0.36 E	0.031	1.7 E	0.7	36 E	3.1	170 E	7	360 E	31	1700 E	10
DIMETHYL METHYLPHOSPHONATE	756-79-6	10	1.2 E	10	1.2 E	1000	120 E	1000	120 E	10	1.2 E	10	1.2 E	NA
DIMETHYLPHENOL, 2,4-	105-67-9	83	36 E	230	100 E	8300	3600 E	10000	10000 C	10000	10000 C	10000	10000 C	NA
DINITROBENZENE, 1,3-	99-65-0	0.1	0.049 E	0.1	0.049 E	10	4.9 E	10	4.9 E	100	49 E	100	49 E	NA
DINITROPHENOL, 2,4-	51-28-5	8.3	0.94 E	23	2.6 E	830	94 E	2300	260 E	8300	940 E	23000	2600 E	NA
DINITROTOLUENE, 2,4-	121-14-2	0.24	0.057 E	1.1	0.26 E	24	6 E	110	26 E	240	57 E	1100	260 E	NA
DINITROTOLUENE, 2,6- (2,6-DNT)	606-20-2	0.049	0.015 E	0.23	0.068 E	5	2 E	23	7 E	49	15 E	230	68 E	NA
DINOSEB	88-85-7	0.7	0.29 E	0.7	0.29 E	70	29 E	70	29 E	700	290 E	700	290 E	NA
DIOXANE, 1,4-	123-91-1	0.64	0.084 E	3.2	0.42 E	64	8.4 E	320	42 E	6.4	0.84 E	32	4.2 E	NA
DIPHENAMID	957-51-7	20	12 E	20	12 E	2000	1200 E	2000	1200 E	20	12 E	20	12 E	NA
DIPHENYLAMINE	122-39-4	100	59 E	290	170 E	10000	5900 E	29000	17000 E	30000	18000 E	30000	18000 E	NA

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		TDS ≤ 2500				TDS > 2500								
		Residential		Nonresidential		Residential		Nonresidential		Residential		Nonresidential		
		100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	
DIPHENYLHYDRAZINE, 1,2-	122-66-7	0.091	0.16 E	0.43	0.76 E	9.1	16 E	25	44 E	25	44 E	25	44 E	30
DIQUAT	85-00-7	2	0.24 E	2	0.24 E	200	24 E	200	24 E	2	0.24 E	2	0.24 E	NA
DISULFOTON	298-04-4	0.07	0.18 E	0.07	0.18 E	7	18 E	7	18 E	70	180 E	70	180 E	20
DITHIANE, 1,4-	505-29-3	8	1.3 E	8	1.3 E	800	130 E	800	130 E	8	1.3 E	8	1.3 E	NA
DIURON	330-54-1	8.3	7.1 E	23	20 E	830	710 E	2300	2000 E	8.3	7.1 E	23	20 E	NA
ENDOSULFAN	115-29-7	25	130 E	48	250 E	48	250 E	48	250 E	48	250 E	48	250 E	15
ENDOSULFAN I (ALPHA)	959-98-8	25	130 E	50	260 E	50	260 E	50	260 E	25	130 E	50	260 E	15
ENDOSULFAN II (BETA)	33213-65-9	25	150 E	45	260 E	45	260 E	45	260 E	25	150 E	45	260 E	15
ENDOSULFAN SULFATE	1031-07-8	12	70 E	12	70 E	12	70 E	12	70 E	12	70 E	12	70 E	15
ENDOTHALL	145-73-3	10	4.1 E	10	4.1 E	1000	410 E	1000	410 E	10	4.1 E	10	4.1 E	NA
ENDRIN	72-20-8	0.2	5.5 E	0.2	5.5 E	20	550 E	20	550 E	0.2	5.5 E	0.2	5.5 E	15
EPICHLOROHYDRIN	106-89-8	0.21	0.042 E	0.86	0.17 E	21	4.2 E	88	17 E	21	4.2 E	88	17 E	NA
ETHEPHON	16672-87-0	21	2.4 E	58	6.7 E	2100	240 E	5800	670 E	21	2.4 E	58	6.7 E	NA
ETHION	563-12-2	2.1	46 E	5.8	130 E	85	1900 E	85	1900 E	2.1	46 E	5.8	130 E	15
ETHOXYETHANOL, 2- (EGEE)	110-80-5	42	5.9 E	180	25 E	4200	590 E	10000	2500 E	4200	590 E	10000	2500 E	NA
ETHYL ACETATE	141-78-6	15	3.9 E	62	16 E	1500	390 E	6200	1600 E	1500	390 E	6200	1600 E	NA
ETHYL ACRYLATE	140-88-5	1.5	0.58 E	7	2.7 E	150	56 E	700	270 E	150	56 E	700	270 E	NA
ETHYL BENZENE	100-41-4	70	46 E	70	46 E	7000	4600 E	7000	4600 E	7000	4600 E	7000	4600 E	NA
ETHYL DIPROPYLTHIOCARBAMATE, S- (EPTC)	759-94-4	100	71 E	290	210 E	10000	7100 E	10000	10000 C	100	71 E	290	210 E	NA
ETHYL ETHER	60-29-7	630	230 E	2300	650 E	10000	10000 C	10000	10000 C	630	230 E	2300	650 E	NA
ETHYL METHACRYLATE	97-63-2	63	10 E	260	43 E	6300	1000 E	10000	4300 E	63	10 E	260	43 E	NA
ETHYLENE CHLORHYDRIN	107-07-3	83	10 E	230	26 E	8300	950 E	10000	2600 E	83	10 E	230	26 E	NA
ETHYLENE GLYCOL	107-21-1	1400	170 E	1400	170 E	10000	10000 C	10000	10000 C	10000	10000 C	10000	10000 C	NA
ETHYLENE THIOUREA (ETU)	96-45-7	0.33	0.037 E	0.93	0.1 E	33	3.7 E	93	10 E	330	37 E	930	100 E	NA
ETHYLP-NITROPHENYL PHENYLPHOSPHOROTHIOATE	2104-64-5	0.042	0.13 E	0.12	0.37 E	4.2	13 E	12	37 E	0.042	0.13 E	0.1	0.37 E	20
FENAMIPHOS	22224-92-6	0.07	0.06 E	0.07	0.06 E	7	6 E	7	6 E	0.07	0.06 E	0.07	0.06 E	NA
FENVALERATE (PYDRIN)	51630-58-1	8.5	94 E	8.5	94 E	8.5	94 E	8.5	94 E	8.5	94 E	8.5	94 E	15
FLUOMETURON	2164-17-2	9	2.5 E	9	2.5 E	900	250 E	900	250 E	9	2.5 E	9	2.5 E	NA
FLUORANTHENE	206-44-0	26	3200 E	26	3200 E	26	3200 E	26	3200 E	26	3200 E	26	3200 E	10
FLUORENE	86-73-7	170	3400 E	190	3800 E	190	3800 E	190	3800 E	190	3800 E	190	3800 E	15
FLUOROTRICHLOROMETHANE (FREON 11)	75-69-4	200	87 E	200	87 E	10000	8700 E	10000	8700 E	10000	8700 E	10000	8700 E	NA
FONOFOS	944-22-9	1	2.9 E	1	2.9 E	100	290 E	100	290 E	1	2.9 E	1	2.9 E	20
FORMALDEHYDE	50-00-0	100	12 E	100	12 E	10000	1200 E	10000	1200 E	10000	1200 E	10000	1200 E	NA
FORMIC ACID	64-18-6	0.063	0.0071 E	0.26	0.029 E	6.3	0.71 E	26	2.9 E	0.63	0.071 E	2.6	0.29 E	NA
FOSETYL-AL	39148-24-8	13000	12000 E	35000	31000 E	190000	190000 C	190000	190000 C	13000	12000 E	35000	31000 E	NA
FURAN	110-00-9	4.2	1.8 E	12	5.2 E	420	180 E	1200	520 E	420	180 E	1200	520 E	NA
FURFURAL	98-01-1	11	1.4 E	35	4.4 E	1100	140 E	3500	440 E	11	1.4 E	35	4.4 E	NA
GLYPHOSATE	1071-83-6	70	620 E	70	520 E	7000	62000 E	7000	62000 E	70	620 E	70	620 E	15
HEPTACHLOR	76-44-8	0.04	0.68 E	0.04	0.68 E	4	68 E	4	68 E	18	310 E	18	310 E	15
HEPTACHLOR EPOXIDE	1024-57-3	0.02	1.1 E	0.02	1.1 E	2	110 E	2	110 E	20	1100 E	20	1100 E	10
HEXACHLOROBENZENE	118-74-1	0.1	0.96 E	0.1	0.95 E	0.6	5.8 E	0.6	5.8 E	0.6	5.8 E	0.6	5.8 E	15
HEXACHLOROBUTADIENE	87-68-3	0.94	11 E	4.4	52 E	94	1100 E	290	3400 E	290	3400 E	290	3400 E	15

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		Residential		Nonresidential		Residential		Nonresidential		Residential		Nonresidential		
		100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	
HEXACHLOROCYCLOPENTADIENE	77-47-4	5	91 E	5	91 E	180	3300 E	180	3300 E	180	3300 E	180	3300 E	15
HEXACHLOROETHANE	67-72-1	0.1	0.56 E	0.1	0.56 E	10	56 E	10	56 E	10	56 E	10	56 E	15
HEXANE	110-54-3	150	1400 E	620	5600 E	950	8700 E	950	8700 E	150	1400 E	620	5600 E	15
HEXAZINONE	51235-04-2	40	8.5 E	40	8.5 E	4000	850 E	4000	850 E	40	8.5 E	40	8.5 E	NA
HEXYTHIAZOX (SAVEY)	78587-05-0	50	820 E	50	820 E	50	820 E	50	820 E	50	820 E	50	820 E	15
HMX	2691-41-0	40	4.8 E	40	4.8 E	500	60 E	500	60 E	40	4.8 E	40	4.8 E	NA
HYDRAZINE/HYDRAZINE SULFATE	302-01-2	0.001	0.00011 E	0.0051	0.00057 E	0.1	0.011 E	0.51	0.057 E	0.01	0.0011 E	0.051	0.0057 E	NA
HYDROQUINONE	123-31-9	1.2	0.16 E	5.7	0.77 E	120	16 E	570	77 E	1200	160 E	5700	770 E	NA
INDENO(1,2,3-CD)PYRENE	193-39-5	0.019	1500 E	0.28	22000 E	1.9	150000 E	6.2	190000 C	6.2	190000 C	6.2	190000 C	5
IPRODIONE	36734-19-7	170	490 E	470	1300 E	1300	3700 E	1300	3700 E	170	490 E	470	1300 E	20
ISOBUTYL ALCOHOL	78-83-1	1300	340 E	3500	910 E	10000	10000 C	10000	10000 C	10000	10000 C	10000	10000 C	NA
ISOPHORONE	78-59-1	10	1.9 E	10	1.9 E	1000	190 E	1000	190 E	10000	1900 E	10000	1900 E	NA
ISOPROPYL METHYLPHOSPHONATE	1832-54-8	70	8.1 E	70	8.1 E	7000	810 E	7000	810 E	70	8.1 E	70	8.1 E	NA
KEPONE	143-50-0	0.0073	1 E	0.034	4.7 E	0.73	100 E	3.4	470 E	7.3	1000 E	34	4700 E	10
MALATHION	121-75-5	50	170 E	50	170 E	5000	10000 C	5000	10000 C	10000	10000 C	10000	10000 C	20
MALEIC HYDRAZIDE	123-33-1	400	47 E	400	47 E	40000	4700 E	40000	4700 E	400	47 E	400	47 E	NA
MANEB	12427-38-2	21	2 E	56	6.6 E	2100	240 E	2300	260 E	21	2 E	58	6.6 E	NA
MERPHOS OXIDE	78-48-8	0.13	17 E	0.35	46 E	13	1700 E	35	4600 E	0.13	17 E	0.35	46 E	10
METHACRYLONITRILE	126-98-7	0.42	0.069 E	1.2	0.2 E	42	6.9 E	120	20 E	0.42	0.069 E	1.2	0.2 E	NA
METHAMIDOPHOS	10265-92-6	0.21	0.026 E	0.58	0.072 E	21	2.6 E	58	7.2 E	0.21	0.026 E	0.58	0.072 E	NA
METHANOL	67-56-1	840	99 E	3500	410 E	10000	9900 E	10000	10000 C	10000	9900 E	10000	10000 C	NA
METHOMYL	16752-77-5	20	3.2 E	20	3.2 E	2000	320 E	2000	320 E	20	3.2 E	20	3.2 E	NA
METHOXYCHLOR	72-43-5	4	530 E	4	630 E	4.5	710 E	4.5	710 E	4.5	710 E	4.5	710 E	10
METHOXYETHANOL, 2-	109-86-4	4.2	0.48 E	18	2 E	420	48 E	1800	200 E	42	4.8 E	180	20 E	NA
METHYL ACETATE	79-20-9	4200	780 E	10000	2200 E	10000	10000 C	10000	10000 C	4200	780 E	10000	2200 E	NA
METHYL ACRYLATE	96-33-3	4	1 E	18	5 E	420	100 E	1800	450 E	420	100 E	1800	450 E	NA
METHYL CHLORIDE	74-87-3	3	0.38 E	3	0.38 E	300	38 E	300	38 E	300	38 E	300	38 E	NA
METHYL ETHYL KETONE	78-93-3	400	76 E	400	76 E	10000	7600 E	10000	7600 E	10000	7600 E	10000	7600 E	NA
METHYL HYDRAZINE	60-34-4	0.0042	0.00048 E	0.018	0.002 E	0.42	0.048 E	1.8	0.2 E	0.042	0.0048 E	0.18	0.02 E	NA
METHYL ISOBUTYL KETONE	108-10-1	330	51 E	930	140 E	10000	5100 E	10000	10000 C	10000	5100 E	10000	10000 C	NA
METHYL ISOCYANATE	624-83-9	0.21	0.029 E	0.88	0.12 E	21	2.9 E	88	12 E	0.21	0.029 E	0.88	0.12 E	NA
METHYL N-BUTYL KETONE (2-HEXANONE)	591-78-6	6.3	1.6 E	26	6.4 E	630	160 E	2600	640 E	6.3	1.6 E	26	6.4 E	NA
METHYL METHACRYLATE	80-62-6	150	20 E	620	84 E	10000	2000 E	10000	8400 E	10000	2000 E	10000	8400 E	NA
METHYL METHANESULFONATE	66-27-3	0.74	0.092 E	3.4	0.42 E	74	9.2 E	340	42 E	0.74	0.092 E	3.4	0.42 E	NA
METHYL PARATHION	298-00-0	0.1	0.21 E	0.1	0.21 E	10	21 E	10	21 E	100	210 E	100	210 E	30
METHYL STYRENE (MIXED ISOMERS)	25013-15-4	8.4	47 E	35	200 E	840	4700 E	3500	10000 C	8.4	47 E	35	200 E	15
METHYL TERT-BUTYL ETHER (MTBE)	1634-04-4	2	0.28 E	2	0.28 E	200	28 E	200	28 E	20	2.8 E	20	2.8 E	NA
METHYLCHLOROPHENOXYACETIC ACID (MCPA)	94-74-6	3	1.2 E	3	1.2 E	300	120 E	300	120 E	3000	1200 E	3000	1200 E	NA
METHYLENE BIS(2-CHLOROANILINE), 4,4'-	101-14-4	0.23	1.8 E	3.4	26 E	23	180 E	340	2600 E	0.23	1.8 E	3.4	26 E	15
METHYLNAPHTHALENE, 2-	91-57-6	17	680 E	47	1900 E	1700	68000 E	2500	100000 E	17	680 E	47	1900 E	15
METHYLSTYRENE, ALPHA	98-83-9	290	510 E	820	1400 E	10000	10000 C	10000	10000 C	290	510 E	820	1400 E	30
METOLACHLOR	51218-45-2	70	40 E	70	40 E	7000	4000 E	7000	4000 E	70	40 E	70	40 E	NA

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REGULATED SUBSTANCE	CASRN	Used Aquifers								Nonuse Aquifers				Soil Buffer Distance (feet)
		TDS ≤ 2500				TDS > 2500								
		Residential		Nonresidential		Residential		Nonresidential		Residential		Nonresidential		
		100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	
METRIBUZIN	21087-64-9	7	2.4 E	7	2.4 E	700	240 E	700	240 E	7	2.4 E	7	2.4 E	NA
MONOCHLOROACETIC ACID	79-11-8	6	0.67 E	6	0.67 E	600	67 E	600	67 E	6	0.67 E	6	0.67 E	NA
NAPHTHALENE	91-20-3	10	25 E	10	25 E	1000	2500 E	1000	2500 E	3000	7500 E	3000	7500 E	30
NAPHTHYLAMINE, 1-	134-32-7	0.041	0.33 E	0.19	1.5 E	4.1	33 E	19	150 E	41	330 E	190	1500 E	15
NAPHTHYLAMINE, 2-	91-59-8	0.041	0.013 E	0.19	0.062 E	4.1	1.3 E	19	6.2 E	41	13 E	190	62 E	NA
NAPROPAMIDE	15299-99-7	420	970 E	1200	2800 E	7000	16000 E	7000	16000 E	420	970 E	1200	2800 E	30
NITROANILINE, O-	88-74-4	42	8 E	120	21 E	4200	750 E	12000	2100 E	42	8 E	120	21 E	NA
NITROANILINE, P-	100-01-6	3.7	0.55 E	17	2.5 E	370	55 E	1700	250 E	3.7	0.55 E	17	2.5 E	NA
NITROBENZENE	98-95-3	8.3	3.6 E	23	10 E	830	360 E	2300	1000 E	8300	3600 E	10000	10000 C	NA
NITROGUANIDINE	556-88-7	70	7.8 E	70	7.8 E	7000	780 E	7000	780 E	70	7.8 E	70	7.8 E	NA
NITROPHENOL, 2-	88-75-5	33	6.7 E	93	19 E	3300	670 E	9300	1900 E	33000	6700 E	93000	19000 E	NA
NITROPHENOL, 4-	100-02-7	6	4.1 E	6	4.1 E	600	410 E	600	410 E	6000	4100 E	6000	4100 E	NA
NITROPROPANE, 2-	79-46-9	0.0016	0.00029 E	0.0093	0.0015 E	0.16	0.029 E	0.93	0.15 E	0.016	0.0029 E	0.093	0.015 E	NA
NITROSODIETHYLAMINE, N-	55-18-5	0.000045	0.0000079 E	0.00058	0.0001 E	0.0045	0.0008 E	0.058	0.01 E	0.00045	0.00008 E	0.0058	0.001 E	NA
NITROSODIMETHYLAMINE, N-	62-75-9	0.00014	0.000019 E	0.0018	0.00024 E	0.014	0.0019 E	0.18	0.024 E	0.0014	0.00019 E	0.018	0.0024 E	NA
NITROSO-DI-N-BUTYLAMINE, N-	924-16-3	0.014	0.017 E	0.063	0.078 E	1.4	1.7 E	6.3	7.8 E	14	17 E	63	78 E	NA
NITROSODI-N-PROPYLAMINE, N-	621-64-7	0.01	0.0014 E	0.049	0.0068 E	1	0.14 E	4.9	0.68 E	10	1.4 E	49	6.8 E	NA
NITROSODIPHENYLAMINE, N-	86-30-6	15	23 E	69	110 E	1500	2300 E	3500	5500 E	3500	5500 E	3500	5500 E	30
NITROSO-N-ETHYLUREA, N-	759-73-9	0.00084	0.000097 E	0.013	0.0015 E	0.08	0.0097 E	1.3	0.15 E	0.8	0.097 E	13	1.5 E	NA
OCTYL PHTHALATE, DI-N-	117-84-0	42	10000 C	120	10000 C	300	10000 C	300	10000 C	300	10000 C	300	10000 C	5
OXAMYL (VYDATE)	23135-22-0	20	2.6 E	20	2.6 E	2000	260 E	2000	260 E	20	2.6 E	20	2.6 E	NA
PARAQUAT	1910-42-5	3	120 E	3	120 E	300	12000 E	300	12000 E	3	120 E	3	120 E	15
PARATHION	56-38-2	25	150 E	70	410 E	2000	10000 C	2000	10000 C	25	150 E	70	410 E	15
PCB-1016 (AROCLOR)	12674-11-2	0.037	10 E	0.17	47 E	4	1000 E	17	4700 E	0.04	10 E	0.17	47 E	10
PCB-1221 (AROCLOR)	11104-28-2	0.037	0.18 E	0.17	0.83 E	3.7	18 E	17	83 E	0.037	0.18 E	0.17	0.83 E	20
PCB-1232 (AROCLOR)	11141-16-5	0.037	0.14 E	0.17	0.7 E	3.7	14 E	17	66 E	0.037	0.14 E	0.17	0.7 E	20
PCB-1242 (AROCLOR)	53469-21-9	0.037	4 E	0.17	20 E	3.7	440 E	10	1200 E	0.037	4 E	0.17	20 E	10
PCB-1248 (AROCLOR)	12672-29-6	0.037	18 E	0.17	81 E	3.7	1800 E	5.4	2600 E	0.037	18 E	0.17	81 E	10
PCB-1254 (AROCLOR)	11097-69-1	0.037	75 E	0.17	340 E	3.7	7500 E	5.7	10000 C	0.037	75 E	0.17	340 E	5
PCB-1260 (AROCLOR)	11096-82-5	0.037	170 E	0.17	770 E	3.7	17000 E	8	35000 E	0.037	170 E	0.17	770 E	5
PEBULATE	1114-71-2	210	350 E	580	980 E	9200	10000 C	9200	10000 C	210	350 E	580	980 E	30
PENTACHLOROBENZENE	608-93-5	3.3	260 E	9.3	750 E	74	5900 E	74	5900 E	74	5900 E	74	5900 E	10
PENTACHLOROETHANE	76-01-7	0.81	3.9 E	3.8	19 E	81	390 E	380	1900 E	0.81	3.9 E	3.8	19 E	20
PENTACHLORONITROBENZENE	82-68-8	0.28	6 E	1	26 E	28	560 E	44	870 E	44	870 E	44	870 E	15
PENTACHLOROPHENOL	87-86-5	0.1	5 E	0.1	5 E	10	500 E	10	500 E	100	5000 E	100	5000 E	10
PHENACETIN	62-44-2	33	13 E	150	58 E	3300	1300 E	15000	5800 E	33000	13000 E	76000	29000 E	NA
PHENANTHRENE	85-01-8	110	10000 E	110	10000 E	110	10000 E	110	10000 E	110	10000 E	110	10000 E	10
PHENOL	108-95-2	200	33 E	200	33 E	20000	3300 E	20000	3300 E	20000	3300 E	20000	3300 E	NA
PHENYL MERCAPTAN	108-98-5	4200	6400 E	12	18 E	420	640 E	1200	1800 E	4.2	6.4 E	12	18 E	30
PHENYLENEDIAMINE, M-	108-45-2	25	3.5 E	70	9.9 E	2500	350 E	7000	990 E	25000	3500 E	70000	9900 E	NA
PHENYLPHENOL, 2-	90-43-7	38	550 E	180	2600 E	3800	55000 E	18000	190000 C	38000	190000 C	70000	190000 C	15
PHORATE	298-02-2	0.83	1.8 E	2	4.9 E	83	180 E	230	490 E	0.83	1.8 E	2	4.9 E	30

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		TDS ≤ 2500				TDS > 2500								
		Residential		Nonresidential		Residential		Nonresidential		Residential		Nonresidential		
		100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	
PHTHALIC ANHYDRIDE	85-44-9	8300	2600 E	23000	7100 E	190000	190000 C	190000	190000 C	190000	190000 C	190000	190000 C	NA
PICLORAM	1918-02-1	50	7.4 E	50	7.4 E	5000	740 E	5000	740 E	50	7.4 E	50	7.4 E	NA
PROMETON	1610-18-0	40	39 E	40	39 E	4000	3900 E	4000	3900 E	40	39 E	40	39 E	NA
PRONAMIDE	23950-58-5	310	190 E	880	540 E	1500	920 E	1500	920 E	310	190 E	880	540 E	NA
PROPANIL	709-98-8	21	11 E	58	30 E	2100	1100 E	5800	3000 E	21	11 E	58	30 E	NA
PROPANOL, 2- (ISOPROPYL ALCOHOL)	67-63-0	42	7.3 E	180	31 E	4200	730 E	10000	3100 E	42	7 E	180	31 E	NA
PROPAZINE	139-40-2	1	0.5 E	1	0.5 E	100	50 E	100	50 E	1	0.5 E	1	0.5 E	NA
PROPHAM	122-42-9	10	2.4 E	10	2.4 E	1000	240 E	1000	240 E	10	2.4 E	10	2.4 E	NA
PROPYLBENZENE, N-	103-65-1	210	400 E	880	1700 E	5200	9900 E	5200	9900 E	210	400 E	880	1700 E	30
PROPYLENE OXIDE	75-56-9	0.3	0.052 E	1.4	0.24 E	30	5.2 E	140	24 E	0.3	0.052 E	1.4	0.24 E	NA
PYRENE	129-00-0	13	2200 E	13	2200 E	13	2200 E	13	2200 E	13	2200 E	13	2200 E	10
PYRIDINE	110-86-1	4.2	0.47 E	12	1.3 E	420	47 E	1200	130 E	42	4.7 E	120	13 E	NA
QUINOLINE	91-22-5	0.024	0.081 E	0.11	0.37 E	2.4	8.1 E	11	37 E	24	81 E	110	370 E	20
QUIZALOFOP (ASSURE)	76578-14-8	30	47 E	30	47 E	30	47 E	30	47 E	30	47 E	30	47 E	30
RDX	121-82-4	0.2	0.057 E	0.2	0.057 E	20	5.7 E	20	5.7 E	0.2	0.057 E	0.2	0.057 E	NA
RESORCINOL	108-46-3	8300	970 E	23000	2700 E	190000	97000 E	190000	190000 C	8300	970 E	23000	2700 E	NA
RONNEL	299-84-3	210	330 E	580	910 E	4000	6200 E	4000	6200 E	210	330 E	580	910 E	30
SIMAZINE	122-34-9	0.4	0.15 E	0.4	0.15 E	40	15 E	40	15 E	0.4	0.15 E	0.4	0.15 E	NA
STRYCHNINE	57-24-9	1.3	1.1 E	3.5	2.8 E	130	110 E	350	280 E	1300	1100 E	3500	2800 E	NA
STYRENE	100-42-5	10	24 E	10	24 E	1000	2400 E	1000	2400 E	1000	2400 E	1000	2400 E	30
TEBUTHIURON	34014-18-1	50	83 E	50	83 E	5000	8300 E	5000	8300 E	50	83 E	50	83 E	30
TERBACIL	5902-51-2	9	2.2 E	9	2.2 E	900	220 E	900	220 E	9	2.2 E	9	2.2 E	NA
TERBUFOS	13071-79-9	0.04	0.055 E	0.04	0.055 E	4	5.5 E	4	5.5 E	0.04	0.055 E	0.04	0.055 E	30
TETRACHLOROBENZENE, 1,2,4,5-	95-94-3	1.3	6 E	3.5	16 E	58	270 E	58	270 E	58	270 E	58	270 E	20
TETRACHLORODIBENZO-P-DIOXIN, 2,3,7,8- (TCDD)	1746-01-6	0.000003	0.032 E	0.000003	0.032 E	0.0003	3.2 E	0.0003	3.2 E	0.0019	20 E	0.0019	20 E	5
TETRACHLOROETHANE, 1,1,1,2-	630-20-6	7	18 E	7	18 E	700	1800 E	700	1800 E	700	1800 E	700	1800 E	30
TETRACHLOROETHANE, 1,1,2,2-	79-34-5	0.06	0.026 E	0.43	0.13 E	8	2.6 E	43	13 E	8	2.6 E	43	13 E	NA
TETRACHLOROETHYLENE (PCE)	127-18-4	0.5	0.43 E	0.5	0.43 E	50	43 E	50	43 E	5	4.3 E	5	4.3 E	NA
TETRACHLOROPHENOL, 2,3,4,6-	58-90-2	130	2000 E	350	5500 E	13000	190000 C	18000	190000 C	18000	190000 C	18000	190000 C	15
TETRAETHYL LEAD	78-00-2	0.00042	0.0052 E	0.0012	0.015 E	0.042	0.52 E	0.1	1.5 E	0.42	0.52 E	1	15 E	15
TETRAETHYLDITHIOPYROPHOSPHATE	3689-24-5	2.1	3.1 E	5.8	8.6 E	210	310 E	560	860 E	2.1	3.1 E	5.8	8.6 E	30
TETRAHYDROFURAN	109-99-9	2.6	0.57 E	13	2.8 E	260	57 E	1300	280 E	2.6	0.57 E	13	2.8 E	NA
THIOFANOX	39196-18-4	1.3	0.14 E	3.5	0.39 E	130	14 E	350	39 E	1.3	0.14 E	3.5	0.39 E	NA
THIRAM	137-26-8	21	55 E	58	150 E	2100	5500 E	3000	7800 E	21	55 E	58	150 E	20
TOLUENE	108-88-3	100	44 E	100	44 E	10000	4400 E	10000	4400 E	10000	4400 E	10000	4400 E	NA
TOLUIDINE, M-	108-44-1	4.6	2.1 E	21	9.7 E	460	210 E	2100	970 E	4.6	2.1 E	21	9.7 E	NA
TOLUIDINE, O-	95-53-4	4.6	5.2 E	21	24 E	460	520 E	2100	2400 E	4600	5200 E	10000	10000 C	NA
TOLUIDINE, P-	106-49-0	2.4	2.2 E	11	10 E	240	220 E	1100	1000 E	2.4	2.2 E	11	10 E	NA
TOXAPHENE	8001-35-2	0.3	1.2 E	0.3	1.2 E	30	120 E	30	120 E	0.3	1.2 E	0.3	1.2 E	20
TRIALLATE	2303-17-5	54	280 E	150	770 E	400	2000 E	400	2000 E	54	280 E	150	770 E	15
TRIBROMOMETHANE (BROMOFORM)	75-25-2	8	3.5 E	8	3.5 E	800	350 E	800	350 E	800	350 E	800	350 E	NA
TRICHLORO-1,2,2-TRIFLUOROETHANE, 1,1,2-	76-13-1	6300	10000 C	10000	10000 C	10000	10000 C	10000	10000 C	10000	10000 C	10000	10000 C	20

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		Residential		Nonresidential		Residential		Nonresidential		Residential		Nonresidential		
		100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	100 X GW MSC	Generic Value	
TRICHLOROACETIC ACID	76-03-9	2	0.32 E	2	0.32 E	200	32 E	200	32 E	2	0.32 E	2	0.332 E	NA
TRICHLOROBENZENE, 1,2,4-	120-82-1	7	27 E	7	27 E	700	2700 E	700	2700 E	4400	10000 C	4400	10000 C	20
TRICHLOROBENZENE, 1,3,5-	108-70-3	4	31 E	4	31 E	400	3100 E	400	3100 E	4	31 E	4	31 E	15
TRICHLOROETHANE, 1,1,1-	71-55-6	20	7.2 E	20	7.2 E	2000	720 E	2000	720 E	200	72 E	200	72 E	NA
TRICHLOROETHANE, 1,1,2-	79-00-5	0.5	0.15 E	0.5	0.15 E	50	15 E	50	15 E	5	1.5 E	5	1.5 E	NA
TRICHLOROETHYLENE (TCE)	79-01-6	0.5	0.17 E	0.5	0.17 E	50	17 E	50	17 E	5	1.7 E	5	1.7 E	NA
TRICHLOROPHENOL, 2,4,5-	95-95-4	420	2600 E	1200	7300 E	42000	190000 C	100000	190000 C	100000	190000 C	100000	190000 C	15
TRICHLOROPHENOL, 2,4,6-	88-06-2	4.2	12 E	12	34 E	420	1200 E	1200	3400 E	4200	12000 E	12000	34000 E	20
TRICHLOROPHENOXYACETIC ACID, 2,4,5- (2,4,5-T)	93-76-5	7	1.5 E	7	1.5 E	700	150 E	700	150 E	7000	1500 E	7000	1500 E	NA
TRICHLOROPHENOXYPROPIONIC ACID, 2,4,5- (2,4,5-TP(SILVEX)	93-72-1	5	22 E	5	22 E	500	2200 E	500	2200 E	5	22 E	5	22 E	20
TRICHLOROPROPANE, 1,1,2-	598-77-6	21	3.6 E	58	9.9 E	2100	360 E	5800	990 E	21	3.6 E	58	9.9 E	NA
TRICHLOROPROPANE, 1,2,3-	96-18-4	4	3.2 E	4	3.2 E	400	320 E	400	320 E	400	320 E	400	320 E	NA
TRICHLOROPROPENE, 1,2,3-	96-19-5	0.063	0.037 E	0.26	0.15 E	6.3	3.7 E	26	15 E	0.063	0.037 E	0.26	0.15 E	NA
TRIETHYLAMINE	121-44-8	1.5	0.36 E	6.2	1.5 E	150	36 E	620	150 E	1.5	0.36 E	6.2	1.5 E	NA
TRIETHYLENE GLYCOL	112-27-6	8300	1000 E	10000	2900 E	10000	10000 C	10000	10000 C	8300	1000 E	10000	2900 E	NA
TRIFLURALIN	1582-09-8	1	1.9 E	1	1.9 E	100	190 E	100	190 E	1	1.9 E	1	1.9 E	30
TRIMETHYLBENZENE, 1,3,4- (TRIMETHYLBENZENE, 1,2,4-)	95-63-6	1.5	8.4 E	6.2	35 E	150	840 E	620	3500 E	150	840 E	620	3500 E	15
TRIMETHYLBENZENE, 1,3,5-	108-67-8	42	74 E	120	210 E	4200	7400 E	4900	8600 E	42	74 E	120	210 E	30
TRINITROGLYCEROL (NITROGLYCERIN)	55-63-0	0.5	0.2 E	0.5	0.2 E	50	20 E	50	20 E	50	20 E	50	20 E	NA
TRINITROTOLUENE, 2,4,6-	118-96-7	0.2	0.023 E	0.2	0.023 E	20	2.3 E	20	2.3 E	0.2	0.023 E	0.2	0.023 E	NA
VINYL ACETATE	108-05-4	42	5 E	180	21 E	4200	500 E	10000	2100 E	42	5 E	180	21 E	NA
VINYL BROMIDE (BROMOETHENE)	593-60-2	0.15	0.073 E	0.78	0.38 E	15	7.3 E	78	38 E	1.5	0.73 E	7.8	3.8 E	NA
VINYL CHLORIDE	75-01-4	0.2	0.027 E	0.2	0.027 E	20	2.7 E	20	2.7 E	2	0.27 E	2	0.27 E	NA
WARFARIN	81-81-2	1.3	3.1 E	3.5	8.4 E	130	310 E	350	840 E	1300	3100 E	1700	4100 E	30
XYLENES (TOTAL)	1330-20-7	1000	990 E	1000	990 E	10000	10000 C	10000	10000 C	10000	10000 C	10000	10000 C	NA
ZINEB	12122-67-7	210	33 E	580	92 E	1000	160 E	1000	160 E	210	33 E	580	92 E	NA

1 For other options see Section 250.308

All concentrations in mg/kg

E - Number calculated by the soil to groundwater equation in Section 250.308

C - Cap

NA - The soil buffer distance option is not available for this substance