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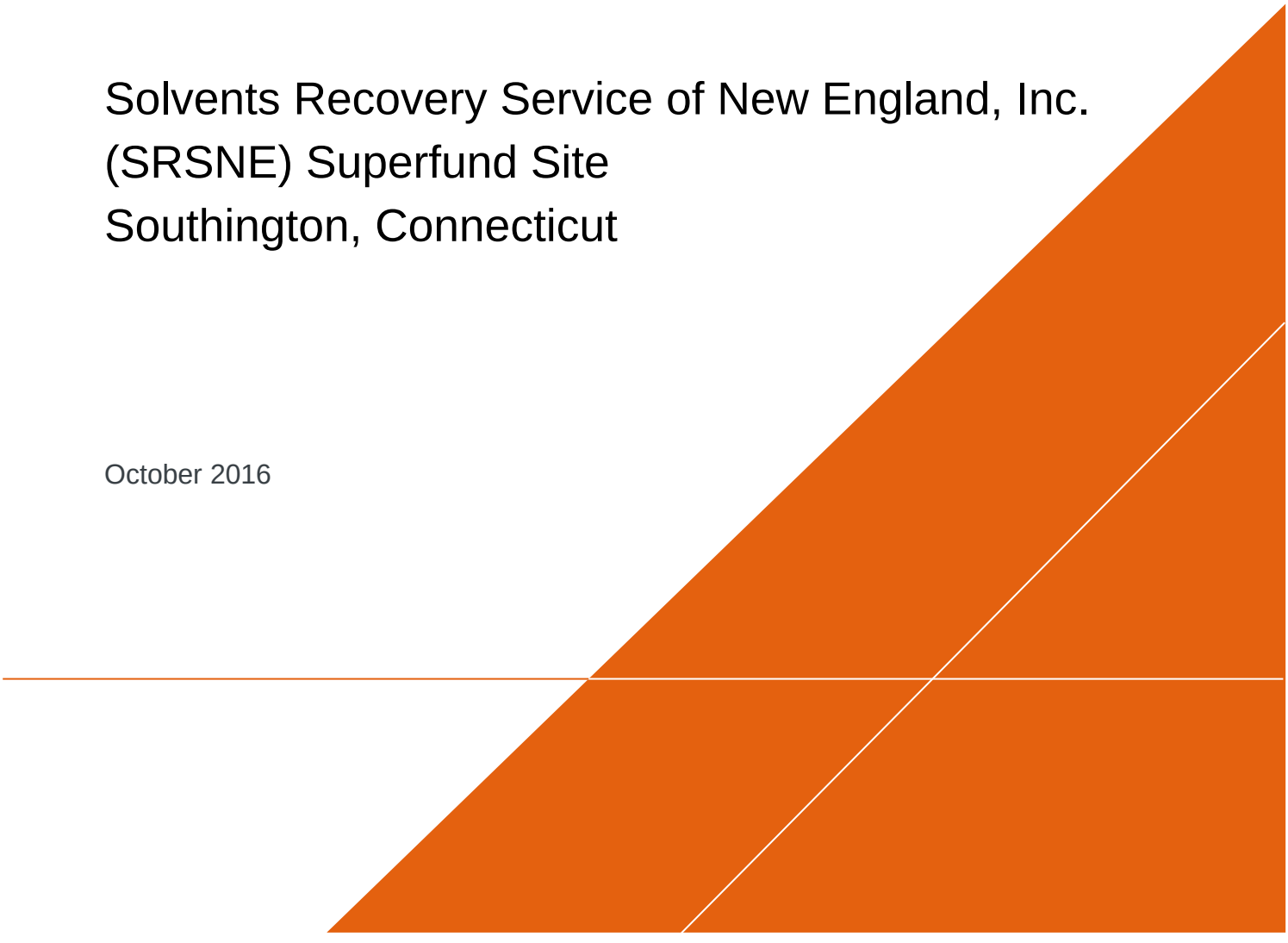
SRSNE Site Group

RCRA CAP CONSTRUCTION REMEDIAL ACTION WORK PLAN

Solvents Recovery Service of New England, Inc. (SRSNE) Superfund Site
Southington, Connecticut

October 2016



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Solvents Recovery Service of New England, Inc. (SRSNE) Superfund Site
Southington, Connecticut

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SRSNE Site Group

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APPENDICES

ACRONYMS AND ABBREVIATIONS

ARARs	Applicable or Relevant and Appropriate Requirements
BBL	Blasland, Bouck & Lee, Inc.
bgs	below ground surface
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CPU	central processing unit
CT DEEP	Connecticut Department of Energy and Environmental Protection
CWA	Clean Water Act
FSP	Field Sampling Plan
HCTS	Hydraulic Containment and Treatment System
HDPE	High-Density Polyethylene
HLVs	Hazard Limiting Values
IQAT	Independent Quality Assurance Team
ISTR	In Situ Thermal Remediation
LID	Low Impact Development
mg/m^3	milligrams per cubic meter
NAPL	Non-aqueous Phase Liquid
NTCRA	Non-Time-Critical Response Action
PCB	polychlorinated biphenyls
PID	Photoionization Detector
ppm	parts per million
QAPP	Quality Assurance Project Plan
RA POP	Remedial Action Project Operations Plan
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RD/RA	Remedial Design/Remedial Action
RD POP	Remedial Design Project Operations Plan
ROD	Record of Decision
RSRs	Remediation Standard Regulations

SMP	Site Management Plan
SOW	Statement of Work
SRSNE	Solvents Recovery Service of New England, Inc.
SVOCs	Semi-volatile Organic Compounds
SWPPP	Stormwater Pollution Prevention Plan
TWA	Time Weighted Average
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds

1 INTRODUCTION

1.1 Purpose and Scope

This document has been prepared on behalf of the SRSNE Site Group, an unincorporated association of the Settling Defendants to a Consent Decree (CD) and Statement of Work (SOW) for the Remedial Design/Remedial Action (RD/RA) at the Solvents Recovery Service of New England, Inc. (SRSNE) Superfund Site in Southington, Connecticut (Site). The CD was lodged on October 30, 2008 with the United States District Court for the District of Connecticut in connection with Civil Actions No. 3:08cv1509 (SRU) and No. 3:08cv1504 (WWE). The CD was entered by the Court on March 26, 2009.

This Remedial Action Work Plan (RAWP) is being submitted to the United States Environmental Protection Agency (USEPA) for review and approval in accordance with Sections V.D.1.h and VI.A of the SOW. Of the various site remedial action components specified in the Record of Decision (ROD; USEPA 2005) and the SOW, this RAWP addresses three specific components:

1. Excavate contaminated soil and wetland soil from the Cianci Property and culvert outfall, and consolidate excavated soils with contaminated soil in the former SRSNE Operations Area (SOW Section III.B);
2. Design and construct a low-permeability, multi-layer, composite Resource Conservation and Recovery Act (RCRA) Subtitle C cap that meets the requirements of the Connecticut Remediation Standard Regulations (RSRs) over the contaminated soil in the Operations Area and along the Railroad Right-of-Way (SOW Section III.D); and
3. Restore the functions and values of any and all habitats affected by the remediation (to the extent practicable) (SOW Section III.H).

This RAWP also addresses various ancillary activities associated with implementing the remedial components specified above, including management of additional soils outside the cap limits, implementing rails-to-trails beyond the cap limits, post-construction stabilization and monitoring. It also addresses planned modifications to the Non-Time-Critical Response Action (NTCRA) 1 sheetpile wall, which are proposed as part of modifications to the existing Hydraulic Containment and Treatment System (HCTS).

Consistent with the requirements established in Section VI.A of the SOW, this RAWP summarizes the scope of work associated with the specified remedial construction activities, and describes the various ancillary activities necessary to implement that scope of work. As further discussed below, this includes contracting approach and construction schedule, a perimeter air monitoring plan, a stormwater pollution prevention plan, and the approach for compliance with substantive permit requirements. This RAWP is being submitted concurrent with a detailed 100% Design Report that presents the basis of design, design calculations, design drawings, and technical specifications associated with the specified remedial components.

1.2 Project Background

The SRSNE Site is composed of approximately 14 acres of land encompassing four properties along Lazy Lane in Southington, Hartford County, Connecticut, approximately 15 miles southwest of the City of Hartford (Figure 1). One of the major components of the selected remedial action that was outlined in the Superfund ROD calls for in-situ thermal treatment of subsurface source material (non-aqueous phase liquid [NAPL]) in the overburden aquifer. The associated site preparation work (i.e., site grading, utility installations, rerouting a culvert, etc.) was performed between 2010 and 2012 (Arcadis 2013a). The thermal treatment component was subsequently implemented between 2013 and 2015 (***de maximis, inc.*** 2015). Having completed that work, this document primarily addresses the design of three subsequent ROD-specified components of the remedial action: excavation and consolidation of impacted soils on the Cianci property, construction of a Resource Conservation and Recovery Act (RCRA) Subtitle C cap in the former Operations Area of the Site, and restoration of habitat areas affected by remediation (to the extent possible). It also addresses other related activities to be implemented in conjunction with this phase of remedy implementation, as indicated in Section 1.1 and further described in the associated Design Report.

It should be noted that the activities addressed herein represent the expected final phase of significant remedial construction for the site. Other components of the site remediation approach primarily involve monitoring, institutional controls, and ongoing operation of the HCTS (with expected modifications over time). While minor site work and construction may periodically be necessary to support those activities, no additional remedial construction is anticipated unless triggered in the future by changed conditions or a decision by the Southington Water Department to reinitiate use of the Town Well Field as a water supply.

1.3 Roles and Responsibilities

de maximis, inc. (de maximis) is the Supervising Contractor on behalf of the SRSNE Site Group. de maximis' responsibilities include supervising and directing the various firms and contractors that support the design and implementation of the site remedy. de maximis also serves as the Independent Quality Assurance Team (IQAT).

Arcadis is the Remedial Design Contractor for the various remedial components addressed in this RAWP. This includes developing the remedial design, preparing and implementing the RAWP, and documenting the completion of the work.

de maximis has selected C-Tec Solar to design and construct a solar array atop the RCRA surface cover. The cap design was developed to accommodate the expected solar development area and equipment selection. The installation of panels, wiring, and ancillary features will be installed by C-Tec Solar after the remainder of the cap components have been constructed.

As further discussed in Section 3.2, a Remediation Contractor will be selected to implement the remedial construction activities addressed herein and in the associated Design Report. The Remediation Contractor will be selected via competitive bidding in parallel with USEPA and Connecticut Department of Energy and Environmental Protection's (CT DEEP's) review of the 100% RD and RAWP. USEPA will be notified of the selected contractor following the bidding process to be conducted by de maximis on behalf of the SRSNE Site Group.

Additional information regarding roles and responsibilities is presented in the Site Management Plan (SMP) (Attachment A to the Remedial Design Project Operations Plan [RD POP]).

1.4 Work Plan Organization

The remainder of this document is organized into six sections that detail the work scope and implementation support activities. The sections are identified and briefly described as follows:

- **Section 2 – Description of Construction Activities:** provides an overview of the various construction activities addressed by this RAWP and the companion Design Report, including the anticipated construction sequence.
- **Section 3 – Construction Implementation and Schedule:** presents the anticipated design and construction schedule contractor procurement approach, SOW-required meetings, approach for characterizing imported fill; offsite transport and disposal requirements, and the planned final reporting approach.
- **Section 4 – Perimeter Air Monitoring Plan:** describes the perimeter air monitoring to be performed in support of the construction activities.
- **Section 5 – Stormwater Pollution Prevention Plan (SWPPP):** provides information and details for erosion and sediment control practices to be implemented during construction.
- **Section 6 – Compliance with Substantive Permit Requirements:** describes the requirements of federal, state and local permits that are applicable to the subject construction activities, and describes the means by which the design achieves substantive compliance with the permit requirements.
- **Section 7 – References:** lists documents cited herein.

Various figures and appendices are also provided and referenced as appropriate. In addition, reference is made to the separately bound and concurrently submitted 100% Design Report, including the Design Drawings and Technical Specifications provided with that document.

2 DESCRIPTION OF CONSTRUCTION ACTIVITIES

As indicated in Section 1, this document provides design-related information associated with excavation and consolidation of impacted soils on the Cianci property, construction of a RCRA Subtitle C cap in the former SRSNE Operations Area, and other related activities to be implemented in conjunction with this phase of remedy implementation. The general sequence of work activities is described below, followed by additional details regarding key construction activities.

2.1 General Construction Sequence

It is anticipated that certain monitoring wells will be abandoned by the SRSNE Site Group in advance of mobilization by the selected Remediation Contractor, as further discussed in Section 2.2 and in the accompanying RCRA Cap 100% Design Report ("Design Report"). The general sequence associated with subsequent implementation of the RCRA cap construction activities by the selected Remediation Contractor is anticipated to occur as follows:

1. Mobilization of equipment, materials, and labor.
2. Construction of a contractor support and material staging areas.
3. Placement of erosion and sedimentation controls around work areas.
4. Site clearing.
    - Removal and disposal of vegetation and debris as required for access to work areas and implementation of site work.
    - Breaking up the unreinforced concrete cover placed in the In Situ Thermal Remediation (ISTR) treatment area for thermal treatment.
    - Removal and off-site disposal of existing railroad ties along the rails to trails corridor.
5. Relocation of existing fencing and installation of new fencing as needed to encompass the work areas and minimize the potential for inadvertent or unknowing access to the site. The modified perimeter fence alignment is shown on the Design Drawings (included in the Design Report).
6. Implementation of utility abandonments and removals for services to the former ISTR process equipment area.
7. Extend well risers for certain wells to accommodate grade changes in the NTCRA 1 area.
8. Excavation and consolidation of on-site soils.
    - Removal of existing soil and concrete debris piles for consolidation as grading/fill materials in the RCRA cap area.
    - Excavation of target soils located within and adjacent to the Cianci property for consolidation as grading/fill material within the RCRA cap area.
    - Backfill of the Cianci property excavations with clean fill from an offsite source.

9. HCTS Modifications in NTCRA 1 Area.
    - Construction of a permeable trench and perforated collection piping on the upgradient side of the existing NTCRA 1 sheet pile containment wall with pipe penetrations through the wall to drain to a perforated distribution pipe/trench on the downgradient side of the sheet pile wall. Valves will be installed at the pipe crossings to control the flow between the two sides of the wall. Excavated soils will be consolidated beneath the cap area.
    - Construction of a revised drainage channel to convey flow from the southern drainage swale around the RCRA cap to the Quinnipiac River floodplain around (south of) the NTCRA 1 fill area.
    - Excavation of soil from an on-site borrow area in the northeast portion of the Cianci property adjacent to the Quinnipiac River floodplain. This soil will be placed and consolidated as part of the surface grading in the NTCRA 1 area, and the borrow area will create additional flood storage and to offset other project impacts.
    - Delivery of general fill and topsoil from off-site source(s) as needed to supplement the onsite borrow volume and construct vegetated cover soil mound.
    - Grading and compaction of fill materials and placement of topsoil to achieve final surface grades as specified on the design drawings.
    - Construction of a new access road to replace the portion of the existing access road between the HCTS building and NTCRA 2 recovery wells that is covered by the NTCRA 1 area soil fill.
10. RCRA cap area grading and cap construction.
    - Grading and compaction of on-site fill materials and grading layer select fill material from off-site source(s) to achieve target subgrade as specified on the Design Drawings, followed by placement of geosynthetic layers.
    - Delivery of clean general fill, topsoil, and stone materials from off-site source(s) as needed to construct vegetated cover system for RCRA cap, including the designated solar array area and access road.
    - Installation of piping conduit from the solar array area to existing HCTS building – including portions within the RCRA Cap cover materials (above the geosynthetics layer) – to facilitate future solar array installation and connection to the treatment system.
    - Modifications to perimeter drainage swales/stormwater piping and grading of cap to achieve final surface grades followed by placement of temporary and permanent erosion control measures.
11. Rails to Trails construction.
    - Excavation, filling, grading and compaction of existing subgrade materials to subgrade elevations required to achieve final grades as shown on the Design Drawings.
    - Install new 15-inch diameter High-Density Polyethylene (HDPE) culvert at the south end of the RCRA cap to pass beneath the paved rail path.
    - Grading and compaction of select fill subbase material from an off-site source(s) to achieve pavement subbase elevations.

- Adjust elevation of AT&T fiber optic pull box at south end of RCRA cap.
- Placement of asphalt pavement and stone surfacing.

12. Restoration and stabilization.
    - Restoration of surface vegetation in ancillary affected areas, including excavation areas within and adjacent to the Cianci property.
    - Construction of permanent chain link fencing along the rails to trails cap segment.
    - Construction of a parking area for access to the rails to trails segment, as well as access-control fencing, boulders, and/or bollards to prevent unauthorized vehicular access to the trail.
    - Revegetation of effected areas by reseeding and revegetation to target pre-remedial conditions and habitats where possible.
13. Demobilization.
    - Remove all construction support facilities.
    - Clean/restore, at a minimum to the pre-construction condition, any areas/features that were disturbed as a result of the cap and rails to trails construction activities.

2.2 Monitoring Well Abandonment

Certain existing wells will be abandoned because they are no longer needed for monitoring purposes and/or interfere with the planned remedial activities. It is anticipated that these wells will be abandoned by the SRSNE Site Group in advance of mobilization by the selected Remediation Contractor. Wells will be abandoned consistent with the approach described in the Field Sampling Plan (Attachment B of the Remedial Design Project Operations Plan [Arcadis 2010]). The specific wells to be abandoned, along with rationale, are indicated in the Design Report.

2.3 Contractor Mobilization and Site Preparation

Following selection, the Contractor will be required to mobilize personnel, equipment and materials to the site to begin construction. It is anticipated that the following will be included as part of the mobilization and site preparation activities:

- Provide submittals as required by the Contract Documents for review and approval. This would include submittal(s) specifying the sources and, if necessary, the corresponding analytical data for proposed backfill sources to be used during the performance of this project;
- Establish construction support facilities and identify utilities and other critical site features to be protected;
- Establish site controls and access;
- Site survey and layout;
- Delineate work areas and clearing limits;
- Place erosion and sedimentation controls around work areas;

- Perform a pre-construction site assessment to ensure that all appropriate erosion and sediment controls are in-place and properly installed;
- Abandon existing ISTR utilities; and
- Extend monitoring well riser heights to accommodate grade changes.

Aboveground and underground utilities that could potentially be affected by the construction activities will be identified prior to initiating any intrusive subsurface activities (e.g., soil excavation, etc.). As indicated on the Design Drawings, certain subsurface and above ground utilities are known to be present within and adjacent to work areas at the Site. These utilities include an AT&T fiber optic line that is located around the perimeter of the RCRA cap area and within the rails to trails right-of way. The selected Contractor will be responsible for coordinating with AT&T when excavation occurs within the vicinity of the fiber optic cable.

Temporary construction fencing will be installed, as needed, to delineate and secure areas where existing fencing is removed for construction activities. Temporary fencing is expected to be at least 4 feet in height, constructed of high-density polyethylene, and orange in color. Construction activities that occur in the vicinity of Lazy Lane, Curtiss Street or other high traffic areas may necessitate the use of flagmen, signs or other signaling devices (i.e., flashing beacons mounted on sawhorses).

The Contractor will be required to perform survey activities at several critical junctures during the performance of the Remedial Action, to: (1) establish appropriate horizontal and vertical control prior to the initiation of the soil excavation and capping activities; (2) verify achievement of the horizontal and vertical limits of excavation; (3) verify achievement of the required elevations specified in the subgrade and final grading plan for the RCRA cap, as well as the appropriate elevations for the backfilled excavations outside the cap; (4) document achievement of the specified minimum thickness of the RCRA cap components; and (5) document the final elevations of all restored areas.

Erosion and sedimentation control measures will be implemented to minimize the potential for erosion of exposed soils and subsequent accumulation of materials in site drainage pathways. In addition, these measures may be used to divert rainfall runoff from contacting any soil stockpile areas and/or entering work areas and open excavations. At a minimum, the erosion control measures to be implemented will include placement of hay bales and/or staked silt fencing around the work areas and filter socks at existing drainage inlets as indicated on the Design Drawings. Additional area-specific measures may be implemented for erosion control as required. Hay bales and/or fencing will be placed at the start of the site work activities and will be maintained until a good stand of vegetation is established.

The existing water, sewer, gas and telephone utilities providing underground service to the former ISTR area will be abandoned. Following removal of any existing piping and equipment from the vaults and manholes, utility lines will be abandoned by appropriately plugging and filling with non-shrink grout. The vaults or manholes will also be filled with concrete or soil fill.

Certain groundwater monitoring wells are located in areas where grade changes are planned. In order to accommodate continued future use of those wells, riser and casing extensions will be installed such that the wells will extend approximately 2 to 3 feet above the new ground surface (unless flush-mount is needed). Wells to be extended, the approximate length of extension, and a detail for the well extension approach are identified in the Design Drawings.

2.4 HCTS Modifications in NTCRA 1 Area

Modifications will be made in the vicinity of the NTCRA 1 sheetpile wall in anticipation of future operational modifications to the HCTS. Proposed NTCRA 1 area modifications are consistent with SOW Sections IV.B.2 and V.C.4. Section IV.B.2 allows for modifications or enhancements to the HCTS that decrease the costs or time of system operation provided they are carried out in a protective, compliant, effective, and cost-effective manner, as determined by USEPA. Section V.C.4 allows for a containment/ treatment evaluation and optimization study to identify potential post-ISTR modifications to the HCTS.

The NTCRA 1 area modifications include installation of collection trenches/pipes along a portion of the upgradient (west) side of the sheet pile wall, three penetrations through the wall, valves at the penetration points to allow flow control (if necessary), distribution trenches/pipes along the downgradient (east) side of the wall, and surface grade adjustments to facilitate surface drainage and maintain the water table below ground surface.

It should be noted that the HCTS modifications addressed herein do not include discontinuing use of the existing extraction wells on the upgradient side of the wall. Rather, the trenches and grade modifications are being implemented at this point only for the purpose of efficiency given that construction personnel and equipment will be present on site for the other remedial components, and because work is planned in the immediate vicinity as part of the excavation of the Cianci Property removal areas. It is not anticipated that the penetrations or trenches will be used until some future point in time when a determination is made, in conjunction with the USEPA, to reduce or eliminate groundwater extraction at the NTCRA 1 pumping wells based on conditions that exist at that time.

2.5 Soil Excavation and Consolidation

The proposed Remedial Action will require excavation and handling of existing soils within the Cianci Property and outside the RCRA cap area. Specifically, existing soils within the Cianci Property excavation limits and depths, as depicted on Design Drawing 4 (Appendix A of the Design Report) will be removed using conventional construction equipment (e.g., excavator, backhoe, and loader). The excavation depths are typically 1 to 2 feet below ground surface (bgs) with a maximum depth of 4 feet (bgs) in Excavation Area EA-4. Stockpiled soil and debris, as well as excavation of soils targeted for removal from outside the cap limits as a result of dioxin impacts, will also be removed and relocated for consolidation beneath the cap.

Perimeter and work zone air monitoring will be implemented during excavation activities (Section 4). In the event action levels are triggered during excavation, water will be sprayed to keep the open excavation (or excavated soils) moist. If, after implementing measures to mitigate windborne migration of particulate matter, dust from work zone is still visibly airborne (e.g., occurring repeatedly and/or for more than a minute, at the discretion of the Construction Manager), the Contractor will be required to immediately discontinue operations until such measures are effective or conditions change such that windborne migration of particulates is no longer an issue. Where soil stockpiles or staging areas are located in areas not subject to future excavation or capping, polyethylene sheeting will be placed under such stockpiles or staging areas and perimeter berms will be placed to prevent excavated soils or precipitation runoff from the excavated soils from contacting underlying soils.

Measures will also be incorporated to control runoff from and/or migration of consolidated soils from the time they are placed in the cover area until the geosynthetic cap components are placed. This is further discussed as part of the Stormwater Pollution Prevention Plan (Section 5).

Backfilling of excavations will be initiated as soon as practicable after completion and proper documentation of excavation activities (i.e., survey control and confirmation sampling, where needed). It is anticipated that the excavations will be backfilled and compacted using conventional construction equipment. Clean imported backfill materials will be placed in maximum 12-inch thick lifts in a loose state and compacted in accordance with the Technical Specifications prior to additional fill being placed within the excavation.

2.6 RCRA Subtitle C Cap

It is anticipated that conventional construction equipment will be used to spread and compact the various cover materials that are incorporated within the RCRA cap. It is also anticipated that the geosynthetic clay liner, geomembrane liner and geosynthetic drainage composite will be placed by hand and using light duty equipment with rubber tires. Geosynthetic materials not immediately covered with soil overburden will be anchored with sand bags until the remaining cover materials have been placed. It is anticipated that low ground pressure construction equipment will be used to spread and compact the various cover materials that are placed over the geosynthetic cap components. During the construction of the cap, the Contractor will be required to exercise appropriate care when covering the geosynthetic clay liner, geomembrane liner and geosynthetic drainage composite with the cover soil materials such that construction equipment does not damage the underlying geosynthetic components. The specific materials to be used and procedures to be followed when installing the various components of the RCRA cap are provided in detail in the Design Drawings and Technical Specifications.

Following construction of the cap system, the majority of the cap surface will be seeded with an upland erosion control seed mix as shown on Design Drawings 13 and 14 to establish a vegetated (grass) cover. Subsequent to seeding, a straw mulch layer of no more than two inches will be installed. Following completion of the restoration activities, areas of sparse vegetation (if any) will be subject to re-seeding and mulching activities.

A portion of the RCRA cap (approximately 525 linear feet along the former railroad bed) will be completed as rails to trails bicycle/walking path. Cap construction in this area will proceed in the same manner as the vegetated cap construction discussed above with the exception of the surface treatment in the paved portion of the trail. Specifically, the 6-inch topsoil layer and 6 inches of the soil protection layer will be replaced by a 10.5 feet wide section of the paved trail surface for the rails to trails segment will involve the placement of a 9-inch subbase layer, a 1.5-inch base course of bituminous concrete binder material, and a 1.5 -inch wearing course of bituminous concrete. A 3.5 feet wide soft trail surface for the rails to trails segment will involve the placement of a 9-inch subbase layer and a 3-inch layer of stone screenings.

A portion of the RCRA cap, involving an area of approximately 65 by 260 feet, will be completed with a crushed stone surface to facilitate subsequent installation of a solar array. The solar array will be installed as a ground-mounted system, meaning that the panels and racks will be installed above ground and anchored with ballast weights rather than driven posts. Cap construction in this area will proceed in the same manner as the vegetated cap construction discussed above with the exception that the 6-inch

topsoil layer will be replaced by a layer of geotextile overlain by 6 inches of nominal ¾-inch crushed stone. The crushed stone will provide a smooth surface for panel installation. It will also minimize maintenance requirements in the solar panel area because it will inhibit vegetative growth around the panels and provide erosion protection along panel drip lines. Design of the solar area surface preparation and conduit to facilitate installation of the necessary electrical wiring from the array to the point of electrical connection (inside the onsite groundwater treatment system building) is included in the cap design so that the future solar component installation can proceed without affecting or disturbing the cap. The necessary site preparation design has been developed in consultation with C-Tec Solar, although the specific design and installation of the solar array components is not part of the remedial design for the SRSNE Site; design and installation of the array and electrical components will be separately addressed by C-Tec Solar.

Finally, a portion of the RCRA cap area will be completed as a gravel access road in order to allow maintenance equipment and solar installation equipment to access the portion of the cap area that is west of the fenced rails-to-trails pathway. The access road will commence at the existing gate north of the former SRSNE Operations Area (i.e., along the paved road accessing the SRSNE property from Lazy Lane) and allow for access to the gently-sloped upper portion of the cap adjacent to the solar array area. The access road will be constructed similar to the solar area, except that a larger stone material will be used for the access road material. The access road configuration is shown on the Design Drawings, and includes provisions for a turn-around area.

2.7 Rails to Trails

The paved rails to trails segment will extend from Lazy Lane south to Curtiss Street. The trail segment located north of the RCRA cap to Lazy Lane was constructed to the aggregate subbase layer during the pre-ISTR phase of the project. This segment will be graded to meet the final grade subbase elevations, compacted and then surfaced with a 10.5 feet wide paved trail and 3.5 feet wide soft trail as described for the cap segment above. A 4-inch layer of topsoil will be placed in the surface areas outside of the paved portions of the trail and seeded.

The rails to trails segment located south of the RCRA cap to Curtiss Street is approximately 1,970 feet long and will require clearing of the existing vegetation within the work limits and removal/disposal of existing railroad ties. Following clearing, the area would be graded to the widths and subgrade elevations shown on the Design Drawings (refer to Design Report), compacted, and then surfaced with 9-inches of subbase aggregate and a 10.5 feet wide paved trail and 3.5 feet wide soft trail as described for the cap segment above. An exception is in the southernmost 450 linear feet of trail, where the soft trail will not be constructed as a result of width limitations imposed by the existing pedestrian bridge and narrow railroad grade width through the floodplain area. A 4-inch layer of topsoil will be placed in the surface areas outside of the paved portions of the trail and seeded.

2.8 Wetland Mitigation

Based on the 2010 delineation boundaries, a total of 0.31 acres of wetland mitigation credits were generated by enhancing Wetland A along the Quinnipiac River and expanding Wetland A in its northwest corner to create an oxbow wetland (Wetland G) (BBL 1995). That mitigation project was intended to offset

anticipated wetland impacts associated with the NTCRA 1 system installation and operation. However, the NTCRA 1 system did not result in wetland losses to Wetlands C, D, E, or F, as determined by subsequent re-evaluation of those areas following the NTCRA 1 system installation and operation. The mitigation wetland was monitored in 2007, 2008, and 2009, and was found to meet the performance standards. Accordingly, the 0.31 acres of "banked" mitigation wetland were available to mitigate wetland impacts associated with subsequent remedial activities.

During the pre-ISTR site preparation phase of remedial implementation, 0.16 acres of Wetland E (formerly located along the railroad right-of-way) were permanently lost as a result of filling and grading necessary to implement the ISTR component of the remedy. Subtraction of this 0.16 acres of permanently altered wetland from the banked mitigation wetland results in 0.15 acres of mitigation wetland available for other wetland impacts on the Site.

Three wetland areas on the Site, totaling 0.11 acres, will be permanently lost as a result of grading activities in the NTCRA-1 area (see attached Figure 2 and Design Drawing 13 appended to the 100% Design Report) to be implemented as part of the current phase of remedial activities. The loss of these 0.11 acres of wetlands will be mitigated by applying 0.11 acres of the remaining 0.15 acres of the mitigation wetland, leaving 0.04 acres of mitigation wetland available at the Site. Because no further permanent wetland impacts are anticipated as part of the remedial activities, the project will have resulted in a net gain of 0.04 acres of wetland area. In addition, another 0.04 acres of wetland may be established via the excavation and restoration of a soil borrow area adjacent to the Wetland G area.[1] The borrow area will provide fill for the NTCRA 1 area grading and also offset flood storage impacts associated with placement of fill in certain portions of the NTCRA 1 fill area. Because the project is expected to result in a net wetland gain, no further compensatory wetland mitigation is anticipated.

Also under current remedial activities, two Cianci Property excavation areas (EA-3 and EA-5) involve removal within Wetland A and one excavation area in Wetland C. These excavations will result in temporary disturbances to a total of approximately 0.30 acres of wetlands. These disturbed wetlands will be restored in-place and in-kind by backfilling to restore original grades, seeding, and planting. Since these wetlands are being restored in-place and in-kind, no additional mitigation is proposed for their temporary disturbance.

[1] It is anticipated that the portion of the borrow area below an elevation of 150 feet may naturally be re-established as a wetland due to its planned elevation and connectivity to existing Wetland G. Accordingly, wetland plantings will be made in the portion of the excavation area below elevation 150 feet. However, the objective of the borrow area is not to create wetland, so no performance metrics for wetland establishment are included in the design.

3 CONSTRUCTION IMPLEMENTATION AND SCHEDULE

This section discusses various implementation support and schedule-related requirements, including the RA-related activities and schedule specified by the SOW as well as the anticipated schedule for RCRA cap construction activities. It also discusses contractor procurement.

3.1 Schedule

Remedial action components are specified in Section VI of the SOW. This RAWP addresses the requirements of SOW Section VI.A. Section VI.A also calls for a revised Remedial Action Project Operations Plan (RA POP) if needed. However, there are no activities associated with the remedial construction described herein that require addenda to or modification of the POP submitted in conjunction with the Remedial Design activities. Note, however, that the schedule-related information presented herein supersedes the schedule of remedial action activities provided in the RD POP (Arcadis 2010).

The following table identifies the various RA-related work activities specified in SOW Section VI that are anticipated to be performed in conjunction with RCRA cap construction and related activities. It also identifies the SOW-specified timeframe/schedule for each item.

Milestone/SOW Reference	Description	Timeframe/Target Date of Implementation
RA Implementation Schedule; VI.B	The implementation schedule will identify all major milestones for completion of each major component of the RA, including the commencement and completion of construction of each component of the remedy, and for demonstrating compliance with the approved construction plan.	Within 30 days after receipt of USEPA approval or modifications of the Final RAWP.
Initiation of Construction; VI.E	Commence mobilization to execute RAWP.	Within 60 days after receipt of USEPA approval or modifications of the Final RAWP.
Final Construction Inspection; VI.G	Participants will include all parties involved in the RA, including but not limited to the Settling Defendants and their representatives, USEPA and CT DEEP.	Within 60 days after completion of construction; contingent upon construction completion date.

The SRSNE Site Group is targeting RCRA cap and related construction activities to commence in the 2016 construction season. Remedial construction for the components addressed by this phase of work (Section 2) is anticipated to require approximately four months to complete. It is anticipated that fieldwork will commence in November 2016, and be completed during the spring of 2017 following a winter shutdown period.

3.2 Contractor Procurement Approach

The SRSNE Site Group solicited competitive bids from qualified contractors as a basis for contractor procurement. To proceed in as timely a manner as possible, and with the goal of initiating construction in 2016, Contractor bidding was performed concurrent with USEPA review of the draft 100% design report submittal. As indicated in the general schedule in Section 3.1 above, it is anticipated that construction will be initiated within 60 days after receipt of USEPA approval of the RAWP and 100% Design Report.

3.3 Meetings

Remedial action meeting components are specified in Section VI of the SOW and summarized in the following table:

Milestone/SOW Reference	Description	Timeframe/Target Date of Implementation
Pre-Construction Conference; VI.C	Participants will include all parties involved in the RA, including but not limited to the Settling Defendants and their representatives, USEPA and CT DEEP.	Within 30 days after receipt of USEPA approval or modifications of the Final RAWP.
Pre-Construction Public Meeting; VI.D	Invitees will include local law enforcement and emergency personnel, as well as local residents. This meeting may be combined with the Pre-Construction Conference.	Within 45 days after receipt of USEPA approval or modifications of the Final RAWP.
Meetings During Construction; VI.F	Discuss progress of construction activities. Modification to the RAWP may be proposed during meetings and/or conference calls.	Weekly during construction.

3.4 Characterization of Imported Fill

Any offsite materials proposed for use as general fill, select fill, or topsoil must be from an approved source. Samples of proposed sources of granular fill (i.e., soil, but not stone) will be provided by the selected contractor and subject to analytical testing for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), dioxin[2], pesticides/herbicides, and inorganics; results will be compared to the Soil Cleanup Levels for the Site. Sources exhibiting concentrations above Site Cleanup Levels will not be approved for use.

[2] "Dioxin" refers to polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs).

3.5 Offsite Transport and Disposal

The RCRA cap is designed to encapsulate the former Operations Area and cover any soils that are planned to be excavated and placed within its boundaries. These excavated soils include the five discrete excavation areas on the Cianci Property, remaining soil piles on the site, and dioxin impacted soils as shown on Figure 3 and further discussed in the 100% Design Report. The RCRA cap is designed to accommodate some degree of additional material beyond the estimated combined amounts of all excavation areas. However, it remains possible (although unlikely) that additional removal triggered by confirmation sampling and contingent excavation could generate a volume that exceeds the capacity available beneath the planned cap area. In this case, offsite transport and disposal may be required for the excess volume. If a reasonable potential for a capacity issue exists pending initial post-excavation confirmation sampling in the limited areas where such sampling is required (see Section 5.6 of the 100% Design Report), the SRSNE Site Group will initiate provisions for characterization, profiling, and offsite transport/disposal of the excess materials.

Some remaining railroad ties are present along the existing railroad right-of-way between the former SRSNE property and Curtiss Street. These railroad ties will be removed prior to constructing the paved pathway as part of the rails-to-trails system. Similarly, root balls will be generated in areas where tree clearing is necessary to excavate target soils. Root balls with associated soils will be subject to offsite transport and disposal to minimize accumulations of organic materials beneath the RCRA cap. Removed ties and root balls will be disposed at an approved off-site commercial facility permitted to accept such materials. The specific disposal facility is subject to proposal by the selected Contractor and approval the SRSNE Site Group and the USEPA/CT DEEP, as warranted.

3.6 Equipment Cleaning

Equipment that has been used for excavation and handling of impacted materials – including soils excavated from outside the cap for consolidation beneath the cap – will be subject to cleaning prior to relocating to an area outside the remediation area (i.e., exclusion/contaminant reduction zones), before handling fill materials (if that equipment had previously been used to handle impacted materials), and prior to departing from the site. Equipment cleaning will be performed in a designated area that is, at a minimum, underlain by an impermeable barrier sloped to a collection sump. The anticipated design and location of the equipment cleaning area are indicated in the Design Drawings, although the selected Contractor will have the ability to propose for approval an alternate design and/or location in the Contractor Operations Plan to be prepared prior to the commencement of work. At a minimum, cleaning will include high-pressure water spray or steam cleaning, as necessary, to remove accumulations of soils on buckets, exteriors, or other surfaces that may have contacted impacted materials. Accumulated wash waters will be periodically removed from the cleaning area and containerized or otherwise transferred from the equipment cleaning area for subsequent treatment or disposal (see Section 3.7). Precautions will be taken to limit contact between the equipment, personnel performing the cleaning operations, and any liquids that may accumulate in the cleaning area.

3.7 Water Management and Treatment

Impacted water will be generated as a result of construction activities. Potential contributing sources include, but are not necessarily limited to:

- Accumulated groundwater removed from trenches and/or excavation areas to facilitate the work;
- Precipitation that accumulates in open excavation areas;
- Water that drains from consolidated materials placed within the RCRA Cap area; and
- Liquids generated by equipment cleaning activities.

Measures will be taken to reduce the amount of potentially impacted water that is generated during remedy implementation, including diversion of runoff around work areas, erosion and sedimentation controls, and use of covers on stockpiles and soil consolidation areas. Water removed from impacted areas for the purpose of remedy implementation, or that has otherwise potentially contacted impacted materials, will be collected for management and treatment. Treatment is anticipated to occur using the existing groundwater treatment facility at the site. Use of this treatment system may require the addition of one or more fractionation tanks and filter system(s) to provide for flow equalization and solids removal, respectively, to provide a flow rate and solids load commensurate with the system's available excess capacity. Based on its design treatment capacity versus typical operating rate, the existing treatment system can accommodate a maximum continuous additional flow rate of approximately 5 gallons per minute (gpm) of influent. Note that, while modifications to the treatment facility have been proposed and are currently under consideration, it is anticipated that the existing treatment components will be maintained to support this project.

3.8 Reporting

The remedial action reporting component is specified in Section VI of the SOW. It is outlined in the following table:

Milestone/SOW Reference	Description	Timeframe/Target Date of Implementation
Construction Completion Report; VI.H	Summarize construction activities.	Within 30 days after the Final Construction Inspection; contingent upon construction completion date.

4 PERIMETER AIR MONITORING PLAN

Certain components of the planned remedial activities have the potential to generate localized impacts to air quality. These components include soil excavation/backfill/grading and material handling/transfer/storage. The types of air quality impacts potentially associated with these activities include release of VOCs or dust associated with exposed soil and/or handling/transfer of soils.

The basis for this air monitoring plan was described in the Thermal Wellfield Implementation Support Plan [TWISP (Arcadis 2013b)], and was implemented during the ISTR component of the remedial construction. The scope of the perimeter air monitoring plan, control measures that will be implemented if action levels are exceeded, and instrument calibration requirements are further described below.

4.1 Perimeter Air Monitoring

4.1.1 Air Monitoring Locations

The air monitoring system will consist of four perimeter stations located around the work zone. The locations will be selected based on the location(s) of the work, the prevailing wind direction on a given work day, and the direction of the nearest potential downwind receptors. The four locations will include one location upwind of all work activities, plus three downwind locations relative to ongoing work. The locations will not be fixed, and are intended to be moved as required based on the work locations and actual wind direction. Figure 3 illustrates a potentially representative layout of monitoring locations that may be appropriate under typical wind directions and given the primary work areas. The equipment contained within these perimeter stations is outlined in Section 4.1.2 of this document.

4.1.2 Equipment Selection

Air monitoring equipment and technical assistance will be provided under contract by Emilcott. The air monitoring system discussed in this section is known as Emilcott's Greenlight Environmental Monitoring System. The four perimeter stations of the air monitoring system will each consist of a MiniRAE-3000, DUSTTRAK II, a headless central processing unit (CPU) data-logger, and a GEMS-3000 Communicator. These instruments will be located in durable cases secured to a stand. The perimeter station locations are several hundred feet from the nearest fixed location of an off-site receptor, and thus serve as highly conservative monitoring locations relative to potential nearby receptors. Note also that the locations may be adjusted as needed depending on wind direction or the nature of site activities.

Total organic vapor monitoring will be performed with a MiniRAE-3000 photoionization detector equipped with a 10.6 eV lamp and calibrated to 100 parts per million (ppm) isobutylene. The MiniRAE is capable of providing instantaneous readings every second at a range of 0 to 15,000 ppm. Each reading will then be incorporated to calculate rolling Time Weighted Average (TWA) readings. When used with the 10.6 eV lamp, the MiniRAE-3000 measures volatile concentrations, including those associated with ionizing chlorinated compounds. The MiniRAE-3000 will be powered with a removable, rechargeable battery.

A DUSTTRAK II will be used for airborne particulate monitoring. The DUSTTRAK II is particulate monitor that measures aerosol concentrations corresponding to PM10 or respirable size fractions. The DUSTTRAK II is capable of providing instantaneous every second at a range of 0.001 to 400 milligrams

per cubic meter (mg/m^3). Each reading will then be incorporated to calculate rolling TWA readings. The DUSTTRAK II will be powered by a removable, rechargeable battery.

Each MiniRAE and DUSTTRAK will be connected to a CPU data-logger that polls the instruments for current data. The data-logger will acquire the readings from the instruments, package the data and transfer it, through a GEMS-3000 Communications Controller, to a remote web-based server at Emilcott's datacenter. Due to the common fluctuations with Photoionization Detectors (PID), the data-logger will poll the PIDs every second (1 reading per second), calculate a 15-second TWA for each and transfer the data to the server. For the DUSTRAK II, the CPU will poll the instruments every 15 seconds, obtain instantaneous readings and transfer the data to the server. Once the data are transferred from all the instruments, it can be viewed in the database server remotely (on-site) through computers and other web-enabled device. The database will be capable of calculating time-weighted averages as well as implementing action levels. The database will be accessible to and monitored by designated de maximis and Arcadis personnel.

In addition to air monitoring stations, an on-site weather station (WXT520 or equivalent) is in place at the Site. The station is capable of providing temperature, humidity, barometric pressure, wind direction and wind speed on a real-time basis. Weather information will be transferred electronically, in the same fashion as the monitoring data, to the same database. With this information upwind/downwind locations will be instantly determined by Emilcott's data system. Weather data is transferred electronically allowing for a historical review of weather corresponding to monitoring data.

Another feature of the Emilcott Greenlight system is the ability to send alerts and alarms if established thresholds are exceeded at one (or more) of the perimeter stations. Alerts and alarms can be sent in the form of emails or text messages to involved and responsible personnel. Using the on-site weather data, upwind/downwind stations can be incorporated to determine if exceedances were produced from Site-related sources. At a minimum, alerts will be made to de maximis personnel coordinating site activities. Alert notifications can also be made to other site personnel as warranted.

4.1.3 Action Levels

The action levels described in the following subsections were developed considering the maximum concentrations in soil for all locations in the Site database that fall within the RCRA cap limits, the five discrete Cianci Property excavations, and the preliminary dioxin-based soil excavation areas outside the cap limits (i.e., the areas where impacted soils are likely to be disturbed by the work). The dataset did not consider samples deeper than 4 feet below grade, as it is not anticipated that soils will be disturbed below this depth. Data that no longer represents current soil conditions, such as samples taken in the thermal treatment zone prior to ISTR activities, were removed from the dataset. The associated maximum values are presented in Appendix A.

4.1.3.1 Volatile Organic Compounds

Perimeter action levels were developed to represent "instantaneous" (measured as a 15-second average reading), 30-minute TWA values and an 8-hour TWA values. The pertinent Site analytical maximum values (provided in Appendix A) were used to calculate a perimeter action level using the State of Connecticut Hazard Limiting Values (HLVs) located in Section 22a-174-29 "Hazardous Air Pollutants"

regulation. The action levels were calculated using the 30-minute and 8-hour HLVs for constituents found in the site soil and are further described in Appendix A. In addition, a 15-second "instantaneous" warning level was established as a real-time indication of elevated concentrations so that corrective actions could be taken as appropriate prior to triggering a 30-minute action level. Other warning levels were also established as a trigger for investigation and implementing corrective measures, as needed, prior to exceeding action levels.

For VOCs, warning and action levels are based on concentrations relative to the background (i.e., upwind) concentration. The Emilcott system, in combination with the site weather station monitoring data, is capable of calculating the action levels relative to the measured background (upwind) location. Action levels in exceedance at any of the downwind stations will be subject to actions specified in the tables below.

The established VOC-based warning and action levels are summarized as follows:

Time Period	Warning Level		Action Level	
	Value	Basis	Value	Basis
15-sec average	10 ppm	Conservative value to be protective of 30-minute TWA	25 ppm	Health and Safety Plan[3]
30-min TWA	8.5 ppm	50% of action level	17 ppm	Appendix A
8-hr TWA	2 ppm	67% of action level	3 ppm	Appendix A

Actions to be taken based on the perimeter VOC monitoring data are summarized in the following table:

Time Period	Downwind Concentration	Action
Instantaneous (15-second average)	0 ppm to <10 ppm above background at ***all*** downwind stations	Normal Operations; continue hourly perimeter readings
	>10 ppm above background at ***any*** downwind station	Continue working, assess/address sources
30-minute rolling average	0 ppm to <8.5 ppm above background at ***all*** downwind stations	Normal Operations; continue hourly perimeter readings
	8.5 ppm to <17 ppm above background at ***any*** downwind station	Continue working, assess/address sources
	>17 ppm above background at ***any*** downwind station	Immediately stop work; implement corrective measures

[3] Attachment D to the Remedial Design Project Operations Plan (Arcadis 2010)

Time Period	Downwind Concentration	Action
8-hour rolling average	0 ppm to <2 ppm above background at ***all*** downwind stations	Normal Operations; continue hourly perimeter readings
	2 ppm to <3 ppm above background at ***any*** downwind station	Continue working, assess/address sources
	>3 ppm above background at ***any*** downwind station	Immediately stop work; implement corrective measures

4.1.3.2 Airborne Particulate Monitoring

Perimeter action levels for particulates were developed considering the maximum soil concentration data for existing metals and dioxin/furans (which are the constituents most likely associated with respirable dust) in soil that may be disturbed during planned remedial activities. The action levels consider both the 30-minute and 8-hour HLVs located in Section 22a-174-29 “Hazardous Air Pollutants” regulation, as well as other applicable standards (i.e., for total particulates). In overview, the maximum detected metals concentrations in the representative soils were considered in conjunction with their corresponding HLVs to calculate airborne dust concentrations that correlate to ambient air levels below the HLVs. In doing so, it was also determined that the USEPA 24-hour average ambient air quality standard for ***total*** particulates (0.15 mg/m^3) is the most stringent basis for a particulate action level on both an 8-hr TWA and 30-minute TWA basis.

Based on the calculation of particulate action levels in Appendix A, particulate-based warning and action levels are summarized as follows:

Time Period	Warning Level*		Action level*	
	Value	Basis	Value	Basis
30-min TWA	1.2 mg/m^3	50% of action level	2.4 mg/m^3	Appendix A
8-hr TWA	0.11 mg/m^3	75% of action level	0.15 mg/m^3	Appendix A

* Particulate based warning and action levels are based on total particulates, and are not relative to background (upwind) values.

Actions to be taken based on the perimeter particulate monitoring data are summarized in the following table:

Particulates Time Period	Concentration	Action
30-minute rolling average	0 mg/m^3 to <1.2 mg/m^3 at ***all*** locations	Normal Operations; continue hourly perimeter readings
	1.2 mg/m^3 to < 2.4 mg/m^3 at ***any*** location	Continue working, assess/address sources
	> 2.4 mg/m^3 at ***any*** location	Immediately stop work; implement corrective measures
8-hour rolling average	0 mg/m^3 to < 0.11 mg/m^3 at ***all*** locations	Normal Operations; continue hourly perimeter readings
	0.11 mg/m^3 to < 0.15 mg/m^3 at ***any*** location	Continue working, assess/address sources
	> 0.15 mg/m^3 at ***any*** location	Immediately stop work; implement corrective measures

4.1.4 Data Collection and Reporting

Air monitoring data will be automatically transferred from PID and PM10 monitors into an electronic database that can be accessed on demand. The database can be accessed at any time to view real time data. In the event of an exceedance of an action level (for either airborne particulate or VOCs), the field personnel will notify the Project Manager (or designee) at the time the exceedance is observed (i.e., real time). The field personnel will follow up with the Project Manager (or designee) within 24 hours of the observed exceedance summarizing the data, the cause of the exceedance, and any corrective measures implemented as a result of the exceedance.

Sometimes, an exceedance is caused by non-site-related sources, such as high humidity affecting the instruments, exhaust emissions from operating equipment, or other factors unrelated to the site media. Taking in wind direction, if such a source is suspected to be the cause of the exceedance, and other potential sources are adequately investigated and ruled out, this will be recorded in the field documentation.

4.1.5 Monitoring Schedule

Real-time VOC and airborne particulate monitoring and will commence concurrent with the start of remedial construction activities that will involve disturbance of soil, and be performed for the duration of the construction project. Monitoring activities will be performed concurrent with the start of work activities each week (e.g., on Monday morning) and continue 24-hrs per day until the end of the work week (e.g., Friday afternoon). If site and/or weather conditions warrant (e.g., extensive exposed soils combined with

dry or windy conditions), monitoring during non-work periods may also be performed at the discretion of the Construction Manager. Best management practices, including the use of soil covers and mulching, will be used to minimize the potential for dust or volatiles during non-work periods.

4.2 Air/Dust Emissions and Control Measures

Air emissions control and fugitive dust suppression measures will be implemented as needed based on the results of the air monitoring programs. Control measures will be used to limit the potential for organic vapor and dust emissions at levels that exceed work zone or perimeter-based action levels. The following vapor and dust control measures may be used during these activities, depending upon specific circumstances, visual observations and air monitoring results:

- Water spray to reduce dust levels
- Water/BioSolve® spray to reduce dust and odors
- Polyethylene sheeting (e.g., for covering soil cuttings or other exposed soils)
- Vapor suppression foam (Rusmar, or equivalent)
- Use clean soil to cover consolidated soil cuttings

de maximis will provide BioSolve® (or approved equivalent) and vapor-suppressant foam (including application equipment) at the Site prior to initiating drilling activities and will maintain an adequate supply of such materials for the duration of intrusive activities in the event they are needed over the course of the work.

4.3 Instrument Calibration

Calibration of the air monitoring instrumentation will be conducted at the beginning of each workday (at a minimum) in accordance with each of the equipment manufacturer's calibration and quality assurance requirements. Calibrations will be recorded in the field logbook.

Records for calibrated equipment must include the following minimum information:

- Type and identification number of equipment
- Calibration frequency and acceptance tolerances
- Calibration dates
- The individual and organization performing the calibration
- Reference equipment and/or standards used for calibration; standards for calibration will be consistent with those recommended by the manufacturer (e.g., 100 ppm isobutylene standard for a PID)
- Calibration data
- Certificates or statements of calibration provided by manufacturers and external organizations
- Documentation of calibration acceptance or failure and of repair of failed equipment

Additional information related to instrument calibration is provided in the RD POP – Attachment B (Field Sampling Plan [FSP]) and Attachment C (Quality Assurance Project Plan [QAPP]).

5 STORMWATER POLLUTION PREVENTION PLAN

This section provides a Stormwater Pollution Prevention Plan (SWPPP) that addresses stormwater management and pollution prevention measures to be implemented during RCRA cap construction and associated activities (Section 2). Due to the phased nature of the remediation activities, interim surface conditions currently exist throughout the work area. The actions presented herein are applicable to the RCRA cap construction and associated ancillary activities.

5.1 Project Description

The work area is located in an area of flat to rolling terrain with slope gradients averaging from approximately 1 to 8 percent. The project area and the adjacent upland areas generally slope to the east towards the Quinnipiac River. The typical land uses present in the watersheds that drain to the Site consist mainly of a mix of wooded areas, fallow field, and residential/commercial development. From the current Natural Resources Conservation Service soil survey, soils in the area are predominantly Cheshire fine sandy loams and Ludlow silty loam with hydrologic soil group ratings of B and C, respectively. Surface runoff from a number of sources including a 36-acre watershed area west of the Site, a ditch along the railroad on the north side of Lazy Lane, and the former Operations Area, is collected in a drainage channel located on the west side of the existing railroad right-of-way east of the former Operations Area (Figure 2). The channel drains to an existing 30-inch HDPE culvert beneath the railroad right-of-way and then runs below grade eastward to an outlet located approximately 150 feet from the Quinnipiac River.

The main focus of the project is the construction of a multilayer cap over the former Operations Area. The total area of the cap is approximately 2.9 acres. Additional construction will occur on the rails-to-trails pathway along the former railroad right-of-way from Curtiss Street to Lazy Lane, in five discrete soil areas on the Cianci property, in a borrow/wetland mitigation area adjacent to the existing Quinnipiac River floodplain, and in the vicinity of the NTCRA 1 containment wall. The total area of disturbance for the RCRA cap construction and ancillary activities is estimated to be approximately 7.7 acres.

The general sequence associated with the implementation of site preparation activities is anticipated to occur as described in Section 2.1. The remainder of this section discusses the erosion and sedimentation control plan, inspection and maintenance of erosion control measures, and post-construction stormwater management.

5.2 Erosion and Sediment Control Plan

The contractor will be responsible for installing and maintaining all temporary erosion and sediment control measures that may be required during the performance of the work. Erosion and sediment controls will be installed and maintained in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control (Department of Environmental Protection Bulletin 34) unless otherwise noted herein. Temporary erosion and sediment control measures will be installed prior to any significant soil disturbance and/or clearing activities at the Site. The contractor will also be responsible for providing additional erosion and sediment control measures, as needed, to achieve the stormwater management objectives of this SWPPP.

General descriptions of erosion and sediment control measures that are anticipated to be utilized during planned construction activities are presented below. Refer to the Design Drawings (Appendix A to the Design Report) for approximate locations and details for construction of proposed erosion and sediment controls.

Temporary Seeding - will be established to reduce the potential for erosion and sediment transport from disturbed or bare soil areas. Seeding will be performed in areas that have achieved final grade or are not scheduled for further construction activities within 14 calendar days. Temporary or long-term erosion control mats will be placed on slopes or other areas during time periods when site conditions are not conducive to rapid germination and grass growth. Temporary seeding will be performed in accordance with the Design Drawings. Temporary and permanent seeding should occur within 24 hours of initial disturbance/achievement of final grade to reduce the need for scarification of the seedbed prior to seeding.

Mulching - provides immediate erosion control during the establishment of vegetation, moderation of seedbed conditions (e.g., temperature and moisture), and serves as a dust control measure. Mulching will be performed immediately following seeding (in areas not receiving erosion control mat) and conducted in accordance with the materials and methods indicated in Section 5-4-5 of the Connecticut Guidelines for Soil Erosion and Sediment Control, titled, “Non-Living Soil Protection – Mulch for Seed”.

Equipment Lay-Down/Material Staging Areas - are anticipated to be established in two primary areas for use during the work: one on the west side of the groundwater treatment building across from the gravel access road and another within a grass-covered area south of the groundwater treatment building. Silt fencing will be installed along the downgradient perimeter of all laydown/material staging areas. Any impact to the existing ground surface south of the treatment building that results from temporary equipment staging will be repaired and the area will be reseeded as soon as practical following the completion of staging.

Silt Fence - will be used to reduce the potential for migration of suspended sediments from construction areas to off-site locations. Silt fencing will be installed on the perimeter of disturbed areas as shown on the Design Drawings.

Stone Check Dam - will be constructed to reduce the velocity of concentrated stormwater flows within the drainage channels and therefore reducing erosion of the channels. Stone check dams also temporarily pond storm water runoff and allow sediments to settle out. Stone check dams will be constructed in the steeper portions of the perimeter cap area swales and rails to trails ditches in accordance with the materials and methods indicated on the drawings and in Section 5 of the Connecticut Guidelines for Soil Erosion and Sediment Control, titled, “Energy Dissipaters – Stone Check Dam”.

Temporary Diversions - will be installed as necessary to reduce the potential for migration of sediment-laden water off-site by conveying construction-related stormwater to on-site management areas.

Polyethylene Tarps - will be used to cover stockpile areas where the site constraints make the use of alternative erosion controls (e.g., silt fence) impractical. Tarps will completely cover the pile, extend out from the base, and be secured in-place with sand bags (or similar means). Tarps will also be placed over the granular fill stockpile(s) (e.g., clean backfill pending final placement) at the end of each day’s work effort, and during significant rainfall events (i.e., capable of producing visible run-off from stock-pile areas).

Dust Control - will be the responsibility of the contractor and will be performed in accordance with the HASP and the measures described in Section 4 of this RAWP. Water that is applied to exposed soils and access roads during construction shall be done without causing soil erosion.

Stabilized Construction Entrance – an existing stabilized construction entrance located on Lazy Lane will be the main construction entrance for the site. The existing entrance will be upgraded and maintained as needed during construction to prevent tracking of dirt and mud onto public roadways.

Good housekeeping practices - will be implemented at the site to minimize the potential for construction materials entering stormwater discharges from the Site. During construction, the contractor will be responsible for maintaining the site in a neat and orderly condition. This will include, but may not be necessarily limited to: routine waste management activities, including the collection and disposal of trash, rubbish, construction waste and sanitary wastes; establishment and use of a vehicle and equipment cleaning area (Section 3.6); prompt cleanup of spills of liquid or dry materials (if any); and prompt cleanup of any sediments tracked by construction vehicles and/or transported by wind or stormwater from active work areas to other areas of the Site or nearby off-site areas.

5.3 Inspection and Maintenance of Erosion and Sediment Controls

Inspections of erosion and sediment controls will be performed as a quality control procedure to confirm that the erosion and sediment control plan is being implemented properly and remains functional relative to site conditions. Prior to initiation of significant construction activities, the contractor will have a qualified inspector (as defined in the CT DEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities) perform a pre-construction site assessment to verify that erosion and sediment controls are properly installed. During construction, the contractor will also be responsible for inspecting and maintaining erosion and sediment controls associated with construction activities. At a minimum, the erosion and sediment control measures will be inspected for deficiencies by a qualified inspector each work day. In addition, repair of damage to sediment control features will be initiated within one day of identification of any deficiencies and will be completed prior to the next scheduled inspection. The erosion and sediment control measures will be maintained for the duration of the project until such time that all permanent stabilization measures have been fully established.

5.4 Management of Consolidated Materials

The following material management practices and controls will be used to minimize the potential for transport/migration (e.g., by wind, precipitation runoff, or other means) of materials consolidated within the RCRA cap construction area during subgrade preparation activities and until such time that the geosynthetic clay layer has been placed:

- Silt fence will be installed at the perimeter of the RCRA cap prior to placement of materials within the consolidation area. The silt fence will remain in place until upgradient consolidation areas are capped with cover system fill materials and/or exposure to potentially impacted stormwater runoff is eliminated.

- During placement of materials in the consolidation area, dust and particulate control measures will be implemented in accordance with the Section 4.2 and Contractor's approved Dust Prevention and Control Plan.
- At the end of each working day, the consolidation areas are to be thoroughly wetted down (unless precipitation is occurring) to prevent the generation of dust overnight. In addition, mulch (or other approved method) will be applied to the consolidation areas before weekend work stoppage, or any other time when the area will remain idle the following day.
- Filter socks will be placed around the catch basin inlet within the northern portion of the cap area (as per Detail 4 on Design Drawing 15) to prevent unfiltered runoff from accessing the catch basin.
- Areas requiring excavation outside the RCRA cap area have been pre-delineated, to the extent possible (see Section 5.6 of the 100% Design Report), to minimize the time period over which consolidation activities are performed. Where post-excavation confirmation sampling is required, rapid laboratory turnaround times will be requested so that backfill or further excavation, as appropriate, can be performed as soon as possible. The Contractor will be required to sequence the work in a manner that will allow excavation and consolidation activities to proceed as expeditiously as possible once commenced, and to proceed directly to installation of the geosynthetics once the consolidation and subgrade preparation is complete.

5.5 Additional Pollution Control Measures

In addition to the good housekeeping practices indicated in Section 5.2, the Contractor will implement additional pollution prevention measures as indicated in the following sections.

5.5.1 Spill Prevention

Prior to mobilization, each piece of equipment to be brought on-site will be visually inspected by the contractor for potential sources of spills of hydraulic fluid, engine oil, transmission fluid, fuel, grease, etc. (by inspecting the condition of hydraulic cylinders, hoses, gaskets, fuel tanks, etc.). If a potential spill source is identified, the contractor will conduct the necessary repairs or replace the piece of equipment prior to entering the site. At a minimum, the construction site will be equipped with a spill kit, consisting of sorbents, absorbent booms, and fire extinguishers. All spills will be contained and cleaned up immediately.

5.5.2 Construction Waste

Rubbish and debris will be disposed of in a covered dumpster located in a support/staging area in the general work area. The dumpster will be emptied as needed or at the completion of the work.

5.5.3 Soil Stockpiling

Any soils that are either excavated or brought on site to be used as backfill will be stored in an area that is not within a concentrated runoff pathway unless such pathway is scheduled for fill in accordance with the grading plan and new/alternate drainage features are established. The stockpiles will be surrounded by

silt fencing and covered with plastic or seeded to prevent erosion in the event they are to be left idle for more than 14 calendar days.

5.5.4 Additional Restoration Requirements for Excavation Area EA-5

One of the Cianci Property excavation areas (EA-5) is located adjacent to the end of a stormwater discharge pipe and the discharge of the site's current groundwater treatment system. The area also extends within several feet of the normal flow channel of the Quinnipiac River. As a result, this area is particularly susceptible to erosion and sedimentation during the excavation period and until such time that the area is sufficiently restored. Considering this particularly sensitivity, additional control measures have been and will be implemented for this area during and following the excavation. These include:

- To the extent possible, the area was pre-delineated to confirm removal limits and minimize the need for post-excavation confirmation sampling that could prolong the excavation duration and delay backfill during the laboratory analytical period. In particular, the horizontal and vertical extent of dioxin exceeding the soil cleanup level has been pre-delineated, thus eliminating the potentially long delays associated with analysis of confirmation samples for this constituent. Where post-excavation sampling may be required (Section 5.6 of the 100% Design Report), it is limited to constituents for which rapid laboratory analytical turnaround times are available.
- A sump area will be established at the existing drainline outfall and a bypass pumping system will be used to prevent flow through the drainage channel during the excavation, backfill, and restoration processes. Sandbags and a stone check dam will be placed at the point where the channel discharges to the river to prevent backflow from the river back up into the excavation area.
- The contractor will be instructed to schedule excavation of this area during a period of low river flow and when rain is not forecast for the expected duration of the excavation, backfill, and restoration period, and to avoid unnecessary delays or disruptions to the work sequence once work commences in this area.
- The restoration design calls for the installation of a temporary erosion control blanket to be installed in this area as part of the restoration. The erosion control blanket will minimize the potential for erosion of disturbed and/or backfilled soils until such time that the vegetation is re-established.

5.6 Post-Construction Stormwater Management

The following Low Impact Development (LID) measures will be employed to reduce the impacts of runoff from the Site for the post-construction condition:

- Replace impervious surfaces in the former operations area with vegetated surfaces to increase infiltration - approximately 1.8 acres of impervious concrete and pavement area will be converted to vegetated (or a crushed stone surface where solar panels are installed) surfaces.
- Limit clearing and grubbing and other land disturbance activities to areas where remedial work and Rails to Trails activities will take place.
- Install vegetated drainage swales at the perimeter of the RCRA cap, and maintain existing and natural vegetated drainage ways along the Rails to Trails path to promote infiltration of runoff.

- Place a level spreader and vegetated filter strip on the downgradient side of the proposed Rails to Trails parking area pavement to filter runoff from the parking lot.

In addition to the proposed LID measures above, the site is required to retain the water quality volume in accordance with the post-construction performance standards for "Other Development" as defined in the CT DEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities. The water quality volume for the RCRA cap area and Cianci property was determined to be approximately 5,300 cubic feet based on the post-construction surface conditions. The water quality volume for the Rails to Trails area was determined to be approximately 4,200 cubic feet based on the post-construction surface conditions. Due to the elevated groundwater conditions, presence of the RCRA cap, and existing natural areas at this site, stormwater management measures to retain the water quality volume were not found to be suitable. In lieu of additional measures, an approximately 5% reduction in runoff from the pre-ISTR site conditions will be realized by conversion of impervious surfaces to vegetated surfaces and additional runoff volume will be retained through use of vegetated swales as described in the above LID measures. In addition, excavation of the borrow area as designed is expected to provide approximately 12,400 cubic feet of floodplain storage capacity to offset approximately 10,800 cubic feet of planned net fill associated with the NTCRA 1 grading modifications. This results in a net increase of 1,600 cubic feet of flood storage capacity from the borrow area excavation.

5.7 Dewatering Wastewater

On-site sources of construction wastewater generated from water table depression, dewatering of excavations, decontamination of equipment or other means will be collected, containerized and managed as discussed in Section 3.7.

5.8 Recordkeeping

The following reporting and recordkeeping requirements will be followed for the duration of the project:

- **SWPPP (and related documents)** – A copy of the SWPPP, Design Drawings, Design Report, any inspection reports, and any other relevant documents will be retained at the construction site from the date of initiation of construction activities to the date of final site stabilization. These documents will be retained on-site in a secured location readily available to individuals performing compliance inspections.
- **Contractor Compliance Certification** – All contractors and subcontractors are required to certify compliance with the SWPPP. All such certifications will be retained along with the SWPPP, on-site.
- **Weekly Inspection Reports** – In accordance with Section 5.2, above, erosion and sediment controls will be inspected, at a minimum, once every 7 calendar days. Inspection reports will be used to document the results of the inspections. At a minimum, inspection reports shall include the following:
    - Date and time of inspection.
    - Name and title of person(s) performing inspection.
    - A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection.

- A description of the condition of the runoff at all points of discharge from the construction site. This shall include identification of any discharges of sediment from the construction site. Include discharges from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow.
- Identification of all erosion and sediment control practices that need repair or maintenance.
- Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced.
- Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection.
- Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards.
- Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices, and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s).
- Signature of the qualified inspector performing the inspection.

- **Records Retention** – Copies of the SWPPP and related documents, any reports submitted or prepared in conjunction with the SWPPP to meet the requirements of the Connecticut DEP's General Permit will be retained for a period of at least three years (or a longer period of time if required by the Site Management Plan) from the date that the site is finally stabilized.

6 COMPLIANCE WITH SUBSTANTIVE PERMIT REQUIREMENTS

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) exempts the need to obtain permits or implement administrative requirements under federal law (e.g., dredge and fill permits), state law (e.g., water discharge permits), and local law (e.g., building construction permits relative to fire prevention, electrical, and other code requirements). Notwithstanding the permit exemption, remedial action under CERCLA must comply with the substantive requirements of federal, state and local laws and regulations if they are identified as applicable or relevant and appropriate requirements (ARARs). Compliance with the substantive requirements of federal, state and local laws is also referred to as "permit equivalency." The requirements and manner of compliance for the applicable or relevant rules and regulations for the RCRA cap construction are summarized in the following table:

Regulatory Agency	Permit	Description	Manner of Compliance
Town of Southington	Conservation Commission Wetlands and Watercourses Permit	This permit regulates any operation within or use of a wetland or watercourse involving removal or deposition of material, or any obstruction, construction, alteration or pollution of such wetlands or watercourses, as well as land within 100 feet of the edge of the defined channel of the Quinnipiac River.	Minimize disturbance to existing wetlands from grading activities. Develop Site-specific SWPPP and employ erosion and sediment controls during construction.
State of Connecticut	Contaminated Soil and/or Sediment Management (Staging and Transfer)	This general permit authorizes the staging, transfer, and temporary storage of contaminated soil and/or sediment and is intended to address the management of these materials when they are generated during projects that are less than 2 years in duration and involve the excavation of earthen material.	Soil management procedures established for handling of excavated soils. Excavated soil will be used for on-site fill and consolidated beneath the RCRA cap.
	Surface Water and Wetlands, Inland Wetlands and Watercourses Act	This rule regulates any activities within or affecting inland wetlands involving removal or deposition of material or any obstruction, construction, alteration or pollution of such wetlands.	Minimize disturbance to existing wetlands from excavation activities. Employ erosion and sediment controls during construction.

Regulatory Agency	Permit	Description	Manner of Compliance
	Discharge of Stormwater and Dewatering Wastewaters from Construction Activities	This regulation applies to all discharges of stormwater and dewatering wastewater from construction activities which result in the disturbance of one or more total acres of land area on a site regardless of project phasing.	Develop a Site-specific SWPPP and employ erosion and sediment controls during construction. Dewatering wastewater from on-site excavation will be collected and treated (see Section 3.7).
	Placement of Utilities and Drainage within Inland Wetlands and Stream Encroachment Lines	This rule regulates activities involving the placement, repair or replacement of utilities or drainage subject to certain conditions, if they are within inland wetlands and stream channel encroachment lines.	Minimize disturbance to existing wetlands from placement of utilities and drainage. Employ erosion and sediment controls during construction
Federal	Clean Water Act (CWA) -Discharge to Waters of the United States, Section 404	These rules regulate the discharge of dredge and fill materials in wetlands and navigable waters. Such discharges are not allowed if practicable alternatives are available.	Minimize disturbance to existing wetlands from grading activities. Restore temporary wetland impacts associated with remedial activities. Provide mitigation wetland areas for wetlands lost due to remedial activities. Employ erosion and sediment controls during construction.
	Toxic Substances Control Act	Soil containing PCBs > 50 ppm is regulated under this Act.	Soil management procedures established for handling of excavated soils. Excavated soil will be used for on-site fill and will be stored and consolidated beneath the RCRA cap.

7 REFERENCES

Arcadis. 2010. Remedial Design Project Operations Plan (RD POP). Solvents Recovery Service of New England, Inc. (SRSNE) Superfund Site, Southington, Connecticut. November 2010.

Arcadis. 2013a. Pre-ISTR Site Preparation Completion Report. Solvents Recovery Service of New England, Inc. (SRSNE) Superfund Site, Southington, Connecticut. April 2013.

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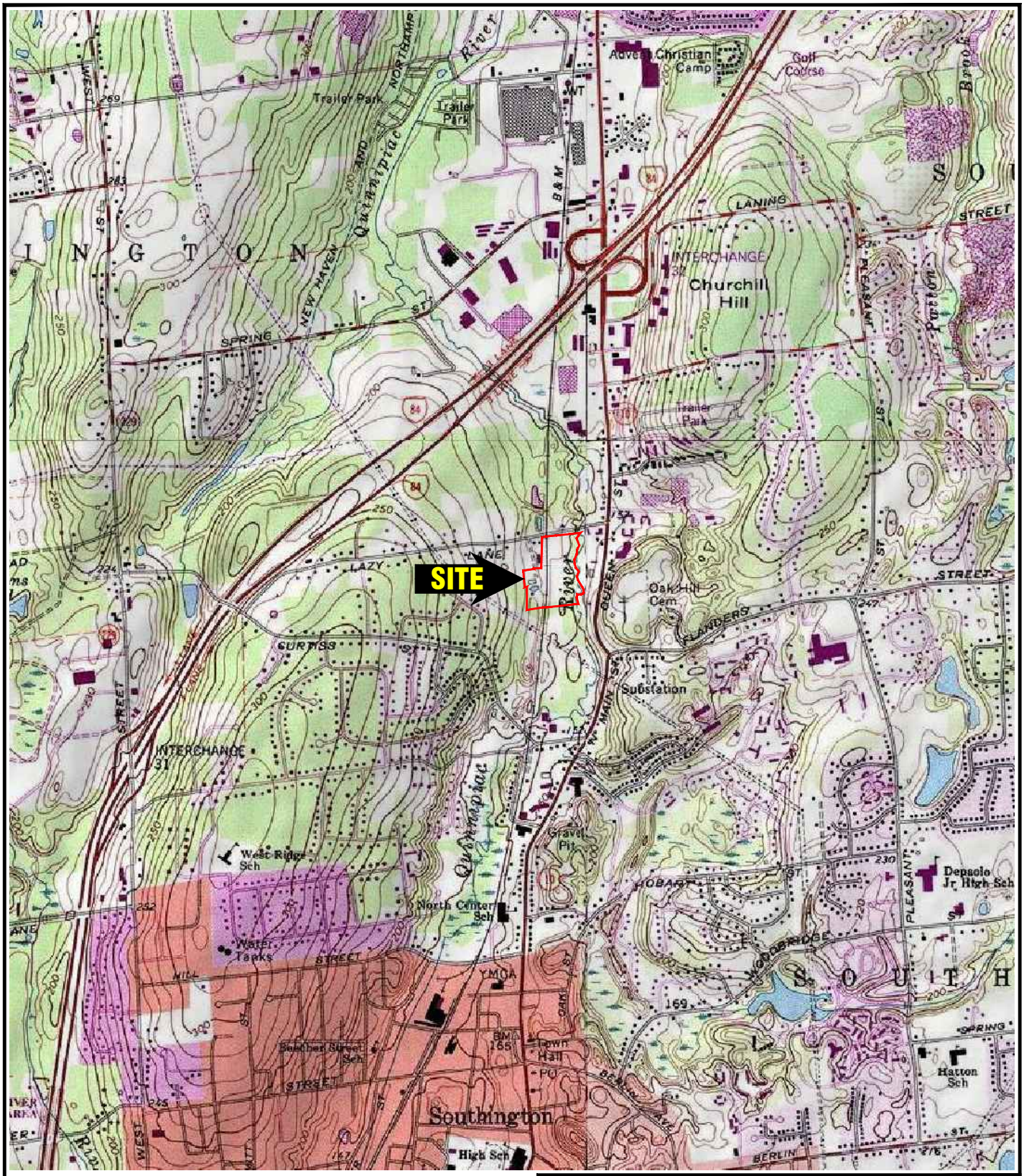
Blasland, Bouck & Lee, Inc. (BBL). 1995. Detailed Wetlands Mitigation Plan. Solvents Recovery Service of New England, Inc. Superfund Site, Southington, Connecticut.

Connecticut Department of Environmental Protection. 2002. Guidelines for Soil Erosion and Sediment Control (DEP Bulletin 34).

de maximis, inc. 2015. In-Situ Thermal Remediation Construction Completion Report. Solvents Recovery Service of New England Inc. Superfund Site, Southington, Connecticut. September 2015.

United States Environmental Protection Agency (USEPA). 2005. Record of Decision (ROD). Solvents Recovery Service of New England, Inc. Superfund Site, Southington, Connecticut. September 2005.

FIGURES



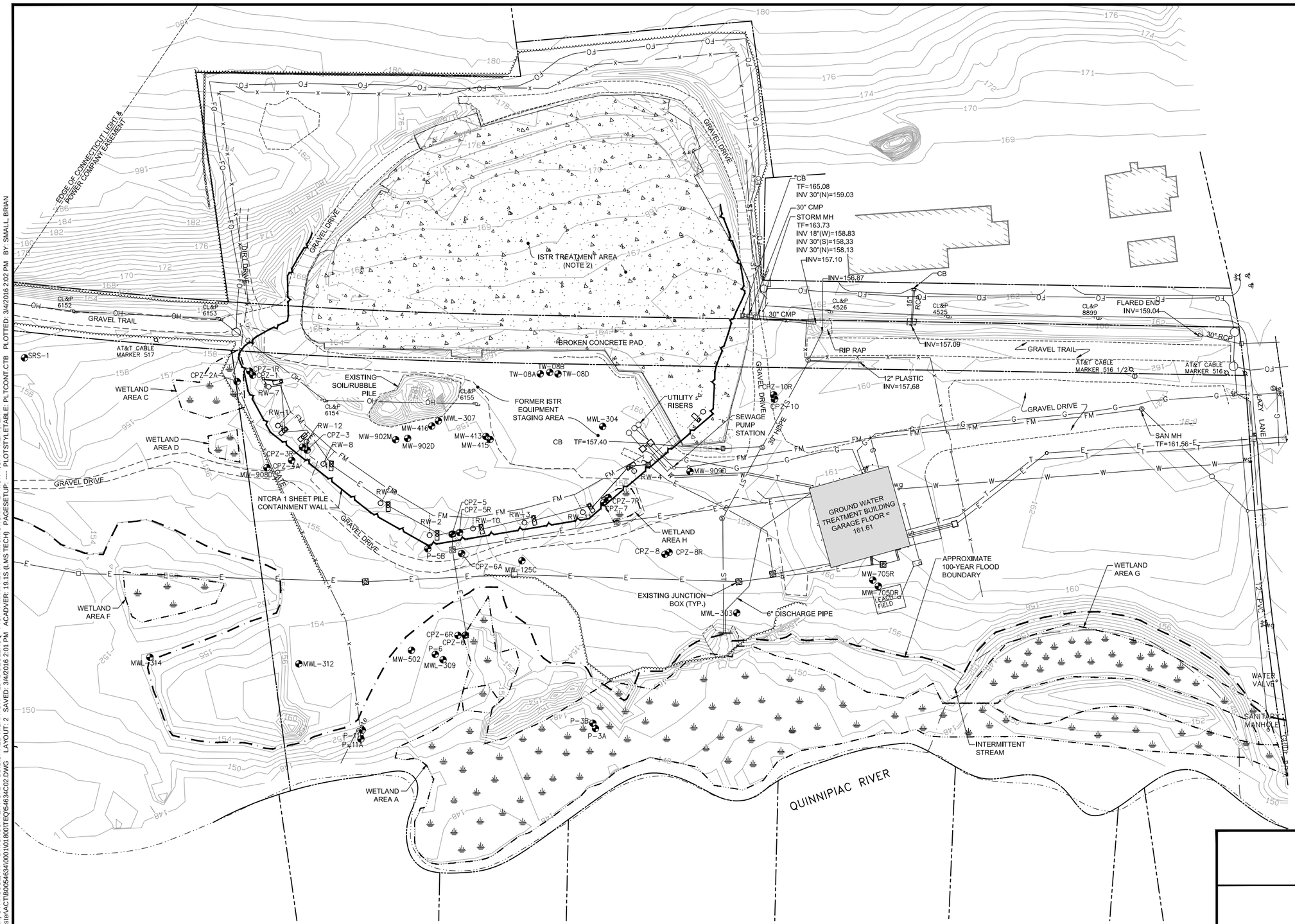
SOURCE: TOPO!
QUAD: MERIDEN, CT
DATE: 1992

SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1



LEGEND:

- PROPERTY BOUNDARY
- 166 EXISTING GRADE CONTOUR (1-FOOT CONTOUR INTERVAL)
- GRAVEL ROAD
- RIVER/STREAM LINE
- E ELECTRIC LINE
- D DISCHARGE LINE
- G GAS LINE
- OH OVERHEAD LINE
- W WATER LINE
- ST STORM DRAIN
- S SEWER LINE
- FM FORCE MAIN LINE
- FO FIBER OPTIC LINE
- T TELEPHONE
- SOIL PILE
- EXISTING BUILDING
- TREE LINE
- RW-7 INFLUENT LINE WITH RECOVERY WELL
- CPZ-7R MONITORING WELL LOCATION
- WETLAND BOUNDARY
- NTCRA 1 STEEL SHEETPILE WALL
- STONE WALL
- FENCE
- ELECTRIC PULL BOX
- HYDRANT
- M MECHANICAL BOX
- UTILITY/TELEPHONE POLE AND ACCESS
- S SANITARY SEWER MANHOLE
- CONCRETE

NOTES:

1. EXISTING SITE FEATURES AND TOPOGRAPHIC INFORMATION PROVIDED WAS COMPILED FROM FIELD SURVEY INFORMATION BY CONKLIN AND SOROKA, INC. JANUARY 13, 2009 AND PEREIRA ENGINEERING, LLC JULY 11, 2014 AND DECEMBER 7, 2015.
2. THE ISTR TREATMENT AREA IS COVERED WITH LOW STRENGTH, LOW DENSITY CONCRETE THAT IS NO LONGER INTACT FOLLOWING DEMOBILIZATION OF ISTR EQUIPMENT.

SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

EXISTING SITE PLAN

ARCADIS Design & Consultancy for natural and built assets

FIGURE 2

CITY: (MANCHESTER) SYRACUSE, NY DIV/GROUP: ENV CAD DB:B.SMALL K.SARTORI LD: B DECLERCQ PIC: PM: K.FABIAN TM: J.MORGAN LYR:ON=*;OFF=*REF; ITEXT
G:\ENVCAD\ManchesterACT\B0054634\0001\01800\TEQ\54634C02.DWG LAYOUT: 2 SAVED: 3/4/2016 2:02 PM BY: SMALL, BRIAN
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ACADVER: 19.1S (LMS TECH)
XREFS:
54634X01

BDS-1
BDS-2
BDS-3
GATE
CHAIN LINK FENCE
ROCK PILE
EDGE OF CONNECTICUT LIGHT & POWER COMPANY EASEMENT
CHAIN LINK FENCE
DIRT DRIVE
GRAVEL DRIVE
FORMER OPEN-PIT INCINERATOR
STEPS ON CONCRETE CAP (TYP)
CONCRETE CAP
APPROXIMATE PERIMETER AIR MONITORING LOCATION
LIMITS OF ISTR TREATMENT AREA AND ISTR SURFACE COVER
LIMIT OF OVERBURDEN NAPL AREA (TARGET TREATMENT ZONE)
CL&P 6151
CL&P 6152
CL&P 6153
CL&P 4526
CL&P 4525
CL&P 8899
AT&T CABLE MARKER 512
AT&T CABLE MARKER 516
AT&T CABLE MARKER 518
NEW DRAINAGE SWALE
APPROXIMATE PERIMETER AIR MONITORING LOCATION
CHAIN LINK FENCE
GRAVEL DRIVE
GATE
EXISTING SOIL PILE
CL&P 6154
CL&P 6155
CONCRETE PAD W/ EQUIPMENT
CONCRETE PAD W/ EQUIPMENT
CONTAINMENT WALL
MAIN ENTRANCE
SAN MH TF=161.56 FILLED W/WATER
HCTS SYSTEM BUILDING TREATMENT
LAZY LANE
JUNCTION BOX (TYP)
APPROXIMATE LOCATION EXISTING FORCE MAIN (TYP)
APPROXIMATE PERIMETER AIR MONITORING LOCATION
RIPRAP
APPROXIMATE PERIMETER AIR MONITORING LOCATION

LEGEND:

- PROPERTY BOUNDARY
- PARCEL BOUNDARY
- 162 CONTOUR INDEX
- 160 CONTOUR INTERMEDIATE
- E ELECTRIC LINE
- GAS GAS LINE
- OHW OVERHEAD UTILITY LINE
- T TELEPHONE LINE
- W WATER LINE
- CHAINLINK FENCE
- S SANITARY SEWER
- SHEET PILE CONTAINMENT WALL
- LIMIT OF GRADING
- TARGET REMOVAL LIMITS BASED ON SIP DELINEATION SAMPLING
- TARGET SOIL REMOVAL LIMITS BASED ON DIOXIN SAMPLING
- RCRA CAP LIMITS
- APPROXIMATE RAILTRAIL PAVING BOUNDARY
- CATCH BASIN
- UTILITY POLE
- SIP SOIL INVESTIGATION PLAN

NOTES:

1. BASE MAP REFERENCED FROM "TOPOGRAPHIC SURVEY" BY: PEREIRA ENGINEERING, DATED: JULY 11, 2014, SCALE: 1"=50'.
2. PERIMETER AIR MONITORING LOCATION SHOWN HEREON ARE REPRESENTATIVE OF "TYPICAL" CONDITIONS ONLY. ACTUAL LOCATIONS MAY VARY BASED ON WIND DIRECTION AND SPECIFIC WORK LOCATIONS OVER THE COURSE OF CONSTRUCTION ACTIVITIES.
3. FILE COORDINATE SYSTEM: CT STATE PLANE, NAD27, FEET.

0 50' 100'
GRAPHIC SCALE

SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

PERIMETER AIR MONITORING PLAN

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

APPENDIX A

Calculations of Air Monitoring Action Levels

VOC ACTION LEVEL CALCULATIONS

The State of Connecticut Hazard Limiting Values (HLVs) located in Section 22a-174-29 "Hazardous Air Pollutants" regulation for each of the VOCs/SVOCs were used to calculate the perimeter PID ambient air action level using a PID equipped with a 10.6 eV lamp calibrated to isobutylene. HLVs for VOCs/SVOCs are presented as a 30-minute and/or 8-hour values. HLVs used for this evaluation represent the April 4, 2016 published values.

Action levels for VOCs/SVOCs were based on the concentrations of the specific constituents found in the soil located on site. Dividing the HLVs by the mole fraction of that constituent in the soil, the PID measurement required to exceed the HLV is determined. The following formula can be used to calculate the maximum PID measurement to maintain VOCs/SVOCs in air below their respective HLV:

> Maximum PID measurement to maintain VOCs/SVOCs in air below their respective HLV = [HLV (ppm) / (mole fraction in Soil)(PID Correction factor)

Using the HLVs established by the State of Connecticut, taking into account the PID correction factors provided by the manufacturer for a 10.6 eV lamp, and incorporating the maximum contaminant concentrations detected in soil samples within proposed excavation limits, both 8-hour and 30-minute average action levels can be calculated (see Tables 1A and 1B presenting the State of Connecticut HLVs and illustrating calculations for both values below). The VOCs/SVOCs having the lowest and most conservative 8-hour and 30-minute average action level was total xylenes with a value of 8 ppm (8-hour) and 40 ppm (30-minute). As an added level of conservatism, the mole fraction adjustment can be eliminated from the equation above, thus considering only the HLV and the PID response factor for the compound of interest (xylenes). This results in unadjusted 30-minute and 8-hour TWA PID action levels of 17 and 3 ppm, respectively

TOTAL DUST ACTION LEVEL CALCULATIONS

Action levels for total airborne dust were based on the maximum concentrations of the specific metal as well as total dioxin/furan constituents found in the soil on site. Taking the 8-hour and 30-minute State of Connecticut Hazard Limiting Values (HLVs) for these contaminants, multiplying them by 10^6 mg/kg and dividing them by the highest concentration level in the soil, the level of total dust required to exceed the HLV is determined. The following formula can be used to calculate an airborne dust concentration to maintain ambient metals and dioxins/furans in air levels below the HLV:

Minimum airborne total dust level required to reach the HLV for a specific metals contaminant = (HLV (mg/m^3) X 10^6 mg/kg) / Concentration in Soil (mg/kg)

Following calculation, the contaminant having the lowest and most conservative 8-hour average action level was iron with a value of 4.1 mg/m^3. The contaminant having the lowest and most conservative 30-minute average action level was also iron with a value of 20.4 mg/m^3 (see Tables 2A and 2B below illustrating calculations for both values).

In addition to Connecticut's HLVs, the United States Environmental Protection Agency (USEPA) has an overall 24-hour average ambient air quality standard of 0.15 mg/m^3. This can be conservatively adopted as an 8-hour TWA for the site. Since this value is significantly lower than the calculated 8-hour TWA action level based on site-specific data (4.1 mg/m^3 as indicated above), the value of 0.15 mg/m^3 will be established for the 8-hour TWA particulate threshold. From above, the 30-minute fence line action level was calculated to be 20.3 mg/m^3. However, if sustained for 30 minutes, this is less stringent than the 8-hour TWA action level. By multiplying the 8-hour TWA threshold of 0.15 mg/m^3 by 16 (16 30-minute periods in an 8 hour cycle) a value of 2.4 mg/m^3 for the 30-minute action level will provide compliance with the 8-hour TWA.

Based on the aforementioned calculations the fence line 8-hour TWA dust action level will be 0.15 mg/m^3 and the 30-minute action level will be 2.4 mg/m^3.

Table 1A: VOC 8-Hour TWA Action Level Data

VOC/SVOC	Maximum Concentration (ug/kg)	MW (ug/umole)	Molar Concentration (umole/kg)	Mole Fraction	8-Hour TWA HLV (ppm)	PID Correction Factor	Action Level (ppm)
1,1,1-Trichloroethane	31	133.40	0.232383808	5.19653E-06	7	NR	NA
1,2-Dichloroethane	909	98.95	9.186457807	0.000205426	0.005	NR	NA
1,2-Dichloroethene, Total	3.6	96.95	0.037132543	8.30352E-07	4	0.8	6021544.6
2-Butanone (MEK)	6300	72.11	87.36652337	0.001953676	4	0.9	2274.9
2-Hexanone	8.1	100.16	0.080870607	1.80842E-06	0.1	NL	NA
2-Methylnaphthalene	2500	142.20	17.58087201	0.000393141	NL	NL	NA
4-Methyl-2-pentanone (MIBK)	2100	100.16	20.96645367	0.000468848	1	0.8	2666.1
Acenaphthene	1500	154.21	9.726995655	0.000217513	NL	NL	NA
Acenaphthylene	22000	152.19	144.5561469	0.00323254	NL	NL	NA
Acetone	64000	58.08	1101.928375	0.024641139	5	1.1	184.5
Anthracene	23000	178.23	129.0467374	0.002885722	NL	NL	NA
Benzaldehyde	6500	106.12	61.25141349	0.001369694	NL	NL	NA
Benzene	159	78.11	2.035590833	4.55195E-05	0.05	0.53	2072.5
Benzo[a]anthracene	43000	228.29	188.3569145	0.004212006	NL	NL	NA
Benzo[a]pyrene	42000	252.32	166.4552949	0.003722246	NL	NL	NA
Benzo[b]fluoranthene	70000	252.31	277.4364869	0.006203988	NL	NL	NA
Benzo[g,h,i]perylene	9600	276.33	34.74107046	0.000776874	NL	NL	NA
Benzo[k]fluoranthene	13000	252.31	51.52391899	0.001152169	NL	NL	NA
Benzoic acid	10000	122.12	81.88666885	0.001831136	NL	NL	NA
Bis(2-ethylhexyl) phthalate	3100	390.56	7.93732077	0.000177493	NL	NL	NA
Bromomethane	1.1	94.94	0.011586265	2.5909E-07	NL	NL	NA
Butyl benzyl phthalate	1400	312.36	4.48200794	0.000100226	NL	NL	NA
Carbazole	3600	167.21	21.52981281	0.000481446	NL	NL	NA
Carbon disulfide	7	76.14	0.091935908	2.05586E-06	0.02	1.2	8106.9
Chlorobenzene	48	112.56	0.426439232	9.53596E-06	1.5	0.4	393248.2

VOC/SVOC	Maximum Concentration (ug/kg)	MW (ug/umole)	Molar Concentration (umole/kg)	Mole Fraction	8-Hour TWA HLV (ppm)	PID Correction Factor	Action Level (ppm)
Chloroethane	11	64.51	0.170516199	3.81305E-06	NL	NR	NA
Chrysene	41000	228.29	179.5961277	0.004016099	NL	NL	NA
cis-1,2-Dichloroethene	38	96.94	0.391995048	8.76573E-06	4	0.8	570403.3
Dibenz(a,h)anthracene	4400	278.35	15.80743668	0.000353483	NL	NL	NA
Dibenzofuran	1200	168.19	7.134788037	0.000159547	NL	NL	NA
Di-n-butyl phthalate	93	278.34	0.334123734	7.47162E-06	NL	NL	NA
Di-n-octyl phthalate	46	390.56	0.117779599	2.63377E-06	NL	NL	NA
Ethylbenzene	320000	106.17	3014.034096	0.067399328	2	0.52	57.1
Fluoranthene	54000	202.26	266.9830911	0.005970231	NL	NL	NA
Fluorene	3400	166.22	20.45481891	0.000457407	NL	NL	NA
Indeno[1,2,3-cd]pyrene	15000	276.33	54.28292259	0.001213866	NL	NL	NA
Isophorone	51	138.21	0.36900369	8.2516E-06	0.1	NL	NA
M,P-Xylene	1500000	106.17	14128.28483	0.315934351	2	0.44	14.4
Methylene chloride	6	84.93	0.070646415	1.57978E-06	2	NR	NA
Naphthalene	2000	128.17	15.60427557	0.00034894	0.2	0.42	1364.7
O-Xylene	520000	106.16	4898.266767	0.109534225	2	0.46	39.7
Pentachlorophenol	170	266.34	0.638281895	1.42732E-05	NL	NL	NA
Phenanthrene	20000	178.23	112.2145542	0.002509323	NL	NL	NA
Phenol	180	94.11	1.912655403	4.27705E-05	0.1	1	2338.1
Pyrene	34000	202.25	168.1087763	0.00375922	NL	NL	NA
Styrene	5900	104.15	56.64906385	0.001266777	1	0.4	1973.5
Tetrachloroethene (perchloroethene)	22000	165.83	132.6659832	0.002966655	0.25	0.57	147.8
Tetrahydrofuran	45	72.11	0.624046595	1.39548E-05	4	1.7	168611.3
Toluene	31000	92.14	336.4445409	0.007523517	2	0.5	531.7
trans-1,2-Dichloroethene	2.2	96.94	0.02269445	5.0749E-07	4	0.45	17515413.9
Trichloroethene	6500	131.40	49.46727549	0.001106179	0.25	0.54	418.5
Vinyl chloride	2.4	62.50	0.0384	8.58694E-07	0.025	2	14557.0

VOC/SVOC	Maximum Concentration (ug/kg)	MW (ug/umole)	Molar Concentration (umole/kg)	Mole Fraction	8-Hour TWA HLV (ppm)	PID Correction Factor	Action Level (ppm)
Xylenes, Total	2000000	106.16	18839.48757	0.421285482	2	0.6	7.9

Notes:
TWA = time weighted average
VOCs = volatile organic compounds
SVOCs = semi-volatile compounds
ppm = parts per million
ug = microgram
kg = kilogram
NR = No Response (on PID)
NL = not listed
NA = not applicable

Table 1B: VOC 30-Minute TWA Action Level Data

VOC/SVOC	Maximum Concentration (ug/kg)	MW (ug/umole)	Molar Concentration (umole/kg)	Mole Fraction	30-MIN TWA HLV (ppm)	PID Correction Factor	Action Level (ppm)
1,1,1-Trichloroethane	31	133.4	0.232383808	5.19653E-06	35	NR	NA
1,2-Dichloroethane	909	98.95	9.186457807	0.000205426	0.025	NR	NA
1,2-Dichloroethene, Total	3.6	96.95	0.037132543	8.30352E-07	20	0.8	30107723.2
2-Butanone (MEK)	6300	72.11	87.36652337	0.001953676	20	0.9	11374.6
2-Hexanone	8.1	100.16	0.080870607	1.80842E-06	0.5	NL	NA
2-Methylnaphthalene	2500	142.2	17.58087201	0.000393141	NL	NL	NA
4-Methyl-2-pentanone (MIBK)	2100	100.16	20.96645367	0.000468848	5	0.8	13330.5
Acenaphthene	1500	154.21	9.726995655	0.000217513	NL	NL	NA
Acenaphthylene	22000	152.19	144.5561469	0.00323254	NL	NL	NA
Acetone	64000	58.08	1101.928375	0.024641139	25	1.1	922.3
Anthracene	23000	178.23	129.0467374	0.002885722	NL	NL	NA
Benzaldehyde	6500	106.12	61.25141349	0.001369694	NL	NL	NA
Benzene	159	78.11	2.035590833	4.55195E-05	0.25	0.53	10362.5
Benzo[a]anthracene	43000	228.29	188.3569145	0.004212006	NL	NL	NA
Benzo[a]pyrene	42000	252.32	166.4552949	0.003722246	NL	NL	NA
Benzo[b]fluoranthene	70000	252.31	277.4364869	0.006203988	NL	NL	NA
Benzo[g,h,i]perylene	9600	276.33	34.74107046	0.000776874	NL	NL	NA
Benzo[k]fluoranthene	13000	252.31	51.52391899	0.001152169	NL	NL	NA
Benzoic acid	10000	122.12	81.88666885	0.001831136	NL	NL	NA
Bis(2-ethylhexyl) phthalate	3100	390.56	7.93732077	0.000177493	NL	NL	NA
Bromomethane	1.1	94.94	0.011586265	2.5909E-07	NL	NL	NA
Butyl benzyl phthalate	1400	312.36	4.48200794	0.000100226	NL	NL	NA
Carbazole	3600	167.21	21.52981281	0.000481446	NL	NL	NA
Carbon disulfide	7	76.14	0.091935908	2.05586E-06	0.1	1.2	40534.6
Chlorobenzene	48	112.56	0.426439232	9.53596E-06	7.5	0.4	1966240.8

VOC/SVOC	Maximum Concentration (ug/kg)	MW (ug/umole)	Molar Concentration (umole/kg)	Mole Fraction	30-MIN TWA HLV (ppm)	PID Correction Factor	Action Level (ppm)
Chloroethane	11	64.51	0.170516199	3.81305E-06	NL	NR	NA
Chrysene	41000	228.29	179.5961277	0.004016099	NL	NL	NA
cis-1,2-Dichloroethene	38	96.94	0.391995048	8.76573E-06	20	0.8	2852016.4
Dibenz(a,h)anthracene	4400	278.35	15.80743668	0.000353483	NL	NL	NA
Dibenzofuran	1200	168.19	7.134788037	0.000159547	NL	NL	NA
Di-n-butyl phthalate	93	278.34	0.334123734	7.47162E-06	NL	NL	NA
Di-n-octyl phthalate	46	390.56	0.117779599	2.63377E-06	NL	NL	NA
Ethylbenzene	320000	106.17	3014.034096	0.067399328	20	0.52	570.7
Fluoranthene	54000	202.26	266.9830911	0.005970231	NL	NL	NA
Fluorene	3400	166.22	20.45481891	0.000457407	NL	NL	NA
Indeno[1,2,3-cd]pyrene	15000	276.33	54.28292259	0.001213866	NL	NL	NA
Isophorone	51	138.21	0.36900369	8.2516E-06	0.5	NL	NA
M,P-Xylene	1500000	106.17	14128.28483	0.315934351	10	0.44	71.9
Methylene chloride	6	84.93	0.070646415	1.57978E-06	10	NR	NA
Naphthalene	2000	128.17	15.60427557	0.00034894	1	0.42	6823.4
O-Xylene	520000	106.16	4898.266767	0.109534225	10	0.46	198.5
Pentachlorophenol	170	266.34	0.638281895	1.42732E-05	NL	NL	NA
Phenanthrene	20000	178.23	112.2145542	0.002509323	NL	NL	NA
Phenol	180	94.11	1.912655403	4.27705E-05	0.5	1	11690.3
Pyrene	34000	202.25	168.1087763	0.00375922	NL	NL	NA
Styrene	5900	104.15	56.64906385	0.001266777	5	0.4	9867.6
Tetrachloroethene (perchloroethene)	22000	165.83	132.6659832	0.002966655	1.25	0.57	739.2
Tetrahydrofuran	45	72.11	0.624046595	1.39548E-05	20	1.7	843056.4
Toluene	31000	92.14	336.4445409	0.007523517	10	0.5	2658.3
trans-1,2-Dichloroethene	2.2	96.94	0.02269445	5.0749E-07	20	0.45	87577069.6
Trichloroethene	6500	131.4	49.46727549	0.001106179	1.25	0.54	2092.6
Vinyl chloride	2.4	62.5	0.0384	8.58694E-07	0.125	2	72784.9

VOC/SVOC	Maximum Concentration (ug/kg)	MW (ug/umole)	Molar Concentration (umole/kg)	Mole Fraction	30-MIN TWA HLV (ppm)	PID Correction Factor	Action Level (ppm)
Xylenes, Total	2000000	106.16	18839.48757	0.421285482	10	0.6	39.6

Notes:
TWA = time weighted average
VOCs = volatile organic compounds
SVOCs = semi-volatile compounds
ug = microgram
kg = kilogram
ppm = parts per million
NR = No Response (on PID)
NL = not listed
NA = not applicable

Table 2A: Particulate 30-Minute Action Level Data

Compound	Metals Concentration (mg/kg)	HLV 30-Minute Value (mg/m^3)	Airborne Dust Concentration To Maintain Ambient Level Below The HLV 30-Minute Value (mg/m^3)
Antimony	12.6	0.05	3968.3
Arsenic	9.7	0.00025	25.8
Chromium	128	0.0125	97.7
Cobalt	13.7	0.01	729.9
Copper	151	0.1	662.3
Iron	24500	0.5	20.4
Magnesium	6470	1	154.6
Manganese	3760	0.1	26.6
Mercury	1.3	0.001	769.2
Nickel	67.8	0.0015	22.1
Silver	16	0.001	62.5
Thallium	2	0.01	5000.0
Vanadium	58	0.005	86.2
Zinc	204	0.5	2451.0
Dioxins, Total (as TCDD TEQs)	0.0005	NL	NA

Notes:
TWA = time weighted average
mg = milligram
kg = kilogram
m^3 = cubic meters
NL = not listed
NA = not applicable

Table 2B: Particulate 8-Hour TWA Action Level

Compound	Metals Concentration (mg/kg)	HLV 8-HR Value (mg/m^3)	Airborne Dust Concentration To Maintain Ambient Level Below The HLV 8-HR Value (mg/m^3)
Antimony	12.6	0.01	793.7
Arsenic	9.7	0.00005	5.2
Chromium	128	0.0025	19.5
Cobalt	13.7	0.002	146.0
Copper	151	0.02	132.5
Iron	24500	0.1	4.1
Magnesium	6470	0.2	30.9
Manganese	3760	0.02	5.3
Mercury	1.3	0.0002	153.8
Nickel	67.8	0.0003	4.4
Silver	16	0.0002	12.5
Thallium	2	0.002	1000.0
Vanadium	58	0.001	17.2
Zinc	204	0.1	490.2
Dioxins, Total (as TCDD TEQs)	0.0005	0.0000007	1400.0

Notes:
TWA = time weighted average
mg = milligram
kg = kilogram
m^3 = cubic meters
NL = not listed
NA = not applicable

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