May 11, 2016
GZA File No: 03.0033930.04

Commonwealth of Massachusetts
Department of Environmental Protection
Northeast Regional Office
205B Lowell Street
Wilmington, Massachusetts 01887

Re: Utility-Related Abatement Measure (URAM) Status Report No. 7
UMASS Boston Campus UCRR Project
Boston, Massachusetts
RTN 3-31002

To Whom It May Concern:

On behalf of the University of Massachusetts Boston (UMASS Boston; the “Site”), GZA GeoEnvironmental, Inc. (GZA) has prepared this Utility-Related Abatement Measure (URAM) Status Report No. 7 for the UMASS Boston Utility Corridor and Roadway Replacement Project (UCRR). Modifications to the URAM Plan for this Site have been necessitated by the detection of asbestos fibers in samples collected from excavated landfill material stockpiled at the site, as discussed in URAM Status Report 6. The provisions in place for the management of soil, prior to the detection of asbestos, are detailed in the original URAM Plan dated June 24, 2013. Additional provisions were provided in URAM Status Report 6.

This URAM Status Report No. 7 discusses ongoing UCRR activities, including excavation, monitoring and control measures, installation and backfilling of utilities, installation of softscapes and hardscapes, the installation of demarcation layer materials, and soil handling, management, and reuse. This Status Report also discusses additional material management provisions to be instituted for the remaining duration of the project. The UCRR project is currently anticipated to be completed in December 2017.

A Site Locus Map is presented as Figure 1. Due to the size of the project, work will be completed in delineated segments. The area covered by this Status Report and the delineated segments are shown on Figure 2. Work in several segments may occur concurrently. During work in each segment, portions of the segment may be delineated as the work zone, and other portions of the segment will remain accessible to the public for pedestrian and vehicular traffic. A fence will surround the work zone and the public will not have access to the work zone.

All soil excavated during the installation of utilities, related structures and roadways in the UCRR project will be managed under the protocols set forth in this and subsequent URAM Status Reports. The URAM will be performed in compliance with the applicable requirements of Section 40.0460 of the Massachusetts Contingency Plan (MCP).
This status report also describes the program of air monitoring for asbestos. Detailed provisions for air monitoring/sampling for asbestos are described in Attachment 1, Perimeter Asbestos Air Monitoring Plan, prepared by Environmental Health & Engineering (EH&E).

BACKGROUND

The project Site is approximately 95 acres in area and is occupied by a college campus consisting of multi-story buildings, a central former parking garage that forms a central plaza level, a former running track, a softball field, parking lots, and roadways. The UMASS Boston campus is located on the Columbia Point peninsula, which has a history of filling over the past 130 years. Originally, the Site was a tidal marshland, and approximately 60 acres of the southern and eastern campus area was submerged or tidal marsh. The UMass Boston Campus is constructed on filled marsh deposits, and the fill material used was largely municipal solid waste mixed with granular soil.

A manufactured gas plant (MGP) was in operation on what is now the western portion of the campus from the late 1880s to the 1930s. Beginning in the 1920s, the Site was used as a City of Boston burning dump; this activity more than doubled the size of the previously filled land that is now occupied by the campus. The landfill was closed in the early 1960s and the UMASS Boston campus was constructed in the early 1970s.

The complex land use history of the Site, combined with extensive regrading during the initial campus construction, has created a fairly homogeneous waste profile of fill extending to depths of as much as 30 feet below the existing ground surface. Oil and hazardous materials (OHM) detected in the fill include petroleum hydrocarbons, polychlorinated biphenyls (PCBs), metals, polycyclic aromatic hydrocarbons (PAHs), and methane. In some cases, the reported OHM concentrations have exceeded Reportable Concentrations specified in the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000).

The UMASS Boston campus was granted a Special Project Designation (SPD) under the MCP by the MassDEP in 2012. All projects on campus which involve earthwork or ground-disturbing construction are managed under the MCP and require oversight by a Licensed Site Professional (LSP). The master release tracking number (RTN) for the UMB campus is 3-31000. Under the terms of the SPD, each construction project site on campus at which MCP-regulated materials may be encountered, excavated, disturbed, or relocated is assigned a unique “daughter” RTN. The UCRR project is being conducted under RTN 3-31002 and the work is overseen by the MassDEP Bureau of Waste Site Cleanup.

UTILITY CORRIDOR AND ROADWAY RELOCATION (UCRR) PROJECT

The UCRR project is a massive and essential enabling project for the UMass campus. In 2009, a new Campus Master Plan was adopted that provided the framework for campus development for the subsequent twenty-five years. When the campus was originally constructed, primary campus utilities were routed through a central Substructure located below the original campus buildings. The 40-year-old Substructure is now failing, and the Campus Master Plan calls for the creation of a central quadrangle on campus to replace the failing Substructure. In order to provide a better understanding of the campus’ needs related to the demolition of the Substructure, a Utilities Master Plan was undertaken by Arup USA Inc. to consider options for rerouting the utilities necessitated by the demolition of the Substructure. The Utilities Master Plan also reviewed current utility loads and conditions, evaluated possible alternative sources of energy for the campus, and forecasted future utility loads based upon the anticipated full development build-out envisioned in the Campus Master Plan.
Based upon the Utilities Master Plan, a decision was made to provide a campus-wide perimeter utility corridor. The UCRR project construction started in 2012 with upgrades to the existing Campus Utility Plant. Construction has continued on the primary utility loop and includes a new two-way roadway system with 11-foot lanes, five-foot bike lanes, eight-foot tree lawns and eight-foot sidewalks throughout most of the campus. In addition, more than 600 new trees are planned to be planted on campus.

The new roadway and pedestrian system will improve overall traffic circulation and pedestrian connections on campus. The new utility corridor, incorporating more than 17 miles of new piping and duct banks, will support future buildings and provide reliable and redundant utility services to the campus. The new utilities being installed include piping for domestic and fire water, sanitary wastewater, chilled water, heating hot water, and natural gas, as well as conduits for electrical, telecommunications, and data lines. A storm water management plan is also part of this project, and will make extensive use of sustainable bio-retention swales to manage storm water run-off.

Unlike individual building projects on the campus which have a well-defined areal footprint, the UCRR project is linear and extends over much of the campus area (refer to Figure 2 for utility corridor alignment). It is estimated that over the course of the entire project approximately 300,000 cubic yards of soil and landfill material will be handled (excavated, potentially processed, stockpiled, reused to construct landforms and changes in grade, potentially reused as utility trench backfill, or disposed of off-Site).

**STATUS OF WORK IN THE AREA UNDER URAM STATUS REPORT 6**

URAM Status Report No. 6, submitted to MassDEP on January 13, 2016, discussed the provisions to be taken to address the handling and management of excavated material that would be encountered during work associated with the installation of pile caps and other utilities in the area to the north of the Calf Pasture Pump Station (also referred to as the Tri-Gen Site). This area is shown on Figure 7. URAM Status Report #6 was approved with conditions by MassDEP on January 25, and the work described in that report is currently underway.

Following the submittal and approval of Status Report 6, the design and construction teams determined that the locations originally proposed for wheel washes could not be practically implemented. MassDEP was notified of the revised wheel wash location (refer to Figure 7) in an email on February 26, 2016. In addition to the wheel wash location revision, the revised plan shows a staging area between the work zone and wheel wash that trucks pass through to access the new wheel wash location and that also serves as an area for temporary stockpiles. The staging area is within the construction fence and is not accessible by the public; trucks do not leave the Site to access public roadways without going through the wheel wash.

Since February 24, 2016, EH&E has been implementing perimeter asbestos air monitoring around work areas north of the Calf Pasture Pump Station subject to URAM Status Report 6 in accordance with the MassDEP approved sampling plan. The perimeter air monitoring for asbestos was performed to assess the adequacy of dust control measures at minimizing the potential for airborne asbestos fibers, and to ensure that if elevated levels were detected that corrective actions be implemented to effectively control potential sources. Through April 22, 2016, this has involved collecting 457 area air samples (not including quality assurance samples), around work areas when potentially asbestos-contaminated soils were being disturbed on 33 work days. The samples were analyzed for total airborne fibers, including but not specific to asbestos, using Phase Contrast Microscopy (PCM). All results to date have been well below the MassDEP specified action level of 0.010 fibers per cubic centimeter (f/cc), which is based on the clearance criteria for re-occupancy of spaces following asbestos abatement. All measurements have also been orders of magnitude below health-based occupational exposure limits for asbestos, including the U.S. Occupational Safety and Health Administration (OSHA) permissible
exposure limit of 0.1 f/cc. PCM results have been provided to the MassDEP on a daily basis in accordance with the plan. Overall, perimeter air monitoring results to date do not indicate any evidence of elevated emissions from UCRR Project work areas.

MATERIAL MANAGEMENT FOR REMAINING WORK IN THE UCRR PROJECT

Overview of Scope of Remaining Work To Be Conducted Under the Provisions of this Status Report

It is anticipated that an estimated 145,000 cubic yards of material will be excavated and handled during the remainder of the UCRR project. Future excavations may be as deep as 20 feet. Work on the UCRR project will be conducted subject to the material management provisions described below.

Management of Excavated Material

As previously discussed, the UMASS Boston Campus was built on a former municipal solid waste burning dump, and the entire Site is underlain by refuse and ash. Off-site transport and disposal of the relatively small portion of the residual dump material excavated during the UCRR project would provide no real environmental benefit and would do virtually nothing to alter the human health exposure potential or public safety aspect of the Site. In light of the enormous fiscal burden that off-Site disposal would add to the project, the on-Site reuse of material will be pursued where practical.

In order to maintain the feasibility of the UCRR Project, GZA developed measures during the design phase to allow for the on-Site reuse of as much excavated material as possible. The detection of asbestos fibers in some excavated materials at the Site requires that certain additional measures and controls be put in place in order to allow this reuse. In the absence of data documenting the non-detection of asbestos, for the work conducted under this Status Report all excavated and stockpiled material will be presumed to contain asbestos fibers.

1. Excavated material that is not tested for asbestos, and excavated material in which asbestos fibers are detected, may be reused in subsurface applications (below a demarcation layer) on-Site. Processing by screening or crushing of excavated material may be conducted only if the screening or crushing is conducted in accordance with the “Material Processing” section of this status report below. Culling, the segregation of oversized material such as stumps, logs, tires, blocks and rocks by excavator bucket, at or within the work zone may be conducted to allow the reuse of this material in non-structural applications, including landscaped areas.

2. Unpaved softscapes areas that are disturbed, restored, or constructed within the area of this Status Report will be covered by at least 18 inches of cover material placed over a shovel-resistant geotextile barrier layer. The barrier layer will serve as a visual warning material that also provides resistance to penetration with a hand shovel (refer to the Demarcation/Barrier Layer section of this Status Report below). The integrity of this demarcation/barrier layer to physical contact will be maintained through the provisions of an AUL for the Site which will require a specific campus permit for any excavation, in conjunction with the development of appropriate Health and Safety and Soil Management plans.

3. All future paved and hardscape areas disturbed, restored, or constructed within the area of this Status Report will be covered by at least one foot of cover material, including the components of the pavement, overlying a demarcation layer. The demarcation layer will serve as a visual warning material (refer to the Demarcation/Barrier Layer section of this Status Report below).

4. Culled oversized and unsuitable material, as well as screen tailings and excavated material for which there is not an on-Site reuse option, will be disposed of off-Site in accordance with MassDEP and MCP regulations.
Material handling activities, including excavation, culling, placing, compacting, loading, transporting, etc., will be monitored in accordance with the Perimeter Air Monitoring Plan in Attachment 1.

**Monitoring and Controls**

The potential route of exposure to asbestos would be through inhalation or ingestion. Therefore, dust and erosion will be suppressed and the following mitigation measures will be taken within each work area to avoid these exposures:

- During all construction activities that have the potential to create dust, the landfill material will be managed in such a way as to prevent the generation of visible dust and monitoring/sampling will be performed as indicated in the Air Monitoring for Asbestos and Dust section of this Status Report. If such dust is being generated by a specific activity involving landfill material, that activity will temporarily halted until additional dust control measures can be applied. If necessary, the areas to be excavated and the excavated material will be wetted with water or misted.
- Excavated materials not being immediately reused will be stockpiled at Lot S, Site T, Lot A, or the Tri-Gen Site (refer to Figure 3). As needed to maintain constructability, materials may need to be temporarily stockpiled near the work activity while waiting for truck transport to the stockpile and materials management locations listed above. Stockpiles and landforms that are comprised of excavated material will be covered with polyethylene sheeting, GeoMatrix Permeable Fiber Mat, Gorilla Snot, or other similar product designed and intended for use in dust control. Specifications for GeoMatrix and for Gorilla Snot are attached as Attachments 2 and 3. Inactive portions of stockpiles and landforms will be kept continuously covered. Active faces of stockpiles being worked will be covered at the end of each work day. Following the use of these locations as temporary soil management and stockpiling areas, landforms will be constructed at these areas using on-site materials. Refer to the Landform section of this Status Report for additional details.
- Workers potentially contacting soil will wear gloves and will wash their hands before eating, drinking, smoking, or leaving the work area.
- All equipment, including personnel trucks that have come into contact with excavated material, will be decontaminated using a “wheel wash” prior to moving onto University and public streets, before being moved off site, or when entering areas that are accessible to the public.
- During truck transport of excavated material over public roads or areas that are accessible to the public, the truck loads will be dampened if necessary and covered with truck tarps to minimize the potential for dust.
- A water truck will be used to apply water as needed to construction roadways to minimize the potential for generation of dust.
- Monitoring for air-borne asbestos/dust will take place around work activities that have the potential to generate dust. If permissible limits are exceeded, the control measures will be enhanced. Refer to the Air Monitoring for Asbestos and Dust section in this report for additional details.
Dust Control

Dust control will be performed by the Contractor during excavation, stockpiling, and all other earthwork operations at the Project Site. The Contractor will provide all required measures to control the generation of dust from Site activities and to prevent off-Site migration. Dust suppression techniques such as wetting, misting, soil covering, ensuring the material is damp when excavated and handled, strategic placement of wind barriers, and/or the application of temporary covering agents will be employed as necessary to reduce dust levels. Wetting techniques will be controlled so as not to cause runoff and soil erosion, or to increase the soil moisture content to such an extent that it interferes with the soil’s proper on-Site reuse (placement and compaction). Dust suppression techniques will be modified or enhanced if on-site dust is visually observed or if monitoring indicates exceedances of maximum allowable dust levels in accordance with 310 CMR 6.00 or for the air-borne asbestos levels presented in Attachment 1.

Air Monitoring for Asbestos and Dust

Air monitoring for asbestos will take place at the perimeter of work areas when soils are being disturbed. The areas to be monitored and details of the air monitoring program are provided in EH&E’s Perimeter Asbestos Air Monitoring Plan provided in Attachment 1. For work areas subject to URAM Status Report No. 7, Perimeter Asbestos monitoring will be conducted using methods equivalent to those currently being implemented under the MassDEP approved air sampling plan detailed in URAM Status Report No. 6. It is anticipated that after 3 months (60 work days) results will be evaluated in conjunction with UCRR Project activities to assess whether modifications can be made to the plan. Any modifications to this plan will be submitted to and approved by MassDEP prior to implementation.

During excavation, loading, stockpiling, and other earth moving activities, GZA will monitor for dust along the perimeter of the work limits using a Thermo Scientific MIE pDR-1000 DataRam Dust Monitor (total dust meter) and a Thermo Scientific MIE pDR-1500 (PM10 dust meter). The dust readings will be compared to the action levels specified in the Excavated Materials Management Plan. If dust or air-borne asbestos levels exceed the action levels, GZA or EH&E will notify the Program Manager and the contractor will modify its dust-suppression techniques as necessary to maintain a permissible level of dust.

Wheel Washes (Decontamination Pads)

Wheel washes will be required prior to entering areas accessible by the public for any vehicle that has come in contact with, or may have come in contact with, excavated material.

Wheel washes will be constructed, and the wash water managed, as outlined in URAM Status Report No. 6. Equipment decontamination (decon) facilities will be constructed in locations adjacent to work areas utilizing two layers of 0.45 mil rubber roof membrane sufficient in length and width to accommodate the cleaning of all heavy equipment, trailers, and dumpsters prior to their exiting the work areas. The rubber membrane will be formed over hay bales and secured to the ground to form a damming barrier so that all the wash water can be effectively pumped into a frac tank to be processed through a 5 micron in-line filtering system. Following filtering, this wash water may be reused on-Site for dust control or may be infiltrated into the onsite soils using recharge pits.

Based on the size, duration, logistics, traffic management, requirements for campus functionality, and fluid schedule of a project of this magnitude, it is not possible to predict the location of each wheel wash. Therefore, as work proceeds, the wheel washes/decon stations may be relocated to accommodate construction.
Material Processing

As noted above, excavated landfill materials that are presumed to contain asbestos fibers may be processed (by screening or crushing) only if the processing activities are conducted within a suitable enclosure designed to protect the screening and crushing operations from wind and precipitation that could result in fugitive dust and erosion. Prior any landfill material being processed by screening or crushing, the proposed design of the enclosure, and control measures to be implemented during landfill material processing, will be provided to MassDEP for approval. Excavated materials destined for reuse in non-structural locations, including landforms, will be culled. Oversized or unsuitable materials, such as stumps, logs, tires, granite blocks, rocks and other oversized material, will be segregated using the excavator bucket. The culling procedure will be managed in such a way as to prevent the generation of visible dust and monitoring/sampling will be performed as indicated in the Air Monitoring for Asbestos and Dust section of this Status Report. If necessary, the material will be kept damp while culling. The oversized or unsuitable material, including tailings from previous screening or crushing operations, will be stockpiled and covered, and may be characterized for off-site disposal.

Landforms

Materials management, stockpiling, and potential processing areas are indicated on Figure 3. Following the use of these areas for materials management, landforms are planned to be constructed at the locations listed below and as outlined in Figure 6:

- Tri-Gen Site,
- Site T (the former track and field),
- Lot S (South Lot), and
- (Potentially) Lot A.

The proposed grading of these landforms may be revised from what is shown on Figure 6 to accommodate the reuse of additional on-site materials. Potential regrading currently being considered may include the following:

- Tri-Gen Site: Lateral expansion of the landform to the northwest, with the western toe of the landform embankment adjacent to the eastern extent of Lot D.
- Site T: Vertical expansion (i.e., increase in height) and potential future lateral expansion to the south of the existing track.
- Lot S: Potential vertical expansion of proposed grades.

The fill used to construct the landforms will consist of excavated landfill materials from which oversized and unsuitable materials have been culled as described above.

Demarcation/Barrier Layer

Provisions for the installation of a demarcation or barrier layer were not included in the June 24, 2013, URAM Plan; however, MassDEP has requested that such layers be installed.

Hardscape Areas: The intent of a demarcation layer is to provide a visual marker to prevent unintended exposure to potentially contaminated soils should the cover material be disturbed. As previously noted, the demarcation layer at the Site will be installed beneath the paved and hardscape cover materials and above potentially contaminated soils at
future locations that are disturbed by the UCRR project. A woven geotextile similar to Mirafi FW700 is proposed for use as the demarcation layer under hardscaped areas.

Softscape Areas: The intent of a geotextile barrier layer is to provide a readily visible layer of geotextile material that is strong enough to provide resistance to penetration by a hand shovel. The barrier layer will be installed beneath unpaved softscapes areas that are disturbed, restored, or constructed within the area of this Status Report and will be covered by at least 18 inches of cover material. A single layer of woven geotextile similar to Mirafi RS380i is proposed for use as the barrier layer in softscape areas.

Refer to Attachment 5 for product information on the Mirafi FW700 and RS380i geotextiles, and refer to Figure 8 for details on the proposed layout and locations of the demarcation layer and barrier layer. The areas where a demarcation layer or barrier layer is installed will be delineated on a plan that will accompany the AUL that will be filed for the Site.

Cover Material

The cover material to be placed within the area covered under this URAM Status Report 7 will either be imported material or on-Site material that has been tested and found to be non-detect for asbestos and to contain levels of lead and arsenic that do not present a significant risk to UMass Boston students, faculty, staff, and visitors. The frequency of testing for reused on-Site material will be one test per 100 cubic yards for asbestos, and one test per 250 yards for lead and arsenic. Potential on-Site material for reuse as cover material includes the existing stockpiles of loam, sand and gravel, and reclaimed asphalt.

Activity and Use Limitation

On behalf of UMass Boston, GZA will prepare an Activity and Use Limitation (AUL) to be placed on the property to identify the conditions in the subsurface and to institutionalize the controls on excavation and soil management set forth above.

RECENT ADDITIONAL DATA

As part of recent additional investigations, 30 samples of landfill material were collected from borings executed at future excavation locations along approximately 150 linear feet of the Utility Corridor alignment (see Figure 2). Samples were collected at a frequency of about one sample per 200 to 250 cubic yards of landfill material. The results of asbestos testing on these samples (attached as Attachment 4) indicated that all samples contained at least trace amounts of asbestos.
Please contact the undersigned at 781-278-3700 if you have any questions regarding this URAM Status Report No. 7.

GZA, INC.

Jason Ressler, P.E.     Randy Meuse
Project Manager    Consultant/Reviewer

Lawrence Feldman, LSP
Senior Principal

Figures: Figure 1: Locus Map
         Figure 2: Segment Plan
         Figure 3: Overall Campus Work Area Plan
         Figure 4: Approximate Segment Plan Showing Potential Fence Locations
         Figure 5: Plan Showing Anticipated Construction Dates
         Figure 6: Landform Plan
         Figure 7: Revised Wheel Wash Location in the Area Covered Under URAM Status Report 6
         Figure 8: Demarcation Barrier Layout Plan

Attachments: Attachment 1: Perimeter Asbestos Air Monitoring Plan
             Attachment 2: Product Literature for GeoMatrix
             Attachment 3: Product Literature for Gorilla Snot
             Attachment 4: Recent Asbestos Testing Results
             Attachment 5: Geotextile Barrier Layer Product Literature

J:\Geo\33930.jer\MCP SUBMITTALS\URAM STATUS REPORTS\URAM Status Report 007 - 1st Long Term Plan\UCRR Status Report No 7.docx
Attachments on file in EHS