Chapter 6 – Construction

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6. CONSTRUCTION

6.1. Introduction

Chapter 6 identifies potential impacts associated with the construction of the SSX project and identifies mitigation measures that would be required during project construction staging and sequencing. As directed by the Secretary of EEA in the Certificate on the ENF,[1] Chapter 6 also includes a draft Construction Management Plan (CMP) and a draft Construction Waste Management Plan (CWMP).

Elements to be completed would generally include the following:

- Demolition of the USPS General Mail Facility.
- Construction of an expanded station headhouse, rail systems, platforms, and ancillary facilities at the South Station site.
- Reconstruction of Dorchester Avenue, including construction of the roadway, parking lanes, Harborwalk, bicycle accommodations, streetscape, and landscaping.
- Construction of new or expanded layover facilities at up to three sites, which includes track, signals, and facility program functions such as crew quarters and parking, but would also include demolition of existing structures at Beacon Park Yard and Widett Circle.
- Construction activities at South Station and at the layover sites would include construction of utilities, roads, and site civil work, including drainage structures.

Rail-related construction activities would be performed in close coordination with the operating railroads, including the MBTA and its commuter rail operator, Amtrak, and CSXT. Flagging (protection of trains and employees) and inspection services would be provided by the operating railroad for a given section of track. Other, non-rail-related construction activities would be coordinated with the City of Boston, utility companies, and other public and private entities as appropriate. As design is advanced, construction period assessments would include evaluation of potential construction access locations and laydown areas for station, rail systems, and layover facilities. Because it is envisioned at this time that design of the joint development would be prepared by a private developer, joint development construction impacts are not specifically addressed in this section. However, many of the mitigation measures identified herein would apply to any joint development designs and developers would be held to similar standards.

While the SSX project is currently unfunded for construction, a potential construction schedule has been developed to establish potential timeframes and durations for the various stages of construction activities. Figure 6-1 presents a preliminary SSX project schedule, which if construction was initiated at the completion of final design and permitting would have the South Station and layover facilities completed in the spring of 2023. It is assumed that the South Station Air Rights (SSAR) project will be constructed concurrent with the USPS facility demolition and SSAR project construction will be completed prior to SSX construction.

[1]Executive Office of Energy and Environmental Affairs. *Certificate of the Secretary of Energy and Environmental Affairs on the Environmental Notification Form 15028*. April 19, 2013. http://www.env.state.ma.us/mepa/mepacerts/2013/sc/enf/15028enf.pdf.

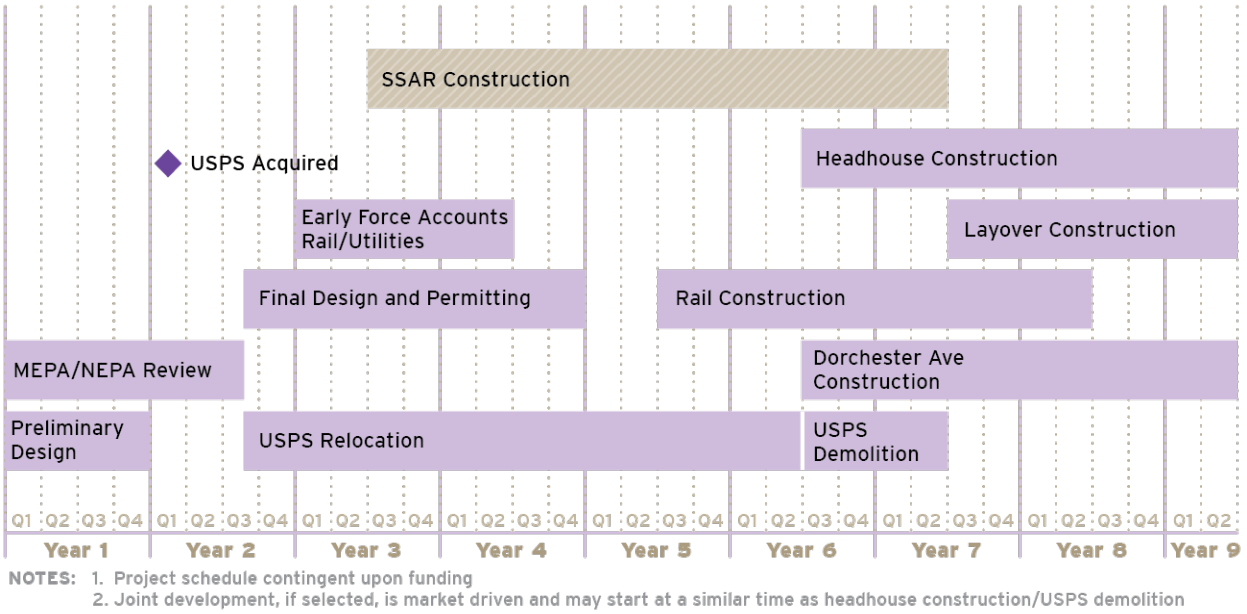

Figure 6-1—Preliminary Project Schedule

6.2. Construction Sequencing

The general construction sequencing at the South Station site would be as follows:

- Site preparation and mobilization.
- Demolition of the USPS facility.
- Dorchester Avenue reconstruction and early opening of pedestrian access, if possible.
- Excavation and foundation installation.
- Rail infrastructure modifications and installation.
- Station platforms, headhouse, and access components.
- Final fit out of station hardware and furnishings.
- Testing and punch list.
- Start up and de-mobilization.

The general construction sequencing at the layover facility sites would be as follows:

- Site preparation and mobilization.
- Demolition of select existing structures.
- Excavation and foundation installation.
- Rail infrastructure modifications and installation.
- Layover civil components construction (roads, walkways, lighting, and utilities).
- Testing and punch list.
- Start up and de-mobilization.

It is anticipated that construction work at the South Station site and layover facility sites could advance independently. While some coordination efforts would be required for rail operations, in general, the layover construction would have minimal impact on train operations. Impact on rail operations at South Station could be minimized with close coordination with Amtrak and MBTA operations staff. A final design task would be to investigate opportunities to coordinate and combine rail systems' planned maintenance activities with construction activities to minimize train operation disruptions.

The first construction activities would be the mobilization of the contractor to the site; immediately followed by the establishment of traffic management details, including the start of enabling work (activities required to prepare the site for construction).

While MassDOT is considering early action to provide limited pedestrian access along the closed portion of Dorchester Avenue, south of Summer Street, it is anticipated that a portion of this roadway would be used for construction access and activities during demolition of the USPS facility and construction of the new headhouse and rail infrastructure. The traffic management plan, including signing, fencing, and barriers, would be developed in coordination with the City of Boston to utilize this asset. Erosion and sediment control measures would be required along the border of Fort Point Channel to protect the inlets to the harbor.

Following the demolition and removal of the USPS facility, station substructure work would begin, followed by the rail infrastructure work. It is anticipated that much of the rail infrastructure construction work could be accomplished without major disruption to the current transportation activities. However, the modification of existing platforms and the erection of overhead structures, as part of the station headhouse and egress components, would require closer scrutiny of contractor proposals to assure that public safety and transportation operations are maintained. In addition to the track and signal improvements at Tower 1, Broad, and Cove Interlockings, retrofit of new vertical circulation elements (stairs, escalators, and elevators) to the existing platforms could also be disruptive to daily train operations and would require a detailed and closely maintained staging plan.

6.3. Potential Construction Period Impacts

Construction period impacts could include air quality, noise and vibration impacts; solid and/or hazardous waste generation; and utility impacts; and would require appropriate management and/or mitigation measures. Construction period impacts are considered in three categories: off-site, interface, and on-site impacts. Off-site and interface impacts are associated with the delivery of materials, equipment, and personnel to and from the site, while on-site impacts are associated with the actual work being performed at the project sites. Interface impacts often occur where the contractors' materials, equipment, and personnel enter the project sites or laydown areas that are used to store materials and equipment. Interface impacts also include temporary parking required for construction and support personnel.

6.3.1. Air Quality Impacts

Temporary air quality impacts could result from construction activities associated with the SSX project, including fugitive dust emissions, direct emissions from construction equipment, and increased emissions from motor vehicles on local streets due to traffic disruption. The anticipated temporary construction activity does not appear to be exceptional or atypical for this type of project. Due to the close proximity of construction activities to nearby businesses and other public areas, however, mitigation measures during construction would be required.

6.3.2. Noise and Vibration Impacts

The City of Boston has established construction noise limits for residential receptors and commercial and business receptors. These limits identify affected sites as a residential receptor located within 300 feet of such construction activity or a commercial/business receptor located within 200 feet of the construction activity. Most of the demolition and construction activity for the SSX project would occur on the east side of South Station along Dorchester Avenue. At this location, there are no residential receptors within 300 feet of the construction activity. The building at 245 Summer Street and the South Station headhouse are both located within 200 feet of the construction activity and would be impacted by construction noise.

Temporary noise barriers would be required to be installed around the site so as to mitigate the construction noise levels at these sites.

While vibration levels generated by the construction equipment proposed for this project would not result in any structural damage to nearby buildings, vibration levels from typical construction equipment that could be used on this project would exceed FTA's human annoyance criterion and the standards for buildings with vibration sensitive assets, such as the equipment located at 245 Summer Street. Therefore, construction period mitigation for vibration would be required.

6.3.3. Site Contamination and Hazardous Material Impacts

Contamination associated with the USPS property could be encountered during construction based on the site's historical use. In addition, fill that was used to create the current landmass upon which South Station exists may contain debris and contamination that would need to be addressed during demolition and construction. Based on the recent and historic use of Beacon Park Yard and Readville – Yard 2 as rail yards, contamination could also be encountered during construction at these sites. Investigatory methods would be employed to determine the nature of the insitu material prior to the letting of any construction contracts. Construction activities at Readville - Yard 2 also could include remediation of an existing disposal site. Prior to demolition of any existing facilities further investigation would be required to identify asbestos-containing materials (ACM) and other potential hazardous materials.

6.3.4. Utility Impacts

If not monitored closely, the proposed construction at the South Station site could result in impacts to existing subsurface utilities via direct contact with pipes and structure, or with excessive construction vibrations or ground settling. The USPS building is situated over the Boston Water and Sewer Commission's (BWSC's) 81 inch by 81 inch Kneeland Street combined sewer overflow (CSO). Demolition of the USPS building and construction of new SSX facilities would require protection of this CSO, including access for continued inspection and maintenance activities. Similar protection measures would be required for Central Artery/Tunnel (CA/T) infrastructure primarily in the Tower 1 area of the site.

6.4. Construction Management Plan

Prior to the start of work, the SSX project contractors would be required to develop a CMP for the SSX project. The CMP would be prepared in accordance with MassDOT General Requirements and Covenants, and it would be implemented in phases that correspond with construction phasing. Of particular importance would be a plan to open project elements for public access as soon as they are no longer needed to safely perform work. The CMP would consist of a detailed plan to address construction period impacts to various environmental resources, and would address vehicular traffic, pedestrian and bicycle, on-street parking, public access, emergency access to local businesses and residences, dust, noise, odor, rodents, and construction-related nuisance conditions. MassDOT would coordinate the development and review of the CMP with the City and emergency personnel to ensure that appropriate safety measures would be incorporated throughout construction. The following sections identify elements of the CMP intended to eliminate or minimize construction-related impacts of the SSX project.

6.4.1. Traffic Management Plan

The CMP would include construction traffic management plans (TMP) to minimize disruption in the area throughout construction. A TMP would be developed for each of the work zones. Through the TMP, the contractor would be required to demonstrate that safe vehicular, pedestrian and bicycle access to normal

South Station operations would be maintained during construction. The TMP would be prepared in coordination with the BTD and would include:

- Phasing plans with details on maintenance of traffic, pedestrian, bicycle, and transit services.
- Construction equipment and material staging.
- Transportation, parking, and Transportation Demand Management (TDM) measures for construction and support workers.
- Hours of construction and material delivery (including delivery routes).
- Details on timing and duration of any street closures, street occupancy, sidewalk closures, and/or sidewalk occupancy during construction.

Traffic management techniques that would be applicable to the SSX project include the following:

- Scheduling of the work to avoid the hours of peak roadway traffic.
- Prohibiting construction vehicle travel during peak traffic periods.
- Using temporary signage and variable message displays.
- Applying physical controls such as temporary pavement markings and channelization.
- Using traffic control officers and flaggers.
- Notifying the public (e.g., through Mass511.com) of construction-related traffic congestion.
- Designating construction staging areas and worker parking areas.
- Designating construction truck routes.
- Establishing temporary detours to minimize traffic disruptions due to construction.
- Staging construction to ensure that adjacent streets are not closed simultaneously.

6.4.2. Emissions Control Plan

The CMP would include an emissions control plan to address impacts of fugitive dust and construction equipment and vehicle exhaust. The emissions control plan would be coordinated with the TMP to address potential traffic disruption and congestion. Because of the temporary nature of the intended construction activities, and the anticipated mitigation measures to be implemented, air quality monitoring in the community is not expected to be needed for this project. Any Occupational Safety and Health Administration requirements for air quality monitoring for worker health and safety or for confined space entry, however, would need to be satisfied by the construction contractor.

Fugitive Dust

Using best practices, such as wetting exposed earth areas, covering dust-producing materials during dust impacts transport, and limiting construction activities during high wind conditions, can help to minimize fugitive dust impacts. Potential Best Management Practices (BMPs) and mitigation measures that may be employed by the construction contractor include:

- Seeding, paving, covering, wetting, or otherwise treating disturbed soil surfaces.
- Minimizing storage and unnecessary transfers of spoils and debris on-site.
- Using wind screens or fences.
- Covering all truckloads of dust-producing material.
- Removing all loose or unsecured debris or materials from empty trucks prior to leaving the site.
- Reducing traffic speeds on any unpaved surfaces.
- Vacuum sweeping or watering of all paved surfaces and roadways on which equipment and truck traffic enter and leave the construction areas.
- Using wheel and truck washes at site egresses.

- Modifying work schedules when weather conditions could lead to adverse impacts (e.g., very dry soil and high winds).

Construction Equipment and Vehicle Exhaust

The CMP would include details on the emissions control plan and it would address impacts of construction equipment and vehicle exhaust. Potential BMPs and mitigations measures could include:

- Comply with MassDEP's idling regulations [310 CMR 7.11(1) (b)], requiring that engines idle for no more than five minutes. Post idling restriction signage on project construction sites.
- Comply with MassDEP's Diesel Retrofit Program (DRP), which promotes the use of such engine emission controls as oxidation catalysts or particulate filters for diesel engines to the maximum extent practicable. In January 2008, MassDEP amended the retrofit applicability requirement to include engines of 50 horsepower or greater that would be on-site for 30 days or more.
- Comply with the State's Low Sulfur Diesel standards (301 CMR 7.05) and U.S. EPA's Clean Air Non-road Diesel Rule.
- Properly maintain and repair all equipment and vehicles to minimize exhaust emissions, including odors. Establish and maintain records of the routine maintenance programs for internal combustion engine-powered vehicles and equipment used for the project.
- Use alternative-fueled or electric equipment where feasible.

Additional Dust Control Considerations

Additional mitigation measures may be considered to further reduce the potential for dust impacts if frequent or persistent complaints arise during construction. These measures could include the following:

- Considering alternative methods of construction.
- Minimizing equipment usage in close proximity to sensitive receptors.
- Minimizing the numbers of pieces of equipment and trucks in use or staged in the construction site area.
- Curtailing work during conditions that are conducive to dust impacts (e.g., dry weather with high wind speeds).
- Conducting more frequent inspections or reviews of construction activities.
- Implementing enhanced procedures for community relations and notification.

6.4.3. Noise Control Plan

The CMP would include a Noise Control Plan to provide construction period noise monitoring to determine compliance with the FTA and the City of Boston construction noise limits, and to identify methods to mitigate construction noise levels as needed. The Noise Control Plan would provide a detailed list of construction equipment used in each construction phase, including the type and location of each piece of equipment. Additionally, the plan would also include the location of each construction activity, and whether the construction activity would occur during the daytime, evening, or nighttime hours.

Based on the contractor's specific equipment and methods of construction, the Noise Control Plan would include detailed noise calculations and assessments for each phase of construction, such as site preparation, demolition, excavation, concrete pouring, track construction, etc. For each piece of equipment, reference construction equipment source noise levels from the FTA guidance manual would

be used in the construction noise assessment. Construction noise levels for each phase of construction would be calculated at each of the closest sensitive receptors.

If the construction noise levels were predicted to exceed the FTA or City of Boston construction noise limits, then appropriate noise mitigation measures, such as noise barriers, would be evaluated, including determining the appropriate location, height, and length of the noise barrier to provide effective mitigation. Vibration measurements would be obtained inside the building at 245 Summer Street to ensure that construction equipment vibration levels would not exceed vibration-sensitive equipment specifications.

Additional noise and vibration control BMPs and mitigation measures could include the following:

- Performing construction equipment noise certification testing.
- Minimize nighttime construction near residential neighborhoods.
- Requiring ambient-adjusting or manually adjusted backup alarms set to 5 dBA (a-weighted decibels) over background levels.
- Minimizing the amount of truck idling.
- Setting acoustic shield requirements for jackhammers, chainsaws, and pavement breakers.
- Establishing protocols for reporting noise monitoring results, noise reduction measures used, and responses to the community.
- Using shields, shrouds, or intake and exhaust mufflers on construction vehicles to control construction noise level.
- Applying noise deadening materials to chutes or storage bins.
- Installing temporary noise barriers.
- Applying acoustic enclosures.
- Limiting the size of generators and the duration of their use.
- Routing construction equipment and vehicles through areas that would cause the least disturbance to nearby receptors where possible, including minimizing exposure to vibration sensitive receptors and maintaining smooth roadway surfaces.
- Fitting any air-powered equipment with pneumatic exhaust silencers.
- Locating stationary construction equipment as far as possible from noise-sensitive sites.
- Constructing noise barriers, such as temporary walls or piles of excavated material, between noisy activities and noise-sensitive receivers.
- Monitoring noise after service starts (with the proposed mitigation in place) to evaluate whether the actual noise levels correspond with the modeled values and take appropriate corrective actions if the actual values are found to be higher than the projections.
- Minimizing and/or avoiding the use of impact and vibratory equipment that generates higher vibration levels [104 to 110 VdB (vibration decibels) at a distance of 25 feet from the pile driver], to avoid potential damage to buildings located within 65 feet of such equipment.

6.4.4. Stormwater Pollution Prevention Plan

Construction at all SSX project sites would require coverage under the NPDES Construction General Permit, which obligates the regulation of erosion control, pollution prevention, and stormwater management (including construction dewatering) at construction sites larger than one acre. A Stormwater Pollution Prevention Plan (SWPPP) would be prepared in accordance with the NPDES Construction General Permit requirements. The SWPPP would identify potential pollutant source areas and describe BMPs to be employed for erosion and sedimentation control, temporary stormwater management, dust control, and site stabilization, as prescribed by MassDEP (Massachusetts Stormwater Handbook, 2008)

and MassDOT (Stormwater Handbook for Highways and Bridges, 2010). The SWPPP would be completed during the SSX project final design phase and would be implemented by the contractor.

Examples of SWPPP BMPs applicable to the SSX project could include the following requirements of contractors:

- Identification and protection of stormwater inlets and other sensitive features.
- Development of erosion protection procedures.
- Procedures to monitor discharges and remedial and corrective action procedures.
- Dewatering plans, including schedule, plan, discharge and recharge (if necessary).
- Rain event action plans.
- Designation of washout areas.
- Establishment of fueling and maintenance practices.
- Spill prevention and control procedures.
- Inspection and remediation procedures.

6.5. Contract Specifications

6.5.1. Sustainability and Recycling Requirements

Contract specifications would be developed to address specific requirements in alignment with MassDOT's GreenDOT Implementation Plan requirements and the project's sustainability goals. Sustainability contract specifications could include:

- Green fleet encouragement.
- Temporary wood reuse.
- Material purchase location and logistics.
- Recycled paving materials.
- Low emitting materials.
- Pest management.

Other potential recycling initiatives would include productive re-use of granite blocks, granite facings, and other granite items present in the project area; recycled content within track-work items, use of reclaimed material, use of alternatives to Portland Cement, and/or use of recycled steel items.

Permanent materials to be installed as part of the SSX project would be as required by the contract specifications. Temporary materials, such as shoring and false work, are more likely to be determined by the contractor. Contract specification would be developed to guide the use of temporary materials to encourage and, in some cases, require the contractor to use materials that have a reduced impact on the environment.

6.5.2. Utility Usage

The contract specifications would include requirements for monitoring and proper utilization of water in the construction process, including measures to minimize losses and to encourage reuse as well as control water quality. Dust control and concrete curing practices would be reviewed to assure proper water usage. Recycle and recover apparatus would be required for operations such as dewatering, slurry installations, and drilled caissons.

The use of existing wastewater systems could be required during construction to provide a wastewater discharge for construction-time needs. Dewatering discharges would not be connected to the sewer system and would be conducted in accordance with local, state, and federal standards.

6.6. Construction Waste Management Plan

The SSX project construction would require the preparation of a Construction Waste Management Plan (CWMP). Solid waste would be generated as part of the SSX project, particularly as a result of demolition, excavation for utilities and foundations, and grading for Dorchester Avenue, the USPS General Mail Facility, station substructure components and the layover facilities. Reconstruction of Dorchester Avenue would include normal street rehabilitation activities associated with utility work, and removal and replacement of streetscape components such as curbs, and asphalt paving. The existing USPS General Mail facility would be demolished in its entirety and materials removed from the site. The layover facility construction would be a function of the preferred site(s) and the preparatory work necessary to build a rail layover facility. In some cases, such as Widett Circle and Beacon Park Yard, construction activities would involve demolition of existing structures and material grading associated with site work and construction of new minor buildings and related structures. For these activities, the contract specifications would address the handling and disposal of asbestos and asphalt, brick and concrete.

All materials that would leave the SSX project sites would be evaluated for possible reuse or recycling capabilities, the hazardous nature of the material, and the final disposition location. Standard MassDOT and MBTA contract specifications specific to construction waste include the following:

- Handling, transportation, and disposal of excavated materials, including field screening, soil sampling, stockpile management and reuse of materials.
- Segregation of demolition debris and waste transportation and disposal, including methods to minimize waste and debris and to reuse, and salvage and recycle to the greatest extent possible.

Prior to construction, Phase I Environmental Site Assessments (ESAs) would be conducted at the SSX project sites to identify Recognizable Environmental Conditions (RECs) on the properties. Pending the results of the Phase I ESAs, Phase II subsurface investigations could be required to further evaluate potential subsurface contamination, including establishing the presence and extent of contaminated material; determining options available to manage and dispose surplus soil generated during construction, including the off-site disposal of soil via either a Bill of Lading or a Uniform Hazardous Waste Manifest; and establishing requirements for treatment and management of groundwater to be dewatered during construction.

Construction activities involving treatment and management of dewatered groundwater could require multiple permits. Required permits could include:

- MassDEP Dewatering General Permit for dewatering of non-contaminated groundwater.
- MassDEP Remediation General Permit for dewatering of contaminated groundwater.

Depending on where the water would be discharged, permits also could include:

- BWSC Dewatering Discharge Permit.
- MWRA Construction Site Dewatering Discharge Permit and Sewer Use Discharge Permit.
- U.S. EPA NPDES Permit, a Notice of Intent, or a NPDES Permit Exclusion.

Additionally, findings of the Phase II ESA subsurface investigations could require notification to MassDEP and compliance with the Massachusetts Contingency Plan (MCP) regulations (310 CMR 40.0000).

Results from the Phase I ESA would also be used to determine any RECs to be addressed in the contractor's construction documents, including any MCP-regulated environmental conditions. Construction techniques (or acceptable alternatives) would be presented that would meet MCP requirements. The construction contract documents would contain requirements for the contractors to maximize the amount and value of materials recovered from the construction and demolition sites, including implementing source separation, deconstruction, and other material reuse practices. Contractor requirements could include use of multiple containers for separation at the site or handling by a construction and demolition (C&D) processing facility. The contract documents would be written to comply with the goals of the Massachusetts Solid Waste Management Plan.

Construction activities at Beacon Park Yard and Readville – Yard 2 could require remediation activities in compliance with the MCP. At Readville – Yard 2, subsurface work would require the oversight of a Licensed Site Professionals (LSP) in conjunction with a Soil Management Plan.

During preliminary design, Hazardous Building Material Evaluations would be conducted at the SSX project sites to identify any recognized hazardous building materials, including lead-based paint, PCBs, universal wastes, and ACM. Response actions could be required prior to building demolition, including notifications to MassDEP and the Massachusetts Division of Occupational Safety (MassDOS). Asbestos handling projects, including demolition and disposal, would require agency notification at least 10 working days prior to work start, using form BWP AQ 04 (ANF-001). If asbestos, lead, or other hazardous/regulated materials would be identified in any project buildings to be demolished, notification to the appropriate regulatory agency (U.S. EPA, MassDEP, or MassDOS) would be required. If PCB caulk would be identified, the work plan could require U.S. EPA approval.