

CONSTRUCTION PHASE BEST MANAGEMENT PRACTICES OPERATION AND MAINTENANCE PLAN

For:

**PLANNED UNIT TOWNHOUSE DEVELOPMENT
TO BE KNOWN AS
WOODMERE AT BRUSH HILL**

Located:

**865 BRUSH HILL ROAD
(ASSESSORS MAP B 12, LOTS 8A, 8B & 2B)
MILTON MASSACHUSETTS 02186**

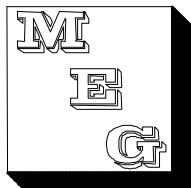
Submitted to:

TOWN OF MILTON

Prepared For:

**NORTHLAND RESIDENTIAL CORPORATION
20 MALL ROAD
SUITE 220
BURLINGTON, MASSACHUSETTS 01803**

MAY 13, 2015



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Construction Phase Best Management Practices (BMP's)

Erosion and Sedimentation will be controlled at the site by utilizing Structural Practices, Stabilization Practice, and Dust Control. These practices correspond with plans entitled "Planned Townhouse Unit Development, Woodmere At Brush Hill, 865 Brush Hill Road, Milton, Massachusetts" issued May 13, 2015 and as revised, hereinafter referred to as the Site Plans.

Responsible Party/ Developer Contact Information:

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Narrative:

Project Description:

The project proponent, Northland Residential Corporation (NRC), proposes to redevelop an approximate 8.36 acre parcel of land located at 865 Brush Hill Road in Milton, Massachusetts. The proposed Planned Unit Townhouse Development (PUTD) consists of thirty-six (36) residential units comprised of thirty-four (34) townhouse units and two (2) mansion units. The development will involve the construction of fourteen (14) residential buildings, the renovation of the "Duper House", an existing 2 1/2 story historic colonial building, approximately 1,500 linear feet of bituminous roadway, landscaping, stormwater management facilities, utility systems and associated infrastructure.

The parcel has frontage on Brush Hill Road to the southeast and is shown on the Milton Assessor's Maps as Lots 8A, 8B and 2B on Assessor's Map B12. The site is located within the Residence A Zoning District and is bordered by developed residential zoned property to the southwest (Cushing Road), developed residential property to the northeast (Dana Avenue), developed residential property to the northwest (Boston Housing Authority) and Brush Hill Road to the southeast. Refer to Figure 1- USGS Locus Map for the location of the parcel.

The project will require a connection to the municipal water system for water and fire services. Currently there is an existing 8" water main within Brush Hill Road at the site's frontage. The project will loop a proposed 8" water main from a connection within Brush Hill Road through the site to a connection to the existing 8" water main within Cushing Road. The looped water main should ensure that adequate flows and pressures will be maintained by adding redundancy to the system.

The project will also require a connection to the municipal sewer system for sanitary services. Currently there is an existing 8" sewer main within Brush Hill Road at the site's frontage. The wastewater generated from the project will be collected and conveyed by a proposed 8" gravity sewer system to the existing sewer collection system within Brush Hill Road. The proposed sewer main connection to the existing sewer system will be provided with a new sewer manhole within Brush Hill Road.

The proposed stormwater management system utilizes mechanical and natural Best Management Practices (BMPs) including four natural depression areas, one infiltration basin and three subsurface infiltration systems. The proposed stormwater management facilities were designed to attenuate peak flows generated by all storm events to ensure that post-development peak flows are contained on site and allow for recharge to groundwater.

Site Description:

The site presently is comprised of an existing approximate 6,155 s.f. building previously used as a rectory, surrounding landscaped grounds, accessory garage, access drive and remaining wooded areas. The site's topography consists of gentle to moderate slopes

ranging from approximately 0 to 20 percent with the majority of the runoff flowing towards the low lying areas on the site along its Brush Hill Road frontage.

The entire site is located within a Zone X, as shown on the current FEMA Flood Insurance Rate Map Panel No. 25021C 0201E with an effective date of July 17, 2012. Refer to Figure 2 – FEMA Flood Map.

Soils:

Soils information was obtained from the Natural Resources Conservation Service (NRCS) Survey of Plymouth County, Massachusetts. The soils on the site are classified as Hinckley, sandy loam, 8-15 percent slopes (245C, Hydrologic Soil Group (HSG) A); Merrimac, fine sandy loam, 0 to 3 percent slopes (254A, HSG A); Merrimac, fine sandy loam, 3 to 8 percent slopes (254B, HSG A); and Merrimac, urban land, 3 to 8 percent slopes (626B, HSG A). Refer to Figure 3 – NRCS Soils Map for a delineation of the boundaries of the soil with respect to the subject parcel.

Erosion and Sedimentation Control Practices:

Structural Practices:

- 1) **Sediment Silt Sock Controls** – A sediment silt sock barrier will be constructed along downward slopes at the limit of work in locations shown on the plans. This control will be installed prior to major soil disturbance on the site. The sediment silt sock should be installed as shown on the Erosion Control Detail Plan.

Sediment Silt Sock Design/Installation Requirements

- a) Locate the silt sock where identified on the plans.
- b) The silt sock line should be nearly level through most of its length to impound a broad, temporary pool. The last 10 to 20 feet at each end of the silt sock should be swung slightly uphill (approximately 0.5 feet in elevation) to provide storage capacity.
- c) The silt sock shall be staked every 8 linear feet with 1-inch by 1-inch stakes.
- d) Sediment silt socks should be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized through one growing season. Retained sediment must be removed and properly disposed of, or mulched and seeded.

Sediment Silt Sock Inspection/Maintenance

- a) Silt socks should be inspected immediately after each rainfall event of 1-inch or greater, and at least daily during prolonged rainfall. Inspect the depth of

sediment, fabric tears, and to see that the stakes are firmly in the ground. Repair or replace as necessary.

- b) Remove sediment deposits promptly after storm events to provide adequate storage volume for the next rain and to reduce pressure on the sock. Sediment will be removed from behind the silt sock when it becomes about $\frac{1}{2}$ foot deep at the silt sock. Take care to avoid undermining the sock during cleanout.
- c) If the fabric tears, decomposes, or in any way becomes ineffective, replace it immediately.
- d) Remove staking only after the contributing drainage areas have been properly stabilized. Sediment deposits and silt sock materials remaining after stakes have been removed should be graded to conform to the existing topography and vegetated.

2) **Sediment Fence Controls** – A sediment fence will be constructed along the limit of work as needed to prevent the spreading of fine sediments from the site. This control will be installed prior to major soil disturbance on the site. The sediment fence should be installed as shown on the Erosion Control Detail Plan and be Amoco woven polypropylene 1198 or equivalent.

Sediment Fence Design/Installation Requirements

- a) Locate the fence upland of the hay bale barriers and where identified on the plans.
- b) The fence line should be nearly level through most of its length to impound a broad, temporary pool. The last 10 to 20 feet at each end of the fence should be swung slightly uphill (approximately 0.5 feet in elevation) to provide storage capacity.
- c) Excavate a trench approximately 8 inches deep and 4 inches wide, or a V-trench; along the line of the fence, upslope side.
- d) Fasten support wire fence (14 gauge with 6-inch mesh) securely to the upslope side of the fence posts with wire ties or staples. Wire should extend 6 inches into the trench.
- e) Attach continuous length of fabric to upslope side of fence posts. Avoid joints, particularly at low points in the fence line. Where joints are necessary, fasten fabric securely to support posts and overlap to the next post.

- f) Place the bottom one foot of fabric in the trench. Backfill with compacted earth or gravel.
- g) Filter cloth shall be fastened securely to the woven wire fence with ties spaced every 24 inches at the top, mid-section, and bottom.
- h) Sediment fences should be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized through one growing season. Retained sediment must be removed and properly disposed of, or mulched and seeded.

Sediment Fence Inspection/Maintenance

- a) Silt fences should be inspected immediately after each rainfall event of 1-inch or greater, and at least daily during prolonged rainfall. Inspect the depth of sediment, fabric tears, if the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground. Repair or replace as necessary.
- b) Remove sediment deposits promptly after storm events to provide adequate storage volume for the next rain and to reduce pressure on the fence. Sediment will be removed from behind the sediment fence when it becomes about $\frac{1}{2}$ foot deep at the fence. Take care to avoid undermining fence during cleanout.
- c) If the fabric tears, decomposes, or in any way becomes ineffective, replace it immediately.
- d) Remove all fencing materials after the contributing drainage area has been properly stabilized. Sediment deposits remaining after the fabric has been removed should be graded to conform to the existing topography and vegetated.

3) **Stabilized Construction Entrance** – A stabilized construction entrance will be placed at the proposed entrance at Brush Hill Road. The construction entrance will keep mud and sediment from being tracked off the construction site onto Brush Hill Road by vehicles leaving the site. The stabilized construction entrance will be installed immediately after the clear and grubbing of the roadway entrance and associated roadway fill to maintain access to the site are completed. The stormwater runoff from the entrance will be diverted towards the natural depression area located along the eastern side of the construction entrance. Care shall be taken to provide sediment control prior to runoff entering the natural depression area. The stabilized construction entrance shall be constructed as shown on the Construction Detail

Plans. The existing paved driveway may be utilized in conjunction with the stabilized construction entrance.

Construction Entrance Design/Construction Requirements

- a) Grade foundation for positive drainage towards the sediment controls along the side of the roadway.
- b) Stone for a stabilized construction entrance shall consist of 1 to 3-inch stone placed on a stable foundation.
- c) Pad dimensions: The minimum length of the gravel pad should be 50 feet. The pad should extend the full width of the proposed roadway, or wide enough so that the largest construction vehicle will fit in the entrance with room to spare; whichever is greater. If a large amount of traffic is expected at the entrance, then the stabilized construction entrance should be wide enough to fit two vehicles across with room to spare.
- d) A geotextile filter fabric shall be placed between the stone fill and the earth surface below the pad to reduce the migration of soil particles from the underlying soil into the stone and vice versa. The filter fabric should be Amoco woven polypropylene 1198 or equivalent.
- e) Washing: If the site conditions are such that the majority of mud is not removed from the vehicle tires by the gravel pad, then the tires should be washed before the vehicle enters the street. The wash area should be a level area with 3-inch washed stone minimum, or a commercial rack.
- f) Water employed in the washing process shall be directed to a sediment trap or approved sediment-trapping device prior to discharge to the temporary sedimentation basin along the western side of the site entrance drive. Sediment should be prevented from entering any watercourses.

Construction Entrance Inspection/Maintenance

- a) The entrances should be maintained in a condition that will prevent tracking or flowing of sediment onto Brush Hill Road. This may require periodic topdressing with additional stone
- b) The construction entrances and sediment disposal area shall be inspected weekly and after heavy rains or heavy use.
- c) Mud and sediment tracked or washed onto public road, Washington Street shall be immediately removed by sweeping.

- d) Once mud and soil particles clog the voids in the gravel and the effectiveness of the gravel pad is no longer satisfactory, the pad must be topdressed with new stone. Replacement of the entire pad may be necessary when the pad becomes completely clogged.
- e) If washing facilities are used, the dewatering area should be cleaned out as often as necessary to assure that adequate trapping efficiency and storage volume is available. Any water pumped from the temporary sedimentation basin shall be directed into a sediment dirt bag or equivalent inlet protection prior to discharge. Discharge should not be across the disturbed construction site but rather to undisturbed areas.
- f) The pad shall be reshaped as needed for drainage and runoff control.
- g) Broken road pavement on Brush Hill Road shall be repaired immediately.
- h) All temporary erosion and sediment control measures shall be removed within 30 days after final site stabilization is achieved or after the temporary practices are no longer needed and only following approval by Engineering Department or their representative. Trapped sediment shall be removed or stabilized on site. Disturbed soil areas resulting from removal shall be permanently stabilized.

4) **Temporary Sediment Basins** – Temporary sediment basins shall be constructed as needed. The temporary sediment basins will handle storm water, filtering out sediment until the permanent stormwater drainage system is functioning properly. The temporary sediment basins will be lined with sediment erosion barrier controls.

Sediment Basin Design/Installation Requirements

- a) Divert runoff from undisturbed areas away from basins.
- b) The sediment basins should have a minimum volume based on $\frac{1}{2}$ inch of storage for each acre of drainage area.
- c) The length-to-width ratio should be 2:1 or greater; divert inflow to upper end of basin to avoid short-circuiting flow. Length is defined as the average distance from the inlet to the outlet of the trap.
- d) Utilize side slopes of 3:1.
- e) The sediment basins should be located as close to the sediment source as site conditions permit considering soils, pool area, dam length, and spillway conditions.

- f) Line bottom with gravel and stabilize as soon as possible.

Sediment Basin and Swale Inspection/Maintenance

- a) The sediment basins should be readily accessible for maintenance and sediment removal. The sediment basins should remain in operation and be properly maintained until the site area is permanently stabilized by vegetation and/or when permanent structures are in place.
- b) Inspect the sediment basins after each significant rainfall.
- c) Remove and properly dispose of sediment when it accumulates to one-half design volume (level marked by reference stake). The effectiveness of a sediment pond is based less on its size than on regular sediment removal.
- d) Check embankment and outlet for erosion damage.
- e) Check embankment for: settlement, seepage, or slumping along the toe. Repair immediately. Remove trash and other debris from principal spillway and pool area.
- f) Clean or replace gravel when sediment pool does not drain properly.

5) **Inlet Protection** – Inlet Protection will be utilized around the catch basin grates. The inlet protection will allow the storm drain inlets to be used before final stabilization. This structural practice will allow early use of the drainage system if the detention basin is already stabilized. Siltsack or equivalent will be utilized for the inlet protection. Siltsack is manufactured by ACF Environmental. The telephone number is 1-800-437-6746. Regular flow siltsack will be utilized, and if it does not allow enough storm water flow, hi-flow siltsack will be utilized.

Silt Sack (or equivalent) Inlet Protection Inspection/Maintenance Requirements

- a) All trapping devices and the structures they protect should be inspected after every rain storm and repairs made as necessary.
- b) Sediment should be removed from the trapping devices after the sediment has reached a maximum depth of one-half the depth of the trap.
- c) Sediment should be disposed of in a suitable area and protected from erosion by either structural or vegetative means. Sediment removed shall be disposed of in accordance with all applicable local, state, and federal regulations.

- d) The silt sack must be replaced if it is ripped or torn in any way.
- e) Temporary traps should be removed and the area repaired as soon as the contributing drainage area to the inlet has been completely stabilized.

Stabilization Practices:

Stabilization measures shall be implemented as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased, with the following exceptions.

- Where the initiation of stabilization measures by the 14th day after construction activity temporary or permanently cease is precluded by snow cover, stabilization measures shall be initiated as soon as practicable.
- Where construction activity will resume on a portion of the site within 21 days from when activities ceased, (e.g. the total time period that construction activity is temporarily ceased is less than 21 days) then stabilization measures do not have to be initiated on that portion of the site by the 14th day after construction activity temporarily ceased.

1) **Temporary Seeding** – Temporary seeding will allow a short-term vegetative cover on disturbed site areas that may be in danger of erosion. Temporary seeding will be done at stock piles and disturbed portions of the site where construction activity will temporarily cease for at least 21 days. The temporary seedings will stabilize cleared and unvegetated areas that will not be brought into final grade for several weeks or months.

Temporary Seeding Planting Procedures

- a) Planting should preferably be done between April 1st and June 30th, and September 1st through September 31st. If planting is done in the months of July and August, irrigation may be required. If planting is done between October 1st and March 31st, mulching should be applied immediately after planting. If seeding is done during the summer months, irrigation of some sort will probably be necessary.
- b) Before seeding, install structural practice controls. Utilize Amoco supergro or equivalent.
- c) Select the appropriate seed species for temporary cover from the following table.

Species	Seeding Rate (lbs/1,000 sq.ft.)	Seeding Rate (lbs/acre)	Recommended Seeding Dates	Seed Cover required
Annual Ryegrass	1	40	April 1 st to June 1 st August 15 th to Sept. 15 th	¼ inch
Foxtail Millet	0.7	30	May 1 st to June 30 th	½ to ¾ inch
Oats	2	80	April 1 st to July 1 st August 15 th to Sept. 15 th	1 to 1-½ inch
Winter Rye	3	120	August 15 th to Oct. 15 th	1 to 1-½ inch

Apply the seed uniformly by hydroseeding, broadcasting, or by hand.

- d) Use an effective mulch, such as clean grain straw; tacked and/or tied with netting to protect seedbed and encourage plant growth.

Temporary Seeding Inspection/Maintenance

- a) Inspect within 6 weeks of planting to see if stands are adequate. Check for damage within 24 hours of the end to a heavy rainfall, defined as a 2-year storm event (i.e., 3.2 inches of rainfall within a twenty-four hour period). Stands should be uniform and dense. Fertilize, reseed, and mulch damaged and sparse areas immediately. Tack or tie down mulch as necessary.
- b) Seeds should be supplied with adequate moisture. Furnish water as needed, especially in abnormally hot or dry weather. Water application rates should be controlled to prevent runoff.

2) **Geotextiles** - Geotextiles such as jute netting will be used in combination with other practices such as mulching to stabilize slopes. The following geotextile materials or equivalent are to be utilized for structural and nonstructural controls as shown in the following table.

Practice	Manufacturer	Product	Remarks
Sediment Fence	Amoco	Woven polypropylene 1198 or equivalent	0.425 mm opening
Construction Entrance	Amoco	Woven polypropylene 2002 or equivalent	0.300 mm opening
Outlet Protection	Amoco	Nonwoven polypropylene 4551 or equivalent	0.150 mm opening
Erosion Control (slope stability)	Amoco	Supergro or equivalent	Erosion control revegetation mix, open polypropylene fiber on degradable

			polypropylene net scrim
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Amoco may be reached at (800) 445-7732

Geotextile Installation

- a) Netting and matting require firm, continuous contact between the materials and the soil. If there is no contact, the material will not hold the soil and erosion will occur underneath the material.

Geotextile Inspection/Maintenance

- a) In the field, regular inspections should be made to check for cracks, tears, or breaches in the fabric. The appropriate repairs should be made.
- 3) **Mulching and Netting** – Mulching will provide immediate protection to exposed soils during the period of short construction delays, or over winter months through the application of plant residues, or other suitable materials, to exposed soil areas. In areas, which have been seeded either for temporary or permanent cover, mulching should immediately follow seeding. On steep slopes, mulch must be supplemented with netting. The preferred mulching material is straw.

Mulch (Hay or Straw) Materials and Installation

- a) Straw has been found to be one of the most effective organic mulch materials. The specifications for straw are described below, but other material may be appropriate. The straw should be air-dried; free of undesirable seeds & coarse materials. The application rate per 1,000 sq.ft. is 90-100 lbs. (2-3 bales) and the application rate per acre is 2 tons (100-120 bales). The application should cover about 90% of the surface. The use of straw mulch is appropriate where mulch is maintained for more than three months. Straw mulch is subject to wind blowing unless anchored, is the most commonly used mulching material, and has the best microenvironment for germinating seeds.

Mulch Maintenance

- a) Inspect after rainstorms to check for movement of mulch or erosion. If washout, breakage, or erosion occurs, repair surface, reseed, remulch, and install new netting.
- b) Straw or grass mulches that blow or wash away should be repaired promptly.

- c) If plastic netting is used to anchor mulch, care should be taken during initial mowings to keep the mower height high. Otherwise, the netting can wrap up on the mower blade shafts. After a period of time, the netting degrades and becomes less of a problem.
- d) Continue inspections until vegetation is well established.

4) **Land Grading** – Grading on fill slopes, cut slopes, and stockpile areas will be done with full siltation controls in place.

Land Grading Design/Installation Requirements

- a) Areas to be graded should be cleared and grubbed of all timber, logs, brush, rubbish, and vegetated matter that will interfere with the grading operation. Topsoil should be stripped and stockpiled for use on critical disturbed areas for establishment of vegetation. Cut slopes to be topsoiled should be thoroughly scarified to a minimum depth of 3-inches prior to placement of topsoil.
- b) Fill materials should be generally free of brush, rubbish, rocks, and stumps. Frozen materials or soft and easily compressible materials should not be used in fills intended to support buildings, parking lots, roads, conduits, or other structures.
- c) Earth fill intended to support structural measures should be compacted to a minimum of 90 percent of Standard Proctor Test density with proper moisture control, or as otherwise specified by the engineer responsible for the design. Compaction of other fills should be to the density required to control sloughing, erosion or excessive moisture content. Maximum thickness of fill layers prior to compaction should not exceed 9 inches.
- d) The uppermost one foot of fill slopes should be compacted to at least 85 percent of the maximum unit weight (based on the modified AASHTO compaction test). This is usually accomplished by running heavy equipment over the fill.
- e) Fill should consist of material from borrow areas and excess cut will be stockpiled in areas shown on the Site Plans. All disturbed areas should be free draining, left with a neat and finished appearance, and should be protected from erosion.

Land Grading Stabilization Inspection/Maintenance

- a) All slopes should be checked periodically to see that vegetation is in good condition. Any rills or damage from erosion and animal burrowing should be repaired immediately to avoid further damage.

- b) If seeps develop on the slopes, the area should be evaluated to determine if the seep will cause an unstable condition. Subsurface drains or a gravel mulch may be required to solve seep problems. However, no seeps are anticipated.
- c) Areas requiring revegetation should be repaired immediately. Slopes should be limed and fertilized as necessary to keep vegetation healthy. Control undesirable vegetation such as weeds and woody growth to avoid bank stability problems in the future.

5) **Topsoiling** – Topsoiling will help establish vegetation on all disturbed areas throughout the site during the seeding process. The soil texture of the topsoil to be used will be a sandy loam to a silt loam texture with 15% to 20% organic content.

Topsoiling Placement

- a) Topsoil should not be placed while in a frozen or muddy condition, when the subgrade is excessively wet, or when conditions exist that may otherwise be detrimental to proper grading or proposed seeding.
- b) Do not place topsoil on slopes steeper than 2.5:1, as it will tend to erode.
- c) If topsoil and subsoil are not properly bonded, water will not infiltrate the soil profile evenly and it will be difficult to establish vegetation. The best method is to actually work the topsoil into the layer below for a depth of at least 6 inches.

6) **Permanent Seeding** – Permanent Seeding should be done immediately after the final design grades are achieved. Native species of plants should be used to establish perennial vegetative cover on disturbed areas. The revegetation should be done early enough in the fall so that a good cover is established before cold weather comes and growth stops until the spring. A good cover is defined as vegetation covering 75 percent or more of the ground surface.

Permanent Seeding Seedbed Preparation

- a) In infertile or coarse-textured subsoil, it is best to stockpile topsoil and respread it over the finished slope at a minimum 2 to 6-inch depth and roll it to provide a firm seedbed. The topsoil must have a sandy loam to silt loam texture with 15% to 20% organic content. If construction fill operations have left soil exposed with a loose, rough, or irregular surface, smooth with blade and roll.
- b) Loosen the soil to a depth of 3-5 inches with suitable agricultural or construction equipment.

- c) Areas not to receive topsoil shall be treated to firm the seedbed after incorporation of the lime and fertilizer so that it is depressed no more than $\frac{1}{2}$ - 1 inch when stepped on with a shoe. Areas to receive topsoil shall not be firmed until after topsoiling and lime and fertilizer is applied and incorporated, at which time it shall be treated to firm the seedbed as described above.

Permanent Seeding Grass Selection/Application

- a) Select an appropriate cool or warm season grass based on site conditions and seeding date. Apply the seed uniformly by hydroseeding, broadcasting, or by hand. Uniform seed distribution is essential. On steep slopes, hydroseeding may be the most effective seeding method. Surface roughening is particularly important when preparing slopes for hydroseeding.
- b) Lime and fertilize. Organic fertilizer shall be utilized in areas within the 100 foot buffer zone to a wetland resource area.
- c) Mulch the seedlings with straw applied at the rate of $\frac{1}{2}$ tons per acre. Anchor the mulch with erosion control netting or fabric on sloping areas. Amoco supergro or equivalent should be utilized.

Permanent Seeding Inspection/Maintenance

- a) Frequently inspect seeded areas for failure and make necessary repairs and reseed immediately. Conduct or follow-up survey after one year and replace failed plants where necessary.
- b) If vegetative cover is inadequate to prevent rill erosion, overseed and fertilize in accordance with soil test results.
- c) If a stand has less than 40% cover, reevaluate choice of plant materials and quantities of lime and fertilizer. Re-establish the stand following seedbed preparation and seeding recommendations, omitting lime and fertilizer in the absence of soil test results. If the season prevents resowing, mulch or jute netting is an effective temporary cover.
- d) Seeded areas should be fertilized during the second growing season. Lime and fertilize thereafter at periodic intervals, as needed. Organic fertilizer should be utilized.

Dust Control :

Dust control will be utilized throughout the entire construction process of the site. For example, keeping disturbed surfaces moist during windy periods will be an effective

control measure, especially for construction haul roads. The use of dust control will prevent the movement of soil to offsite areas. However, care must be taken to not create runoff from excessive use of water to control dust. The following are methods of Dust Control that may be used on-site:

- Vegetative Cover – The most practical method for disturbed areas not subject to traffic.
- Calcium Chloride – Calcium chloride may be applied by mechanical spreader as loose, dry granules or flakes at a rate that keeps the surface moist but not so high as to cause water pollution or plant damage.
- Sprinkling – The site may be sprinkled until the surface is wet. Sprinkling will be effective for dust control on haul roads and other traffic routes.
- Stone – Stone will be used to stabilize construction roads; will also be effective for dust control.

The general contractor shall employ an on-site water vehicle for the control of dust as necessary.

Non-Stormwater Discharges:

The construction de-watering and all non-stormwater discharges will be directed into a sediment dirt bag (or equivalent inlet protection) or a sediment basin. Sediment material removed shall be disposed of in accordance with all applicable local, state, and federal regulations.

The developer and site general contractor will comply with the E.P.A.'s Final General Permit for Construction De-watering Discharges, (N.P.D.E.S., Section 402 and 40 C.F.R. 122.26(b)(14)(x)).

Soil Stockpiling:

Topsoil and subsoil from the roadway grading will be stockpiled in locations shown on the plans.

Stockpile Material Construction Procedure

- 1) Topsoil and subsoil that are stripped will be stockpiled for later distribution on disturbed areas.
- 2) The stockpiles will be located as shown on the plans. These locations will allow them to not interfere with work on the site.
- 3) Seed the stockpiles with a temporary erosion control mix if the stockpile is to remain undisturbed for more than 30 days. The stockpiles must be stable and the side slopes should not exceed 2:1.

- 4) Sediment erosion control measures should be placed surrounding each stockpile.
- 5) As needed, the stockpiled topsoil and subsoil are redistributed throughout the site.

Pollution Prevention:

Fueling and Maintenance of Equipment or Vehicles

Refueling/maintenance Rules – The site supervisor shall produce a written document received by all subcontractors and employees that delineates their responsibilities on site. This document shall include language that shall permit the maintenance of vehicles only in designated locations on the job site. In the event of mechanical failure of a vehicle, the vehicle shall be moved to the designated maintenance area on the site to perform maintenance. The site supervisor shall document receipt of these instructions by obtaining the signatures of subcontractors and individuals that may enter the site and the date in which they were notified of their responsibilities. Refueling for vehicles or equipment shall occur either within the designated washout area or shall utilize temporary drip protection measures at the location of fueling. The site supervisor or their representative shall be present at the time of any fueling procedure. The site supervisor shall have a fuel spill plan and measures on site to initiate containment and clean-up in the event a fuel spill occurs.

1. Fueling operations shall take place in designated area(s) as shown on site maps. Provide temporary drip protection during fueling operations which take place outside of designated area(s). Materials necessary to address a spill shall be made readily available in a location known to the site supervisor or his/her designee.
2. Fueling operation procedures shall be in effect throughout the project duration.

Maintenance Requirements

1. All emergency response equipment listed in the Emergency Response Equipment Inventory shall be made readily available and kept in a designated location known to the site supervisor or his/her designee. All such materials shall be replenished as necessary to the listed amounts.

Washing of Equipment and Vehicles

Vehicle Washing Rules - The site supervisor shall produce a written document received by all subcontractors and employees that delineates their responsibilities on site. The site supervisor shall document receipt of these instructions by obtaining the signatures of subcontractors and individuals that may enter the site and the date in which they were notified of their responsibilities. This document shall include language that shall not permit vehicle washing on the job site. Concrete trucks shall be exempt from this

rule. Concrete truck cleaning shall be confined within the work area and conducted in a manner to prevent water drainage beyond the specified area of work.

Concrete truck washout shall be conducted in designated areas and shall not be discharged in areas which would allow wash water to leave the site or enter protected areas.

Maintenance Requirements

The site supervisor shall maintain a log of individuals receiving these instructions.

Storage, Handling, and Disposal of Construction Products, Materials, and Wastes

Building Products

(Note: Examples include asphalt sealants, copper flashing, roofing materials, adhesives, concrete admixtures.)

Building products being stored for later use on site shall be kept in designated materials storage areas as shown on the site map(s). Storage areas shall properly contain materials and prevent materials or their containers/wrappers from being strewn about the site. Any leaking containers shall be removed and properly disposed of immediately. Weather sensitive materials shall be safely stored in closed temporary containers as necessary.

1. Place all materials being stored for future use in designated storage areas.
2. Place all weather sensitive materials in closed temporary containers as necessary. Care should be taken to store materials in accordance with manufacturer's recommendations and to avoid storing combinations of materials which may cause a noxious, volatile or otherwise dangerous condition.
3. All non-hazardous solid waste shall be disposed of in a trash receptacle (dumpster) which shall be removed and disposed of at an approved land fill.

Maintenance Requirements

1. The site supervisor shall regularly inspect the designated storage areas as well as any portions of the site under construction to ensure that all materials are properly stored. The site supervisor shall immediately address any issues and instruct personnel to secure and properly store all materials.

Pesticides, Herbicides, Insecticides, Fertilizers, and Landscape Materials

The use of pesticides and herbicides is not currently anticipated for this site. Fertilizers and landscape materials will be used to stabilize slopes and other disturbed areas. All fertilizers shall be in compliance with special conditions of Order of Conditions issued by Hanover Conservation Commission

1. Store all fertilizers and landscape materials in designated locations. Store all weather sensitive materials in closed containers in accordance with manufacturer's recommendations.

Maintenance Requirements

1. The site supervisor shall regularly inspect the designated storage areas as well as any portions of the site under construction to ensure that all materials are properly stored. The site supervisor shall immediately address any issues and instruct personnel to secure and properly store all materials.

Diesel Fuel, Oil, Hydraulic Fluids, Other Petroleum Products, and Other Chemicals

Refueling and maintenance for vehicles or equipment shall occur either within the designated washout area or shall utilize temporary drip protection measures at the location of fueling. The site supervisor or their representative shall be present at the time of any fueling procedure. The site supervisor shall have a fuel spill plan and measures on site to initiate containment and clean-up in the event a fuel spill occurs.

Refueling and maintenance of equipment shall take place in designated areas whenever possible. Refueling or maintenance of equipment in locations other than those designated for such activity shall be performed under the supervision of the site supervisor or his/her designee and shall employ drip pans or other suitable means of preventing fuel, hydraulic fluid, etc. from spilling or being otherwise carried offsite or into protected areas.

Maintenance Requirements

All emergency response equipment listed in the Emergency Response Equipment Inventory shall be made readily available and kept in a designated location known to the site supervisor or his/her designee. All such materials shall be replenished as necessary to the listed amounts.

Hazardous or Toxic Waste

(Note: Examples include paints, solvents, petroleum-based products, wood preservatives, additives, curing compounds, acids.)

Hazardous or toxic waste associated with paints, solvents, petroleum-based products, wood preservatives, additives, curing compounds, acids shall be collected in approved containers and disposed of in accordance with municipal, state and federal regulations.

Hazardous or toxic waste shall be collected in approved containers and disposed of in accordance with municipal, state and federal regulations. Hazardous and toxic waste shall not be disposed of in solid waste containers intended for non-hazardous construction debris.

Maintenance Requirements

The site supervisor shall regularly inspect all portions of the project under construction and ensure that all hazardous or toxic materials are disposed of in accordance with the practices detailed above and shall immediately correct any improper disposal practices.

Construction and Domestic Waste

(Note: Examples include packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, styrofoam, concrete, and other trash or building materials.)

Construction and domestic waste shall be disposed of in a trash receptacle (dumpster) which shall be removed and disposed of at an approved land fill.

Recyclable waste material shall be stored in an appropriate container or in a designated location on site until it can be removed.

1. Trash receptacles (dumpsters) and recyclable waste material containers shall be located as needed throughout the site.

Maintenance Requirements

The site supervisor shall inspect all trash receptacles and containers to confirm that construction and domestic waste is properly contained, and shall also ascertain that waste is being picked up in a timely manner to ensure that no receptacles are overflowing. Pick-up schedules shall be modified or the number of receptacles shall be increased as needed.

Sanitary Waste

During the construction process, portable toilets will be utilized on site for sanitary waste. Portable toilets will be provided in appropriate locations based on concentration of construction personnel. Toilets shall be relocated as necessary during the construction process.

Maintenance Requirements

The site supervisor shall execute a contract with a vendor to supply and maintain portable toilets throughout the site for the project duration. The site supervisor shall determine if a sufficient number of toilets are present to meet staffing levels and shall ensure that the toilets are regularly and properly maintained.

Washing of Applicators and Containers used for Paint, Concrete or Other Materials

Concrete washout shall be restricted to designated areas. Paints, form release oils, curing compounds, etc. shall be recycled and/or disposed of utilizing appropriate containers in accordance with manufacturer's recommendations and EPA guidelines.

1. Install straw bale and plastic liner washout pit at the designated location on site. Concrete trucks shall wash out only at washout pit or other similar acceptable facility such as a portable roll-off washout pit.
2. Provide suitable containers for recycling or disposal for cleanup of paints, form release oils, curing compounds, etc.

Maintenance Requirements

1. The site supervisor shall inspect concrete washout pits (or other acceptable facility) to ensure that they are properly maintained. If necessary, wash water in a concrete washout pit shall be vacuumed off and the hardened concrete broken up and recycled. Wash water and broken up concrete shall be properly disposed of at a suitable facility. If necessary the wash out pit shall be repaired and relined with plastic prior to continued use.
2. Containers for waste paint, form release oil, curing compounds, etc. shall be sealed and removed from the site and properly disposed of at a suitable facility. Empty containers shall replace those being removed for disposal.

Fertilizers

Fertilizers shall be used only as necessary to establish vegetative stabilized slopes and disturbed areas. Apply at recommended rates. Use only slow release fertilizers to minimize discharge of nitrogen or phosphorous. All fertilizers shall be in compliance with special conditions of Order of Conditions issued by Hanover Conservation Commission.

1. Store all fertilizers in designated locations. Store all weather sensitive materials in closed containers in accordance with manufacturer's recommendations.
2. To prevent accidental release of fertilizers, the site supervisor shall attempt to coordinate delivery of fertilizers to coincide with application and reduce the need to warehouse large quantities on-site.

Maintenance Requirements

1. Site supervisor shall make regular inspections to ensure that fertilizer is being applied at proper rates and that all perimeter controls are in place and properly maintained to control runoff which may contain fertilizer. Stored fertilizer shall be properly covered or enclosed in a designated location to prevent introduction into stormwater runoff.

Spill Prevention and Response

The site supervisor or their representative shall be present on the job site at all times during the course of work and shall be present during the delivery, removal of any liquid/chemical materials to or from the job site. They will also be present during any

refueling practices. All subcontractors will be notified of their responsibilities in writing. In the event a spill occurs, the site supervisor shall be notified immediately.

The site supervisor shall have in place a spill prevention plan and resources to contain and clean up any potential spills in a timely manner. Refer to the following Spill Containment & Management Plan, including Spill Report, Emergency Response Equipment Inventory, and Emergency Notification and phone numbers.

Inspection/Maintenance:

Operator personnel must inspect the construction site at least once every 14 calendar days and within 24 hours of a storm event of ½-inch or greater. The applicant shall be responsible to secure the services of a licensed engineer or similar professional (inspector) on an on-going basis throughout all phases of the project. Refer to the Inspection/Maintenance Requirements presented earlier in the “Structural and Stabilization Practices.” The inspector should review the erosion and sediment controls with respect to the following:

- Whether or not the measure was installed/Performed correctly.
- Whether or not there has been damage to the measure since it was installed or performed.
- What should be done to correct any problems with the measure.

The inspector should complete the Stormwater Management Construction Phase BMP Inspection Schedule and Evaluation Checklist, as attached, for documenting the findings and should request the required maintenance or repair for the pollution prevention measures when the inspector finds that it is necessary for the measure to be effective. The inspector should notify the appropriate person to make the changes and retain copies of the inspection form for documentation as well as submit copies of the form to the Milton Department of Public Works.

It is essential that the inspector document the inspection of the pollution prevention measures. These records will be used to request maintenance and repair and to prove that the inspection and maintenance were performed. The forms list each of the measures to be inspected on the site, the inspector’s name, the date of the inspection, the condition of the measure/area inspected, maintenance or repair performed and any changes which should be made to the Operation and Maintenance Plan to control or eliminate unforeseen pollution of storm water.

Project Location: Woodmere At Brush Hill, 865 Brush Hill Road, Milton, MA Date: _____

Stormwater Management – Construction Phase Best Management Practices – Inspection Schedule and Evaluation Checklist

Construction Practices				Minimum Maintenance and Key Items to Check	Cleaning/Repair Needed: (List Items)	Date of Cleaning/ Repair	Performed by
Best Management Practice	Inspection Frequency	Date Inspected	Inspector				
Sediment Fence Controls	After heavy rainfall events (minimum weekly)			1. Sediment Fence Design/Installation Requirements 2. Sediment Fence Inspection/Maintenance	<input type="checkbox"/> yes <input type="checkbox"/> no		
Stabilized Construction Entrance	After heavy rainfall events (minimum weekly)			1. Construction Entrance Design/ Construction Requirements 2. Construction Entrance Inspection/ Maintenance	<input type="checkbox"/> yes <input type="checkbox"/> no		
Temporary Sedimentation Basins	After heavy rainfall events (minimum weekly)			1. Sediment Basin Inspection/ Maintenance	<input type="checkbox"/> yes <input type="checkbox"/> no		
Inlet Protection	After heavy rainfall events (minimum weekly)			1. Silt Sack (or equivalent) Inlet Protection Inspection/Maintenance	<input type="checkbox"/> yes <input type="checkbox"/> no		
Temporary Seeding	After heavy rainfall events (minimum weekly)			1. Temporary Seeding Planting Procedures 2. Temporary Seeding Inspection/ Maintenance	<input type="checkbox"/> yes <input type="checkbox"/> no		
Geotextiles	After heavy rainfall events (minimum weekly)			1. Geotextile Inspection/Maintenance	<input type="checkbox"/> yes <input type="checkbox"/> no		
Mulching & Netting	After heavy rainfall events (minimum weekly)			1. Mulch Maintenance	<input type="checkbox"/> yes <input type="checkbox"/> no		
Land Grading	After heavy rainfall events (minimum weekly)			1. Land Grading Stabilization Inspection/ Maintenance	<input type="checkbox"/> yes <input type="checkbox"/> no		

Permanent Seeding	After heavy rainfall events (minimum weekly)	1. Permanent Seeding Inspection/ Maintenance	<input type="checkbox"/> yes <input type="checkbox"/> no	
Dust Control	After heavy rainfall events (minimum weekly)		<input type="checkbox"/> yes <input type="checkbox"/> no	
Soil Stockpiling	After heavy rainfall events (minimum weekly)		<input type="checkbox"/> yes <input type="checkbox"/> no	

Stormwater Control Manager _____

Spill Containment and Management Plan

Initial Notification

In the event of a spill, the facility manager will be notified immediately.

Facility Managers (name) _____

Facility Manager (phone) _____

Assessment - Initial Containment

The supervisor will assess the incident and initiate containment control measures with the appropriate spill containment equipment included in the spill kit kept on-site. The supervisor will first contact the Fire Department and then notify the Police Department, Department of Public Works, Board of Health and Conservation Commission. The fire department is ultimately responsible for matters of public health and safety and should be notified immediately.

Contact: _____ Phone Number: _____

Fire Department: 911 _____

Police Department: 911 _____

Department of Public Works: (617) 898-4900 _____

Board of Health Phone: (617) 898-4886 _____

Conservation Commission Phone: (617) 898-4974 _____

Further Notification

Based on the assessment from the Fire Chief, additional notification to a cleanup contractor may be made. The Massachusetts Department of Environmental Protection (DEP) and the EPA may be notified depending upon the nature and severity of the spill. The Fire Chief will be responsible for determining the level of cleanup and notification required. The attached list of emergency phone numbers shall be posted in the facility office and readily accessible to all employees.

HAZARDOUS WASTE / OIL SPILL REPORT

Date ____ / ____ / ____

Time _____ AM / PM

Exact location (Transformer #) _____

Type of equipment _____ Make _____ Size _____

S / N _____ Weather Conditions _____

On or near water Yes If yes, name of body of water _____

No

Type of chemical / oil spilled _____

Amount of chemical / oil spilled _____

Cause of spill _____

Measures taken to contain or clean up spill _____

Amount of chemical / oil recovered _____ Method _____

Material collected as a result of clean up

_____ drums containing _____

_____ drums containing _____

_____ drums containing _____

Location and method of debris disposal _____

Name and address of any person, firm, or corporation suffering damages _____

Procedures, method, and precautions instituted to prevent a similar occurrence from recurring _____

Spill reported to General Office by _____ Time _____ AM / PM

Spill reported to DEP / National Response Center by _____

DEP Date ____ / ____ / ____ Time _____ AM / PM Inspector _____

NRC Date ____ / ____ / ____ Time _____ AM / PM Inspector _____

Additional comments _____

EMERGENCY RESPONSE EQUIPMENT INVENTORY

The following equipment and materials shall be maintained at all times and stored in a secure area for long-term emergency response need.

--	SORBENT PADS	1 BALE
--	SAND BAGS (empty)	10
--	SPEEDI-DRI ABSORBENT	2 – 40LB BAGS
--	12" INFLATABLE PIPE PLUG	1
--	15" INFLATABLE PIPE PLUG	1
--	SQUARE END SHOVELS	1
--	PRY BAR	1
--	CATCH BASIN COVER	1

EMERGENCY NOTIFICATION PHONE NUMBERS

1. FACILITY MANAGER

NAME: _____ BEEPER: _____
PHONE: _____ CELL PHONE: _____

ALTERNATE:

NAME: _____ BEEPER: N/A _____
PHONE: _____ CEL PHONE: _____

2. FIRE DEPARTMENT

EMERGENCY: 911
BUSINESS: (617) 696-5178

POLICE DEPARTMENT

EMERGENCY: 911
BUSINESS: (617) 698-3800

DEPARTMENT OF PUBLIC WORKS

BUSINESS: (617) 898-4900

3. MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION

EMERGENCY: (617) 556-1133
NORTHEAST REGION - WILMINGTON OFFICE: (978) 694-3200

4. NATIONAL RESPONSE CENTER

PHONE: (800) 424-8802

ALTERNATE: U.S. ENVIRONMENTAL PROTECTION AGENCY

EMERGENCY: (617) 223-7265
BUSINESS: (617) 860-4300

5. DEPARTMENT OF PUBLIC WORKS

CONTACT: Director of Public Works, Joseph Lynch
PHONE: (617) 898-4900

CONSERVATION COMMISSION

CONTACT: Senior Administrative Clerk, Kathy Bowen
PHONE: (617) 898-4974

BOARD OF HEALTH

CONTACT: Public Health Director, Caroline A. Kinsella
PHONE: (617) 898-4886

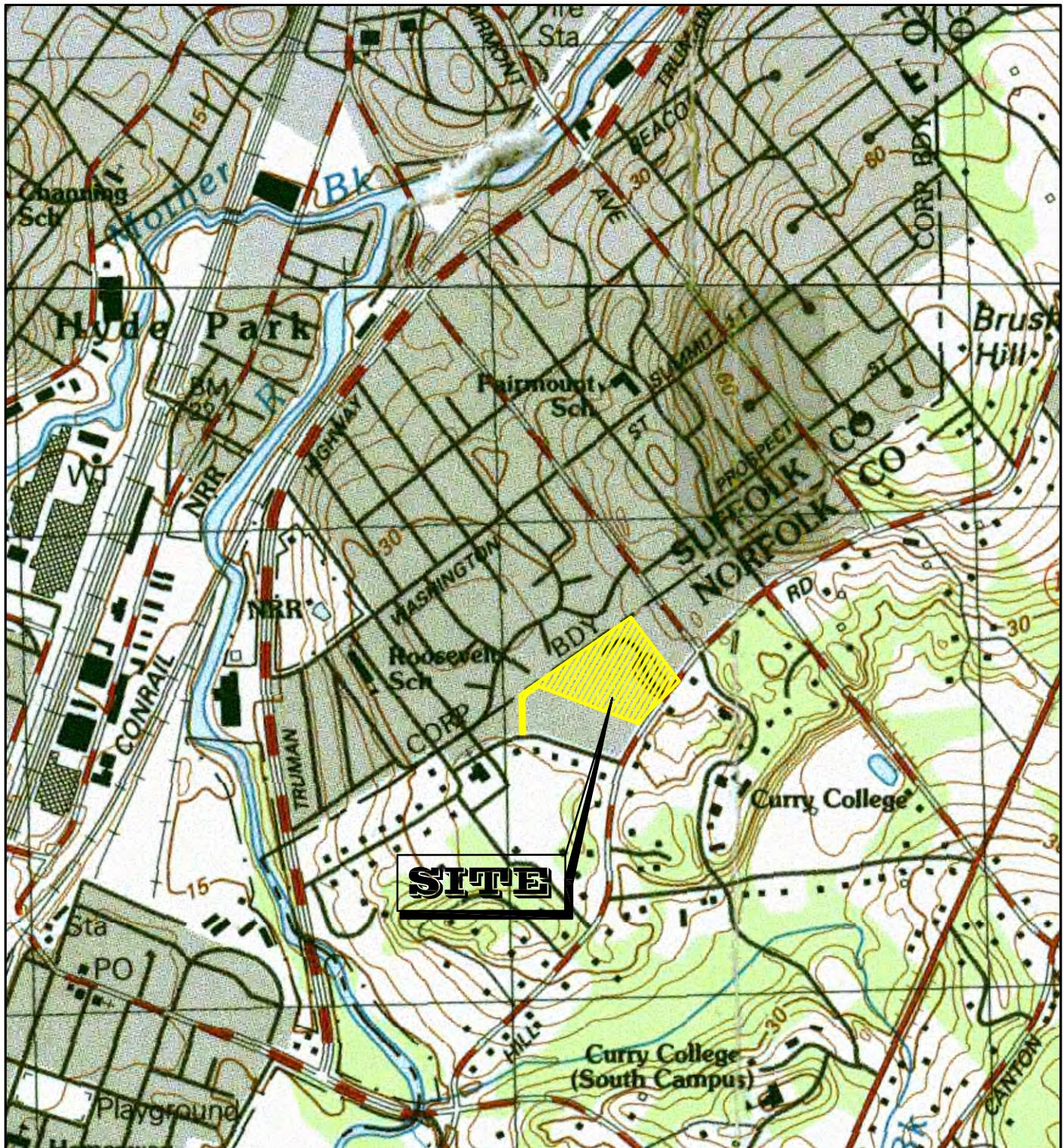
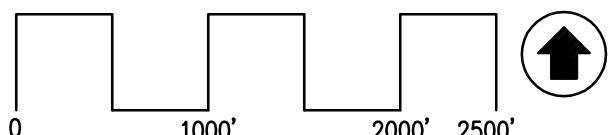


FIGURE - 1



U.S. GEOLOGICAL SURVEY
7.5 X 15 MINUTE SERIES



MCKENZIE
ENGINEERING
GROUP, INC.

150 LONGWATER DRIVE, SUITE 101
NORWELL, MASSACHUSETTS 02061
PHONE: (781) 792-3900
FACSIMILE: (781) 792-0333

PROFESSIONAL CIVIL ENGINEERING • LAND PLANNING • PROJECT MANAGEMENT

USGS Locus Map

865 Brush Hill Road
MAP B12, LOTS 8A, 8B & 2B
MILTON, MASSACHUSETTS

FLOOD HAZARD INFORMATION
IS NOT SHOWN ON THIS MAP
IN AREAS OUTSIDE OF
NORFOLK COUNTY



FIGURE - 2

0 400' 800' 1000'

NATIONAL FLOOD INSURANCE PROGRAM
TOWN OF MILTON, MA
NORFOLK COUNTY
COMMUNITY PANEL NO: 25021C0201E
EFFECTIVE DATE: JULY 17, 2012



MCKENZIE
ENGINEERING
GROUP, INC.

150 LONGWATER DRIVE, SUITE 101
NORWELL, MASSACHUSETTS 02061
PHONE: (781) 792-3900
FACSIMILE: (781) 792-0333

PROFESSIONAL CIVIL ENGINEERING • LAND PLANNING • PROJECT MANAGEMENT

FEMA Flood Map

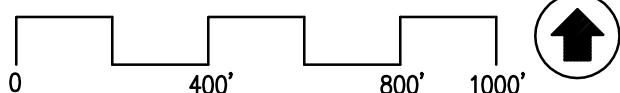
865 Brush Hill Road
MAP B12, LOTS 8A, 8B & 2B
MILTON, MASSACHUSETTS



SOIL KEY

SOIL CLASSIFICATION	DESCRIPTION	HYDROLOGIC SOIL GROUP
245C	HINCKLEY SANDY LOAM, 0 TO 15 PERCENT SLOPES	A
254A	MERRIMAC FINE SANDY LOAM, 0 TO 3 PERCENT SLOPES	A
254B	MERRIMAC FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES	A
626B	MERRIMAC URBAN LAND, 3 TO 8 PERCENT SLOPES	A

FIGURE - 3



NRCS SOIL SURVEY
TOWN OF MILTON, MA
NORFOLK COUNTY



MCKENZIE
ENGINEERING
GROUP, INC.

150 LONGWATER DRIVE, SUITE 101
NORWELL, MASSACHUSETTS 02061
PHONE: (781) 792-3900
FACSIMILE: (781) 792-0333

PROFESSIONAL CIVIL ENGINEERING • LAND PLANNING • PROJECT MANAGEMENT

NRCS Soils Map

865 Brush Hill Road
MAP B12, LOTS 8A, 8B & 2B
MILTON, MASSACHUSETTS