Appendix F for

Final Report
Noroton Heights Flood Mitigation Project
Darien, Connecticut
CIRCA Agreement No. 155194

Town of Darien
2 Renshaw Road
Darien, Connecticut

February 1, 2019

FUSS & O'NEILL

146 Hartford Road
Manchester, CT 06040

Project No. 20160934.A20

Appendix F

Design Guidance Checklist

FUSS & O'NEILL

Design Guidance For
Stormwater Infiltration Systems in Urban Fill in Connecticut

1 Introduction

Background

Soils located in Connecticut's urban areas with a long history of human development can be affected by a number of contaminants. Connecticut's Remediation Standard Regulations (RSR) refer to such soils as "urban soils" or "Urban Fill" and commonly consist of material mixed into natural soils over time or relocated soils used to change the topography in urban areas. Contaminants are typically associated with waste products from demolition, the burning of wood or coal, and by-products of industrial activities that occurred in the late 1800s and early 1900s. As a result of these materials, soils in urban settings can contain contaminants such as heavy metals and poly-nuclear aromatic hydrocarbons, which may not be related to operational-specific releases, but are nonetheless present at concentrations that may pose an unacceptable health risk under certain conditions.

Current stormwater management approaches emphasize the use of Low Impact Development (LID) and Green Stormwater Infrastructure (GSI) practices to address stormwater quality, groundwater recharge, and flood resilience objectives. The potential for stormwater quality and flooding impacts become even greater when considering the potential for increased precipitation with climate change. Infiltration of stormwater into the ground through the use of engineered practices (i.e., structural stormwater Best Management Practices or BMPs) is one of the most common and effective LID/GSI techniques. Infiltration of stormwater in areas of Urban Fill however can potentially mobilize contaminants and negatively impact groundwater, particularly in groundwater drinking supply areas. Stormwater infiltration can be implemented successfully in areas with Urban Fill; however, attention must be paid to, many site-specific factors, as well as the regulatory framework under which these activities are permitted, to achieve a design that complies with the regulations and is protective of groundwater and human health.

Current Policies and Regulations

Connecticut's policies and regulations regarding stormwater quality, Low Impact Development (LID) practices, green stormwater infrastructure, and work in urban soils are currently addressed in separate permit programs and guidance documents, which include:

Permit Programs

- *Municipal*
    - **Planning & Zoning Approval**
    - **Inland Wetlands and Watercourses Permit**
    - **Municipal Stormwater Regulations** – The existence and controlling department or commission for such regulations varies by municipality. The DEEP MS4 General Permit requires regulated municipalities to implement a post-construction stormwater management legal mechanism (ordinance, regulations, etc.) to regulate the discharge of stormwater

associated with new development and redevelopment through the use of LID and other stormwater BMPs.

- *State*
  - **DEEP General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer)** – DEEP notification or registration may be required for stockpiling of "polluted" soil during installation of an infiltration system. The requirements under this general permit vary based on the volume and duration of soil staging. https://www.ct.gov/deep/lib/deep/Permits_and_Licenses/Waste_General_Permits/soilstaging_gp.pdf
  - **General Permit for Water Resource Construction Activities** – This general permit may be applicable during construction of subsequent maintenance of infiltration systems or appurtenant structures or discharge points. https://www.ct.gov/deep/lib/deep/Permits_and_Licenses/LandUse_General_Permits/Inland_Water_General_Permits/construction_gp.pdf
  - **Municipal Separate Storm Sewer System (MS4) Permit** - The MS4 guidance restricts stormwater infiltration in areas where land uses or activities have a potential for high pollutant loads, in areas with soil or groundwater contamination and in groundwater and wellhead water supply areas. https://www.ct.gov/deep/lib/deep/permits_and_licenses/water_discharge_general_permits/ms4_dot_gp.pdf
  - **Flood Management Certification** – An approval of stormwater and flood management designs of State actions or projects that are funded by the State. https://www.ct.gov/deep/cwp/view.asp?a=2709&q=324172&deepNav_GID=1643 . There may be other approvals required for State funded or State sponsored activities such as DEEP Inland Wetlands Program permit for example.
  - **Section 401 Water Quality Certification** – Associated with Section 404 Permit from the US Army Corps of Engineers. https://www.ct.gov/deep/cwp/view.asp?a=2709&q=324168&deepNav_GID=1643
  - **Remediation Standard Regulations (RSRs)** – These regulations would typically be used only for comparative purposes, unless the infiltration system is being installed on a site regulated under a DEEP order or formal State remediation program for evaluating soil disposal requirements/options. Promulgated in RSCA §22a-133k-1 through -3. https://www.ct.gov/deep/cwp/view.asp?a=2715&q=325014&deepNav_GID=1626
  - **Class V Underground Injection Control Regulations** – These regulations may or may not be applicable to a proposed infiltration system. Consult with DEEP Water Permitting and Enforcement Division staff as part of the planning process to make this determination. https://www.epa.gov/sites/production/files/2015-08/documents/fs_storm.pdf https://www.ct.gov/deep/lib/deep/water_regulating_and_discharges/subsurface/bmp_non_domestic_wastewater_secondary_trade_and_tech_school.pdf

- *Federal*
  - **Wetlands/US Army Corps of Engineers** – A USACE Section 404 permit could be required for the discharge to a wetland, for wetland disturbance, or for site preparation or filling associated with infiltration system installation. https://www.epa.gov/cwa-404/section-404-permit-program

Guidance Documents

- **Low Impact Development (LID) Fact Sheet**
  https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/IncorporatingLID.pdf
- **Connecticut Stormwater Quality Manual (SQM) – 2004**
  https://www.ct.gov/deep/cwp/view.asp?a=2721&q=325704
- **Connecticut Stormwater Quality Manual LID Appendix - 2011**
  https://www.ct.gov/deep/lib/deep/water/nps/swgp/lid_stormwaterfinal.pdf
- **DEEP Utility Contractor Guidance**
  https://www.ct.gov/deep/cwp/view.asp?a=2715&q=324962&depNav_GID=1626

2 Purpose of Design Guidance/Checklist

The purposes of this design/guidance checklist are to:

- Provide guidance for project planners and designers on the siting and design of stormwater infiltration systems in urban settings with historical urban fill. The guidance is intended to be applied to new construction projects, redevelopment projects and retrofits of existing drainage systems. Examples of stormwater infiltration systems include:
  - Bioretention basins
  - Rain gardens
  - Water quality swales
    Subsurface infiltration chambers and trenches
- Guide project planners and designers through the appropriate requirements of applicable regulatory practices and policies. The Design Guidance Checklist defines the tasks that need to be undertaken to evaluate and design stormwater infiltration systems in urban areas that may contain historical urban fill, which is a complex process that can be challenging given the many sometimes conflicting technical and regulatory requirements in Connecticut.
- Improve consistency in how planners and designers site and design LID, and green infrastructure, in Connecticut to meet water quality, flood resilience, and other objectives.
- Raise awareness of the potential to encounter urban fill in areas of proposed stormwater management.
- Highlight the critical questions that should be asked to inform the design of an acceptable stormwater management system.

- Identify the regulatory requirements that could apply to the design and construction of a stormwater infiltration systems in urban fill.

3 Limitations of this Design Guidance/Checklist

Users of this checklist must be knowledgeable and proficient in land use and land development in Connecticut, and in particular:

- Design and construction of stormwater management systems
- Construction cost estimating
- Characterization of contaminated soils and groundwater
- Management of contaminated soils and groundwater
- Be familiar with applicable local, state and federal regulations

4 Design Guidance for Stormwater Infiltration at Sites Characterized by Urban Fill

Identifying Urban Fill Areas

The project owner must determine whether the area proposed for or impacted by stormwater infiltration is characterized by Urban Fill. This determination could be made by using one or more of the following methods, which are listed below in increasing level of effort:

- Perform a thorough site walk, during which historic fill areas may be readily identified.
- Review topographic mapping to determine if grades indicate fill in historical stream valleys or wetlands.
- Review NRCS soils mapping for the area proposed for or impacted by stormwater infiltration. Fill areas are sometimes identified on this mapping.
- Excavate test pits or conduct geotechnical borings to determine physical characterization of subsurface soils.
- Obtain soil samples and test for contaminants to evaluate concentrations with respect to the CT RSRs.

Infiltration versus Filtration/Temporary Storage Only

The preferred stormwater management approach will depend on the level of contaminants in the on-site soils. There are two general approaches:

1. **Stormwater Infiltration to Groundwater**: The general concept of stormwater infiltration is to allow the stormwater runoff to infiltrate into underlying soils and recharge groundwater. This can be accomplished through the use of a variety of infiltration designs and configurations, but they all have unrestricted drainage to groundwater as their similar characteristic. For stormwater infiltration systems in general, pre-treatment is essential to protect the infiltration media from premature clogging with solids, particularly in underground installations where visual evidence of clogging (i.e.,

ponding of water) is less obvious. In addition, pre-treatment for removing other contaminants from stormwater runoff may be appropriate. For land uses or activities with potential for higher pollutant loads, also referred to as stormwater "hotspots," pre-treatment with sufficient capacity to capture spills or designed to remove the stormwater contaminants of concern may be appropriate.

2. **Stormwater Filtration/Detention (No Discharge to Groundwater)**: For soils with high levels of potentially mobile contaminants, or in areas of high quality groundwater (GAA or GA areas including groundwater drinking water supply and wellhead areas), stormwater management should focus on the use of filtration and detention (i.e., temporary storage) practices to remove stormwater pollutants and reduce peak flows, but prevent stormwater from infiltrating to groundwater. Surface filtration practices such as infiltration basins, surface bioretention, permeable pavement, or water quality swales can be designed with an underdrain system and a liner below and surrounding the engineered filter media to capture the filtered stormwater runoff for discharge to a stormwater drainage system and ultimately to surface water. An alternative could consist of underground storage structures such as a tank, a series of oversized storm drainage pipes, or concrete leaching galleys for example. In all cases the stormwater would be collected and discharged to a surface water or storm drainage system and would not be allowed to infiltrate to groundwater. For leaching galleys, the soils that are backfilled around the leaching galleys would be segregated from the adjacent and underlying polluted or contaminated soils using a liner to prevent infiltration. Again pre-treatment is appropriate for protection of the engineered filter media from premature clogging. Pre-treatment may also be appropriate depending upon the nature of the land use in the drainage area and the quality of the receiving waters as with the stormwater infiltration approach, but to provide a means to capture spills or remove the stormwater contaminants of concern prior to discharge.

Evaluation Framework

Under this framework, evaluation of environmental considerations during the design of stormwater infiltration systems is based on three primary factors – the levels of contaminants present in the soils on the project site, land uses and land use activities within the drainage area of the proposed infiltration system, and potential uses of groundwater in the vicinity of the proposed system. As indicated above, soil and groundwater quality should be evaluated, at least for comparative purposes, with respect to the Connecticut Remediation Standard Regulations (RSRs). Design considerations specific to soil quality, groundwater use, and land use are discussed in the sections below.

Soil Quality

Analytical testing of soils samples from a proposed project location is recommended to evaluate soil quality (i.e., the levels of contaminants in the soil). Such testing may be combined with geotechnical evaluations to achieve cost savings. The soil quality testing program should include testing at locations characterized by Urban Fill or areas that may have been impacted by discrete releases, such as adjacent to industrial facilities or gasoline stations.

Design Guidance For
Stormwater Infiltration Systems in Urban Fill in Connecticut

Contaminant concentration limits for soil in the RSRs are divided into criteria that consider direct contact with soil and criteria that consider impact to groundwater due to infiltration of water through the soil. These criteria are further subdivided to allow for consideration of a location's land use and actual or potential uses of groundwater as a drinking water resource or surface water recharge source. Specific criteria applicable to evaluation of soil quality, and their applicability to infiltration system design, are summarized below:

- Direct Exposure Criteria (DEC) – The DEC are based on risk associated with direct human contact with soil. The DEC are based on either residential or industrial/commercial scenarios. In general, these criteria are not a significant concern relative to the design of stormwater infiltration systems in existing soil unless a spill or release of contaminants has occurred in the past, the site is regulated under the RSRs, and formal RSR compliance must be demonstrated. However, the DEC need to be considered when developing soil handling/management protocols and providing for disposal of excess soil.

- Pollutant Mobility Criteria (PMC) – The PMC protect against the risk of water infiltrating through unsaturated soil at a site/project location and impacting groundwater at levels that may pose a risk to groundwater or surface water resources. The PMC are based on a location's groundwater classification as defined in the Connecticut Water Quality Standards Regulations. Separate PMC criteria exist for areas where groundwater is classified GA or GAA and for areas where groundwater is classified as GB (see below). With respect to stormwater infiltration system design, the quality of soil surrounding the proposed system location should be considered relative to the appropriate PMC criteria to determine if the proposed increase in stormwater infiltration over that occurring naturally may cause an unacceptable increase in contaminant concentrations in groundwater.

Urban Fill is considered to be environmentally impacted because it frequently contains non-soil material including ash, coal fragments, and asphalt particles. These materials, as well as more inert building materials such as brick and concrete, are present as a result of historical land uses and the more common historical use of coal for heating, and these materials are frequently incorporated into fill or disturbed material during urban redevelopment activities. Based on the nature of non-soil materials in Urban Fill, this soil typically contains elevated levels of metals, polynuclear aromatic hydrocarbons (PAHs), and/or petroleum hydrocarbons. Because leachability of contaminants out of Urban Fill is typically limited, the RSRs do provide a conditional exemption from compliance with the PMC when contamination is determined to be present solely due to the presence of coal or wood ash, coal fragments, or asphalt in the soil (see RSCA §22a-133k-2(c)(4)(B)) and soil remains in-situ or is re-used on-site. Despite this exemption, the potential for mobilization of additional contaminants into groundwater from proposed stormwater infiltration systems should be considered, particularly in groundwater drinking supply areas. Also, it should be noted that the PMC exemption does not apply to soil managed ex-situ or transported off-site for disposal, or for soil contamination present as a result of a discrete release.

Groundwater Quality

As indicated above, the current or potential uses of groundwater as a drinking water resource is an important consideration for the siting and design of stormwater infiltration systems. Infiltration of stormwater can mobilize soil contaminants present in Urban Fill or where contaminant releases have occurred, or introduce pollutants present in stormwater runoff that may impact groundwater quality. Connecticut's groundwater classification system, contained within the Connecticut Water Quality Standards, provides a general indicator of the designated uses of groundwater across the State. The groundwater classifications, along with the associated water quality criteria, provide standards to protect human uses of groundwater including the general types of discharges allowed.

A summary of common groundwater classifications is provided below:

- **GAA** – This groundwater classification, and related sub-classes, indicates that groundwater in these areas is actively used as a public drinking water resource, either through well withdrawal or as recharge for a reservoir.
- **GA** – This groundwater classification is the default classification, and indicates that groundwater in these areas is or may be used as a groundwater resource for residential purposes.
- **GB** – This groundwater classification indicates that groundwater quality has been degraded by point or nonpoint wastewater discharges associated with historical land uses. Groundwater in these areas is presumed to not be suitable for use as a drinking water resource without treatment.

A useful GIS viewer that can be used to determine a project location's groundwater classification can be found online at http://www.cteco.uconn.edu. In contrast to other stormwater management systems, which typically convey discharges to surface water bodies, stormwater infiltration systems discharge, at least partially, to groundwater. In GA groundwater areas, and particularly GAA areas, special consideration should be given to the potential for stormwater infiltration systems to increase pollutant loadings to public or private groundwater drinking supplies. Such considerations may include minimizing and disconnecting large impervious surfaces within the drainage area, preventing illicit discharges, redirecting runoff to aboveground treatment structures prior to infiltration, and other stormwater infiltration system design provisions such as the use of spill storage, pre-treatment, and/or lined systems. Additional guidance for stormwater management in Aquifer Protection Areas and other groundwater drinking supply areas is provided in Appendix C of the DEEP General Permit for the Discharge of Stormwater from Small Municipal Separate Storm Sewer Systems (MS4 General Permit).

The RSRs include three separate criteria for groundwater that reflect limits based on potential use as a drinking water resource (Groundwater Protection Criteria), potential adverse impacts to surface water (Surface Water Protection Criteria), and as a potential source of vapor intrusion due to off-gassing of volatile compounds (Groundwater Volatilization Criteria). In general, these criteria are not strictly applicable to stormwater discharges but can be useful for comparison to existing groundwater quality, particularly the Groundwater Protection Criteria, to further evaluate the capacity of the groundwater to handle additional

pollutant loads. In some cases, performance of a groundwater receptor survey in the area surrounding a proposed project location may be warranted to determine if groundwater is being used for drinking water in the area surrounding a project location. In addition to system design considerations, the presence of contaminants in groundwater may indicate the presence of associated soil contamination issues, and may also need to be considered in terms of project health and safety protocols, project permitting, and potential treatment if dewatering is anticipated to be necessary during construction.

Land Use

Land use activities within the drainage area of a stormwater management system play a significant role in the system design. Stormwater runoff from residential areas and other low-intensity land uses tends to contain lower pollutant concentrations and loads. However, high-risk land uses, such as commercial or industrial facilities or gasoline stations, for example, may still be present in these areas, and may represent a higher risk for stormwater infiltration than in some urban settings, since groundwater is more likely to be used as a drinking water resource in many residential areas. In urban areas, land uses tend to be more intensive, with the associated potential for higher pollutant concentrations and loads and/or a higher potential for chemical or petroleum spills. This is of concern relative to stormwater infiltration system design, particularly for stormwater infiltration systems that discharge directly to the subsurface with limited filtration or other pretreatment. Soils in urban areas are also more likely to be environmentally-impacted, either by the presence of Urban Fill or the presence of discrete releases related to high-risk land uses.

Stormwater Infiltration Considerations

The matrix below provides guidance for the design of stormwater infiltration systems in various soil, groundwater, and land use settings, consistent with the framework described above.

Groundwater Classification	Residential Areas/Lower Pollutant Loads	Urban Areas/Higher Pollutant Loads
Clean Soil *– Natural soil or rock that contains background levels of contaminants or fill soil containing inert materials such as brick, ceramics, or concrete and/or has been treated to reduce the concentration of pollutants to levels that do not exceed the appropriate DEC and PMC.*		
GA/GAA	No specific restrictions on stormwater infiltration	Incorporate provisions for pre-treatment of urban area runoff and spill storage in areas with potential for higher pollutant loads
GB	No specific restrictions on stormwater infiltration	No specific restrictions on stormwater infiltration
Polluted Soil *– Natural soil or rock or fill soil that contains concentrations of contaminants above background levels but below the appropriate DEC or PMC.*		

Design Guidance For
Stormwater Infiltration Systems in Urban Fill in Connecticut

Groundwater Classification	Residential Areas/Lower Pollutant Loads	Urban Areas/Higher Pollutant Loads
GA/GAA	Recommend groundwater receptor evaluation. Consider replacement of polluted soil with clean soil to reduce potential for infiltration-induced contaminant loading. Soil management plan (SMP) may be necessary for soils removed from or re-used on the site.	Consider replacement of polluted soil beneath the infiltration system with clean soil and incorporation of pre-treatment/spill storage to reduce potential for infiltration-induced contaminant loading. SMP may be necessary.
GB	No specific restrictions on stormwater infiltration. SMP may be necessary.	No specific restrictions on stormwater infiltration. SMP may be necessary.
Contaminated Soil *– Natural soil or rock or fill soil that contains concentrations of contaminants above the appropriate DEC or PMC.*		
GA/GAA	Replace contaminated soil with clean soil. Consider over-excavation to completely remove contaminated soil if limited in extent to remediate the site. Develop SMP; segregate excavated contaminated soil from clean or polluted soil. Consider filtration/detention, i.e., temporary storage (no groundwater discharge) if contaminated soil remains in place.	Replace contaminated soil with clean soil. Consider over-excavation to completely remove contaminated soil if limited in extent to remediate the site. Develop SMP; segregate excavated contaminated soil from clean or polluted soil. Consider filtration/detention, i.e., temporary storage (no groundwater discharge) if contaminated soil remains in place. Consider incorporation of pre-treatment/spill storage to reduce infiltration-induced contaminant loading.
GB		

5 Design Considerations

- *Constructability*
  - **Space Considerations** – Is there enough available space to construct the system? Consideration should include not only the planimetric footprint of the proposed installation but also the areas disturbed a part of any excavation and associated OSHA dictated side slopes for installation, unless shoring or sheeting are proposed to limit the area of disturbance. For municipalities, locating the system beneath a roadway may be a consideration, but such a location may raise additional logistical issues.
  - **Steep Slopes** – Introduction of water to subsurface soils in close proximity to steep slopes could cause slope instability by increasing the groundwater energy gradient or simply saturating the soils. Both of these effects could cause slope failure.
  - **Surface Restoration** – Will the post-construction surface cover above the infiltration system be pavement, soil, or a landscaped area?
  - **Depth to Seasonal High Groundwater** – High water table conditions in the proposed system location will limit or preclude achieving the desired infiltration. A separation distance of at least three feet between the base of the infiltration system and the seasonal high water table is recommended in the Connecticut Stormwater Quality Manual.
  - **Soil type** – As with a sanitary leaching system, the soil type will have a significant impact on the rate of infiltration. Soil adjacent to and beneath the proposed infiltration system should be tested to confirm that the soil can support the desired infiltration rate as outlined in the Connecticut Stormwater Quality Manual.

- *Land uses/pretreatment needs* – The quality of stormwater entering a subsurface infiltration system is important, because the stormwater will be discharged directly to subsurface soil without the benefit of natural filtration through shallow surface soil. Stormwater pretreatment infrastructure should be incorporated into the design, particularly if significant sources of potential surface contaminant releases (e.g., a highly industrialized area or petroleum distribution facility for example) are present within the drainage area serviced by the stormwater infiltration system. Pretreatment should provide ample storage to contain a release that at some point could potentially occur in the drainage area, such as a leaking automobile gas tank from a car accident, or similar potential event. Storage provides a better probability that spill response teams could recover the spilled fuel from a pretreatment unit prior to it flowing to the infiltration system.

- *Capacity needs (high and low)* – Consider the target runoff goals for the area. The system should be designed to accommodate high flow conditions, and bypass flows exceeding system design capacity, as well as to function during low flow conditions.

- *Separation distances* – If public or private potable wells or sanitary disposal systems are present in the area of the proposed infiltration system, the location/design of the system should consider minimum separation distances, to prevent unintended impacts from the system discharge, such as the

potential presence of elevated nutrients or bacteria levels in the infiltrate. In Connecticut, these types of infiltration systems are required to be at least 200 feet from a surface water drinking source and 100 feet from either a public water supply well or tributary to surface water drinking source. Although no separation distance from private potable wells or sanitary disposal systems is specified in the Connecticut regulations, a separation distance of at least 75 feet, similar to the regulated separation distance between private wells and sanitary disposal systems should be considered. See the following link: https://portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/environmental_health/environmental_engineering/2018-Uploads/Highlighted-Revision-Version-2018-Technical-Standards.pdf?la=en

6 Environmental Considerations

In addition to potential impacts to the surrounding environment from a proposed stormwater infiltration system, the designer should consider the implications of existing environmental conditions in the vicinity of the proposed system.

- *Existing Land Uses* – As previously indicated, existing land uses may impact the relative risk of contaminant impacts in soil or groundwater within the project area, and may influence the types and extent of stormwater pretreatment needing to be incorporated into the design of the system and appurtenant structures. For example, if a land use that has a high potential for catastrophic surface releases (such as a fuel distribution facility or a facility with other chemical bulk storage) is present in the drainage area of the proposed infiltration system, design of more robust pretreatment structures would be warranted. Depending on the inferred level of risk, selection of an alternate location for the proposed infiltration system may also be appropriate, and in some cases infiltration systems may not be appropriate.

- *Discrete Contaminant Releases* – If contaminants in the soil are related to specific releases from existing or historical land uses within the project location, such releases need to be evaluated to determine the impact on the infiltration design and construction. Considerations pertinent to the infiltrations system design include but are not necessarily limited to):
    - Does the release intersect the excavation for the proposed infiltration system?
    - If so, will installation of the proposed infiltration system completely mitigate the release area?
    - What are the contaminants of concern, and what special handling or disposal is required?
    - If the release cannot be completely removed, can a "non-infiltration" (i.e., storage only) be designed into the system to prevent stormwater infiltration into remaining contaminated soil area(s)?

- *Regulatory Framework* – What, if any, regulatory framework is soil within the project area subject to from an environmental perspective?
    - **Remediation Standard Regulations (RSRs)** - In Connecticut, soil and groundwater at properties subject to a DEEP order or formal remediation program must be rendered compliant with the RSRs, which are promulgated in Sections 22a-133k-1 through 22a-133k-3 of the Regulations of Connecticut State Agencies (RCSA). For sites not formally regulated by the DEEP, the RSR criteria are frequently still used as risk-based limits for specific contaminants, but there is often more flexibility with respect to complying with other RSR requirements if the project location is not specifically regulated.
    - **DEEP Utility Excavation Guidance** – In 2001, DEEP issued general guidance for excavation conducted in conjunction with utility installations. The guidance indicates that if contaminated soil is encountered during utility excavation activities, the contractor may reuse the impacted soil to backfill the excavation, subject to specific limitations, provided that the utility contractor/owner did not cause the contamination. Excess soil would need to be handled and disposed appropriately.
    - **Soil Management and Staging** – Stockpiling of soil excavated during construction of the infiltration system may be subject to a DEEP general permit if the soil is determined to be "polluted" (i.e., contaminant concentrations above background but below RSR criteria) or "contaminated" (i.e., contaminant concentration above RSR criteria). If there is a reasonable expectation that polluted or contaminated soil may be encountered during the project, a soil management plan (SMP) should be developed and referenced in the specifications or otherwise incorporated into the project documents to ensure appropriate handling and staging protocols are put in place. For polluted or contaminated soil staged during the project, the anticipated volume and storage timeframes should be evaluated to determine the need to notify DEEP or register under the general permit.
    - **Soil Disposal** – If excess soil is determined to be polluted or contaminated, RSR criteria and/or disposal facility permit limits need to be considered when this soil is removed from the project area. If there is a reasonable expectation that such soil may be encountered, protocols for soil disposal by the contractor should be included in the SMP and/or incorporated into the project specifications. If soil exhibiting contaminant concentrations above hazardous waste thresholds is encountered, USEPA RCRA requirements may also need to be considered.