Scovill Industrial Landfill Superfund Site Waterbury, CT

U.S. EPA | HAZARDOUS WASTE PROGRAM AT EPA NEW ENGLAND

THE SUPERFUND PROGRAM *protects human health and the environment by locating, investigating, and cleaning up abandoned hazardous waste sites and engaging communities throughout the process. Many of these sites are complex and need long-term cleanup actions. Those responsible for contamination are held liable for cleanup costs. EPA strives to return previously contaminated land and groundwater to productive use.*

YOU ARE INVITED TO ATTEND!

PUBLIC INFORMATIONAL MEETING
TUESDAY, 8/6/13 • 7PM
WARC 1929 E. Main Street
Waterbury, CT 06705

FORMAL PUBLIC HEARING
TUESDAY, 8/6/13 • 8:30PM
WARC 1929 E. Main Street
Waterbury, CT 06705

EPA will hold a public informational meeting Tuesday, August 6, 2013. EPA will present its proposed remediation plan to you and will answer any questions you might have regarding this remediation proposal.

YOUR OPINION COUNTS!

EPA will also be holding a formal Public Hearing on August 6, 2013 during which members of the public may provide oral or written comments on EPA's proposed plan. EPA will also accept written comments on this remediation proposal during a formal public comment period from July 24 to August 24, 2013. You do not have to be a technical expert to comment. If you have a concern or preference regarding EPA's proposed remediation plan, EPA wants to hear from you before making a final decision on how to protect your community. Comments can also be sent by mail, e-mail, or fax. Send written comments postmarked no later than Saturday, August 24, 2013 to:

Almerinda Silva, Remedial Project Manager
U.S. EPA New England
5 Post Office Square, Suite 100
Mail Code: OSRR07-1
Boston, MA 02109-3912

E-mail comments to: Silva.Almerinda@epa.gov
Fax comments to: (617) 918-0246

If you have questions about how to comment, or if you have specific needs for the public hearing or questions about the facility and its accessibility, please contact EPA Community Involvement Coordinator Kate Renahan at (617) 918-1491, or at toll-free number (888) 372-7341.

THE PROPOSED PLAN AT A GLANCE...

After careful study of the impacts of soil and groundwater contamination at the Scovill Industrial Landfill Superfund Site (the Site), EPA proposes to take a combination of the following remedial actions, known as alternatives SO2, SO3, SO6, SO8C, VI2 and VI3 to address risks to human health and the environment from Site contamination.

Because much of the Site is already developed with multiple residential/commercial uses (see Figure 1), in order to evaluate human health and environmental risk, the Site was divided into a series of 10 risk exposure areas based on current land use and potential exposures. Receptors evaluated in each Risk Area varied according to current and potential land use. As indicated on Figure 2, each of the Risk Areas is classified as either residential or commercial/industrial based upon their current use. Therefore, alternatives differ for different types of properties, usage and receptors. *continued >*

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• For Areas D3, E2, E3, G and H, limited action (SO2) is proposed and would consist of the application of Institutional Controls. These are a series of use restrictions (e.g., deed restrictions, city ordinances or other enforceable restrictions) to limit the excavation and removal of soil to specific depths and to prevent conversion of non-residential properties to residential usage without regulatory approval.

• For Areas D1, E1 and F, certain locations with soil contamination exceeding site-specific remedial guidelines would be removed and replaced with clean backfill (SO3) and the surface would be restored to existing conditions (pavement or vegetation). Institutional Controls also would be applied in these areas.

• For Areas I and J, pre-design investigations would be conducted to better define the extent of contamination in order to limit unnecessary remediation activities. Based on current data, it is expected that the pre-design investigations will confirm that 12,800 cubic yards or less of soil would need to be addressed at Area J, and a soil cap would be placed over the area to prevent further contact (SO6). At Area I it is expected that 3,720 cubic yards or less of soil would require excavation (SO8). Similar to other areas, Institutional Controls also would be applied to Areas J and I.

• In addition, at Areas J and EI, there is a potential for chemicals to volatilize from groundwater beneath a building and reach indoor living areas. Alternative VI2 consists of Institutional Controls that would require any structure built on Area J to have a soil vapor barrier or vapor mitigation system. Alternative VI3 includes a pre-design investigation to assess existing building foundation and potential vapor intrusion routes, the installation of active soil vapor mitigation systems for the ground level units, as well as institutional controls governing existing and new buildings at Area E1.

The cost of the proposed remedy is estimated at $6,200,000. A more detailed description of the Proposed Plan begins on page 10.

This Proposed Plan summarizes parts of the Feasibility Study. The entire text of the Feasibility Study can be found at www.epa.gov/region1/superfund/sites/scovill. In September 2013, EPA expects to have reviewed all public comments and will issue a Record of Decision (ROD) describing the chosen remediation plan. The ROD and a summary of responses to public comments will then be made available to the public via the internet and at the site information repositories listed below.

In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (Section 117), the statute which created EPA's Superfund program, and the National Contingency Plan Section 300.430(f)(2), this document summarizes EPA's remediation proposal. For detailed information on the options evaluated for the site, see the Feasibility Study available for review at the information repositories at the Silas Bronson Library, 267 Grand Street, Waterbury, CT and EPA's Five Post Office Square office in Boston, MA and at www.epa.gov/region1/superfund/sites/scovill

SCOVILL INDUSTRIAL LANDFILL SITE DESCRIPTION AND HISTORY

Site Description

The Site is located in the City of Waterbury, New Haven County, Connecticut (Figure 1). The 25 acre Site is generally flat and slopes slightly to the south. The Site is bounded to the north by residential properties along Newbury Street and Academy Avenue, to the east by a steep hill topped by residential properties abutting Academy Avenue, to the south by Meriden Avenue (State Route 69) with commercial property beyond, and to the west by a steep hill topped by residential properties along Monroe Avenue (Figure 1).

Approximately 18 of the 25 acres of the Site are developed along Meriden Road, Store Avenue, Dunbar Street, and Newman Street. The developed parcels consist of two and three story residential structures (condominiums and apartment buildings), small commercial buildings that include a landscaping firm, a child daycare facility, elderly housing, a social club, a cab service, a former medical office, a used car lot, car repair shop, and a shopping mall (East Gate Shopping Plaza). Two seasonally wet areas are located at the northeastern and northwestern boundaries.

The aquifer underlying the Site has been classified by Connecticut Department of Energy and Environmental Protection (DEEP) as GB, which indicates "...a historically highly urbanized area or an area of intense industrial activity and where public water supply service is available. Such ground water may not be suitable for human consumption without treatment due to waste discharges, spills or leaks of chemicals or land use impacts".

Site History

The Scovill Manufacturing Company (the Company) used the Site as a landfill from 1919 to the mid-1970s for disposal of ash, cinders, demolition debris, and other wastes generated by Scovill Manufacturing Company. The Company manufactured various metal parts that used aluminum, chromium, copper, silver, tin, and zinc including brass buttons, belt buckles, clasps, and other products. In addition, the Company produced appliances, small motors, watches, injection molded plastics, and photographic equipment. The Company also produced numerous products for the military during World Wars I and II and the Korean War, including munitions, fuses, and brass artillery casings. By the mid-1990s, the Southern portion, which consists of approximately 18 acres, had been developed for residential and commercial uses.

In 1998, the northern portion of the site was an undeveloped 6.8-acre parcel, referred to as the Calabrese parcel. This parcel was in the initial stages of development for a proposed elderly housing complex when a number of capacitors, ash, cinder, crushed drums containing sludge material, metal waste, demolition debris and other waste materials were encountered at depths ranging between 8 and 20 feet below grade.

A BRIEF HISTORY OF THE SCOVILL LANDFILL SUPERFUND SITE

June 1919: Scovill Manufacturing Company acquired property from Daniel McCarthy of Waterbury Connecticut; initiated disposal of waste materials on property and appears to have progressed northwards from Meriden Road at Store Ave.

1941—1963: Scovill sold off portions of filled property in individual transactions.

1951—1963: Based upon historic photographs, initial site development was undertaken shopping plaza and commercial buildings.

July 1972—October 1974: Joseph Calabrese acquired various properties making up what is termed the Calabrese Parcel.

1988: Joseph Calabrese initiated excavation activities on the Calabrese Parcel to install concrete footings for a planned development for the property.

March 1989: DEEP (then known as CTDEP) inspected the Calabrese property following citizen complaints to the City of Waterbury regarding suspected wetland violations. DEEP noted that waste materials excavated and staged in piles located throughout the property and water within the excavations exhibited an oily sheen. DEEP also observed electrical capacitors, rusted drums containing sludge material, metal wastes, and other materials and collected soil samples. Sample results indicated concentrations of PCBs (11 to 140 mg/Kg) and several metals. The City issued a cease and desist order on all work being conducted at the property based on the soil contamination and wetland violations.

October 1989: DEEP issued a Hazardous Material Order (No. HM-637) to Joseph Calabrese requiring an investigation into the impacts of Site contamination to human health and the environment, develop a remedial strategy, and once approved, perform remediation and follow-up monitoring. Joseph Calabrese attempted to conduct some investigation/remediation activities, however, the extent of these activities is not currently known.

January 1998: DEEP and EPA initiated Phase I site assessment activities at the Calabrese Parcel, and added the Site to the EPA list of potential Superfund candidate sites. DEEP identified that numerous capacitors and waste material remained exposed at the ground surface, and trespassing was evident. Follow-up soil sampling confirmed the presence of several metals, VOCs petroleum-related substances, and PCBs.

Spring 1998: DEEP removed 2,300 tons of PCB-contaminated soil and 18 additional capacitors.

March—April 1999: DEEP and EPA contractor personnel collected soil samples.

September 1999: EPA completed a Site Inspection and collected 124 surface soil samples. These data utilized to support the listing of the Site on the National Priorities List.

July 2000: The Scovill Industrial Landfill was added to the National Priorities List.

Fall 2002: EPA initiated Phase I of the Remedial Investigation at the Scovill Site.

March 2004: EPA issued an Administrative Order to Saltire, Inc. (successor to Scovill) to complete the remaining RI activities.

Summer 2004: PRP contractors began Phase II Remedial Investigation, but Saltire filed for Chapter 11 Bankruptcy protection in 2004, halting any further data collection and/or analysis by the PRP contractors.

March 2005: EPA contractor compiled all available Phase IIA data collected prior to the PRP bankruptcy.

January 2008: EPA removed drums abandoned by the PRP's contractor containing soil and water from sampling activities and discarded protective clothing used during field work.

September—December 2008: EPA contractor performed remaining Remedial Investigation (Phase III) activities.

December 2008—October 2010: Groundwater monitored and sampled quarterly.

July and November 2010: Additional groundwater samples collected to evaluate potential of volatile contaminants to build up indoors.

June 2011: EPA contractor completed Final Risk Assessment.

March 2013: EPA contractor completed Draft Remedial Investigation Report.

March 2013: EPA contractor completed Draft Feasibility Study.

May 2013: EPA contractor completed Final Remedial Investigation Report.

July 2013: EPA contractor completed Final Feasibility Study.

The waste materials contained elevated levels of polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and metals. The construction project was ordered to stop until the extent and degree of contamination was identified. DEEP removed contaminated soils and capacitors before placing a 1 foot thick soil cap over the area and fencing in four of the almost seven acres of the parcel.

EPA, the lead agency, and its contractors conducted investigations to support potential waste-removal efforts and evaluation of Site conditions. The Site was listed on the National Priorities List (NPL) on July 27, 2000. EPA conducted Phase I of the Remedial Investigation (RI) in the fall of 2002.

In 2004, EPA issued an Administrative Order to the Potentially Responsible Party (PRP), Saltire Inc. (the corporate successor to Scovill Manufacturing Company), to complete the remaining RI activities. The PRP's contractor conducted approximately 90 percent of the Phase II RI in 2004, but ceased all work after Saltire filed for bankruptcy in July 2004. EPA acquired the existing data for evaluation and conducted the Phase III Remedial Investigation between 2008 and 2011.

WHY REMEDIATION IS NEEDED

Land Use

As shown on Figure 2, the Site was divided into 10 "Areas" for risk assessment purposes. Approximately 18 of the 25 acres of the Site are developed, consisting of two- and three-story condominiums and apartment buildings (Areas D1, E1, E3, and F), small commercial buildings (Areas D3, E2, G, and H), and a shopping center (Area I). Area J is undeveloped. Except for Area E3, which is zoned for residential use, the Site is currently zoned for commercial use. However, as noted above, some commercially-zoned parcels are actually used for residential purposes.

Contaminants of Concern

Polycyclic aromatic hydrocarbons (PAHs), arsenic, chromium, polychlorinated biphenyls (PCBs), and dioxins were selected as soil contaminants of concern (COCs) based on the most conservative Area-specific risk estimates. Several volatile organic compounds (VOCs) in shallow groundwater were selected as COCs, including chloroform, trichloroethylene (TCE), and vinyl chloride.

Contaminated Media

Soil

Varying concentrations of numerous organic and inorganic chemical substances have been detected in surface, subsurface, and deep subsurface soils at the Site. EPA has identified no Principal Threat Waste (PTW) for this Site.

Although several VOCs were detected in soil samples, only a few samples containing carbon tetrachloride, tetrachloroethylene (PCE), TCE, and vinyl chloride exceeded State criteria. The elevated VOC concentrations appeared to be limited to areas either currently or formerly utilized for automotive sales/service or dry cleaning. The presence of VOCs in soils did not result in risks exceeding the EPA targeted cancer risk range or hazard index.

Semi-volatile organic compounds (SVOCs) were detected in soil samples collected throughout the Site and are dominated by the presence of PAH compounds associated with the Site-related coal ash and combustion byproducts. Numerous SVOCs (including PAHs) exceeded screening criteria throughout the Site.

Elevated PCB concentrations were detected in soil samples collected primarily from Area J, but also on the northern extent of Area E1. Based on the past removal activities and Site history, it is likely that similar materials may remain in the subsurface at Area J.

Dioxins and furans were detected in Area J and the northern portion of Area E1 at concentrations exceeding screening criteria.

Several metals (arsenic, chromium, copper, nickel, lead, and vanadium) were detected at concentrations exceeding direct contact or pollutant mobility criteria. Similar to the distribution of SVOCs in soil, these metals are widely distributed across the Site both laterally and vertically.

Groundwater

VOCs have been detected in samples collected from a monitoring well located near an occupied elderly apartment complex in Area E1 (Figure 2). The VOCs including cis-1,2-dichloroethene (1,2-DCE), PCE, and TCE were also sporadically detected in overburden groundwater samples. Vinyl chloride and other VOCs were detected sporadically in the deeper overburden aquifer, but to a lesser degree than in the shallow aquifer. Based on results from the bedrock monitoring well, it does not appear that contamination extends into the bedrock aquifer.

The chlorinated VOCs, principally 1,1-DCE and vinyl chloride, were detected at concentrations in excess of Connecticut's Remediation Standard Regulations (CT RSRs) Groundwater Volatilization Criteria (GWVC), which indicates the potential for VOCs to volatilize from groundwater into soil vapor, and possibly migrate into indoor air under the right conditions. In addition, concentrations of VOCs in shallow groundwater at select locations exceed the EPA vapor intrusion screening levels based on cancer risk of 1 x 10-6 or non-cancer Hazard Quotient (HQ) of 1 for residential indoor air exposures. Of particular concern is Risk Area E1 where maximum detected concentrations of vinyl chloride, corresponding to a risk level of slightly over 1 x 10-4 for residential indoor air exposures, were detected.

The majority of the PAH compounds were detected infrequently in all aquifers. Only a few of the detected PAHs exceeded the CT RSR Surface Water Protection Criteria (SWPC). The State of Connecticut does not have ground water quality standards for dissolved or total metals in GB aquifers like the one at Scovill. However, six metals (arsenic, cadmium, copper, lead, manganese, and zinc) exceeded the SWPC. A supplemental evaluation of SWPC determined the groundwater at Scovill does not pose a threat to surface water quality at the Mad River, the nearest receiving surface water body, approximately 1 mile southwest of the Site. Groundwater flow

direction is generally to the south and southwest.

Risk and Exposure Pathways Considered

Exposure occurs when people eat, drink, breathe or have direct skin contact with a substance or waste material. Based on existing or reasonably anticipated future land use, EPA develops different exposure scenarios to determine potential risk, appropriate cleanup levels, and potential remediation approaches to meet the site cleanup goals. Human health and ecological risk assessments were prepared to determine if and where there are current or potential future unacceptable risk(s) at the Site from exposure to contamination based upon a number of circumstances or exposure scenarios.

Human Health Risks

For consideration of soil exposures, the Site was divided into 10 Risk Areas (Areas) (Figure 2) based on current land use (current/future exposures) and potential (future) exposures. Current/future exposures are those exposures that could be happening now and continue on into the future, based on current land use. Future exposures are not happening now, but may reasonably happen in the future. For developed parcels, current/future residential or industrial/commercial worker scenarios considered exposures to surface soil, and future scenarios considered exposures to soil from 0 to 10 feet below ground surface. Future residents at current non-residential properties considered both the scenario of exposures to just surface soil and the scenario of exposures to 0 to 10 foot soil. For the undeveloped parcel, current/future exposures are limited to trespassers; future scenarios include both residents and industrial/ commercial workers exposed to either surface soils or 0 to 10 foot soil. In general, the major contributors to residential cancer risk include PAHs, arsenic, vanadium, and PCBs (in Area J). The risk assessment evaluations for the Areas identify whether health risks exceed EPA's target risk range. A qualitative evaluation of groundwater exposures through potential vapor intrusion was also performed. As appropriate for each area, potential exposures to current and future residents, visitors, daycare children, trespassers, groundskeepers, industrial/commercial workers, and/or construction workers were evaluated. The conclusions of the risk assessment were as follows:

Area D1 – Current use: Residential. The cancer risk estimates for the current/future and future residents slightly exceed the EPA targeted cancer risk range (see the "What's the Risk to Me?" text box for an explanation of risk).

Area D3 – Current use: Commercial. No cancer risks exceeding the EPA targeted cancer risk range were identified. Potential exposures to future residents would exceed the EPA targeted cancer risk range.

Area E1 – Current use: Residential (elderly housing). No cancer risks exceeding the EPA targeted cancer risk range were identified for current/future elderly residents or child recreational visitors. The cancer risk estimates for the future residents, assuming the elderly housing is converted to become housing for families and include children, exceed the EPA targeted cancer risk range.

Area E2 – Current use: Commercial (daycare facility). No cancer risks exceeding the EPA targeted cancer risk range were identified for this Area. Potential exposures to future residents would exceed the EPA targeted cancer risk range.

Area E3 – Current use: Residential. The cancer risk estimates for the current/future and future residents exceed the EPA targeted cancer risk range.

Area F – Current use: Residential. The cancer risk estimates for current/future and future residents exceed the EPA targeted cancer risk range

Area G – Current use: Commercial. No cancer risks exceeding the EPA targeted cancer risk range were identified for this Area. Potential exposures to future residents would exceed the EPA targeted cancer risk range.

Area H – Current use: Commercial. No cancer risks exceeding the EPA targeted cancer risk range were identified for this Area. Potential exposures to future residents would exceed the EPA targeted cancer risk range.

Area I – Current use: Commercial. No cancer risks exceeding the EPA targeted cancer risk range were identified for current industrial and/or commercial workers for this Area. The cancer risk estimates for future industrial and/or commercial workers exceed the EPA targeted cancer risk range. Potential exposures to future residents would also exceed the EPA targeted cancer risk range.

Area J – Current use: Vacant (zoned for industrial/commercial use or short-term residential use including elderly housing). No cancer risks exceeding the EPA targeted cancer risk range were identified for current/future trespassers or future industrial and/or commercial workers. Estimated non-cancer hazard indices indicated potential adverse non-cancer effects for future adult and child residents and industrial and/or commercial workers. The cancer risk estimates for future residents exceed the EPA targeted cancer risk range.

A summary of risks by Risk Area is provided in Table 1.

Human exposures to groundwater were limited to potential vapor intrusion into indoor air spaces. This pathway was evaluated for the developed and undeveloped parcels through comparison of EPA vapor intrusion screening levels based on cancer risk of 1 x 10-6 or HQ of 1 for residential indoor air exposures to shallow groundwater sampling results. Residential screening levels were selected as a conservative approach to address both current and potential future uses for all parcels.

Based on the evaluations, the vapor intrusion pathway was considered potentially complete. A completed pathway is one in which contaminants are present in a media where human receptors are present and may contact it through inhalation, ingestion, or dermal exposure. In this case, the evidence indicates that contaminants are present in shallow groundwater in concentrations that may migrate into indoor air spaces to

reach human receptors. Chloroform, TCE, and vinyl chloride concentrations in shallow groundwater exceed the Screening Levels in the developed parcel. Of particular concern is Area E1, a current residential property, where maximum detected concentrations of vinyl chloride, corresponding to a risk level slightly over 1 x 10-4, were detected at groundwater sampling locations. However, there is no discernable plume, but rather sporadic detections in isolated areas.

Basis For Action

The basis for action at the Site includes the following:

- Contaminants (PAHs, arsenic, hexavalent chromium, and PCBs) in the soil underlying the Site exceed background soil concentrations and pose potential excess health threats to current and future residents, commercial and industrial workers, and trespassers;

- Contaminants in soil underlying the Site are present at concentrations that exceed allowable CT RSR Direct Exposure Criteria for the protection of human health;

- Contaminants are present in soil at concentrations that exceed CT RSR PMC and may pose a threat to groundwater through leaching; and

- Contaminants in groundwater pose potential health threats through vapor intrusion to residents residing in structures located above groundwater where elevated VOC concentrations occur.

Because of these threats to human health and the environment, the following Remedial Action Objectives (RAOs) were designed:

- Protection of Human Health RAO - Soil

The soil RAO for the protection of human health is to prevent potential direct exposure (inhalation, dermal contact, or ingestion) to soil contaminants that would result in a cancer risk greater than 1.0E-04 to 1.0E-06, or a non-carcinogenic risk greater than an Hazard Index (HI) of 1.

- Protection of Environment RAO - Soil

The soil RAO for the protection of the environment is to prevent the potential transport of soil contaminants to groundwater (Section 2.5.1.1).

- Protection of Human Health RAO – Vapor Intrusion

The vapor intrusion RAO for the protection of human health is to prevent potential exposure to soil vapor contaminants resulting from localized groundwater VOCs contamination that would result in cancer risk greater than 1E-04 to 1E-06, or a non-carcinogenic risk greater than a HI of 1.

WHAT'S THE RISK TO ME?

In evaluating risks to humans, risk estimates for carcinogens (chemicals that may cause cancer) and non-carcinogens (chemicals that may cause adverse effects other than cancer) are expressed differently.

For carcinogens, risk estimates are expressed in terms of probability. For example, exposure to a particular carcinogenic chemical at a specific concentration may present a 1 in 10,000 chance of causing cancer over an estimated lifetime of 70 years. This can also be expressed as 1x10-4 or 1E-04. The EPA acceptable risk range for carcinogens is 1x10-6 to 1x10-4 (or 1E-06 to 1E-04). In general, calculated risks higher than this range would require consideration of remedial alternatives.

For non-carcinogens, exposures are first estimated and then compared to a reference dose (RfD). The RfD is developed by EPA scientists to estimate the amount of a chemical a person (including the most sensitive person) could be exposed to over a lifetime without developing adverse (non-cancer) health effects. This measure is known as a hazard index. A Hazard Index (HI) greater than 1 suggests that adverse effects are possible.

Ecological Risk

A baseline ecological risk assessment was prepared to determine whether exposure to COCs present in sediment and surface waters in the seasonally wet areas is detrimental to ecological receptors. The major ecological habitats at the Site consist of two small seasonally wet areas along the fenced area in the 6.8-acre undeveloped parcel (Area J; Figure 1). The evaluation indicated a low potential for impact on the long-term health and stability of the benthic invertebrate community in Wetland 1 (except perhaps in a few focused areas with high levels of COCs) and of the local water column invertebrate and larval amphibian communities in Wetland 2. The two on-site wetlands are degraded and are of low functional value. Both receive surface water runoff that conveys oils, heavy metals, and other contaminants from nearby parcels and roadways. Based on the quality of the habitats provided by these wet areas, minimal Site-related impacts, and continued inflow from street and parking lot runoff, no further action will be considered for the wet areas.

REMEDIAL ALTERNATIVES CONSIDERED FOR THE SCOVILL INDUSTRIAL LANDFILL SUPERFUND SITE

Once areas of risk have been identified at a site, remedial alternatives are developed to address the identified risks and to achieve site-specific remediation objectives. EPA has developed chemical-specific Preliminary Remediation Goals (PRGs) based on risk, regulatory criteria and background concentrations that specify acceptable chemical limits above which remediation occurs. In Connecticut regulatory criteria can include both Direct Exposure Criteria (DEC), Pollutant Mobility Criteria (PMC) and Groundwater Volatilization Criteria (GWVC). A short synopsis of each alternative considered is outlined below. The PRGs developed for this Site are shown on Table 2.

Soil

Alternative SO1 – No Action [all Areas]. No further action will be taken at the Site. Although this alternative does not achieve the Remedial Action Outcomes (RAOs), it is retained as a baseline alternative for comparison in accordance with the National Contingency Plan and EPA's RI/FS Guidance.

Alternative SO1 Cost: $0

Alternative SO2 – Limited Action, Institutional Controls, Periodic Assessments, and Five-Year

Reviews [Areas D3, E2, E3, G, and H]. This alternative involves no active treatment, but provides protection of human health by preventing or controlling potential exposures to contaminated soil through institutional controls, such as use restrictions. TThis alternative is applicable to Areas where risk is less then 1E-04 based on exposure to the top four feet of soil and existing uses (Areas D3, E2, G, and H). This alternative also applies to Areas where risk is equal to or greater than 1E-04, but no PRG exceedances were observed or where soils are considered to be accessible (Area E3). Institutional controls would protect against unacceptable risks by preventing residential uses of these Areas. Components of this alternative include:

Institutional Controls – A combination of the following use restrictions may be implemented:

- IC-1 – Prevent future excavation of on-site soils for use beyond the property boundary without state regulatory approval;
- IC-2 – Prevent future residential use without federal/state regulatory approval; and
- IC-3 – Prevent excavation and re-use of soil from 4 feet below ground surface (ft bgs) without federal/state regulatory approval.

Periodic Assessments – Periodic assessments will be performed to ensure that Institutional Controls (i.e., IC-1, IC-2, and IC-3) are implemented to protect human health and the environment in accordance with the requirements of the selected remedy. Site conditions and protectiveness of remedy will be reviewed at that time.

Five-Year Reviews – Review Site conditions and protectiveness of remedy every 5 years.

Alternative SO2 Cost: $201,000

Alternative SO3 – Targeted Remediation (Targeted Excavation and Off-site Disposal), Institutional Controls, Periodic Assessments, and Five-Year Reviews [Portions of Areas D1, E1, F]. This alternative uses targeted excavations coupled with off-site disposal, and institutional controls to prevent exposure to contaminated soil at the Site. The excavations will be at locations with PRG and PMC exceedances in Areas D1, E1, and F, where estimated risk is equal to or greater than 1E-04. Components of this alternative include:

Targeted Excavation and Off-site Disposal – Excavate and dispose of PRG and PMC exceedances within Areas D1, E1, and F. Targeted excavation and disposal may include the following:

- Remove pavement or surface vegetation, excavate to 4 ft bgs (for PRG excceedances) or top of groundwater (PMC exceedances), backfill with clean fill and topsoil, and revegetate or backfill and restore pavement;
- Dispose of contaminated soil off-site;
- Dust control during excavation;
- Confirmation sampling and sampling of sidewalls and bottoms during excavation
- Off-site disposal of excavated materials.

Institutional Controls – Use restrictions to limit or govern excavations in contaminated fill. The institutional controls described in Alternative SO2 would be implemented, except IC-2 because Areas D1, E1, and F are already used for residential purposes.

Periodic Assessments – Periodic assessments will be performed to ensure that Institutional Controls are implemented to protect human health and the environment in accordance with the requirements of the selected remedy.

Five-Year Reviews – Review Site conditions and protectiveness of remedy every 5 years.

Alternative SO3 Cost: $400,000

Alternative SO4 – Targeted In-Situ Physical Treatment (Solidification/Stabilization), Institutional Controls, Periodic Assessments, and Five-Year Reviews (portions of Areas D1, E1 and F1). This alternative uses targeted in-situ solidification/stabilization of PRG and PMC exceedances to prevent potential exposure to contaminated soil and leaching to groundwater in Areas D1, E1, and F. At targeted locations, soil and soil COCs would be encapsulated in-situ to form a solid material. Components of this alternative include:

In-Situ Physical Treatment – Target PRG and PMC exceedances within Areas D1, E1, and F using solidification/stabilization to immobilize COCs.

- Conduct soil investigations in the vicinities of PRG and PMC exceedances to further delineate the extent of the exceedances;
- Perform bench and field pilot testing; and
- Use mechanical mixing and low-permeability materials to encapsulate contaminated materials at targeted depths.

Institutional Controls – Use restrictions to limit or govern excavations in contaminated fill. The institutional controls described in Alternative SO2 may be implemented, except IC-2 because Areas D1, E1, and F are already used for residential purposes.

Periodic Assessments – Periodic assessments will be performed ensure that Institutional Controls (i.e., IC-1, IC-2, and IC-3) are implemented to protect human health and the environment in accordance with the requirements of the selected remedy. Assessments will be performed annually for the first 10 years, and then at every Five-Year Review.

Five-Year Reviews – Review Site conditions and protectiveness of remedy every 5 years.

Alternative SO4 Cost: $420,000

Alternative SO5 – Pre-Design Investigations, Excavation and Off-site Disposal, Institutional Controls, Periodic Assessments, and Five-Year Reviews [Area J]. This alternative uses a pre-design investigation to further characterize Area J. SO5 will use excavation coupled with off-site disposal, backfilling, and institutional controls to prevent exposure to contaminated soil. Alternative SO5 assumes a large portion of Area J, rather than discrete "hot spots", will need to be addressed because of PRG exceedances. Components of this alternative include:

Pre-Design Investigations – Delineate PRG and PMC exceedances and further characterize Area J for PCBs presence. Evaluate the management of stormwater during and after construction activities.

Excavation and Off-site Disposal – Excavate and dispose of PRG and PMC exceedances within Area J. Excavation and disposal may include the following:

- Remove all surface vegetation, excavate to 4 ft bgs for PRG exceedance and top of groundwater for PMC exceedance;
- Confirmation sampling and dust control during excavation;
- Backfill with clean fill at limited excavations areas; and
- Dispose of contaminated soil offsite at solid waste and/or hazardous waste landfill. Volumes dependent on PDI results. Range of possible volumes for cost sensitivity evaluation include:
- SO5A – all 12,800 cubic yards (CY) non-hazardous
- SO5B – 2,200 CY hazardous, 10,600 CY non-hazardous
- SO5C – 4,400 CY hazardous, 8,400 CY non-hazardous
- SO5D - all 12,800 CY hazardous

Institutional Controls – Use restrictions to limit or govern excavations in contaminated fill and prevent residential use without federal/state regulatory approval. The institutional controls described in Alternative SO2 may be implemented. In addition, access restrictions, such as a fence and warning signs, may also be implemented.

Periodic Assessments – Periodic assessments will be performed ensure that Institutional Controls (i.e., IC-1, IC-2, and IC-3) are implemented to protect human health and the environment in accordance with the requirements of the selected remedy.

Five-Year Reviews – Review Site conditions and protectiveness of remedy every 5 years.

Alternative SO5A Cost: $4,551,000
Alternative SO5B Cost: $5,662,000
Alternative SO5C Cost: $6,772,000
Alternative SO5D Cost: $11,013,000

Alternative SO6 – Pre-Design Investigations, Soil Cap, Institutional Controls, Operation and Maintenance, Periodic Assessment, and Five-Year Reviews [Area J]. This alternative uses a pre-design investigation to further characterize Area J. Limited excavation coupled with consolidation, capping/containment (as appropriate), and institutional controls will be implemented to prevent exposure to contaminated soil in Area J. Components of this alternative include:

Pre-Design Investigations – Delineate PRG and PMC exceedances, further characterize Area J, and determine the extent of excavation and capping. Evaluate the management of stormwater during and after construction activities.

Soil Cap – Excavate PRG exceedances outside of planned soil cap area and consolidate to within the cap area. Contaminated soil that exceed the PMC will be excavated and will be disposed of at an off-site facility. Install a soil cap within Area J using geotextile (est. 86,200 square feet), 6 inch to 1 ft barrier layer (cobbles), 1 ft thick soil cover, and surface vegetation.

Institutional Controls – Use restrictions to limit or govern excavations in contaminated fill. The institutional controls described in Alternative SO2 (IC-1, IC-2, and IC-3) may be implemented. In addition, a deed restriction will be needed that requires long-term care of cap components, including repairs and limitations and requirements for construction. Access restrictions, such as a fence and warning signs, may also be implemented.

Operation and Maintenance – Long-term operation and maintenance of the soil cap will be required.

Periodic Assessments – Periodic assessments will be performed to ensure that Institutional Controls (i.e., IC-1, IC-2, and IC-3) are implemented to protect human health and the environment in accordance with the requirements of the selected remedy.

Five-Year Reviews – Review Site conditions and protectiveness of remedy every 5 years.

Alternative SO6 Cost: $1,416,000

Alternative SO7 – Pre-Design Investigation, Targeted Remediation (Targeted Excavation and Off-site Disposal), Institutional Controls, Periodic Assessments, and Five-Year Reviews [Portions of Area J]. This alternative uses a pre-design investigation to further characterize Area J. This alternative assumes a limited number of PRG exceedances. Discrete excavations coupled with off-site disposal (as appropriate), and institutional controls will be implemented to prevent exposure to contaminated soil in Area J. Components of this alternative include:

Pre-Design Investigation – Delineate PRG and PMC exceedances and further characterize Area J. Evaluate the management of stormwater during and after construction activities.

Targeted Excavation and Off-site Disposal – Excavate and dispose of PRG and PMC exceedances within Risk Area J. Targeted excavations and disposal may include the following:

- Remove all surface vegetation, excavate to 4 ft bgs for PRG exceedances, excavate to 10 ft bgs for PMC exceedances, backfill with clean fill and topsoil, and revegetate;
- Dispose of contaminated soil off-site;
- Dust control during excavation;
- Confirmation sampling of sidewalls and bottoms during excavation and groundwater sampling for post-excavation of targeted PMC exceedances; and
- Off-site disposal of hazardous excavated materials.

Institutional Controls – Use restrictions to limit or govern excavations in contaminated fill and prevent residential use without federal/state regulatory approval. The institutional controls described in Alternative SO2 may be implemented. In addition, access restrictions, such as a fence and warning signs, may also be implemented.

Periodic Assessments – Periodic assessments will be performed to ensure that Institutional Controls (i.e., IC-1, IC-2, and IC-3) are implemented to protect human health and the environment in accordance with the requirements of the selected remedy. In addition, access restrictions, such as a fence and warning signs, may also be implemented.

Five-Year Reviews – Review Site conditions and protectiveness of remedy every 5 years.

Alternative SO7 Cost: $1,293,000

Alternative SO8 – Pre-Design Investigation, Excavation and Off-site Disposal, Institutional Controls, Periodic Assessments, and Five-Year Reviews [Portions of Area I]. This alternative uses a pre-design investigation to further characterize Area I.. Excavation coupled with discrete removals (as appropriate), and institutional controls will be implemented to prevent exposure to contaminated soil in Area I. Components of this alternative include:

Pre-Design Investigation – Delineate PRG and PMC exceedances.

Excavation and Off-site Disposal – Depending on the PDI results, a range of excavation scenarios is possible and include the following:

• SO8A – Perform discrete excavations and dispose of PRG and PMC exceedances:

- Excavate to 4 ft bgs for PRG exceedances and top of groundwater (10 ft bgs) for PMC exceedances;
- Backfill with clean fill and pavement;
- Confirmation sampling during excavation; and
- Off-site disposal of an estimated 120 CY of non-hazardous contaminated soil.

• SO8B – Excavate and dispose of a large area (24,600 square feet) of PRG and PMC exceedances to a depth of 4 ft bgs:

- Excavate to 4 ft bgs for PRG exceedances and top of groundwater for PMC exceedances;
- Backfill with clean fill and pavement;
- Confirmation sampling during excavation; and
- Off-site disposal of an estimated 3,720 CY of non-hazardous contaminated soil.

• SO8C – Excavate and dispose of a large area (24,600 square feet) of PRG and PMC exceedances to a depth of 2 ft bgs:

- Excavate to 2 ft bgs for PRG exceedances and top of groundwater for PMC exceedances
- Backfill with clean fill and pavement;
- Confirmation sampling during excavation;
- Off-site disposal of an estimated 1,900 CY of non-hazardous contaminated soil; and
- Perform long-term operation and maintenance of the pavement to ensure the area is not disturbed.

Institutional Controls – Use restrictions to limit or govern excavations in contaminated fill and prevent residential use without federal/state regulatory approval. The institutional controls described in Alternative SO2 may be implemented. In addition Alternative SO8C, a deed restriction will be needed that requires long-term care of the pavement, including repairs.

Periodic Assessments – Periodic assessments will be performed to ensure that Institutional Controls (i.e., IC-1, IC-2, and IC-3) are implemented to protect human health and the environment in accordance with the requirements of the selected remedy. Site conditions and protectiveness of remedy will be reviewed at that time.

Five-Year Reviews – Review Site conditions and protectiveness of remedy every 5 years.

Alternative SO8A Cost: $434,000
Alternative SO8B Cost: $1,518,000
Alternative SO8C Cost: $1,062,000

Groundwater / Vapor Intrusion

Alternative VI1 – No Action [Areas E1 and J]. This alternative was developed as a baseline case, as required by the NCP, to which all other vapor intrusion alternatives may be compared.

Alternative VI1 Cost: $0

Alternative VI2 – Limited Action, Institutional Controls, Periodic Assessments, and Five-Year Reviews [Areas E1 and J]. This alternative involves no passive or active vapor collection, removal, or treatment of Area E1 and J; but provides limited protection of human health by preventing or controlling potential exposures to contaminated soil vapor through institutional controls. Components of this alternative include:

Institutional Controls – Use restrictions will be implemented to limit, govern, or prevent new construction without the installation of a soil vapor barrier and/or vapor mitigation system, and prohibit residential occupation of 1st floor apartments within existing building (Area E1). A combination of the following institutional controls may be implemented:

• VIIC-1 – Prohibit the use of first floor residential units without use of vapor mitigation systems, unless information that demonstrates the systems are not needed is provided to the regulatory agencies for review and approval.

• VIIC-2 – Any new constructions will require the use of vapor mitigation systems, unless information that demonstrates the systems are not needed is provided to the regulatory agencies for review and approval.

Five-Year Reviews – Review Site conditions and protectiveness of remedy every 5 years.

Alternative VI2 Cost: $131,000

Alternative VI3 – Active Soil Vapor Mitigation System, Operation and Maintenance, Periodic Assessments, Institutional Controls, and Five-Year Reviews [Area E1]. This alternative uses active vapor mitigation to create a pressure differential across the residential building slab to promote migration of subsurface soil gases into a collection system that prevents the entry of volatilized groundwater VOCs into occupied residential apartment units unless deed restrictions limit residential use of the first floor existing structures. Potential exposure to contaminated soil vapors would be mitigated in Area E1. Components of this alternative include:

Active Vapor Mitigation System – Perform PDI to assess contaminant concentrations in indoor air and sub-slab soil gas; existing building founda-

tion; and potential vapor intrusion routes. Seal vapor migration pathways (underground utility penetrations, cracks, and/or sumps). Install a vapor barrier to minimize vapor migration pathways. Construct an active vapor mitigation system using vapor extraction trenches, piped to fans, and exhausted through discharge stacks to atmosphere.

Operation and Maintenance – O&M will be performed to ensure proper functioning of the vapor mitigation system.

Institutional Controls – The institutional controls described in Alternative VI2 would be implemented.

Five-Year Reviews – Review Site conditions and protectiveness of remedy every 5 years.

Alternative VI3 Cost: $616,000

Alternative VI4 – Passive Soil Vapor Barrier and Mitigation System, Operation and Maintenance, Periodic Assessments, Institutional Controls, and Five-Year Reviews [Area E1]. This alternative uses a combination of a passive vapor barrier and passive vapor mitigation to minimize vapor migration pathways and create a slight pressure differential across the foundation slab to promote migration of subsurface soil gases into a collection system that prevents the entry of volatilized groundwater VOCs into occupied residential apartment units. Potential exposure to contaminated soil vapors would be mitigated in Area E1. Components of this alternative include:

Passive Vapor Mitigation System – Perform pre-design investigation to assess contaminant concentrations in indoor air and sub-slab soil gas; existing building foundation; and potential vapor intrusion routes. Install a passive vapor barrier, minimizing vapor migration pathways. Construct a passive sub-slab venting system using vapor collection trenches, solar chimneys, barometric check valves and discharge stacks to atmosphere.

Operation and Maintenance – O&M will be performed to ensure proper functioning of the vapor mitigation system.

Five-Year Reviews – Review Site conditions and protectiveness of remedy every 5 years.

Institutional Controls – The institutional controls described in Alternative VI2 would be implemented.

Alternative VI4 Cost: $571,000

A CLOSER LOOK AT EPA'S REMEDIAL PROPOSAL…

After careful study of soil, groundwater, surface water, and sediment at the Scovill Industrial Landfill Superfund Site, the EPA proposes the following plan to address the remaining risks to human health and the environment from site contamination (Details regarding the remedial approach can be found in Section 5 of the Feasibility Study available in either Scovill repository cited above) and at www.epa.gov/region1/superfund/sites/scovill.

Proposed EPA Soil Alternatives

For Soil contamination EPA proposes to use a combination of remedial alternatives SO2, SO3, SO6 and SO8B as described more fully below.

Alternative SO2 for Areas D3, E2, E3, G, and H – Limited Action, Institutional Controls, Periodic Assessments, and Five-Year Reviews

This alternative involves no active treatment, but provides protection of human health by preventing or controlling potential exposures to contaminated soil through institutional controls. This alternative is applicable to Areas where risk is less then 1E-04 based on exposure to the top four feet of soil and existing uses (Areas D3, E2, G, and H). This alternative also applies to Areas where risk is equal to or greater than 1E-04, but no PRG exceedances were observed or where soils are considered to be accessible (Area E3). Components of this alternative include:

Institutional Controls – Use restrictions to limit, govern, or prevent excavations in contaminated fill, and to protect against unacceptable risks by preventing residential uses in areas that are not now used as residential. A combination of the following institutional controls may be implemented:

- IC-1 – Prevent future excavation of on-site soils for use beyond the property boundary without state regulatory approval;
- IC-2 – Prevent future residential use without federal/state regulatory approval; and
- IC-3 – Prevent excavation and re-use of soil from 4 feet below ground surface (ft bgs) without federal/state regulatory approval.

Periodic Assessments – Periodic assessments will be performed to ensure that Institutional Controls are implemented to protect human health and the environment in accordance with the requirements of the selected remedy. Site conditions and protectiveness of remedy will be reviewed at that time.

Five-Year Reviews – Review Site conditions and protectiveness of remedy every 5 years.

Alternative SO3 for Area D1, E1, and F – Targeted Remediation (Targeted Excavation and Off-site Disposal), Institutional Controls, Periodic Assessments, and Five-Year Reviews

This alternative uses targeted excavations coupled with off-site disposal, and institutional controls to prevent exposure to contaminated soil at the Site. The excavations will be at locations with PRG and PMC exceedances in Areas D1, E1, and F, where estimated risk is equal to or greater than 1E-04. Components of this alternative include:

Targeted Excavation and Off-site Disposal – Excavate and dispose of PRG and PMC exceedances within Risk Areas D1, E1, and F. Targeted excavation and disposal may include the following:

- Remove pavement or surface vegetation, excavate to 4 ft bgs (PRG) or top of groundwater (PMC), backfill with clean fill and topsoil, and revegetate or backfill and restore pavement;
- Dispose of contaminated soil off-site;
- Dust control during excavation;

- Confirmation sampling and sampling of sidewalls and bottoms during excavation
- Off-site disposal of excavated materials.

Institutional Controls – Use restrictions to limit or govern excavations in contaminated fill. The institutional controls described in Alternative SO2 would be implemented, except IC-2 because Areas D1, E1, and F are already used for residential purposes.

Periodic Assessments – Periodic assessments will be performed to ensure that Institutional Controls are implemented to protect human health and the environment in accordance with the requirements of the selected remedy.

Five-Year Reviews – Review Site conditions and protectiveness of remedy every 5 years.

Alternative SO6 for Area J – Pre-Design Investigation, Soil Cap, Institutional Controls, Operation and Maintenance, Periodic Assessment, and Five-Year Reviews

This alternative uses a pre-design investigation to further characterize Area J. Limited excavation coupled with consolidation, capping/containment (as appropriate), and institutional controls to prevent exposure to contaminated soil in Area J. Components of this alternative include:

Pre-Design Investigations – Perform pre-design investigation to delineate PRG and PMC exceedances, further characterize Area J, and determine the extent of excavation and capping. Evaluate the management of stormwater during and after construction activities.

Soil Cap – Excavate PRG exceedances outside of planned soil cap area and consolidate to within the cap area. Excavate PMC exceedances for off-site disposal. Install a soil cap within Area J using geotextile (est. 86,200 square feet), 6 in to 1 ft barrier layer (cobbles), 1 ft thick soil cover, and surface vegetation.

Institutional Controls – Use restrictions to limit or govern excavations in contaminated fill. The institutional controls described in Alternative SO2 may be implemented. In addition, a deed restriction will be needed that requires long-term care of cap components, including repairs and limitations and requirements for construction. Access restrictions, such as a fence and warning signs, may also be implemented.

Operation and Maintenance – Long-term operation and maintenance of the soil cap will be required to ensure the area is not disturbed.

Periodic Assessments – Periodic assessments will be performed to ensure that Institutional Controls are implemented to protect human health and the environment in accordance with the requirements of the selected remedy.

Five-Year Reviews – Assessments will be performed no less than every 5 years at every Five-Year Review. Review Site conditions and protectiveness of remedy every 5 years.

Alternative SO8B for Area I – Pre-Design Investigation, Excavation and Off-site Disposal, Institutional Controls, Periodic Assessments, and Five-Year Reviews

This alternative uses a pre-design investigation delineate PRG and PMC exceedances to determine overall extent of excavation. Excavation coupled with discrete removals (as appropriate), and institutional controls to prevent exposure to contaminated soil in Area I. Components of this alternative include:

Pre-Design Investigation – Perform PDI to delineate PRG and PMC exceedances and further characterize Area I.
Excavation and Off-site Disposal – Excavate and dispose of area (24,600 square feet) of PRG and PMC exceedances to a depth of 4 ft bgs:

- Excavate to 4 ft bgs for PRG exceedances and top of groundwater for PMC exceedances;
- Backfill with clean fill and pavement;
- Confirmation sampling during excavation; and
- Off-site disposal of an estimated 3,720 CY of non-hazardous contaminated soil.

Institutional Controls – Use restrictions to protect against unacceptable risks by preventing residential uses and to limit or govern excavations in contaminated fill. The institutional controls described in Alternative SO2 may be implemented.

Periodic Assessments – Periodic assessments will be performed to ensure that Institutional Controls are implemented to protect human health and the environment in accordance with the requirements of the selected remedy.

Five-Year Reviews – Assessments will be performed no less than every 5 years at every Five-Year Review. Review Site conditions and protectiveness of remedy every 5 years.

The estimated total present-worth cost for this preferred soil remediation plan, including construction, operation and maintenance, and long-term monitoring, is approximately $5,023,000.

Proposed Vapor Intrusion Remedial Alternatives

For vapor intrusion remediation EPA proposes to use a combination of remedial alternatives VI2 and VI3 as described more fully below.

Alternative VI2 for Area J – Limited Action, Institutional Controls, Periodic Assessments, and Five-Year Reviews

This alternative involves no passive or active vapor collection, removal, or treatment of Area J but provides limited protection of human health by preventing or controlling potential exposures to contaminated soil vapor through institutional controls. Components of this alternative include:

Institutional Controls – Use restrictions will be implemented to limit, govern, or prevent new construction without the installation of a soil vapor barrier and/or vapor mitigation system. The following institutional controls may be implemented:

• VIIC-2 – Any new constructions will require the use of vapor mitigation systems, unless information that demonstrates the systems are not needed is provided to the regulatory agencies for review and approval.

Periodic Assessments – Annual assessments will be performed to ensure that Institutional Controls (i.e., VIIC-2) are implemented to protect human health.

Five-Year Reviews – Review Site conditions and protectiveness of remedy every 5 years.

Alternative VI3 for Area E1 – Active Soil Vapor Mitigation System, Operation and Maintenance, Periodic Assessments, and Five-Year Reviews [Area E1]

This alternative uses active vapor mitigation to create a pressure differential across the residential building slab to promote migration of subsurface soil gases into a collection system that prevents the entry of volatilized groundwater VOCs into occupied residential apartment units unless deed restrictions limit residential use of the first floor in existing structures. Potential exposure to contaminated soil vapors would be mitigated in Area E1. Components of this alternative include:

Active Vapor Mitigation System – Perform pre-design investigation to assess contaminant concentrations in indoor air and sub-slab soil gas; existing building foundation; and potential vapor intrusion routes. Seal vapor migration pathways (underground utility penetrations, cracks, and/or sumps). Install a vapor barrier to minimize vapor migration pathways. Construct an active vapor mitigation system using vapor extraction trenches, piped to fans, and exhausted through discharge stacks to atmosphere.

Operation and Maintenance – O&M will be performed to ensure proper functioning of the vapor mitigation system.

Institutional Controls – The institutional controls described in Alternative VI2 may be implemented. In addition, the use of the first floor residential units without vapor mitigation systems would be prohibited.

Five-Year Reviews – Review Site conditions and protectiveness of remedy every 5 years.

The estimated total present-worth cost for this preferred vapor intrusion plan, including construction, operation and maintenance, and periodic assessments, is approximately $1,177,000.

SUMMARY OF PREFERRED ALTERNATIVES AND COSTS

Risk Areas	D3	E2	E3	G	H	D1	E1	F	I	J
Soil Alternative:	SO2 $201K					SO3 $400K			SO8B $1.52M	SO6 $1.4M
Vapor Intrusion Alternative:	NA	NA	NA	NA	NA	NA	VI3 $616K	NA	NA	VI2 $131K

K=thousand M=million

IMPACTS TO THE LOCAL COMMUNITY FROM THE REMEDIATION

Impacts to the community during implementation of the proposed remediation plan are expected to be low. There will be construction noise and some minor traffic impacts from vehicles. Individual property owners will have areas cordoned off during remediation, which may temporarily affect parking and customary egress. Dust would be controlled by a number of active measures depending on weather and particular construction activity. All excavations and removed material would be fenced off and isolated from the public.

IMPACTS TO WETLANDS

Any remedial action to be implemented will take the appropriate measures, as appropriate, to prevent degradation of the two wetlands in Area J.

EPA'S NINE CRITERIA FOR CHOOSING A REMEDIATION PLAN

EPA uses nine criteria to evaluate alternatives and select a final remediation plan. EPA has already evaluated how well each of the remedial alternatives developed for the Scovill Industrial Landfill Superfund Site meets the first seven criteria (see "Comparative Analysis" below). Once comments from the state and the community are received, EPA will select the remediation plan. The evaluation criteria are:

1. Overall protection of human health and the environment: Will it protect you and the plant and animal life on and near the site? EPA will not choose a plan that does not meet this basic criterion.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs): Does the alternative meet all federal and state environmental statutes, regulations and requirements? The chosen plan must meet this criterion.

3. Long-term effectiveness and permanence: Will the effects of the cleanup plan last or could contamination cause future risk?

4. Reduction of toxicity, mobility or volume through treatment: Using treatment, does the alternative reduce the harmful effects of the contaminants, the spread of contaminants, and the amount of contaminated material?

5. Short-term effectiveness: How soon will site risks be adequately reduced? Could the cleanup cause short-term hazards to workers, residents or the environment?

6. Implementability: Is the alternative technically feasible? Are the right goods and services (i.e. treatment machinery, space at an approved disposal facility) available for the plan?

7. Cost: What is the total cost of an alternative over time? EPA must find a plan that gives necessary protection for a reasonable cost.

8. State acceptance: Do state environmental agencies agree with EPA's proposal?

9. Community acceptance: What objections, suggestions or modifications do the public offer during the comment period?

DETAILED ANALYSIS OF ALTERNATIVES

In accordance with the National Contingency Plan (NCP), the retained remedial alternatives were assessed using nine evaluation criteria, including the following:

Threshold Criteria
1. Overall Protection of Human Health and the Environment
2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Primary Balancing Criteria
3. Long-Term Effectiveness and Permanence
4. Reduction of Toxicity, Mobility, or Volume Through Treatment
5. Short-Term Effectiveness
6. Implementability
7. Cost

Modifying Criteria
8. State Acceptance
9. Community Acceptance

In conformance with the NCP, the seven criteria included in the Threshold Criteria and the Primary Balancing Criteria noted above were used to evaluate each of the retained alternatives. The last two Modifying Criteria, State and community acceptance, will be addressed following the public comment period.

COMPARATIVE ANALYSIS OF ALTERNATIVES

After completion of the detailed evaluation of alternatives, a comparative analysis of the alternatives was performed to identify the alternative that satisfies the two threshold criteria of protection of human health and the environment and compliance with Applicable or Relevant Requirements, or more concisely ARARs.

Soil

1. Overall Protection of Human Health and the Environment

Alternative SO1 provides the least amount of protection of human health and the environment because no actions will be taken to reduce the risk presented by contamination in soil. Alternative SO2 relies on institutional controls to prevent human exposure to contaminated soil in select Areas. Deed restrictions under SO2 will prevent excavation and movement of soil that exceed PRGs, and will be protective.

Alternatives SO3 and SO4 provide overall protection of human health and the environment by excavation and off-site disposal of soils with PRG and CT RSR PMC exceedances across the majority of the Site. Alternative SO5 provides overall protection of human health and the environment using targeted in-situ physical treatment to solidify and stabilize soils with PRG and PMC exceedances in Areas D1, E1, and F. In the near- and long-term, Alternatives SO3, SO4, SO5, SO6, SO7 and SO8 will be protective of human health and the environment.

2. Compliance with ARARs

Any federal or state law, regulation or policy that pertains to the protection of human health or the environment in addressing specific conditions or the use of a particular cleanup technology at a Superfund site is an Applicable or Relevant Requirement. For Risk Areas where CERCLA response actions are warranted, EPA needs to consider each alternative's ability to comply with ARARs that are based on allowable chemical standards including the CT RSR DEC (if selected as the PRG) and PMC; the locations where the remedial action will occur including the protection of wetlands under Executive Order and the Clean Water Act's regulations for aquatic resources; and what actions may be involved including the Toxic Substances Control Act (TSCA) and State requirements addressing PCBs handling, storage, and disposal, and State hazardous waste regulations that govern generation, management, storage, and disposal. The alternatives are then assessed to determine which option is the best based on the five balancing criteria.

Alternative SO1 will not meet the chemical-specific ARARs because no actions will be taken. Alternative SO2 will meet the action-specific ARARs by using institutional controls (deed restrictions) to prevent potential exposure to Site COCs in Areas D3, E2, E3, G and H.

Alternatives SO3, SO4, SO5, SO6, SO7 and SO8 will meet the chemical-specific ARARs or reduce the potential health risks to acceptable levels through active remediation for contaminated soil that are above applicable DECs, PMCs, or the background levels as established in the Remedial Investigation. Alternative SO3, if applied at Areas D1, E1, and F, will meet ARARs through the excavation and off-site disposal of contaminated soil. Alternative SO4, if applied at Areas D1, E1, and F, will meet ARARs by solidifying/stabilizing contaminated soil. SO5 and SO7, if implemented in Area J, will meet ARARs through the excavation and offsite disposal of contaminated soil. SO6, if applied at Area J, will comply with ARARs by placing a soil cover to prevent potential exposures to contaminated soil. SO8, if applied to Area I, will meet ARARs through the excavation and off-site disposal of contaminated soil.

3. Long-Term Effectiveness and Permanence

Alternative SO1 provides the least long-term effectiveness and permanence because no actions will be taken to control exposure over time or to permanently reduce the level of contaminants in soil in the long term. Alternative SO2 will be protective of human health by using institutional controls to prevent the excavation and movement of contaminated soil, thereby preventing potential exposures.

Alternatives SO3, SO5, SO7 and SO8 will provide permanent reduction in the contaminant mass with targeted and limited, respectively, excavations and off-site disposal of soil with PRG and CT RSR PMC exceedances. The targeted and limited excavations and the backfilling will effectively redefine the remaining contaminated soil at these locations as "inaccessible" per the Connecticut Remediation Standard Regulations. As a result, these alternatives will decrease risks to EPA acceptable levels in the near- and long-term. Alternative SO6 will cover contaminated soil, and with proper maintenance, will be protective in the long term.

Alternative SO4 provides a permanent reduction of risk through solidification/stabilization of PRG and PMC exceedances. Leachability testing during treatability and pilot studies can measure the immobilization of contaminants and confirm the long-term effectiveness of this alternative.

4. Reduction of Toxicity, Mobility, or Volume through Treatment

CERCLA's statutory preference for treatment applies to Principal Threat Wastes. As presented previously, there are no Principal Threat Wastes at the Site, so this evaluation criterion does not apply to the soil remedial alternatives.

Alternative SO4 will employ active treatment processes to address the soil contamination and satisfy CERCLA's statutory preference for treatment, which is not required for the Site. This alternative would reduce the mobility of the contaminants during treatment. The toxicity and volume of the contaminants would not change; however, the treatment would render the treated soil unavailable and would limit potential leaching. Treatability and pilot study testing would confirm the effectiveness of toxicity and mobility reduction.

5. Short-Term Effectiveness

No active remedial actions are associated with Alternatives SO1 and SO2; therefore, no risks to the community, workers, or the environment during implementation.

During Alternatives SO3, SO4, SO5, SO6, SO7 and SO8, temporary surface, dust, and traffic disruptions to the community are anticipated, but can be controlled through use of engineering and administrative controls. Risks to workers are limited and can be controlled using personal protection equipment and appropriate health and safety protocols.

Environmental impact to the Site during Alternatives SO3, SO4, SO5, SO6, SO7 and SO8 are anticipated to be minimal. Dust and storm water control measures will be implemented to avoid impacts during the excavation activities of Alternatives SO3, SO5, SO6, SO7 and SO8. All construction activities will occur outside of the seasonally wet areas. Alternative SO4 will include control measures to prevent adverse impacts to local groundwater during injection and soil mixing activities.

6. Implementability

Alternative SO1 is the easiest to implement when compared with the other alternatives because no actions are required. Alternative SO2 includes institutional controls and periodic assessments, which are implementable.

Alternatives SO3, SO5, SO6, SO7 and SO8 will require construction and waste transportation firms with heavy equipment to implement the targeted and limited excavations and off-site disposal. Equipment and materials are readily available. SO5 and SO6 are more difficult to implement than SO3 due to the larger excavation areas.

SO4 will require a specialized engineering firm, which are limited, with testing capabilities, reagents, and equipment to implement the in-situ physical treatment Of the active remediation alternatives (SO3, SO4, SO5, SO6, SO7 and SO8), SO4 is regarded as the green alternative with in-situ targeted physical treatment. The heavy construction and transportation equipment associated with SO3, SO5, SO6, SO7 and SO8 will result in the emissions of combustion byproducts, including particulates, carbon dioxide, nitrogen oxides, sulfur dioxide, heavy metals, and VOCs.

7. Cost

Alternative SO5 (and its variants) is the most expensive alternative, followed by SO8B, SO8C, SO6, SO7, SO8A, SO4, SO3, SO2, and SO1.

8. State Acceptance

DEEP has reviewed the Feasibility Study prior to the issuance of this Proposed Plan. EPA and DEEP have had substantive discussions regarding the Site and the cleanup. EPA has received input from DEEP indicating that DEEP supports the Proposed Cleanup Alternative.

9. Community Acceptance

Community acceptance will be evaluated based on the feedback received during the comment period.

Vapor Intrusion

1. Overall Protection of Human Health and the Environment

Alternative VI1 provides the least amount of protection of human health and the environment because no actions will be taken to reduce the risk presented by vapor intrusion from contaminated groundwater. Alternative VI2 relies on institutional controls to prevent potential human exposure to vapor intrusion by contaminated groundwater.

Alternatives VI3 and VI4 provide overall protection of human health by extracting soil gases from below Area E1 building's slab and preventing the migration of contaminated vapor into occupied residential apartments. In the near- and long-term, Alternatives VI3 and VI4 will be protective of human health and the environment.

2. Compliance with ARARs

Alternatives VI1 will not meet the chemical-specific ARARs. Alternative VI2 will use institutional controls to minimize potential exposures to vapor intrusion. Those institutional controls requiring the use of a vapor intrusion mitigation system will comply with ARARs. VI3 and VI4 will meet the chemical-, location-, and action-specific ARARs through active and passive vapor mitigation systems, respectively.

3. Long-Term Effectiveness and Permanence

Alternative VI1 provides the least long-term effec-

tiveness and permanence because no actions will be taken to control exposure to soil vapor over time or to permanently reduce the groundwater contamination in the long term. Alternative VI2 relies on institutional controls in the long-term to prevent potential exposures to vapor intrusion from contaminated groundwater. The long-term effectiveness of Alternative VI2 is only as good as the measures taken to ensure the reliability of controls.

Alternatives VI3 and VI4 will provide a reduction of vapor intrusion using active and passive mitigation systems, respectively. Alternatives VI3 and VI4 are dependent on the proper implementation, operation and maintenance, monitoring, and enforcement of institutional controls to remain effective.

4. Reduction of Toxicity, Mobility, or Volume Through Treatment
CERCLA's statutory preference for treatment applies to Principal Threat Wastes. As presented previously, there are no Principal Threat Wastes at the Site, so this evaluation criterion does not apply to the vapor intrusion remedial alternatives.

5. Short-Term Effectiveness
No active remedial actions are associated with Alternatives VI1 and VI2; therefore, no risks to the community, workers, or the environment during implementation. Risks to workers during long-term monitoring associated with Alternative VI2 are minimal and can be controlled using appropriate health and safety protocols.

Alternatives VI3 and VI4 include active and passive soil vapor mitigation, respectively. Residents will be temporarily evacuated while these alternatives are under construction. Site workers will use proper personal protection equipment and appropriate health and safety protocols will be followed when implementing the alternatives. No risk to the environment is anticipated with Alternatives VI3 and VI4.

6. Implementability
Alternative VI1 is the easiest to implement when compared with the other alternatives because no actions are required. Alternative VI2 includes institutional controls and long-term monitoring, which are readily implementable.

VI3 and VI4 will require an environmental remediation firm with experience in soil vapor mitigation to construct and operate the active and passive mitigation systems, respectively. Equipment and materials are readily available. Fluctuations in naturally occurring atmospheric conditions can limit the reliability of VI4. VI4 is slightly more difficult to implement than VI3; and both are more difficult than VI1 and VI2.

Of the active remediation alternatives (VI3 and VI4), VI4 is regarded as the green alternative with passive soil vapor mitigation. Alternative VI4 requires the least amount of energy because mitigation relies on naturally occurring atmospheric conditions to passively vent soil vapor to the atmosphere.

7. Cost
Alternative VI3 is the most expensive alternative, followed by VI4, VI2, and VI1.

8. State Acceptance
DEEP has reviewed the Feasibility Study prior to the issuance of this Proposed Plan. EPA and DEEP have had substantive discussions regarding the Site and the cleanup. EPA has received input from DEEP indicating that DEEP supports VI3 as the Proposed Cleanup Alternative.

9. Community Acceptance
Community acceptance will be evaluated based on the feedback received during the comment period.

NEXT STEPS

This summer/fall, EPA will review and evaluate all comments received on this proposal and expects to sign a Record of Decision, which is a document that describes the chosen remediation plan. The Record of Decision and a summary of responses to any public comments (the Responsiveness Summary) will then be made available to the public at the Waterbury Public Library and at EPA's Records Center in Boston, and via the internet. EPA will announce the final decision on the remediation plan through the local media and via EPA's website.

HOW YOU CAN COMMENT ON EPA'S CLEANUP PROPOSAL

During the 30-day formal comment period, EPA will accept formal written comments and hold a hearing to accept formal verbal comments. EPA uses public comments to improve the remediation proposal. To make a formal comment you need only speak during the Public Hearing on Tuesday, August 6, 2013 at 8:30 pm at the WARC at 1929 East Main Street in Waterbury, or submit written comments during the 30-day comment period from **July 24 - August 24, 2013**.

Provide EPA with your written comments about the Proposed Plan for the Scovill Industrial Landfill Superfund Site postmarked no later than **August 24, 2013** to:

Almerinda Silva, RPM
U.S. EPA Region 1
Mail Code: OSRR04-1
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Submit comments by e-mail to:
silva.almerinda@epa.gov
or fax comments to: **(617) 918-0246**

Although EPA cannot respond to comments submitted at this Public Hearing, EPA will respond to both your oral and written comments in the written Responsiveness Summary that will be included with the Record of Decision. EPA will review the transcript of all formal comments received at the hearing, and all written comments received during the formal comment period, before making a final remediation decision.

EPA will be holding an informational meeting on Tuesday, August 6, 2013 at 7:00 pm at WARC at 1929 East Main Street in Waterbury, just prior to the formal public hearing that same night at

8:00 pm. EPA will be answering questions during the informational meeting.

Your formal comment will become part of the official public record. The transcript of comments and EPA's written responses will be issued in a document called a Responsiveness Summary when EPA releases the final remediation decision.

FOR MORE DETAILED INFORMATION

To help the public understand and comment on the proposal for the Scovill Industrial Landfill Superfund Site, this publication summarizes a number of reports and studies. All of the technical and public information publications prepared to date for the Site are available at the following information repositories:

USEPA Records Center
5 Post Office Square, Suite 100
Mail Code: OSRR02-3
Boston, MA 02109-3912
(617) 918-1440
Hours: 9:00 a.m.-5:00 p.m. Monday through Friday

Silas Bronson Library
267 Grand Street
Waterbury, CT 06705
(203) 574-8222
Hours: 9:00 a.m. – 8:00 p.m. Monday -Thursday; 9:00 a.m. – 5:00 p.m. Friday & Saturday

Information is also available for review on-line at: www.epa.gov/region1/superfund/sites/scovill

LIST OF ACRONYMS

PRGs - Preliminary Remediation Goals
PMC - Pollutant Mobility Criteria
DEC - Direct Exposure Contact
VOCs - Volatile Organic Compounds
SVOCs Semi-Volatile Organic compounds
COCs - Contaminants of Concern
RSRs - Connecticut Remediation Standard Regulations
CT DEEP- Connecticut Department of Energy and Environmental Protection
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
ARAR - Applicable or Relevant and Appropriate Requirements
RAO - Remedial Action Objective
ROD - Record of Decision
IC - Institutional Control
PDI - Pre-design Investigation
NCP - National Contingency Plan

Figure 1

N

Drawn By: JH	Checked By: BA
Date: June 2013	Revision No. 00

APPROXIMATE SCALE
0 50 100 200 Feet

- Estimated Limit of Scovill Derived/Placed Fill
- Risk Area Boundaries
- Assessor's Parcel Boundaries
- Calabrese Property
- Approximate Seasonal Wetland Area
- Modern Roads

FIGURE 1
Site Plan
Scovill Industrial Landfill
Waterbury, CT

Nobis
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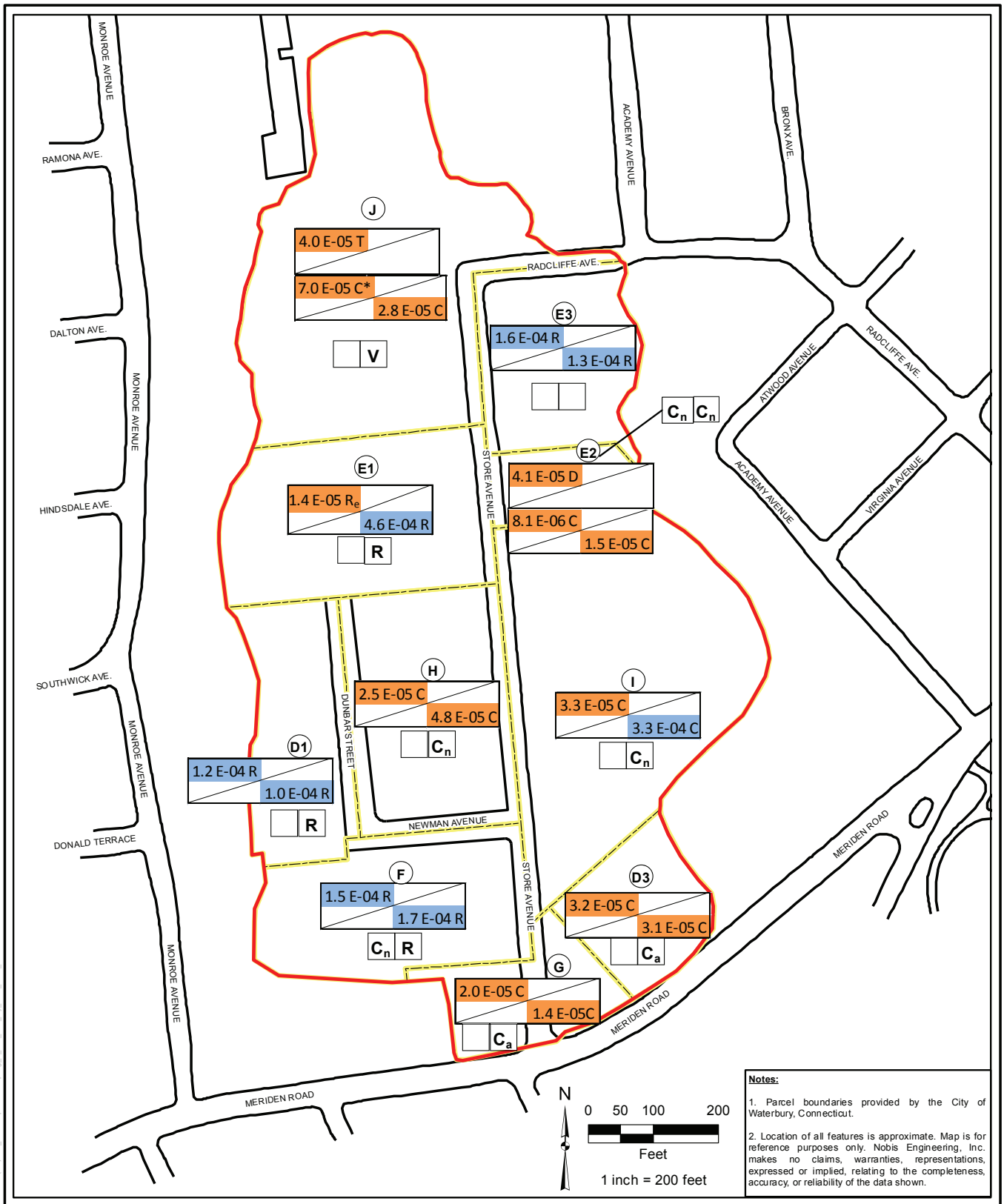
Path: R:\80000 Task Orders\80018 Scovill LF\Technical Data (TD)\GIS_Data\Maps\RI_Report\RI Section 4 Feb 2013\Fig_1_C_Scovill_Address.mxd Date Printed: 7/18/2013

Figure 2



Notes:

1. Parcel boundaries provided by the City of Waterbury, Connecticut.

2. Location of all features is approximate. Map is for reference purposes only. Nobis Engineering, Inc. makes no claims, warranties, representations, expressed or implied, relating to the completeness, accuracy, or reliability of the data shown.

Zoning / Use Designation

X_x X_x

Current Use

Current Zoning

J Risk Areas

Zoning / Use Definition

C = Commercial
C* = Future Commercial Exposed to Surface Soil
C_a = Commercial Arterial
C_n = Commercial Neighborhood Shopping
D = Daycare
R = Unrestricted Residential
R_e = Elderly Residential
T = Trespasser
V = Vacant

Present Scenario Risk (Surface) / Future Scenario Risk (Aggregate)

≥ 1.0 E-04

< 1.0 E-04

Estimated Limit of Scovill Derived/ Placed Fill

Risk Area Limits

Modern Roads

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FIGURE 2

ZONING DESIGNATION AND ESTIMATED RISK BY RISK AREA
SCOVILL INDUSTRIAL LANDFILL SITE
WATERBURY, CONNECTICUT

PREPARED BY: JH	CHECKED BY: BA
PROJECT NO. 80018	DATE: JULY 2013

Path: R:\80000 Task Orders\80018 Scovill LF\Technical Data (TD)\GIS_Data\Maps\Risk Map\Fig_2_Soil_Risk_By_Area_Land_Use.mxd Date Printed: 7/10/2013

TABLE 1

Property	Timeframe	Scenario/ Receptor	Media	Reasonable Maximum Exposure		
				Total Cancer Risks[2]	Total Non-cancer Hazard Index[3]	Organ-specific Hazard Index above 1.0
Risk Area D1	Current/Future	Resident	Surface Soil	1.2E-04	1.1	No
	Future	Resident	Aggregate Soil	1.0E-04	1.8	No
Risk Area D3	Current/Future	Industrial/Commercial Worker	Surface Soil	3.2E-05	0.12	No
	Future	Industrial/Commercial Worker	Aggregate Soil	3.1E-05	0.092	No
	Future	Resident	Surface Soil	3.8E-04	1.5	No
	Future	Resident	Aggregate Soil	4.0E-04	1.1	No
Risk Area E1	Current/Future	Adult Resident (Elderly Only)	Surface Soil	1.4E-05	0.12	No
	Current/Future	Child Recreational Visitor	Surface Soil	5.6E-05	0.43	No
	Future	Resident (Families)	Surface Soil	1.5E-04	0.96	No
	Future	Resident (Families)	Aggregate Soil	4.6E-04	1.8	No
Risk Area E2	Current/Future	Daycare Child	Surface Soil	4.1E-05	0.63	No
	Current/Future	Indus/Comm. Worker	Surface Soil	8.1E-06	0.071	No
	Future	Indus/Comm. Worker	Aggregate Soil	1.5E-05	0.093	No
	Future	Resident	Surface Soil	9.8E-05	0.89	No
	Future	Resident	Aggregate Soil	1.9E-04	1.1	No
Risk Area E3	Current/Future	Resident	Surface Soil	1.6E-04	1.3	No
	Future	Resident	Aggregate Soil	1.3E-04	1.3	No
Risk Area F	Current/Future	Resident	Surface Soil	1.5E-04	1.6	No
	Future	Resident	Aggregate Soil	1.7E-04	1.9	No
Risk Area G	Current/Future	Indus/Comm. Worker	Surface Soil	2.0E-05	0.40	No
	Future	Indus/Comm. Worker	Aggregate Soil	1.4E-05	0.36	No
	Future	Resident	Surface Soil	1.5E-04	5.0	Blood
	Future	Resident	Aggregate Soil	1.1E-04	4.6	Blood
Risk Area H	Current/Future	Indus/Comm. Worker	Surface Soil	2.5E-05	0.081	No
	Future	Indus/Comm. Worker	Aggregate Soil	4.8E-05	0.17	No
	Future	Resident	Surface Soil	3.4E-04	1.0	No
	Future	Resident	Aggregate Soil	6.0E-04	2.1	No
Risk Area I	Current/Future	Indus/Comm. Worker	Surface Soil	3.3E-05	0.12	No
	Future	Indus/Comm. Worker	Aggregate Soil	3.3E-04	0.16	No
	Future	Resident	Surface Soil	4.3E-04	1.1	No
	Future	Resident	Aggregate Soil	4.6E-03	2.0	No
Risk Area J	Future	Resident	Surface Soil	9.8E-04	73	Eyes and Immune System and Body Weight
	Future	Indus/Comm. Worker	Surface Soil	7.0E-05	5.9	Eyes and Immune System
	Future	Resident	Aggregate Soil	3.6E-04	21	Eyes and Immune System
	Future	Indus/Comm. Worker	Aggregate Soil	2.8E-05	1.7	None Observed

Notes:

Cancer Risks are above $1x10^{-4}$.

Cancer risks fall in the range of 10^{-6} to 10^{-4}.

Non-cancer Hazard Indices are above 1.

Table 2
Soil Preliminary Remediation Goals

Analyte	Recommended Comm./Ind. PRGs				Recommended Residential PRGs			
	Surface Soil (mg/Kg)	Basis	Sub-surface Soil (mg/Kg)	Basis	Surface Soil (mg/Kg)	Basis	Sub-surface Soil (mg/Kg)	Basis
PAHs								
Benzo(a)anthracene	7.8	RSR	7.8	RSR	3.4	BTV	1	RSR
Benzo(a)pyrene	3.7	BTV	1	RSR	3.7	BTV	1	RSR
Benzo(b)fluoranthene	7.8	RSR	7.8	RSR	5.1	BTV	1.1	BTV
Benzo(k)fluoranthene	78	RSR	78	RSR	8.4	RSR	8.4	RSR
Dibenz(a,h)anthracene	1	RSR	1	2008 Draft	1	2008 Draft	1	2008 Draft
Indeno(1,2,3-cd)pyrene	7.8	RSR	7.8	2008 Draft	1.9	BTV	1	2008 Draft
PCBs, Dioxins								
Dioxin TEQ	6.00E-04	risk-based	6.00E-04	risk-based	5.E-05	risk-based	5.E-05	risk-based
PCBs	10	EPA/RSR	10	EPA/RSR	1	EPA/ RSR	1	EPA/RSR
Metals								
Antimony	8,200	RSR	8,200	RSR	27	RSR	27	RSR
Arsenic	13.4	BTV	10.4	BTV	13.4	BTV	10.4	BTV
Chromium - Trivalent	51,000	RSR	51,000	RSR	3,900	RSR	3,900	RSR
Chromium - Hexavalent	100	RSR	100	RSR	100	RSR	100	RSR
Nickel	7,500	RSR	7,500	RSR	1,400	RSR	1,400	RSR
Vanadium	14,000	RSR	14,000	RSR	470	RSR	470	RSR

Abbreviations:

CT RSR - CT Remediation Standard Regulations (RCSA 22a--133--1 through -3)
Comm./Ind.- commercial/industrial
DEC - RSR Direct Exposure Criteria
PAHs - Polycyclic aromatic hydrocarbons
PCBs - polychlorinated biphenyls
PRGs - Preliminary Remediation Goals
Dioxin TEQ - 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) Toxicity Equivalent
ARAR - Applicable or Relevant and Appropriate Requirement
BTV – Background Threshold Value