

**Draft**  
**Construction Work Plan**  
**Non-Public Properties**  
**Newhall Street**  
**Neighborhood Site**  
Hamden, Connecticut

**Revision 0**

**Prepared for:**

**Olin Corporation**  
Cleveland, Tennessee

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## **Introduction**

The intent of this Construction Work Plan is to present the general sequence of pre-construction and construction/remediation activities which are planned to take place at the Non-Public Properties, Newhall Street Neighborhood Site in Hamden, Connecticut. In addition, this plan summarizes the proposed methodology for performing various phases of the work. It describes possible equipment and personnel to be used, general sequencing of the work activities, the use of the site for staging, stockpiling and other activities, and security. This work plan has been prepared in coordination with the Health and Safety Plan (HASP), Quality Assurance Project Plan (QAPP), Transportation/ Consolidation Plan, Dust Control Plan, and the Sampling and Analysis Plan.

## **Site History**

The Newhall Street Neighborhood is located in the southern part of Hamden, Connecticut, east of Dixwell Avenue and just north of New Haven. The Newhall Street Neighborhood is approximately an 18-block area that historically consisted of wetlands and low-lying areas. Waste materials were used to fill these areas from the late 1800s to the mid-1900s. Subsequently, homes, public buildings, and parks were built on and next to the historic fill areas.

The Non-Public Properties (NPP) consent order boundary is approximately an 18-block area consisting of approximately 230 residential properties. For ease of geographic reference, the city blocks within the consent order boundary are given letters A, C, E, F, H, J, K, L, M, N, P, Q, R, S and T. Refer to Appendix A, Figure 1 for details.

In October 2007 the Connecticut Department of Environmental Protection (CTDEP) issued a final Remedy Selection Plan for the Site. The selected remedy for the approximately 230 residential properties (and other Non-Public Properties) located inside the Consent Order boundary is as follows:

1. Excavation of fill within the top 4 feet and off-site disposal at authorized facilities.
2. Backfilling with clean soil.

3. Restoration of pre-existing features (landscaping, patios, fencing, driveways, etc.) if disturbed during construction.

## **Pre-Construction Preparation Activities**

Prior to the start of any construction and remediation of properties within the NPP Consent Order boundaries, the following pre-construction preparation activities will be implemented and maintained throughout the course of the project:

1. Documentation of existing conditions at each individual property will be performed, consisting of the following:
  - Existing physical conditions and existing landscape and other site features will be inspected and documented.
  - Individual property sketches will be developed detailing the existing conditions of each property. The documentation, including photographs and video, will be used to verify structural conditions and restoration features following construction.
2. The development of Property-Specific Remedial Action Plans (RAPs) for each individual property, and approval of the Property-Specific RAPs from DEP.
3. Receipt of signed Temporary Access Agreements with individual property owners.
4. A topographic survey will be performed, utilizing a licensed surveyor in the State of Connecticut, to verify and establish existing conditions to allow proper restoration of all existing features removed during Work.
5. Receipt of work plan approvals from Olin and the CTDEP. Anticipated work plans to include:
  - A Construction Work Plan (this document) that describes the means and methods for executing the Work, including general sequencing of the Work, excavation procedures, the use of the Site for staging, stockpiling, and other activities,

security measures and personnel to secure the Site work areas, contractors equipment and materials as well as protecting the residents and private property during non-working hours including weekends and holidays and where residents have been temporarily relocated.

- A Health and Safety Plan that defines the requirements and designates protocols to be followed during remedial action at the site, to maintain safe and healthful working conditions, to provide and ensure the use of all necessary personnel protection equipment to assure the safety and health of site employees and the general public, to require that site work be planned to provide a range of protection based on the degree of hazards encountered under actual working conditions and provide workers with the information and training required to make them fully aware of known and suspected hazards that may be encountered, and of the appropriate methods for protecting themselves, their co-workers, and the public at large. Work performed under this contract will comply with applicable Federal, State and Local Safety and Occupational Health laws and regulations.
- A Construction Quality Control Plan identifying personnel, procedures, instructions, records and forms to be used in carrying out the requirements of the Project. It will provide the means to maintain effective Quality Controls for construction, sampling and testing activities.
- A Quality Assurance Project Plan which describes the quality assurance, quality control, and other technical activities that will be implemented to ensure that sampling and analyses are performed in order to meet applicable data quality objectives for the project.
- A Dust Control/Air Monitoring Plan detailing the requirements to minimize dust generation during work execution and the necessary air monitoring that will be implemented to identify and quantify safety and health hazards and airborne levels of particulates or dust. The air sampling program will be used to assure proper selection of engineering controls, work practices and personal protective

equipment for affected site workers and will also evaluate the potential impacts to adjacent residences.

- A Transportation and Consolidation Plan that will include the proposed disposal facilities for waste materials that do not meet the acceptability criteria for the Tire Pond, Tire Pond management procedures, proposed traffic routes for haul trucks, recordkeeping and spill response procedures.
  - A Sampling and Analysis Plan that describes the sampling and analysis to support the remediation.
6. Identification of the off-site fill borrow sources and the performance of the required geotechnical and analytical testing of the fill materials proposed for the project.
  7. Negotiations with the Town of Hamden to utilize Mill Rock Park (Rochford Field Annex) as a primary staging area for the staging of temporary office trailers, employee parking lot, equipment lay-down, material lay-down, temporary stockpiling area for clean fill materials and a temporary stockpiling/loading area for excavated impacted fill.
  8. Coordination with local utility companies (Town of Hamden, Regional Water Authority, Southern Connecticut Gas Company, Greater New Haven Water Pollution Control Authority, AT&T and United Illuminating). The impact to utilities and the need to remove or replace services for individual properties will be determined and where service connections will be affected, residents will be notified as soon as possible of the expected schedule and duration of utility service interruptions, if required. In addition, "Call Before You Dig" notification will also be conducted before excavation activities begin for marking of existing utilities.
  9. Obtaining construction related permits.

## **Remedial Construction Activities**

Based on the Generic Remedial Action Plan, the total remediation of the Non-Public Properties is to be completed in phases and is presently scheduled to take approximately two to four years to

complete. The smaller isolated areas in blocks M, N, R, and S may be performed concurrently with other phases. A preliminary phasing plan is included in the Generic Remedial Action Plan, however, the actual phasing will be dependent on obtaining access agreements. Actual phasing limits and timing will be adjusted based on the ability to obtain property access and restoration agreements as well as the availability of funding.

Tentatively, mobilization and remediation construction activities for the NPP are scheduled to commence in the spring/summer of 2009. It is anticipated that Phase I operations will consist of the remediation of isolated areas located in blocks N, R and S followed by remediation of blocks H and J.

Remedial construction activities will consist of mobilization to the jobsite, site preparations, clearing and grubbing, removal, disposal and/or storage of above ground items, excavation, transportation and disposal of impacted fill material, backfilling of areas of excavation, utility relocation/replacement, restoration and demobilization.

Listed below are the remedial construction activities which detail the sequence of work, the means and methods, and the anticipated equipment that will be utilized to perform the remediation of the Non-Public Properties in Hamden, Connecticut.

## **Mobilization**

Upon award of the Contract and authorization to proceed, mobilization activities will commence.

Mobilization will consist of the following:

1. Mobilization of necessary labor, materials, equipment, tools, and supervision to commence work on the project.
2. Continued processing of the required submittals which includes administrative and procedural requirements for submitting project work plans, product data, samples and any other submittals required in the Project Specifications.
3. Performance of pre-construction activities, previously detailed, on a continual basis, to ensure that as one phase of remediation is completed the next phase of remediation can



commence.

4. The Contractor personnel, taking part in the active remediation activities, will receive the required medical surveillance (initial entrance physicals) prior to any hazardous or intrusive site work being performed.

Also during the mobilization phase, the construction and set-up of the primary support/staging area for the Project will take place. If approved by the Town of Hamden, Mill Rock Park will be utilized as the primary support/staging area.

The primary support/staging area will be utilized to stage temporary field office trailers consisting of (2) Contractor office trailers, (1) Contractor employee lunch trailer, (1) Contractor safety trailer, (1) MACTEC/Olin office trailer, a security trailer, and various equipment/tool trailers. A temporary employee/visitor parking area, an excavated impacted fill stockpile area, a material staging area, a clean backfill stockpile area, and a stabilized construction entrance will be constructed.

Construction activities of the primary support staging area will consist of the following:

1. The Installation of a temporary chain link fence around the perimeter of Mill Rock Park including the installation of entrance gate(s).
2. The stabilized construction entrance will be constructed, in accordance with the contract drawings, with the removal of topsoil, the installation of geotextile fabric, followed by the delivery, placement and grading of crushed stone covering the geotextile fabric from the existing curb line of Winchester Avenue to the interface of the proposed primary staging area. If necessary, depending on the amount of truck traffic, a paved driveway apron at the stabilized construction entrance may also be constructed.
3. The construction of the aggregate base layer for the primary staging area will consist of the installation of geotextile fabric over the existing ground surface covering, for the most part, the entire area of Mill Rock Park, followed with the delivery, placement, grading and compaction of gravel base/stone. This layer of stone will be graded to insure proper drainage is maintained and does not impact the surrounding area. It will also serve as the

foundation and surface layer for the temporary office trailers, employee/visitor parking area, access roads, excavated impacted fill stockpile area, material staging area, and the clean backfill stockpile area.

As the placement of the gravel/base stone progress and staging areas become available, the following activities will commence:

1. Deliver, stage, block and anchor temporary office trailers. Each trailer will be furnished and supplied with the necessary office furniture, equipment and supplies. Temporary utility services (telephone, electric, etc.) will be installed. Due to the length of the project, temporary sanitary and water services connected directly to town utilities may be installed. If not feasible or practical, potable water and portable toilets will be provided to service the support facility. The support facility will be maintained in a clean and orderly fashion throughout the Project.
2. To complete the construction of the clean backfill stockpile area, sedimentation barriers, silt fencing and/or staked hay bales, will be installed around the perimeter of the proposed clean backfill stockpile area to provide erosion control measures. Orange construction fencing will also be installed around the perimeter to delineate and discourage any unauthorized entry to the clean stockpile area.
3. Construction of the excavated impacted fill stockpile area will require re-grading the previously placed gravel base/stone to drain to a proposed collection sump. A sump will be utilized to collect potentially contaminated wastewater within the stockpile staging area. Wastewater collected in the sump will be transferred, via pumping, to a temporary wastewater storage tank staged outside the stockpile staging area. Wastewater in the storage tank will then be sampled and analyzed for offsite disposal to a licensed facility or to the local POTW. A berm constructed of hay bales will be installed around the perimeter of the proposed impacted fill stockpile area. An impermeable liner system will also be installed. The impermeable liner will protect against contaminating the underlining gravel base/stone and underlying soil and will be durable enough to accommodate heavy equipment. The lining system will extend over the top of the perimeter berms (hay bales) and will be secured with sandbags or other appropriate method. A dumping ramp will also

be constructed, using precast concrete barriers. The ramp will be utilized as a discharge point for dump trucks to discharge excavated fill material into the stockpile staging area and will prevent any spillage from accruing outside the stockpile staging area during dumping operations. Orange construction fencing will also be installed around the perimeter of the stockpile staging area to delineate the area as an exclusion zone where only authorized personnel are allowed to enter.

Refer to Appendix A, Figure 2, Proposed Primary Staging Area, for further details.

## **Site Preparation**

Site preparations may begin starting in block N, sequentially progressing to blocks R, S, H and J. Also, concurrent with site preparations, the necessary preparations to construct a transfer, staging and processing area at the existing Tire Pond Landfill located at 2895 State Street in the Town of Hamden will be performed.

The following site preparation activities are anticipated: the preparation of a transfer, staging processing area and the necessary haul roads to support operations at the Tire Pond; the preparation of a temporary satellite support facility for the staging of a temporary lunch/security trailer that will be located in the vicinity of blocks H and J and the installation of the temporary utility services to support the facility; the establishment of the proposed excavation limits utilizing a surveyor licensed in the State of Connecticut; establish site work zones; installation of erosion control measures; installation of decontamination pads at various locations to access the proposed areas of excavation; installation of temporary haul roads within the areas of excavation; installation of dewatering facilities; and installation of the necessary traffic controls.

### **PREPARATION OF THE TIRE POND**

The Contractor will be responsible for the transportation, staging and processing of excavated fill material generated during the remediation activities at the Non-Public Properties, Newhall Street Neighborhood. Excavated fill material will be transported to the proposed transfer staging and processing area at the Tire Pond Landfill in the Town of Hamden.

In accordance with the CTDEP Tire Pond Materials Management Plan, the Contractor will meet with the Tire Pond Manager or its designated subcontractor, to determine a location for the staging and processing area and will also review the procedures outlined in the Materials Management Plan to ensure that the procedures and responsibilities are understood by all parties while conducting material management operations at the Tire Pond.

Preparation of the proposed transfer staging and processing area will consist of the upgrading of existing haul roads, as necessary, at the Tire Pond, and the construction of new haul roads, if needed, to access the proposed transfer staging and processing area.

A processing staging area will also be constructed. This area will be utilized as a stockpile and processing area for excavated materials, which have not been pre-characterized and/or processed prior to delivery to the Tire Pond.

The construction of the processing staging area will consist of the placement of geotextile fabric on the existing ground surface. Stone will then be delivered, placed graded and compacted.

Upon the completion of the processing staging area, the Contractor will mobilize and stage process equipment at the site. Equipment may include: a Powerscreen, a rubber tire loader, an off road hauler and a track excavator. Solid waste will first be separated from the fill material. Material meeting the requirements for use as closure cover/or fill material at the Tire Pond will be transferred and delivered to the approved designated receiving area, unless an alternate location is specified by the Tire Pond Project Manager for additional handling by others. The screened solid waste material not suitable for the Tire Pond will be temporarily staged in a designated area for disposal at a licensed off site solid waste landfill.

Excavated soils, not requiring screening and meeting the requirements for use at the Tire Pond will be directly transported from the NPP areas of excavation and off loaded at the approved designated receiving area, unless an alternate location is specified, as noted above.

#### OTHER SITE PREPARATION ACTIVITIES AT PROJECT SITE

Site preparations in blocks N, R, S, H and J will consist of the following activities:

1. The Contractor will utilize a surveyor licensed in the State of Connecticut to locate and footprint the proposed excavations limits in accordance with the contract drawings and also establish the necessary controls needed to re-establish existing conditions. This will allow the proper restoration of existing features removed during remediation activities. The surveyor will also perform the required post excavation and final topographic surveys.
2. The establishment of the work zone delineations to control access to known areas of contamination and prevent accidental movement of contamination from the areas of excavation. Three zones will be established, which will consist of a Support Zone, a Contamination Reduction Zone and an Exclusion Zone.
  - Exclusion Zone: This zone includes areas where potentially contaminated materials are exposed, excavated, or handled and all areas where contaminated equipment or personnel may travel. The level of personnel protection will be determined by the Site Safety and Health Officer in accordance with the Health and Safety Plan.
  - Contamination Reduction Zone: This zone provides for the transfer of construction materials and equipment from off-site to the exclusion zone, decontamination of vehicles prior to re-entering the Support Zone, decontamination of personnel and clothing (including containerization of disposable outerwear), personnel decontamination facilities, and physical segregation of the Support and Exclusion Zones.
  - Support Zone: this zone provides a location for temporary site facilities and an entry and exist area for personnel, material, and equipment from the project site.

The above zones will be physically demarcated in the field using a combination of temporary construction fencing, barricades, traffic cones, signs, etc. Initially, temporary construction fencing will be installed just outside of the proposed limits of excavation. As excavation of the impacted fill is being performed, additional construction fencing will be installed, as needed, to define the area of excavation. Contamination Reduction Zones

will also be delineated in the same manner. The Exclusion Zone delineation will continue to be installed as the areas of excavation progresses. As the areas of excavation are completed and post excavation topographic surveys are performed, backfilling operations will commence. The Exclusion Zone will decrease accordingly as backfill operations are completed. The Site Health and Safety Officer will be responsible for determining the boundaries of the work zones and the level of personnel protection required.

3. Construction entrances/access points to access the areas of excavation will be constructed. These access points will provide for the transfer of construction materials, equipment, vehicles and personnel to enter and exit the area of excavation and also facilitate for the decontamination of vehicles/equipment and personnel prior to exiting the area of excavation. The location of the site access points will be adjusted or relocated as excavation operations progress from one area to the next or based on construction needs or site conditions. The access points will interface the local streets and the limits of excavation.

Construction of the access points consist of the placement of geotextile fabric, if needed, over the existing ground surface beginning at the existing curb line of the local street and continuing to the proposed limits of excavation. Stone will be delivered to the site, to construct a stabilized entrance, and placed and graded in an 8-inch lift. A portable decontamination pan will be installed and positioned on a liner at the stabilized entrance.

To facilitate the decontamination operations, the Contractor will also stage a pressure washer, a trash pump with hosing, necessary small tools (brooms, shovels) and a temporary wastewater storage tank in the location of the portable decontamination pan.

Any equipment, vehicles or trucks in contact with contaminated soil will be inspected and decontaminated, as necessary, to remove all soil prior to leaving the Site. Any water generated and contained within the decontamination pan will be transferred, via pumping, to the temporary wastewater storage tank. Wastewater in the storage tank will then be sampled, analyzed for offsite disposal to a licensed facility or to the local POTW. Any sediment collected from decontamination procedures will be properly transported and disposed with the excavated fill material at the Tire Pond or a licensed off-site facility.

The stabilized construction entrance will be maintained in a condition that will prevent tracking or flowing of sediment or soil onto the local roadways. Any sediment spilled, dropped, washed or tracked onto roadways (public or private) will be swept and removed immediately.

4. The installation of soil erosion and sediment control measures (silt fencing, hay bales, inlet filter protection) will be installed at the locations shown on the contract drawings, in accordance with the Soil Erosion and Sediment Control Plan and the Connecticut guidelines for soil erosion and sediment control (CT standards).

Preventive measures will include the installation of silt fencing installed in low areas and down gradient locations. Also at critical locations (determined in the field), a combination of silt fencing and hay bales (augmented silt fencing) will be installed. Additional soil erosion sediment control measures will be installed to meet site conditions and or as the work progresses.

Silt fencing or hay bales will also be installed at the base of temporary contaminated stockpiles. Contaminated stockpiles will be covered with poly-sheeting during non-working hours, rain events or when not in use.

At all times the Site will be graded and maintained, including providing and maintaining drainage swales or berms, as needed, to divert surface run off water around the areas of excavation. However, during storm events, stormwater is likely to collect within the areas excavations. Dewatering procedures may include a combination of measures. Stormwater will be contained within the excavation allowing some infiltration/evaporation, pumping and filtering, or transferring of water from the excavation, via pumping, to temporary wastewater storage tanks.

Inlet filter protection will be installed at catch basins adjacent to excavations in accordance with the contract drawings. If necessary, drainage structures located within the excavation areas will be removed and pipes plugged at the edge of the work area. The affected structures and piping will be replaced during backfilling and restoration activities.

Soil erosion and sediment control measures will be installed in proper sequence and maintained until permanent stabilization has been established.

Inspection and maintenance of the soil erosion and sediment control measures will be performed in accordance with the contract drawings and specifications.

5. The Installation of temporary haul roads may be initiated in order to access the areas of excavation. The construction of the temporary roads may require the installation of geotextile fabric and the placement of stone and/or the installation of wood timber mats, depending on site conditions. The haul roads would extend from the various stabilized construction entrances and progress to the backyards of the properties or isolated areas, as required. They will provide a stable base for vehicles to access the areas of excavation or areas of temporary stockpiles for direct loading and transportation to the Tire Pond or the primary stockpile staging area for further handling. They will also provide a clean surface to enter and exit the areas of excavation and minimize the time required to perform the decontamination procedures when exiting to the local streets.

The construction of the temporary roads will consist of the placement of geotextile fabric and stone on the existing ground surface. If wood timber mats are utilized, geotextile fabric will be installed on the existing ground surface and the wood timber mats will be placed on the fabric using a loader or track excavator.

During excavation operations, the temporary roads will be maintained and graded, as necessary. Water will be applied, as required, using a water truck, to minimize dust generation during excavation operations.

Upon completion of the excavation operations, stone used in the construction of the temporary roads, will be re-used as backfill material during backfilling operations. The geotextile fabric will be disposed of as required. Wood timber mats will be removed, staged and re-used, when needed.

6. Precast concrete barriers will be installed, as required, along the curb line adjacent to active and open excavations. The concrete barriers will be relocated as work progresses and open excavations are backfilled.



Work within the public right of way may involve the restriction or detouring of traffic from the work area during working hours. In order to decrease the congestion of traffic within these areas, the Contractor will typically install signage, temporary barriers, temporary road closures or detours around the work areas. Suggested detour routes, transportation hauling routes and other alternatives to control traffic will be discussed with the Town of Hamden prior to initiation of excavation.

Refer to Appendix A, Figure 3 (Area N), Figure 4 (Areas R, S) and Figure 5 (Areas H, J) for further details.

## **Clearing and Grubbing**

Many properties within the Consent Order boundary have significant trees or landscape items that property owners would like to preserve. In accordance with the property-specific restoration agreements, prior to excavation activities, a qualified arborist will be consulted as to the viability of leaving the tree in place.

Prior to implementing clearing and grubbing operations, significant trees or landscape items designated to be saved will be flagged and protected. During clearing, excavation, backfilling and restoration activities, reasonable efforts will be taken to ensure the survival of the tree. However, if the tree dies within two years following remedial activity, it will not be replaced in kind, but with available nursery stock.

Trees, shrubs, and brush designated for removal will be cut to the ground surface within the areas of excavation. Clearing and grubbing operations will be performed utilizing chain saws, chipper, brush hog, rubber tire loader, and a track excavator with grapple attachment. Debris will be sized and staged and prepared for transportation and off-site disposal to the approved facility. Proposed disposal facilities will be listed in the Transportation and Consolidation Plan.

Subsurface root material and small vegetation will be segregated and handled accordingly during excavation operations.

Care will be taken when clearing large trees located near structures to insure that no damage occurs to the structures.

## **Demolition and Removal of Above Ground Items**

During the remediation, permanent structures (homes, garages, other buildings with concrete slabs and foundations), and attached porches with roofs will remain in place. Paved city streets will also remain in place. Other features including sheds, pools, permanent fencing, driveways, walkways, sidewalks, decks and stairs will be removed prior to excavation as required for the removal of the designated contaminated fill material.

Access to properties will be maintained for Residents who do not relocate during remediation activities. The Contractor will coordinate demolition, excavation, backfill and restoration activities and provide and maintain the necessary accommodations (temporary stairs, ramps, etc) for safe access to their residence.

The contents within structures scheduled for demolition may require temporary storage. Where possible, the entire shed and contents may be temporarily relocated outside the active work areas, or if demolished, the contents will be relocated into rental containers for temporary storage. The moving and temporary storage of contents of non-permanent sheds or outbuildings will be determined and addressed during the access and restoration agreement phases of the Project.

Debris removed during demolition operations will be inspected for adhering soils and broom cleaned and segregated, as necessary, and temporarily staged for further handling or placed in the appropriate roll off containers for off-site transportation and disposal at an approved licensed facility or an approved recycling facility (i.e. asphalt, concrete materials, masonry, etc). Proposed disposal facilities and/or recycling will be listed in the Transportation and Consolidation Plan.

## **Excavation, Transportation and Disposal of Impacted Fill Material**

### General

Prior to excavation of any property, the pre-construction remediation activities, previously detailed, will be implemented, sequenced, coordinated and will continue to progress as remediation activities are conducted throughout the various phases of the project.

Also prior to any excavations, site preparations will be implemented, sequenced and will continue as excavation operations continue to progress from one phase to the next. As detailed previously, site preparations consisted of: preparation of the Tire Pond transfer, staging and processing area, locating the limits of excavation, installation of erosion and sediment control measures, establishment of work zones, installation of site access and decontamination facilities, installation of temporary haul roads, installation of dewatering facilities and the installation of the necessary traffic controls.

As previously mentioned, access to properties will be maintained for Residents who elect to not relocate during remediation activities. The Contractor will coordinate the excavation, backfilling and restoration activities and construct and maintain the necessary temporary structures to accommodate access to the properties. The Contractor will also provide security during non-working hours, weekends and holidays to patrol and monitor the active work areas and also the properties where residents have relocated. The Contractor will coordinate with the local police department and keep them informed of the properties or areas where work is being performed, which will enable them to monitor these areas more closely.

Due to the proximity of neighboring homes, work will be performed being sensitive to the issues of fugitive dust and its control. The target will be to generate no dust during the excavation process. Use of water will be the primary method of dust control. The dust control measures and air monitoring procedures are further detailed, under separate cover, in the Dust Control Plan and Perimeter Air Monitoring Plan.

"Call before You Dig" notification will be conducted to locate existing underground utilities. Excavation and backfilling activities will be coordinated with local utility companies (Town of Hamden, Regional Water Authority, Southern Connecticut Gas Company, Greater New Haven Water Pollution Control Authority, AT&T and United Illuminating) and replacement of utility services, as necessary, for individual properties will be performed. In addition, the Contractor will work to minimize the shut-off of utilities to maintain resident comfort. The safety of the properties, residents and workers during excavation may require a longer term shut-off of utilities during which residents may be required to temporarily relocate

Excavation next to buildings, structures, slab on grades and utilities will proceed with caution to prevent any potential damage to the structures. During the documentation of existing conditions of individual properties, structures with integrity issues will be identified, documented and the appropriate considerations to protect or support these structures will be detailed prior to excavation. During excavation and backfilling, the Contractor will continually look for undermining and/or settlement at structures.

During non-working hours, temporary stockpiles will be covered with poly-sheeting and secured with sandbags to prevent precipitation from entering the stockpile and minimize the potential for dust.

Temporary construction fencing and signage will be installed at the perimeter of open excavations to secure open excavations, during non-working hours.

Impacted fill material will be excavated to a depth of up to 4 feet from the existing ground surface. On properties where fill extends greater than 4 feet, the material deeper than 4 feet will remain in place. Where fill material above 4 feet is left in place, a durable warning marker/barrier will be installed. Warning marker/barriers with varying degrees of durability and resistance to disturbance will be used as appropriate, based on verification testing results. The durable warning marker/barrier will likely range from orange snow/construction fencing or orange geotextile, to spray-on concrete (shotcrete) or a similar type barrier.

Excavations, in general, will extend vertically along the proposed limits of excavation with the following exceptions:

- Homes that are determined to have structural stability issues or structures supported on a slab on grade, to prevent causing additional structural damage and or potential settlement issues, excavations will consist of a 1 foot deep cut along the face of the structure or slab, and the excavation of an 18 inch soil wedge with a 1 on 1 slope to the required excavation elevation will be left in place. If confirmatory sampling indicates that lead concentrations exceed the allowable criteria, additional excavations will be performed, in accordance with the *Final Design – Generic Remedial Action Plan, Non-Public Properties, Newhall Street Neighborhood, Hamden, CT* (MACTEC, August 2008),...

as long as it is determined that further excavations will not compromise the structural stability of the foundation or slab. In the event that structural stability is an issue, specific plans of action will be developed.

- Excavation along existing streets, to prevent settlement or undermining of the roadway, will consist of leaving a soil wedge of 1 foot offset and a 1 on 1 slope to the required elevation. Additional excavation will not be performed due to increased potential of causing structural damage or undermining to the existing curb and pavement.
- Excavation around significant or ornamental trees designated to be saved will be performed in accordance with the procedures defined in the *Final Design – Generic Remedial Action Plan, Non-Public Properties, Newhall Street Neighborhood, Hamden, CT* (MACTEC, August 2008).

The majority of the fill excavated during excavation operations is not anticipated to be classified as a hazardous material and is expected to meet the Tire Pond acceptance criteria. However, in isolated locations fill material may have contaminant levels above the Tire Pond acceptance criteria. If the fill encountered during excavation is determined to be hazardous, disposal options will include:

1. Off site disposal at an Olin approved and licensed hazardous waste disposal facility.
2. Fill will be amended, in place or segregated and stockpiled and amended, to render the fill compliant with material acceptance criteria and transported and placed at the Tire Pond. A Treatability Work Plan will be submitted for approval for any proposed amendment activity. The Treatability Work Plan will describe the treatment process and include the treatability sampling and analysis protocol. A treatability study will then be performed using the approved Treatability Work Plan to demonstrate acceptable results prior to implementation in the field. Confirmatory sampling of the amended or treated soil will be performed prior to transport to the Tire Pond in accordance with the Sampling and Analysis Plan.

Excavated materials encountered during excavations not meeting the criteria of the Tire Pond will be segregated and staged, to the extent possible, for transportation and off site disposal at an Olin approved disposal facility or transported to the Tire Pond for staging and screening. For example, subsurface root material, below ground structures or solid waste can be transported to the Tire Pond. Hazardous waste will be dealt with at the site and not transported to the Tire Pond. No Hazardous waste will be transported to the Tire Pond. Also during excavation operations, to the extent practicable, asphalt, concrete materials, and masonry will be directly loaded into transport vehicles and disposed of at an Olin approved recycling facility.

#### Excavation Operations in the Backyards of the Properties

As stated previously, temporary haul roads and access points will be constructed to access the backyards of the properties. Equipment used during excavation operations may include track excavators, track dozers and off road haulers or other appropriate equipment. During the excavation in the backyards, it is anticipated that a majority of the excavation will not require the relocation of residents.

The Following is an example of construction methods that may be used:

1. Transport vehicles will utilize the temporary haul roads to access the areas of excavation. Material will be excavated, utilizing a track excavator, and loaded directly into transport vehicles for transportation and disposal to the approved disposal facility.
2. Material will be excavated and loaded into off road haulers, utilizing a track excavator. The off road haulers will transport the excavated material, utilizing the temporary haul roads, to a temporary stockpile staging area located within the area of excavation and adjacent to the temporary haul road. A second track excavator will be located on the temporary access road adjacent to the temporary stockpile staging area and load the stockpiled material into transport vehicles for transportation and disposal to the approved facility.
3. Material will be excavated, utilizing a track excavator, casting excavated material back to a track dozer. The track dozer will relocate excavated material to a temporary stockpile staging area located within the area of excavation, adjacent to the temporary haul road.

A second track excavator will be located on the temporary haul road adjacent to the temporary stockpile staging area and load the stockpiled material into transport vehicles for transportation and disposal to the approved facility.

During the above operations, temporary haul roads will be utilized for as long as practical. They will provide a stable base for transport hauling vehicles to access the areas of excavation or areas of temporary stockpiles for direct loading and transportation to the Tire Pond, the primary stockpile staging area for further handling, or off site to an approved disposal facility. They will also provide a clean surface to enter and exit the areas of excavation and minimize the time required to perform the decontamination procedures when exiting the areas of excavation on to local streets.

As excavation operations progress, stone used in the construction of the temporary haul roads, will be removed and cast to the side and may be re-used as backfill material during backfilling operations provided it meets specifications. The geotextile fabric will be disposed of as required. Wood timber mats, if utilized, will be removed, staged and re-used. The remaining fill material beneath the temporary haul roads will be excavated using similar construction methods as previously detailed.

As excavation operations progress in the backyards, post-excavation verification/confirmatory sampling will be performed in accordance with the Sampling and Analysis Plan. Excavation limits will be modified as approved by the Engineer, based on the results of the post excavation verification/confirmation sampling. Upon receiving favorable results from verification/confirmatory sampling and approval from the Engineer, a topographic survey of the area of excavation will be performed, by a surveyor licensed in the state of Connecticut, and backfilling and restoration operations will be initiated at the disturbed areas.

#### Excavation Operations at Sides and Front yards of the Properties

Excavation of the sides and front yards of the properties will be an independent operation working in sequence with the excavation of the backyard properties. Access to the sides of the properties, in some cases is limited. The excavations are adjacent to buildings, structures, and local roadways and in areas of existing utilities. It will involve constructing and maintaining safe

access to properties where residents are not relocated during the remediation activities, and potential sequencing and coordination for temporary relocation of residents. Coordination will also take place with local utility companies in support of the removal and replacement of utility services to minimizing disturbance to utilities in order to maintain residents' comfort.

In the front yards, where access is sufficient, a track excavator will be utilized to excavate material and load directly into transport vehicles. Alternately, excavated material will be temporarily stockpiled, within the limits of the excavation, and then the stockpiled material will be loaded into transport vehicles for transportation and disposal to the approved facility.

At the sides of properties, depending on access, a rubber tire backhoe or mini-excavator may be utilized to excavate fill material and load excavated materials directly into a roll off container, a transport vehicle, or cast back to a loader for stockpiling in the front yard of the property. A track excavator will then be utilized to load the stockpiled material into transport vehicles for transportation and disposal to the approved facility.

Excavation next to buildings, structures, and utilities will proceed with caution to prevent any potential damage to the structures. If conditions and access dictate, the Contractor will also have the capability to hand excavate materials and transfer excavated materials via vacuum trucks. During excavation and backfilling, the Contractor shall monitor for undermining and settlement at structures.

As previously described, post-excavation verification/confirmatory sampling will be performed in accordance with the Sampling and Analysis Plan. Excavation limits will be modified as approved by the Engineer, based on the results of the post excavation verification/confirmation sampling. Upon receiving favorable results from verification/confirmatory sampling and approval from the Engineer, a topographic survey of the area of excavation will be performed, by a licensed surveyor in the state of Connecticut, and backfilling and restoration operations will be initiated at the disturbed areas.

Refer to Appendix A, Figures 3, 4 and 5 for further details.



#### Excavation of Block Areas N, R and S

Block areas N, R and S require the excavation of fill materials located in isolated areas within each block. It is anticipated that relocation of residents will be minimal or not necessary during the excavation operations in blocks N, R, and S. Depending on access to these areas, various types and sizes of equipment will be utilized. In areas where access is good, a track excavator or other appropriate equipment may be used to excavate material and load directly into transport vehicles, or temporarily stockpile the excavated material within the limits of the excavation and then load stockpiled material into transport vehicles for transportation and disposal at the approved disposal facility or to a temporary stockpile area for staging prior to final disposition. In areas where access is limited a rubber tired backhoe or mini-excavator may be used to excavate and load materials directly into a roll off container staged adjacent to the excavation, or temporarily stockpile material on poly-sheeting placed over existing soils adjacent to the excavation. The material will then be transferred from the stockpile, utilizing a loader and loaded into a roll off container staged as close to the excavation as site conditions allow and transported for disposal at the approved disposal facility. Post-excavation verification/confirmatory sampling will be performed in accordance with the approved Sampling and Analysis Plan. Excavation limits will be modified as approved by the Engineer, based on the results of the post excavation verification/confirmation sampling. Upon receiving favorable results from verification/confirmatory sampling and approval from the Engineer, a topographic survey of the area of excavation will be performed, by a surveyor licensed in the state of Connecticut, and backfilling and restoration operations will be initiated at any disturbed areas.

Refer to Appendix A, Figure 3 (Area N), and Figure 4 (Areas R, S) for further details.

#### Excavation of Block Areas H and J

The excavation of blocks H and J will consist of excavation crews performing excavation in the backyards, on the sides, and in the front yards of the properties. During excavation operations, stockpiling, if necessary, of excavated material will be at the primary soil stockpile staging area (located in area D, Mill Rock Park (Rochford Field Annex) or at an alternate designated temporary stockpile location. Excavated materials within the limits of the excavations will be loaded out during the course of each day, limiting the amount of stockpiling within the individual properties.

The intent is to minimize the amount of material stockpiles and the amount of time that stockpiles are present on private properties within the neighborhood.

Areas of excavation will be graded and maintained so stormwater runoff from disturbed areas is contained within the excavation or diverted around the excavations.

All haul trucks or equipment in contact with contaminated soil will be inspected and decontaminated to remove all soil prior to leaving the area of excavation. Haul trucks will be equipped with tarp covers.

### **Backfill/Utility Replacement**

The replacement or relocation of utilities will be performed during backfilling operations. Prior to beginning backfilling operations, coordination with local utility companies (Town of Hamden, Regional Water Authority, Southern Connecticut Gas Company, Greater New Haven Water Pollution Control Authority, AT&T and United Illuminating) will be conducted to establish specified protocols, materials, installation procedures, field testing, and inspections required for each utility. Gas utility work will be conducted by the Southern Connecticut Gas Company. The Contractor will provide the necessary earthwork services to assist the Gas Company during the replacement or relocation of services. The Contractor will perform the installation of the remaining utilities or assist the various utility companies, as needed. If Connecticut state licensees are required for the installation of a particular utility service, the services of qualified subcontractors licensed in the state of Connecticut will be utilized. Prior to backfilling utilities that have been replaced or relocated, the Contractor shall utilize a surveyor, licensed in the State of Connecticut, to perform the required as-built surveys to identify utility locations.

Backfilling of the areas of excavation will follow upon acceptance by the Engineer and completion of a topographic survey of the excavation limits.

The names and locations of off site borrow sources for fill materials proposed for the Project will be submitted to the Engineer for approval prior to delivery of any material. Laboratory testing data and certification from the borrow source indicating that the soil materials are clean and meet the CTDEP Remediation Standards Regulation, residential Direct Exposure Criteria, and GA Pollutant Mobility Criteria will be provided. Independent testing firms will perform the required

geotechnical testing, field in place density testing and chemical testing in accordance with Section 02300, Earthwork, of the Specifications.

A surveyor, licensed in the State of Connecticut, will establish the necessary controls in order to establish pre-existing features and to restore areas to conditions comparable to conditions that existed prior to remediation activities.

Backfill materials will be delivered to the site, placed and graded, utilizing track dozers and/or loaders, in loose lifts not to exceed 12-inches. Compaction will be performed utilizing a steel drum roller, plate tampers, walk behind roller, or tracking with the track dozers, as site conditions require. Compaction will be to the required percentage of maximum dry density in accordance with Section 02300, Earthwork, of the Specifications.

No vibratory rollers will be utilized during compaction. Static rollers or other appropriate construction equipment and/or techniques (tracking) will be used in backyards, at a safe distance from any structures and underground utilities. Manual or hand compaction equipment (plate tamper, walk behind roller) may be utilized in areas with limited access or adjacent to foundations or underground utilities.

Care will be taken adjacent to structures, placing backfill material in 8-inch loose layers and backfilling against structures by carrying the material uniformly around the structure at the same elevation in each lift until final grade elevation is achieved.

Foundations with structural integrity issues will be backfilled with select fill and if deemed necessary, the thickness of backfill layers will be reduced to 6-inch or less with compacting performed by manual or hand operations.

As previously mentioned, where fill material less than 4 feet in depth is left in place, with exceedances of allowable criteria, a durable warning marker/barrier will be installed prior to backfilling operations. The durable warning marker/barrier will likely range from orange snow/construction fencing or orange geotextile, to spray-on concrete (shotcrete) or a similar type barrier.

Soil erosion sediment control and dust control measures will continue to be conducted during backfilling and restoration operations until permanent measures are established.

## **Restoration**

As backfilling operations progress, the Contractor will initiate restoration activities at each property. Existing features will be restored to conditions comparable to those which existed prior to remediation activities. Prior to restoration, the selection of specific restoration items (i.e. fencing, specific plantings garden borders, walls, sheds, unit pavers, concrete/asphalt driveways, etc) for each property will be finalized in the Restoration Agreement with the property owners. Field surveys will be performed, to re-establish existing features to conditions comparable to that which existed prior to remediation activities.

The Contractor will schedule, coordinate and oversee restoration activities, utilizing qualified subcontractors (i.e. concrete, asphalt, masonry, carpentry, fencing, landscaping, etc) to perform the various restoration items of work in accordance with the Restoration Agreements, Contract Drawings and Specifications.

As restorations of the properties are completed, a final topographic survey will be performed by a surveyor licensed in the State of Connecticut for documentation.

## **Demobilization/Winter Shut Down**

Since remediation activities for the project are presently scheduled to take two to four years to complete, Winter shut downs are anticipated. To prepare for winter shut down, the following activities will take place:

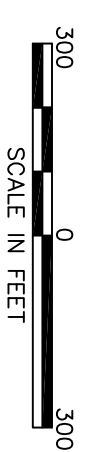
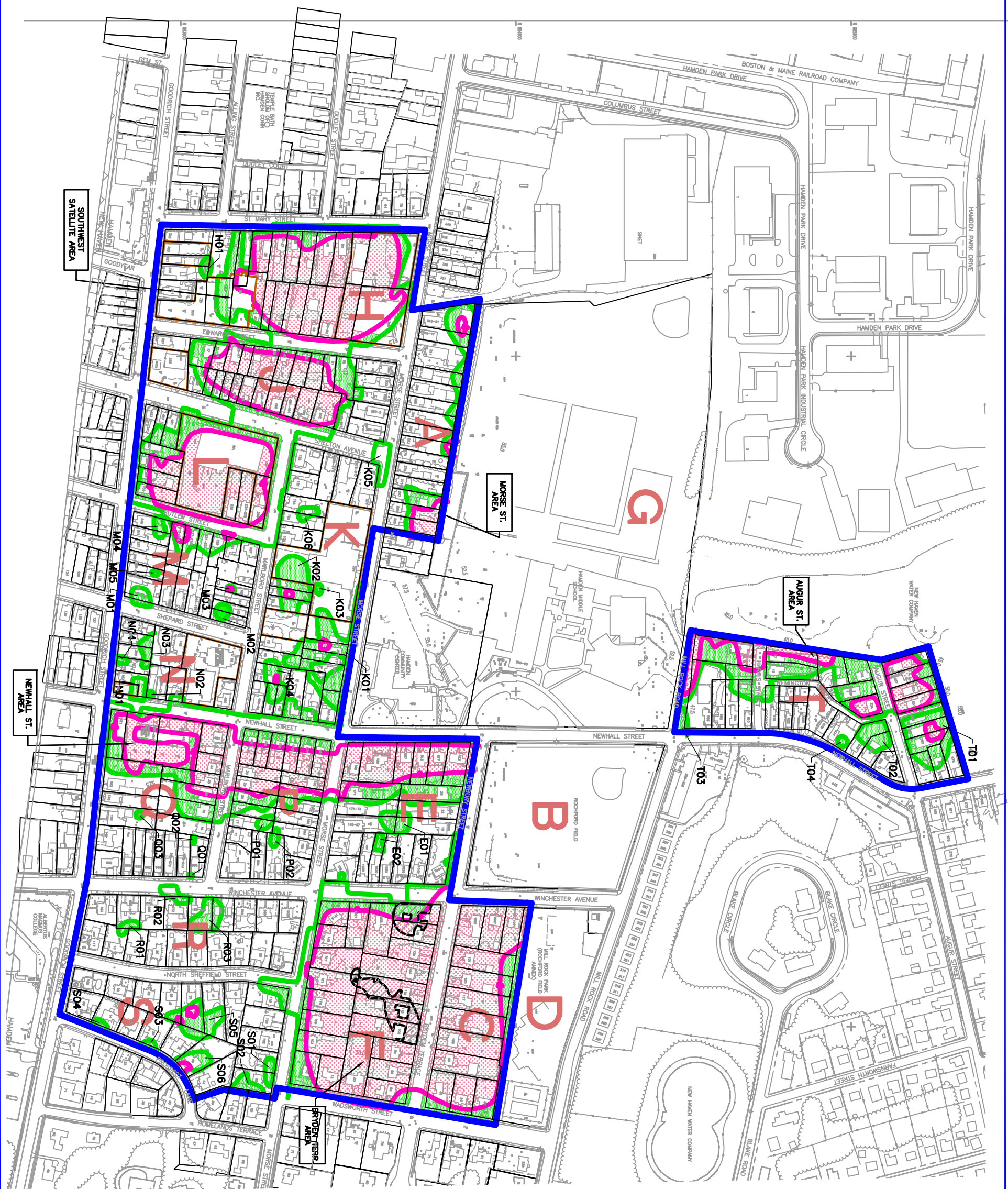
1. All equipment will be decontaminated and either staged at the primary support/staging area (Mill Rock Park-Rochford Field Annex) or other approved area for the winter or demobilized from the Site and remobilized, as needed, when the project resumes.
2. The Tire Pond transfer, staging and processing area will be secured. Debris generated will be disposed of and the entire area cleaned to the satisfaction of the Tire Pond Manager. Equipment will be decontaminated and either staged at the Tire Pond or

transported and staged at the primary support/staging area during the winter shut down.

3. Areas that were disturbed during remediation activities will be restored to the degree practicable given the stage of the project. Any temporary fencing, temporary barriers and sediment control measures in the work areas will be taken down as required.
4. The primary support/staging area will remain intact during the winter shut down. A reduced office staff may continue working on site performing necessary pre-construction and administrative activities for the upcoming phases of work. Also, depending on site and weather conditions, the Contractor, with the approval of Olin, may continue remediation activities, working in isolated areas that will have minimal impact to any residents.
5. Security will also be provided during non-working hours during winter shut down if deemed necessary.

APPENDIX A





## Overall Project Area

Olin Corporation  
Generic Remedial Action Plan  
Non-Public Properties, Newhall Street Neighborhood  
Hamden, Connecticut

FIGURE

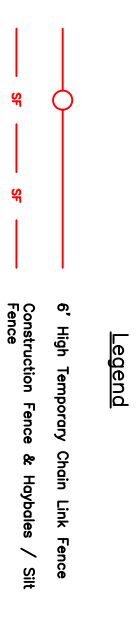
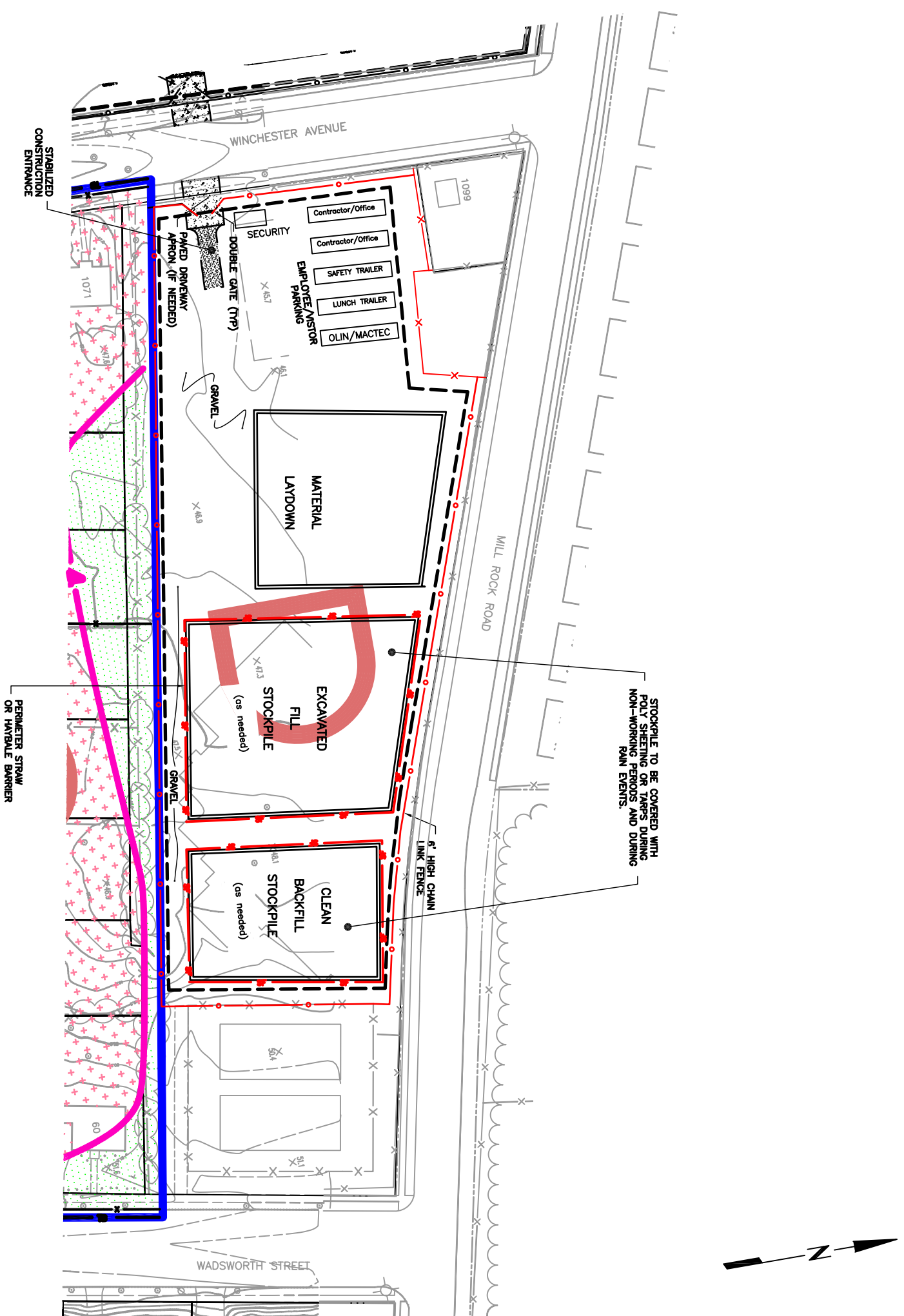
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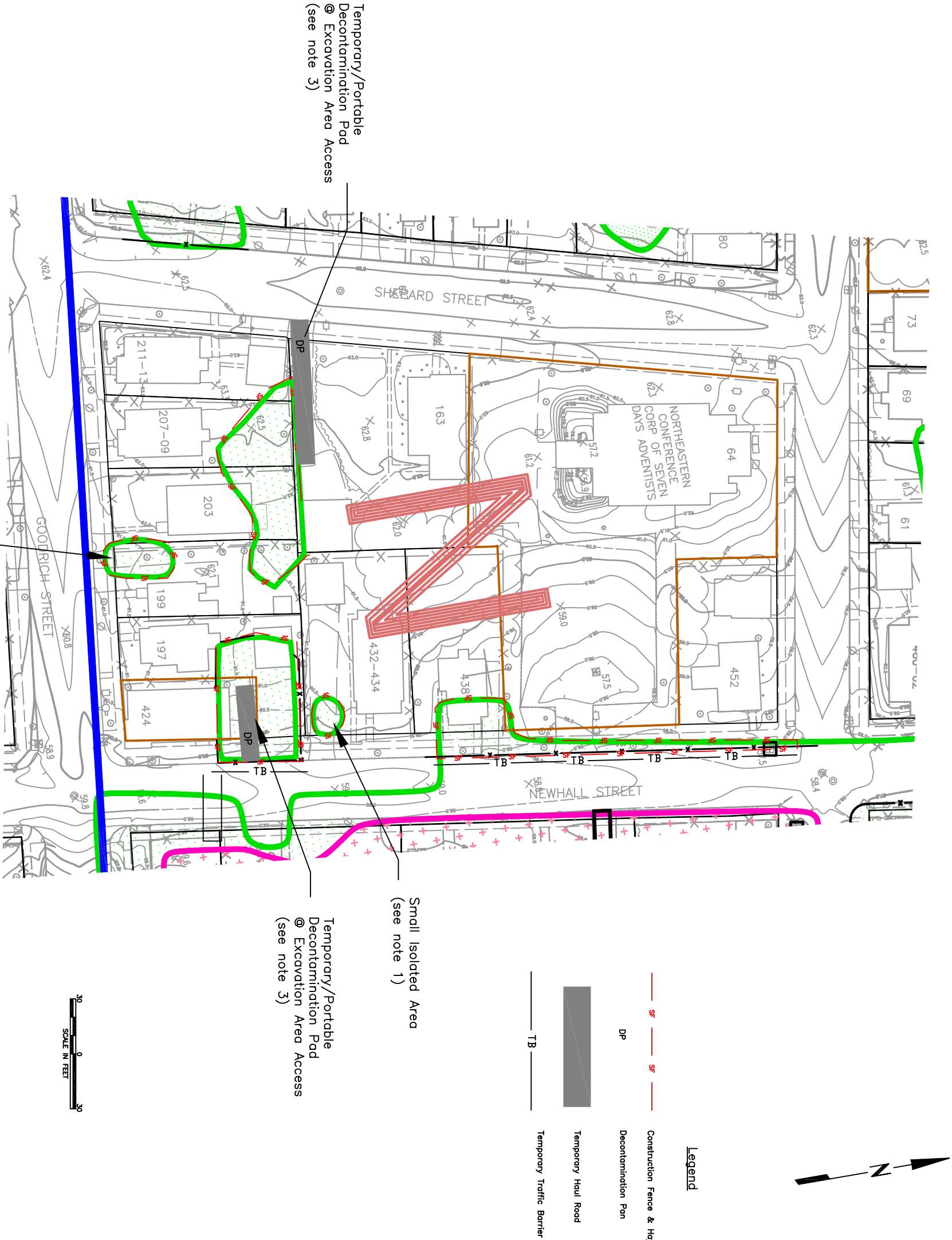
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Proposed Primary Staging Area	
Olin Corporation Generic Remedial Action Plan Non-Public Properties, Newhall Street Neighborhood Hamden, Connecticut	
FIGURE	2
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- NOTES:
- FOR SMALL ISOLATED AREAS, EXCAVATE FILL MATERIALS DIRECTLY INTO HAUL TRUCKS. PROVIDE A CLEAN LOADING ZONE USING HEAVY DUTY POLY-SHEETING. SMALL ISOLATED AREAS WILL BE EXCAVATED AND BACKFILLED WITHIN 2 DAYS. STABILIZE COMPLETED BACKFILL AREAS WITH TEMPORARY MULCHING OR BEGIN FINAL RESTORATION COVER (I.E. LAWN OR PAVEMENT) PLACEMENT WITHIN 5 DAYS.
  - SECURE EXCAVATIONS WITH TEMPORARY CONSTRUCTION FENCING DURING NON-WORKING HOURS. CONSTRUCTION FENCING IS NOT SHOWN AT ALL EXCAVATION LOCATIONS AS THE LIMITS OF REQUIRED FENCING WILL BE BASED ON THE ACTUAL LIMITS OF OPEN EXCAVATION DURING NON-WORKING PERIODS.
  - THE ACTUAL LOCATION OF EXCAVATION ACCESS POINTS MAY BE ADJUSTED OR RELOCATED DURING THE WORK BASED ON CONSTRUCTION NEEDS OR SITE CONDITIONS.
  - PERFORM EXCAVATION BY MAINTAINING CLEAN EDGES WITHOUT PILES OF EXCAVATED MATERIAL ACCUMULATING ALONG THE LIMITS OR PERIMETER TO PREVENT SEDIMENT DISCHARGE FROM EXCAVATION AREAS. SMALL SEDIMENT BARRIERS ALONG THE PERIMETER OF EXCAVATION LOCATIONS SHALL BE INSTALLED AS NEEDED, ESPECIALLY DURING BACKFILL OPERATIONS.
  - AS REQUIRED, PROMOTE TRAFFIC BARRIERS ALONG STREETS ADJACENT TO ACTIVE AND OPEN EXCAVATIONS. RELOCATE TRAFFIC BARRIERS AS WORK PROGRESSES AND OPEN EXCAVATIONS ARE BACKFILLED. TRAFFIC CONTROL SHALL BE COORDINATED WITH THE TOWN OF HAMDEN.

Area "N" Site Preparations	
Olin Corporation	
Generic Remedial Action Plan	
Non-Public Properties, Newhall Street Neighborhood	
Hamden, Connecticut	
FIGURE	
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- Construction Fence & Holedies / Silt Fence
- Decontamination Pan
- DP
- Temporary Haul Road
- Temporary Traffic Barrier

NOTES:

- FOR SMALL ISOLATED AREAS, EXCAVATE FILL MATERIALS DIRECTLY INTO HAUL TRUCKS. PROVIDE A CLEAN LOADING ZONE USING HEAVY DUTY POLY-SHEETING. SMALL ISOLATED AREAS WILL BE EXCAVATED AND BACKFILLED WITHIN 2 DAYS. STABILIZE COMPLETED BACKFILL AREAS WITH TEMPORARY MULCHING OR BEGIN FINAL RESTORATION COVER (I.E. LAWN OR PAVEMENT) PLACEMENT WITHIN 5 DAYS.
- SECURE EXCAVATIONS WITH TEMPORARY CONSTRUCTION FENCING DURING NON-WORKING HOURS. CONSTRUCTION FENCING IS NOT SHOWN AT ALL EXCAVATION LOCATIONS AS THE LIMITS OF REQUIRED FENCING WILL BE BASED ON THE ACTUAL LIMITS OF OPEN EXCAVATION DURING NON-WORKING PERIODS.
- THE ACTUAL LOCATION OF EXCAVATION ACCESS POINTS MAY BE ADJUSTED OR RELOCATED DURING THE WORK BASED ON CONSTRUCTION NEEDS OR SITE CONDITIONS.
- PERFORM EXCAVATION BY MAINTAINING CLEAN EDGES WITHOUT PILES OF EXCAVATED MATERIAL ACCUMULATING ALONG THE LIMITS OR PERIMETER TO PREVENT SEDIMENT DISCHARGE FROM EXCAVATION AREAS. SMALL SEDIMENT BARRIERS ALONG THE PERIMETER OF EXCAVATIONS SHALL BE PLACED AT THE DOWN-GRADIENT LOCATIONS FROM THE EXCAVATED AREAS AS NEEDED, ESPECIALLY DURING BACKFILL OPERATIONS.
- AS REQUIRED, PROVIDE TRAFFIC BARRIERS ALONG STREETS ADJACENT TO ACTIVE AND OPEN EXCAVATIONS. RELOCATE TRAFFIC BARRIERS AS WORK PROGRESSES AND OPEN EXCAVATIONS ARE BACKFILLED. TRAFFIC CONTROL SHALL BE COORDINATED WITH THE TOWN OF HAMDEN.

Area "R & S" Site Preparations

Olin Corporation  
Generic Remedial Action Plan  
Non-Public Properties, Newhall Street Neighborhood  
Hamden, Connecticut

FIGURE

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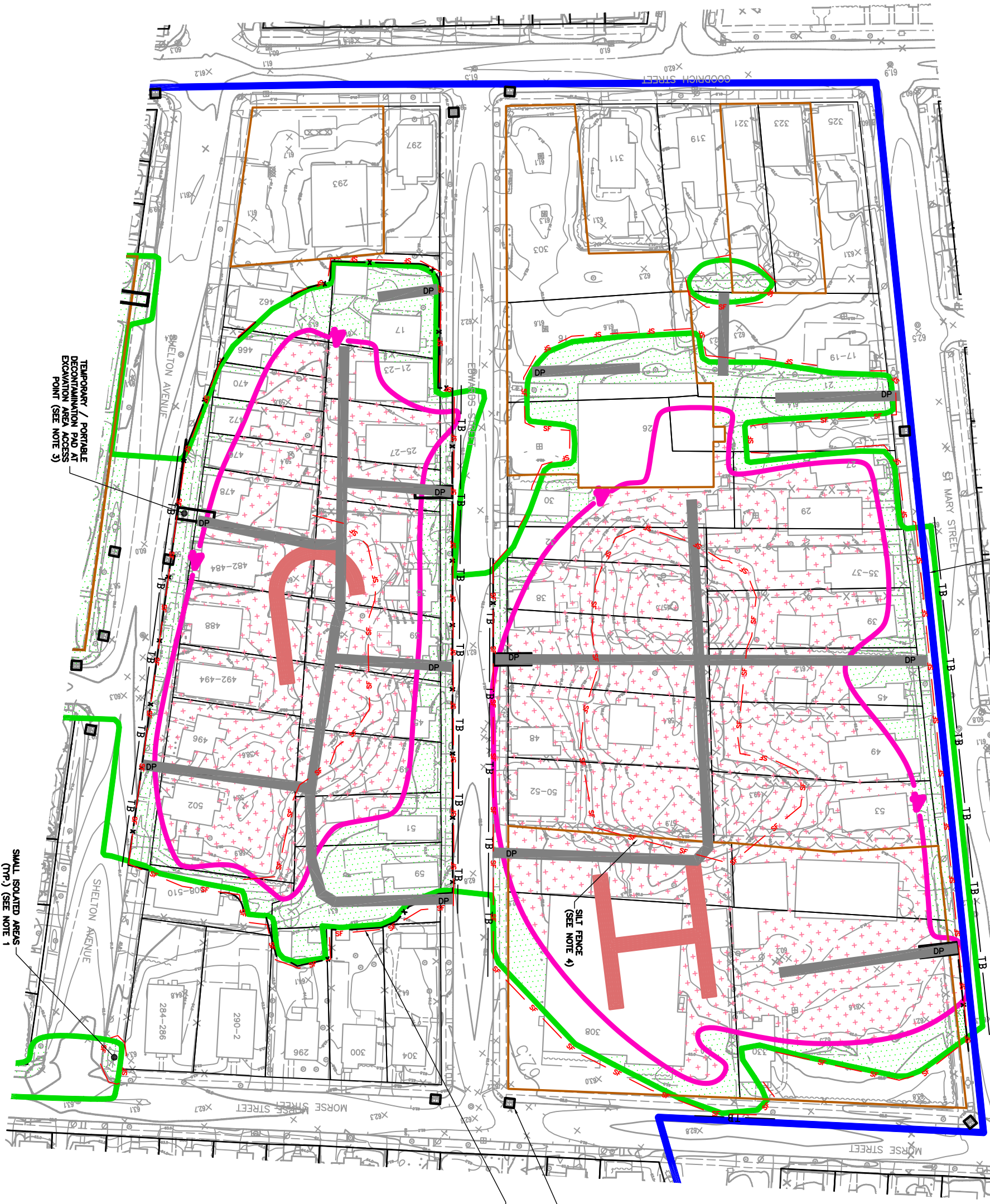
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TEMPORARY TRAFFIC BARRIER  
(TTP) AS REQUIRED DURING  
EXCAVATION ADJACENT TO  
STREETS (SEE NOTE 5)

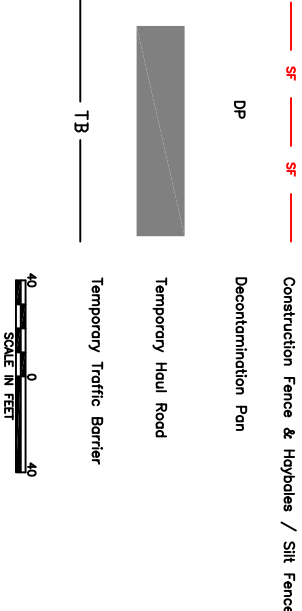


- NOTES:
1. FOR SMALL ISOLATED AREAS, EXCAVATE FILL MATERIALS DIRECTLY INTO HAUL TRUCKS. PROVIDE A CLEAN LOADING ZONE USING HEAVY DUTY POLY-SHEETING. SMALL ISOLATED AREAS WILL BE EXCAVATED AND BACKFILLED WITHIN 2 DAYS. STABILIZE COMPLETED BACKFILL AREAS WITH TEMPORARY MULCHING OR BEGIN FINAL RESTORATION COVER (IE: LAWN OR PAVEMENT) PLACEMENT WITHIN 5 DAYS.
  2. SECURE EXCAVATIONS WITH TEMPORARY CONSTRUCTION FENCING DURING NON-WORKING HOURS. CONSTRUCTION FENCING IS NOT SHOWN AT ALL EXCAVATION LOCATIONS AS THE LIMITS OF REQUIRED FENCING WILL BE BASED ON THE ACTUAL LIMITS OF OPEN EXCAVATION DURING NON-WORKING PERIODS.
  3. THE ACTUAL LOCATION OF EXCAVATION ACCESS POINTS MAY BE ADJUSTED OR RELOCATED DURING THE WORK BASED ON CONSTRUCTION NEEDS OR SITE CONDITIONS.
  4. PERFORM EXCAVATION BY MAINTAINING CLEAN EDGES WITHOUT PILES OF EXCAVATED MATERIAL ACCUMULATING ALONG THE LIMITS OR PERIMETER TO PREVENT SEDIMENT DISCHARGE FROM EXCAVATION AREAS. INSTALL SEDIMENT BARRIERS AT THE PERIMETER OF DOWNGRADIENT LOCATIONS FROM DISTURBED AREAS AS NEEDED, ESPECIALLY DURING BACKFILL OPERATIONS.
  5. AS REQUIRED, PROVIDE TRAFFIC BARRIERS ALONG STREETS ADJACENT TO ACTIVE AND OPEN EXCAVATIONS. RELOCATE TRAFFIC BARRIERS AS WORK PROGRESSES AND OPEN EXCAVATIONS ARE BACKFILLED. TRAFFIC CONTROL SHALL BE COORDINATED WITH THE TOWN OF HAMDEN.

INLET FILTER  
PROTECTION  
(TTP)

TEMPORARY CONSTRUCTION  
FENCE (TTP.) (SEE NOTE 2)

Legend



Area "H & J" Site Preparations

Olin Corporation  
Generic Remedial Action Plan  
Non-Public Properties, Newhall Street Neighborhood  
Hamden, Connecticut

FIGURE

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