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October 11, 2013

Mr. John Carrigan
Section Chief – Solid Waste
Northeast Regional Office
Massachusetts Department of Environmental Protection
205B Lowell Street
Wilmington, Massachusetts 01887

Subject: Corrective Action Design - Response to Comments
Hamilton Landfill Closure
MassDEP Transmittal Number X252969

Dear Mr. Carrigan:

On behalf of the Town of Hamilton, Massachusetts, CDM Smith Inc. (CDM Smith) submits herein additional information in response to MassDEPs comments included in the September 20, 2013 Notification of Administrative Completeness for the Corrective Action Design (CAD) for closure of the Hamilton Landfill. The following paragraphs address each comment. MassDEP comments are presented in italics and CDM Smith responses are in bold font.

Comment #1

Design Plans: Sheet C-1, Existing Conditions. Identify the different cap areas (Areas 1, 1A, 2, 2A and 2B) on this plan.

Response: Sheet C-1 has been revised to show the different areas and is included in Attachment A.

Comment#2

Post-Closure Use. The Applicant proposes to place a pavement cap on Area 1A, and run a small DPW operation area for Material Storage and residential brush drop off on the paved area. Provide an Operations & Maintenance plan for this portion of the cap and the proposed DPW operation. The Applicant needs to show that the operation can be performed on the capped area while at the same time protecting the integrity of the final cap. Also address where these operations will take place during closure construction.

Response: Post-closure maintenance of the pavement cap will occur as part of the site-wide 30-year post closure monitoring and maintenance program. The following alternative pavement cap specific inspection and repair items will be included in the post-closure monitoring and maintenance plan to be submitted with the final closure construction certification report. The Town will inspect the



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pavement cap for cracks, settlement, deterioration on an ongoing basis and annually by a third-party qualified inspector as part of the annual post-closure landfill inspection required by the Massachusetts Solid Waste Management Regulations (SWMR), 310 CMR 19.000. All cracks and observed deterioration in the pavement will be repaired with appropriate sealants or with additional pavement. Areas of puddling/ponding of stormwater indicative of settlement will be repaired by the addition of pavement. If the settlement persists or appears to be caused by a larger problem, the areas will be repaired by removing the pavement cap and re-grading and stabilizing the subgrade, then re-capping. However, settlement is not anticipated due to the age of waste and the prior and current use of the pavement cap area as an access road and material storage area, which has pre-loaded the underlying soils.

Pavement caps have been permitted at the Brewster Landfill and the Brookline Landfill with similar post-closure uses. The pavement is a durable surface that can withstand increased use. The Town proposes to use the area to the south of the site entrance as the residential drop off for brush. Along the west side, where current stockpiles exist, the Town proposes to have material stockpiles for stumps, stones/boulders, ABC, and soil excavate originating from Town DPW construction activities. These stockpiles are similar to what currently exists at the site.

During closure construction activities, the Town will temporarily store materials at another location. As part of the closure contract, the Contractor is required to provide a location at the site entrance for one Town supplied roll-off container for the continued acceptance of residential brush and yard waste. The Contractor is required to provide access to this roll-off on every last Wednesday of each month to residents.

Comment#3

Restoration of Cap Areas 1 and 1A. The MassDEP approval of the Corrective Action Alternatives Analysis (CAAA) dated April 16, 2013, required Areas 1 and 1A (previously capped area) to be restored to a condition consistent with the original design and regulations at that time (310 CMR 19.00 with the effective date of April 21, 1971). Section 19.15 (3) of the 1971 regulations required a minimum depth of 2 feet for the final cap layer. Provide details on how Areas 1 and 1A will be restored to ensure the minimum 2 foot final cover layer?

Response: Test pits conducted in Area 1A within the limits of the proposed alternative pavement cap, have determined cover soils above the waste to vary between 12-inches and 4-feet thick. Since the Town has been using this area for DPW materials storage area, stockpiles of soils and other materials currently exist over this varying amount of cover soils. The proposed alternative pavement cap which is 12-inches thick in conjunction with the existing cover soils will meet the 24-inch required minimum cap thickness for Area 1A. Material removal and regrading of this area in



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preparation of the pavement cap will also slightly increase the existing cover soils quantity underneath the pavement.

In order to meet the required 2-foot minimum cap over Area 1, the existing cap will be augmented with additional soils. Based upon test pits conducted across Area 1, the thinnest existing cap cross section is 8-inches thick. Therefore, a minimum of 16-inches of additional soils are needed to meet the 24-inch cap requirement. In consideration of construction feasibility, a 24-inch layer of additional soil will be placed over a portion of Area 1 that effectively covers the areas found to be deficient. No additional testing of the existing cap thickness will be performed prior to cap augmentation. Existing topsoil may be stripped and re-used prior to placing an 18-inch thick layer of common fill and 6-inch thick layer of topsoil that make up the 24-inch cap supplement. Figure 1 contained in Appendix B shows the test pits that indicated a less than 24-inch thick cap on Area 1. Based upon the location of the test pits, a contiguous area of augmentation to the existing cap is delineated and shown on the revised Sheet C-2.

Comment #4

Landfill Cap subgrade layer for Areas 1A, 2, 2A, and 2B. 310 CMR 19.112 (4) requires that the subgrade layer be free of materials that may damage or abrade the low permeability layer or venting layer and be of sufficient thickness to cover all solid waste. Provide the proposed details of how the subgrade layer will be prepared.

Response: Based upon test pits, in most areas, there is a varying thickness of cover soils that may act as a subgrade layer. In areas of waste consolidation, bulky waste and other waste that may damage or abrade the low permeability layer will be placed at greater depths from the final cap. Daily cover used for waste relocation areas will also provide a smooth subgrade. The subgrade will be inspected by the Contractor and Engineer prior to placement of the low-permeability layer to verify that the subgrade is smooth with no waste or large stones are visible. If select waste is not available, a minimum 6-inch thick layer of common fill will be spread to finish subgrade. Details have been reflected to show this 6-inch thick subgrade beneath the low permeability layer.

Comment #5

Section 2.2.2.1 Common Fill of the Design Report. Please explain the following statement in this section:

“Note to accommodate the potential future post closure uses, the common fill layer may be used beneath the low-permeability layer to construct a flatter plateau.”





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Any changes to the final cap grading as shown on Sheets C-2 Subgrade Plan and Sheet C-3 Final Grading Plan will require additional MassDEP approval.

Response: During the closure design, the Town was in negotiations to receive a large quantity of clean soils that would help offset the cost to build a flatter plateau for post closure use at the site. This statement introduced the potential for the Town to submit a revised grading plan to show this plateau, if the soils were secured. Since then, the Town has secured these soils and a revised grading plan has been submitted with this correspondence. The quantity of soils is not great enough to maximize the plateau area, however, it will provide enough to account for the soil needed for cap augmentation on Area 1 and create a small plateau.

Comment #6

Areas 2 and 2A Material Volumes. The Applicant proposes to relocate waste from portions of Areas 2 and 2A. Based on previous test pits, how much waste is anticipated to be excavated from these areas? On Sheet C-2, Subgrade Plan, how much volume above the existing grades do these grades represent?

Response: Based upon test pit information, waste extends to approximately an average depth of 5-feet below ground surface (bgs) in both Areas 2 and 2A. The volume of waste anticipated to be excavated from Area 2A is 6,500 cubic yards and from Area 2 is 6,800 cubic yards, including general re-grading of the mound. The volume between the existing grades and proposed subgrade is approximately 14,000 cubic yards, leaving an approximate remaining volume of 700 cubic yards for daily cover volumes and a small increase in relocated waste volumes.

Comment #7

Section 2.4 Waste Relocation. The application states, in part:

“ If bulkier waste is encountered, additional measure will be implemented to achieve adequate compaction and minimize the potential for settlement.”

Any additional measure not reviewed and approved in this permit application will require notification to MassDEP and may require MassDEP approval prior to implementing.

Response: Additional measures to be considered include pre-crushing prior to placing waste in the relocation areas and removing materials from the site and bringing them to a licensed facility to dispose of in accordance with Massachusetts state regulations. Also, any tires will not be relocated on site, but removed from site and managed according to state regulations.

Comment #8

Construction Erosion Controls Area 1. The entire surface of Area 1 of the landfill will be cleared and grubbed in preparation to restoring the cap. Therefore, erosion control (haybale and silt fence)





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measures around the entire perimeter of Area 1 may be required. Please address this including any measures required by the town of Hamilton Conservation Commission, if applicable.

Response: Erosion control barriers were added to the plans submitted to the Hamilton Conservation Commission (HCC) for the Notice of Intent (NOI) Application. The erosion control barriers are also shown on the revised Sheet C-2 as included in Attachment A. The HCC approved the project on October 9, 2013.

Comment #9

Appendix E Stormwater Plans. Must be stamped and signed by a Massachusetts Professional Engineer.

Response: The stormwater plans have been stamped and signed by a Massachusetts Registered Professional Engineer and are included as Attachment C.

Comment #10

Conflict Sheet C-2, Subgrade Plan and Sheet D-2. The note on Sheet C-2 states: Pull waste back in order to install soil cap with an approximate 5-foot buffer between the wetland and edge of waste. Detail 10 on Sheet D-2 shows that the 5-foot buffer is between the edge of the soil cap and the wetland. Which is correct

Response: The 5-foot buffer is between the edge of the soil cap and the wetland as shown on Detail 10, on Sheet D-2. The note on Sheet C-2 is referring to the revised edge of waste and not the existing edge of waste. The note has been revised to clarify this and reads: "Pull waste back in order to install soil cap with an approximate 5-foot buffer between the wetland and final edge of cap".

Comment #11

Detail 3, Sheet D-1. States: "Processed Gravel Base of Reclaimed Material. Provide additional information on the "reclaimed material".

Response: The reclaimed material consists of a mix of crushed asphalt pavement and gravel borrow. MassDOT refers to the material as Reclaimed Pavement Borrow Material under section M1.11.0 of the Massachusetts Highway Department Specifications.

Comment #12

Detail 11 on Sheet D-2 Gravel Access Road and Soil Cap Transition. The collection and transportation of storm water off the landfill cap must be addressed





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Response: The revised final grading plan shows a different topographical transition from the soil cap to the gravel access road to incorporate stormwater controls. A grass swale has been designed on the north side of the access road to transmit flow along the transition areas and prevent potential erosion gullies along the edge gravel access road. A detail showing this transition and swale is included on Detail Sheet D-2.

A revised set of plans have been provided in Attachment A that addresses MassDEP comments and Hamilton Conservation Commission comments. These plans will also serve as the bid plans for the closure contract to be bid in the coming weeks.

Please do not hesitate to call me at (617) 452-6589 or Bruce Haskell at (617) 452-6541, if you have any questions or require additional information.

Very truly yours,

A handwritten signature in blue ink, appearing to read "Laura A. Bugay".

Laura A. Bugay, P.E.
Project Manager
CDM Smith Inc.

Attachments

cc: Michael Lombardo, Hamilton
David Hanlon, Hamilton
Bruce Haskell, CDM Smith
File: 0644/89096/03/05



Attachment A
Revised Plan Set
(Bound Separately)

**TOWN OF HAMILTON, MASSACHUSETTS
HAMILTON LANDFILL CLOSURE PROJECT**

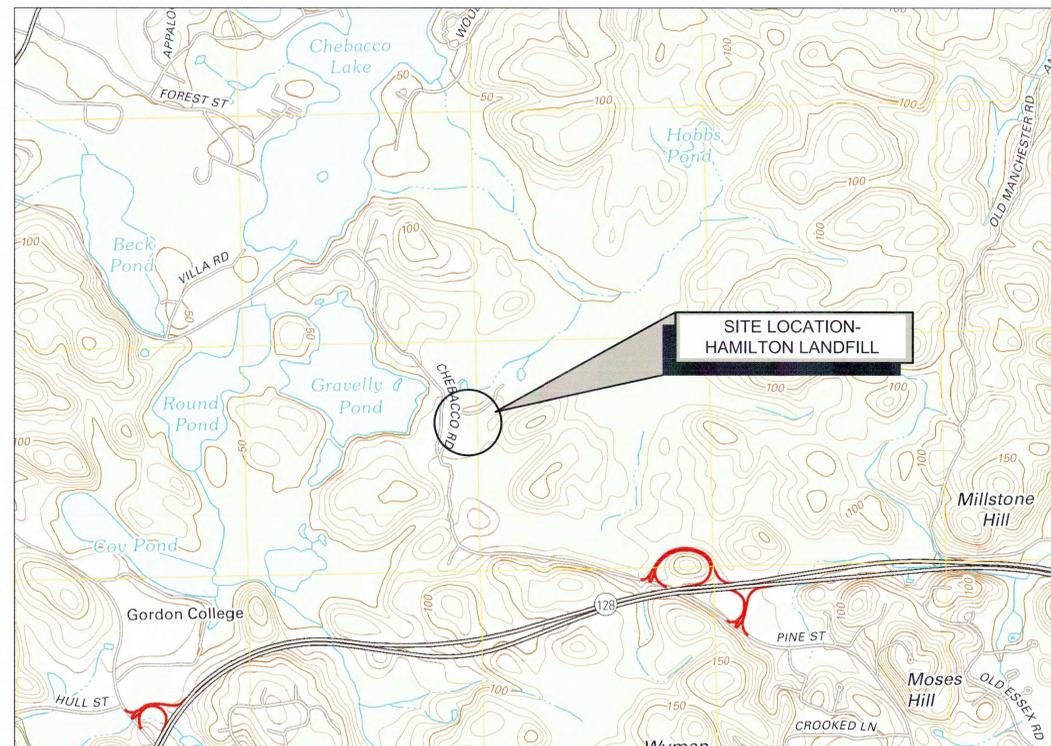
CORRECTIVE ACTION DESIGN

TOWN MANAGER

MICHAEL A. LOMBARDO

DEPARTMENT OF PUBLIC WORKS

DAVID HANLON, DIRECTOR



LIST OF DRAWINGS

<u>SHEET</u>	<u>TITLE</u>
C-1	EXISTING CONDITIONS PLAN
C-2	SUBGRADE PLAN
C-3	FINAL GRADING PLAN
C-4	LANDFILL CAP AND CORRECTIVE ACTION LOCUS PLAN
D-1	LANDFILL CLOSURE DETAILS II
D-2	LANDFILL CLOSURE DETAILS II

OCTOBER 2013

LOCATION PLAN

**CDM
Smith**



CAMBRIDGE, MASSACHUSETTS

Water

Environment

Transportation

Energy

Facilities

100-FOOT WETLAND BUFFER ZONE AND AURA
 75-FOOT NO BUILD BUFFER ZONE
 50-FOOT NO DISTURB BUFFER ZONE

LEGEND

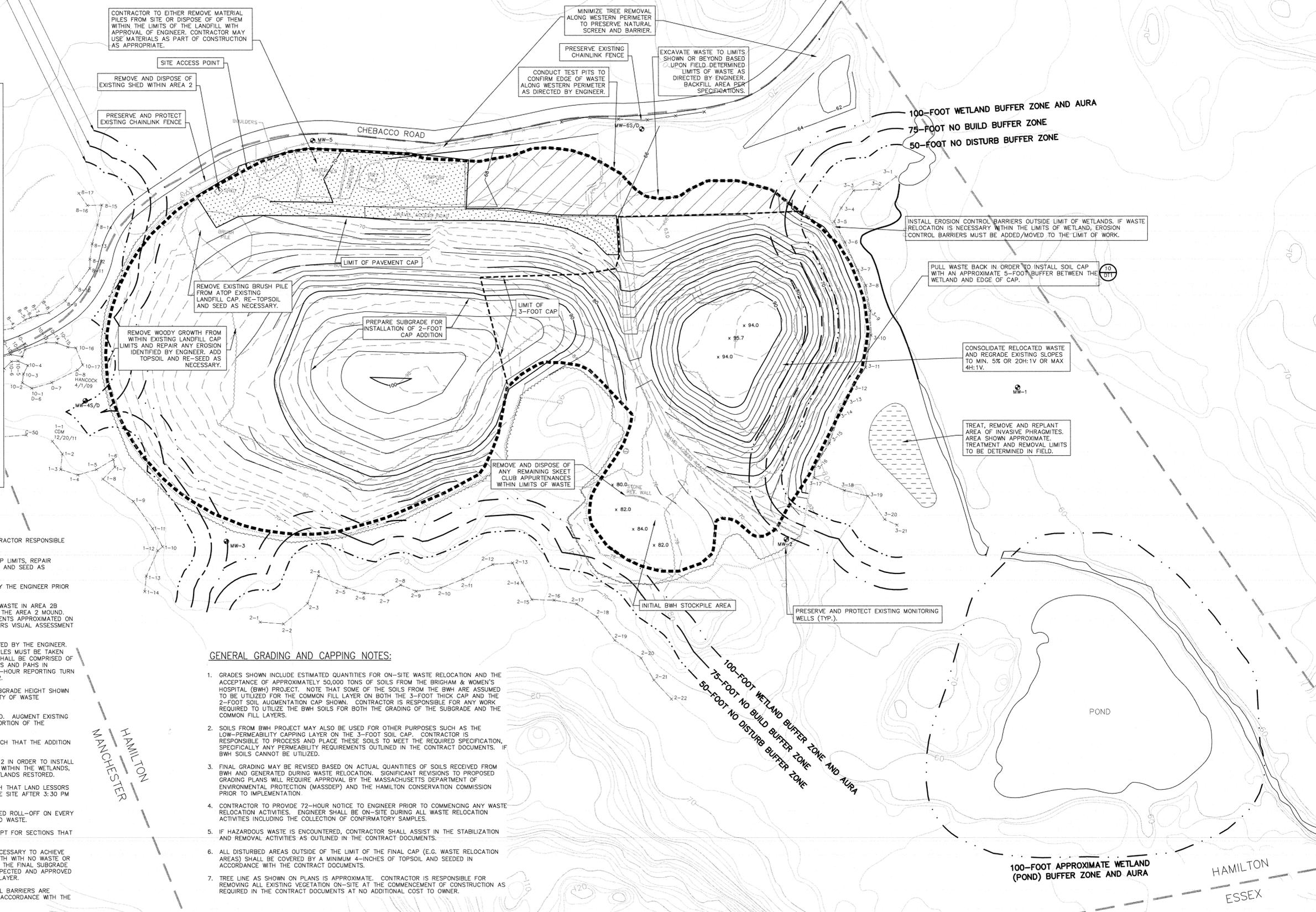
EXISTING CONDITIONS

- APPROXIMATE PROPERTY LINE
- APPROXIMATE LIMIT OF WASTE
- INTERMITTENT STREAM
- 2007 SURVEY MAJOR CONTOUR (EXISTING 10 FT)
- 2007 SURVEY MINOR CONTOUR (EXISTING 2 FT)
- MW-1 HAMILTON LANDFILL MONITORING WELL
- 2012 SURVEY MAJOR CONTOUR (EXISTING 10 FT)
- 2012 SURVEY MINOR CONTOUR (EXISTING 2 FT)
- EDGE OF WETLANDS
- 100' WETLAND BUFFER ZONE AND ASSOCIATED UPLAND RESOURCE AREA (AURA)
- 75' NO BUILD BUFFER ZONE
- 50' NO DISTURB BUFFER ZONE
- EXISTING GRAVEL ROAD

PROPOSED CONDITIONS

- PROPOSED EROSION CONTROL BARRIERS
- PROPOSED 2' FINAL CONTOUR
- PROPOSED 10' FINAL CONTOUR
- WASTE RELOCATION AREA
- LIMIT OF ALTERNATIVE PAVEMENT CAP
- LIMIT OF 3-FOOT SOIL CAP ON AREA 1

1" = 60'
 0 30 60



- GENERAL GRADING AND CAPPING NOTES:**
- GRADES SHOWN INCLUDE ESTIMATED QUANTITIES FOR ON-SITE WASTE RELOCATION AND THE ACCEPTANCE OF APPROXIMATELY 50,000 TONS OF SOILS FROM THE BRIGHAM & WOMEN'S HOSPITAL (BWH) PROJECT. NOTE THAT SOME OF THE SOILS FROM THE BWH ARE ASSUMED TO BE UTILIZED FOR THE COMMON FILL LAYER ON BOTH THE 3-FOOT THICK CAP AND THE 2-FOOT SOIL AUGMENTATION CAP SHOWN. CONTRACTOR IS RESPONSIBLE FOR ANY WORK REQUIRED TO UTILIZE THE BWH SOILS FOR BOTH THE GRADING OF THE SUBGRADE AND THE COMMON FILL LAYERS.
 - SOILS FROM BWH PROJECT MAY ALSO BE USED FOR OTHER PURPOSES SUCH AS THE LOW-PERMEABILITY CAPPING LAYER ON THE 3-FOOT SOIL CAP. CONTRACTOR IS RESPONSIBLE TO PROCESS AND PLACE THESE SOILS TO MEET THE REQUIRED SPECIFICATION, SPECIFICALLY ANY PERMEABILITY REQUIREMENTS OUTLINED IN THE CONTRACT DOCUMENTS. IF BWH SOILS CANNOT BE UTILIZED.
 - FINAL GRADING MAY BE REVISED BASED ON ACTUAL QUANTITIES OF SOILS RECEIVED FROM BWH AND GENERATED DURING WASTE RELOCATION. SIGNIFICANT REVISIONS TO PROPOSED GRADING PLANS WILL REQUIRE APPROVAL BY THE MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (MASSDEP) AND THE HAMILTON CONSERVATION COMMISSION PRIOR TO IMPLEMENTATION.
 - CONTRACTOR TO PROVIDE 72-HOUR NOTICE TO ENGINEER PRIOR TO COMMENCING ANY WASTE RELOCATION ACTIVITIES. ENGINEER SHALL BE ON-SITE DURING ALL WASTE RELOCATION ACTIVITIES INCLUDING THE COLLECTION OF CONFIRMATORY SAMPLES.
 - IF HAZARDOUS WASTE IS ENCOUNTERED, CONTRACTOR SHALL ASSIST IN THE STABILIZATION AND REMOVAL ACTIVITIES AS OUTLINED IN THE CONTRACT DOCUMENTS.
 - ALL DISTURBED AREAS OUTSIDE OF THE LIMIT OF THE FINAL CAP (E.G. WASTE RELOCATION AREAS) SHALL BE COVERED BY A MINIMUM 4-INCHES OF TOPSOIL AND SEEDED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
 - TREE LINE AS SHOWN ON PLANS IS APPROXIMATE. CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL EXISTING VEGETATION ON-SITE AT THE COMMENCEMENT OF CONSTRUCTION AS REQUIRED IN THE CONTRACT DOCUMENTS AT NO ADDITIONAL COST TO OWNER.

- GENERAL NOTES: SEE SHEET C-1.**
- CONSTRUCTION NOTES:**
- PRESERVE AND PROTECT EXISTING MONITORING WELLS ON SITE. CONTRACTOR RESPONSIBLE FOR REPAIR/REPLACEMENT IF DAMAGED DURING CONSTRUCTION.
 - CONTRACTOR TO REMOVE WOODY GROWTH FROM AREA 1 EXISTING CAP LIMITS, REPAIR EROSION AND OTHER AREAS OF STRESSED VEGETATION WITH TOPSOIL AND SEED AS DIRECTED BY THE ENGINEER.
 - EROSION CONTROL BARRIERS SHALL BE INSTALLED AND APPROVED BY THE ENGINEER PRIOR TO ANY WORK ON THE SITE.
 - TEST PITS SHALL BE CONDUCTED TO VERIFY THE WESTERN LIMIT OF WASTE IN AREA 2B PRIOR TO EXCAVATION. WASTE EXCAVATED SHALL BE RELOCATED TO THE AREA 2 MOUND. WASTE EXCAVATION TO OCCUR IN AREA 2B TO THE HORIZONTAL EXTENTS APPROXIMATED ON THE PLAN. FINAL EXCAVATION DEPTH TO BE DETERMINED BY ENGINEERS VISUAL ASSESSMENT AND CONFIRMED BY CONFIRMATORY SAMPLING.
 - CONFIRMATORY SAMPLES SHALL BE COLLECTED AT LOCATIONS DIRECTED BY THE ENGINEER. FOUR (4) ACCEPTABLE BOTTOM SAMPLES AND SIX (6) SIDEWALL SAMPLES MUST BE TAKEN PER ACRE OF WASTE RELOCATION AREA. EACH COMPOSITE SAMPLE SHALL BE COMPRISED OF FOUR INDIVIDUAL GRAB SAMPLES AND ANALYZED FOR RCRA 8 METALS AND PAHS IN ACCORDANCE WITH THE REPORTING LIMITS, ANALYTICAL METHODS, 24-HOUR REPORTING TURN AROUND TIME, ETC. IDENTIFIED IN THE SPECIFICATIONS SECTION 13612.
 - AREA 2 SHALL BE GRADED TO A MAXIMUM SIDESLOPE OF 4H:1V. SUBGRADE HEIGHT SHOWN ON THE PLAN MAY CHANGE IN FIELD DEPENDING ON ACTUAL QUANTITY OF WASTE RELOCATION REQUIRED.
 - CONSTRUCT 3-FOOT CAP ON NORTH SIDE OF AREA 1, AS DELINEATED. AUGMENT EXISTING CAP WITH 18-INCHES COMMON FILL AND 6-INCHES TOPSOIL ON A PORTION OF THE REMAINDER OF AREA 1 AS SHOWN ON THE PLANS.
 - BACKFILL WASTE EXCAVATION AREA TO APPROPRIATE SUBGRADES SUCH THAT THE ADDITION OF 4-INCHES OF TOPSOIL WILL ACHIEVE FINAL GRADES.
 - WASTE SHALL BE EXCAVATED ALONG THE NORTHERN EDGE OF AREA 2 IN ORDER TO INSTALL 3-FOOT SOIL CAP OUTSIDE OF THE WETLANDS. IF WASTE IS FOUND WITHIN THE WETLANDS, WASTE WILL BE REMOVED, CONSOLIDATED INTO AREA 2 AND THE WETLANDS RESTORED.
 - CONTRACTOR TO PROVIDE ACCESS THROUGH SITE AT ALL TIMES SUCH THAT LAND LESSORS MAY ACCESS FACILITIES LOCATED IN THE NORTHEAST CORNER OF THE SITE AFTER 3:30 PM WEEKDAYS AND ON WEEKENDS.
 - CONTRACTOR TO PROVIDE ACCESS TO AND SPACE FOR TOWN SUPPLIED ROLL-OFF ON EVERY LAST WEDNESDAY OF THE MONTH FOR RESIDENTS TO DROP OFF YARD WASTE.
 - CONTRACTOR TO PRESERVE AND PROTECT EXISTING FENCE LINE EXCEPT FOR SECTIONS THAT REQUIRE REPLACEMENT.
 - CONTRACTOR TO PREPARE SUBGRADE BY CUTTING OR FILLING AS NECESSARY TO ACHIEVE SUBGRADES SHOWN ON THIS PLAN. THE SUBGRADE SHALL BE SMOOTH WITH NO WASTE OR STONES GREATER THAN 2-INCHES IN DIAMETER WITHIN 4-INCHES OF THE FINAL SUBGRADE SURFACE IN THE 3-FOOT CAP AREAS. THE SUBGRADE SHALL BE INSPECTED AND APPROVED BY THE ENGINEER PRIOR TO PLACEMENT OF THE LOW PERMEABILITY LAYER.
 - NOTIFY THE HAMILTON CONSERVATION AGENT WHEN EROSION CONTROL BARRIERS ARE INSTALLED AND AFTER CLEARING AND GRUBBING FOR INSPECTION IN ACCORDANCE WITH THE ORDER OF CONDITIONS.

HAMILTON
 MANCHESTER

100-FOOT WETLAND BUFFER ZONE AND AURA
 75-FOOT NO BUILD BUFFER ZONE
 50-FOOT NO DISTURB BUFFER ZONE
 100-FOOT APPROXIMATE WETLAND (POND) BUFFER ZONE AND AURA
 HAMILTON
 ESSEX

DESIGNED BY: L. BUGAY
 DRAWN BY: L. BUGAY
 SHEET CHK'D BY: B. HASKELL
 CROSS CHK'D BY: L. BUGAY
 APPROVED BY: B. HASKELL
 DATE: OCT. 2013



TOWN OF HAMILTON, MASSACHUSETTS
 LANDFILL CLOSURE PROJECT

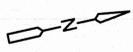


SUBGRADE PLAN

PROJECT NO. 0644-89096
 FILE NAME: CSTPL001
 SHEET NO.
 C-2

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REV. NO.	DATE	DRWN	CHKD	REMARKS



LEGEND

EXISTING CONDITIONS

- APPROXIMATE PROPERTY LINE
- ~ INTERMITTENT STREAM
- 2007 SURVEY MAJOR CONTOUR (EXISTING 10 FT)
- 2007 SURVEY MINOR CONTOUR (EXISTING 2 FT)
- MW-1 HAMILTON LANDFILL MONITORING WELL
- 2012 SURVEY MAJOR CONTOUR (EXISTING 10 FT)
- 2012 SURVEY MINOR CONTOUR (EXISTING 2 FT)
- EDGE OF WETLANDS
- - - 400' ZONE A PROTECTION AREA
- ▭ EXISTING GRAVEL ROAD

PROPOSED CONDITIONS

- ⋯ PROPOSED HAYBALES AND SEDIMENT FENCE
- PROPOSED 2' FINAL CONTOUR
- PROPOSED 10' FINAL CONTOUR
- LIMIT OF ALTERNATIVE PAVEMENT CAP
- LIMIT OF 3-FOOT SOIL CAP
- - - FINAL LIMIT OF WASTE
- (V) PROPOSED GAS VENT

1" = 60'



GENERAL NOTES: SEE SHEET C-1

CONSTRUCTION NOTES:

- SEE SHEET C-2 FOR ADDITIONAL CONSTRUCTION AND GENERAL GRADING AND CAPPING NOTES.
- CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING MONITORING WELLS LOCATED ON SITE.
- CONTRACTOR SHALL MAINTAIN EROSION CONTROLS THROUGHOUT THE DURATION OF THE PROJECT.
- CONTRACTOR MUST PROTECT DOWNGRADE WETLANDS TO THE NORTH, EAST AND SOUTH OF THE SITE.
- CONTRACTOR SHALL INSTALL SOIL CAP LAYER TO THE EXTENTS SHOWN ON THE PLAN. CAPPED AREAS SHALL NOT BE SLOPED GREATER THAN 4H:1V OR LESS THAN 20H:1V (5%).
- CONTRACTOR SHALL TRANSITION BETWEEN ALTERNATIVE PAVEMENT CAP AND ACCESS ROAD ON CAP.
- SOIL CAP SHALL NOT BE INSTALLED WITHIN THE LIMITS OF THE EXISTING WETLANDS.
- CONTRACTOR SHALL USE TOPSOIL TO GRADE TOE OF CAPPED LANDFILL SLOPE (AREA 1) AT EDGE OF ALTERNATIVE PAVEMENT CAP TO MAINTAIN POSITIVE SLOPE AND DIRECT STORMWATER ACROSS ACCESS ROAD.
- CONTRACTOR TO PLACE 12-INCH CAP LAYERS IN ONE LIFT. THE 18-INCH CAP LAYER SHALL BE INSTALLED IN TWO EQUIVALENT LIFTS OF 9-INCHES. ALL LIFTS MUST BE COMPACTED TO A MINIMUM OF 90% COMPACTION.
- CONTRACTOR RESPONSIBLE FOR MINIMIZING EROSION OF CAP LAYERS AND REPAIR OF ANY EROSION GULLIES.
- CONTRACTOR SHALL SUBMIT SOURCE INFORMATION INCLUDING GEOTECHNICAL AND CHEMICAL TESTING RESULTS OF ALL SOIL USED ON SITE PER THE SPECIFICATIONS PRIOR TO SOIL BEING BROUGHT ON SITE.
- CONTRACTOR TO PROVIDE ACCESS TO AND SPACE FOR TOWN SUPPLIED ROLL-OFF ON EVERY LAST WEDNESDAY OF THE MONTH FOR RESIDENTS TO DROP OFF YARD WASTE.
- CONTRACTOR TO PRESERVE AND PROTECT EXISTING FENCE LINE.
- CONTRACTOR TO TREAT AND REMOVE PHRAGMITES AND REPLANT IN ACCORDANCE WITH ORDER OF CONDITIONS.
- CONTRACTOR TO INSTALL SOIL CAP TO A MINIMUM TOTAL DEPTH OF 3-FOOT AND AUGMENT THE EXISTING CAP IN AREA AS SHOWN ON THE PLANS AND DIRECTED BY ENGINEER WITH A MINIMUM OF 2-FOOT. ALL LAYERS WILL BE FIELD VERIFIED FOR DEPTH CONFIRMATION.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: L. BUGAY
 DRAWN BY: L. BUGAY
 SHEET CHK'D BY: B. HASKELL
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TOWN OF HAMILTON, MASSACHUSETTS
 LANDFILL CLOSURE PROJECT



FINAL GRADING PLAN

PROJECT NO. 0644-89098
 FILE NAME: CSTPL001
 SHEET NO. C-3

XREFS: [CONS_3042, 2007 BasePlan, Cor. CD04, 05 West Front, floodplain] Images: []
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 REUSE OF DOCUMENTS:

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TOWN OF HAMILTON, MASSACHUSETTS
LANDFILL CLOSURE PROJECT



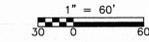
LANDFILL CAP AND CORRECTIVE ACTION LOCUS PLAN

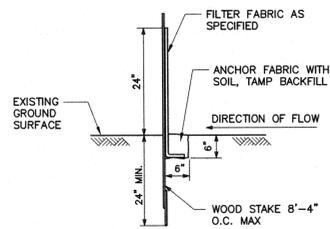
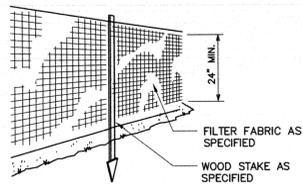
PROJECT NO. 0644-89096
 FILE NAME: CSTPL001
 SHEET NO. C-4

- LEGEND**
- EXISTING CONDITIONS**
- APPROXIMATE PROPERTY LINE
 - INTERMITTENT STREAM
 - 2007 SURVEY MAJOR CONTOUR (EXISTING 10 FT)
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 - HAMILTON LANDFILL MONITORING WELL
 - 2012 SURVEY MAJOR CONTOUR (EXISTING 10 FT)
 - 2012 SURVEY MINOR CONTOUR (EXISTING 2 FT)
 - EDGE OF WETLANDS

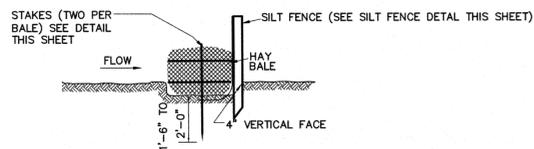
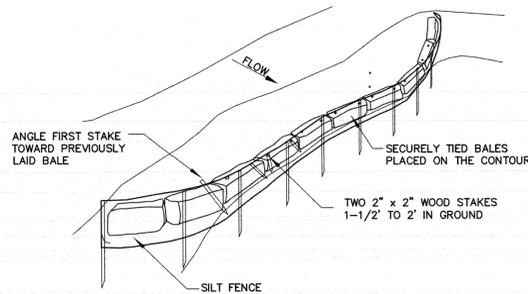
- PROPOSED CONDITIONS**
- FINAL LIMIT OF WASTE

- CAP AND WORK AREAS**
- WASTE TO BE EXCAVATED AND RELOCATED TO AREA 2. BACKFILL AREA PER SPECIFICATIONS AFTER CONFIRMATORY SAMPLING.
 - ALTERNATIVE PAVEMENT CAP
 - 2-FOOT SOIL CAP AUGMENTATION OVER PORTION OF AREA 1
 - 3-FOOT SOIL CAP
 - RESTORE EXISTING SOIL CAP BY REMOVING WOODY VEGETATION AND ADDING TOPSOIL AND SEED AS NECESSARY

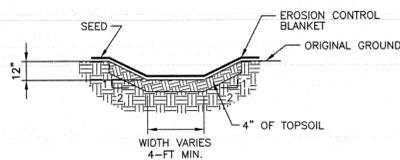




SILT FENCE DETAIL
N.T.S.

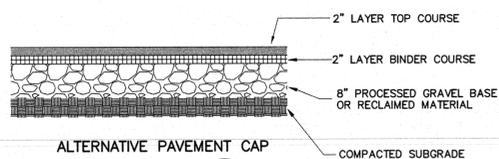


HAYBALE AND SILT FENCE DETAIL
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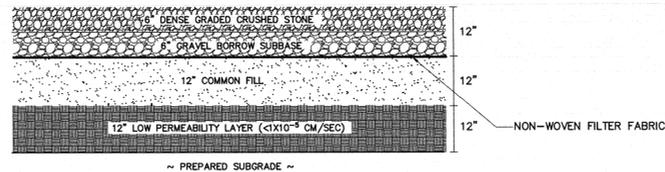
GRASS LINED SWALE
N.T.S.

- NOTES:**
1. INSTALL EROSION CONTROL BLANKET AS SHOWN ON THIS SHEET.
 2. USE SALT TOLERANT SEED FOR 25' GRASS FILTER STRIP PORTION OF GRASS SWALE.

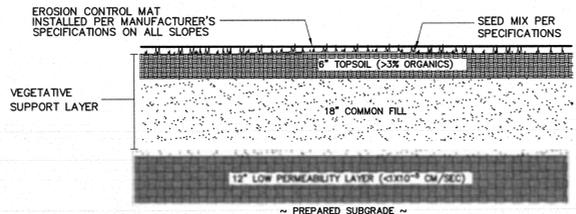


ALTERNATIVE PAVEMENT CAP
N.T.S.

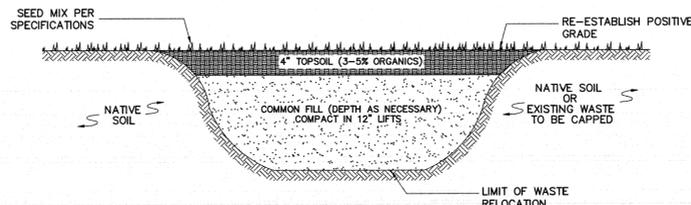
- NOTE:**
1. WASTE AND EXISTING SOIL TO BE REMOVED AND RELOCATED ON SITE TO MEET FINAL GRADES.



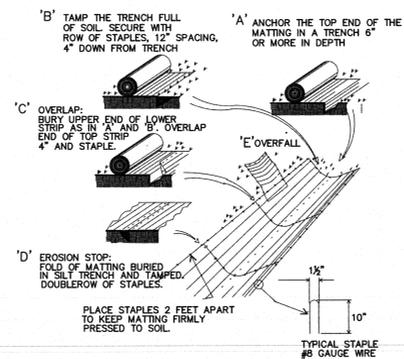
PROPOSED ACCESS ROAD ON CAP
N.T.S.



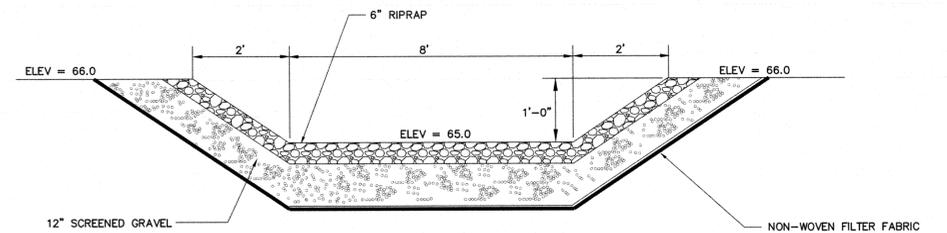
PROPOSED 3-FOOT ALTERNATIVE CAP
N.T.S.



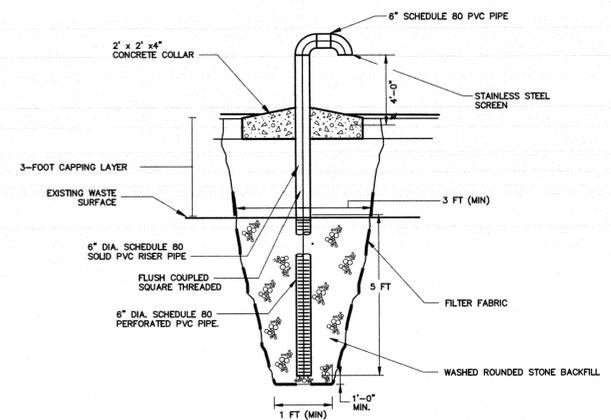
WASTE RELOCATION BACKFILL
N.T.S.



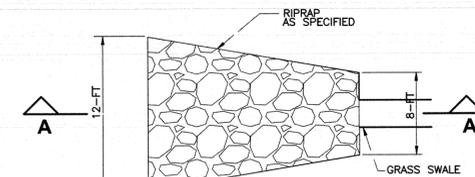
EROSION CONTROL MATTING PLACEMENT
N.T.S.



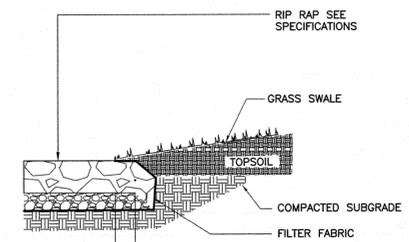
STORMWATER BASIN RIPRAP SPILLWAY
N.T.S.



PASSIVE GAS VENT
N.T.S.



PLAN



SECTION A-A'

RIP RAP SPLASHPAD
N.T.S.

REV.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: L. BUGAY
DRAWN BY: L. BUGAY
SHEET CHK'D BY: C. KOEHLER
CROSS CHK'D BY: L. BUGAY
APPROVED BY: B. HASKELL
DATE: OCT 2013

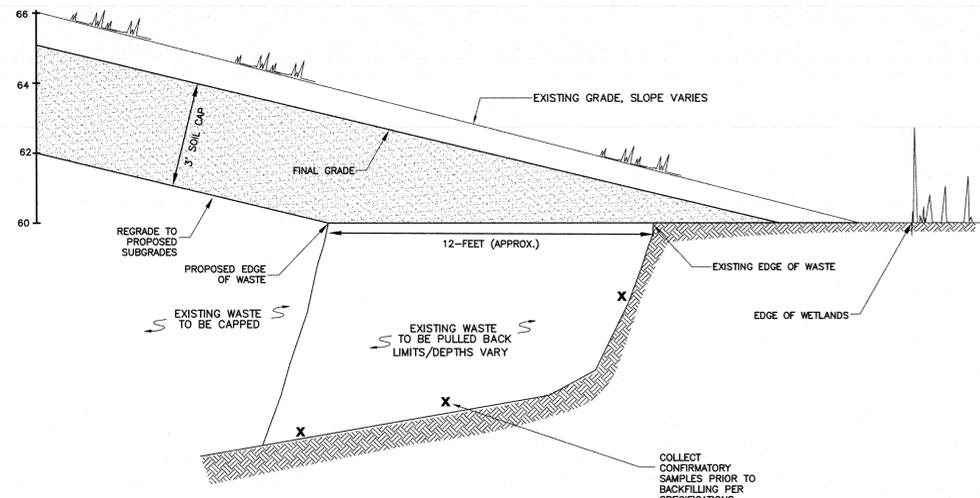
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50 Hampshire Street
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LANDFILL CLOSURE PROJECT

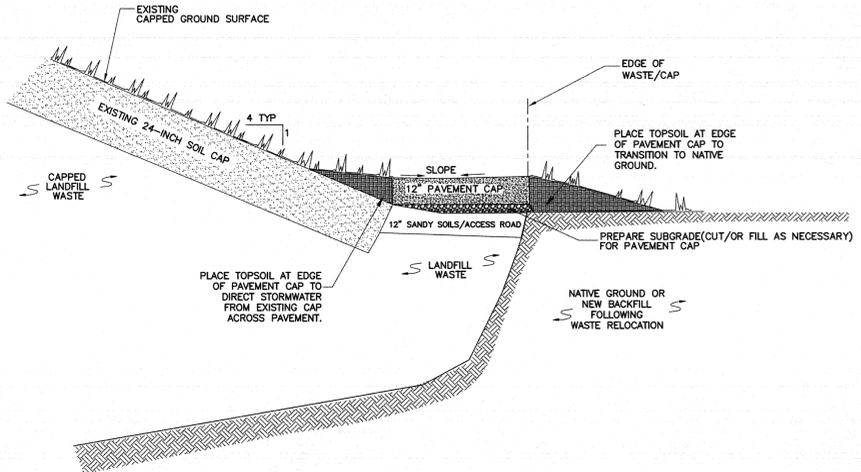


LANDFILL CLOSURE DETAILS

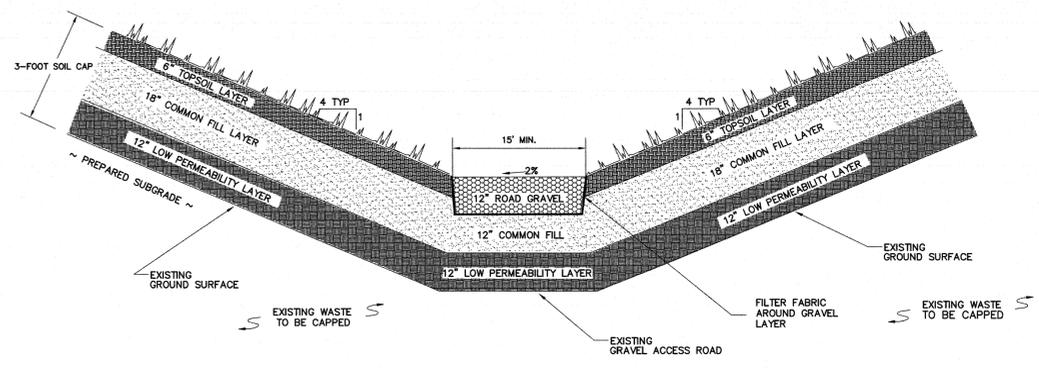
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FILE NAME: CSTDT001
SHEET NO. **D-1**



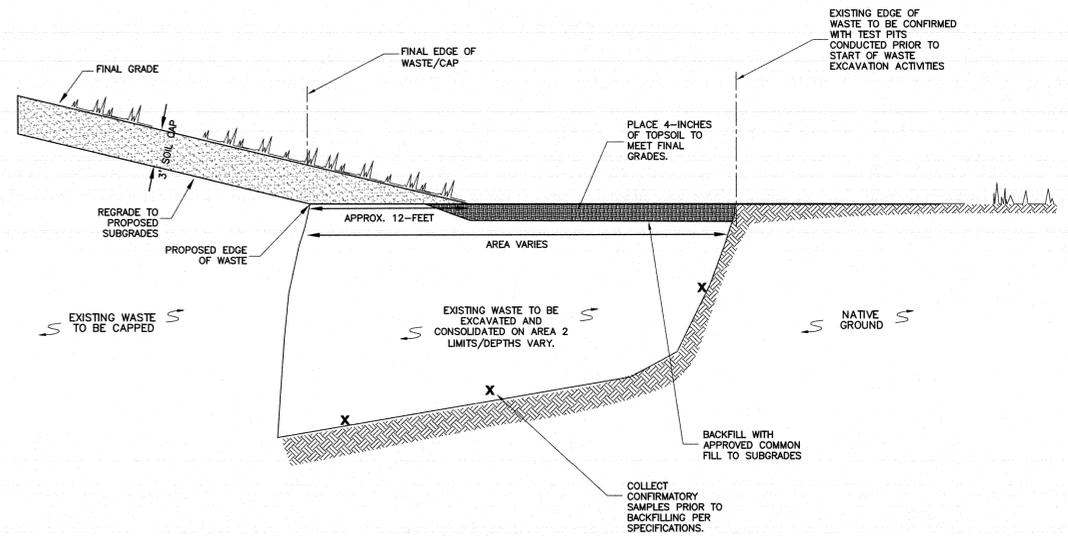
AREA 2 TOE OF SLOPE
DETAIL 10
N.T.S.



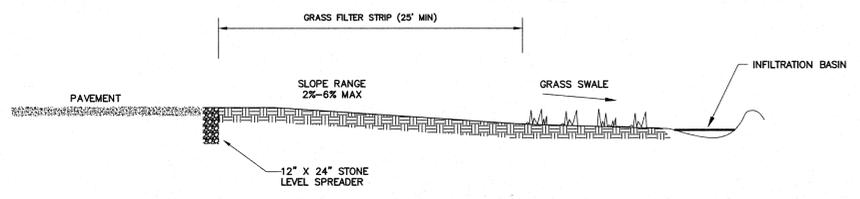
GRAVEL ACCESS ROAD AND PAVEMENT CAP TRANSITION
DETAIL 12
NOT TO SCALE



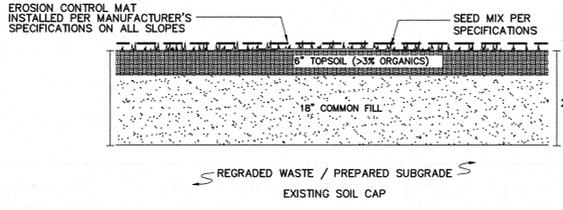
GRAVEL ACCESS ROAD AND SOIL CAP TRANSITION
DETAIL 11
NOT TO SCALE



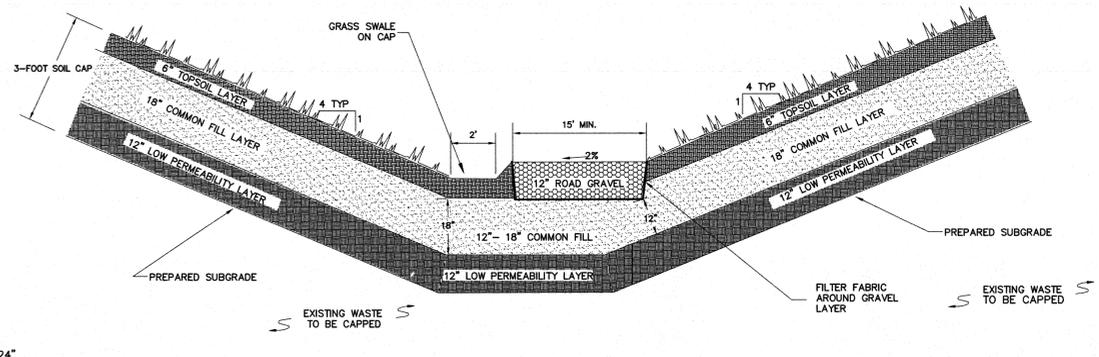
AREA 2B WASTE RELOCATION TRANSITION
DETAIL 13
N.T.S.



VEGETATED FILTER STRIP AND STONE LEVEL SPREADER
DETAIL 14
NOT TO SCALE



PROPOSED 2-FOOT CAP AUGMENTATION
DETAIL 16
NOT TO SCALE



GRAVEL ACCESS ROAD, GRASS SWALE AND SOIL CAP TRANSITION
DETAIL 15
NOT TO SCALE

Xref's: [CDM_3042_CDM_3042_2] Images: []
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 PLEASE UPDATE THE PROJECTWISE PATH (SELECT ATTRIBUTES IN PROJECTWISE AND CLICK CHECK BOX)
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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: L. BUGAY
 DRAWN BY: L. BUGAY
 SHEET CHK'D BY: B. HASKELL
 CROSS CHK'D BY: L. BUGAY
 APPROVED BY: B. HASKELL
 DATE: OCT 2013



TOWN OF HAMILTON, MASSACHUSETTS
LANDFILL CLOSURE PROJECT



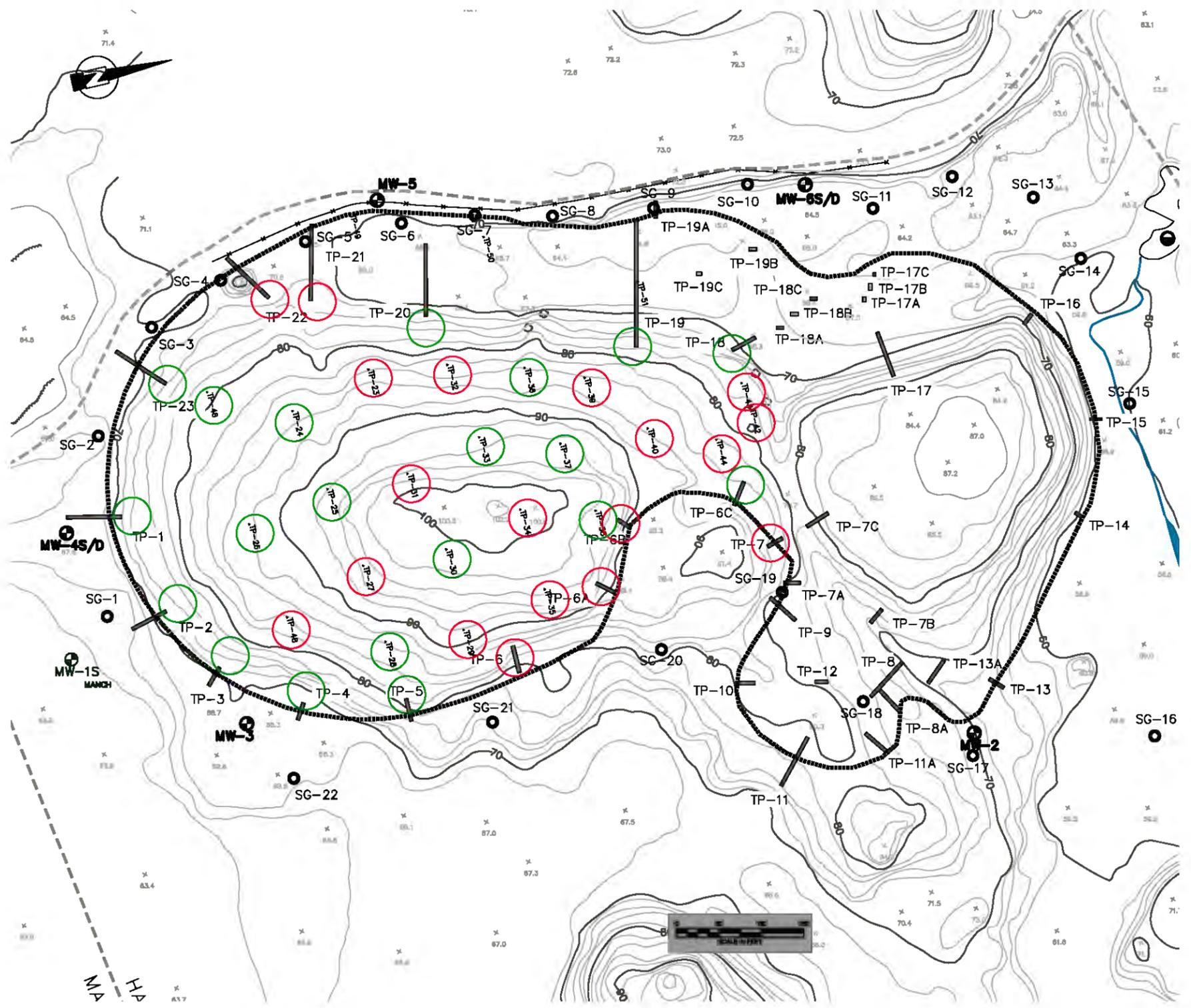
LANDFILL CLOSURE DETAILS

PROJECT NO. 0644-89096
 FILE NAME: CSTD002
 SHEET NO.
D-2

Attachment B

Test Pit Plan

- LANDFILL PROPERTY LINE
- APPROX. LIMIT OF WASTE
- TP-1 CSA TEST PIT LOCATION (SEPTEMBER 2007)
- STREAM
- MAJOR CONTOUR
- MINOR CONTOUR
- HAMILTON LANDFILL MONITORING WELL
- PIEZOMETER
- SG-23 SOIL GAS PROBE
- MANCHESTER LANDFILL MONITORING WELL
- CAP CONFIRMATION TEST PIT: <24 INCHES
- CAP CONFIRMATION TEST PIT: >24 INCHES (MEETS CAP REQUIREMENT)



GENERAL NOTES

1. AERIAL PHOTOGRAMMETRY CONDUCTED AND COMPILED BY EASTERN TOPOGRAPHICS OF WOLFBORO, NH. PHOTO DATE: APRIL 2, 1989. SOME FEATURES DIGITIZED FROM MASSGIS ORTHOPHOTOS TAKEN APRIL, 2001.
2. VERTICAL DATUM: NGVD 1929.
3. PROPERTY LINES ARE APPROXIMATE AND BASED UPON TOWN OF HAMILTON GIS DATA (2005).
4. LIMIT OF LANDFILL IS BASED UPON TEST PITS ADVANCED BY SEA IN SEPTEMBER 2007.
5. THIS PLAN WAS PREPARED FOR ASSESSMENT PURPOSES ONLY. THE INFORMATION SHOWN WAS COMPILED FROM THE SOURCES NOTED ABOVE.
6. CAP CONFIRMATION TEST PITS WERE CONDUCTED BY CDM SMITH INC. ON DECEMBER 18-20, 2011. THESE TEST PITS ARE NUMBERED TP-23 THROUGH TP-46.

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REV. NO.	DATE	BY	CHKD.	REMARKS

DESIGNED BY: _____
 DRAWN BY: _____
 SHEET CHECKED BY: _____
 CROSS CHECKED BY: _____
 APPROVED BY: _____
 DATE: JAN 2012

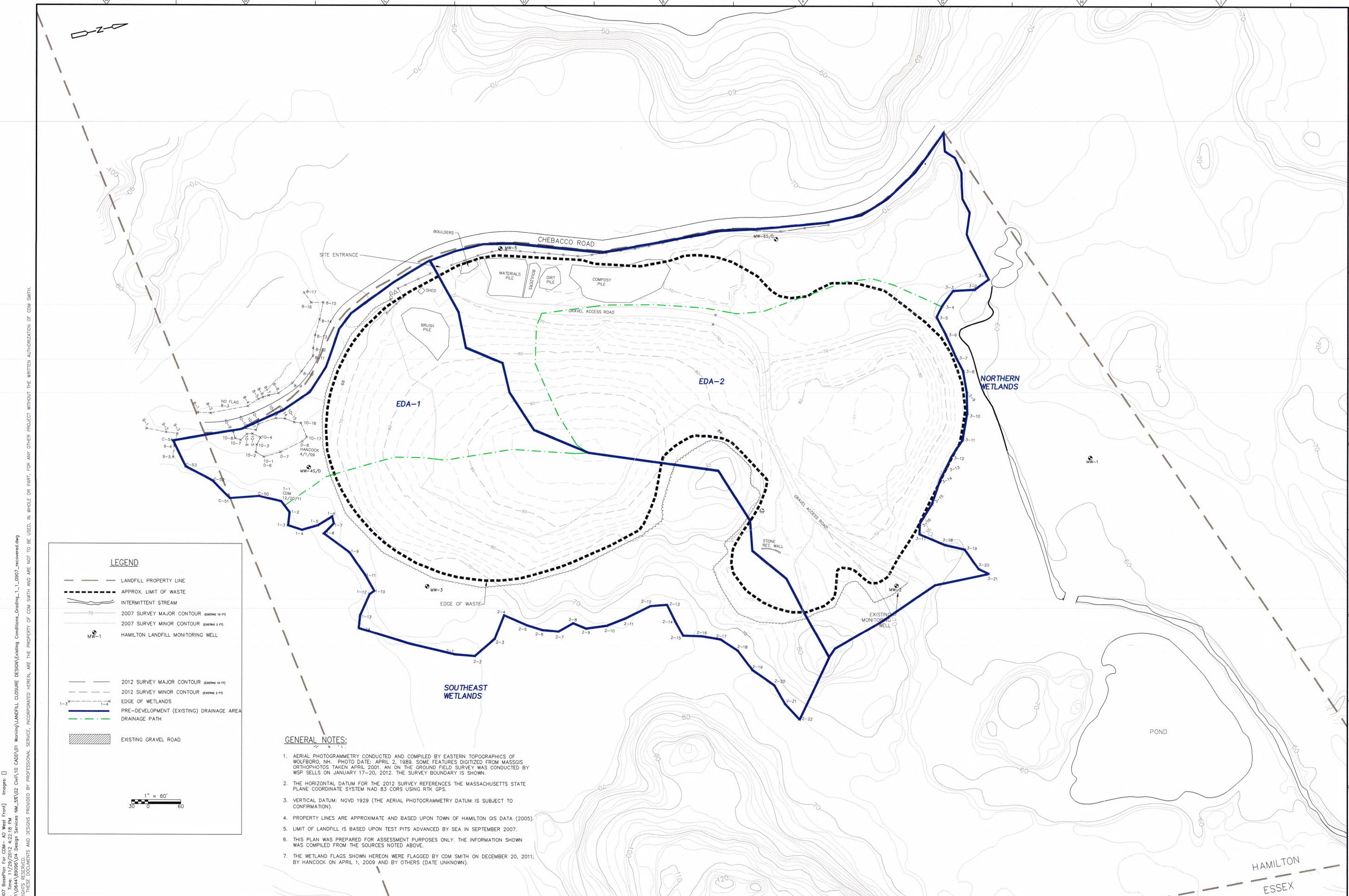
CDM Smith
 50 Haverhill Street
 Cambridge, MA 02142
 TEL: (617) 452-6000

TOWN OF HAMILTON, MASSACHUSETTS
LANDFILL CLOSURE PROJECT

PROJECT NO. 0644-0000
FILE NAME
SHEET NO.

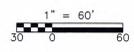
Attachment C

Stormwater Plans



LEGEND

- LANDFILL PROPERTY LINE
- - - - - APPROX. LIMIT OF WASTE
- ~ ~ ~ ~ ~ INTERMITTENT STREAM
- 70 2007 SURVEY MAJOR CONTOUR (EXISTING 10 FT)
- 70 2007 SURVEY MINOR CONTOUR (EXISTING 1 FT)
- MW-1 HAMILTON LANDFILL MONITORING WELL
- 2012 SURVEY MAJOR CONTOUR (EXISTING 10 FT)
- 2012 SURVEY MINOR CONTOUR (EXISTING 1 FT)
- EDGE OF WETLANDS
- PRE-DEVELOPMENT (EXISTING) DRAINAGE AREA
- DRAINAGE PATH
- EXISTING GRAVEL ROAD



GENERAL NOTES:

1. AERIAL PHOTOCGRAMMETRY CONDUCTED AND COMPILED BY EASTERN TOPOGRAPHICS OF WOLFBORO, NH. PHOTO DATE: APRIL 2, 1989. SOME FEATURES DIGITIZED FROM MASSGIS ORTHOPHOTOS TAKEN APRIL 2001. AN ON THE GROUND FIELD SURVEY WAS CONDUCTED BY WSP SELLS ON JANUARY 17-20, 2012. THE SURVEY BOUNDARY IS SHOWN.
2. THE HORIZONTAL DATUM FOR THE 2012 SURVEY REFERENCES THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM NAD 83 CORRS USING RTK GPS.
3. VERTICAL DATUM: NGVD 1929 (THE AERIAL PHOTOCGRAMMETRY DATUM IS SUBJECT TO CONFIRMATION).
4. PROPERTY LINES ARE APPROXIMATE AND BASED UPON TOWN OF HAMILTON GIS DATA (2005).
5. LIMIT OF LANDFILL IS BASED UPON TEST PITS ADVANCED BY SEA IN SEPTEMBER 2007.
6. THIS PLAN WAS PREPARED FOR ASSESSMENT PURPOSES ONLY. THE INFORMATION SHOWN WAS COMPILED FROM THE SOURCES NOTED ABOVE.
7. THE WETLAND FLAGS SHOWN HEREON WERE FLAGGED BY CDM SMITH ON DECEMBER 20, 2011; BY HANCOCK ON APRIL 1, 2009 AND BY OTHERS (DATE UNKNOWN).

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DRAWN BY:	
SHEET CHK'D BY:	
CROSS CHK'D BY:	
APPROVED BY:	
DATE:	OCT 2013

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 50 Hampshire Street
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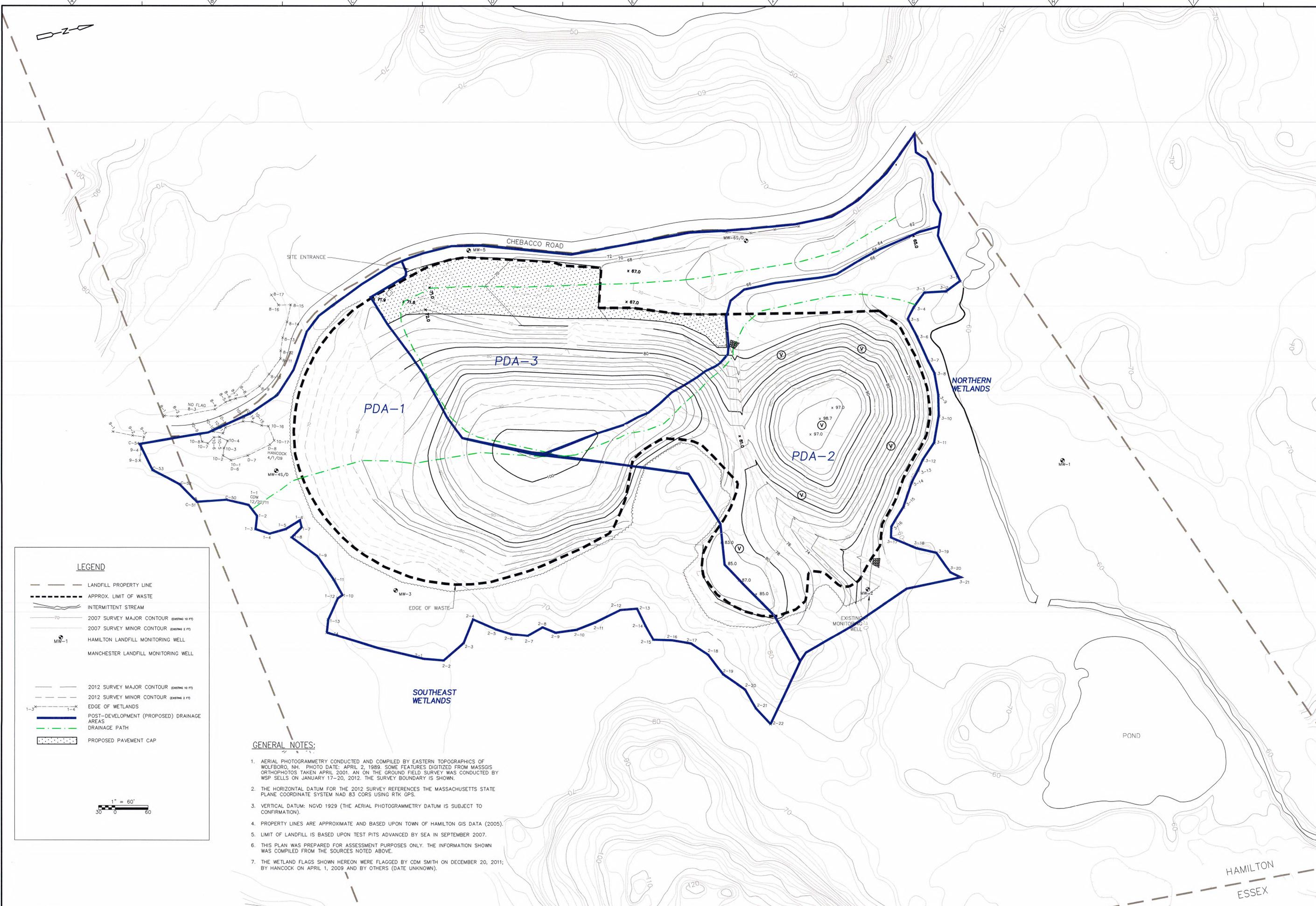
TOWN OF HAMILTON, MASSACHUSETTS
LANDFILL CLOSURE PROJECT



PRE-DEVELOPMENT DRAINAGE
 AREA PLAN

PROJECT NO.	0644-89096
FILE NAME:	
SHEET NO.	
FIGURE 1	

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LEGEND

- LANDFILL PROPERTY LINE
- - - - - APPROX. LIMIT OF WASTE
- ~ ~ ~ ~ ~ INTERMITTENT STREAM
- 70 2007 SURVEY MAJOR CONTOUR (EXISTING 10 FT)
- 70 2007 SURVEY MINOR CONTOUR (EXISTING 2 FT)
- MW-1 HAMILTON LANDFILL MONITORING WELL
- MW-1 MANCHESTER LANDFILL MONITORING WELL
- 2012 SURVEY MAJOR CONTOUR (EXISTING 10 FT)
- 2012 SURVEY MINOR CONTOUR (EXISTING 2 FT)
- - - - - EDGE OF WETLANDS
- POST-DEVELOPMENT (PROPOSED) DRAINAGE AREAS
- DRAINAGE PATH
- PROPOSED PAVEMENT CAP

1" = 60'

30 0 60

GENERAL NOTES:

1. AERIAL PHOTOGRAMMETRY CONDUCTED AND COMPILED BY EASTERN TOPOGRAPHICS OF WOLFBOURNE, NH. PHOTO DATE: APRIL 2, 1989. SOME FEATURES DIGITIZED FROM MASSGIS ORTHOPHOTOS TAKEN APRIL 2001. AN ON THE GROUND FIELD SURVEY WAS CONDUCTED BY WSP SELLS ON JANUARY 17-20, 2012. THE SURVEY BOUNDARY IS SHOWN.
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REV. NO.	DATE	DRWN	CHKD	REMARKS

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 DATE: OCT 2013

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 50 Hampshire Street
 Cambridge, MA 02139
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TOWN OF HAMILTON, MASSACHUSETTS
 LANDFILL CLOSURE PROJECT



POST-DEVELOPMENT DRAINAGE AREA PLAN

PROJECT NO. 0644-89096
 FILE NAME:
 SHEET NO.
FIGURE 2