NPDES FORM 3510-9	EPA	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY WASHINGTON, DC 20460 NOTICE OF INTENT (NOI) FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER AN NPDES GENERAL PERMIT	Form Approved. OMB Nos. 2040-0004

Submission of this Notice of Intent (NOI) constitutes notice that the operator identified in Section II of this form requests authorization to discharge pursuant to the NPDES Construction General Permit (CGP) permit number identified in Section I of this form. Submission of this NOI also constitutes notice that the operator identified in Section II of this form meets the eligibility requirements of Parts 1.1 and 1.2 of the CGP for the project identified in Section III of this form. Permit coverage is required prior to commencement of construction activity until you are eligible to terminate coverage as detailed in Part 8 of the CGP. To obtain authorization, you must submit a complete and accurate NOI form. Discharges are not authorized if your NOI is incomplete or inaccurate or if you were never eligible for permit coverage. Refer to the instructions at the end of this form.

I. Approval to Use Paper NOI Form

Have you been given approval from the Regional Office to use this paper NOI form*? ☐ Yes ☐ NO

If yes, provide the reason you need to use this paper form, the name of the EPA Regional Office staff person who approved your use of this form, and the date of approval:

Reason for using paper form:

Name of EPA staff person:

Date approval obtained:

*** Note: You are required to obtain approval from the applicable Regional Office prior to using this paper NOI form.**

II. Permit Information:

Tracking Number (EPA Use Only) MAR12AK26

Permit Number: MAR120000 (see Appendix B of the CGP for the list of eligible permit numbers)

III. Operator Information

Name: Lighthouse Environmental Management LLC

Phone: (978)706-1782 Fax (Optional): (978)706-1784

Email: kevin@lighthousemgmt.com

IRS Employer Identification Number (EIN): 45-3734525

Point of Contact (First Name, Middle Initial, Last Name): Kevin F Gervais

Mailing Address:

Street: 184 Stone Street

City: Clinton State: MA Zip: 01510

NOI Preparer (Complete if NOI was prepared by someone other than the certifier):

Prepared by (First Name, Middle Initial, Last Name): Kevin F Gervais

Organization: Lighthouse Environmental Management LLC

Phone: (978)706-1782 Fax (Optional): (978)706-1784

E-mail: kevin@lighthousemgmt.com

IV. Project/Site Information

Project/Site Name: Overlook and Jordan Farms

Project/Site Address:

Street/Location: Overlook Road

City: Rutland State: MA Zip: 01543

County or similar government subdivision: Worcester

For the project/site for which you are seeking permit coverage, provide the following information:

Latitude/Longitude (Use one of three possible formats, and specify method)

Latitude 1.	42.23.48	N(degrees, minutes, seconds)	Longitude 1.	71.54.26	W(degrees, minutes, seconds)
2.		N(degrees, minutes, decimal)	2.		W(degrees, minutes, decimal)
3.		N(degrees, decimals)	3.		W(degrees, decimals)

Latitude/Longitude Data Source: ☐ U.S.G.S topographical map ☐ EPA Web Site ☐ GPS ☑ Other: Acme Mapper

If you used a U.S.G.S. topographic map, what was the scale?

Horizontal Reference Datum: ☐ NAD 27 ☐ NAD 83 or WGS 84 ☑ Unknown

Is your project/site located in Indian Country lands, or located on a property of religious or cultural significance to an Indian tribe? ☐ Yes ☑ No

If yes, provide the name of the Indian tribe associated with the area of Indian country (including name of Indian reservation, if applicable), or if not in Indian country, provide the name of the Indian tribe associated with the property:

Are you requesting coverage under this NOI as a "federal operator" as defined in Appendix A? ☐ Yes ☑ No

Estimated Project Start Date: 11/01/2012 Estimated Project Completion Date: 03/01/2016

Estimated Area to be Disturbed (to the nearest quarter acre): 125.0

Have earth-disturbing activities commenced on your project/site? ☑ Yes ☐ No

If yes, is your project an emergency-related project? ☐ Yes ☑ No

Have stormwater discharges from your project/site been covered previously under an NPDES permit? ☐ Yes ☑ No

If yes, provide the Tracking Number if you had coverage under EPA's CGP or the NPDES permit number if you had coverage under an EPA individual permit:

V. Discharge Information

Does your project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)? ☐ Yes ☑ No

Are there any surface waters within 50 feet of your project's earth disturbances? ☐ Yes ☑ No

Receiving Waters and Wetlands Information: (Attach a separate list if necessary)

Surface water(s) to which discharge	Impaired Water	Listed Water Pollutant(s)	Tier 2, 2.5 or 3	Source	TMDL Name and Pollutant
Muschopauge Brook	No		Yes	Massachusetts DEP web site	

Describe the methods you used to complete the above table: Please refer to the Source(s) in the above table.

VI. Chemical Treatment Information

Will you use polymers, flocculants, or other treatment chemicals at your construction site? ☑ Yes ☐ No

If yes, will you use cationic treatment chemicals* at your construction site? ☐ Yes ☑ No

If yes, have you been authorized to use cationic treatment chemicals by your applicable EPA Regional Office in advance of filing your NOI*? ☐ Yes ☐ No

If you have been authorized to use cationic treatment chemicals by your applicable EPA Regional Office, attach a copy of your authorization letter and include documentation of the appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to a violation of water quality standards.

Please indicate the treatment chemicals that you will use: Anionic polyacrylamide flocculants

* Note: You are ineligible for coverage under this permit unless you notify your applicable EPA Regional Office in advance and the EPA office authorizes coverage under this permit after you have included appropriate controls and implementation procedures designed to ensure that your use of cationic treatment chemicals will not lead to a violation of water quality standards.

VII. Stormwater Pollution Prevention Plan (SWPPP) Information

Has the SWPPP been prepared in advance of filing this NOI? ☑ Yes ☐ No

SWPPP Contact Information:

First Name, Middle Initial, Last Name: Kevin F Gervais

Organization: Lighthouse Environmental Management LLC

Phone: (978)706-1782 Fax (Optional): (978)706-1784

E-mail: kevin@lighthousemgmt.com

VIII. Endangered Species Protection

Using the instructions in Appendix D of the CGP, under which criterion listed in Appendix D are you eligible for coverage under this permit (only check 1 box)?

☑ A ☐ B ☐ C ☐ D ☐ E ☐ F

Provide a brief summary of the basis for criterion selection listed in Appendix D (e.g., communication with U.S. Fish and Wildlife Service or National Marine Fisheries Service, specific study):Publicly available information at the Massachusetts GIS web site using the OLIVER application

If you select criterion B, provide the Tracking Number from the other operator's notification of authorization under this permit:

If you select criterion C, you must attach a copy of your site map (see Part 7.2.6 of the permit), and you must answer the following questions:

What federally-listed species or federally-designated critical habitat are located in your "action area":

What is the distance between your site and the listed species or critical habitat (miles):

If you select criterion D, E, or F, attach copies of any letters or other communications between you and the U.S. Fish and Wildlife Service or National Marine Fisheries Service.

IX. Historic Preservation

Are you installing any stormwater controls as described in Appendix E that require subsurface earth disturbance? (Appendix E, Step 1) ☑ Yes ☐ No

If yes, have prior surveys or evaluations conducted on the site have already determined historic properties do not exist, or that prior disturbances have precluded the existence of historic properties? (Appendix E, Step 2) ☑ Yes ☐ No

If no, have you determined that your installation of subsurface earth-disturbing stormwater controls will have no effect on historic properties? (Appendix E, Step 3) ☐ Yes ☐ No

If no, did the SHPO, THPO, or other tribal representative (whichever applies) respond to you within the 15 calendar days to indicate whether the subsurface earth disturbances caused by the installation of stormwater controls affect historic properties? (Appendix E, Step 4) ☐ Yes ☐ No

If yes, describe the nature of their response:

☐	Written indication that adverse effects to historic properties from the installation of stormwater controls can be mitigated by agreed upon actions.
☐	No agreement has been reached regarding measures to mitigate effects to historic properties from the installation of stormwater controls.
☐	Other:

X. Certification Information

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

First Name, Middle Initial, Last Name: Kevin F Gervais

Title: Project Manager

Signature: Date:

E-mail: kevin@lighthousemgmt.com

Appendix D – Copy of Inspection Form

Stormwater Construction Site Inspection Report

General Information			
Project Name	Overlook and Jordan Farms		
NPDES Tracking No.	MAR12AK26	**Location**	Overlook Road, Rutland
Date of Inspection		**Start/End Time**	
Inspector's Name(s)	Gary Salter		
Inspector's Title(s)			
Inspector's Contact Information	(508)331-1884		
Inspector's Qualifications			
Describe present phase of construction	**First**		

Type of Inspection:
❑ Regular ❑ Pre-storm event ❑ During storm event ❑ Post-storm event

Weather Information

Has there been a storm event since the last inspection? ❑Yes ❑No
If yes, provide:
Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):

Weather at time of this inspection?
❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snowing ❑ High Winds
❑ Other: Temperature:

Have any discharges occurred since the last inspection? ❑Yes ❑No
If yes, describe:

Are there any discharges at the time of inspection? ❑Yes ❑No
If yes, describe:

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1	Erosion control barriers	❑Yes ❑No	❑Yes ❑No	
2	Temp. settling basins	❑Yes ❑No	❑Yes ❑No	
3	Straw bale dikes	❑Yes ❑No	❑Yes ❑No	
4	Drainage swales	❑Yes ❑No	❑Yes ❑No	
5	Floc Blocks & Jute Mesh	❑Yes ❑No	❑Yes ❑No	
6	Temp basin Outlet controls	❑Yes ❑No	❑Yes ❑No	
7		❑Yes ❑No	❑Yes ❑No	
8		❑Yes ❑No	❑Yes ❑No	
9		❑Yes ❑No	❑Yes ❑No	
10		❑Yes ❑No	❑Yes ❑No	
11		❑Yes ❑No	❑Yes ❑No	

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
14		❑Yes ❑No	❑Yes ❑No	
15		❑Yes ❑No	❑Yes ❑No	
16		❑Yes ❑No	❑Yes ❑No	
17		❑Yes ❑No	❑Yes ❑No	
18		❑Yes ❑No	❑Yes ❑No	
19		❑Yes ❑No	❑Yes ❑No	
20		❑Yes ❑No	❑Yes ❑No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions at your site.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
1	Are all slopes and disturbed areas not actively being worked properly stabilized?	❑Yes ❑No	❑Yes ❑No	
2	Are natural resource areas (e.g., streams, wetlands, mature trees, etc.) protected with barriers or similar BMPs?	❑Yes ❑No	❑Yes ❑No	
3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	❑Yes ❑No	❑Yes ❑No	
4	Are discharge points and receiving waters free of any sediment deposits?	❑Yes ❑No	❑Yes ❑No	
5	Are storm drain inlets properly protected?	❑Yes ❑No	❑Yes ❑No	
6	Is the construction exit preventing sediment from being tracked into the street?	❑Yes ❑No	❑Yes ❑No	
7	Is trash/litter from work areas collected and placed in covered dumpsters?	❑Yes ❑No	❑Yes ❑No	
8	Are washout facilities (e.g., paint, stucco, concrete) available, clearly marked, and maintained?	❑Yes ❑No	❑Yes ❑No	

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
9	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	❑Yes ❑No	❑Yes ❑No	
10	Are materials that are potential stormwater contaminants stored inside or under cover?	❑Yes ❑No	❑Yes ❑No	
11	Are non-stormwater discharges (e.g., wash water, dewatering) properly controlled?	❑Yes ❑No	❑Yes ❑No	
12	(Other)	❑Yes ❑No	❑Yes ❑No	

Non-Compliance

Describe any incidents of non-compliance not described above:

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name and title: Gary Salter, Inspector

Signature: _____ **Date:** _____

Appendix E – Copy of Corrective Action Form

Corrective Action Log

Date	BMP Deficiency	Corrective action	Approved By

Appendix F – SWPPP Amendment Log

No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]
1	Changed Inspector Added Inspection Form	May 22, 2013	Andrew B. Li ston PE, PLA, CPESC

Appendix G – Subcontractor Certifications/Agreements

SUBCONTRACTOR CERTIFICATION
STORMWATER POLLUTION PREVENTION PLAN

Project Number: MAR12AK26

Project Title: Overlook and Jordan Farms

Operator(s): Lighthouse Environmental Management, LLC

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the practices described in the SWPPP.

This certification is hereby signed in reference to the above named project:

Company: Lighthouse Environmental Management, LLC

Address: 184 Stone Street, Clinton, MA 01510

Telephone Number: 978-706-1782

Type of construction service to be provided: Land filling and grading to improve the farms

Signature: _____

Title: _____

Date: _____

Appendix H – Grading and Stabilization Activities Log

Date Grading Activity Initiated	**Description of Grading Activity**	**Description of Stabilization Measure and Location**	**Date Grading Activity Ceased** (Indicate Temporary or Permanent)	**Date When Stabilization Measures Initiated**

Appendix I – SWPPP Training Log

Stormwater Pollution Prevention Training Log

Project Name:

Project Location:

Instructor's Name(s):

Instructor's Title(s):

Course Location: _____ Date: _____

Course Length (hours): _____

Stormwater Training Topic: *(check as appropriate)*

- ☐ **Sediment and Erosion Controls**
- ☐ **Emergency Procedures**
- ☐ **Stabilization Controls**
- ☐ **Inspections/Corrective Actions**
- ☐ **Pollution Prevention Measures**

Specific Training Objective:_____

_____

Attendee Roster: *(attach additional pages as necessary)*

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		

Appendix J – Delegation of Authority Form

Delegation of Authority

I, Kevin Gervais, Manager, hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit, at the Overlook and Jordan Farms construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

Gary Salter, Inspector	(name of person or position)
Lighthouse Environmental Management, LLC	(company)
184 Stone Street	(address)
Clinton, MA 01510	(city, state, zip)
(508)835-5905	(phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix I of EPA's Construction General Permit (CGP), and that the designee above meets the definition of a "duly authorized representative" as set forth in Appendix I.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: Kevin Gervais, Manager

Company: Lighthouse Environmental Management, LLC

Title: Manager

Signature: _____

Date: _____

Appendix J – Delegation of Authority Form

Delegation of Authority

I, _____ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit, at the _____ construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

_____ (name of person or position)
_____ (company)
_____ (address)
_____ (city, state, zip)
_____ (phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix I of EPA's Construction General Permit (CGP), and that the designee above meets the definition of a "duly authorized representative" as set forth in Appendix I.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____

Company: _____

Title: _____

Signature: _____

Date: _____

Appendix K – Endangered Species Documentation

The Massachusetts GIS OLIVER viewer was used in May 2013 and no endangered species or habitats of endangered or threatened species were found to be located on or in close proximity to this site.

Attachment E

Loam Approval Package and Soil Blending Letter (EI)

EcoTec, Inc.

ENVIRONMENTAL CONSULTING SERVICES
102 Grove Street
Worcester, MA 01605-2629
508-752-9666 / Fax: 508-752-9494

May 15, 2013

Michele Padula, Regional Planner
Agricultral Preservation Restriction Program
MA Dept of Agricultral Resources
251 Causeway St., Suite 500
Boston, MA 02114

Re: Overlook Farms, Rutland, MA

Subject: Soil for APR Land

Dear Ms. Padula:

I am a soil scientist contracted by Kevin Gervais of Lighthouse Management to help address the concerns that you raised pursuant to placement of off-site soils on Agricultural Preservation Restriction ("APR") program lands at Overlook Farms in Rutland, Massachusetts. I am taking this opportunity to provide you with information on the source and condition of topsoil that Mr. Gervais, and Mr. Williams (AKA: the landowner) intends to place on APR land including information on conformance with the "NRCS Filling Material Criteria for Agricultural Applications in Massachusetts" (the "Criteria"). The topsoil is presently being stockpiled on adjacent, non-APR land at Jordan Farm in Rutland. It is to be placed as a surface layer over an APR area that is presently un-farmed and had been wooded until it was cleared in 2011 to 2012. The Soil Management Plan depicts proposed soil volumes, contours, stratigraphy and control measures for the area to be filled. The un-farmed area is mapped by the Natural Resources Conservation Service ("NRCS") as a combination of Charlton-Paxton association, 15 to 45 percent slopes, extremely stony; and Charlton-Chatfield association, 3 to 15 percent slopes, extremely stony. The Land Capability Classes of the un-farmed area are 6s and 7s. Neither of the existing soil series in the un-farmed area are Prime Farmlands or Farmlands of State or Local Importance (as defined by NRCS). I have attached an overview photo of the existing APR area to be filled (see attached photo No. 1).

The source of the subject topsoil is a site under construction located at 700 Lafayette Road in Seabrook, NH. As noted in the attached Licensed Site Professional ("LSP") opinion letters, a portion of the site was historically occupied by an industrial facility and the entire property is being re-developed as a shopping center. Attached you will find an aerial photo locus map of the site as well as the site plan for re-development. The site has some history of contamination but has been remediated to the satisfaction of the New Hampshire Department of Environmental Services. The topsoil source locations are on

the perimeters of the site which were wooded, undeveloped and uncontaminated at the time the topsoils were removed. The soils have been thoroughly tested for contaminants and found to be consistent in quality and suitable for re-use. I researched available USDA-NRCS soil survey information for the soil source location and have attached the Custom Soil Resource Report which was generated. Available soil mapping indicates that the upland site perimeters consist of Soil Map Unit 313A which is known as Deerfield fine sandy loam. The Deerfield series is a moderately well drained soil developed in glacial outwash with a surface layer of fine sandy loam. Based on my evaluations of the soil, together with soil testing results discussed below, it is my opinion that the stockpiled topsoil is representative of a Deerfield soil. The primary agricultural limitations are the presence of a seasonally high water table combined with loamy sand and sand in the subsoil layers which creates the potential for low available water content in the topsoil horizon. The non-irrigated land capability classification of the Deerfield soil is 3w due to the potential for a seasonal high water table up to 18 inches below the surface. The USDA-NRCS soil survey notes that the Deerfield soil is a "Farmland of Local Importance".

Starting on May 1, 2013 I have been evaluating the topsoil being stockpiled at the Jordan Farm in Rutland. I observed and sampled the topsoil stockpile periodically including on May 1, 3, 7 & 10, 2013. I have found the topsoil to be loamy sand to sandy loam in texture and very dark grey brown to dark brown (i.e., Munsell colors 10YR 3/2 and 10YR 3/3) in color. Fine to medium-size, woody root fragments were present along with approximately 10% gravel and 2% cobble and stone. No trash or debris was noted. These characteristics are indicative of a native topsoil, consistent with the Deerfield soil series, which was supporting woody plant growth at the time it was removed. The brown color is indicative of a moderate level of organic matter (ca. 3 to 5%) consistent with a historically plowed and amended topsoil. On May 1, 2013 I took a composite sample of the soil which I sent to the University of Massachusetts ("UMASS") Soil Testing Lab for analysis of particle size, organic matter content, pH and nutrients. The results of the analysis are appended to this report and are referenced in my discussion of the NRCS Criteria (see attached). As of my latest inspection on May 10, 2013 it was estimated that approximately 50% of the total topsoil from the New Hampshire site had been brought to Rutland. On May 10, 2013 I took another composite sample and have sent that to the UMASS soil testing lab. I intend to take another composite sample for analysis when 100% of the New Hampshire topsoil has been brought to the site. I also intend to continue to evaluate the soil stockpile periodically, while it is being brought to the site, to ensure consistency with my findings to date. I have attached photos of the topsoil stockpile that I took during my evaluations.

In my professional opinion, the topsoil that I have examined to date (originating from 700 Lafayette Road in Seabrook, NH) is of high quality relative to its potential for crop growth and is suitable for use on the APR program lands at Overlook Farms in Rutland, MA. The only parameter that does not meet the NRCS Criteria is the organic matter content of 2.9 percent which is below the optimum recommended level of 5 percent. As

noted in the attached analysis of the criteria, it is my opinion that amending with organic matter, in accordance with standard agricultural practice, will quickly raise the organic matter content to the optimum level. For comparison purposes, Paxton soil is commonly found on the Overlook farm site and it is considered Prime Farmland soil when the stone content is low and it is on a gentle slope. The published organic matter content for Paxton topsoil ranges between 2 and 5 percent.

I have attached a brief description of my qualifications. Please do not hesitate to contact me if you have any questions concerning this or other matters.

Sincerely,

Arthur Allen, CPSS, CESSWI, CWS
Vice President
Soil & Environmental Scientist 10/soil/OverlookTopsoil 5.6.13.doc

Attachments: 8 (Qualifications, EcoTec photos, Seabrook, NH locus; Seabrook, NH Site Plan; Soil Analysis Report, Custom Soil Resource Report, EnviroTrac letter, Wilcox & Barton letter w/ data)

1. APR Area to be filled

RUTLAND TOPSOIL STOCKPILE PHOTOS (AS DATED)

EcoTec, Inc.

ENVIRONMENTAL CONSULTING SERVICES
102 Grove Street
Worcester, MA 01605-2629
508-752-9666 / Fax: 508-752-9494

Arthur Allen, CPSS, CWS, CESSWI
Vice President
Soil & Wetland Scientist

Arthur Allen is the Vice President of EcoTec, Inc. and has been a senior environmental scientist there since 1995. His work with EcoTec has involved wetland delineation, wildlife habitat evaluation, environmental permitting (federal, state and local), environmental monitoring, expert testimony, peer reviews, contaminated site assessment and the description, mapping and interpretation of soils. His clients have included private landowners, developers, major corporations and regulatory agencies. Prior to joining EcoTec, Mr. Allen mapped and interpreted soils in Franklin County, MA for the U.S.D.A. Natural Resources Conservation Service (formerly Soil Conservation Service) and was a research soil scientist at Harvard University's Harvard Forest. Since 1994, Mr. Allen has assisted the Massachusetts Department of Environmental Protection and the Massachusetts Association of Conservation Commissions as an instructor in the interpretation of soils for wetland delineation and for the Title V Soil Evaluator program.

Mr. Allen has a civil service rating as a soil scientist, an undergraduate degree in Natural Resource Studies and a graduate certificate in Soil Studies. His work on the Franklin County soil survey involved interpretation of landscape-soil-water relationships, classifying soils and drainage, and determining use and limitation of the soil units that he delineated. As a soil scientist at the Harvard Forest, Mr. Allen was involved in identifying the legacies of historical land-use in modern soil and vegetation at a number of study sites across southern New England. He has a working knowledge of the chemical and physical properties of soil and water and how these properties interact with the plants that grow on a given site. While at Harvard Forest he authored and presented several papers describing his research results which were later published. In addition to his aforementioned experience, Mr. Allen was previously employed by the Trustees of Reservations as a land manager and by the Town of North Andover, MA as a conservation commission intern.

Education:
1993-Graduate Certificate in Soil Studies, University of New Hampshire
1982-Bachelor of Science in Natural Resource Studies, University of Massachusetts

Professional Affiliations:
Certified Professional Soil Scientist (ARCPACS CPSS #22529)
New Hampshire Certified Wetland Scientist (#19)
Registered Professional Soil Scientist – Society of Soil Scientists of SNE [Board Member (2000-2006)]
Certified Erosion, Sediment & Stormwater Inspector (#965)
Massachusetts Arborists Association-Certified Arborist (1982 – 1998)
New England Hydric Soils Technical Committee member
Massachusetts Association of Conservation Commissions member
Society of Wetland Scientists member

Refereed Publications:
Soil Science and Survey at Harvard Forest. A.Allen. *In*: Soil Survey Horizons. Vol. 36, No. 4, 1995, pp. 133-142.
Controlling Site to Evaluate History: Vegetation Patterns of a New England Sand Plain. G.Motzkin, D.Foster, A.Allen, J.Harrod, & R.Boone. *In*: Ecological Monographs 66(3), 1996, pp. 345-365.
Vegetation Patterns in Heterogeneous Landscapes: The Importance of History and Environment. G.Motzkin, P.Wilson, D.R.Foster & A.Allen. In: Journal of Vegetation Science 10, 1999, pp. 903-920.

NRCS Filling Material Criteria for Agricultural Applications in Massachusetts

Topsoil for Overlook Farms, Rutland, MA

Analysis by: Arthur Allen, CPSS of EcoTec, Inc.
May 15, 2013

This analysis pertains to topsoil which is being imported from a Deerfield soil area in Seabrook, NH. The topsoil has been evaluated by the author and found to be consistent with the Deerfield Soil Series descriptions. It is assumed that this topsoil will be spread at least 24 inches in depth as a finished surface layer over a low-lying area to be filled. The active rooting depth for annual agricultural crops such as sileage corn is typically 12 inches or less. Perennial crops do not typically root more than 24 inches deep. This analysis is based on field evaluation by the author, published soil survey information and soil testing results referenced in the cover letter to Michele Padula dated May 15, 2013.

A. The material has sufficient available water capacity within a depth of 1 meter, or in the root zone (root zone is the part of the soil that is penetrated or can be penetrated by plant roots) if it is less than 1 meter deep, to produce the commonly grown cultivated crops (cultivated crops include, but are not limited to, grain, forage, oilseed, vegetables, orchard, vineyard, and bush fruit crops) adapted to the region in 7 or more years out of 10 (more than 5 cm of available water), and,

   The Deerfield topsoil has an Available Water Capacity of 4.3 inches (10.9 cm) as published in the soil survey.

B. The material has a pH between 4.5 and 8.4 in all LAYERS within a depth of 1 meter or in the root zone if it is less than 1 meter deep; and,

   The tested Deerfield topsoil pH is 5.8. This material will form the root zone.

C. After spreading, the material has no water table or has a water table that is maintained at a sufficient depth during the cropping season to allow cultivated crops common to the area to be grown; and,

   The topsoil is free draining (published Ksat: 2.0 to 6.0 in/hr) and will be spread over a contoured surface that will allow lateral drainage over any more restrictive soils below. It is anticipated that seasonal high water tables will be no higher than 24 inches below the ground surface which is conducive to all common cultivated crops. The Soil Management Plan contains a cross-section of the proposed soil profile.

D. The land upon which the material is spread is not flooded frequently during the growing season (less often than once in 2 years); and,

   The land upon which the topsoil is to be spread is not presently "frequently flooded during the growing season". Following spreading, the finished grades will be significantly higher and contoured so as to prevent flooding.

E. After spreading, the product of K (erodibility factor) and percent slope is less than 4.2; and,

   The Deerfield topsoil product of K (0.17 published) and the proposed slope (3%) is 0.51 which is significantly less than 4.2 over the farmable area.

F. The material has a permeability rate of at least 0.15 cm per hour in the upper 50 cm; and,

The Deerfield topsoil has a published permeability rate of 15.24 cm per hour.

G. The material after spreading has a bulk density less than 1.62 grams per cubic centimeter throughout the upper 50 cm; and,

The Deerfield topsoil has a published bulk density of 1.00 gram per cubic centimeter. Compaction during spreading will be minimized by the use of tracked equipment, avoidance of spreading when the soils are saturated and minimizing the amount of equipment traffic over the finished soil surface.

H. Less than 10 percent of the upper 15 cm in the material consists of rock fragments greater than 7.5 cm in diameter; and,

The published Deerfield topsoil data indicates no rock fragments greater than 7.5 cm diameter. Based on field observations, the rock fragment content of the New Hampshire Deerfield topsoil is no more than 2 percent.

I. The material has organic matter content by dry weight of at least 5 percent in the upper 15 cm.

The New Hampshire Deerfield topsoil lab analysis indicates 2.9 percent organic matter. Organic matter amendments, with liming agents, will be added and tilled-in, consistent with standard agricultural practice, to reach 5 percent organic matter content.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Rockingham County, New Hampshire

May 2, 2013

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (700 Lafayette Rd., Seabrook, NH)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:5,410 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 12, Sep 27, 2012

Date(s) aerial images were photographed: 7/31/2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (700 Lafayette Rd., Seabrook, NH)

Rockingham County, New Hampshire (NH015)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
115	Scarboro muck	3.4	2.5%
140B	Chatfield-Hollis-Canton complex, 3 to 8 percent slopes, very stony	4.6	3.4%
299	Udorthents, smoothed	22.1	16.3%
313A	Deerfield fine sandy loam, 0 to 3 percent slopes	51.0	37.7%
314A	Pipestone sand, 0 to 5 percent slopes	13.3	9.8%
599	Urban land-Hoosic complex, 3 to 15 percent slopes	8.5	6.3%
699	Urban land	32.5	24.0%
Totals for Area of Interest		**135.5**	**100.0%**

Map Unit Descriptions (700 Lafayette Rd., Seabrook, NH)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been

observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Rockingham County, New Hampshire

115—Scarboro muck

Map Unit Setting

Elevation: 0 to 2,100 feet
Mean annual precipitation: 28 to 45 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 100 to 195 days

Map Unit Composition

Scarboro and similar soils: 80 percent
Minor components: 20 percent

Description of Scarboro

Setting

Landform: Outwash terraces

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water capacity: High (about 9.7 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 5w
Hydrologic Soil Group: D

Typical profile

0 to 12 inches: Mucky peat
12 to 16 inches: Sandy loam
16 to 60 inches: Sand

Minor Components

Chocorua

Percent of map unit: 10 percent
Landform: Bogs

Pipestone

Percent of map unit: 10 percent
Landform: Outwash terraces

140B—Chatfield-Hollis-Canton complex, 3 to 8 percent slopes, very stony

Map Unit Setting

Elevation: 0 to 1,600 feet
Mean annual precipitation: 28 to 46 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 60 to 180 days

Map Unit Composition

Chatfield and similar soils: 35 percent
Canton and similar soils: 20 percent
Hollis and similar soils: 20 percent
Minor components: 25 percent

Description of Chatfield

Setting

Parent material: Till

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.5 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 6s
Hydrologic Soil Group: B

Typical profile

0 to 20 inches: Fine sandy loam
20 to 31 inches: Cobbly fine sandy loam
31 to 35 inches: Unweathered bedrock

Description of Hollis

Setting

Parent material: Till

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 1.6 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 6s
Hydrologic Soil Group: D

Typical profile

0 to 2 inches: Fine sandy loam
2 to 13 inches: Cobbly fine sandy loam
13 to 17 inches: Unweathered bedrock

Description of Canton

Setting

Parent material: Till

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 5.3 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 6s
Hydrologic Soil Group: B

Typical profile

0 to 5 inches: Gravelly fine sandy loam
5 to 21 inches: Gravelly fine sandy loam
21 to 60 inches: Loamy sand

Minor Components

Other inclusions

Percent of map unit: 8 percent
Landform: Depressions

Greenwood

Percent of map unit: 5 percent
Landform: Bogs

Newfields

Percent of map unit: 5 percent

Walpole

Percent of map unit: 5 percent
Landform: Depressions

Rock outcrop
Percent of map unit: 2 percent

299—Udorthents, smoothed

Map Unit Composition
Udorthents and similar soils: 100 percent

Description of Udorthents

Properties and qualities
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

313A—Deerfield fine sandy loam, 0 to 3 percent slopes

Map Unit Setting
Elevation: 0 to 1,000 feet
Mean annual precipitation: 28 to 55 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 120 to 200 days

Map Unit Composition
Deerfield and similar soils: 80 percent
Minor components: 20 percent

Description of Deerfield

Setting
Parent material: Sandy outwash derived mainly from granite, gneiss and schist

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.3 inches)

Interpretive groups

Farmland classification: Farmland of local importance
Land capability (nonirrigated): 3w
Hydrologic Soil Group: B

Typical profile

0 to 8 inches: Fine sandy loam
8 to 21 inches: Loamy sand
21 to 60 inches: Sand

Minor Components

Eldridge

Percent of map unit: 5 percent

Pipestone

Percent of map unit: 5 percent
Landform: Outwash terraces

Squamscott

Percent of map unit: 5 percent
Landform: Marine terraces

Windsor

Percent of map unit: 5 percent

314A—Pipestone sand, 0 to 5 percent slopes

Map Unit Setting

Elevation: 0 to 2,100 feet
Mean annual precipitation: 28 to 55 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 200 days

Map Unit Composition

Pipestone and similar soils: 75 percent
Minor components: 25 percent

Description of Pipestone

Setting

Landform: Outwash terraces

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None

Available water capacity: Low (about 4.3 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 4w
Hydrologic Soil Group: B

Typical profile

0 to 6 inches: Sand
6 to 33 inches: Sand
33 to 60 inches: Sand

Minor Components

Chocorua

Percent of map unit: 5 percent
Landform: Bogs

Deerfield

Percent of map unit: 5 percent

Not named wet

Percent of map unit: 5 percent
Landform: Outwash terraces

Scarboro

Percent of map unit: 5 percent
Landform: Depressions

Squamscott

Percent of map unit: 5 percent
Landform: Marine terraces

599—Urban land-Hoosic complex, 3 to 15 percent slopes

Map Unit Setting

Elevation: 90 to 1,100 feet
Mean annual precipitation: 30 to 55 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 120 to 190 days

Map Unit Composition

Urban land: 55 percent
Hoosic and similar soils: 25 percent
Minor components: 20 percent

Description of Hoosic

Setting

Parent material: Outwash

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.6 inches)

Interpretive groups

Farmland classification: Not prime farmland
Land capability (nonirrigated): 3s
Hydrologic Soil Group: A

Typical profile

0 to 8 inches: Gravelly fine sandy loam
8 to 15 inches: Very gravelly fine sandy loam
15 to 60 inches: Very gravelly coarse sand

Minor Components

Eldridge

Percent of map unit: 4 percent

Newfields

Percent of map unit: 4 percent

Scitico

Percent of map unit: 4 percent
Landform: Marine terraces

Squamscott

Percent of map unit: 4 percent
Landform: Marine terraces

Udorthents

Percent of map unit: 4 percent

699—Urban land

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent

Minor Components

Not named

Percent of map unit: 15 percent

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

AOI Inventory

This folder contains a collection of tabular reports that present a variety of soil information. Included are various map unit description reports, special soil interpretation reports, and data summary reports.

Map Unit Description (Brief, Generated) (700 Lafayette Rd., Seabrook, NH)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous

areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description (Brief, Generated) (700 Lafayette Rd., Seabrook, NH)

Rockingham County, New Hampshire

Map Unit: 115—Scarboro muck

Component: Scarboro (80%)

The Scarboro component makes up 80 percent of the map unit. Slopes are 0 to 3 percent. This component is on outwash terraces. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is not flooded. It is frequently ponded. A seasonal zone of water saturation is at 6 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 88 percent. Nonirrigated land capability classification is 5w. This soil meets hydric criteria.

Component: Chocorua (10%)

Generated brief soil descriptions are created for major components. The Chocorua soil is a minor component.

Component: Pipestone (10%)

Generated brief soil descriptions are created for major components. The Pipestone soil is a minor component.

Map Unit: 140B—Chatfield-Hollis-Canton complex, 3 to 8 percent slopes, very stony

Component: Chatfield (35%)

The Chatfield component makes up 35 percent of the map unit. Slopes are 3 to 8 percent. The parent material consists of till. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface

horizon is about 6 percent. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria.

Component: Canton (20%)

The Canton component makes up 20 percent of the map unit. Slopes are 3 to 8 percent. The parent material consists of till. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria.

Component: Hollis (20%)

The Hollis component makes up 20 percent of the map unit. Slopes are 3 to 8 percent. The parent material consists of till. Depth to a root restrictive layer, bedrock, lithic, is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria.

Component: Other inclusions (8%)

Generated brief soil descriptions are created for major components. The Other inclusions soil is a minor component.

Component: Greenwood (5%)

Generated brief soil descriptions are created for major components. The Greenwood & ossipee soil is a minor component.

Component: Newfields (5%)

Generated brief soil descriptions are created for major components. The Newfields soil is a minor component.

Component: Walpole (5%)

Generated brief soil descriptions are created for major components. The Walpole soil is a minor component.

Component: Rock outcrop (2%)

Generated brief soil descriptions are created for major components. The Rock outcrop soil is a minor component.

Map Unit: 299—Udorthents, smoothed

Component: Udorthents (100%)

The Udorthents component makes up 100 percent of the map unit. Slopes are Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. This soil does not meet hydric criteria.

Map Unit: 313A—Deerfield fine sandy loam, 0 to 3 percent slopes

Component: Deerfield (80%)

The Deerfield component makes up 80 percent of the map unit. Slopes are 0 to 3 percent. The parent material consists of sandy outwash derived mainly from granite, gneiss and schist. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 27 inches during January, February, March, April, December. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 3w. This soil does not meet hydric criteria.

Component: Eldridge (5%)

Generated brief soil descriptions are created for major components. The Eldridge soil is a minor component.

Component: Pipestone (5%)

Generated brief soil descriptions are created for major components. The Pipestone soil is a minor component.

Component: Squamscott (5%)

Generated brief soil descriptions are created for major components. The Squamscott soil is a minor component.

Component: Windsor (5%)

Generated brief soil descriptions are created for major components. The Windsor soil is a minor component.

Map Unit: 314A—Pipestone sand, 0 to 5 percent slopes

Component: Pipestone (75%)

The Pipestone component makes up 75 percent of the map unit. Slopes are 0 to 5 percent. This component is on outwash terraces. The parent material consists of

sandy outwash derived mainly from granite, gneiss and schist. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 12 inches during January, February, March, April, May, June, October, November, December. Organic matter content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria.

Component: Chocorua (5%)

Generated brief soil descriptions are created for major components. The Chocorua soil is a minor component.

Component: Deerfield (5%)

Generated brief soil descriptions are created for major components. The Deerfield soil is a minor component.

Component: Not named wet (5%)

Generated brief soil descriptions are created for major components. The Not named wet soil is a minor component.

Component: Scarboro (5%)

Generated brief soil descriptions are created for major components. The Scarboro soil is a minor component.

Component: Squamscott (5%)

Generated brief soil descriptions are created for major components. The Squamscott soil is a minor component.

Map Unit: 599—Urban land-Hoosic complex, 3 to 15 percent slopes

Component: Urban land (55%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Component: Hoosic (25%)

The Hoosic component makes up 25 percent of the map unit. Slopes are 3 to 8 percent. The parent material consists of outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter

content in the surface horizon is about 4 percent. Nonirrigated land capability classification is 3s. This soil does not meet hydric criteria.

Component: Eldridge (4%)

Generated brief soil descriptions are created for major components. The Eldridge soil is a minor component.

Component: Newfields (4%)

Generated brief soil descriptions are created for major components. The Newfields soil is a minor component.

Component: Scitico (4%)

Generated brief soil descriptions are created for major components. The Scitico soil is a minor component.

Component: Squamscott (4%)

Generated brief soil descriptions are created for major components. The Squamscott soil is a minor component.

Component: Udorthents (4%)

Generated brief soil descriptions are created for major components. The Udorthents soil is a minor component.

Map Unit: 699—Urban land

Component: Urban land (85%)

Generated brief soil descriptions are created for major soil components. The Urban land is a miscellaneous area.

Component: Not named (15%)

Generated brief soil descriptions are created for major components. The Not named soil is a minor component.

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April 29, 2013

VIA E-MAIL

Mr. Kevin Gervais
Lighthouse Environmental Management, Inc.
184 Stone Street, PO Box 931
Clinton, Massachusetts

Subject: Subject: Letter of Acceptance for "<RCS-1", Natural Loam and Granular Fill Soil for Re-use at the Overlook Farms Property, Rutland, Massachusetts

Sending Site: 700 Lafayette Road, Seabrook, NH

Dear Kevin:

EnviroTrac, Ltd (EnviroTrac) has been contracted by you to prepare a "Soil Management Plan" (SMP) and conduct periodic reviews of candidate soil packages for re-use at the above-referenced "<RCS-1" Site located at 29 Overlook Drive in Rutland, Massachusetts. EnviroTrac has collected background soil samples at the farm property and has reviewed analytical testing conducted on a mix of paper mill sludge ("Biomix") permitted by MassDEP to be placed on the property by New England Organics (August 17, 2011). Some testing done for this effort was also considered to represent background as described in the SMP. Soil cover was previously removed from portions of this area on the farm to underlying till and bedrock and the farm is accepting certain soils considered to be physically and chemically suitable to replace the sub-soil layer for growth of corn.

The SMP for the property was prepared (September 24, 2012) and documented the basis for acceptance of candidate soils at the Site believed to be accordance with applicable local and state regulations based on information from the owner at the time and other available correspondences. The re-use requirements were prepared that were considered suitable for the property and surrounding human and environmental receptors. Specifically, the SMP summarized local environmental conditions and addressed the "anti-degradation" requirements in the Massachusetts Contingency Plan (MCP) which specify chemical constituents of soils brought to a site that would not environmentally degrade existing conditions.

State and local agencies recently reviewed the original SMP and provided inquiries requiring elaboration by the Owner, Lighthouse, and EnviroTrac in March 2013. A "Cease and Desist" order was filed by the Rutland Board of Health (BOH) in early March 2013 in order for them to review the information in the SMP. The information was provided to MassDEP (Bureau of Waste Site Cleanup and Resource Protection), Mass Department of Conservation and Recreation (DCR), National Resources Conservation

Service (NRCS), and City of Worcester at the request of BOH. After review, the BOH unanimously lifted the order on March 18, 2013 pending provision of an SMP Supplement that updates runoff/wetland protection concerns by the agencies with a revised topographic soil-fill placement and wetlands protection map, storm water pollution protection plan, and potential periodic testing of incoming soils at the discretion of the City of Worcester or Town of Rutland in coordination with Lighthouse and ET . The SMP Supplement is expected to be submitted in May 2013 and the map will confirmed provide wetland boundaries, protective measures, and areas pre-agreed upon for continued placement of soil.

Based on EnviroTrac's experience at several other soil re-use sites similar to this one in central Massachusetts, and the planned use of the soil as part of an overall mix to support growing of corn, the subject soil is considered not to significantly exceed pre-existing background soil conditions and will pose no human or ecological risk based on the current and planned future use as a farm with the SMP Supplement. A Site Plan will be provided in the SMP Supplement that depicts the area where soil placement will occur as coordinated and tracked by you and the owner. The MassDEP Draft Guidance on Soil Re-use issued March 26, 2013 was also considered in evaluating data for this package in addition to the existing Acceptance Criteria that will be updated in the SMP Supplement. A copy of the updated Acceptance Criteria is included with this approval that was provided to the consultant.

EnviroTrac has received a package of information from Wilcox & Barton, Inc. (WB) dated April 29, 2013 summarizing a professional LSP opinion for re-use of up to 17,000 cy (25,500 tons) of near surface loam and granular fill material that was not located in previous waste storage or disposal areas as described by WB that are below MCP residential "RCS-1"soil standards and are consistent with updated Acceptance Criteria developed at the Overlook Farms Soil Re-use Site. The physical makeup of the candidate soils in this package have been discussed by you with the Owner and approved prior to EnviroTrac's submittal of this approval.

EnviroTrac has discussed this package with WB and reviewed their demonstration that the soil results in this package are adequately represented by the testing contained herein. The soil is currently stockpiled and has been characterized in the stockpile by WB and will be shipped using the unsigned straight BOL that contains no MassDEP Release Tracking Number (RTN) and will be signed for soil shipments. Soil data was collected for candidate soils at the above-referenced Sending Site by WB at a certain frequency deemed suitable as described in the attached package based on their familiarity with the sending site.

Samples were collected by WB from the stockpile as shown on the attached map to characterize the soil. WB collected 43 soil samples of the subject soils as shown on the attached data table. The soil was considered suitable for re-use at Overlook based on a sampling frequency of about 1 sample/500 cy of loam and structurally unsuitable granular fill.

The soil samples were analyzed in general conformance with parameters prescribed in MassDEP's "COMM-97-001" Policy for disposal/re-use characterization at Massachusetts Landfills according to WB while employing due diligence practices based on their knowledge of the Site. The loam/fill soil stratum at the near surface depths was collected in areas peripheral to areas where waste impacts were found on the site and

contains no debris, trash or other evidence of visual contamination or contamination using PID screening. Headspace volatile concentrations were evaluated with a photo-ionization detector (PID) by WB and no readings above 2 ppmv were detected.

Site Information

The following summarizes pertinent information for the Site. Please also refer to pertinent sections of the Soil Profile Package prepared as required and provided in Attachment A.

Site Address: 700 Lafayette Road, Seabrook, NH

Consultant Providing Analytical Information: Ms. Amy Roth, PG, LSP

MassDEP Disposal Site and Release Tracking Number: According to the information provided to EnviroTrac in the report, the material was generated in association with the excavations in vegetated areas at the above-referenced development project. No known NHDES or MCP-regulated releases have occurred to the subject soils and no known hazardous characteristics of soils were found. The results for the subject soils were below the unrestricted MCP "RCS-1" Reportable Concentrations.

Analytical Profiling Documents: The analytical reports were provided by e-mail to EnviroTrac by WB and are on file at EnviroTrac and WB.

Analyses Conducted and Frequency: Total Petroleum Hydrocarbons (TPH), semi volatile organic compounds (SVOCs), volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), Resource Conservation and Recovery Act (RCRA) 8 Metals, conductance, and hazardous indicators were run as justified by WB. The Overlook Site requires analysis for pesticides/herbicides or a demonstration by an LSP that no use or unauthorized releases of these materials existed to the soils that would result in concentrations of significance. There was no history of pesticide/herbicide use or storage on the property that would affect the subject soil at these depths.

Total Estimated Quantity of Soils Requested to be Re-used: Up to 17,000 cy of select loam/fill soil as defined by WB from the locations and depths sampled as shown on the map in Attachment A.

Evaluation of Constituent Concentrations with Acceptance Criteria and Comments:

The constituents tested meet the updated Acceptance Criteria for the Overlook Farms Site with the following notes below:

- No VOCs were reported above detection limits except for very low detections of isopropyltoluene and toluene in 2 samples which were well below RCS-1. This together with the PID testing indicated the results were acceptable.

- A few SVOCs were detected in 2 samples slightly above Acceptance Criteria but most were ND or below criteria and the average was below criteria.

- Low levels of TPH were detected in some samples but all were below the updated Acceptance Criteria. No PCBs were detected.

- No metals were detected above updated Acceptance Criteria and conductance and hazardous indicator results were also ND or acceptable.

- WB has indicated only the soil represented by the samples in Attachment A will be sent.

- Solid debris, such as non-painted or coated concrete, bricks, wood, and rocks are not expected but if encountered, shall be of diameter less than 12 inches and constitute no greater than 5% of the quantity. There shall be no wooden timbers or other debris as indicated in the Plan.

- The soil will contain no free water and no noticeable nuisance odors, such as hydrogen sulfide or significant amount of sea shells which again are not expected based on the soil description provided.

- The soil will be shipped using the attached signed straight BOL that requires signature by the owner and LSP for shipment and placement will be logged by you or another authorized representative at Overlook Farms as stated in the plan

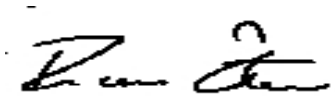
Acknowledgement and Acceptance

By review of the information provided, EnviroTrac hereby considers up to 17,000 cy (25,500 tons) of the subject soils, as represented by WB to EnviroTrac and you acceptable for re-use at the Overlook Farms Site in accordance with the SMP as long as they are physically suitable for agricultural use which has been coordinated and pre-determined by you and the Owner. The acceptance is subject to the periodic inspections at the Overlook Farms as described in the Plan and soils will be placed in areas for farming. This approval will be kept on file by you.

The soil will be shipped using the fully executed and updated shipping documentation (BOL) after coordination is made with you. You will log each soil load that is shipped to the facility and its final location.

Please call me at (781) 793-0074, ext.11 if you have questions.

Very Truly Yours,



Richard G. Stromberg, CPG, LSP
Principal Geologist

CC: A. Roth (WB)

This Acceptance is hereby acknowledged by the sending LSP:

_____
[Signature]

_____
[Print Name]

_____
[Title]

_____
[Date]

Wilcox & Barton INC.
ENVIRONMENTAL AND ENGINEERING SERVICES

April 29, 2013

Mr. Kevin Gervais
Lighthouse Environmental Management, LLC
184 Stone Street
Clinton, MA 01510

Re: Soil Disposal Opinion Letter
700 Lafayette Road, Seabrook, New Hampshire

Dear Mr. Gervais:

This Opinion Letter has been prepared on behalf of DDR Seabrook, LLC (DDR) concerning the reuse of excess soil generated at the above-referenced site. Redevelopment of the property has resulted in the generation of an estimated 17,000 cubic yards of excess topsoil and fill material deemed not to be significantly impacted by historical operations material. The excess soil will be transported under a straight Bill of Lading (BOL) to the Overlook Farms, 29 Overlook Road in Rutland, Massachusetts.

The source of the excess soil is an approximately 50-acre property that was used as an industrial manufacturing facility from its development in 1964 through 2004. The property was previously occupied by a 376,000-square foot manufacturing plant and several supporting structures and appurtenances including a hazardous waste storage area, boiler building, fuel storage building, electric substation, and wastewater treatment facilities. Facility operations included the manufacture and coating of plastic (injection molded) automotive parts and the extrusion of rubber parts. Facility wastewaters included sanitary wastewater, parts washing system discharges, paint booth water wall discharge, boiler blow down, spent deionization system regenerant solutions, lab sink discharges, and evaporative cooling process bleeds from air compressors, cooling, and injection molding processes. Wastewater was treated on site and discharged to groundwater via infiltration basins until 1998 when the facility was connected to the municipal sanitary sewer system. Operations ceased at the site in 2004 and site structures were subsequently demolished.

In September 2005, New Hampshire Department of Environmental Services (NHDES) approved an application for the subject property's admission into the State Brownfields Covenant Program. This site is identified in this program as NHDES #198705069. Significant site assessment and remediation activities were completed at the site between 2005 and 2013. On June 7, 2011, DDR Seabrook, LLC received a Certificate of Completion from NHDES indicating that:

1. All activities specified in the approved remedial action plan, with the exception of groundwater monitoring, have been completed;
2. The performance standards specified for the approved remedial action and the groundwater management permit have been achieved;
3. All monitoring requirements under the groundwater management permit are being met;
4. Any necessary activity and use restrictions have been implemented;

5. All penalty(ies) or fine(s) issued under the New Hampshire Statutes for Oil Spillage, Underground Storage Facilities, or Hazardous Waste Management have been paid;
6. All invoices associated with the Department's recoverable costs have been paid or waived; and
7. All fees or costs due under the Brownfields Program have been paid.

The Certificate of Completion and a Covenant Not to Sue issued by the NHDES were recorded in the Rockingham County Registry of Deeds in December 2012. Groundwater monitoring is to continue in accordance with the conditions of Groundwater Management Permit GWP-198705069-S-001.

The soil that is the subject of this Opinion Letter was generated during clearing and grubbing of wooded and vegetated areas on the property fringes away from the developed areas, former manufacturing buildings, and landscaped/maintained areas of the property. Field screening did not indicate visual or olfactory evidence of contamination. Soil was stockpiled and forty 8-point (minimum) composite samples were collected from the stockpile on March 14, 2013, for waste characterization analysis. The samples were composited from test pits dug into the pile to ensure representative sampling.

The soil samples were submitted to Con-Test Analytical Laboratory in East Longmeadow, Massachusetts, under standard chain of custody procedures for analysis of volatile organic compounds (VOCs) by EPA Method 8260, semi-volatile organic compounds (SVOCs) by EPA Method 8270, total petroleum hydrocarbons (TPH) by EPA Method 8100, RCRA 8 metals by EPA Methods 6010 and 7471, and polychlorinated biphenyls (PCBs) by EPA Method 8082. Three of the samples (LS-1 through LS-3), which were 30-point composites, were also analyzed for flashpoint, reactivity and pH. Based upon disposal facility requirements, an additional three 30-point composite soil samples (LS-41 through LS-43) were collected for analysis of specific conductance.

Based upon the analytical data, concentrations of all analytes are below the Massachusetts Contingency Plan (MCP) Reportable Concentrations for S-1 soils (RCS-1 thresholds), as shown on the attached table.

For comparison to the specific acceptance criteria for Overlook Farm, mean concentrations were calculated using one-half of the reporting limit for non-detect results.

- VOCs: The acceptance criteria for VOCs are specified as "Not Detected." All "detected" concentrations of VOCs were estimated concentrations detected below the reporting limit with two exceptions: p-isopropyltoluene in sample LS-11 and toluene in LS-14. All detected VOC concentrations are well below the RCS-1 thresholds, and all calculated mean concentrations can be classified as "not detected at or above the laboratory reporting limit."

- SVOCs: Two of the 40 composite samples, LS-10 and LS-30, contained individual SVOCs at concentrations exceeding the Overlook Farms criteria. However, the calculated mean concentrations of all detected SVOCs are well below the Overlook Farms criteria and the RCS-1 thresholds.

- PCBs: The reporting limits for the PCB Aroclors exceeded the Overlook Farms acceptance criteria of 0.1 milligrams per kilogram (mg/kg). However, the analytical detection limits for

all Aroclors were well below the 0.1 mg/kg criteria and no Aroclors were detected by the laboratory.

- Metals: No metals were detected at concentrations exceeding Overlook Farms acceptance criteria or RCS-1 standards.

- Pesticides and Herbicides: The soil characterized by this submittal was not specifically analyzed for pesticides or herbicides due to its origin. The material was generated from clearing and grubbing of heavily vegetated and wooded areas of the site on the property fringes away from the developed areas, former manufacturing buildings, and landscaped/maintained areas of the property. Therefore, pesticides and herbicides were not identified as potential contaminants of concern. A review of historical data for developed areas of the revealed a few instances where pesticides and/or herbicides were analyzed in soil. No pesticides or herbicides have been detected in soil at the site throughout the course of assessment and remediation since 2005.

The soil to be transported under this straight BOL will be sent to Overlook Farms in Rutland, Massachusetts. Enviro-Trac Environmental Services (Enviro-Trac) has established updated criteria for acceptance of the material, and has reviewed the waste characterization data and indicated that it is acceptable for reuse at the Overlook Farms facility. The number (greater than 1 sample per every 500 cubic yards) and distribution of samples collected is adequate for characterization of the material. Based on a review of the site history information, the Overlook Farms acceptance criteria, and the laboratory data used to characterize the soil to be transported, it appears that this soil meets the criteria for reuse at Overlook Farms.

If you have any questions, or require further information, please contact me at (508) 548-2363.

Very truly yours,

WILCOX & BARTON, INC.

Amy Roth, P.G., LSP
Senior Project Geologist

Attachments: Laboratory Analytical Data Table

TABLE 1
SUMMARY OF SOIL DISPOSAL ACCEPTANCE CRITERIA

Overlook Farms
Rutland, Massachusetts

	Sample Name								Calculations			Standards		Acceptance Criteria	
Analysis	S-1 (upland)	S-2 (lowland)	NEO Sample	#1	#2	#3	#4	#5	Maxium Concentration	Average Concentration	3 x Average Concentration	Concentration in "Natural" Soil (MassDEP Draft 2013)	Proposed MCP Reportable Concentrations: Draft 2013	Calculated Acceptance Criteria	MassDEP Allowable Soil Concentration Assuming Published Values (MassDEP Draft 2013)
GC/MS SEMI VOC/PAHs BY 8270D (mg/kg)															
1,1-Biphenyl	--	--	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.19	0.56	NE	0.05	0.67	NE
1,2,4-Trichlorobenzene	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	2	0.67	NE
1,2-Dichlorobenzene	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	9	0.67	NE
1,3-Dichlorobenzene	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	1	0.67	NE
1,4-Dichlorobenzene	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	1	0.67	NE
2,4,5-Trichlorophenol	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	4	0.67	NE
2,4,6-Trichlorophenol	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	1	0.67	NE
2,4-Dichlorophenol	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	1	0.67	NE
2,4-Dimethylphenol	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	1	0.67	NE
2,4-Dinitrophenol	ND (1.0)	ND (1.0)	--	ND (1.91)	ND (1.81)	--	--	--	ND	0.72	2.15	NE	3	2.15	NE
2,4-Dinitrotoluene	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	1	0.67	NE
2,6-Dinitrotoluene	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	100	0.67	NE
2-Chloronaphthalene	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	1,000	0.67	NE
2-Chlorophenol	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	1	0.67	NE
2-Methylnaphthalene	ND (0.26)	ND (0.26)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.16	0.47	0.5	0.7	0.47	<0.7
2-Methylphenol	--	--	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.19	0.56	NE	NA	0.56	NE
2-Nitrophenol	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	100	0.67	NE
3,3'-Dichlorobenzidine	ND (0.26)	ND (0.26)	--	ND (0.764)	ND (0.723)	--	--	--	ND	0.25	0.75	NE	1	0.75	NE
3+4-Methylphenol	--	--	--	ND (0.764)	ND (0.723)	--	--	--	ND	0.37	1.12	NE	NA	1.12	NE
4-Bromophenyl phenyl ether	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	100	0.67	NE
4-Chloroaniline	ND (1.0)	ND (1.0)	--	ND (0.764)	ND (0.723)	--	--	--	ND	0.44	1.31	NE	1	1.3	NE
4-Nitrophenol	ND (1.0)	ND (1.0)	--	ND (1.91)	ND (1.81)	--	--	--	ND	0.72	2.15	NE	100	2.15	NE
Acenaphthene	ND (0.26)	ND (0.26)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.16	0.47	0.5	4	0.47	<4
Acenaphthylene	ND (0.26)	ND (0.26)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.16	0.47	0.5	1	0.47	<1
Acetophenone	ND (0.52)	ND (0.52)	--	ND (0.764)	ND (0.723)	--	--	--	ND	0.32	0.95	NE	1,000	0.95	NE
Aniline	ND (0.52)	ND (0.52)	--	ND (1.91)	ND (1.81)	--	--	--	ND	0.60	1.79	NE	1,000	1.79	NE
Anthracene	ND (0.26)	ND (0.26)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.16	0.47	1.0	1,000	0.47	<10
Azobenzene	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	NA	0.67	NE
Benzo[a]anthracene	ND (0.26)	ND (0.26)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.16	0.47	2	7	0.47	<7
Benzo[a]pyrene	ND (0.26)	ND (0.26)	--	0.22	ND (0.181)	--	--	--	0.22	0.14	0.43	2	2	0.43	<2
Benzo[b]fluoranthene	ND (0.26)	ND (0.26)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.16	0.47	2	7	0.47	<7
Benzo[g,h,i]perylene	ND (0.26)	ND (0.26)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.16	0.47	1	1,000	0.47	<10
Benzo[k]fluoranthene	ND (0.26)	ND (0.26)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.16	0.47	1	70	0.47	<10
Bis(2-chloroethoxy)methane	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	500	0.67	NE
Bis(2-chloroethyl)ether	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	1	0.67	NE
Bis(2-ethylhexyl) phthalate	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	200	0.67	NE
Butyl benzyl phthalate	ND (1.0)	ND (1.0)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.34	1.03	NE	100	1.03	NE
Chrysene	ND (0.26)	ND (0.26)	--	0.263	ND (0.181)	--	--	--	0.26	0.15	0.46	2	70	0.46	<20
Dibenz(a,h)anthracene	ND (0.26)	ND (0.26)	--	ND (0.191)	ND (0.181)	--	--	--	ND	0.11	0.33	0.5	0.7	0.33	<0.7
Dibenzofuran	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	100	0.67	NE
Diethyl phthalate	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	10	0.67	NE
Dimethyl phthalate	ND (1.0)	ND (1.0)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.34	1.03	NE	30	1.03	NE
Di-n-butyl phthalate	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	50	0.67	NE
Di-n-octyl phthalate	ND (1.0)	ND (1.0)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.34	1.03	NE	1,000	1.03	NE
Fluoranthene	ND (0.26)	ND (0.26)	--	0.467	ND (0.361)	--	--	--	0.47	0.23	0.68	4	1,000	0.68	<40
Fluorene	ND (0.26)	ND (0.26)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.16	0.47	1	1,000	0.47	<10
Hexachlorobenzene	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	1	0.67	NE
Hexachlorobutadiene	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	6	0.67	NE
Hexachloroethane	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	1	0.67	NE
Indeno[1,2,3-cd]pyrene	ND (0.26)	ND (0.26)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.16	0.47	1	7	0.47	<7
Isophorone	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	100	0.67	NE
Naphthalene	ND (0.26)	ND (0.26)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.16	0.47	0.5	4	0.47	<4
Nitrobenzene	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	500	0.67	NE
n-Nitrosodimethylamine	--	--	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.19	0.56	NE	NA	0.56	NE
Pentachlorophenol	ND (0.52)	ND (0.52)	--	ND (1.91)	ND (0.181)	--	--	--	ND	0.39	1.17	NE	3	1.17	NE
Phenanthrene	ND (0.26)	ND (0.26)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.16	0.47	3	10	0.47	<10
Phenol	ND (0.52)	ND (0.52)	--	ND (0.381)	ND (0.361)	--	--	--	ND	0.22	0.67	NE	1	0.67	NE
Pyrene	ND (0.26)	ND (0.26)	--	0.385	ND (0.361)	--	--	--	0.39	0.21	0.62	4	1,000	0.62	<40

NOTES:

VOC is volatile organic compounds
PAH is polycyclic aromatic hydrocarbons
VOA is volatile organic analysis
PCB is polychlorinated biphenyls
TPH is total petroleum hydrocarbons
NA is Not Applicable
ND is Not Detected
-- is Not Sampled

MassDEP 2013 refers to the MassDEP Draft Technical Update "Identifying When Soil Concentrations at a Receiving Location are 'Not significantly Lower Than Managed Soil", MassDEP, 3/26/13.

Average Concentration: One-half of the laboratory detection limit was used to estimate the average concentration of ND results.

Calculated Acceptance Critieria: Mult of Max value but < RCS-1 (including 1/2 detection limits for ND samples) were used in determing the calculated acceptance criteria.

VOCs/Pest/Herbs: No VOCs can be accepted. Trace levels of pesticides/herbicides can be accepted on a case-by-case basis.

PCBs: No PCBs > 0.10 can be accepted.

TPH: TPH up to 1,000 ppm is acceptable from asphalt that was not from a fuel oil release

Conductance: 500-1,000 umhos/cm can be accepted provided the concentrations of other metals are low enough.

Arsenic: Somewhat elevated in Worcester County as documented by MassDEP (30 ppm). A value of 20 was selected, but may range to 30 in natural non-impacted soils. Soils with >20 ppm of arsenic without exempt status cannot be accepted.

Cadmium: Acceptance criteria may increase to 4 ppm with revised RCS-1 by MassDEP

Chromium: For calculated acceptance criteria, Cr can be accepted up to 157 ppm with demonstration that Cr VI is <100 ppm.

Chromium III: Criteria for Cr III will be revised to 1,000 ppm per the draft MassDEP guidance; therefore, 157 was used.

Chromium VI: Per the draft MassDEP guidance, Cr VI must be shown to be ND or <100.

Lead: These are typical constituents in fill soils. Lead value of 67 ppm used as 3x average concentration.

Other Metals: Other metals will be evaluated on case-by-case basis. .

TABLE 1
SUMMARY OF SOIL DISPOSAL ACCEPTANCE CRITERIA

Overlook Farms
Rutland, Massachusetts

	Sample Name								Calculations			Standards		Acceptance Criteria	
Analysis	S-1 (upland)	S-2 (lowland)	NEO Sample	#1	#2	#3	#4	#5	Maxium Concentration	Average Concentration	3 x Average Concentration	Concentration in "Natural" Soil (MassDEP Draft 2013)	Proposed MCP Reportable Concentrations: Draft 2013	Calculated Acceptance Criteria	MassDEP Allowable Soil Concentration Assuming Published Values (MassDEP Draft 2013)
GC/MS VOA BY 8260C (mg/kg)															
1,1,1,2-Tetrachloroethane	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	0	ND	NE
1,1,1-Trichloroethane	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	30	ND	NE
1,1,2,2-Tetrachloroethane	ND (0.0019)	ND (0.0020)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	0	ND	NE
1,1,2-Trichloroethane	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	0	ND	NE
1,1-Dichloroethane	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	0	ND	NE
1,1-Dichloroethene	ND (0.0076)	ND (0.0080)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	3	ND	NE
1,1-Dichloropropene	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	NA	ND	NE
1,2,3-Trichlorobenzene	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	NA	ND	NE
1,2,3-Trichloropropane	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	100	ND	NE
1,2,4-Trichlorobenzene	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	2	ND	NE
1,2,4-Trimethylbenzene	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	1,000	ND	NE
1,2-Dibromo-3-Chloropropane	ND (0.0038)	ND (0.0040)	--	ND (0.101)	ND (0.101)	--	--	--	ND	0.03	0.08	NE	10	ND	NE
1,2-Dibromo-ethane	--	--	--	ND (0.101)	ND (0.101)	--	--	--	ND	0.05	0.15	NE	NA	ND	NE
1,2-Dichlorobenzene	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	9	ND	NE
1,2-Dichloroethane	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	0	ND	NE
1,2-Dichloropropane	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	0	ND	NE
1,3,5-Trimethylbenzene	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	10	ND	NE
1,3-Dichlorobenzene	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	1	ND	NE
1,3-Dichloropropane	ND (0.0019)	ND (0.0020)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	500	ND	NE
1,4-Dichlorobenzene	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	1	ND	NE
1,4-Dioxane	ND (0.19)	ND (0.20)	--	ND (5.07)	ND (5.03)	--	--	--	ND	1.31	3.93	NE	0	ND	NE
2,2-Dichloropropane	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	NA	ND	NE
2-Butanone (MEK)	ND (0.076)	ND (0.080)	--	ND (1.32)	ND (1.31)	--	--	--	ND	0.35	1.04	NE	4	ND	NE
2-Chlorotoluene	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	100	ND	NE
2-Hexanone	ND (0.038)	ND (0.040)	--	ND (1.32)	ND (1.31)	--	--	--	ND	0.34	1.02	NE	100	ND	NE
4-Chlorotoluene	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	NA	ND	NE
4-Isopropyltoluene	--	--	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.03	0.08	NE	NA	ND	NE
4-Methyl-2-pentanone (MIBK)	ND (0.038)	ND (0.040)	--	ND (1.32)	ND (1.31)	--	--	--	ND	0.34	1.02	NE	0	ND	NE
Acetone	ND (0.19)	ND (0.20)	--	ND (2.54)	ND (2.51)	--	--	--	ND	0.68	2.04	NE	6	ND	NE
Acrolein-Screen	--	--	--	ND (5.07)	ND (5.03)	--	--	--	ND	2.53	7.58	NE	NA	ND	NE
Benzene	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	2	ND	NE
Bromobenzene	ND (0.0038)	ND (0.0040)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	100	ND	NE
Bromochloromethane	--	--	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.03	0.08	NE	NA	ND	NE
Bromodichloromethane	--	--	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.03	0.08	NE	0.1	ND	NE
Bromoform	ND (0.0038)	ND (0.0040)	--	ND (0.101)	ND (0.101)	--	--	--	ND	0.03	0.08	NE	0	ND	NE
Bromomethane	ND (0.019)	ND (0.017)	--	ND (0.101)	ND (0.101)	--	--	--	ND	0.03	0.09	NE	1	ND	NE
Carbon disulfide	ND (0.011)	ND (0.010)	--	0.106	ND (0.101)	--	--	--	ND	0.04	0.13	NE	100	ND	NE
Carbon tetrachloride	ND (0.0038)	ND (0.0034)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	5	ND	NE
Chlorobenzene	ND (0.0038)	ND (0.0034)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	1	ND	NE
Chlorodibromomethane	ND (0.0019)	ND (0.0017)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	0	ND	NE
Chloroethane	ND (0.019)	ND (0.017)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.02	0.05	NE	100	ND	NE
Chloroform	ND (0.0076)	ND (0.0069)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	0	ND	NE
Chloromethane	ND (0.019)	ND (0.017)	--	ND (0.101)	ND (0.101)	--	--	--	ND	0.03	0.09	NE	100	ND	NE
cis-1,2-Dichloroethene	ND (0.0038)	ND (0.0034)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	0	ND	NE
cis-1,3-Dichloropropene	ND (0.0019)	ND (0.0017)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	0	ND	NE
Dibromochloromethane	--	--	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.03	0.08	NE	0.005	ND	NE
Dibromomethane	ND (0.0038)	ND (0.0034)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	500	ND	NE
Dichlorodifluoromethane	ND (0.019)	ND (0.017)	--	ND (0.101)	ND (0.101)	--	--	--	ND	0.03	0.09	NE	1,000	ND	NE
Diethyl ether	--	--	--	ND (0.101)	ND (0.101)	--	--	--	ND	0.05	0.15	NE	NA	ND	NE
Di-Isopropyl ether	--	--	--	ND (0.101)	ND (0.101)	--	--	--	ND	0.05	0.15	NE	NA	ND	NE
Ethylbenzene	ND (0.0038)	ND (0.0034)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	40	ND	NE
Hexachlorobutadiene	ND (0.0038)	ND (0.0034)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	6	ND	NE
Isopropylbenzene	ND (0.0076)	ND (0.0069)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	1,000	ND	NE
Methyl tert-butyl ether	ND (0.0076)	ND (0.0069)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	0	ND	NE
Methylene Chloride	ND (0.019)	ND (0.017)	--	ND (2.54)	ND (0.251)	--	--	--	ND	0.35	1.06	NE	0	ND	NE
m-Xylene & p-Xylene	ND (0.0076)	ND (0.0069)	--	ND (0.101)	ND (0.101)	--	--	--	ND	0.03	0.08	NE	300	ND	NE
Naphthalene	ND (0.0076)	ND (0.0069)	--	ND (0.0507)	ND (0.101)	--	--	--	ND	0.02	0.06	NE	4	ND	NE
n-Butylbenzene	ND (0.0038)	ND (0.0034)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	NA	ND	NE
N-Propylbenzene	ND (0.0038)	ND (0.0034)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	100	ND	NE
o-Xylene	ND (0.0038)	ND (0.0034)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	300	ND	NE
sec-Butylbenzene	ND (0.0076)	ND (0.0069)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.02	0.05	NE	NA	ND	NE
Styrene	ND (0.0038)	ND (0.0034)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	3	ND	NE
Tert-amyl methyl ether	ND (0.0019)	ND (0.0017)	--	ND (0.101)	ND (0.101)	--	--	--	ND	0.03	0.08	NE	NA	ND	NE
Tert-butyl ethyl ether	ND (0.0019)	ND (0.0017)	--	ND (0.101)	ND (0.101)	--	--	--	ND	0.03	0.08	NE	NA	ND	NE
tert-Butylbenzene	ND (0.0076)	ND (0.0069)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	100	ND	NE
Tetrachloroethene	ND (0.0038)	ND (0.0034)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	1	ND	NE
Tetrahydrofuran	ND (0.019)	ND (0.017)	--	ND (5.07)	ND (5.03)	--	--	--	ND	1.27	3.80	NE	500	ND	NE
Toluene	ND (0.0038)	ND (0.0034)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	30	ND	NE
trans-1,2-Dichloroethene	ND (0.0038)	ND (0.0034)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	1	ND	NE
trans-1,3-Dichloropropene	ND (0.0019)	ND (0.0017)	--	ND (0.101)	ND (0.101)	--	--	--	ND	0.03	0.08	NE	0	ND	NE
Trichloroethene	ND (0.0038)	ND (0.0034)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.01	0.04	NE	0	ND	NE
Trichlorofluoromethane	ND (0.019)	ND (0.017)	--	ND (0.101)	ND (0.101)	--	--	--	ND	0.03	0.09	NE	1,000	ND	NE
Vinyl chloride	ND (0.019)	ND (0.017)	--	ND (0.0507)	ND (0.0503)	--	--	--	ND	0.02	0.05	NE	1	ND	NE

NOTES:

VOC is volatile organic compounds
PAH is polycyclic aromatic hydrocarbons
VOA is volatile organic analysis
PCB is polychlorinated biphenyls
TPH is total petroleum hydrocarbons
NA is Not Applicable
ND is Not Detected
-- is Not Sampled

MassDEP 2013 refers to the MassDEP Draft Technical Update "Identifying When Soil Concentrations at a Receiving Location are 'Not significantly Lower Than Managed Soil", MassDEP, 3/26/13.

Average Concentration: One-half of the laboratory detection limit was used to estimate the average concentration of ND results.

Calculated Acceptance Critieria: Mult of Max value but < RCS-1 (including 1/2 detection limits for ND samples) were used in determing the calculated acceptance criteria.

VOCs/Pest/Herbs: No VOCs can be accepted. Trace levels of pesticides/herbicides can be accepted on a case-by-case basis.

PCBs: No PCBs > 0.10 can be accepted.

TPH: TPH up to 1,000 ppm is acceptable from asphalt that was not from a fuel oil release

Conductance: 500-1,000 umhos/cm can be accepted provided the concentrations of other metals are low enough.

Arsenic: Somewhat elevated in Worcester County as documented by MassDEP (30 ppm). A value of 20 was selected, but may range to 30 in natural non-impacted soils. Soils with >20 ppm of arsenic without exempt status cannot be accepted.

Cadmium: Acceptance criteria may increase to 4 ppm with revised RCS-1 by MassDEP

Chromium: For calculated acceptance criteria, Cr can be accepted up to 157 ppm with demonstration that Cr VI is <100 ppm.

Chromium III: Criteria for Cr III will be revised to 1,000 ppm per the draft MassDEP guidance; therefore, 157 was used.

Chromium VI: Per the draft MassDEP guidance, Cr VI must be shown to be ND or <100.

Lead: These are typical constituents in fill soils. Lead value of <200 ppm used .

Other Metals: Other metals will be evaluated on case-by-case basis.

TABLE 1
SUMMARY OF SOIL DISPOSAL ACCEPTANCE CRITERIA

Overlook Farms
Rutland, Massachusetts

Analysis	Sample Name								Calculations			Standards		Acceptance Criteria	
	S-1 (upland)	S-2 (lowland)	NEO Sample	#1	#2	#3	#4	#5	Maxium Concentration	Average Concentration	3 x Average Concentration	Concentration in "Natural" Soil (MassDEP Draft 2013)	Proposed MCP Reportable Concentrations: Draft 2013	Calculated Acceptance Criteria	MassDEP Allowable Soil Concentration Assuming Published Values (MassDEP Draft 2013)
GC SEMI VOA BY 8100 Modified															
TPH (C9-C36)	330	410	--	77.4	159	--	--	--	410	244	732	NE	1000	<1,000	NE
Pesticides BY 8081B (mg/kg)															
4,4'-DDD	ND (0.0061)	ND (0.0059)	--	--	--	--	--	--	ND	0.003	0.009	NE	4	0.15	NE
4,4'-DDE	ND (0.0061)	ND (0.0059)	--	--	--	--	--	--	ND	0.003	0.009	NE	3	0.15	NE
4,4'-DDT	ND (0.0061)	ND (0.0059)	--	--	--	--	--	--	ND	0.003	0.009	NE	3	0.15	NE
Aldrin	ND (0.0077)	ND (0.0074)	--	--	--	--	--	--	ND	0.004	0.011	NE	0.04	0.15	NE
alpha-BHC	ND (0.0077)	ND (0.0074)	--	--	--	--	--	--	ND	0.004	0.011	NE	50	0.15	NE
beta-BHC	ND (0.0077)	ND (0.0074)	--	--	--	--	--	--	ND	0.004	0.011	NE	10	0.15	NE
Chlordane (technical)	ND (0.031)	ND (0.030)	--	--	--	--	--	--	ND	0.015	0.046	NE	0.7	0.15	NE
delta-BHC	ND (0.0077)	ND (0.0074)	--	--	--	--	--	--	ND	0.004	0.011	NE	10	0.15	NE
Dieldrin	ND (0.0061)	ND (0.0059)	--	--	--	--	--	--	ND	0.003	0.009	NE	0.05	0.15	NE
Endosulfan I	ND (0.0077)	ND (0.0074)	--	--	--	--	--	--	ND	0.004	0.011	NE	0.5	0.15	NE
Endosulfan II	ND (0.012)	ND (0.012)	--	--	--	--	--	--	ND	0.006	0.018	NE	0.5	0.15	NE
Endosulfan sulfate	ND (0.012)	ND (0.012)	--	--	--	--	--	--	ND	0.006	0.018	NE	NA	0.15	NE
Endrin	ND (0.012)	ND (0.012)	--	--	--	--	--	--	ND	0.006	0.018	NE	8	0.15	NE
Endrin ketone	ND (0.012)	ND (0.012)	--	--	--	--	--	--	ND	0.006	0.018	NE	NA	0.15	NE
gamma-BHC (Lindane)	ND (0.0031)	ND (0.0030)	--	--	--	--	--	--	ND	0.002	0.005	NE	0.003	0.15	NE
Heptachlor	ND (0.0077)	ND (0.0074)	--	--	--	--	--	--	ND	0.004	0.011	NE	0.2	0.15	NE
Heptachlor epoxide	ND (0.0077)	ND (0.0074)	--	--	--	--	--	--	ND	0.004	0.011	NE	0.09	0.15	NE
Hexachlorobenzene	ND (0.0077)	ND (0.0074)	--	--	--	--	--	--	ND	0.004	0.011	NE	0.7	0.15	NE
Methoxychlor	ND (0.077)	ND (0.074)	--	--	--	--	--	--	ND	0.038	0.113	NE	200	0.15	NE
PCBs BY 8082A (mg/kg)															
PCB-1016	ND (0.15)	ND (0.15)	ND (0.02)	ND (0.0555)	ND (0.0541)	--	--	--	ND	0.043	0.129	NE	2	0.1	NE
PCB-1221	ND (0.15)	ND (0.15)	ND (0.02)	ND (0.0555)	ND (0.0541)	--	--	--	ND	0.043	0.129	NE	2	0.1	NE
PCB-1232	ND (0.15)	ND (0.15)	ND (0.02)	ND (0.0555)	ND (0.0541)	--	--	--	ND	0.043	0.129	NE	2	0.1	NE
PCB-1242	ND (0.15)	ND (0.15)	ND (0.02)	ND (0.0555)	ND (0.0541)	--	--	--	ND	0.043	0.129	NE	2	0.1	NE
PCB-1248	ND (0.15)	ND (0.15)	ND (0.02)	ND (0.0555)	ND (0.0541)	--	--	--	ND	0.043	0.129	NE	2	0.1	NE
PCB-1254	ND (0.15)	ND (0.15)	ND (0.02)	ND (0.0555)	ND (0.0541)	--	--	--	ND	0.043	0.129	NE	2	0.1	NE
PCB-1260	ND (0.15)	ND (0.15)	ND (0.02)	ND (0.0555)	ND (0.0541)	--	--	--	ND	0.043	0.129	NE	2	0.1	NE
PCB-1262	ND (0.15)	ND (0.15)	--	ND (0.0555)	ND (0.0541)	--	--	--	ND	0.051	0.154	NE	2	0.1	NE
PCB-1268	ND (0.15)	ND (0.15)	--	ND (0.0555)	ND (0.0541)	--	--	--	ND	0.051	0.154	NE	2	0.1	NE
Herbicides BY 8151A (mg/kg)															
2,4,5-T	ND (3.8)	ND (3.8)	--	--	--	--	--	--	ND	1.9	5.7	NE	NA	0.03	NE
2,4-D	ND (38)	ND (38)	--	--	--	--	--	--	ND	19	57	NE	NA	0.03	NE
2,4-DB	ND (38)	ND (38)	--	--	--	--	--	--	ND	19	57	NE	NA	0.03	NE
Dalapon	ND (94)	ND (94)	--	--	--	--	--	--	ND	47	141	NE	NA	0.03	NE
Dicamba	ND (3.8)	ND (3.8)	--	--	--	--	--	--	ND	1.9	5.7	NE	NA	0.03	NE
Dichlorprop	ND (38)	ND (38)	--	--	--	--	--	--	ND	19	57	NE	NA	0.03	NE
Dinoseb	ND (19)	ND (19)	--	--	--	--	--	--	ND	9.5	28.5	NE	NA	0.03	NE
Silvex (2,4,5-TP)	ND (3.8)	ND (3.8)	--	--	--	--	--	--	ND	1.9	5.7	NE	100	0.03	NE
METALS BY 6010C (mg/kg)															
Arsenic	13	11	--	6.5	8.7	12.2	12.1	8	13	10.21	30.64	20	20	20	<20
Barium	40	38	--	35.8	28.8	--	--	--	40	26.19	60	50	1,000	300	<375
Cadmium	0.37	0.41	ND (0.5)	ND (0.52)	ND (0.51)	--	--	--	0.4	0.31	0.93	2	40	4	<20
Chromium	20	21	21	17.4	15.5	--	--	--	21	18.98	56.94	30	100	157	<100
Copper	--	--	8.5	--	--	--	--	--	8.5	8.5	25.5	40	NE	85	<300
Lead	27	30	29	12.2	13.7	--	--	--	30	22.38	67.14	100	200	<200	<200
Mercury	--	--	ND (0.1)	0.073	0.061	--	--	--	0.073	0.06	0.18	0.3	20	0.7	<3
Nickel	11	11	11	--	--	--	--	--	11	11	33	20	600	82.5	<150
Selenium	ND (7.2)	ND (7.3)	--	ND (5.1)	ND (5.1)	--	--	--	ND	3.09	9.26	0.5	400	<5	<5
Silver	ND (0.72)	ND (0.73)	--	ND (0.52)	ND (0.51)	--	--	--	ND	0.31	0.93	0.6	100	<6	<6
Zinc	46	46	47	--	--	--	--	--	47	46.33	139	100	1,000	352	<500
GENERAL CHEMISTRY BY MOISTURE (%)															
Percent Solids	65.2	65.5	--	91	91	89	91	89	91	83.1	249.3	NE	NA	NA	NE
GENERAL CHEMISTRY BY SM 2510B (umhos/cm)															
Specific Conductance	14	7	--	1,850	1,860	--	--	--	1,860	933	2,798	NE	NA	500-1000	NE

NOTES:

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PAH is polycyclic aromatic hydrocarbons
VOA is volatile organic analysis
PCB is polychlorinated biphenyls
TPH is total petroleum hydrocarbons
NA is Not Applicable
ND is Not Detected
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MassDEP Draft 2013: Refers to the MassDEP Draft Technical Update "Identifying When Soil Concentrations at a Receiving Location are 'Not significantly Lower Than Managed Soil", MassDEP, 3/26/13.
Average Concentration: One-half of the laboratory detection limit was used to estimate the average concentration of ND results.
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PCBs: No PCBs > 0.10 can be accepted.
TPH: TPH up to 1,000 ppm is acceptable from asphalt that was not from a fuel oil release
Conductance: 500-1,000 umhos/cm can be accepted provided the concentrations of other metals are low enough.

Arsenic: Somewhat elevated in Worcester County as documented by MassDEP (30 ppm). A value of 20 was selected, but may range to 30 in natural non-impacted soils. Soils with >20 ppm of arsenic without exempt status cannot be accepted.
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Chromium: For calculated acceptance criteria, Cr can be accepted up to 157 ppm with demonstration that Cr VI is <100 ppm.
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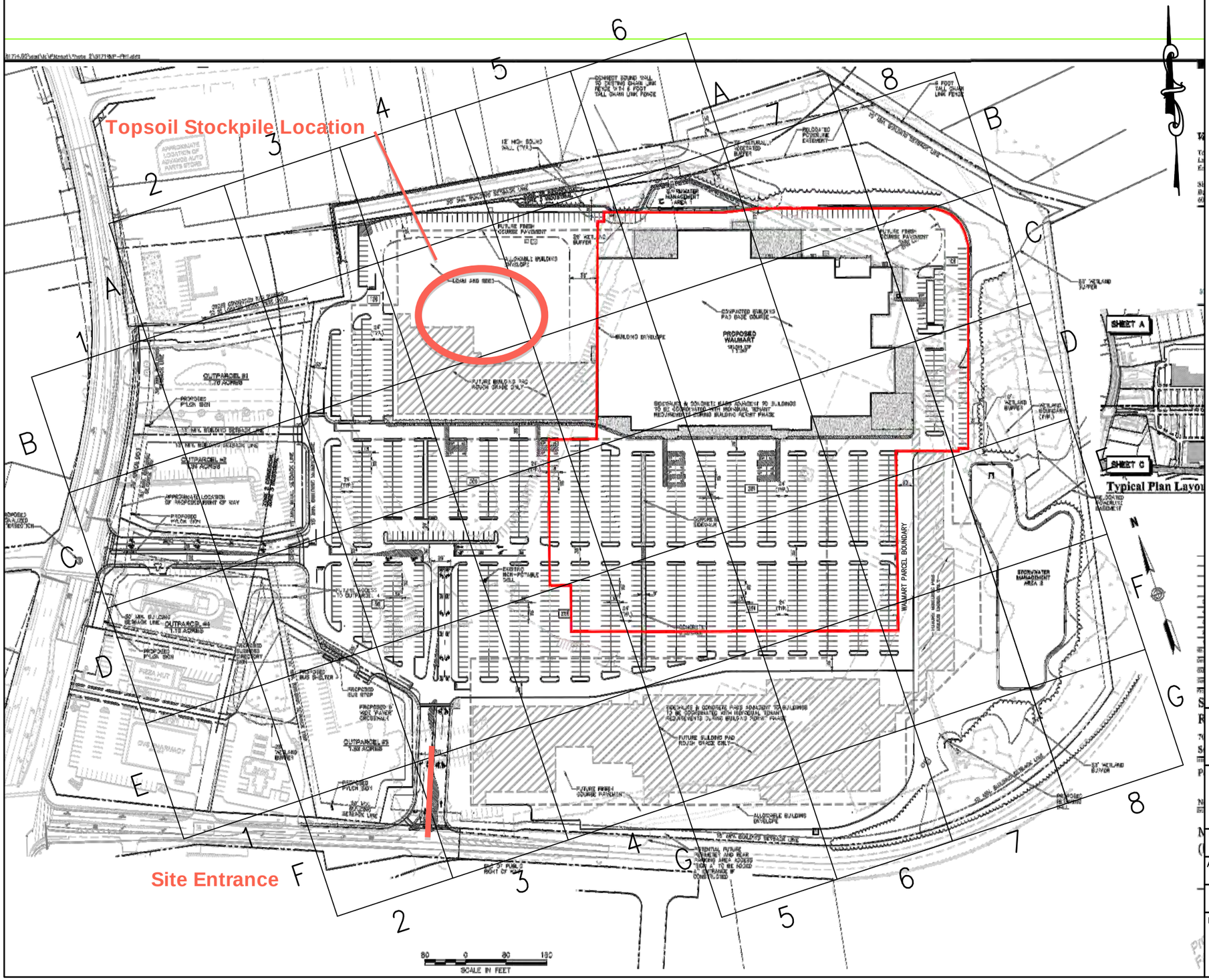

LEGEND

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. PLAN BASED ON VANASSE HANGEN BRUSTLIN, INC. PLAN ENTITLED "MASTER SITE PLAN (INITIAL SITE WORK), (DRAWING NO. C-2) DATED AUGUST 10, 2012, AND SITE VISITS BY WILCOX & BARTON, INC.

GRAPHIC SCALE

200 0 100 200 400

(IN FEET)
1 inch = 200 feet

Wilcox & Barton INC.
ENVIRONMENTAL AND ENGINEERING SERVICES

TITLE

FIELD GRID

DATE: JANUARY 3, 2013	SCALE: GRAPHIC	FILE: DDR GRID
APPROVED BY: WRW	DRAWN BY: RWR	REVISED:
CLIENT: DDR Seabrook, LLC		JOB NUMBER: DDR5001
LOCATION: 700 Lafayette Road, Seabrook, New Hampshire		DRAWING NUMBER:

Soil Samples - Summary of Analytical Results
Topsoil Stockpile
700 Lafayette Rd, Seabrook, New Hampshire
(see notes on alternate pages)

Sample Identification / Sample Date	Overlook Farm Acceptance Criteria	MCP Reportable Concentration ‡ RCS-1	Average Concentration[3]	LS-1 1/16/2013	LS-2 1/16/2013	LS-3 1/16/2013	LS-4 3/12/2013	LS-5 3/12/2013	LS-6 3/12/2013	LS-7 3/12/2013	LS-8 3/12/2013	LS-9 3/12/2013	LS-10 3/12/2013
Volatile Organic Compounds (VOCs) by EPA Method 8260[1]													
Acetone	ND	6	**0.029 J**	0.089 UJ	**0.018 J**	**0.020 J**	**0.017 J**	0.062 U	0.052 U	**0.029 J**	0.070 U	0.058 U	**0.021 J**
Benzene	ND	2	--	0.0018 U	0.0015 U	0.0014 U	0.0014 U	0.0012 U	0.0010 U	0.0015 U	0.0014 U	0.0012 U	0.0015 U
n-Butylbenzene	ND	NS	--	0.0018 U	0.0015 U	0.0014 U	0.0014 U	0.0012 U	0.0010 U	0.0015 U	0.0014 U	0.0012 U	0.0015 U
sec-Butylbenzene	ND	NS	--	0.0018 U	0.0015 U	0.0014 U	0.0014 U	0.0012 U	0.0010 U	0.0015 U	0.0014 U	0.0012 U	0.0015 U
tert-Butylbenzene	ND	100	--	0.0018 U	0.0015 U	0.0014 U	0.0014 U	0.0012 U	0.0010 U	0.0015 U	0.0014 U	0.0012 U	0.0015 U
cis-1,2-Dichloroethene	ND	0.3	--	0.0018 U	0.0015 U	0.0014 U	0.0014 U	0.0012 U	0.0010 U	0.0015 U	0.0014 U	0.0012 U	0.0015 U
1,4-Dioxane	ND	0.2	--	0.089 UJ	0.073 UJ	0.069 UJ	0.070 UJ	0.062 UJ	0.052 UJ	0.073 UJ	0.070 UJ	0.058 UJ	0.075 UJ
Ethylbenzene	ND	40	--	0.0018 U	0.0015 U	0.0014 U	0.0014 U	0.0012 U	0.0010 U	0.0015 U	0.0014 U	0.0012 U	0.0015 U
Isopropylbenzene	ND	1,000	--	0.0018 U	0.0015 U	0.0014 U	0.0014 U	0.0012 U	0.0010 U	0.0015 U	0.0014 U	0.0012 U	0.0015 U
p-Isopropyltoluene	ND	100	**0.0009**	0.0018 U	0.0015 U	0.0014 U	0.0014 U	0.0012 U	0.0010 U	0.0015 U	0.0014 U	0.0012 U	0.0015 U
Naphthalene	ND	4	**0.0014 J**	0.0036 UJ	0.0029 UJ	0.0028 UJ	0.0028 UJ	0.0025 U	0.0021 U	0.0029 U	0.0028 U	0.0023 U	0.0030 U
n-Propylbenzene	ND	100	--	0.0018 U	0.0015 U	0.0014 U	0.0014 U	0.0012 U	0.0010 U	0.0015 U	0.0014 U	0.0012 U	0.0015 U
Tetrachloroethene (PCE)	ND	1	--	0.0018 U	0.0015 U	0.0014 U	0.0014 U	0.0012 U	0.0010 U	0.0015 U	0.0014 U	0.0012 U	0.0015 U
Toluene	ND	30	**0.0007 J**	0.0018 U	0.0015 U	0.0014 U	0.0014 U	0.0012 U	0.0010 U	0.0015 U	0.0014 U	0.0012 U	0.0015 U
Trichloroethene (TCE)	ND	0.3	--	0.0018 U	0.0015 U	0.0014 U	0.0014 U	0.0012 U	0.0010 U	0.0015 U	0.0014 U	0.0012 U	0.0015 U
1,2,4-Trimethylbenzene	ND	1,000	--	0.0018 U	0.0015 U	0.0014 U	0.0014 U	0.0012 U	0.0010 U	0.0015 U	0.0014 U	0.0012 U	0.0015 U
1,3,5-Trimethylbenzene	ND	10	--	0.0018 U	0.0015 U	0.0014 U	0.0014 U	0.0012 U	0.0010 U	0.0015 U	0.0014 U	0.0012 U	0.0015 U
Vinyl chloride	ND	0.6	--	0.0089 U	0.0073 U	0.0069 U	0.0070 U	0.0062 U	0.0052 U	0.0073 U	0.0070 U	0.0058 U	0.0075 U
Total Xylenes	ND	300	--	0.0054 U	0.0044 U	0.0042 U	0.0042 U	0.0037 U	0.0031 U	0.0044 U	0.0042 U	0.0035 U	0.0045 U
Semivolatile Organic Compounds (SVOCs) by EPA Method 8270													
Acenaphthene	0.47	4	--	0.20 U	0.23 U	0.20 U	0.20 U	0.20 U	0.21 U	0.21 U	0.21 U	0.20 U	0.20 U
Acenaphthylene	0.47	1	--	0.20 U	0.23 U	0.20 U	0.20 U	0.20 U	0.21 U	0.21 U	0.21 U	0.20 U	0.20 U
Anthracene	0.47	1,000	**0.10 J**	0.20 U	0.23 U	0.20 U	0.20 U	0.20 U	0.21 U	0.21 U	0.21 U	0.20 U	**0.16 J**
Benzo(a)anthracene	0.47	7	**0.16**	**0.21**	0.23 U	0.20 U	**0.11 J**	0.20 U	**0.22**	0.21 U	0.21 U	0.20 U	**0.44**
Benzo(a)pyrene	0.43	2	**0.16**	**0.22**	0.23 U	0.20 U	**0.13 J**	0.20 U	**0.23**	0.21 U	0.21 U	0.20 U	**0.39**
Benzo(b)fluoranthene	0.47	7	**0.20**	**0.37**	**0.16 J**	**0.17 J**	**0.18 J**	0.20 U	**0.31**	0.21 U	**0.13 J**	0.20 U	**0.47**
Benzo(g,h,i)perylene	0.47	1,000	**0.11 J**	**0.10 J**	0.23 U	0.20 U	**0.11 J**	0.20 U	**0.18 J**	0.21 U	0.21 U	0.20 U	**0.18 J**
Benzo(k)fluoranthene	0.47	70	**0.11 J**	**0.14 J**	0.23 U	0.20 U	0.20 U	0.20 U	**0.13 J**	0.21 U	0.21 U	0.20 U	**0.19 J**
Benzoic Acid	NS	NS	**0.55**	**1.5 J**	**1.9 J**	**1.8 J**	1.1 UJ	**0.21 J**	1.2 UJ	**0.25 J**	**0.24 J**	**0.39 J**	1.2 UJ
Bis(2-Ethylhexyl)phthalate	0.67	200	**0.20 J**	0.40 U	0.45 U	0.40 U	0.39 U	0.40 U	**0.32 J**	0.41 U	0.42 U	0.40 U	0.40 U
Carbazole	NS	NS	--	0.20 U	0.23 U	0.20 U	0.20 U	0.20 U	0.21 U	0.21 U	0.21 U	0.20 U	0.20 U
Chrysene	0.46	70	**0.17**	**0.24**	0.23 U	**0.11 J**	**0.16 J**	0.20 U	**0.24**	0.21 U	**0.13 J**	0.20 U	**0.45**
Dibenz(a,h)anthracene	0.33	0.7	--	0.20 U	0.23 U	0.20 U	0.20 U	0.20 U	0.21 U	0.21 U	0.21 U	0.20 U	0.20 U
2,6-Dinitrotoluene	0.67	100	**0.20 J**	0.40 U	**0.15 J**	0.40 U	0.39 U	0.40 U	0.41 U	0.41 U	0.42 U	0.40 U	0.40 U
Fluoranthene	0.68	1,000	**0.23**	**0.39**	**0.16 J**	**0.16 J**	**0.20**	0.20 U	**0.43**	0.21 U	**0.18 J**	0.20 U	**0.73**
Fluorene	0.47	1,000	--	0.20 U	0.23 U	0.20 U	0.20 U	0.20 U	0.21 U	0.21 U	0.21 U	0.20 U	0.20 U
Indeno(1,2,3-cd)pyrene	0.47	7	**0.12**	**0.12 J**	0.23 U	0.20 U	**0.12 J**	0.20 U	**0.22**	0.21 U	**0.096 J**	0.20 U	**0.22**
Naphthalene	0.47	4	--	0.20 U	0.23 U	0.20 U	0.20 U	0.20 U	0.21 U	0.21 U	0.21 U	0.20 U	0.20 U
Phenanthrene	0.47	10	**0.17**	**0.24**	**0.12 J**	**0.11 J**	**0.12 J**	0.20 U	**0.31**	0.21 U	**0.13 J**	0.20 U	**0.62**
Phenol	0.67	1	**0.22**	**0.46**	**0.55**	0.40 U	0.39 U	0.40 U	0.41 UJ	0.41 U	0.42 U	0.40 U	0.40 U
Pyrene	0.62	1,000	**0.27**	**0.30**	0.23 U	**0.14 J**	**0.24**	0.20 U	**0.54**	0.21 U	**0.24**	0.20 U	**0.75**

Soil Samples - Summary of Analytical Results
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700 Lafayette Rd, Seabrook, New Hampshire
(see notes on alternate pages)

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Total Petroleum Hydrocarbons by EPA Method 8015													
TPH-Gasoline Range Organics	NS	NS	**103**	1.6 U	2.0 U	1.5 U	--	--	--	--	--	--	--
TPH-Diesel Range Organics	NS	NS		**78**	**120**	**35**	--	--	--	--	--	--	--
TPH (C9-C36)	<1,000	2,500		--	--	--	**87 *B**	**100 *B**	**130 *B**	**120 *B**	**110 *B**	**75 *B**	**150 *B**
Polychlorinated Biphenyls (PCBs)[2] by EPA Method 8082													
All Aroclors	0.1	2	--	*0.12 U*	*0.13 U*	*0.11 U*	*0.11 U*	*0.12 U*	*0.12 U*	*0.12 U*	*0.12 U*	*0.12 U*	*0.12 U*
RCRA 8 Metals by EPA Methods 6010 and 7471													
Arsenic	20	20	**3.0**	**12 J**	**2.7 J**	**3.9**	**3.6**	**2.5 J**	**3.3**	**2.7 J**	**2.2 J**	**1.6 J**	**2.3 J**
Barium	300	1,000	**13.5**	**17**	**11**	**18**	**32 J**	**14**	**16**	**11**	**12**	**8.0**	**15**
Cadmium	4	2	**0.32**	0.28 U	0.32 U	0.29 U	**0.43**	**0.36**	**0.35**	**0.38**	**0.32**	**0.29**	**0.37**
Chromium	157	30	**9.7**	**13**	**7.0**	**11**	**11**	**8.8**	**9.8**	**9.8**	**9.4**	**7.4**	**11**
Lead	<200	300	**17.69**	**17**	**14**	**36**	**110**	**27**	**17**	**17**	**19**	**10**	**15**
Mercury	0.7	20	**0.071**	**0.054**	**0.053**	**0.12**	**0.15**	**0.092**	**0.045**	**0.083**	**0.088**	**0.073**	**0.049**
Selenium	<5	400	--	*5.7 U*	*6.4 U*	*5.8 U*	*5.7 U*	*5.6 U*	*6.0 U*	*6.0 U*	*5.9 U*	*5.6 U*	*5.6 U*
Silver	<6	100	--	0.57 U	0.64 U	0.58 U	0.57 U	0.56 U	0.60 U	0.60 U	0.59 U	0.56 U	0.56 U
Hazardous Waste Characteristics													
Reactive Cyanide	NS	NS	--	3.9 U	4.0 U	3.9 U	--	--	--	--	--	--	--
Reactive Sulfide	NS	NS	--	19 U	20 U	19 U	--	--	--	--	--	--	--
pH (standard units)	NS	NS	--	5.5	4.7	5.2	--	--	--	--	--	--	--
Specific Conductance (µmhos/cm)	500-1000	NS	--	--	--	--	--	--	--	--	--	--	--
Ignitability (present/absent)	NS	NS	--	Absent	Absent	Absent	--	--	--	--	--	--	--

Only detected and selected other compounds listed; all other analytes were not detected.
Analytical results in milligrams per kilogram (mg/kg) unless otherwise noted.

1. All "detected" concentrations of VOCs were estimated concentrations below the reporting limit with two exceptions: p-isopropyltoluene in LS-11 and toluene in LS-14. All detected VOC concentrations are well below the RCS-1 thresholds.

2. Although the reporting limits for the PCB aroclors exceed the criteria of 0.1 mg/kg, the detection limits for the aroclors were well below the 0.1 mg/kg criteria and no aroclors were reported by the laboratory as having been detected.

3. Arithmetic average concentration calculated using half the reporting limit when analyte was not detected.

U	Not detected; reporting limit shown.
NS	No standard or criterion established.
J	Estimated concentration (below reporting limit or surrogate recovery is outside acceptance limits).
B	Detected in method blank; sample result >5x blank; result valid.
bold	Detected analyte.
italics	Reporting limit exceeds Overlook Farm criterion.
shaded	Detected concentration exceeds Overlook Farm criterion.
red	Concentration exceeds MCP RCS-1 threshold.
--	Not analyzed or mean concentration not calculated because all results were non-detect.
*	Sample contamination consists of heavy residual hydrocarbons similar to asphalt. Chromatogram also shows the presence of PAHs.
‡	310 CMR 40.1600.

Soil Samples - Summary of Analytical Results
Topsoil Stockpile
700 Lafayette Rd, Seabrook, New Hampshire
(see notes on alternate pages)

Sample Identification / Sample Date	Overlook Farm Acceptance Criteria	MCP Reportable Concentration ‡ RCS-1	Average Concentration	LS-11 3/12/2013		LS-12 3/12/2013		LS-13 3/12/2013		LS-14 3/12/2013		LS-15 3/12/2013		LS-16 3/12/2013		LS-17 3/12/2013		LS-18 3/13/2013		LS-19 3/13/2013		LS-20 3/13/2013	
Volatile Organic Compounds (VOCs) by EPA Method 8260[1]																							
Acetone	ND	6	**0.029**	**0.031**	**J**	**0.023**	**J**	0.055	U	**0.024**	**J**	0.050	U	0.062	U	**0.019**	**J**	0.069	U	**0.020**	**J**	**0.015**	**J**
Benzene	ND	2	--	0.0013	U	0.0013	U	0.0011	U	0.0013	U	0.0010	U	0.0012	U	0.0015	U	0.0014	U	0.0015	U	0.0012	U
n-Butylbenzene	ND	NS	--	0.0013	U	0.0013	U	0.0011	U	0.0013	UJ	0.0010	U	0.0012	U	0.0015	U	0.0014	U	0.0015	U	0.0012	U
sec-Butylbenzene	ND	NS	--	0.0013	U	0.0013	U	0.0011	U	0.0013	UJ	0.0010	U	0.0012	U	0.0015	U	0.0014	U	0.0015	U	0.0012	U
tert-Butylbenzene	ND	100	--	0.0013	U	0.0013	U	0.0011	U	0.0013	UJ	0.0010	U	0.0012	U	0.0015	U	0.0014	U	0.0015	U	0.0012	U
cis-1,2-Dichloroethene	ND	0.3	--	0.0013	U	0.0013	U	0.0011	U	0.0013	U	0.0010	U	0.0012	U	0.0015	U	0.0014	U	0.0015	U	0.0012	U
1,4-Dioxane	ND	0.2	--	0.065	UJ	0.065	UJ	0.055	UJ	0.066	UJ	0.050	UJ	0.062	UJ	0.076	UJ	0.069	UJ	0.077	UJ	0.058	UJ
Ethylbenzene	ND	40	--	0.0013	U	0.0013	U	0.0011	U	0.0013	U	0.0010	U	0.0012	U	0.0015	U	0.0014	U	0.0015	U	0.0012	U
Isopropylbenzene	ND	1,000	--	0.0013	U	0.0013	U	0.0011	U	0.0013	U	0.0010	U	0.0012	U	0.0015	U	0.0014	U	0.0015	U	0.0012	U
p-Isopropyltoluene	ND	100	**0.0009**	**0.0021**		0.0013	U	0.0011	U	**0.0071**	**J**	**0.00050**	**J**	0.0012	U	0.0015	U	0.0014	U	0.0015	U	0.0012	U
Naphthalene	ND	4	**0.0014**	0.0026	U	0.0026	U	0.0022	U	0.0026	UJ	0.0020	U	0.0025	U	0.0030	U	0.0028	U	0.0031	U	0.0023	U
n-Propylbenzene	ND	100	--	0.0013	U	0.0013	U	0.0011	U	0.0013	U	0.0010	U	0.0012	U	0.0015	U	0.0014	U	0.0015	U	0.0012	U
Tetrachloroethene (PCE)	ND	1	--	0.0013	U	0.0013	U	0.0011	U	0.0013	U	0.0010	U	0.0012	U	0.0015	U	0.0014	U	0.0015	U	0.0012	U
Toluene	ND	30	**0.0007**	0.0013	U	0.0013	U	0.0011	U	**0.0012**	**J**	0.0010	U	0.0012	U	0.0015	U	0.0014	U	0.0015	U	0.0012	U
Trichloroethene (TCE)	ND	0.3	--	0.0013	U	0.0013	U	0.0011	U	0.0013	U	0.0010	U	0.0012	U	0.0015	U	0.0014	U	0.0015	U	0.0012	U
1,2,4-Trimethylbenzene	ND	1,000	--	0.0013	U	0.0013	U	0.0011	U	0.0013	UJ	0.0010	U	0.0012	U	0.0015	U	0.0014	U	0.0015	U	0.0012	U
1,3,5-Trimethylbenzene	ND	10	--	0.0013	U	0.0013	U	0.0011	U	0.0013	U	0.0010	U	0.0012	U	0.0015	U	0.0014	U	0.0015	U	0.0012	U
Vinyl chloride	ND	0.6	--	0.0065	U	0.0065	U	0.0055	U	0.0066	U	0.0050	U	0.0062	U	0.0076	U	0.0069	U	0.0077	U	0.0058	U
Total Xylenes	ND	300	--	0.0039	U	0.0039	U	0.0033	U	0.0039	U	0.0030	U	0.0037	U	0.0045	U	0.0042	U	0.0046	U	0.0035	U
Semivolatile Organic Compounds (SVOCs) by EPA Method 8270																							
Acenaphthene	0.47	4	--	0.20	U	0.20	U	0.20	U	0.21	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Acenaphthylene	0.47	1	--	0.20	U	0.20	U	0.20	U	0.21	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Anthracene	0.47	1,000	**0.10**	0.20	U	0.20	U	0.20	U	0.21	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Benzo(a)anthracene	0.47	7	**0.16**	**0.27**		**0.11**	**J**	0.20	U	**0.12**	**J**	**0.21**		**0.19**	**J**	**0.12**	**J**	0.20	U	0.20	U	0.20	U
Benzo(a)pyrene	0.43	2	**0.16**	**0.28**		**0.13**	**J**	0.20	U	**0.13**	**J**	**0.19**	**J**	**0.20**		**0.11**	**J**	0.20	U	0.20	U	0.20	U
Benzo(b)fluoranthene	0.47	7	**0.20**	**0.38**		**0.19**	**J**	0.20	U	**0.17**	**J**	**0.23**		**0.29**		**0.16**	**J**	0.20	U	0.20	U	0.20	U
Benzo(g,h,i)perylene	0.47	1,000	**0.11**	**0.13**	**J**	0.20	U	0.20	U	0.21	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Benzo(k)fluoranthene	0.47	70	**0.11**	**0.14**	**J**	0.20	U	0.20	U	0.21	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Benzoic Acid	NS	NS	**0.55**	1.2	UJ	1.2	UJ	1.2	UJ	1.2	UJ	1.2	UJ	**0.20**	**J**	**0.27**	**J**	**0.18**	**J**	**0.18**	**J**	1.2	UJ
Bis(2-Ethylhexyl)phthalate	0.67	200	**0.20**	0.39	U	0.39	U	0.40	U	0.42	U	0.40	U	0.40	U	0.41	U	0.41	U	0.40	U	0.41	U
Carbazole	NS	NS	--	0.20	U	0.20	U	0.20	U	0.21	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Chrysene	0.46	70	**0.17**	**0.29**		**0.15**	**J**	0.20	U	**0.14**	**J**	**0.24**		**0.21**		**0.13**	**J**	0.20	U	0.20	U	0.20	U
Dibenz(a,h)anthracene	0.33	0.7	--	0.20	U	0.20	U	0.20	U	0.21	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
2,6-Dinitrotoluene	0.67	100	**0.20**	0.39	U	0.39	U	0.40	U	0.42	U	0.40	U	0.40	U	0.41	U	0.41	U	0.40	U	0.41	U
Fluoranthene	0.68	1,000	**0.23**	**0.43**		**0.22**		0.20	U	**0.21**		**0.20**	**J**	**0.33**		**0.19**	**J**	0.20	U	0.20	U	0.20	U
Fluorene	0.47	1,000	--	0.20	U	0.20	U	0.20	U	0.21	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Indeno(1,2,3-cd)pyrene	0.47	7	**0.12**	**0.16**	**J**	**0.084**	**J**	0.20	U	0.21	U	**0.085**	**J**	**0.095**	**J**	0.20	U	0.20	U	0.20	U	0.20	U
Naphthalene	0.47	4	--	0.20	U	0.20	U	0.20	U	0.21	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Phenanthrene	0.47	10	**0.17**	**0.25**		**0.12**	**J**	0.20	U	**0.13**	**J**	**0.098**	**J**	**0.21**		**0.13**	**J**	0.20	U	0.20	U	0.20	U
Phenol	0.67	1	**0.22**	0.39	U	0.39	U	0.40	U	0.42	U	0.40	U	0.40	U	0.41	U	0.41	U	0.40	U	0.41	U
Pyrene	0.62	1,000	**0.27**	**0.45**		**0.23**		0.20	U	**0.19**	**J**	**0.35**		**0.26**		**0.17**	**J**	0.20	U	0.20	U	0.20	U

Soil Samples - Summary of Analytical Results
Topsoil Stockpile
700 Lafayette Rd, Seabrook, New Hampshire
(see notes on alternate pages)

Sample Identification / Sample Date	Overlook Farm Acceptance Criteria	MCP Reportable Concentration ‡ RCS-1	Average Concentration	LS-11 3/12/2013	LS-12 3/12/2013	LS-13 3/12/2013	LS-14 3/12/2013	LS-15 3/12/2013	LS-16 3/12/2013	LS-17 3/12/2013	LS-18 3/13/2013	LS-19 3/13/2013	LS-20 3/13/2013
Total Petroleum Hydrocarbons by EPA Method 8015													
TPH-Gasoline Range Organics	NS	NS	**103**	--	--	--	--	--	--	--	--	--	--
TPH-Diesel Range Organics	NS	NS		--	--	--	--	--	--	--	--	--	--
TPH (C9-C36)	<1,000	2,500		**150 *B**	**110 *B**	**55 *B**	**210 *B**	**120 *B**	**120 *B**	**100 *B**	**84 *B**	**88 *B**	**80 *B**
Polychlorinated Biphenyls (PCBs) [2] by EPA Method 8082													
All Aroclors	0.1	2	--	*0.11 U*	*0.12 U*	*0.12 U*	*0.12 U*	*0.12 U*	*0.12 U*	*0.12 U*	*0.12 U*	*0.12 U*	*0.12 U*
RCRA 8 Metals by EPA Methods 6010 and 7471													
Arsenic	20	20	**3.0**	**4.1**	**2.6 J**	**2.8**	**1.6 J**	**2.9**	**2.8 J**	**2.3 J**	**1.8 J**	**2.0 J**	**2.1 J**
Barium	300	1,000	**13.5**	**18**	**13**	**12**	**12**	**13**	**15**	**12**	**9.0**	**10**	**10**
Cadmium	4	2	**0.32**	**0.42**	**0.33**	**0.31**	**0.31**	**0.36**	**0.37**	**0.34**	0.30 U	**0.32**	**0.35**
Chromium	157	30	**9.7**	**11**	**9.1**	**9.8**	**7.6**	**10**	**12**	**8.0**	**7.5**	**8.2**	**8.7**
Lead	<200	300	**17.69**	**13**	**14**	**11**	**14**	**18**	**16**	**15**	**13**	**15**	**15**
Mercury	0.7	20	**0.071**	**0.053**	**0.076**	**0.073**	**0.035**	**0.11**	**0.077**	**0.056**	**0.14**	**0.088**	**0.085**
Selenium	<5	400	--	*5.7 U*	*5.7 U*	*5.5 U*	*5.9 U*	*5.7 U*	*5.7 U*	*5.8 U*	*5.9 U*	*5.8 U*	*5.6 U*
Silver	<6	100	--	0.57 U	0.57 U	0.55 U	0.59 U	0.57 U	0.57 U	0.58 U	0.59 U	0.58 U	0.56 U
Hazardous Waste Characteristics													
Reactive Cyanide	NS	NS	--	--	--	--	--	--	--	--	--	--	--
Reactive Sulfide	NS	NS	--	--	--	--	--	--	--	--	--	--	--
pH (standard units)	NS	NS	--	--	--	--	--	--	--	--	--	--	--
Specific Conductance (µmhos/cm)	500-1000	NS	--	--	--	--	--	--	--	--	--	--	--
Ignitability (present/absent)	NS	NS	--	--	--	--	--	--	--	--	--	--	--

Only detected and selected other compounds listed; all other analytes were not detected.

Analytical results in milligrams per kilogram (mg/kg) unless otherwise noted.

1. All "detected" concentrations of VOCs were estimated concentrations below the reporting limit with two exceptions: p-isopropyltoluene in LS-11 and toluene in LS-14. All detected VOC concentrations are well below the RCS-1 thresholds.

2. Although the reporting limits for the PCB aroclors exceed the criteria of 0.1 mg/kg, the detection limits for the aroclors wer well below the 0.1 mg/kg criteria and no aroclors were reported by the laboratory as having been detected.

3. Arithmetic average concentration calculated using half the reporting limit when analyte was not detected.

U	Not detected; reporting limit shown.
NS	No standard or criterion established.
J	Estimated concentration (below reporting limit or surrogate recovery is outside acceptance limits).
B	Detected in method blank; sample result >5x blank; result valid.
bold	Detected analyte.
italics	Reporting limit exceeds Overlook Farm criterion.
shaded	Detected concentration exceeds Overlook Farm criterion.
red	Concentration exceeds MCP RCS-1 threshold.
--	Not analyzed or mean concentration not calculated because all results were non-detect.
*	Sample contamination consists of heavy residual hydrocarbons similar to asphalt. Chromatogram also shows the presence of PAHs.
‡	310 CMR 40.1600.

Soil Samples - Summary of Analytical Results
Topsoil Stockpile
700 Lafayette Rd, Seabrook, New Hampshire
(see notes on alternate pages)

Sample Identification / Sample Date	Overlook Farm Acceptance Criteria	MCP Reportable Concentration ‡ RCS-1	Average Concentration	LS-21 3/13/2013	LS-22 3/13/2013	LS-23 3/13/2013	LS-24 3/13/2013	LS-25 3/13/2013	LS-26 3/13/2013	LS-27 3/14/2013	LS-28 3/14/2013	LS-29 3/14/2013	LS-30 3/14/2013
Volatile Organic Compounds (VOCs) by EPA Method 8260[1]													
Acetone	ND	6	**0.029**	0.054 UJ	0.073 UJ	0.061 UJ	0.081 UJ	0.078 UJ	0.071 UJ	0.066 UJ	**0.019 J**	0.075 UJ	0.071 UJ
Benzene	ND	2	--	0.0011 U	0.0015 U	0.0012 U	0.0016 U	0.0016 U	0.0014 U	0.0013 U	0.0016 U	0.0015 U	0.0014 U
n-Butylbenzene	ND	NS	--	0.0011 U	0.0015 U	0.0012 U	0.0016 U	0.0016 U	0.0014 U	0.0013 U	0.0016 U	0.0015 U	0.0014 U
sec-Butylbenzene	ND	NS	--	0.0011 U	0.0015 U	0.0012 U	0.0016 U	0.0016 U	0.0014 U	0.0013 U	0.0016 U	0.0015 U	0.0014 U
tert-Butylbenzene	ND	100	--	0.0011 U	0.0015 U	0.0012 U	0.0016 U	0.0016 U	0.0014 U	0.0013 U	0.0016 U	0.0015 U	0.0014 U
cis-1,2-Dichloroethene	ND	0.3	--	0.0011 U	0.0015 U	0.0012 U	0.0016 U	0.0016 U	0.0014 U	0.0013 U	0.0016 U	0.0015 U	0.0014 U
1,4-Dioxane	ND	0.2	--	0.054 UJ	0.073 UJ	0.061 UJ	0.081 UJ	0.078 UJ	0.071 UJ	0.066 UJ	0.079 UJ	0.075 UJ	0.071 UJ
Ethylbenzene	ND	40	--	0.0011 U	0.0015 U	0.0012 U	0.0016 U	0.0016 U	0.0014 U	0.0013 U	0.0016 U	0.0015 U	0.0014 U
Isopropylbenzene	ND	1,000	--	0.0011 U	0.0015 U	0.0012 U	0.0016 U	0.0016 U	0.0014 U	0.0013 U	0.0016 U	0.0015 U	0.0014 U
p-Isopropyltoluene	ND	100	**0.0009**	0.0011 U	0.0015 U	0.0012 U	0.0016 U	0.0016 U	0.0014 U	0.0013 U	0.0016 U	0.0015 U	0.0014 U
Naphthalene	ND	4	**0.0014**	0.0022 U	0.0029 U	0.0025 U	0.0032 U	**0.0014 J**	0.0028 U	0.0026 U	0.0031 U	0.0030 U	0.0028 U
n-Propylbenzene	ND	100	--	0.0011 U	0.0015 U	0.0012 U	0.0016 U	0.0016 U	0.0014 U	0.0013 U	0.0016 U	0.0015 U	0.0014 U
Tetrachloroethene (PCE)	ND	1	--	0.0011 U	0.0015 U	0.0012 U	0.0016 U	0.0016 U	0.0014 U	0.0013 U	0.0016 U	0.0015 U	0.0014 U
Toluene	ND	30	**0.0007**	0.0011 U	0.0015 U	0.0012 U	0.0016 U	0.0016 U	0.0014 U	0.0013 U	0.0016 U	0.0015 U	0.0014 U
Trichloroethene (TCE)	ND	0.3	--	0.0011 U	0.0015 U	0.0012 U	0.0016 U	0.0016 U	0.0014 U	0.0013 U	0.0016 U	0.0015 U	0.0014 U
1,2,4-Trimethylbenzene	ND	1,000	--	0.0011 U	0.0015 U	0.0012 U	0.0016 U	0.0016 U	0.0014 U	0.0013 U	0.0016 U	0.0015 U	0.0014 U
1,3,5-Trimethylbenzene	ND	10	--	0.0011 U	0.0015 U	0.0012 U	0.0016 U	0.0016 U	0.0014 U	0.0013 U	0.0016 U	0.0015 U	0.0014 U
Vinyl chloride	ND	0.6	--	0.0054 U	0.0073 U	0.0061 U	0.0081 U	0.0078 U	0.0071 U	0.0066 U	0.0079 U	0.0075 U	0.0071 U
Total Xylenes	ND	300	--	0.0033 U	0.0044 U	0.0037 U	0.0048 U	0.0047 U	0.0042 U	0.0039 U	0.0047 U	0.0045 U	0.0042 U
Semivolatile Organic Compounds (SVOCs) by EPA Method 8270													
Acenaphthene	0.47	4	--	0.20 U	0.20 U	0.20 U	0.21 U	0.20 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U
Acenaphthylene	0.47	1	--	0.20 U	0.20 U	0.20 U	0.21 U	0.20 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U
Anthracene	0.47	1,000	**0.10**	0.20 U	0.20 U	0.20 U	0.21 U	0.20 U	0.20 U	0.19 U	0.19 U	0.19 U	**0.14 J**
Benzo(a)anthracene	0.47	7	**0.16**	0.20 U	**0.099 J**	0.20 U	**0.14 J**	**0.092 J**	0.20 U	**0.20 J**	0.19 U	**0.23**	**0.67 J**
Benzo(a)pyrene	0.43	2	**0.16**	0.20 U	0.20 U	0.20 U	**0.16 J**	**0.11 J**	0.20 U	**0.18 J**	0.19 U	**0.21**	**0.62 J**
Benzo(b)fluoranthene	0.47	7	**0.20**	0.20 U	**0.15 J**	**0.11 J**	**0.20 J**	**0.15 J**	**0.11 J**	**0.22 J**	**0.11 J**	**0.24**	**0.73 J**
Benzo(g,h,i)perylene	0.47	1,000	**0.11**	0.20 U	0.20 U	0.20 U	**0.14 J**	**0.094 J**	0.20 U	**0.13 J**	0.19 U	**0.12 J**	**0.33 J**
Benzo(k)fluoranthene	0.47	70	**0.11**	0.20 U	0.20 U	0.20 U	0.21 U	0.20 U	0.20 U	0.19 U	0.19 U	0.19 U	**0.29 J**
Benzoic Acid	NS	NS	**0.55**	1.2 UJ	**0.22 J**	1.2 UJ	1.2 UJ	1.2 UJ	1.2 UJ	1.1 UJ	**0.17 J**	**0.20 J**	1.1 UJ
Bis(2-Ethylhexyl)phthalate	0.67	200	**0.20**	0.40 U	0.41 U	0.40 U	0.41 U	0.39 U	0.39 U	0.39 U	0.38 U	**0.12 J**	0.38 U
Carbazole	NS	NS	--	0.20 U	0.20 U	0.20 U	0.21 U	0.20 U	0.20 U	0.19 U	0.19 U	0.19 U	**0.091 J**
Chrysene	0.46	70	**0.17**	0.20 U	**0.11 J**	0.20 U	**0.16 J**	**0.12 J**	0.20 U	**0.21 J**	**0.094 J**	**0.23**	**0.69 J**
Dibenz(a,h)anthracene	0.33	0.7	--	0.20 U	0.20 U	0.20 U	0.21 U	0.20 U	0.20 U	0.19 U	0.19 U	0.19 U	**0.11 J**
2,6-Dinitrotoluene	0.67	100	**0.20**	0.40 U	0.41 U	0.40 U	0.41 U	0.39 U	0.39 U	0.39 U	0.38 U	0.39 U	0.38 U
Fluoranthene	0.68	1,000	**0.23**	0.20 U	**0.18 J**	**0.14 J**	**0.26**	**0.19 J**	**0.12 J**	**0.30 J**	**0.12 J**	**0.30**	**0.95 J**
Fluorene	0.47	1,000	--	0.20 U	0.20 U	0.20 U	0.21 U	0.20 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U
Indeno(1,2,3-cd)pyrene	0.47	7	**0.12**	0.20 U	0.20 U	0.20 U	**0.16 J**	**0.11 J**	**0.093 J**	**0.16 J**	0.19 U	**0.15 J**	**0.41 J**
Naphthalene	0.47	4	--	0.20 U	0.20 U	0.20 U	0.21 U	0.20 U	0.20 U	0.19 U	0.19 U	0.19 U	0.19 U
Phenanthrene	0.47	10	**0.17**	0.20 U	**0.11 J**	**0.097 J**	**0.15 J**	**0.097 J**	0.20 U	**0.21 J**	0.19 U	**0.24**	**0.71 J**
Phenol	0.67	1	**0.22**	0.40 U	0.41 U	0.40 U	0.41 UJ	0.39 UJ	0.39 UJ	0.39 UJ	0.38 UJ	0.39 UJ	0.38 UJ
Pyrene	0.62	1,000	**0.27**	0.20 U	**0.16 J**	0.20 U	**0.38**	**0.21**	**0.19 J**	**0.46 J**	**0.19 J**	**0.50**	**1.4 J**

Soil Samples - Summary of Analytical Results
Topsoil Stockpile
700 Lafayette Rd, Seabrook, New Hampshire
(see notes on alternate pages)

Sample Identification / Sample Date	Overlook Farm Acceptance Criteria	MCP Reportable Concentration ‡ RCS-1	Average Concentration	LS-21 3/13/2013	LS-22 3/13/2013	LS-23 3/13/2013	LS-24 3/13/2013	LS-25 3/13/2013	LS-26 3/13/2013	LS-27 3/14/2013	LS-28 3/14/2013	LS-29 3/14/2013	LS-30 3/14/2013
Total Petroleum Hydrocarbons by EPA Method 8015													
TPH-Gasoline Range Organics	NS	NS	**103**	--	--	--	--	--	--	--	--	--	--
TPH-Diesel Range Organics	NS	NS		--	--	--	--	--	--	--	--	--	--
TPH (C9-C36)	<1,000	2,500		**86 *B**	**88 *B**	**110 *B**	**62 ***	**100 ***	**130 ***	**150 ***	**97 ***	**110 ***	**110 ***
Polychlorinated Biphenyls (PCBs) [2] by EPA Method 8082													
All Aroclors	0.1	2	--	*0.12 U*	*0.12 U*	*0.12 U*	*0.12 U*	*0.12 U*	*0.11 U*	*0.12 U*	*0.11 U*	*0.11 U*	*0.11 U*
RCRA 8 Metals by EPA Methods 6010 and 7471													
Arsenic	20	20	**3.0**	**2.5 J**	**3.4**	**2.2 J**	**3.1**	**3.1**	**2.3 J**	**3.0**	**2.0 J**	**3.6**	**3.3**
Barium	300	1,000	**13.5**	**10**	**12**	**12**	**15**	**13**	**14**	**13**	**11**	**19**	**15**
Cadmium	4	2	**0.32**	**0.30**	**0.33**	**0.35**	**0.35**	**0.37**	**0.32**	**0.37**	**0.31**	**0.40**	**0.38**
Chromium	157	30	**9.7**	**8.6**	**8.7**	**11**	**9.4**	**10**	**8.2**	**11**	**10**	**12**	**11**
Lead	<200	300	**17.69**	**13**	**12**	**13**	**13**	**17**	**23**	**12**	**15**	**13**	**14**
Mercury	0.7	20	**0.071**	**0.062**	**0.062**	**0.077**	**0.063**	**0.077**	**0.040**	**0.052**	**0.059**	**0.074**	**0.056**
Selenium	<5	400	--	*5.7 U*	*6.0 U*	*5.6 U*	*6.0 U*	*5.8 U*	*5.4 U*	*5.8 U*	*5.8 U*	*5.8 U*	*5.6 U*
Silver	<6	100	--	0.57 U	0.60 U	0.56 U	0.60 U	0.58 U	0.54 U	0.58 U	0.58 U	0.58 U	0.56 U
Hazardous Waste Characteristics													
Reactive Cyanide	NS	NS	--	--	--	--	--	--	--	--	--	--	--
Reactive Sulfide	NS	NS	--	--	--	--	--	--	--	--	--	--	--
pH (standard units)	NS	NS	--	--	--	--	--	--	--	--	--	--	--
Specific Conductance (µmhos/cm)	500-1000	NS	--	--	--	--	--	--	--	--	--	--	--
Ignitability (present/absent)	NS	NS	--	--	--	--	--	--	--	--	--	--	--

Only detected and selected other compounds listed; all other analytes were not detected.

Analytical results in milligrams per kilogram (mg/kg) unless otherwise noted.

1. All "detected" concentrations of VOCs were estimated concentrations below the reporting limit with two exceptions: p-isopropyltoluene in LS-11 and toluene in LS-14. All detected VOC concentrations are well below the RCS-1 thresholds.

2. Although the reporting limits for the PCB aroclors exceed the criteria of 0.1 mg/kg, the detection limits for the aroclors wer well below the 0.1 mg/kg criteria and no aroclors were reported by the laboratory as having been detected.

3. Arithmetic average concentration calculated using half the reporting limit when analyte was not detected.

U	Not detected; reporting limit shown.
NS	No standard or criterion established.
J	Estimated concentration (below reporting limit or surrogate recovery is outside acceptance limits).
B	Detected in method blank; sample result >5x blank; result valid.
bold	Detected analyte.
italics	Reporting limit exceeds Overlook Farm criterion.
shaded	Detected concentration exceeds Overlook Farm criterion.
red	Concentration exceeds MCP RCS-1 threshold.
--	Not analyzed or mean concentration not calculated because all results were non-detect.
*	Sample contamination consists of heavy residual hydrocarbons similar to asphalt. Chromatogram also shows the presence of PAHs.
‡	310 CMR 40.1600.

Soil Samples - Summary of Analytical Results
Topsoil Stockpile
700 Lafayette Rd, Seabrook, New Hampshire
(see notes on alternate pages)

Sample Identification / Sample Date	Overlook Farm Acceptance Criteria	MCP Reportable Concentration ‡ RCS-1	Average Concentration	LS-31 3/14/2013		LS-32 3/14/2013		LS-33 3/14/2013		LS-34 3/14/2013		LS-35 3/14/2013		LS-36 3/14/2013		LS-37 3/14/2013		LS-38 3/14/2013		LS-39 3/14/2013		LS-40 3/14/2013	
Volatile Organic Compounds (VOCs) by EPA Method 8260[1]																							
Acetone	ND	6	**0.029**	0.057	UJ	0.069	UJ	**0.018**	**J**	**0.059**	**J**	0.070	UJ	0.064	UJ	**0.026**	**J**	0.076	UJ	**0.045**	**J**	**0.032**	**J**
Benzene	ND	2	--	0.0011	U	0.0014	U	0.0013	U	0.0014	U	0.0014	U	0.0013	U	0.0016	U	0.0015	U	0.0014	U	0.0015	U
n-Butylbenzene	ND	NS	--	0.0011	U	0.0014	U	0.0013	U	0.0014	U	0.0014	U	0.0013	U	0.0016	U	0.0015	U	0.0014	U	0.0015	U
sec-Butylbenzene	ND	NS	--	0.0011	U	0.0014	U	0.0013	U	0.0014	U	0.0014	U	0.0013	U	0.0016	U	0.0015	U	0.0014	U	0.0015	U
tert-Butylbenzene	ND	100	--	0.0011	U	0.0014	U	0.0013	U	0.0014	U	0.0014	U	0.0013	U	0.0016	U	0.0015	U	0.0014	U	0.0015	U
cis-1,2-Dichloroethene	ND	0.3	--	0.0011	U	0.0014	U	0.0013	U	0.0014	U	0.0014	U	0.0013	U	0.0016	U	0.0015	U	0.0014	U	0.0015	U
1,4-Dioxane	ND	0.2	--	0.057	UJ	0.069	UJ	0.063	UJ	0.071	UJ	0.070	UJ	0.064	UJ	0.082	UJ	0.076	UJ	0.072	UJ	0.077	UJ
Ethylbenzene	ND	40	--	0.0011	U	0.0014	U	0.0013	U	0.0014	U	0.0014	U	0.0013	U	0.0016	U	0.0015	U	0.0014	U	0.0015	U
Isopropylbenzene	ND	1,000	--	0.0011	U	0.0014	U	0.0013	U	0.0014	U	0.0014	U	0.0013	U	0.0016	U	0.0015	U	0.0014	U	0.0015	U
p-Isopropyltoluene	ND	100	**0.0009**	0.0011	U	0.0014	U	0.0013	U	0.0014	U	0.0014	U	0.0013	U	0.0016	U	0.0015	U	0.0014	U	0.0015	U
Naphthalene	ND	4	**0.0014**	0.0023	U	0.0028	U	0.0025	U	0.0028	U	0.0028	U	0.0026	U	0.0033	U	0.0030	U	0.0029	U	0.0031	U
n-Propylbenzene	ND	100	--	0.0011	U	0.0014	U	0.0013	U	0.0014	U	0.0014	U	0.0013	U	0.0016	U	0.0015	U	0.0014	U	0.0015	U
Tetrachloroethene (PCE)	ND	1	--	0.0011	U	0.0014	U	0.0013	U	0.0014	U	0.0014	U	0.0013	U	0.0016	U	0.0015	U	0.0014	U	0.0015	U
Toluene	ND	30	**0.0007**	0.0011	U	0.0014	U	0.0013	U	0.0014	U	0.0014	U	0.0013	U	0.0016	U	0.0015	U	0.0014	U	0.0015	U
Trichloroethene (TCE)	ND	0.3	--	0.0011	U	0.0014	U	0.0013	U	0.0014	U	0.0014	U	0.0013	U	0.0016	U	0.0015	U	0.0014	U	0.0015	U
1,2,4-Trimethylbenzene	ND	1,000	--	0.0011	U	0.0014	U	0.0013	U	0.0014	U	0.0014	U	0.0013	U	0.0016	U	0.0015	U	0.0014	U	0.0015	U
1,3,5-Trimethylbenzene	ND	10	--	0.0011	U	0.0014	U	0.0013	U	0.0014	U	0.0014	U	0.0013	U	0.0016	U	0.0015	U	0.0014	U	0.0015	U
Vinyl chloride	ND	0.6	--	0.0057	U	0.0069	U	0.0063	U	0.0071	U	0.0070	U	0.0064	U	0.0082	U	0.0076	U	0.0072	U	0.0077	U
Total Xylenes	ND	300	--	0.0034	U	0.0042	U	0.0038	U	0.0042	U	0.0042	U	0.0039	U	0.0049	U	0.0045	U	0.0043	U	0.0046	U
Semivolatile Organic Compounds (SVOCs) by EPA Method 8270																							
Acenaphthene	0.47	4	--	0.19	U	0.19	U	0.20	U	0.20	U	0.21	U	0.19	U	0.20	U	0.20	U	0.20	U	0.20	U
Acenaphthylene	0.47	1	--	0.19	U	0.19	U	0.20	U	0.20	U	0.21	U	0.19	U	0.20	U	0.20	U	0.20	U	0.20	U
Anthracene	0.47	1,000	**0.10**	0.19	U	0.19	U	0.20	U	0.20	U	0.21	U	0.19	U	0.20	U	0.20	U	0.20	U	0.20	U
Benzo(a)anthracene	0.47	7	**0.16**	0.19	U	**0.24**		**0.12**	**J**	**0.15**	**J**	0.21	U	**0.18**	**J**	**0.16**	**J**	0.20	U	0.20	U	**0.12**	**J**
Benzo(a)pyrene	0.43	2	**0.16**	0.19	U	**0.25**		**0.13**	**J**	**0.14**	**J**	0.21	U	**0.18**	**J**	**0.17**	**J**	0.20	U	0.20	U	**0.12**	**J**
Benzo(b)fluoranthene	0.47	7	**0.20**	0.19	U	**0.34**		**0.19**	**J**	**0.19**	**J**	**0.13**	**J**	**0.27**		**0.22**		0.20	U	0.20	U	**0.14**	**J**
Benzo(g,h,i)perylene	0.47	1,000	**0.11**	0.19	U	**0.11**	**J**	0.20	U	0.20	U	0.21	U	**0.081**	**J**	**0.13**	**J**	0.20	U	0.20	U	**0.092**	**J**
Benzo(k)fluoranthene	0.47	70	**0.11**	0.19	U	**0.14**	**J**	0.20	U	0.20	U	0.21	U	0.19	U	0.20	U	0.20	U	0.20	U	0.20	U
Benzoic Acid	NS	NS	**0.55**	**0.25**	**J**	**0.21**	**J**	**0.21**	**J**	**0.53**	**J**	**2.0**		1.1	UJ	**0.19**	**J**	1.2	UJ	**0.22**	**J**	**0.22**	**J**
Bis(2-Ethylhexyl)phthalate	0.67	200	**0.20**	0.39	U	0.39	U	0.40	U	0.40	U	0.41	U	0.39	U	0.40	U	0.40	U	0.40	U	0.40	U
Carbazole	NS	NS	--	0.19	U	0.19	U	0.20	U	0.20	U	0.21	U	0.19	U	0.20	U	0.20	U	0.20	U	0.20	U
Chrysene	0.46	70	**0.17**	0.19	U	**0.27**		**0.15**	**J**	**0.16**	**J**	**0.11**	**J**	**0.21**		**0.18**	**J**	0.20	U	0.20	U	**0.14**	**J**
Dibenz(a,h)anthracene	0.33	0.7	--	0.19	U	0.19	U	0.20	U	0.20	U	0.21	U	0.19	U	0.20	U	0.20	U	0.20	U	0.20	U
2,6-Dinitrotoluene	0.67	100	**0.20**	0.39	U	0.39	U	0.40	U	0.40	U	0.41	U	0.39	U	0.40	U	0.40	U	0.40	U	0.40	U
Fluoranthene	0.68	1,000	**0.23**	**0.088**	**J**	**0.37**		**0.17**	**J**	**0.21**		**0.14**	**J**	**0.28**		**0.28**		0.20	U	0.20	U	**0.18**	**J**
Fluorene	0.47	1,000	--	0.19	U	0.19	U	0.20	U	0.20	U	0.21	U	0.19	U	0.20	U	0.20	U	0.20	U	0.20	U
Indeno(1,2,3-cd)pyrene	0.47	7	**0.12**	0.19	U	**0.14**	**J**	0.20	U	0.20	U	0.21	U	**0.11**	**J**	**0.15**	**J**	0.20	U	0.20	U	**0.090**	**J**
Naphthalene	0.47	4	--	0.19	U	0.19	U	0.20	U	0.20	U	0.21	U	0.19	U	0.20	U	0.20	U	0.20	U	0.20	U
Phenanthrene	0.47	10	**0.17**	0.19	U	**0.25**		**0.11**	**J**	**0.16**	**J**	**0.14**	**J**	**0.19**	**J**	**0.19**	**J**	0.20	U	0.20	U	**0.24**	
Phenol	0.67	1	**0.22**	0.39	UJ	0.39	UJ	0.40	UJ	0.40	UJ	0.41	UJ	0.39	UJ	0.40	UJ	0.40	UJ	0.40	UJ	0.40	UJ
Pyrene	0.62	1,000	**0.27**	**0.12**	**J**	**0.40**		**0.22**		**0.27**		**0.17**	**J**	**0.37**		**0.35**		0.20	U	0.20	U	**0.40**	

Soil Samples - Summary of Analytical Results
Topsoil Stockpile
700 Lafayette Rd, Seabrook, New Hampshire
(see notes on alternate pages)

Sample Identification / Sample Date	Overlook Farm Acceptance Criteria	MCP Reportable Concentration ‡ RCS-1	Average Concentration	LS-31 3/14/2013	LS-32 3/14/2013	LS-33 3/14/2013	LS-34 3/14/2013	LS-35 3/14/2013	LS-36 3/14/2013	LS-37 3/14/2013	LS-38 3/14/2013	LS-39 3/14/2013	LS-40 3/14/2013
Total Petroleum Hydrocarbons by EPA Method 8015													
TPH-Gasoline Range Organics	NS	NS	**103**	--	--	--	--	--	--	--	--	--	--
TPH-Diesel Range Organics	NS	NS		--	--	--	--	--	--	--	--	--	--
TPH (C9-C36)	<1,000	2,500		**130** *	**150** *	**130** *	**110** *	**80** *	**58** *	**88** *	**43** *	**64** *	**95** *
Polychlorinated Biphenyls (PCBs) [2] by EPA Method 8082													
All Aroclors	0.1	2	--	*0.12 U*	*0.11 U*	*0.11 U*	*0.12 U*	*0.12 U*	*0.11 U*	*0.12 U*	*0.11 U*	*0.12 U*	*0.12 U*
RCRA 8 Metals by EPA Methods 6010 and 7471													
Arsenic	20	20	**3.0**	**1.5 J**	**2.7 J**	**3.2**	**2.3 J**	**2.4 J**	**8.5**	**2.5 J**	**3.0**	**2.2 J**	**1.8 J**
Barium	300	1,000	**13.5**	**10**	**12**	**25**	**14**	**11**	**12**	**12**	**12**	**9.9**	**11**
Cadmium	4	2	**0.32**	0.29 U	**0.34**	**0.43**	**0.33**	**0.30**	**0.49**	**0.33**	0.29 U	**0.32**	0.30 U
Chromium	157	30	**9.7**	**7.7**	**8.7**	**12**	**10**	**8.9**	**15**	**12**	**7.9**	**8.1**	**8.1**
Lead	<200	300	**17.69**	**14**	**13**	**16**	**18**	**15**	**9.5**	**14**	**6.0**	**14**	**17**
Mercury	0.7	20	**0.071**	**0.048**	**0.052**	**0.043**	**0.072**	**0.11**	**0.024 J**	**0.075**	**0.021 J**	**0.083**	**0.12**
Selenium	<5	400	--	*5.8 U*	*5.6 U*	*5.6 U*	*5.8 U*	*5.8 U*	*5.7 U*	*5.8 U*	*5.7 U*	*5.7 U*	*6.0 U*
Silver	<6	100	--	0.58 U	0.56 U	0.56 U	0.58 U	0.58 U	0.57 U	0.58 U	0.57 U	0.57 U	0.60 U
Hazardous Waste Characteristics													
Reactive Cyanide	NS	NS	--	--	--	--	--	--	--	--	--	--	--
Reactive Sulfide	NS	NS	--	--	--	--	--	--	--	--	--	--	--
pH (standard units)	NS	NS	--	--	--	--	--	--	--	--	--	--	--
Specific Conductance (µmhos/cm)	500-1000	NS	--	--	--	--	--	--	--	--	--	--	--
Ignitability (present/absent)	NS	NS	--	--	--	--	--	--	--	--	--	--	--

Only detected and selected other compounds listed; all other analytes were not detected.
Analytical results in milligrams per kilogram (mg/kg) unless otherwise noted.

1. All "detected" concentrations of VOCs were estimated concentrations below the reporting limit with two exceptions: p-isopropyltoluene in LS-11 and toluene in LS-14. All detected VOC concentrations are well below the RCS-1 thresholds.

2. Although the reporting limits for the PCB aroclors exceed the criteria of 0.1 mg/kg, the detection limits for the aroclors wer well below the 0.1 mg/kg criteria and no aroclors were reported by the laboratory as having been detected.

3. Arithmetic average concentration calculated using half the reporting limit when analyte was not detected.

U	Not detected; reporting limit shown.
NS	No standard or criterion established.
J	Estimated concentration (below reporting limit or surrogate recovery is outside acceptance limits).
B	Detected in method blank; sample result >5x blank; result valid.
bold	Detected analyte.
italics	Reporting limit exceeds Overlook Farm criterion.
shaded	Detected concentration exceeds Overlook Farm criterion.
red	Concentration exceeds MCP RCS-1 threshold.
--	Not analyzed or mean concentration not calculated because all results were non-detect.
*	Sample contamination consists of heavy residual hydrocarbons similar to asphalt. Chromatogram also shows the presence of PAHs.
‡	310 CMR 40.1600.

Soil Samples - Summary of Analytical Results
Topsoil Stockpile
700 Lafayette Rd, Seabrook, New Hampshire
(see notes on alternate pages)

Sample Identification / Sample Date	Overlook Farm Acceptance Criteria	MCP Reportable Concentration ‡ RCS-1	Average Concentration	LS-41 3/29/2013	LS-42 3/29/2013	LS-43 3/29/2013
Volatile Organic Compounds (VOCs) by EPA Method 8260 [1]						
Acetone	ND	6	**0.029**	--	--	--
Benzene	ND	2	--	--	--	--
n-Butylbenzene	ND	NS	--	--	--	--
sec-Butylbenzene	ND	NS	--	--	--	--
tert-Butylbenzene	ND	100	--	--	--	--
cis-1,2-Dichloroethene	ND	0.3	--	--	--	--
1,4-Dioxane	ND	0.2	--	--	--	--
Ethylbenzene	ND	40	--	--	--	--
Isopropylbenzene	ND	1,000	--	--	--	--
p-Isopropyltoluene	ND	100	**0.0009**	--	--	--
Naphthalene	ND	4	**0.0014**	--	--	--
n-Propylbenzene	ND	100	--	--	--	--
Tetrachloroethene (PCE)	ND	1	--	--	--	--
Toluene	ND	30	**0.0007**	--	--	--
Trichloroethene (TCE)	ND	0.3	--	--	--	--
1,2,4-Trimethylbenzene	ND	1,000	--	--	--	--
1,3,5-Trimethylbenzene	ND	10	--	--	--	--
Vinyl chloride	ND	0.6	--	--	--	--
Total Xylenes	ND	300	--	--	--	--
Semivolatile Organic Compounds (SVOCs) by EPA Method 8270						
Acenaphthene	0.47	4	--	--	--	--
Acenaphthylene	0.47	1	--	--	--	--
Anthracene	0.47	1,000	**0.10**	--	--	--
Benzo(a)anthracene	0.47	7	**0.16**	--	--	--
Benzo(a)pyrene	0.43	2	**0.16**	--	--	--
Benzo(b)fluoranthene	0.47	7	**0.20**	--	--	--
Benzo(g,h,i)perylene	0.47	1,000	**0.11**	--	--	--
Benzo(k)fluoranthene	0.47	70	**0.11**	--	--	--
Benzoic Acid	NS	NS	**0.55**	--	--	--
Bis(2-Ethylhexyl)phthalate	0.67	200	**0.20**	--	--	--
Carbazole	NS	NS	--	--	--	--
Chrysene	0.46	70	**0.17**	--	--	--
Dibenz(a,h)anthracene	0.33	0.7	--	--	--	--
2,6-Dinitrotoluene	0.67	100	**0.20**	--	--	--
Fluoranthene	0.68	1,000	**0.23**	--	--	--
Fluorene	0.47	1,000	--	--	--	--
Indeno(1,2,3-cd)pyrene	0.47	7	**0.12**	--	--	--
Naphthalene	0.47	4	--	--	--	--
Phenanthrene	0.47	10	**0.17**	--	--	--
Phenol	0.67	1	**0.22**	--	--	--
Pyrene	0.62	1,000	**0.27**	--	--	--

Soil Samples - Summary of Analytical Results
Topsoil Stockpile
700 Lafayette Rd, Seabrook, New Hampshire
(see notes on alternate pages)

Sample Identification / Sample Date	Overlook Farm Acceptance Criteria	MCP Reportable Concentration ‡ RCS-1	Average Concentration	LS-41 3/29/2013	LS-42 3/29/2013	LS-43 3/29/2013
Total Petroleum Hydrocarbons by EPA Method 8015						
TPH-Gasoline Range Organics	NS	NS	**103**	--	--	--
TPH-Diesel Range Organics	NS	NS		--	--	--
TPH (C9-C36)	<1,000	2,500		--	--	--
Polychlorinated Biphenyls (PCBs) [2] by EPA Method 8082						
All Aroclors	0.1	2	--	--	--	--
RCRA 8 Metals by EPA Methods 6010 and 7471						
Arsenic	20	20	**3.0**	--	--	--
Barium	300	1,000	**13.5**	--	--	--
Cadmium	4	2	**0.32**	--	--	--
Chromium	157	30	**9.7**	--	--	--
Lead	<200	300	**17.69**	--	--	--
Mercury	0.7	20	**0.071**	--	--	--
Selenium	<5	400	--	--	--	--
Silver	<6	100	--	--	--	--
Hazardous Waste Characteristics						
Reactive Cyanide	NS	NS	--	3.9 U	3.9 U	3.9 U
Reactive Sulfide	NS	NS	--	19 U	20 U	20 U
pH (standard units)	NS	NS	--	6.2	5.6	5.6
Specific Conductance (µmhos/cm)	500-1000	NS	--	9.7	5.2	6.3
Ignitability (present/absent)	NS	NS	--	Absent	Absent	Absent

Only detected and selected other compounds listed; all other analytes were not detected.

Analytical results in milligrams per kilogram (mg/kg) unless otherwise noted.

1. All "detected" concentrations of VOCs were estimated concentrations below the reporting limit with two exceptions: p-isopropyltoluene in LS-11 and toluene in LS-14. All detected VOC concentrations are well below the RCS-1 thresholds.

2. Although the reporting limits for the PCB aroclors exceed the criteria of 0.1 mg/kg, the detection limits for the aroclors wer well below the 0.1 mg/kg criteria and no aroclors were reported by the laboratory as having been detected.

3. Arithmetic average concentration calculated using half the reporting limit when analyte was not detected.

U	Not detected; reporting limit shown.
NS	No standard or criterion established.
J	Estimated concentration (below reporting limit or surrogate recovery is outside acceptance limits).
B	Detected in method blank; sample result >5x blank; result valid.
bold	Detected analyte.
italics	Reporting limit exceeds Overlook Farm criterion.
shaded	Detected concentration exceeds Overlook Farm criterion.
red	Concentration exceeds MCP RCS-1 threshold.
--	Not analyzed or mean concentration not calculated because all results were non-detect.
*	Sample contamination consists of heavy residual hydrocarbons similar to asphalt. Chromatogram also shows the presence of PAHs.
‡	310 CMR 40.1600.

BOL No. _____ Work Order No. _____

PO No. DDR5001.2

STRAIGHT BILL OF LADING

Transporter 1 Brighter Horizons Environmental Corporation Vehicle ID #: Truck Plate #: Trailer Plate #:

EPA ID # _____ Phone #: (978) 970-0500

Transporter 2 _____ Vehicle ID #: _____

EPA ID # _____ Phone #: _____

Designated Facility			**Generator**		
Overlook Farm			DDR Seabrook, LLC		
Facility EPA ID #			Generator EPA ID #		
None			None		
Address			Address		
29 Overlook Road			700 Lafayette Road		
City	State	Zip	City	State	Zip
Rutland	MA	01543	Seabrook	NH	03874

Containers No. & Size	Type	HM	Description of Materials	Total Quantity	Units Wt/Vol.
1	DT		**A.** Non-Hazardous, Non-regulated matter, None, None, NA topsoil for reuse		Tons
			B. DT		
			C.		
			D.		
			E.		

Special Handling Instructions

A. Topsoil for reuse. Call Wilcox & Barton, Inc. at (603) 369-4190 for additional information.

Generator Certification

This is to certify that the materials listed above are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation in accordance with the applicable federal and state DOT regulations.

DDR Seabrook, LLC Generator	Print Chris Wood (Agent for)	Sign	Date
Brighter Horizons Transporter 1	Print	Sign	Date
Transporter 2	Print	Sign	Date
Overlook Farm Received by	Print	Sign	Date

Receiving facility: Please return a signed copy of this BOL along with a completed weight slip to:

Wilcox & Barton, Inc.
57 Hoit Road, Concord, NH
Fax: (603) 369-6630

BOL No. _____ Work Order No. _____

PO No. DDR5001.2

STRAIGHT BILL OF LADING

Transporter 1 Brighter Horizons Environmental Corporation Vehicle ID #: Truck Plate #:

Trailer Plate #:

EPA ID # Phone #: (978) 970-0500

Transporter 2 Vehicle ID #:

EPA ID # Phone #:

Designated Facility			**Generator**		
Overlook Farm			DDR Seabrook, LLC		
Facility EPA ID #			Generator EPA ID #		
None			None		
Address			Address		
29 Overlook Road			700 Lafayette Road		
City	State	Zip	City	State	Zip
Rutland	MA	01543	Seabrook	NH	03874

Containers No. & Size	**Type**	**HM**	**Description of Materials**	**Total Quantity**	**Units Wt/Vol.**
1	DT		**A.** Non-Hazardous, Non-regulated matter, None, None, NA topsoil for reuse	~30	Tons
			B. DT		
			C.		
			D.		
			E.		

Special Handling Instructions

A. Topsoil for reuse. Call Wilcox & Barton, Inc. at (603) 369-4190 for additional information.

Generator Certification

This is to certify that the materials listed above are properly classified, described, packaged, marked, and labeled and are in proper condition for transportation in accordance with the applicable federal and state DOT regulations.

DDR Seabrook, LLC Generator	Print Chris Wood (Agent for)	Sign Chris Wood	4/29/2013 Date
Brighter Horizons Transporter 1	Print	Sign	Date
Transporter 2	Print	Sign	Date
Overlook Farm Received by	Print	Sign	Date

Receiving facility: Please return a signed copy of this BOL along with a completed weight slip to:

Wilcox & Barton, Inc.
57 Hoit Road, Concord, NH
Fax: (603) 369-6630

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210.

SOIL ANALYSIS REPORT FOR CORN SILAGE 05/13/13

SOIL AND PLANT TISSUE TESTING LAB
WEST EXPERIMENT STATION
UNIVERSITY OF MASSACHUSETTS
AMHERST, MA 01003

LAB NUMBER: S130508-107
BAG NUMBER: 0

SOIL WEIGHT: 6.11 g/5cc
CROP: FIELD CORN

ECOTEC, INC - A ALLEN
102 GROVE STREET
WORCESTER, MA 01605

COMMENTS: AALLEN@ECOTECINC.COM

SAMPLE ID: NP501 & NT501

LIMESTONE AND FERTILIZER RECOMMENDATIONS FOR SILAGE CORN:

Limestone requirement is 3.8 tons per acre or 170 lbs/1000 sq.ft.
Limestone containing at least 5-10% calcium carbonate equivalence from magnesium sources is recommended.

Nitrogen should be applied according to yield expectations.
Apply 140 lb/acre nitrogen on soils expected to yield less than 20 tons/acre.
Apply 160 lb/acre nitrogen on soils expected to yield between 20 and 24 tons/acre.
Apply 180 lb/acre nitrogen on soils expected to yield more than 24 tons/acre.

Apply 110-120 lb/acre P2O5 and 240-250 lb/acre K2O.
Use a starter fertilizer if planting before May 15.

Decrease N-P2O5-K2O by 5-3-6 lb/acre for each ton of dairy manure used if immediately incorporated, 2-3-6 per ton if not incorporated within 2 days.
If corn follows alfalfa reduce nitrogen by 60 lb/acre.
If corn follows birdsfoot trefoil or clover reduce nitrogen by 40 lb/acre.

MICRONUTRIENT		PPM	SOIL RANGE	MICRONUTRIENT		PPM	SOIL RANGE
Boron	(B)	0.2	0.1-2.0	Copper	(Cu)	0.4	0.3-8.0
Manganese	(Mn)	18.6	3 - 20	Iron	(Fe)	29.1	1.0- 40
Zinc	(Zn)	2.7	0.1- 70	Sulfur	(S)	11.2	1.0- 40

SOIL pH 5.8
BUFFER pH 6.4 ORGANIC MATTER: 2.9 % (Desirable range 4-10%)

NUTRIENT LEVELS:		PPM	Low	Medium	High	Very High
Phosphorus	(P)	1	XX			
Potassium	(K)	30	XXXXXXX			
Calcium	(Ca)	287	XXXXXXXXX			
Magnesium	(Mg)	30	XXXXXXX			

CATION EXCH CAP	PERCENT BASE SATURATION	MICRONUTRIENT LEVELS
7.1 Meq/100g	K= 1.1 Mg= 3.5 Ca=20.3	ALL NORMAL

EXTRACTABLE ALUMINUM: 167 ppm (Soil range: 10-250 ppm)

The lead level in this soil is low.

VISIT soiltest.umass.edu FOR FURTHER INFORMATION ON SOIL TESTING AT UMASS.

UMass Extension

CENTER FOR AGRICULTURE

05/14/13

Agriculture and Landscape Program
Soil and Plant Tissue Testing Laboratory

West Experiment Station
682 North Pleasant Street
University of Massachusetts
Amherst, MA 01003-9302
Phone: 413.545.2311
Email: soiltest@umass.edu
Website: soiltest.umass.edu

TEXTURAL ANALYSIS RESULTS

Customer Name: EcoTec, Inc.
Arthur Allen
102 Grove Street
Worcester, MA 01605

Sample ID: S130508-107

Customer Designation: NP501 & NT501

USDA SIZE FRACTIONS

Main Fractions	Size (mm)	Percent
Sand	0.05-2.0	86.6
Silt	0.002-0.05	8.7
Clay	< 0.002	4.8
Total	< 2.0	100.0

Sand Fractions	Size (mm)	Percent
Very Coarse	1.0-2.0	6.8
Coarse	0.5-1.0	21.5
Medium	0.25-0.5	30.6
Fine	0.10-0.25	21.3
Very Fine	0.05-0.10	6.4
		86.6

Silt Fractions	Size (mm)	Percent
Coarse	0.02-0.05	3.3
Medium	0.005-0.02	3.7
Fine	0.002-0.005	1.6
		8.7

PERCENT OF WHOLE SAMPLE PASSING

Size (mm)	Sieve #	%
2.00	#10	86.7
1.00	#18	80.8
0.50	#35	62.2
0.25	#60	35.7
0.10	#140	17.2
0.05	#270	11.7
0.02	20 um	8.8
0.005	5 um	5.5
0.002	2 um	4.2

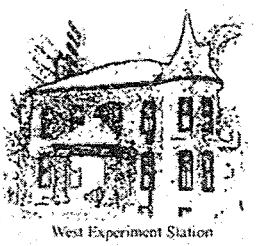
USDA Textural Class = loamy coarse sand

Gravel Content = 13.3%

COMMENTS:

UMass Extension
CENTER FOR AGRICULTURE

Soil and Plant Tissue Testing Laboratory
West Experiment Station
682 North Pleasant Street
University of Massachusetts
Amherst, MA 01003
Phone: (413) 545-2311
e-mail: soiltest@psis.umass.edu
website: http://www.umass.edu/soiltest/



Soil Test Interpretation & Recommendations

The primary goal of soil testing is to provide guidelines for the efficient use of soil amendments, such as lime and fertilizers. The recommendations that we provide with your soil test report are specific to the crop selection that you identify on your soil sample submission form.

Numerical results reported on your soil test reflect the properties of the sample submitted and the testing procedures used by the UMass Soil and Plant Tissue Testing Laboratory. The analytical methods used by the UMass Laboratory were developed for climate and soil types common to the Northeastern U.S. Interpretation of the results, along with lime and fertilizer recommendations, are based on field and greenhouse trials conducted in Massachusetts and other Northeastern states.

Implementing the provided recommendations will correct the nutrient status of your soil for the crop that you indicated. It may or may not solve a given plant growth problem; other factors may need to be evaluated. Problems directly related to disease, insects, weather, and cultural practices cannot be diagnosed by a soil fertility test.

SOIL TEST RESULTS

Soil pH, Buffer pH, and pH adjustments -- Soil pH is a measure of the soil's acidity and is a primary factor controlling nutrient availability, microbial processes, and plant growth. When pH is maintained at the proper level, plant nutrient availability is optimized, toxic elements are often at reduced availability, and beneficial soil organisms are most active. Most plants grow best in a soil pH between 6 and 7, and the majority does best in the middle part of this range. Some notable acid-loving exceptions are blueberry and rhododendron, which grow well under the nutritional conditions imparted by soil acidity.

Due to the climate and geology of New England, soils here tend to be naturally acidic (4.5-5.5) and must often be amended with materials that neutralize soil acidity. Many products are available to accomplish this, but ground limestone is the most common. By convention, lime requirements are made in amounts (tons/acre or lb/1000 sq ft) of agricultural limestone to be added assuming Calcium Carbonate Equivalence (CCE) is 100%. Application rates for liming materials with higher or lower CCE should be adjusted accordingly.

Occasionally soil pH must be lowered, because either the plant requires acid soil or the soil was previously over-limed. Incorporating elemental sulfur is the most effective way to lower soil pH. Once applied, the sulfur oxidizes to sulfuric acid. One to two pounds of sulfur per 100 sq ft will lower the pH of most New England soils by approximately half a unit.

Buffer pH is a value used by the lab to determine lime requirement. It is the resulting pH after a buffering solution has been equilibrated with the soil. The change in pH of the buffering solution is a measure of the soil's capacity to resist pH change after lime has been added. The extent to which the buffer pH is lower than 6.8 is directly related to the amount of limestone needed.

Cation Exchange Capacity and Percentage Base Saturation–Cation exchange capacity (CEC) is an important measure of the ability of soils to retain and supply nutrients. The bulk of this capacity in limed New England soils resides in finely divided soil organic matter; a smaller contribution comes from the clay minerals in soil. The basic nutrient cations (positively charged ions) of Calcium (Ca^{++}), Magnesium (Mg^{++}), and Potassium (K^{+}), and the acidic cations of Aluminum (Al^{+++}) and Hydrogen (H^{+}) account for nearly all the absorbed cations in the soil. Very sandy soils with low organic matter commonly have CEC's less than 5 meq/100 g. New England soils with very high CEC's (greater than 40) are invariably rich in organic matter. A CEC between 10 and 15 is typical for most soils found in the region.

Individual Nutrients

Nitrogen (N) –Nitrogen is <u>essential</u> to nearly every aspect of plant growth. Nitrogen is absorbed from the soil as nitrate (NO_3^-) and ammonium (NH_4^+). Soil NO_3^- and NH_4^+ levels can fluctuate widely with soil and weather conditions over very short periods of time. For this reason, NO_3^- and NH_4^+ are not routinely tested, and we make recommendations based on the assumption that very little NO_3^- and NH_4^+ remain in the soil after the growing season; however, adjustments are often made for soils recently or continuously supplied with manure or compost, which contain nitrogen that will be released during the growing season.

Under certain specific conditions soil NO_3 testing can be useful for predicting fertilizer needs. The Pre-sidedress Soil Nitrate Test (PSNT) has been shown to successfully predict sidedress fertilizer N needs for a few crops (e.g., corn, pumpkin, peppers), but the PSNT requires stricter sampling (depth and timing) and handling than a standard soil fertility sample. Contact the laboratory for more information on this test.

Phosphorus (P) –Among other important functions, phosphorus provides plants with a means of using the energy harnessed by photosynthesis to drive its metabolism. A deficiency of this nutrient can lead to impaired vegetative growth, weak root systems, poor fruit and seed quality, and low yield; however excessive soil phosphorus levels are a concern due to the potential negative impact on

water quality. Phosphorus does not generally leach from soils, but where soil P levels are excessive, runoff losses can occur. Phosphorus enrichment is a leading source of water quality impairment of many lakes, streams, and rivers.

Soil phosphorus exists in a wide range of forms. Some phosphorus is present as part of soil organic matter and becomes available to plants as the organic matter decomposes. Most inorganic soil phosphorus is bound tightly to the surface of soil minerals (e.g., iron and aluminum oxides). Warm, moist, well-aerated soils at a pH level of about 6.5 optimize the release of both of these forms. Plants require fairly large quantities of phosphorus, but the levels of phosphorus available to plant roots at any given time are usually quite low. Soil tests attempt to assess the ability of soil to supply phosphorus from bound forms during the growing season. When a soil test indicates that phosphorus is low and fertilizer in needed, the rate recommended is intended to satisfy immediate crop needs and begin to build soil phosphorus levels to the optimum range (i.e., build and maintain). By convention, phosphorus recommendations are expressed, as P_2O_5 to correlate with fertilizer analysis.

If your soil test results indicate excessive, or *Very High*, soil phosphorus levels, phosphorus application should be significantly reduced or eliminated, and steps should be taken to minimize the risk of surface water contamination by limiting runoff losses.

Potassium (K) – Potassium rivals nitrogen as the nutrient absorbed in greatest amounts by plants. Like nitrogen, crops take up a relatively large proportion of plant-available potassium each growing season. Plants deficient in potassium are unable to utilize nitrogen and water efficiently and are susceptible to disease. Most available potassium exists as an exchangeable cation (see above). The slow release of potassium from native soil minerals and from fixed forms in clays can replenish some of the potassium lost by crop removal and leaching. This ability, however, is limited and variable. Fertilization is often necessary to maintain optimum yields.

When a soil test indicates that fertilizer potassium is required, the rate of fertilizer recommended is intended to satisfy crop needs and build soil potassium levels to the optimum range. Sandy soils with very low CEC will tend to lose substantial quantities due to leaching and will require more frequent applications of fertilizer. Even when soils test in the optimum range, some potassium generally is recommended to account for crop removal. By convention, potassium recommendations are expressed, as K_2O to correlate with fertilizer analysis.

Calcium (Ca) – Calcium is essential in the proper functioning of plant cell walls and membranes. Sufficient calcium must also be present in actively growing plant parts, especially storage organs such as fruits and roots. Properly limed soils with constant and adequate moisture will normally supply sufficient calcium to plants. If soil calcium levels are less than optimal and lime is not required, gypsum (calcium sulfate) may be recommended.

Magnesium (Mg) – Magnesium acts together with phosphorus to drive plant metabolism and is part of chlorophyll, a vital substance for photosynthesis. Like calcium, magnesium is ordinarily supplied through liming. If magnesium levels are low and lime is required, dolomitic lime (rich in Mg) will be recommended. If Mg is low and lime is not required, Epsom salts (magnesium sulfate) may be recommended.

Micronutrients – Micronutrients are elements essential to plants, but required in very small amounts. In most properly limed soils they are available in sufficient quantities. Five of these (iron, manganese, zinc, copper, and boron) are tested routinely. Micronutrient deficiencies and response to micronutrient fertilizers rarely are observed in the Northeast. For this reason, soil test recommendations for micronutrients are not available. Your soil test values are compared to levels normally found in Northeast soils. When levels are below this range, we recommend collecting a plant tissue sample to determine if a deficiency exists and a micronutrient fertilizer is required.

Aluminum (Al)–Aluminum is <u>not</u> a plant nutrient and at elevated levels it can be extremely <u>toxic</u> to plant roots and limit the ability of plants to take up phosphorus by reducing phosphorus solubility. Aluminum sensitivity varies greatly with plant type. Acid-loving plants, such as rhododendrons and blueberries can tolerate moderately high aluminum levels, whereas lettuce, carrots and beets are very sensitive. Extractable aluminum increases greatly at soil pH below 5.5. Proper liming will lower aluminum solubility to acceptable levels.

Lead (Pb)–This laboratory routinely tests for extractable lead. Lead is naturally present in most New England soils in the range of 15-40 parts per million (ppm or mg/kg) total lead. At these levels lead generally is thought to present minimal danger to people or plants. Soil pollution with lead-based paint and the tetraethyl lead of past automotive fuels have increased soil lead levels to several thousand ppm in some places. Unless the estimated total lead level in your soil exceeds 150 ppm, it is simply reported as low and can be considered safe (assuming the sample submitted was representative of the area of concern). Estimated total lead levels above 300 ppm are a concern. In such cases, consult the separate insert on soil lead levels.

Soluble Salts–Soluble salts, such as those used on roads to promote melting and those present in many commercial (and some natural) fertilizers, can cause severe water stress and nutritional imbalances in plants. Generally, seedlings are more sensitive than established plants to elevated soluble salts levels, and great variation exists between plant species. Most soils tested by the UMass laboratory have values between 0.08 and 0.50 dS/m (mmho/cm) with the middle of range typical of most fertile mineral soils; values greater than 0.60 may cause damage to sensitive plants (such as onions, etc.). The level of soluble salts can change rapidly in the soil due to leaching, so the effects of time and growing conditions are important considerations when evaluating the significance of the soluble salts level. Excessive levels can often be corrected by leaching with liberal amounts (2- 4 inches) of fresh water. Normal off-season precipitation usually will correct salt problems resulting from over-fertilization.

Prepared by John Spargo, Assistant Extension Professor of Soil and Nutrient Management and Director, UMass Soil and Plant Tissue Testing Laboratory; Allen Barker, Professor of Soil Fertility and Plant Nutrition, Stockbridge School of Agriculture; and Tracy Allen, Laboratory Supervisor, UMass Soil and Plant Tissue Testing Laboratory. Revised January 2012.

Attachment F

Similar Soils Provision Guidance Policy (WSC#13-500)

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

DEVAL L. PATRICK
Governor

RICHARD K. SULLIVAN JR.
Secretary

KENNETH L. KIMMELL
Commissioner

October 2, 2013

Dear Interested Party:

The Massachusetts Department of Environmental Protection (MassDEP) is pleased to announce the publication of the "Similar Soils Provision Guidance" (WSC#-13-500). This guidance is provided to parties conducting response actions at disposal sites regulated under the Massachusetts Contingency Plan (MCP), 310 CMR 40.0000, to support the assessment and re-use of soil in compliance with the related provisions of the MCP.

This policy addresses the very specific application of an MCP provision (310 CMR 40.0032(3)) that allows certain soils to be managed (and re-used) without prior notice to, or approval from, the Department. MassDEP recognizes that this is but one piece of a much needed comprehensive soil management strategy. The Department is committed to working with external stakeholders to revise areas of regulation and policy to enhance, expedite and more efficiently manage the assessment and appropriate re-use of soil in reclamation and development projects.

I would like to thank the many program stakeholders who have provided valuable input in the development of this document.

Sincerely,

Benjamin J. Ericson
Assistant Commissioner
Bureau of Waste Site Cleanup

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection
One Winter Street Boston, MA 02108 • 617-292-5500

DEVAL L. PATRICK
Governor

RICHARD K. SULLIVAN JR.
Secretary

KENNETH L. KIMMELL
Commissioner

Similar Soils Provision Guidance

Guidance for Identifying When Soil Concentrations at a Receiving Location Are "Not Significantly Lower Than" Managed Soil Concentrations Pursuant to 310 CMR 40.0032(3)

October 2, 2013

WSC#-13-500

The information contained in this document is intended solely as guidance. This guidance does not create any substantive or procedural rights, and is not enforceable by any party in any administrative proceeding with the Commonwealth. Parties using this guidance should be aware that there may be other acceptable alternatives for achieving and documenting compliance with the applicable regulatory requirements and performance standards of the Massachusetts Contingency Plan.

I. Purpose and Scope

The Massachusetts Contingency Plan ("MCP", 310 CMR 40.0000) establishes conditions and requirements for the management of soil excavated at a disposal site. This guidance addresses the specific requirements of 310 CMR 40.0032(3) and the criteria by which a Licensed Site Professional ("LSP") may determine that soil may be moved without prior notice to or approval from the Department. Soil managed pursuant to 310 CMR 40.0032(3) may be transported using a Bill of Lading ("BOL"), but a BOL is not required. Attachment 1 provides a flowchart depiction of the Similar Soil regulations and guidance.

This guidance is not applicable to the excavation and movement of soil from locations other than M.G.L. Chapter 21E disposal sites, nor to the management of soils considered Remediation Waste under the MCP.

II. Relationship to Other Local, State or Federal Requirements

This guidance is intended to clarify and more fully describe regulatory requirements contained within the MCP. Nothing in this guidance eliminates, supersedes or otherwise modifies any local, state or federal requirements that apply to the management of soil, including any local,

state or federal permits or approvals necessary before placing the soil at the receiving location, including, *but not limited to,* those related to placement of fill, noise, traffic, dust control, wetlands, groundwater or drinking water source protection.

III. Requirements of 310 CMR 40.0032(3)

The requirements specified in 310 CMR 40.0032(3) are:

> (3) Soils containing oil or waste oil at concentrations less than an otherwise applicable Reportable Concentration and that are not otherwise a hazardous waste, and soils that contain one or more hazardous materials at concentrations less than an otherwise applicable Reportable Concentration and that are not a hazardous waste, may be transported from a disposal site without notice to or approval from the Department under the provisions of this Contingency Plan, provided that such soils:
>
> (a) are not disposed or reused at locations where the concentrations of oil or hazardous materials in the soil would be in excess of a release notification threshold applicable at the receiving site, as delineated in 310 CMR 40.0300 and 40.1600; and
>
> (b) are not disposed or reused at locations where existing concentrations of oil and/or hazardous material at the receiving site are significantly lower than the levels of those oil and/or hazardous materials present in the soil being disposed or reused.

There are therefore four requirements that must be met before the managed soil can be moved to and re-used (or disposed) at a new location without notice to or approval from MassDEP. Each requirement (A. through D.) is addressed below.

A. The Managed Soil Must Not Be a Hazardous Waste

310 CMR 40.0032(3) applies to soils containing oil or waste oil that are not otherwise a hazardous waste, and to soils containing hazardous materials that are not a hazardous waste. The MCP definition of hazardous waste (310 CMR 40.0006) refers to the definitions promulgated in the Massachusetts Hazardous Waste Regulations, 310 CMR 30.000.

Under the federal Resource Conservation and Recovery Act of 1976 ("RCRA", 42 U.S.C. §§6901 *et. seq.*), the Massachusetts Hazardous Waste Management Act (M.G.L. c.21C), and the Massachusetts Hazardous Waste Regulations (310 CMR 30.000), soil is considered to contain a hazardous waste (hazardous waste soil) if, when generated, it meets either or both of the following two conditions:

- the soil exhibits one or more of the characteristics of a hazardous waste pursuant to 310 CMR 30.120 [such as exhibiting a characteristic of toxicity under 310 CMR 30.125 and 30.155 (Toxicity Characteristic Leaching Procedure, or TCLP)]; or
- the soil contains hazardous constituents from a listed hazardous waste identified in 310 CMR 30.130 or Title 40, Chapter I, Part 261 (Identification and Listing of Hazardous Waste) of the Code of Federal Regulations.

MassDEP has published a Technical Update entitled: *Considerations for Managing Contaminated Soil: RCRA Land Disposal Restrictions and Contained-In Determinations* (August 2010, http://www.mass.gov/eea/docs/dep/cleanup/laws/contain.pdf) that focuses on the determination of whether contaminated soil must be managed as a hazardous waste subject to RCRA requirements, and the presumptive approval process an LSP/PRP can use to document such a determination.

B. The Managed Soil Must Be Less Than Reportable Concentrations (RCs).

This requirement is intended to ensure that the soil being excavated and relocated from a disposal site is not "Contaminated Soil" and therefore neither "Contaminated Media" nor "Remediation Waste" as those terms are defined in 310 CMR 40.0006[1].

310 CMR 40.0361 sets forth two reporting categories for soil (RCS-1 and RCS-2). Reporting Category RCS-1 applies to locations with the highest potential for exposure, such as residences, playgrounds and schools, and to locations within the boundaries of a groundwater resource area. Reporting Category RCS-2 applies to all other locations.

Note that the "applicable Reportable Concentrations" referred to in 310 CMR 40.0032(3) may be the RCS-1 or RCS-2 criteria, depending upon which category would apply to the soils being excavated *at the original disposal site location*, not the RCs applicable to the soils at the receiving location (see Section III.C. below).

> **EXAMPLE:** If soil is being excavated from a disposal site at an RCS-2 location and the soil contaminant concentrations are found to be less than the RCS-2 criteria, then the soil is not "Contaminated Soil" since the soil is less than the release notification threshold established for RCS-2 soil by 310 CMR 40.0300 and 40.1600. The RCS-2 soil in this example is not "Contaminated Soil" even if one or more constituent concentration is greater than an RCS-1 value.

Also, the language at 310 CMR 40.0032(3) specifies the *applicable* RCs. If a notification exemption (listed at 310 CMR 40.0317) applies to the OHM in soil at its original location, then the corresponding Reportable Concentration is not *applicable*. Thus 310 CMR 40.0032(3) should be read to apply to soils containing concentrations of oil or hazardous material ("OHM") less than the applicable RCs *or* covered by a notification exemption. This interpretation of the requirement is consistent with the definition of Contaminated Soil, which uses the term "notification threshold" rather than "Reportable Concentration."

[1] Contaminated Soil - means soil containing oil and/or hazardous material at concentrations equal to or greater than a release notification threshold established by 310 CMR 40.0300 and 40.1600.

Contaminated Media - means Contaminated Groundwater, Contaminated Sediment, Contaminated Soil, and/or Contaminated Surface Water.

Remediation Waste - means any Uncontainerized Waste, Contaminated Media, and/or Contaminated Debris that is managed pursuant to 310 CMR 40.0030. The term "Remediation Waste" does not include Containerized Waste.

C. The Managed Soil Must Not Create a Notifiable Condition at the Receiving Location.

This requirement is intended to prevent the creation of new reportable releases that must be subsequently assessed and remediated.

If the contaminant concentrations in the soil being relocated are less than the RCS-1 criteria, then placement of the soil in any RCS-1 location would not create a new notifiable condition. There are, however, conditions that could result in a notifiable condition.

First, if the soil is excavated from an RCS-2 location (as described in the example in Section III.B. above) with contaminant concentrations *between* the RCS-1 and RCS-2 criteria, then the placement of that soil at an RCS-1 receiving location would create a notifiable condition since one or more concentrations of OHM would then exceed the RCS-1 criteria in the RCS-1 receiving location.

Second, a notification exemption that applies to the original location of the soil may not apply to the receiving location. (For example, the lead paint exemption at 310 CMR 40.0317(8) is specific to "the point of application.") In cases where a notification exemption applies only to the original location, the managed soil must be evaluated solely based on whether its OHM concentrations exceed the applicable RCs at the receiving location.

D. The Managed Soil Must Not Be Significantly More Contaminated Than the Soil at the Receiving Location.

This requirement has been referred to as the "anti-degradation provision" although it is more accurately described as the "Similar Soils Provision." 310 CMR 40.00032(3)(b) requires that the concentrations of OHM at the receiving location not be "significantly lower" than the relocated soil OHM concentrations. One could also say that the provision requires that "there is no significant difference between the relocated soil and the soil at the receiving location," or that "the soils being brought to the receiving location are similar to what is already there." This requirement embodies several considerations.

First, as a general principle, M.G.L. c.21E is intended to clean up contaminated properties and leave them better than they started -- even to clean sites to background conditions, if feasible. It would be inconsistent with this principle to then raise the ambient levels of contamination in the environment as a consequence of a response action conducted under the MCP.

Second, despite the three other requirements (A. through C. above) of 310 CMR 40.0032(3), decisions about the movement of the managed soil will be based upon sampling of soil that is likely to have significant heterogeneity. The Similar Soils Provision is an additional measure to minimize the adverse effects of soil characterization that may not be representative of such heterogeneity.

Third, none of the criteria of 310 CMR 40.0032(3) address the question of whether the soil poses a *risk* in its original or receiving location, although the hazardous waste- and notification-related requirements seem to *imply* risk-based decision making. Put simply, soil that is not a hazardous waste and does not require notification may still pose incremental risk at the receiving location. The Similar Soils Provision is intended to ensure that the managed soil does not increase risk of harm to health, safety, public welfare or the environment at the receiving location, since it will be similar to what is already there.

The "not… significantly lower" language of 310 CMR 40.0032(3)(b) can be interpreted to mean either a quantitative "not statistically different" analysis, or a semi-quantitative, albeit somewhat subjective, approach. MassDEP does not believe that a statistics-driven quantitative approach is necessary when comparing managed soil to known or assumed background conditions, given (a) the relatively low concentrations at issue and (b) the cost of such an analysis, driven by the quantity of sampling needed to show a statistical difference.

The regulations imply that the LSP must have knowledge about the concentrations of OHM in the soil at the receiving location in order to apply the Similar Soils Provision. The regulations also imply that the new soil may contain concentrations of OHM that are *somewhat* higher than those levels at the receiving location – just not "significantly" higher.

MassDEP recognizes that there may be several approaches to address this "knowledge" issue when implementing the Similar Soils Provision of the MCP.

- **Assume the soils at the receiving location are natural background**. Sampling of the soil at the receiving location is not necessary if it is assumed that the concentrations of OHM there are consistent with natural background conditions. MassDEP acknowledges that there is a range of background levels, and that the concentrations at any given location may be lower than the statewide levels published by the Department[2], but the costs associated with determining site-specific background are not justified by likely differences. Further, the published "natural background" levels are similarly used in several areas of the MCP as an acceptable endpoint, including site delineation and the development of the MCP cleanup standards.

  Of course, routine due diligence about the receiving location may still reveal factors that would make the location inappropriate to receive the proposed fill material. Nothing in this guidance relieves any party of the obligation to conduct such due diligence and appropriately consider and act on information thereby obtained.

[2] *See* Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil (May, 2002) http://www.mass.gov/eea/docs/dep/cleanup/laws/backtu.pdf

- **Sample the soils at the receiving location**.
  The sampling plan should include a sufficient number of samples taken at locations selected to provide an understanding of the concentrations of OHM present and the distribution of OHM throughout the receiving location. In order to provide data appropriate for the Similar Soils comparison, the soil at the receiving location should be analyzed for constituents that are likely to be present there (e.g., naturally occurring metals) as well as any OHM known or likely to be present in the soil brought from the disposal site. If a receiving location has been adequately and comprehensively characterized, that data may then be used for comparison to the OHM concentrations in any subsequent soil deliveries - additional sampling is not required.

- **Provide Technical Justification for an Alternative Approach**
  There may be situations for which a different combination of analytical and non-analytical information available for both the source and receiving locations is sufficient to conclude that the nature and concentrations of OHM in the soils are not significantly different. Guidance on recognizing such conditions and the level of documentation that would be necessary to support such a technical justification is beyond the scope of this guidance.

Once the concentrations of OHM in the soils are known (or assumed consistent with this guidance), the LSP must compare the concentrations of the source and receiving locations and determine whether the concentrations at the receiving location are "significantly lower" than those in the soil proposed to be relocated from the disposal site. This comparison may be conducted in several ways, including analyses with appropriate statistical power and confidence. MassDEP has also developed a *rule-of-thumb* comparison to simplify this determination, as described in Section IV.

IV. Determining whether soils at the receiving location are "significantly lower" using a simplified approach

The simplified comparison shall be made using the *maximum* values of the OHM concentrations in both the soil at the receiving location and the soil proposed to be disposed of or reused, using discrete (not composite) samples.

Use of the maximum values is appropriate for several reasons. First, the provisions of 310 CMR 40.0032(3) include comparisons to Reportable Concentrations, and notification is triggered by any single value (i.e., maximum value) exceeding the RC. Second, soil is by its nature heterogeneous, and the use of maximum values is a means of minimizing sampling costs while addressing the expected variability of results. Third, if natural background levels are assumed at the receiving location, the MassDEP published background concentrations are upper percentile levels that are only appropriately compared to similar (e.g., maximum) values of the soil data set.

Note also that when using the maximum reported concentrations for comparison purposes, the typical or average concentration will be lower. This is important to recognize if/when the question of the risk posed by the soil is raised. For example, the RCS-1 and the Method 1 S-1 standard for arsenic are both 20 mg/kg. The Reportable Concentration is applied as a not-to-be-exceeded value, triggering the need to report the release and investigate further. However the S-1 standard is applied as an average value, considering exposure over time. At a location where the highest arsenic value found is less than 20 mg/kg, the average concentration would be well below the Method 1 S-1 standard.

The maximum concentration in the soil at the receiving location may be less than that in the proposed disposed/reused soil by some amount and not be considered "significantly lower." The question is how much lower is "significantly lower"? In this guidance, MassDEP establishes a multiplying factor to be applied to the concentration in the soil at the receiving location. The multiplying factor varies depending upon the concentration in the soil at the receiving location, as shown in Table 1.

Table 1. Receiving Soil Concentration Multiplying Factors

If the concentration in soil at the receiving location for a given OHM is:	Then use a multiplying factor of:
< 10 mg/kg	10
10 mg/kg ≤ *x* <100 mg/kg	7.5
100 mg/kg ≤ *x* <1,000 mg/kg	5
≥ 1,000 mg/kg	2.5

EXAMPLE: The soil at a receiving location that is considered RCS-1 is appropriately sampled and the maximum concentration of silver is found to be 6 mg/kg. Using Table 1, the concentration of silver at the receiving location would not be considered "significantly lower" than *10 x 6 mg/kg = 60 mg/kg*. Since 60 mg/kg is less than the silver RCS-1 value of 100 mg/kg, soil containing a maximum concentration that is less than 60 mg/kg silver could be reused at this location.

EXAMPLE: The soil at a receiving location that is considered RCS-1 is assumed to be consistent with natural background. The MassDEP published natural background level for arsenic is 20 mg/kg. Using Table 1, the concentration of arsenic at the receiving location would not be considered "significantly lower" than *7.5 x 20 mg/kg = 150 mg/kg*. However, since 150 mg/kg is greater than the arsenic RCS-1 value of 20 mg/kg, only soil containing a maximum concentration that is less than 20 mg/kg arsenic could be reused at this location. [The managed soil must not create a notifiable condition at the receiving location, see Section III.C. above.]

> **EXAMPLE:** The soil at a receiving location that is considered RCS-2 is assumed to be consistent with natural background. The MassDEP published natural background level for benzo[a]anthracene is 2 mg/kg. Using Table 1, the concentration of benzo[a]anthracene at the receiving location would not be considered "significantly lower" than *10 x 2 mg/kg = 20 mg/kg*. Since 20 mg/kg is less than the benzo[a]anthracene RCS-2 value of 40 mg/kg, soil containing a maximum concentration that is less than 20 mg/kg benzo[a]anthracene could be reused at this location. [Note that due to the lower reportable concentration, RCS-1 receiving locations could only accept soil containing less than 7 mg/kg benzo[a]anthracene.]

The multiplying factors in Table 1 and the MassDEP published natural background levels can be used to establish concentrations of OHM in soil that would be acceptable for reuse at an RCS-1 receiving location, consistent with the requirements of 310 CMR 40.0032(3). Table 2 lists such concentrations. Note that soil that meets the criteria in Table 2 could be re-used at *any* location (RCS-1 or RCS-2). Similarly, Table 3 lists concentrations of OHM in soil that would be acceptable for reuse at an RCS-2 receiving location (but *not* RCS-1 locations).

If a chemical is not listed on these tables, then MassDEP has not established a natural background concentration[3]. This guidance is limited to the use of only MassDEP-published statewide background concentrations. Therefore an alternative approach, such as sampling the receiving location and comparing maximum reported concentrations, would be appropriate to meet the requirements of 310 CMR 40.0032(3).

[3] For example, MassDEP has not established natural background levels for PCBs, volatile organic compounds (VOCs) or petroleum-related constituents.

Table 2.
Limits to the Concentration of OHM In Soil for Re-Use
Assuming Natural Background Conditions at an RCS-1 Receiving Location
NOTE: THIS TABLE WILL BE REVISED IN THE FALL OF 2013 TO REFLECT RCS-1 REVISIONS

OIL OR HAZARDOUS MATERIAL	Concentration In "Natural" Soil mg/kg	Rule-of-Thumb Multiplier	Multiplied Value mg/kg	RCS-1 mg/kg	Limiting[1] Soil Concentration mg/kg	
ACENAPHTHENE	0.5	10	5	4	<	4
ACENAPHTHYLENE	0.5	10	5	1	<	1
ALUMINUM	10,000	2.5	25000		<	25000
ANTHRACENE	1	10	10	1000	<	10
ANTIMONY	1	10	10	20	<	10
ARSENIC	20	7.5	150	20	<	20
BARIUM	50	7.5	375	1000	<	375
BENZO(a)ANTHRACENE	2	10	20	7	<	7
BENZO(a)PYRENE	2	10	20	2	<	2
BENZO(b)FLUORANTHENE	2	10	20	7	<	7
BENZO(g,h,i)PERYLENE	1	10	10	1000	<	10
BENZO(k)FLUORANTHENE	1	10	10	70	<	10
BERYLLIUM	0.4	10	4	100	<	4
CADMIUM	2	10	20	2	<	2
CHROMIUM (TOTAL)	30	7.5	225	30	<	30
CHROMIUM(III)	30	7.5	225	1000	<	225
CHROMIUM(VI)	30	7.5	225	30	<	30
CHRYSENE	2	10	20	70	<	20
COBALT	4	10	40		<	40
COPPER	40	7.5	300		<	300
DIBENZO(a,h)ANTHRACENE	0.5	10	5	0.7	<	0.7
FLUORANTHENE	4	10	40	1000	<	40
FLUORENE	1	10	10	1000	<	10
INDENO(1,2,3-cd)PYRENE	1	10	10	7	<	7
IRON	20,000	2.5	50000		<	50000
LEAD	100	5	500	300	<	300
MAGNESIUM	5,000	2.5	12500		<	12500
MANGANESE	300	5	1500		<	1500
MERCURY	0.3	10	3	20	<	3
METHYLNAPHTHALENE, 2-	0.5	10	5	0.7	<	0.7
NAPHTHALENE	0.5	10	5	4	<	4
NICKEL	20	7.5	150	20	<	20
PHENANTHRENE	3	10	30	10	<	10
PYRENE	4	10	40	1000	<	40
SELENIUM	0.5	10	5	400	<	5
SILVER	0.6	10	6	100	<	6
THALLIUM	0.6	10	6	8	<	6
VANADIUM	30	7.5	225	600	<	225
ZINC	100	5	500	2500	<	500

[1] Concentration of OHM in soil must be LESS THAN (not equal or greater than) this value.

Table 3.
Limits to the Concentration of OHM In Soil for Re-Use
Assuming Natural Background Conditions at an RCS-2 Receiving Location
NOTE: THIS TABLE WILL BE REVISED IN THE FALL OF 2013 TO REFLECT RCS-2 REVISIONS

OIL OR HAZARDOUS MATERIAL	Concentration In "Natural" Soil mg/kg	Rule-of-Thumb Multiplier	Multiplied Value mg/kg	RCS-2 mg/kg	Limiting[1] Soil Concentration mg/kg	
ACENAPHTHENE	0.5	10	5	3000	<	5
ACENAPHTHYLENE	0.5	10	5	10	<	5
ALUMINUM	10,000	2.5	25000		<	25000
ANTHRACENE	1	10	10	3000	<	10
ANTIMONY	1	10	10	30	<	10
ARSENIC	20	7.5	150	20	<	20
BARIUM	50	7.5	375	3000	<	375
BENZO(a)ANTHRACENE	2	10	20	40	<	20
BENZO(a)PYRENE	2	10	20	4	<	4
BENZO(b)FLUORANTHENE	2	10	20	40	<	20
BENZO(g,h,i)PERYLENE	1	10	10	3000	<	10
BENZO(k)FLUORANTHENE	1	10	10	400	<	10
BERYLLIUM	0.4	10	4	200	<	4
CADMIUM	2	10	20	30	<	20
CHROMIUM (TOTAL)	30	7.5	225	200	<	200
CHROMIUM(III)	30	7.5	225	3000	<	225
CHROMIUM(VI)	30	7.5	225	200	<	200
CHRYSENE	2	10	20	400	<	20
COBALT	4	10	40		<	40
COPPER	40	7.5	300		<	300
DIBENZO(a,h)ANTHRACENE	0.5	10	5	4	<	4
FLUORANTHENE	4	10	40	3000	<	40
FLUORENE	1	10	10	3000	<	10
INDENO(1,2,3-cd)PYRENE	1	10	10	40	<	10
IRON	20,000	2.5	50000		<	50000
LEAD	100	5	500	300	<	300
MAGNESIUM	5,000	2.5	12500		<	12500
MANGANESE	300	5	1500		<	1500
MERCURY	0.3	10	3	30	<	3
METHYLNAPHTHALENE, 2-	0.5	10	5	80	<	5
NAPHTHALENE	0.5	10	5	40	<	5
NICKEL	20	7.5	150	700	<	150
PHENANTHRENE	3	10	30	1000	<	30
PYRENE	4	10	40	3000	<	40
SELENIUM	0.5	10	5	800	<	5
SILVER	0.6	10	6	200	<	6
THALLIUM	0.6	10	6	60	<	6
VANADIUM	30	7.5	225	1000	<	225
ZINC	100	5	500	3000	<	500

[1] Concentration of OHM in soil must be LESS THAN (not equal or greater than) this value.

V. Sampling Considerations

The soil proposed for disposal/re-use should be sampled at sufficient and adequately distributed locations so that the concentrations of the contaminants of concern in the soil are adequately characterized. This includes sampling for the purpose of MCP site assessment and sampling to characterize the soil in any given stockpile/shipment leaving the site. The factors listed below should be considered when developing and implementing such a sampling plan. Evaluation of release, source, and site specific conditions assist in developing the basis for the selection of field screening techniques, sampling methodologies, sampling frequencies, and the contaminants of concern (e.g., analytical parameters) used to characterize the soil. These include, but are not necessarily limited to the following:

- the type(s) and likely constituents known or suspected to be in the soil;
- current and former site uses, past incidents involving the spill or release of OHM, and past and present management practices of OHM at the site;
- the potential for the soil to contain listed hazardous waste or to be a characteristic hazardous waste;
- the presence or likelihood of any other OHM (e.g., chlorinated solvents, metals, polychlorinated biphenyls (PCBs), semi-volatile organic compounds (SVOCs) , halogenated volatile organic compounds (VOCs));
- visual/olfactory observations, field screening, analytical data, and/or in-situ pre-characterization data;
- soil matrix type - naturally occurring soil or fill/soil mixtures (e.g., homogeneous or heterogeneous soil conditions);
- the identification and segregation of discrete "hot spots";
- the concentration variability in the soil;
- the volume of soil;
- the current and likely future exposure potential at the receiving location, including the potential for sensitive receptors, such as young children, to contact the soil (for example, more extensive sampling of the stockpiles would be warranted for soil slated to be moved to a residential setting than for soil being moved to a secure, low-exposure potential regulated receiving facility); and
- any sampling requirements stipulated by the receiving location.

The assessment of the soil, including the nature and concentrations of OHM therein, is a component of the MCP site assessment and therefore must meet all applicable performance standards, including those for environmental sample collection, analysis and data usability[4]. The assessment should address the precision, accuracy, completeness, representativeness, and comparability of the sampling and analytical results used to determine whether the soil

[4] Additional guidance on data usability is available in Policy #WSC-07-350, MCP Representativeness Evaluations and Data Usability Assessments. http://www.mass.gov/eea/docs/dep/cleanup/laws/07-350.pdf

stockpiles meet the Similar Soils Provision requirements. The representativeness of any site assessment sampling data if used to characterize contaminant concentrations in soil to be moved and reused offsite should be carefully evaluated. Additional guidance on soil sampling considerations is available from U.S. EPA and other state environmental agencies.[5]

VI. Segregation and Management of Soils of Different Known Quality

Soil containing concentrations of OHM equal to or greater than the values listed in Table 3 cannot be managed using the streamlined approach described in this guidance. Such soil must be managed in a manner consistent with its regulatory classification, which may include management as a hazardous waste, as a remediation waste, or under a case-specific Similar Soils determination.

Segregation of soil of different quality should occur based upon *in-situ* pre-characterization sampling results. Stockpiles of soil are mixtures that would require more extensive sampling to document the effectiveness of any attempted post-excavation segregation.

The known presence of soil that exceeds the Table 3 concentrations and the subsequent segregation of soil is one factor that would indicate the need for more frequent sampling (at least in that area of soil excavation) as described in Section V.

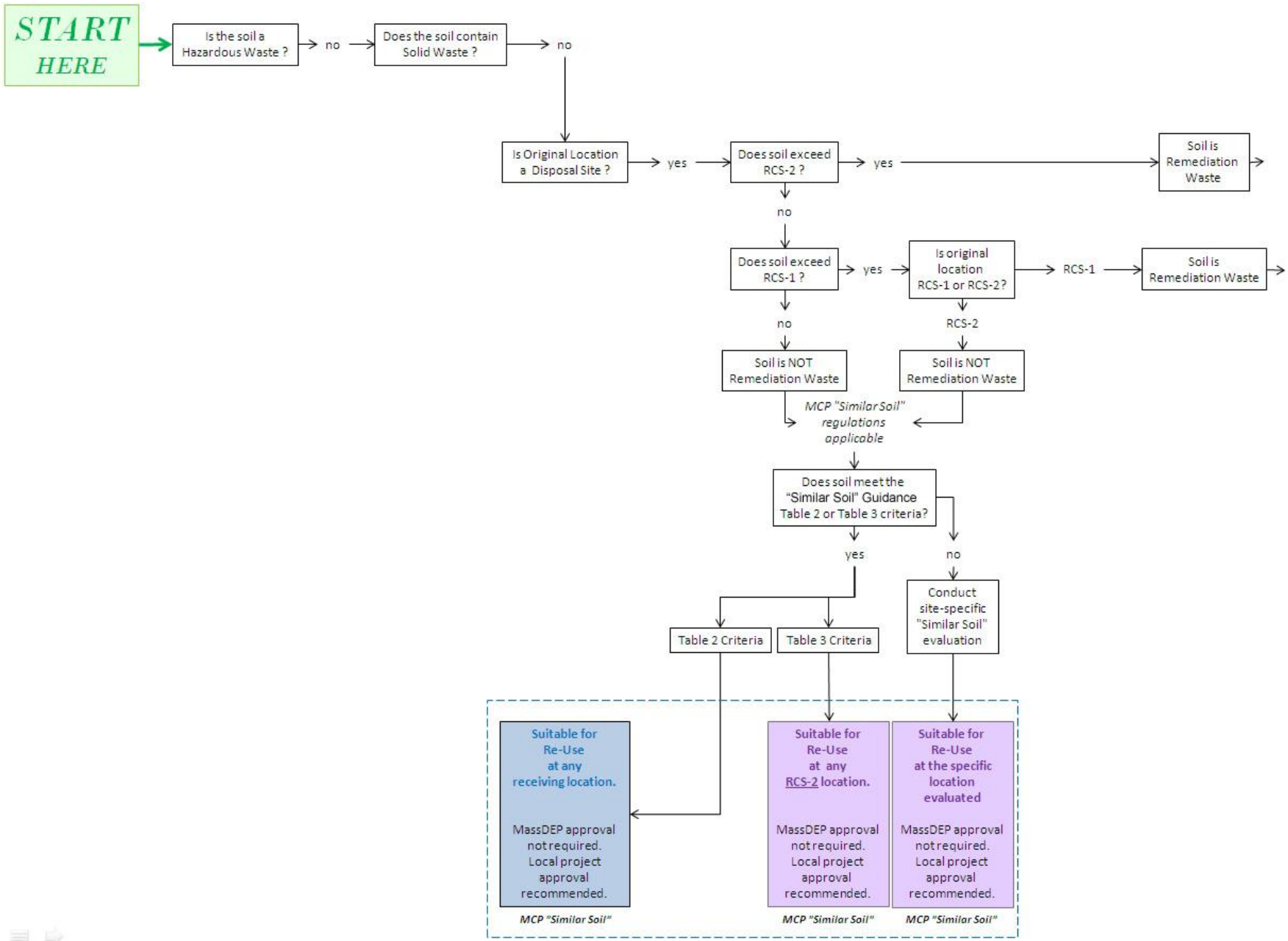
[5] Note that the guidance below are not specific to MGL Chapter 21E disposal sites and may not reflect MCP-specific considerations to determine the suitability of soils for offsite transport and use, such as for residential and other S-1 locations.

NJDEP. 2011. Alternative and Clean Fill Guidance for SRP Sites.
New Jersey Department of Environmental Protection Site Remediation Program
http://www.state.nj.us/dep/srp/guidance/srra/fill_protocol.pdf

USEPA. 1992. Supplemental Guidance to RAGS: Calculating the Concentration Term.
Office of Solid Waste and Emergency Response (OSWER), Washington, DC
http://www.epa.gov/oswer/riskassessment/pdf/1992_0622_concentrationterm.pdf

USEPA. 1995. Superfund Program Representative Sampling Guidance Volume 1: Soil.
OSWER. Washington, DC.
(Note that guidance for determining the number of samples for statistical analysis is addressed in Section 5.4.1).
http://www.epa.gov/tio/download/char/sf_rep_samp_guid_soil.pdf

Attachment 1 – Similar Soil Flowchart



Attachment G

Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil

Massachusetts Department of ENVIRONMENTAL PROTECTION

t e c h n i c a l u p d a t e

Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil

Updates: Section 2.3 *Guidance for Disposal Site Risk Characterization – In Support of the Massachusetts Contingency Plan* (1992)

Discussion

Polycyclic Aromatic Hydrocarbons ("PAHs") are ubiquitous and consistently present in the environment and are typically formed during the incomplete burning of organic material including wood, coal, oil, gasoline and garbage. PAHs are also found in crude oil, coal tar, creosote and asphalt. Historically, PAHs have been associated with human activities such as cooking, heating homes and industries and fuel for operating automobiles, although low levels of PAHs are also present in the environment from natural sources, such as forest fires. Their presence in the environment at higher concentrations is an artifact of habitation and is due to the widespread practice of emptying fireplaces, stoves, boilers, garbage, etc. in rural and urban areas over the past several hundred years. As a result, it is very common to detect "background" levels of PAHs in soils. Metals are both naturally occurring and found in man-made materials (such as paint, fuel, fertilizers and pesticides) widely distributed in the environment. Naturally occurring metals present in wood and coal are often found concentrated in ash residue.

DEP has obtained background data from various sources documenting the concentrations of PAHs and metals in soil affected by human activities, particularly soil associated with wood ash and coal ash. These levels are representative of typical concentrations found in areas with fill material, *not* pristine conditions. DEP has also compiled background soil data for metals that are representative of undisturbed, natural conditions.

The identification of generic values for PAHs and metals in soil is intended to streamline the risk characterization process (310 CMR 40.0900) and determination of applicable Response Action Outcome Category (310 CMR 40.1000). Nothing in this Technical Update obviates the need to establish location-specific background conditions for other purposes, such as compliance with the anti-degradation provisions of the Massachusetts Contingency Plan ("MCP") described at 310 CMR 40.0032(3).

Definition of Background (310 CMR 40.0006)

Background means those levels of oil and hazardous material that would exist in the absence of the disposal site of concern which are either:

(a) ubiquitous and consistently present in the environment at and in the vicinity of the disposal site of concern; and attributable to geologic or ecological conditions, or atmospheric deposition of industrial process or engine emissions;
(b) attributable to coal ash or wood ash associated with fill material;
(c) releases to groundwater from a public water supply system; or
(d) petroleum residues that are incidental to the normal operation of motor vehicles.

Basis of the Background Levels for Soil

The background levels were selected following an analysis of several datasets, including:

- Data (30-140 samples) collected to represent background at c.21E sites located in non-urban areas, gathered from a review of DEP files,
- Site-specific background samples generated for locations in Worcester (68 samples) and Watertown (17 samples),
- Data (750-1,000 samples) collected by Mass Highway Department as part of the Central Artery/Tunnel (CA/T) project and presented in a draft document *Background Soil Contaminant Assessment* (CDM, April 1996),
- Data (590 natural soil samples from depths of 10 to 70 feet) collected by Haley & Aldrich, Inc. in the Boston Area
- Preliminary data compiled by the Massachusetts Licensed Site professional Association from background data submitted by its members,
- Published data (62 samples) from ENSR, Inc. from 3 New England locations, and
- Generic background data published by the Agency for Toxic Substances and Disease Registry (ATSDR).

There is not one concentration of a chemical, of course, which can correctly be labeled ***the*** background level. Hundreds of years of human activities have only broadened the naturally occurring range of concentrations reported as "background", and this range is best thought of as a statistical distribution. In the evaluation of environmental contamination, we often select point values from the range of background levels, and consider these to be representative of background. The use of such point-value "background" levels is essentially a short-cut method that allows consideration of background in the absence of site-specific information. The intent of DEP policy is to protect public health while minimizing the routine site-specific determinations at sites in the statewide cleanup program.

"Natural" Soil

- Generally, the 90th percentile value from the MA DEP 1995 dataset was the point-value identified as background.
- In the absence of data in the MA DEP 1995 dataset, a lower percentile value from the CDM 1996 dataset was chosen as background.

Soil Containing Fill Material

- Generally, the 90th percentile value from the CDM 1996 dataset was point-value identified as background.
- In the absence of data in the CDM 1996 dataset, the 90th percentile value from the "natural" soil (MA DEP, 1995) dataset was chosen as background.

Applicability of the Values Listed in Table 1

Table 1 presents two lists of background concentrations: one for use with natural soils, and the second for use with soils containing either coal ash or wood ash associated with fill material, or other material consistent with the regulatory definition of background. The list for use with natural soils may be compared to site soil concentrations with no site-specific justification. The use of the list for soil containing fill material must be accompanied by documentation that the soil at the site does, in fact, contain coal ash or wood ash associated with fill material (or other material consistent with the regulatory definition of background). Such documentation may include information about the site history, soil strata, physical evidence or visual observations (including microscopic).

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Elevated chemical concentrations and/or and urban setting are not, *per se*, sufficient evidence to justify use of the higher background levels.

Comparison of Site Concentrations to the Background Levels for Soil

Section 2.3 of the DEP's *Guidance for Disposal Site Risk Characterization – In Support of the Massachusetts Contingency Plan* (1995) describes the use of DEP-published generic background values. If the site investigation indicates the presence of fill material in the soil, and *all* reported concentrations of an oil or hazardous material ("OHM") fall below the applicable value published in Table 1, then it may concluded that the OHM is present at background concentrations. In other words, the values published in Table 1 are to be compared to the maximum reported concentration at the site. This Technical Update does not modify or change this comparison.

Table 1 lists background levels for "natural" soil and for soil containing coal ash and wood ash associated with fill material. A detailed summary of the data is attached in Appendix A. The applicability of these background concentrations to a site should be determined based upon the presence or absence of fill material containing coal ash or wood ash. If all contaminant concentrations are found to be equal to or less than the applicable background concentrations, a Class A-1 Response Action Outcome may be an option at the site, and no Activity and Use Limitation is required.

Background Concentrations Different Than The MADEP-Published Values

Appendix A describes the wide ranges seen in the distributions of background concentrations. MADEP's choice of point values within these ranges balances the need to eliminate background chemicals from the risk assessment with the need to retain for evaluation those chemicals whose presence is related to the disposal practices at the site.

It is inevitable that at some sites the use of the values listed in Table 1 will incorrectly require the assessment of some "true" background concentrations of OHM at the high end of the background range. Conversely, some chemicals that *are* related to the disposal practices at a site (and are not background) will be screened out of the risk assessment by the use of the Table 1 concentrations. The goal is to minimize **both** kinds of error.

In many cases, additional information about the location of the site, the nature of the soils or the known or suspected disposal practices may be used to justify the application of different literature values or site-specific background information. DEP's adoption of the generic, statewide values presented in this Technical Update does not negate the validity of site-specific background information, when such information is available and of appropriate data quality. The level of effort necessary for such a justification will depend on the specific circumstances. For example, such a justification would be straightforward for elevated arsenic concentrations in soil at a gasoline-release site in an area of the state known to have geological formations rich in arsenic. The level of effort would be significantly higher at a tannery site in the same area due to the facility's historic use of arsenic. Similarly, the presence of elevated chromium or barium concentrations in marine clay deposits could generally be attributable to natural background absent known or suspected sources of the chemical at the site.

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Minimizing Exposure to Soils Containing Elevated Background Material and/or Material Exempt from M.G.L. c.21E

As discussed in this Technical Update, M.G.L. Chapter 21E and the Massachusetts Contingency Plan (the statute and regulations) do not require remediation of chemicals present at levels consistent with background, even if such concentrations would otherwise pose a significant risk of harm to health, safety, public welfare or the environment. The statute also exempts several other environmental conditions (such as lead from lead paint or gasoline and pesticides applied according to their label) that could pose a Significant Risk.

While such conditions are not subject to regulation by DEP, the Department encourages parties to mitigate potential exposures whenever possible. Such mitigation measures could include:

- providing clean soil (down to a depth of 3 feet) in residential settings, and
- providing clean corridors for utility lines.

For Further Information

For further information about this Technical Update, please contact Paul W. Locke, Massachusetts Department of Environmental Protection, One Winter Street, Boston, MA 02108, telephone: (617) 556-1052, email: Paul.Locke@state.ma.us.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Polycyclic Aromatic Hydrocarbons (PAHs) (Update) August, 1995.

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Table 1.

MADEP Identified Background Levels in Soil

OIL OR HAZARDOUS MATERIAL	Concentration in "Natural" Soil mg/kg	Concentration in Soil Containing Coal Ash or Wood Ash Associated With Fill Material mg/kg
ACENAPHTHENE[2]	0.5	2
ACENAPHTHYLENE[2]	0.5	1
ANTHRACENE[2]	1	4
ALUMINUM[1]	10,000	10,000
ANTIMONY	1	7
ARSENIC	20	20
BARIUM[1]	50	50
BENZO(a)ANTHRACENE[2]	2	9
BENZO(a)PYRENE[2]	2	7
BENZO(b)FLUORANTHENE[2]	2	8
BENZO(g,h,i)PERYLENE[2]	1	3
BENZO(k)FLUORANTHENE[2]	1	4
BERYLLIUM	0.4	0.9
CADMIUM	2	3
CHROMIUM (TOTAL)	30	40
CHROMIUM(III)	30	40
CHROMIUM(VI)	30	40
CHRYSENE[2]	2	7
COBALT[1]	4	4
COPPER	40	200
DIBENZO(a,h)ANTHRACENE[2]	0.5	1
FLUORANTHENE[2]	4	10
FLUORENE[2]	1	2
INDENO(1,2,3-cd)PYRENE[2]	1	3
IRON[1]	20,000	20,000
LEAD	100	600
MAGNESIUM[1]	5,000	5,000
MANGANESE[1]	300	300
MERCURY	0.3	1
METHYLNAPHTHALENE, 2-[2]	0.5	1
NAPHTHALENE[2]	0.5	1
NICKEL	20	30
PHENANTHRENE[2]	3	20
PYRENE[2]	4	20
SELENIUM	0.5	1
SILVER	0.6	5
THALLIUM	0.6	5
VANADIUM[1]	30	30
ZINC	100	300

(Values rounded to one significant figure.)

[1] In the absence of fill-specific data, the "natural" soil value has been adopted.

[2] In the absence of data specific to "natural" soil, a lower percentile value from the fill data set has been adopted.

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Levels of PAHs and Metals in Soil from Various Datasets

Appendix A - Detailed Data Summary

	Number of Samples	Geometric Mean or Median mg/kg	Minimum mg/kg	50th mg/kg	90th mg/kg	95th mg/kg	Maximum mg/kg
			<---------- PERCENTILES ---------->				
Total PAHs							
CA/T Project	873	2.7	0.08	2.6	92	230	3000
ENSR - Urban Soils	62	10.97	2.292				167
Total Carcingenic PAHs							
CA/T Project	873	1.5	0.022	1.1	42	95	1200
ENSR - Urban Soils	62	4.86	0.68				78
Total Noncarcinogenic PAHs							
CA/T Project	873	1.9	0.08	1.6	54	140	1900
ENSR - Urban Soils	62	6.11	1.612				89
Acenaphthene							
CA/T Project	868	0.18	0.024	0.18	1.9	4.1	42
Med City/Mill Brook	67	NC	ND (64)	NC	NC	NC	1.7
ENSR - Urban Soils	62	0.128	ND (32)				3.4
Acenaphthylene							
CA/T Project	869	0.17	0.037	0.17	1	1.9	10
Med City/Mill Brook	67	NC	ND (65)	NC	NC	NC	0.76
ENSR - Urban Soils	62	0.133	ND (38)				1.1
Anthracene							
CA/T Project	872	0.2	0.033	0.2	3.8	10	130
Med City/Mill Brook	68	NC	ND (52)	NC	0.592	1.2	3.4
ENSR - Urban Soils	62	0.184	ND (8)				5.7
Benzo[a]pyrene							
CA/T Project	873	0.3	0.031	0.3	7.4	17	230
LSPA Project	489	0.44	ND (220)	0.44	15.3	NC	222
Watertown	17	0.95	0.6	NC	3.39	4.77	6.08
Med City/Mill Brook	67	NC	ND (43)	NC	2.02	3.3	9.7
ENSR - Urban Soils	62	0.686	ND (5)				13
ATSDR Range:			0.165				0.22
Benzo[a]anthracene							
CA/T Project	872	0.33	0.045	0.33	8.5	19	250
LSPA Project	490	0.563	ND (206)	0.563	17.6	NC	796
Watertown	17	0.411	0.021	0.48	2.52	6.04	6.05
Med City/Mill Brook	68	NC	ND (38)	NC	2.39	3.8	15
ENSR - Urban Soils	62	0.672	ND (4)				15
ATSDR Range:			0.169				59
Benzo[b]fluoranthene							
CA/T Project	873	0.68	0.045	0.4	8.4	18	270
LSPA Project	486	NC	ND (258)	NC	11	NC	250
Watertown	17	1.4	0.6	0.6	6.78	6.79	7.08
ENSR - Urban Soil	62	0.722	ND (7)				12
ATSDR Range:			15				62

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Appendix A - Detailed Data Summary

	Number of Samples	Geometric Mean or Median mg/kg	Minimum mg/kg	50th mg/kg	90th mg/kg	95th mg/kg	Maximum mg/kg
			<---------- PERCENTILES ---------->				
Benzo[g,h,i]perylene							
CA/T Project	871	0.2	0.045	0.2	3.1	7.7	77
Med City/Mill Brook	67	NC	ND (52)	NC	1.2	1.41	5.2
ENSR - Urban Soil	62	0.461	ND (26)				5.9
ATSDR Range:			0.9				47
Benzo[k]fluoranthene							
CA/T Project	869	0.21	0.045	0.21	4	9.7	150
LSPA Project	475	NC	ND (289)	NC	11.4	NC	110
Watertown	17	0.502	0.065	0.406	3.35	4.47	5.13
ENSR - Urban Soil	62	0.834	ND (3)				25
ATSDR Range:			0.3				26
Chrysene							
CA/T Project	873	0.35	0.022	0.35	7.3	18	240
LSPA Project	490	0.59	ND (204)	0.59	20.3	NC	420
Watertown	17	0.32	0.016	0.404	4.55	5.06	6.6
Med City/Mill Brook	68	NC	ND (42)	NC	2.1	3.6	14
ENSR - Urban Soil	62	0.844	ND (2)				21
ATSDR Range:			0.251				0.64
Dibenzo[a,h]anthracene							
CA/T Project	866	0.17	0.045	0.17	1.1	2.1	39
Watertown	17	0.195	0.155	NC	0.494	0.604	0.64
Med City/Mill Brook	68	NC	ND (65)	NC	NC	NC	1.6
ENSR - Urban Soils	62	0.245	ND (30)				2.9
Fluoranthene							
CA/T Project	873	0.89	0.035	0.61	14	33	490
Med City/Mill Brook	68	NC	ND (32)	0.376	4.2	11	40
ENSR - Urban Soils	62	1.38	ND (2)				39
ATSDR Range:			0.2				166
Fluorene							
CA/T Project	873	0.18	0.028	0.18	2.3	5.5	79
Med City/Mill Brook	68	NC	ND (65)	NC	NC	NC	2
ENSR - Urban Soils	62	0.141	ND (27)				3.3
Indeno[1,2,3-cd]pyrene							
CA/T Project	871	0.2	0.022	0.2	2.8	7	100
LSPA Project	475	NC	ND (304)	NC	6.3	NC	130
Watertown	17	1.752	1.2	NC	5.64	6.2	7.2
Med City/Mill Brook	68	NC	ND (50)	NC	1.5	2	6
ENSR - Urban Soil	62	0.532	ND (19)				6
ATSDR Range:			8				61
2-Methylnaphthalene							
CA/T Project	789	0.15	0.03	0.15	0.96	2.2	13
Med City/Mill Brook	68		ND (67)	NC	NC	NC	0.77
ENSR - Urban Soil	62	0.121	ND (43)				0.64

Levels of PAHs and Metals in Soil from Various Datasets
Appendix A - Detailed Data Summary

	Number of Samples	Geometric Mean or Median mg/kg	Minimum mg/kg	50th mg/kg	90th mg/kg	95th mg/kg	Maximum mg/kg
			<---------- PERCENTILES ---------->				
Naphthalene							
CA/T Project	867	0.17	0.016	0.17	1.4	3	28
Med City/Mill Brook	68	NC	ND (65)	NC	NC	NC	1.9
ENSR - Urban Soils	62	0.0917	ND (27)				0.66
Phenanthrene							
CA/T Project	873	0.8	0.029	0.47	15	38	480
Med City/Mill Brook	68	NC	ND (38)	NC	2.7	5.6	16
ENSR - Urban Soils	62	0.788	ND (1)				36
Pyrene							
CA/T Project	873	0.89	0.034	0.61	16	35	440
Med City/Mill Brook	68	NC	ND (32)	0.343	4.29	9	30
ENSR - Urban Soil	62	1.54	ND (1)				11
ATSDR Range:			0.145				147
Aluminum							
DEP 1995	30	5536	387	7800	13000	16000	24000
Antimony							
DEP 1995	90	0.2	ND (0.002)	0.34	1.4	4.8	22
CA/T Project	746	NC	0.25	1	7	12	160
Arsenic							
DEP 1995	139	4.7	ND (0.1)	4.8	16.7	24.5	99
CA/T Project	754	5.3	0.25	5.4	14	21	99
H&A 2001	589	5.5	ND	5.57	11	12.9	23
Barium							
DEP 1995	64	15	0.42	15.7	45.2	52.8	104
H&A 2001	490	35	ND	35.7	80.9	89.3	680
Beryllium							
DEP 1995	103	0.21	0.03	0.23	0.39	0.53	1.6
CA/T Project	746	0.5	0.03	0.5	0.88	2	7.5
H&A 2001	22	0.5	ND	0.63	1.15	1.2	1.3
Cadmium							
DEP 1995	127	0.43	ND (0.01)	0.29	2.06	3.4	5.9
CA/T Project	756	0.5	0.1	0.5	3	5	25
H&A 2001	572	1.8	ND	1.26	1.63	1.63	3
Chromium							
DEP 1995	147	10.3	0.02	10.6	28.6	38.8	105
CA/T Project	756	13	1	15	39	50	530
H&A 2001	589	22	ND	22	43.9	49.6	94
Cobalt							
DEP 1995	10	0.8	ND (0.5)	NC	4.4	4.5	4.7
Copper							
DEP 1995	103	7.7	ND (0.5)	7.3	37.7	56.1	160
CA/T Project	742	34	1	30	170	320	5300
H&A 2001	22	26	6	27	47.5	64.5	130

Levels of PAHs and Metals in Soil from Various Datasets
Appendix A - Detailed Data Summary

		Number of Samples	Geometric Mean or Median mg/kg	Minimum mg/kg	50th mg/kg	90th mg/kg	95th mg/kg	Maximum mg/kg
				<---------- PERCENTILES ---------->				
Iron								
	DEP 1995	30	6031	444	7200	17000	22500	50000
Lead								
	DEP 1995	141	19.5	1	19.1	98.7	158	326
	CA/T Project	850	51	0.05	53	570	1100	11000
	LSPA Project	457	83	ND (5)	83	640	NC	10600
	H&A 2001	583	15	ND	24.4	78.9	112	300
Magnesium								
	DEP 1995	30	1028	ND (250)	1300	4900	6700	11000
Manganese								
	DEP 1995	30	81.5	ND (3)	110	300	365	460
Mercury								
	DEP 1995	107	0.043	ND (0.0002)	0.066	0.28	0.43	1.4
	CA/T Project	785	0.15	0.001	0.15	1.4	2.6	23
	H&A 2001	583	0.2	ND	0.19	0.74	1.1	2.5
Nickel								
	DEP 1995	103	4.6	ND (0.5)	5.1	16.6	22.7	48
	CA/T Project	740	14	1	14	31	41	220
	H&A 2001	22	34.5	5	35	67.5	70	101
Selenium								
	DEP 1995	93	0.1	ND (0.0005)	0.17	0.5	1	4.6
	CA/T Project	756	0.5	0.1	0.5	1	2.1	57
	H&A 2001	426	0.84	ND	0.74	1.36	1.58	2.8
Silver								
	DEP 1995	117	0.09	ND (0.003)	0.07	0.58	0.91	82
	CA/T Project	756	1	0.19	1	5	7.3	81
	H&A 2001	335	0.64	ND	NC	NC	NC	0.64
Thallium								
	DEP 1995	71	0.1	ND (0.005)	NC	0.6	1.65	5
	CA/T Project	734	NC	0.035	1	5	5	50
Vanadium								
	DEP 1995	30	7.6	ND (1)	10.3	28.5	38.5	46.6
Zinc								
	DEP 1995	112	29.3	3.52	27.7	116.4	131.2	190
	CA/T Project	746	84	5.8	73	340	590	5000
	H&A 2001	22	67	15	58.5	103	106	120

Attachment H

Directions to Site

90 Worcester, Mass to:29 Overlook Road Rutland Mass | Search

ex: pizza near NYC

Get Directions History

A Interstate 190, Worcester, MA
B 29 Overlook Rd, Rutland, MA 01543
Massachusetts 122A N/Main St — 12.6 mi, 23 mins

A Interstate 190, Worcester, MA

1. Head **north** on **I-190 N**
   1.7 mi
2. Take exit **4** for **MA-12** toward **West Boylston** (12)
   0.6 mi
3. Turn right onto **MA-12 S/W Boylston St**
   1.0 mi
4. Turn right onto **W Mountain St**
   0.6 mi
5. Continue onto **Doyle Rd**
   0.8 mi
6. Turn left onto **Shrewsbury St**
   0.8 mi
7. Slight left to stay on **Shrewsbury St**
   92 ft
8. Turn right onto **Massachusetts 122A N/ Main St**
   3.7 mi
9. Slight right onto **MA-68 N/Broad St** Continue to follow MA-68 N
   2.6 mi
10. Turn right onto **Wachusett St**

▼ Places
My Places
Sightseeing Tour
Make sure 3D Buildings layer is checked
Temporary Places

▼ Layers — Earth Gallery »
Primary Database
Borders and Labels
Places
Photos

Turn right onto Overlook Rd
Turn right onto Wachusett St
Turn right to stay on Overlook Rd
Quinapoxet Reservoir
Cournoyer Pond
Moulton Pond
Muschopauge Pond
Maple Spring Pond
Rutland
Slight right onto MA-68 N
Jefferson
Stump Pond
Eagle Lake
Holden
Pine Hill Reservoir
Kendall Reservoir
Bryant Pond
Oakdale
Thomas Basin
Lily Ponds
Edwards Pond
Gates Cove
West Boylston
Carrolls Pond
South Bay
Turkey Hill Pond
Streeter Pond
Slight left to stay on Shrewsbury St
Turn right onto Massachusetts 122A N
Turn left onto Shrewsbury St
Chaffin Pond
Take exit 4
Turn right onto MA-12 S
Continue onto Doyle Rd
Turn right onto W Mountain St
Head north on I-190 N
Asnebumskit Pond
Eames Pond
Paxton
Holden Reservoir Number One
Holden Reservoirs
Pool Pond
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Google earth
Imagery Date: 9/20/2010 42°19'14.52" N 71°45'06.49" W elev 432 ft
Eye alt 52190 ft

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