Superfund Records Center
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Five-Year Review Report

Second Five-Year Review

for

Old Southington Landfill Superfund Site

Southington, Connecticut

SDMS DocID 471913

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Prepared by:

The United States Environmental Protection Agency

Region 1, New England

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Date

TABLE OF CONTENTS (cont.)
SECOND FIVE-YEAR REVIEW
OLD SOUTHINGTON LANDFILL SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

SECTION **PAGE**

ACRONYMS **AC-1**

EXECUTIVE SUMMARY **ES-1**

1.0 INTRODUCTION **1**

2.0 SITE CHRONOLOGY **2**

3.0 BACKGROUND **3**
- 3.1 Physical Characteristics and Land and Resource Use 3
- 3.2 History of Contamination 4
- 3.3 Initial Response 7
- 3.4 Basis for Taking Action 9
  - 3.4.1 Human Health Risk 9
  - 3.4.2 Ecological Risk 13

4.0 REMEDIAL ACTION **14**
- 4.1 Remedy Selection 14
- 4.2 Remedy Implementation 18
- 4.3 Operations and Maintenance 19

5.0 PROGRESS SINCE LAST FIVE-YEAR REVIEW **20**
- 5.1 Status of Recommendations from Previous Five-Year Review 20
- 5.2 Progress Since the Last Five-Year Review 22

6.0 FIVE-YEAR REVIEW PROCESS **26**
- 6.1 Administrative Components 26
- 6.2 Community Notification and Involvement 26
- 6.3 Document Review 27
- 6.4 Data Review 28
  - 6.4.1 Groundwater 29
  - 6.4.2 Landfill Gas 31
  - 6.4.3 Fish Study 32
- 6.5 Site Inspection 34
- 6.6 Interviews 34

7.0 TECHNICAL ASSESSMENT **36**
- 7.1 Question A: Is the Remedy Functioning as Intended by the Decision Documents? 36
- 7.2 Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives Used at the Time of the Remedy Selection Still Valid? 37
- 7.3 Question C: Has Any Other Information Come To Light That Could Call Into Question the Protectiveness of the Remedy? 43

TABLE OF CONTENTS (cont.)
SECOND FIVE-YEAR REVIEW
OLD SOUTHINGTON LANDFILL SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

SECTION		PAGE
	7.4 Technical Assessment Summary	43
8.0	**ISSUES**	**44**
9.0	**RECOMMENDATIONS AND FOLLOW-UP ACTIONS**	**44**
10.0	**PROTECTIVENESS STATEMENTS**	**46**
11.0	**NEXT REVIEW**	**46**

TABLES

NUMBER	
2-1	Chronology of Site Events
3-1	Old Southington Contaminants of Potential Concern in Groundwater
5-1	Status of Recommendations from Previous Five-Year Review
6-1	2009 VOCs Data for G313A (VI Potential at Radio Station Report)
8-1	Issues
9-1	Recommendations and Follow-Up Actions

FIGURES

NUMBER	
1	Site Location Map
2	Groundwater Quality Classification Map
3	Wells Exceeding Commercial/Industrial Action Levels for Vapor Intrusion
4	Wells Exceeding Residential Action Levels for Vapor Intrusion

APPENDICES

A	Documents Reviewed/References
B	Site Photos
C	Site Inspection Checklist
D	Community Notification and Interview Records

ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
ATSDR	Agency for Toxic Substances and Disease Registry
AWQC	Ambient Water Quality Criteria
BTEX	Volatile Aromatic Compounds
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
CT DEP	Connecticut Department of Environmental Protection
CT DPH	Connecticut Department of Public Health
CTDPHAS	Connecticut Department of Health and Addiction Services
CT RSRs	Connecticut Remediation Standard Regulations
ELUR	Environmental Land Use Restriction
EPA	U.S. Environmental Protection Agency
FYR	Five-Year Review
HHRA	Human Health Baseline Risk Assessment
LA WP	Limited Action Work Plan
LEA	Loureiro Engineering Associates, Inc.
LEL	Lower Explosive Limit
LTMP	Long-Term Monitoring Program
MCL	Maximum Contaminant Level
mg/kg	Milligram per Kilogram
MW	Monitoring Well
NRWQC	National Recommended Water Quality Criteria
Nobis	Nobis Engineering, Inc.
NPL	National Priorities List
O&M	Operations and Maintenance
OU	Operable Unit
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PCE	Tetrachloroethene
POP	Project Operations Plan

ACRONYMS (cont.)

ppb	parts per billion
ppm	parts per million
PRP	Potentially Responsible Party
RA	Remedial Action
RD/RA	Remedial Design/Remedial Action
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
Site	Old Southington Landfill
SOW	Scope of Work
SRI	Supplemental Remedial Investigation
SVOCs	Semi-Volatile Organic Compounds
SW	Surface Water
TAI	Test America, Inc.
TCE	Trichloroethene
µg/L	micrograms per liter
VC	Volatilization Criteria
VOCs	Volatile Organic Compounds
WP	Work Plan
WQS	Water Quality Standard

ES EXECUTIVE SUMMARY

This is the second Five-Year Review completed for the Old Southington Landfill Site located in Southington, Connecticut. This Five-Year Review evaluates the progress made since the completion of the first Five-Year Review towards achieving the remediation goals established in the 1994 Record of Decision (ROD) for an interim source control remedy (OU1) and in the 2006 ROD for the final groundwater vapor intrusion remedy (OU2).

OU1 ROD addressed contamination found at the landfill that posed potential human health risks and represented a source of contamination to groundwater. The OU1 ROD required the relocation of residential, commercial, and industrial facilities from the landfill, and the construction of a cap over the landfill wastes to prevent direct contact exposures and to minimize precipitation infiltration that leached chemicals from the landfill wastes. Construction of a single-barrier cap in the northern portion of the landfill and a double-barrier RCRA C type cap in the southern portion was completed in 2001. The remedy also included the construction of a passive landfill gas collection system, a lined landfill cell, and surface water controls. The effectiveness of the passive gas collection system was evaluated and a vertical landfill gas barrier along the northern boundary of the landfill, closest to residences along Rejean Road, was installed to prevent any landfill gas from migrating off-Site.

The First Five-Year Review concluded that the remedy as constructed is consistent with the OU1 ROD requirements. The interim remedy components are currently functioning effectively and the on-going Operations and Maintenance (O&M) program ensures that the cap remains effective. The O&M activities include monthly inspections of the landfill cap and surface water control system, monitoring of combustible landfill gas emissions, seasonal mowing of the surface vegetation, and periodic pumping of the lined cell.

Groundwater investigations have been implemented since 2001, in accordance with the OU1 ROD, to define the boundaries of the downgradient plume. In 2004, the Connecticut Department of Environmental Protection (CTDEP) reclassified a portion of the downgradient aquifer, through which the plume migrates, from Class GA (potable) to Class GB (non-potable), thereby eliminating the risk to human health from groundwater ingestion. Groundwater investigation results, to date, indicate that the groundwater plume leaving the landfill has migrated over one-half of a mile downgradient before ultimately discharging to the Quinnipiac River. The primary

plume contaminants include chlorinated volatile organic compounds (VOCs) including trichloroethene, dichloroethene, and vinyl chloride. Currently, areas adjacent to the Site continue to include residential, commercial, and industrial uses. However, the groundwater is not used as a potable supply because a public water supply is available and there is a prohibition by the Town on the installation of drinking water wells.

In 2006, EPA issued a final OU2 ROD for the Site which addresses the low-level threat posed by vapor intrusion resulting from VOCs-contaminated groundwater. Engineering controls and institutional controls will be used to prevent the potential exposure to contamination that presents an unacceptable risk to human health and the environment. The OU2 ROD focuses on groundwater VOC concentrations in exceedance of the Connecticut Remediation Standard Regulation (CT RSR) Volatilization Criteria for residential or commercial/industrial use, as appropriate. The main components of the OU2 ROD include institutional controls in the form of Environmental Land Use Restrictions (ELURs) as defined by the CT RSRs, periodic inspections, building ventilation/vapor barriers and mitigation measures (as deemed necessary and in accordance with the defined ELURs), groundwater monitoring, and Five-Year Reviews (FYRs). The second Consent Decree (CD) was signed in July 2009. Following the signing of the second CD, the Remedial Design/Remedial Action (RD/RA) Work Plan was prepared by the Potentially Responsible Parties (PRPs) in April 2010, and is undergoing EPA review. The LA WP addresses the implementation of the vapor intrusion studies, the design of the engineering systems, if deemed necessary, to mitigate vapor intrusion, and development of the ELURs.

Various actions have been implemented since the First Five-Year Review. A risk assessment was completed in 2006 that determined the landfill gases emitted from the gas vents did not pose threats to human health. The 2009 Black Pond fish tissue study confirmed that there had been no substantial changes to contaminant levels in fish after the completion of the limited source control remedy. Due to concerns that combustible gases were consistently detected in gas probes situated outside of the landfill, a helium tracer gas study was completed in 2009 to assess the effectiveness of the passive gas vent collection system. The results of the study indicated that very small amounts of helium gas were migrating horizontally and getting through the cap, thus indicating that the passive vent gas system was not fully effective in preventing the off-Site migration of landfill gases. In response to these findings, the PRPs constructed a vertical landfill gas barrier in 2009 that physically blocked migration of any landfill gases towards residences along Rejean Road, north of the Site. The PRPs also performed an evaluation for

potential off-site landfill gas migration along the southern boundary of the capped area. The evaluation compared three rounds of gas vent data and compared these to the RSR VCs, which indicated that the landfill gas concentrations were below the CT RSR VCs. In addition, using data developed from the helium gas tracer test, potential soil gas concentrations were calculated. The results indicated that even if all landfill gases evaded the passive gas collection system, all gases would diminish to below the CT RSR VCs within 40 feet of the cap boundary. Therefore, no further action is required for the passive gas vent system along the Site's southern boundary.

Six well clusters immediately downgradient (west of the Site) are sampled quarterly as part of the cap effectiveness monitoring program. The data indicate that VOC concentrations in groundwater have fluctuated over time, but have not diminished substantially. While the cap has reduced or minimized infiltration into the landfill wastes situated above the water table, an estimated one-third of the wastes are still present in the water table and may serve as continuing sources of contaminants to groundwater. Given the nature and extent of the saturated landfill waste continuing to provide contaminants into groundwater, it is anticipated that long-term monitoring of groundwater will be required for a protracted period of time to ensure protectiveness.

The components of the remedy required by the OU1 ROD are functioning appropriately and are protective of human health. The landfill cap has effectively prevented dermal contact with landfill contaminants. Removal of commercial and residential structures in conjunction with the landfill cap construction has further supported overall protectiveness. While the cap has been effective in reducing precipitation infiltration, landfill wastes present below the water table may continue to act as groundwater contamination sources. The CT DEP has reclassified the groundwater impacted by the plume to a GB (non-potable) aquifer and everyone in the area is hooked up to municipal water, thus, eliminating the potential for groundwater ingestion or dermal risk. The long-term protectiveness of the remedial action at the Site will continue to be verified through ongoing monitoring programs. The 2006 remedy, OU2, is currently protective. Monitoring will continue at certain parcels to ensure long-term protectiveness should land use or conditions change in the future.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name *(from WasteLAN)*: Old Southington Landfill		
EPA ID *(from WasteLAN)*: CTD980670806		
Region: 1	**State:** CT	**City/County:** Southington/Hartford
SITE STATUS		
NPL status: ☑ Final ☐ Deleted ☐ Other (specify)		
Remediation status (choose all that apply): ☐ Under Construction ☑ Operating ☑ Complete		
Multiple OUs?* ☑ YES ☐ NO	**Construction completion date:** September 2010	
Has site been put into reuse? ☑ YES ☐ NO Portion serve as passive recreation		
REVIEW STATUS		
Lead agency: ☑ EPA ☐ State ☐Tribe ☐Other Federal Agency_____		
Author name: Almerinda Silva		
Author title: EPA Remedial Project Manager	**Author affiliation:** U.S. EPA Region 1	
Review period:** 8/26/2009 through 8/31/2010		
Date(s) of site inspection: 4/27/2010		
Type of review: ☑ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only ☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion		
Review number: ☐1 (first) ☑ 2 (second) ☐3 (third) ☐ Other (specify)		
Triggering action: ☐Actual RA Onsite Construction at OU #___ ☐ Actual RA Start at OU#____ ☐ Construction Completion ☑ Previous Five-Year Review Report ☐ Other (specify)		
Triggering action date *(from WasteLAN)*: September 30, 2005		
Due date *(five years after triggering action date)*: September 30, 2010		

* "OU" refers to operable unit.

Five-Year Review Summary Form, cont'd.

Issues:

1. Capping has not diminished groundwater contaminant concentrations downgradient of the Site. Landfill wastes present below the water table are continuing sources of chemical contamination to groundwater.

2. While a portion of the aquifer downgradient of the Site has been reclassified as Class GB, it is uncertain whether the contaminated groundwater plume could at some point in the future encroached into the Class GA drinking water aquifer.

3. Vapor intrusion from VOCs in the shallow groundwater plume may pose potential future health risks to parcels situated over the downgradient plume. Thus area will continue to be monitored.

4. Institutional Controls are not yet in place for the southern portion of the landfill nor for parcels west of the landfill that may be affected by vapor intrusion in the future should land use be changed.

Recommendations and Follow-up Actions:

1. Continue cap effectiveness groundwater monitoring downgradient of the Site. Evaluation of concentration trends should continue during the next five year period.

2. Implement the GA/GB Boundary Study, which is detailed in the LA WP and supporting documents. The Limited Action Work Plan (LA WP) describes the technical approach for meeting the Performance Standards set forth in Section IV of the 2009 Consent Decree RD/RA Statement of Work.

3. Implement the Vapor Intrusion Monitoring Plan for the Chuck and Eddy's Property and the Radio Station Property as detailed in the LA WP and supporting documents.

4. Institutional Controls (as ELURs) will be prepared and recorded in accordance with the LA WP.

A third five year review will be submitted in 2015.

Five-Year Review Summary Form, cont'd.

Protectiveness Statement(s):

1. The 1994 remedy, OU1, components are functioning appropriately and are protective of human health. The landfill cap has effectively prevented dermal contact with landfill contaminants. Removal of commercial and residential structures in conjunction with the landfill cap construction has further supported overall protectiveness. While the cap has been effective in reducing precipitation infiltration, landfill wastes present below the water table may continue to act as groundwater contamination sources. The CT DEP has reclassified the groundwater impacted by the plume to a GB (non-potable) aquifer and everyone in the area is hooked up to municipal water. Thus, eliminating the potential for groundwater ingestion or dermal risk. The long-term protectiveness of the remedial action at the Site will continue to be verified through ongoing monitoring programs.

2. The 2006 remedy, OU2, is currently protective. Monitoring will continue at certain parcels to ensure long-term protectiveness should land use or conditions change in the future.

   Site-wide construction has been completed at this Site. The Site wide remedy is protective of human health and the environment. Exposure pathways that could result in unacceptable risks are being controlled.

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) Region 1 has conducted the second Five-Year Review at the Old Southington Landfill Superfund Site (the Site) in the Town of Southington (Town) in Hartford County, Connecticut. This review was conducted from August 2009 through August 2010. This report documents the results of the review.

The purpose of this Five-Year Review is to determine whether the remedy selected for the Site continues to be protective of human health and the environment. This report: summarizes the Five-Year Review processes, investigations, and remedial actions undertaken at the Site; evaluates the monitoring data collected; reviews, as appropriate, the Applicable or Relevant and Appropriate Requirements (ARARs) specified in the 1994 Record of Decision (ROD) and the 2006 ROD for changes; discusses any issues identified during the review; and presents recommendations to address those issues.

The Five-Year Review is consistent with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) §121, 42 U.S.C. §9621 and the National Oil and Hazardous Substances Contingency Plan. CERCLA §121 (c), as amended states:

> *"If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the Site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such Site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews."*

The EPA interpreted this requirement further in the NCP. 40 Code of Federal Regulations (CFR) §300.430(f) (4) (ii) states:

> *"If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action."*

This is the second Five-Year Review for the Site. Once an initial Five-Year Review is complete, the triggering mechanism for subsequent reviews is the completion date of the immediately preceding Five-Year Review. At this Site, the previous Five-Year Review was completed in September 2005. This second review covered the time period between October 2005 and September 2010.

This statutory review is required because hazardous substances, pollutants, or contaminants remain at the Site above levels that do not allow for unlimited use and unrestricted exposure.

In conducting this Five-Year Review, relevant existing documents related to project objectives, cleanup goals, and implementation of the remedial actions at the Site have been examined. The documents reviewed during preparation of this report are presented and listed in Attachment 4.

This Five-Year Review has been prepared in accordance with the EPA's *Comprehensive Five-Year Review Guidance* (EPA, June 2001). The report reflects that the remedies for the Site are currently protective.

2.0 SITE CHRONOLOGY

Table 2-1
Chronology of Site Events

Event	Date
Old Turnpike Landfill accepts mixed residential, commercial and industrial waste	1920-1967
Town of Southington closes Old Turnpike Landfill	1967
CT Department of Public Health (CT DPH) and Addiction Services initiates groundwater sampling at Site	1978
CT DPH closes municipal groundwater Production Well #5	1979
EPA initiates hydrogeologic investigations at the landfill	1980
Old Southington Landfill Site placed on the NPL	1984
Administrative Order by Consent issued by EPA	1987
Remedial Investigation/Feasibility Study (RI/FS) Report and Risk Assessment (RA) completed	1993
EPA issues Addendum to RI/FS Report	1994
Record of Decision (ROD) for Interim Remedial Action for Limited Source Control issued by EPA	1994
Consent Decree between EPA and Performing Settling Defendants (PRPs) lodged	1998
Supplemental Groundwater Investigations initiated	1999

Event	Date
100 percent Remedial Design Report for landfill cap completed	2000
Landfill Cap construction initiated	2000
Long-Term Groundwater Monitoring Program initiated	2000
Landfill Cap construction completed	2001
Landfill Operation & Maintenance (O&M) Program initiated	2001 (ongoing)
Combustible Gas Comprehensive Summary Report completed	2003, 2004, 2006
Supplemental Hydrogeologic Review completed	2005
First Five-Year Review completed	2005
Supplemental RI Report for groundwater completed	2006
Risk Assessment for Gas Vent VOCs completed	2006
Amended FS completed	2006
Landfill Inspection Cap Effectiveness Monitoring	2001 – 2010 (ongoing)
Final ROD	2006
Gas Vent Monitoring	2001 (ongoing)
Second Consent Decree signed between EPA, CT DEP and PRPs	2009
Radio Station Vapor Intrusion (VI) Assessment completed	2006
Gas Collection Verification Study completed	2009
Fish Study of Black Pond conducted	2009
Vertical landfill gas barrier installed	2009
Restoration and Landscaping of Northern Portion of Landfill completed due to gas barrier installation	2010
FYR Site Inspection by EPA, Nobis, and PRPs	2010
LA WP for OU2 submitted by PRPs	2010

3.0 BACKGROUND

This section contains information pertaining to the Site's physical characteristics, current and prior land use at the property, as well as waste identification and characterization information. This information has been obtained through a review of historical information, previous investigations, zoning and flood maps, and a site visit.

3.1 Physical Characteristics and Land and Resource Use

Physical Characteristics

The Old Southington Landfill Site lies in the Plantsville Section of the Town of Southington in Hartford County, Connecticut (see Site Location Map in Attachment E). For purposes of this Five-Year Review, the Site encompasses approximately 13 acres and is defined as the area encompassed by the landfill cap and bordered on the west by Old Turnpike Road and on the

north by Rejean Road. Along its northeastern boundary, the Site is bordered by Black Pond, a fresh water body. Residential areas are located immediately north of the Site along Rejean Road and to the south of the Site along Old Turnpike Road. A commercial auto salvage yard lies immediately to the west of the Site across Old Turnpike Road. A commercial storage facility and a construction company are located immediately east of the southern portion of the landfill. Figures 2 and 3 depict the overall study area including the Site, and the area to the west is traversed by the downgradient groundwater plume.

Land and Resource Use

The Site operated as a municipal and industrial waste landfill between 1920 and 1967. During that period, mixed residential, commercial, and industrial solid and liquid wastes were disposed of at the landfill. The northern area of the landfill was primarily used for the disposal of wood and construction debris. The southern area of the landfill received municipal commercial and industrial waste materials. Two areas in the southern portion of the landfill abutting Old Turnpike Road, identified as the semi-solid disposal areas, received aqueous, semi-solid, and semi-liquid wastes.

The OU1 ROD required the PRPs to permanently relocate all buildings from the landfill; excavate and consolidate a hot spot into a lined cell under the cap; cap the landfill; and install a gas collection system. The northern part of the landfill was to be used for passive recreation and the southern portion of the landfill would not be accessible to the public. Land use for the area surrounding the Site continues to include residential, commercial, and industrial buildings. Groundwater down gradient of the Site has been reclassified as GB (non-potable) by the CT DEP and is no longer used as a drinking water source, as depicted in the Groundwater Quality Classification Map in Attachment E.

3.2 History of Contamination

From 1920 to 1967, the Old Southington Landfill received mixed residential, commercial, and industrial wastes including solid, semi-solid and liquid wastes. Commercial and industrial wastes were primarily deposited in the southern portion of the landfill. In 1967 the Town of Southington closed the landfill and placed a 2-foot soil cover over it. In 1979, the Connecticut Department of Public Health (CT DPH) closed municipal Production Well No. 5. From the early 1970s to the 1980s, the landfill was subdivided and developed into residential, commercial, and industrial

properties. Residential homes occupied portions of the northern part of the landfill. Commercial and industrial businesses occupied the southern part of the landfill.

Potentially Responsible Parties (PRPs) signed the Administrative Order on Consent to perform the Remedial Investigation and Feasibility Study (RI/FS) in 1987 to determine the nature and extent of landfill contamination. The RI was completed in October 1993.

Soil and Debris/Waste

Based on a soil boring program, the RI determined that the northern area (previously residential) was distinctly different from the southern area (previously commercial/industrial). Two Semi-Solid Waste Disposal Areas (SSDAs) known as SSDA1 and SSDA2 were also identified. The approximate boundary of the landfill area is depicted on Figures 2 and 3.

The northern area of the Site was primarily used for disposal of wood stumps and construction-type debris such as glass, bricks, and asphalt. Some or all of the debris in this area was burned, resulting in the formation of polynuclear aromatic hydrocarbons (PAHs), a type of semi-volatile organic compounds (SVOCs). Subsurface soils contained varying levels of PAHs. No volatile organic compounds (VOCs) were found in surface soil samples collected in the northern area.

The southern area of the landfill was used for the disposal of municipal, commercial, and industrial wastes. Soil samples contained primarily metal, paper, plastic, and glass. Chemical analysis of the southern area's subsurface soils indicated a wide variety of contaminants including VOCs, SVOCs, and metals. Elevated levels of VOCs including toluene, ethylbenzene, xylenes, tetrachloroethene, and trichloroethene were detected. Other VOCs detected included chlorinated solvent degradation products (i.e., cis-1,2-dichloroethene, vinyl chloride, etc.). Varying levels of pesticides and polychlorinated biphenyls (PCBs) were also detected in a few of the samples. The major contaminants of concern found in surface soils were SVOCs, principally PAHs. Several southern area samples were found to contain metals (arsenic, lead, and mercury) present above background levels.

Landfill Gases

Methane and other landfill gases have been measured in soils at the Site since 1985. Prior to the cap construction in 2001, EPA was notified by Connecticut Department of Health and

Addiction Services (CT DPHAS) in 1991, that gases were detected in floor cracks of the Parks & Recreation Building, and that two employees from the Southington Metal Fabricating Company (SMF) had complained of illness (See Figure 2 for previous on-Site building locations). A landfill gas monitoring and mitigation program was implemented by the PRP Group and the Southington Fire Department (SFD) through an agreement with CT DEP and in consultation with the EPA, CT DPHAS, and the Agency for Toxic Substances and Disease Registry (ATSDR).

Soil gases from the Site were also sampled for combustible gases and VOCs as part of the RI. Elevated levels of combustible gases and VOCs were detected in the southern area of the landfill, which had received municipal and industrial wastes. VOCs detected included benzene, ethylbenzene, toluene, vinyl chloride, and xylenes.

Since 1995, the PRPs have installed and sampled gas probes outside of the perimeter of the capped materials to monitor landfill gas migration including methane. Results of the sampling indicated that methane was detected. Further evaluations indicated that much of the landfill was situated above peat deposits, which are known to release methane. Additional evaluations were then conducted to evaluate the effectiveness of the passive landfill gas collection system in 2009, resulting in the construction of a vertical landfill gas barrier system (see Section 5.2 for additional details).

Groundwater

During the RI, sampling results indicated that a number of chlorinated and non-chlorinated VOCs, including vinyl chloride, trichloroethene, cis-1,2-dichloroethene, ethylbenzene, toluene, and xylenes were present in the groundwater both at the landfill (predominantly in the southern portion) and to the west of the landfill (downgradient). Most of the VOCs were present at concentrations many times higher than the Maximum Concentration Levels (MCLs).

SVOCs detected in groundwater were generally found at much lower concentrations than VOCs. Some of the SVOCs found include dichlorobenzenes and various types of phenol and phthalate compounds. Groundwater collected from two locations just west of the landfill contained traces of pesticides at concentrations below MCLs. PCBs were detected in one well at concentrations above the MCL. Groundwater sampling results indicated that metal concentrations exceeded background levels in wells both at the landfill and down gradient in

exceedance of MCLs (antimony, barium, beryllium, cadmium, chromium, copper, lead, mercury, nickel, silver, and thallium.)

In 2005, a Supplemental Remedial Investigation (SRI) was completed and the results confirmed the initial findings of the original RI. Groundwater monitoring indicated the continued presence of chlorinated and to a lesser extent non-chlorinated VOCs in a number of wells downgradient of the landfill. The SRI results also indicated that a lengthy groundwater VOC plume was migrating downgradient from the landfill, and is believed to ultimately discharge into the Quinnipiac River. The SRI indicated that chlorinated VOC concentrations in the plume decrease slowly with increasing distance downgradient from the landfill. The plume also drops in depth as it moves west from the landfill.

As part of the remedial action for the cap's operations and maintenance (O&M), a cap effectiveness groundwater monitoring program is performed quarterly to evaluate VOCs and metals distribution and trends. These results indicate the capped landfill is still a source of groundwater VOC contamination, which continues to migrate downgradient (westerly).

Hydrogeology

The water table at the landfill varies from about 2 feet to 34 feet below the ground surface. It is shallower to the north end of the Site and deeper to the south end of the Site. Landfill wastes are located both above and below the water table depending upon the specific area of the Site. Approximately two-thirds of the landfill waste is located above the water table. Waste located below the water table acts as a continuing source of contamination to the groundwater. Contaminated soils located above the water table also act as a source of contamination to groundwater as precipitation and snow melt infiltrate down through the waste, transporting contamination to it. The regional groundwater flow is westerly toward the Quinnipiac River and contaminated groundwater in the unconsolidated aquifer migrates in a westerly direction from the landfill.

3.3 Initial Response

The CT DPH sampled Town of Southington groundwater Production Well No. 5 on several occasions between December 1978 and March 1979. This well was located approximately 700 feet north-northwest of the furthest northern extent of the Southington Landfill. Results of this

sampling effort indicated that the well was contaminated with chlorinated organic compounds including TCE and 1,1,1-trichloroethane (TCA). Based on these results, the well was closed in August 1979. In November 1980, the CT DEP collected and analyzed soil samples from a manhole that was located in the industrial park that was built on the landfill. Both chlorinated and non-chlorinated VOCs were detected in the soil samples.

In September 1984, CT DEP signed a Consent Order with the Town of Southington under which the town was required to investigate a portion of the contamination at the landfill. Subsequently, in 1992, an agreement was reached between the Town of Southington and CT DEP. The Town of Southington implemented a landfill gas monitoring and mitigation plan at the Site.

In September 1987, three PRPs, the Town of Southington, Pratt and Whitney division of United Technologies Corp., and Solvents Recovery Service (SRS) of New England, Inc., signed an Administrative Order by Consent to perform an RI/FS at the Old Southington Site.

In September 1994, EPA issued a ROD for the Site. The ROD identified the selected remedy for the Site as an interim remedial action for limited source control. This interim remedial action included the following principal components:

- Removal and relocation of all residential and commercial structures from the landfill and relocation of all affected residents and businesses;
- Excavation and consolidation of semi-solid materials from the semi-solid disposal area identified as SSDA #1 into a lined cell to be placed underneath the cap and above the water table;
- Construction of a low permeability cap over the landfill;
- Installation of a gas collection system and, if necessary, a gas treatment system;
- Implementation of a long-term monitoring plan to determine the long-term effectiveness of the cap on groundwater, surface water and sediment quality, the effectiveness of the soil gas collection system; and
- Development of institutional controls, including fencing.

In addition, the OU1 ROD required that additional groundwater studies (i.e. SRI) be performed at the Site. The primary purpose of this investigation was to better define the downgradient boundaries of the groundwater plume and determine whether any natural resources were being

impacted. Following negotiations, a Consent Decree between EPA, CT DEP, and the PRPs was lodged in the United States District Court in March 1998.

Based on additional groundwater studies, the OU2 ROD was issued. The OU2 ROD set forth the final selected remedy to address potential human health risks from vapor intrusion that may enter into buildings situated above the shallow groundwater VOC plume. This component of the final remedy complemented the OU1 ROD's interim remedial remedy.

3.4 Basis for Taking Action

The basis for taking corrective action at the Site included both human health risk and ecological risk assessment.

3.4.1 Human Health Risk

OU1 ROD

A human health baseline risk assessment (HHRA) was performed as part of the 1993 RI/FS for the Site. As summarized in the OU1 ROD, the risk assessment identified and selected a total of 31 contaminants of potential concern (COPCs) in groundwater beneath the Site, 21 contaminants in surface soils in the northern portion of the Site, 21 contaminants in surface soils in the southern portion of the Site, 20 contaminants in on-site sediments, 17 contaminants in off-site sediments, nine contaminants in surface water, and 12 contaminants in air. The COPCs were selected to represent potential site-related hazards based upon toxicity, concentration, frequency of detection, mobility, and persistence in the environment. Risk assessment evaluations indicated that the primary exposure pathway exceeding EPA's target risk range was groundwater ingestion. The overall set of groundwater COPCs is presented in Table 3-1.

Risk assessment calculations indicated that major contributors to carcinogenic risk estimates in groundwater included trichloroethene, vinyl chloride, beryllium, arsenic, bis(2-ethylhexylphthalate) and PCB aroclors. Major contributors to non-carcinogenic risk estimates included antimony, barium, bis(2-ethylhexyl) phthalate, cadmium, chromium, 1,2-dichloroethene, ethyl benzene, nickel, silver, thallium, toluene, vanadium, arsenic, manganese, zinc, and PCB aroclors. MCLs were exceeded for approximately 20 compounds.

Table 3-1
Contaminants of Potential Concern in Groundwater

Antimony	Aroclor 1248	Aroclor 1254
Arsenic	Barium	Benzene
Beryllium	Bis(2-ethylhexyl) phthalate	Butylbenzylphthalate
Cadmium	Carbon Disulfide:	Chloroform
Chromium (hexavalent)	Chlordane (gamma)	1,2-Dichloroethene (total)
Ethylbenzene	Lead	Manganese
Mercury	Methylene Chloride	Nickel
Silver:	Tetrachloroethene (PCE)	Thallium
Toluene	1,1,1-Trichloroethene	Trichloroethene
Vanadium	Vinyl Chloride	Xylenes (total)
Zinc		

At the time of the signing of the OU1 ROD for the Site, the groundwater aquifer at the leading edge of the VOC plume near the Quinnipiac River was classified by CT DEP as GA, acceptable for human consumption. Therefore, from a risk assessment standpoint, those groundwater contaminants that were relatively mobile were of particular concern. Migration of these contaminants out of the landfill and into the downgradient aquifer represented a potential human health exposure pathway. The carcinogenic and non-carcinogenic risks calculated for the on-site workers (indoors or outdoors), the wader, and swimmer were below their respective EPA benchmarks. The carcinogenic risk calculated for the maximum case for the on-site resident for exposure to surface soil exceeded the EPA acceptable risk range due to carcinogenic PAHs.

CT DEP has classified the groundwater within the study area (between the landfill and the Quinnipiac River) as "GB", which indicates that the groundwater is not suitable for use as a drinking water supply. Therefore, the potential human health risks (presented above) resulting from ingestion and other exposures related to use of groundwater as a domestic water supply (e.g. dermal contact and inhalation of VOCs while bathing) were not evaluated through a formal human health risk assessment process.

The GB area abuts groundwater that is currently designated as GA. Additional information will be acquired to assess whether contaminated groundwater originating from the Site may be impacting the GA groundwater zone. This work is planned to occur following the approval of the LA WP for the OU2 ROD.

OU2 ROD

Shallow groundwater depth for this Site is defined as 30 feet below ground surface. Groundwater contaminated with VOCs may impact buildings through vapor intrusion that could potentially migrate through the slab or basement. Thus, occupants of structures overlying shallow groundwater contamination may potentially be exposed to VOCs originating from the shallow groundwater. The following route of potential human exposure to site-related contamination as determine in the 2006 ROD includes:

- Inhalation of VOCs indoors resulting from the migration from shallow contaminated groundwater through the subsurface, and into overlying structures.

In general, contaminated groundwater from the Site migrates in a westerly direction toward the Quinnipiac River. As it travels, it descends in depth west of Old Turnpike Road (as presented in Figure 14 of Supplemental RI, 2006). Thus, parcels immediately to the west of the landfill along Old Turnpike Road include areas where contaminated groundwater is relatively close to the ground surface.

Connecticut has established Remediation Standards Regulations (RSRs) for groundwater (RCSA, Section 22a-133k-3c) that include specific volatilization criteria (VC) developed for the purpose of providing public health protection as a result of vapor intrusion. Connecticut's groundwater VC regulations are health-based, chemical-specific standards that are specific to the type of land use (i.e. residential or commercial/industrial) overlying the contaminated groundwater. The CT RSRs were subject to rulemaking in 1996 and have been consistently applied by CT DEP since they were promulgated, with many provisions meeting the definition of ARARs under CERCLA. In March 2003, Connecticut proposed revisions to the RSR VC that included revised numeric criteria for several compounds as well as the provision that the criteria be applied to polluted water located within 30 feet of the ground surface (previously, the 1996 RSRs applied only to contaminated groundwater located within 15 feet of ground surface). The proposed revisions to the CT RSRs of March 2003 are viewed as "to be considered" criteria by EPA for decision-making purposes.

Due to the complexity of evaluating site-related vapor intrusion risk at facilities, a quantitative baseline human health risk evaluation was not performed. However, the vapor intrusion

exposure pathway was evaluated by comparing VOC concentrations in the shallow groundwater aquifer to the RSR VCs.

Three parcels (Former Lori Corporation parcel, the Radio Station parcel, and the Chuck and Eddy's parcel), located to the west and downgradient of the Site were evaluated for the vapor intrusion potential. All other parcels overlying contaminated groundwater sit above contamination that is either too deep to be subject to the Connecticut regulations or that does not exceed CT RSRs for vapor intrusion. The summary below is based on groundwater monitoring data collected between December 2003 and November 2005. A complete record of all samples obtained can be found in Tables 1 and 7 of the Supplemental Remedial Investigation Report, 2006. Potential for vapor intrusion at the three parcels indicate:

- **Former Lori Corporation Parcel** – Subsequent hydrogeologic investigations have determined that due to a groundwater divide, contaminated groundwater originating from the Site does not migrate to the Former Lori Corporation parcel. While the potential for vapor intrusion occurs at this parcel, it is unrelated to the Site. Therefore, further response actions for this parcel will not be a component of the Site remedial actions.

- **Radio Station Parcel** – On the Radio Station parcel, well locations M28, M30, M31, M32, M45, M46, M47, M68, PZ-2, and PZ-3 had one or more detections of vinyl chloride exceeding both the promulgated and proposed RSR VC for residential and commercial/industrial land use. See figure titled "Wells Exceeding Commercial/Industrial Action Levels for Vapor Intrusion" and figure titled "Wells Exceeding Residential Action Levels for Vapor Intrusion" in Attachment E. A few shallow groundwater samples (M30, M31, and M45) had detections of vinyl chloride that were between 50-400 times the vinyl chloride VC. Because this parcel is currently used for commercial purposes, the data suggest there may be a future potential harm to human health via vapor intrusion. In 2006 the PRPs conducted subslab testing at the building. The results came back clean. Long-term monitoring will ensure the continued protectiveness at this parcel.

- **Chuck and Eddy's Parcel** – Fifteen shallow wells located on the Chuck and Eddy's parcel had one or more detections of vinyl chloride exceeding both the promulgated and proposed CT RSR VC for both residential and commercial/industrial land use. Two adjacent sample locations (G304A and M36) had concentrations of vinyl chloride that

were between 100 to 2000 times the CT RSR VC. Shallow groundwater concentrations exceeding commercial/industrial volatilization criteria for TCE, 1,1-DCE, and CCU were also noted but were limited in extent to a few locations (G304A, M36, M41, and M60). While the data exceeded the CT RSRs, the pre-fabricated type and layout of the building along with the abundant air circulation that it receives make the actual intrusion of vapors an unlikely. Locations G304A, M36, M40, M41, M42, M54, M55, M60, M76 also noted concentrations in shallow groundwater in excess of the residential volatilization criteria for benzene, cis-1,2 DCE, 1,2-dichloroethane, ethylbenzene, PCE, toluene, and xylene in addition to vinyl chloride, TCE, 1,1-DCE, and CCU (Appendix B, Table G-3). Thus, there may be a threat to public health in the future via vapor intrusion should the Chuck and Eddy's parcel be used for residential purposes in the future. The need for implementing engineering controls will be determined through the long term monitoring program.

A fourth area of interest is a new residential development (Highland Hills) located west of the Site. This area was tested by the PRPs in August 2010 for vapor intrusion potential in accordance with the July 2009 CD. Through this testing effort, the deep plume was located and the shallow groundwater was found to be free of VOCs. Thus no further action is necessary in this area.

3.4.2 Ecological Risk

As part of the 1993 RI/FS, an ecological risk assessment was conducted at the Site and also for a limited area in the near field relative to the landfill. The ecological risk assessment consisted of the following:

- A delineation of wetlands within the study area;
- An evaluation of wetland functions within the study area;
- A qualitative animal survey within the study area; and
- An ecological hazard assessment of the study area.

The ecological hazard assessment included an evaluation of contaminants in surface waters and sediments in Black Pond and its outlet stream. The chemical characteristics of both surface waters and sediments were evaluated. Surface water metal concentrations were compared to

representative data compiled by the U.S. Geological Survey. VOCs were found in only trace to low concentrations in both surface water and sediment samples. Metals and PAHs were noted in certain sediment samples at varying concentrations. Results suggested that maximum sediment concentrations for some metals tended to be observed along the western edge of Black Pond and also downstream of the pond. Metals and PAHs were identified as the principal chemical classes of ecological concern to Black Pond.

Surface water and sediment concentrations of metals and PAHs were compared to relevant National Recommended Water Quality Criteria (NRWQC) and National Oceanic and Atmospheric Administration (NOAA) sediment quality values, as appropriate. Overall, surface water results indicated that the NRWQC for a few metals were exceeded at certain sampling locations. Toxicity assessment results indicated that in Black Pond sediments, there was no clearly defined pattern of metal exceedances of the sediment quality values versus sampling location. However, lead concentrations appeared to exceed the Effects Range Low (ER-L) and Effects Range Medium (ER-M) threshold levels at a number of locations. Some SVOC levels (primarily PAHs) in sediment samples also exceeded ER-L and ER-M values at certain sampling locations. The results of the ERA indicated no appreciable risk to the environment.

4.0 REMEDIAL ACTION

This section describes the Remedial Actions (RA) selected for the Site.

4.1 Remedy Selection

OU1 ROD

The OU1 ROD to address the contaminated landfill wastes of the Site was signed in September 1994. The OU1 ROD addressed all affected media (i.e. soil, soil gas, surface water, and sediment) at the landfill, at the adjacent Black Pond, and at the Unnamed Stream across Old Turnpike Road west of the landfill. During development of the ROD for Old Southington, a number of potential exposure pathways were analyzed for risk and threats to human health and the environment, and summarized in the RI for the Old Southington Site (ESE, 1993). As a result of these assessments, remedial action objectives (RAOs) were developed to mitigate existing and future threats to human health and the environment. These RAOs included the following:

- Minimize the current and future effects of landfill contaminants on groundwater quality;
- Eliminate potential future risks to human health through direct contact with landfill contaminants by maintaining a physical barrier;
- Prevent risks from uncontrolled landfill gas migration and emissions;
- Minimize potential impacts of implementing the selected limited source control alternative on adjacent surface waters and wetlands;
- Control surface water run-on, run-off and erosion at the Site; and
- Comply with state and federal applicable or relevant and appropriate requirements (ARARs).

The following were the major components of the OU1 ROD:

- Relocation of existing residences and businesses located on top of the landfill;
- Construction of a synthetic cap over the landfill;
- Excavation and consolidation of a highly contaminated area "hot spot" into a lined cell underneath the landfill cap;
- Installation of a soil gas collection/treatment system;
- Performance of long term operation and maintenance;
- Performance of long-term monitoring;
- Performance of Five-year reviews; and
- Continued groundwater investigations.

The selected remedy was a comprehensive approach for the final decision that addresses all remaining current and potential future risks at the Site. Because of its reliance on preventing environmental and human exposures to contaminants through capping, removal of buildings, and restricting site access, the OU1 ROD set no chemical-specific clean-up standards.

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to the remedial action (RA), is cost-effective, and utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable. However, this remedy does not satisfy the statutory preference for treatment as a principal element of the remedy.

Because this remedy will result in hazardous substances remaining onsite above levels that allow for unlimited use and unrestricted exposure (groundwater and land use restrictions are necessary). The FYR process started in 2005 after initiation of the 1994 RA and will continue every five years to ensure that the remedy continues to provide adequate protection to human health and the environment.

OU2 ROD

The remaining risks are associated with the potential for vapor intrusion migrating into buildings located above the contaminated shallow groundwater plume. Specifically, this final remedial action includes implementation of engineering controls, if deemed necessary based on future use, and evaluation of monitoring data, institutional controls, and long-term monitoring on properties located immediately west of the Site and Old Turnpike Road. The focus of this future monitoring and ELURs is currently on two properties: the Chuck & Eddy Salvage Yard property and the Radio Station property. Previously, groundwater contamination observed at the former Lori Corp. property was thought to be associated with releases from the Site. Hydrogeologic investigations have determined that contaminated groundwater from the Site is not migrating towards the former Lori Corporation property. Contamination at the former Lori Corporation is due to past releases that occurred at that property.

In September 2006, the Final ROD to address vapor intrusion resulting from contaminated groundwater was signed. The OU2 ROD sets forth the final selected remedy that addresses the potential exposure to contamination through vapor intrusion for parcels located above the shallow groundwater plume.

The RAO for the OU2 ROD is:

- Prevent inhalation of VOCs by occupants of residential/commercial/industrial buildings resulting from volatilization of VOCs in groundwater, in excess of 10-4 to 10-6 cancer risk, a hazard index > 1, and/or comply with applicable or relevant and appropriate volatilization criteria.

The OU2 ROD addresses the low-level threat presented by vapor intrusion by the use of engineering controls and institutional controls to prevent exposure to contamination that

presents an unacceptable risk to human health and the environment. Remedial components of this ROD are as follows:

- Institutional controls in the form of Environmental Land Use Restrictions (ELURs) as defined in CT's RSRs on properties or portions of properties where groundwater VOC concentrations exceed the CT RSR volatilization criteria. The institutional controls will remain in place as long as groundwater VOC concentrations exceed the criteria.

- Periodic inspections will be performed or other procedures and requirements will be put in place to ensure compliance with the institutional controls and to ensure notification to EPA and the State and the appropriate local governmental agencies if the institutional control is breached.

- Building ventilation controls will be used to either prevent migration of VOC vapors into buildings, or to control the level of VOCs in vapors beneath existing buildings, (subslab depressurization or similar technology) as appropriate. Similarly, vapor barriers (or similar technology) will be used to control vapors in new buildings. Operation, maintenance, and monitoring of engineering and institutional controls will ensure remedial measures are performing as intended, and continue to protect human health and the environment in the long-term.

- Groundwater monitoring will be conducted in areas where the potential for vapor intrusion is a concern, in accordance with the CT RSRs volatilization criteria. Compliance wells will be installed at appropriate locations to collect groundwater and evaluate long term fluctuations in accordance with the monitoring requirements to ensure the protectiveness of the remedy in the future.

- Compliance wells will be installed at appropriate locations, to collect groundwater to evaluate long-term fluctuations in accordance with the monitoring requirements of the CT RSRs and other federal requirements to ensure the protectiveness of the remedy in the future.

4.2 Remedy Implementation

This section describes the implementation of the selected remedies specified in the OU1 ROD and the OU2 ROD.

OU1 ROD Remedy

Limited Source Control

The remedial design/remedial action activities were approved by EPA and performed by the PRPs. Residents and businesses were relocated and on-site residential and commercial structures were removed prior to capping. Cap construction was initiated in May 2000 and completed in July 2001. A passive landfill gas collection system was installed underneath the cap and a 6 foot high perimeter fence was installed around the southern portion of the landfill. A 3 foot high fence was installed around the northern perimeter of the landfill with openings which allow for public access. The northern portion of the landfill is open for passive recreation. Section 5.2 presents additional information regarding the passive landfill gas collection system and improvements.

Groundwater Monitoring

As part of the cap effectiveness monitoring program, groundwater sampling has been performed by the PRPs on a quarterly basis to assess the status of contaminants in the groundwater plume. Groundwater samples are collected for VOCs and metals analysis, and the results are submitted to EPA and the CT DEP for review.

Institutional Controls

A 6-foot high chain link fence encircles the southern portion of the landfill. Public access is not allowed on this part of the landfill. The northern portion of the Site has a 3-foot high fence with open access. The northern part of the landfill was designed for passive recreation. These protection measures do appear to be effective as there have been no reports of any significant compromises to the remedy.

The Town of Southington is in the process of finalizing institutional controls (ICs) on the northern portion of the landfill, for which it retains title, and the deed restrictions will be completed by the end of September 2010. EPA has successfully transferred title for the southern landfill property

to the State of Connecticut. Connecticut is expected to establish ICs on the southern part of the landfill prior to the next FYR. In the mean time, there is no public access to this part of the site.

OU2 ROD Remedy

A consent decree was lodged in July 2009 to implement the OU2 ROD remedy. Since then, the PRPs have developed and submitted a Limited Action Work Plan and the Project Operations Plan. The monitoring will confirm the continued protectiveness of the remedy. The monitoring results will also be used as the basis for determining if any engineering controls are necessary should land use change in the future.

4.3 Operations and Maintenance

There is an ongoing operations and maintenance (O&M) program instituted for the OU1remedy that includes landfill cover maintenance, cap effectiveness monitoring (groundwater monitoring and gas vent monitoring), and landfill inspection. An inspection plan was developed to ensure integrity of the cover system. Routine inspections of the Site include observing and recording the height of grass cover and areas of settlement and/or ponding. A security inspection that includes a fence perimeter inspection and a visual inspection of trespasser or disturbance activity is also conducted. The PRPs' contractor performs the cap effectiveness monitoring and inspections of the Site. The Town of Southington performs the soil cover maintenance on a routine basis (removal of debris and grass cutting). EPA conducts yearly inspections of the Site. Below is a table of estimated O& M costs.

Estimated Operation & Maintenance Costs for this FYR

Year	Approximate Yearly Cost	Approximate Total Cost
2010	$155,288	
2009	$152,588	
2008	$149,988	
2007	$147,348	
2006	$144,788	
		$750,000

5.0 PROGRESS SINCE LAST FIVE-YEAR REVIEW

Progress has been made at the Site since the last Five-Year Review and the activities are summarized in this section.

The existing Limited Source Control components of the remedy required by OU1 are functioning appropriately and are protective of human health and the environment. The landfill cap has effectively prevented dermal contact with residential landfill contaminants. Removal of commercial and residential structures in conjunction with the landfill cap construction has further supported overall protectiveness. Institutional controls are also functioning effectively. Final evaluations regarding landfill gas emissions and also the need for active gas treatment have been completed.

The long term protectiveness of the remedial action at the Site will continue to be verified through groundwater, surface water, sediment, and possibly fish tissue sampling, as well as air monitoring programs, as appropriate. These programs will address the downgradient groundwater plume, site-related gas emissions and possible impacts to surface waters which adjoin the site, including Black Pond.

5.1 Status of Recommendations from Previous Five-Year Review

The following recommendations were made in the first Five-Year Review:

- Continue long-term groundwater sampling and analysis in order to effectively monitor the cap effectiveness and ensure continuing human health and environmental protectiveness. Based upon the results of the ongoing groundwater investigation, additional monitoring wells may be required.

- In the northern portion of the landfill, high combustible gas levels indicative of high methane levels continue to be observed in certain landfill gas probes along the northern perimeter of the landfill cap. Available information previously compiled by the PRPs suggests that the methane may largely result from naturally occurring peat deposits existing both beneath certain portions of the landfill and certain adjoining residential areas. Nonetheless, it appears appropriate to further evaluate this issue along the

northern perimeter of the landfill cap to assess its long term implications and also to continue gas monitoring, as warranted.

- Continue to perform perimeter air monitoring and inspect the gas probes at the Site. The results are presented monthly and indicate percent lower explosive limit (LEL), VOCs, oxygen, and hydrogen sulfide (H_2S). The trend has been that the perimeter and storm water catch basin sampling results remain essentially at zero for the parameters sampled. The inspection and maintenance of the cap and surrounding areas are performed by the Town and are transmitted by the Town to EPA and CT DEP.

Table 5-1 also includes summaries of the issues noted in the previous Five-Year Review and the status of actions taken to resolve the issues.

Table 5-1
Status of Recommendations from Previous Five-Year Review
Old Southington Landfill Superfund Site
Southington, Connecticut

Issues from Previous Review	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
The landfill cap had not yet reduced the groundwater VOC Plume.	PRPs	2036	Continue long-term groundwater monitoring to assess cap effectiveness.	Ongoing
High combustible gas (% LEL) emissions were observed in some gas probes in the northern portion of the landfill. Changes in LEL/methane levels or distributions might impact protectiveness.	PRPs	2005/2006	A landfill gas tracer study was completed in 2009, which determined that the passive landfill gas vent system was ineffective. A vertical barrier was installed to prevent off-site migration of landfill gases, and repairs were made to the passive vent system to improve its efficiency.	Completed 2009 Completed 2009

Issues from Previous Review	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
Minor settlement occurred in a small area of the landfill but there were no cap integrity issues at the time.	PRPs	Summer 2005	Evaluated and resolved. Observations of the cap condition are included in the routine cap maintenance provided by the Town of Southington and during the routine monitoring rounds performed by LEA. EPA performs annual site inspections.	Summer 2005 Ongoing
Minor landfill maintenance issues noted during site inspection (i.e., rooted vegetation, gas probes, soil vapor monitors)	PRPs Town of Southington (current)	2005/2006	Removed rooted vegetation from Black Pond rip rap, assessed, and repaired landfill gas probes. The landfill cap maintenance is being performed on a routine basis by the Town of Southington.	2005/2006 Ongoing
The landfill abuts Black Pond, a CT DEP Class A surface water. Monitoring results indicated no impact on protectiveness.	PRPs	2010	This action is complete. The 2009 sampling indicated that contaminant concentrations in fish tissue were comparable to or less than previous results. No further monitoring of fish tissue is warranted unless there are changes to Site conditions that result in impacts to the Black Pond.	Performed October 2009 Completed.
1-4 dioxane was not monitored in groundwater. It was not anticipated to have an impact on protectiveness.	PRPs,	2010	Performed 1-4 dioxane analyses. 1-4 dioxane was detected at 45 µg/l which is lower than EPA's risk based regional screening level of 65 µg/l.	Performed Dec 2009 Ongoing

Note: The milestone date projected for item 1 above is based on the typical 30 year set in the Final OU2 ROD.

5.2 Progress Since the Last Five-Year Review

A summary of progress since the previous Five-Year Review is presented below:

Former Lori Corporation Parcel

In 2009, a hydrogeologic investigation was completed by a contractor for Kaba Corporation, the current owner of the parcel that is known as the Former Lori Corporation. The results indicated that because of the presence of a groundwater divide, contaminated groundwater is not migrating from the Old Southington Landfill to the Former Lori Corporation parcel. The divide prevents the northwesterly migration of groundwater from the Site. Therefore, VOCs detected in groundwater underlying the Former Lori Corporation is not attributable to the Site. No further action by the PRPs is anticipated by EPA for this parcel.

Landfill Gas Collection System Evaluation

A passive landfill gas collection system was installed at the landfill in conjunction with cap construction. The PRPs implemented a landfill gas sampling and analysis program pursuant to the O&M Plan. Gas probes were installed outside of the landfill perimeter to evaluate potential landfill gas migration beyond the perimeter of the landfill. Monthly reports are submitted to EPA and CT DEP.

Methane gas was consistently detected in the off-Site gas probes throughout the soil gas monitoring program. It was unclear whether the methane originated from the landfill or from the underlying peat deposits that exist underneath the landfill as well as off-Site in the northern residential area. As a result, EPA requested the PRPs to implement a landfill gas migration study. The PRPs also evaluated two gas vents in the northern portion of the landfill because of the vents' inadequate performance. Using a downhole camera, the inspection noted that a portion of the lateral vent piping and a portion of the screened section of GV-1 were submerged in groundwater, while GV-0 gas vent was improperly constructed. These problems were repaired.

Beginning in August 2009, the PRPs conducted the Gas Collection Verification Study using a helium gas tracer test to evaluate the effectiveness of the existing passive gas collection system. The conclusions of the study indicated that the passive gas vent system, as constructed, may be ineffective at preventing 100 percent of landfill gas migration beyond the limits of the landfill. A Gas Collection Verification Study was performed by injecting a tracer gas, helium, into the capped landfill and measuring for it outside of the cap area. A very small

amount of helium was detected. Helium is lighter than landfill gases and is more likely to migrate from the landfill than others. Thus this was a conservative test.

Landfill Gas Barrier Trench

As a result of the Gas Collection Verification Study, the PRPs installed a landfill gas barrier trench in December 2009, under EPA oversight. The landfill gas barrier trench consists of a vertical impermeable barrier composed of a 60-mil linear low density polyethylene (LLDPE) liner installed along the northern boundary of the landfill, approximately 556 feet long, extending from Black Pond following the fence line to GV-1, (see figure in back of Neighborhood Notice in Appendix D). The liner installation depth ranged from approximately 5 feet to 11 feet below ground surface and at least 1 foot below the groundwater table. The barrier's goal is to limit horizontal gas migration while minimizing any disruption to the existing landfill cap. Polyethylene liners are commonly used in synthetic landfill cap systems to limit or control vertical gas migration. Landfill gas levels will continue to be monitored and recorded as part of the landfill inspection and monitoring program. Installation of the vertical landfill gas barrier prevents the migration of landfill gases beyond the landfill cap, thereby complying with the OU1 ROD goals and with regulatory requirements.

Landfill Gas Migration Evaluation for the Southern Boundary of the Capped Area

Because the helium tracer test indicated that the passive gas vent system may not be effectively preventing off-site landfill gas migration on the north, EPA requested that the PRPs perform an evaluation for the potential for off-site landfill gas migration along the southern boundary of the capped area. The evaluation compared three rounds of gas vent data (collected in 2001 and 2002) and compared these to the RSR VCs, which indicated that the landfill gas concentrations were below the RSR VCs. In addition, using data developed from the helium gas tracer test, potential soil gas concentrations were calculated. The results indicated that even if all landfill gases evaded the passive gas collection system, all gases would diminish to below the CT RSR VCs within 40 feet of the cap boundary. Therefore, no further action is required for the passive gas vent system along the Site's southern boundary.

Discontinuation of Selected Gas Probes Monitoring

Since 2000, the PRPs have installed three series of gas probes (GP-, PMP-, and NP-) outside of the cap perimeter to monitor potential landfill gas migration beyond the passive gas collection

system. Gas probe monitoring was initiated in 2002 and has been ongoing. Review of the accumulated monthly data in 2008 by EPA indicated that a number of the gas probes were no longer functioning properly due to failures in the well seals. Many of these probes were sitting in the water table and were no longer functioning. These gas probes provided inaccurate landfill gas measurements. In December 2009, EPA approved the discontinuation of the monitoring of the PMP- and NP-series of gas probes. Monitoring of the GP-series is ongoing.

Vapor Intrusion

In July 2009, the second Consent Decree (CD) was signed. Following the signing of the second CD, the LA Work Plan was submitted by the PRPs. The LA Work Plan (2010), pending EPA approval, describes the technical approach for meeting the Performance Standards set forth in Section IV of the 2009 CD to provide additional information in support of the remedy. The Performance Standards require the following activities:

- Vapor Intrusion Monitoring Plan (VIMP) and Monitoring: This program will include the installation of additional groundwater monitoring wells at properties located downgradient of the landfill (the Chuck & Eddy Salvage Yard Property and the Radio Station Property). The wells will be monitored for four consecutive quarters.

- Highland Hills Groundwater Investigation: A groundwater investigation in the area of the Highland Hills Subdivision was completed in August 2010 to assess the potential for vapor intrusion. The results showed that there is no risk due to vapor intrusion and thus no further action is necessary in this area.

- Soil vapor sampling beneath the Radio Station property.

- GA Boundary Survey: A hydrogeologic study will be performed in accordance with the 2009 CD to confirm that contaminated groundwater cannot migrate to and impact the GA Groundwater Classification Area located southwest of the Site. The hydrogeologic study shall include the study of groundwater flow paths and bedrock elevations.

- Institutional Controls Plan: Institutional controls will be implemented in the form of ELURs to prevent the use and/or construction of a residential, commercial, and/or

industrial building where shallow groundwater exceeds the applicable Volatilization Criteria (VC) of the CT RSRs unless the EPA and the Commissioner of the CT DEP grant a release from such ICs/ELURs. These institutional controls will be defined for the Chuck & Eddy's Salvage Yard and the Radio Station properties, or portions of such properties, as well as for any other properties or portions of properties as appropriate. Any such ELUR areas shall be identified as the Institutional Control Zone. Institutional controls in effect will require a monitoring program.

6.0 FIVE-YEAR REVIEW PROCESS

This section provides a summary of the Five-Year Review process and the actions taken to complete the review.

6.1 Administrative Components

EPA, the lead agency for this Five-Year Review, notified the CT DEP and the PRPs in 2009 that the Five-Year Review would be completed. EPA Remedial Project Manager is Almerinda Silva and the CT DEP Project Manager is Mr. Gennady Shteynberg. The review was conducted between September 2009 and September 2010. The scope of work included the following activities:

- document reviews
- standards (ARAR) review
- site interviews
- site inspection/technology review

6.2 Community Notification and Involvement

EPA Region 1 published a notice in both the Meriden Record Journal (daily newspaper) and in the Southington Citizen (weekly publication) on March 5, 2010 notifying the community of the initiation of the FYR process. The notice indicated that EPA would be conducting a FYR of the Site to ensure that the Site is protective of public health and the environment and that the implemented components of the remedy are functioning as designed. It was also indicated that once the FYR is completed, the results will be made available in a final report. A similar notice will be published when the review is completed.

In addition, the large newspaper display ad encouraged local citizens to contact EPA if they had any questions about the Site or if they wanted to be interviewed as part of the FYR process. No citizens contacted EPA to be interviewed. Interviews were conducted with the Southington Town Manager and the Southington Director of Public Works / Town Engineer in April, 2010. Additional Informal interviews with residents in the immediate vicinity of the landfill were conducted by the EPA Community Involvement Coordinator (CIC) during distribution of neighborhood notices related to sampling and construction activities in the second half of 2009. Flyers were distributed door-to-door in August, October, and December 2009 and the CIC discussed the Site work and the FYR with approximately 10 residents.

The December 2009 neighborhood information flyer that was distributed door-to-door in the vicinity of the landfill specifically noted activities related to the FYR.

A public meeting pertaining to the progress and upcoming activities for the Site was held on June 8, 2010. The meeting included an agenda item on the FRY: "Overview of Second Site Five Year Review (September 2010): Purpose is to look at all remedial and monitoring components to make sure the remedy is working effectively and continuing to protect human health and the environment." An announcement of the meeting which noted the FYR agenda item was sent to approximately 200 homes and businesses in the vicinity of the landfill.

The FYR report will be provided to the Town and a press release will be issued to announce its availability. Copies of the community notification materials are included in Appendix D.

6.3 Document Review

This Five-Year Review consisted of a review of the documents listed below:

- Consent Decree (September 1988)
- Remedial Action Completion Report (September, 1994)
- Semi-Annual Long-Term Monitoring Program Work Plan – Revision 2 (2000)
- Vent Sampling Monitoring Program Reports (2001-2002)
- Record of Decision, OU1 (September, 2004)
- First Five-Year Review (September 2005)

- Supplemental Remedial Investigation (May 2006)
- Combustible Gas Report (May 2006)
- Risk Assessment-Gas Vent VOC Data (June 2006)
- Nobis Review of PSDs' Groundwater Data From Long-Term Monitoring Program from December 2005 to December 2009 (December 2009)
- Record of Decision Summary, OU2 (September 2006)
- Nobis Review of Monthly Air Monitoring Reports (2007-2008)
- PSD's Landfill Gas Migration Presentation and Supporting Information (January 2008)
- Nobis Trip Reports (December 2008 through October 2009)
- Remedial Design/Remedial Action (RD/RA) SOW (April 2009)
- Landfill Inspection Reports and Vapor Monitoring Reports (through April 2010)
- Cap Effectiveness Monitoring Program Data Report, Operations & Maintenance Plan (through December 2009)
- Second Consent Decree (July 2009)
- Gas Collection Verification Study Report and Injection Well and Soil Gas Installation Points (September 2009)
- Gas Collection Verification Study Report, Injection Well and Soil Gas Point Installation (October 2009)
- Approval of Discontinuation of PMP and NP series gas probe monitoring along Rejean Road (December 2009)
- Landfill Gas Barrier Trench Installation Report (January 2010)
- Black Pond Fish Tissue Sampling Report (April 2010)
- Evaluation of Potential for Vapor Intrusion at the Radio Station Property (November 2006)
- CT DEP Remediation Standard Regulations (RSRs) (April 2010)
- LA WP (WP) (April 2010)

Complete references are included in Appendix A.

6.4 Data Review

A summary of relevant data regarding the components of the Site remedy is presented below. The results of these sampling events are summarized below by media.

6.4.1 Groundwater

The SRI or the 2006 RI was completed in 2006 pursuant to the June 1998 CD. The SRI developed data that provides a refined conceptual model that expanded upon the original 1993 RI/FS. The primary source of the groundwater plume is the waste mass in the southern portion of the Site. That waste mass is present both above, and to a lesser extent below, the water table. Contaminants are transported by groundwater as a narrow plume in the lower portion of the aquifer immediately downgradient of the Site and remain in the lower portion of the aquifer, with ultimate discharge into the Quinnipiac River Basin west-northwest of the Site. This refined conceptual model also demonstrated that non-VOC contaminants from the Site are not present in downgradient groundwater at concentrations greater than applicable regulatory criteria. Site-related contaminants in groundwater downgradient of the Site do not adversely impact other environmental media. It was verified that groundwater downgradient of the Site is not used as a potable water supply. The entire area potentially affected by the VOC plume is serviced by public water supply. Installation of private drinking water wells are prohibited through a Town Ordinance.

An ongoing monitoring program evaluates groundwater conditions at the Site and surrounding areas. Quarterly low-flow groundwater sampling is conducted by the PRPs from six well clusters: G302(A,B,C), G303(A,B,C), G304(A,B,C), G111(A,B,C), G312(A,B,C), G313(A,C), GZ-1, GZ-3, GZ-5(S,M) and GZ-17(M,D). Samples are analyzed for Target Compound List (TCL) VOCs, and Target Analyte List (TAL) metals using CLP protocols (USEPA CLP SOW for Organics Analysis, Multi-Media, Multi-Concentration, SOM01.2 and for Inorganics Analysis, ILM05.4).

Beginning in September 2000, an increasing trend in TCE, cis-1,2-DCE, and vinyl chloride concentrations was observed in groundwater samples from monitoring well G302A (located approximately 175 feet south of the radio station). The presence of these compounds was considered to be the result of disturbance of materials at SSDA 1 during relocation of those wastes to the lined cell. These compounds had been historically absent from this well prior to May 2000.

After the March 2001 round, these compounds decreased in concentrations. Vinyl chloride, cis—1,2-DCE and TCE were not detected in the G302A sample during the December 2009

monitoring event. 1,4-Dioxane was detected in the groundwater sample from monitoring well G302A during the December 2009 monitoring event for the first time since the initiation of the cap-effectiveness monitoring program at a concentration of 45 micrograms per liter (µg/L).

As stated in previous reports, relatively elevated concentrations of cis-1,2-DCE and TCE were detected in groundwater samples from monitoring well GZ-5M (located approximately 425 feet south-southeast of G302 and approximately 50 feet south of Chuck and Eddy's) during the sampling round of December 2007. Concentrations of both compounds in groundwater generally decreased in subsequent monitoring events (i.e. March 2008 through June 2009). Concentrations of cis-1,2-DCE and TCE in groundwater increased in September 2009 to similar concentrations as detected in December 2007. Concentrations of both cis-1,2-DCE and TCE decreased during the December 2009 monitoring event. TCE was detected at a concentration of 130 µg/L and cis-1,2-DCE was detected at a concentration of 190 µg/L and 180 µg/L (duplicate sample).

During the sampling round of September 2009, ethylbenzene and total xylenes were detected in groundwater samples from monitoring wells G303B and G303C (cluster wells located approximately 200 feet south of G302) for the first time after the initiation of the cap effectiveness monitoring program at maximum concentrations of 2.4 µg/L. Ethylbenzene and total xylenes were not detected in groundwater samples taken from monitoring wells G303B and G303C during the sampling round of December 2009. VOC concentrations in the groundwater in other monitoring wells sampled for cap effectiveness are generally consistent with previous groundwater data.

Metals concentrations in ground water are also included in the cap effectiveness monitoring program. The occurrence of various heavy metals at isolated monitoring wells does not indicate a pattern of heavy metals migration from the landfill. Unlike VOCs, which are distributed in a typical plume pattern, heavy metals appear randomly throughout the Study Area. Furthermore, heavy metals have not been detected at concentrations that could pose a toxicity risk to the environment, except at discrete intervals at isolated monitoring well locations.

Because VOC concentrations remain relatively unchanged in the monitoring wells, these results indicate that the waste underlying the landfill cap continue to leach into and migrate with groundwater. Because there are wastes located below the water table, they will be continuing

sources of groundwater contaminants until the majority of the chemicals are leached from the wastes, which may take a prolonged period of time.

6.4.2 Landfill Gas

Several studies have been completed at the Site to evaluate the emission of landfill gases from the vents of the passive landfill gas collection system to ambient air, to evaluate the potential for lateral migration of the gases through the subsurface, and to evaluate the effectiveness of the passive gas vent system.

Gas Vent Evaluation

A gas vent monitoring program was completed to assess landfill gas emissions at selected gas vents. The data were used to prepare the Risk Assessment of Gas Vent VOC Data (Kleinfelder, 2006), which concluded that predicted potential risks associated with the landfill gas vents at the Site were less than the 10^{-8} range, using the ISCST3 model with very conservative data. This data is two to four orders of magnitude below the EPA accepted risk range of 10^{-4} to 10^{-6}. Therefore, emissions from the gas vents do not represent a potential health threat.

Landfill Gas Monitoring

Air Monitoring and Inspection of the GP-series gas probes are performed monthly as part of the O&M requirements. The gas probes (GP) are measured for percent LEL, VOCs, oxygen, H_2S, measured depth to water, pressure from the vent (inches of mercury), and barometric pressure. The landfill perimeter and storm water catch basins are measured for LEL, VOCs, and barometric pressure.

Review of the most recent data indicates an ongoing issue with gas probes GP-1, GP-5, and GP-6; there have been repeated observations of water in the probes. Further evaluation is warranted to determine if these GP gas probes are still necessary and/or can be fixed. Measured oxygen levels were relatively high, indicating possible breach of the gas probe seals or possibly due to the manner in which the gas samples were collected. Sampling results for the perimeter and storm water catch basins remained essentially at zero for the LEL and VOCs, which indicates that there are no fugitive emissions, and that the gases are not migrating out from the landfill through the catch basins.

On August 20, 2009, gas probes GP-2 and GP-3 were replaced by GP-2R and GP-3R, and resurveyed; the two probes were included in the Gas Collection Verification Study.

Gas Collection Verification Study

The Gas Collection Verification Study was performed in August 2009 by the PRPs to assess the effectiveness of the existing passive gas collection system located beneath the landfill. Four temporary, two permanent soil gas monitoring probes, and one gas injection probe were installed. A tracer test using helium was conducted. A leak test was performed at each of the soil gas points using helium. The first baseline monitoring began on August 31, 2009 and was immediately followed by the first lateral gas migration study that began on September 3, 2009. The second baseline monitoring period began on September 15, 2009 followed by the second lateral gas migration study.

The test results concluded that small amounts of helium were migrating off-Site. Helium is lighter than most landfill gases and can more easily travel. The PRPs installed a gas barrier trench, which is discussed in Section 5.2 of this Five-Year Review.

6.4.3 Fish Study

In October 1992, before the cap was constructed at the landfill, CT DPH conducted fish tissue sampling from Black Pond. The results indicated that the fish were clean. In October 2009, at the request of the EPA and CT DEP, the PRPs conducted a fish study from Black Pond to ensure that contaminant concentrations had not increased since 1992 due to the installation of the cap. The 2009 results were compared to the previous sampling event performed by the CT DPH. Only two of the five target species (Largemouth Bass and Catfish) were collected during the one-day sampling event which utilized several fishing techniques. The other three target species (Smallmouth Bass, Yellow Perch, and White Sucker) were not found during the sampling event and it is unlikely that additional rounds of sampling would produce better results.

Representative samples were submitted to an analytical laboratory for sample preparation and analysis. The sample preparation method deviated from the EPA-approved SOW, as the whole-body fish were composited and homogenized instead of only homogenizing the fillet, as was reportedly conducted by the CT DPH in 1992. Therefore, the 2009 results are most likely higher than actual concentrations from fillet only samples because the skin, target organs, and bones

can also accumulate contaminants. The results of the fish tissue sampling indicate that concentrations of all constituents in both species sampled are generally within one order of magnitude of the 1992 results. Chromium concentrations in the composite Catfish samples slightly exceed the order-of-magnitude threshold identified in the SOW. The following was taken into consideration:

- The intent of the study was to confirm that concentrations of constituents in fish tissue had not substantially increased due to cap installation;

- The 2009 whole-body fish sample concentrations are most likely higher than actual concentrations in the fillet only, thus providing a more conservative analysis;

- The substantial data collected at the Site to date do not support a conceptual site model of increasing concentrations of contaminants in fish tissue over time due to landfill-cap construction; and

- The concentrations of chromium detected in the composite fish tissue sample are also below conservative, published criteria (e.g., the EPA Region III RSL Fish Table criteria, the FDA and EPA Safety Levels, and the Dyer Fish Residue Toxic Screening Levels).

In many cases, the safety levels represent the point at or above which the agency will take legal action to remove products from the market. The 2009 fish tissue results are below the FDA and EPA Safety Level for chromium safety level for consumption of oysters, mussels, and clams (13 parts per million [ppm]). It should be noted that the FDA and EPA Safety Levels only list a specific chromium level for shellfish.

Therefore, because there does not appear to be any substantial change (greater than one order of magnitude) in chemical concentration in the fish tissue, no additional sampling or assessments are warranted, unless change occur at the Site that may release more contaminants into Black Pond.

6.5 Site Inspection

A site inspection was conducted on April 27, 2010. Participants included representatives of EPA, Nobis, and Loureiro Engineering Associates, Inc. (LEA), on behalf of the PRPs. The purpose of the inspection was to help assess the protectiveness of the remedy by observing the condition of the Site fence, the soil cover, the monitoring wells, Black Pond, and the restoration work that was in progress within the Site boundary after the installation of the landfill gas barrier trench.

The cap effectiveness monitoring is performed by LEA personnel. LEA participated in the inspection and responded to questions regarding the O&M activities at the Site. A completed Site Inspection Checklist Form is included as Appendix C.

LEA provided examples of the routine inspection logs for the Site; these are completed on a routine basis and submitted to EPA. The grounds were in good condition and documentation of O&M activities was in good order. On the north side of the Site a chain-link fence surrounding each gas vent (GV) location. The fences and locked gates appeared in good condition.

Also inspected was the restoration work which was in progress at the north end of the Site. LEA was landscaping the landfill gas barrier trench excavation area, hydro-seeding, replanting trees and bushes, and replacing a small section of the sidewalk. Photographs were taken to document the progress. The silt fences remained in place until the seeds can develop shoot systems to control any erosion and/or run off.

6.6 Interviews

Interviews of PRP representatives, local and State officials, and property owners adjacent to the Site were conducted. The objective of the interviews was primarily to obtain general information and to update current understanding of activities at the Site. Summaries of the interviews regarding this second Five-Year Review are included in Appendix D.

Three in-person interviews were conducted by Nobis and EPA on April 27, 2010 with Mr. David Fiereck (LEA, Project Manager), Mr. John Weichsel (Southington Town Manager), and Mr. Anthony Traquillo (Southington Town Engineer and Director of Public Works). Several informal in-person interviews were conducted by the EPA Community Involvement Coordinator at

residences in the immediate surroundings of the Site along Rejean Road and Amanda Lane. No interviewee expressed any major concerns regarding the Site and the effectiveness of the remedy, and in general, all were pleased with the level of communication from the EPA and PRPs concerning activities at the Site. Residents were particularly pleased that EPA had distributed neighborhood information notices on 3 occasions in August, October, and December prior to initiating very visible investigation and construction activities on the landfill.

The Town Manager stated that the Site appears to be in pretty good shape, but he is unsure of the practical effect. Positive comments have been made about the "park-like appearance" of the Site by passersby. He also stated that the nearby residences have become less nervous about the presence of the landfill, and he feels that the Town, as a whole, is well informed about events/work at the Site. The Town Engineer views the work at the Site to be very well done and professional, he is kept up to date with the routine reports. He feels confident about the staff/inspectors that the town sends out to the Site on the routine visits. No additional concerns or major issues were raised during these interviews.

Nobis conducted an interview on July 29, 2010 with Mr. Gennady Shteynberg, CT DEP Project Manager. Mr. Shteynberg was provided the questionnaire to review prior to the interview. He indicated that the project is under very good oversight from the EPA team and its contractor (Nobis), and there is a good working relationship with the PRP contractor (LEA). The Site has a long and complex history of investigations and remediation, but overall is in a good shape based on the ongoing monitoring data and appearance. The surrounding community is informed regarding the status of operations and the general condition of the Site. The recent, June 8, 2010, Public Information Meeting was attended by just two residents, even though the event was highly publicized. He feels that the remedy is generally functioning as expected and that information related to the Site is readily available.

Mr. Shteynberg and Mr. Jeffery Loureiro, LEA Principal, met for a Site Inspection/interview on June 8, 2010. The landfill cover, the gas collection system, and the lined cell are all in good condition and functioning as designed, therefore accomplishing the goals of the remedy. The passive gas collection system has been evaluated and with the inclusion of the vertical landfill gas barrier, the landfill gas migration in the subsurface has been addressed. No other issues or concerns were expressed.

7.0 TECHNICAL ASSESSMENT

This section provides a technical assessment of the remedy implemented at the Site, as outlined in the Comprehensive Five-Year Review Guidance (EPA, 2001). The remedy has been evaluated based on its function in accordance with decision documents, its adherence to valid risk data and scenarios, as well as any other information that could have affected the remedy's protectiveness.

7.1 Question A: Is the Remedy Functioning as Intended by the Decision Documents?

Yes. The review of documents, ARARs, and risk assumptions indicates that the remedy was constructed in accordance with the OU1 ROD and continues to be protective of human health and the environment because groundwater is not used currently as a potable water supply. Public water is available throughout the area that is impacted by the Site's groundwater plume. LEA (PRP contractor) is responsible for the O&M activities at the Site, such as the performance of the cap effectiveness monitoring and inspections, including the groundwater monitoring and gas probe monitoring. The Town of Southington ensures the integrity of the grass/soil cover through routine inspections and maintenance of the cap.

This Record of Decision for OU2 addresses, through long-term monitoring and Five-Year Reviews, the low level threat presented by vapor intrusion by the use of engineering controls/subslab systems and institutional controls to prevent exposure to contamination that presents an unacceptable risk to human health and the environment. Engineering controls and subslab systems will only be installed in the future if CT RSRs are tripped and/or if new buildings are constructed on properties of concern. Further, in August 2010 testing was performed at the Highland Hills neighborhood and the results confirmed that there is no vapor intrusion risk to this neighborhood and thus no further action is necessary in this area.

The testing program for the Highland Hills area was developed through a series of meetings between EPA, CTDEP and the PRPs during 2006 ROD Consent Decree negotiations. As described above under the 2006 RI, the plume emanating from the landfill descends through the aquifer within a short distance of the landfill edge. Thus, the majority of contamination away from the landfill is located at depth. The Highland Hills subdivision is approximately 900 feet downgradient of the landfill. Houses were constructed after completion of the RI and

Supplemental Groundwater Investigation so there are no groundwater monitoring wells within the subdivision. To confirm that any groundwater contamination that far from the landfill edge would be at depths greater than 15 feet and not pose a vapor intrusion risk, groundwater samples were collected sequentially in discrete vertical intervals and analyzed for compliance with CTDEP Volatilization Criterion in the RSRs (22a-133k-3). Groundwater samples from two consecutive one – foot intervals and subsequently every five feet down to 60 feet were collected and analyzed. There were no exceedances of any of the volatilization criteria in the upper 30 feet of the aquifer. These results confirm the conceptual site model that there is no vapor intrusion pathway in groundwater below the Highland Hills subdivision and therefore no vapor intrusion risk. If engineering controls are necessary in the future, the PRPs will be responsible for them.

7.2 Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives Used at the Time of the Remedy Selection Still Valid?

Yes. The exposure assumptions and toxicity data used at the time of the 1994 and 2006 remedy selections are still valid. Toxicity values, exposure assumptions, exposure pathways to be considered, and methods of evaluating risk have changed since the time of the 1994 remedy selection but there is no impact on protectiveness of remedy; further, installation of the cap has eliminated the pathways addressed by the OU1 ROD.

Potential volatilization of groundwater contaminants into indoor air was recognized as the greatest component of risk remaining after the implementation of the OU1 ROD. The OU2 ROD established CT RSRs Volatilization Criteria as ARARs for determining locations where building ventilation systems may be needed in existing or new buildings. The Remedial Action Objectives used at the time of the remedy selections are still valid.

Changes in Standards or To-Be-Considered (TBCs)

OU1 ROD

The overall list of ARARs for the Old Southington Site is designated on pages 37-39 of the OU1 ROD. EPA and the CTDEP have agreed that significant ARARs for this Site include the CT RSRs (CTDEP, 1996). The list of ARARs also encompasses certain other Connecticut statutory

and regulatory programs. As the partial remedy that was implemented during this review period was designed to provide source control through capping, the quantitative risk-based screening values and standards contained in the CT RSRs did not impact the capping system design or construction. However, the CT RSRs define the framework and specific exposure pathways relative to which groundwater protection must be demonstrated. The CT RSRs, through various criteria, explicitly consider the potential for groundwater relative to its use for drinking, direct contact during non-consumptive use, as a source of volatiles that may migrate into indoor air and be inhaled, and as a potential contributor of to surface water bodies. The groundwater criteria (screening levels and standards) were used in the design of the ongoing groundwater studies and to evaluate the analytical results being obtained.

Most of the components of the interim remedial action for limited source control, including removal of residential and commercial structures, construction of the cap, and installation of a gas collection system, and institutional controls, were performed in compliance with the above ARARs and TBCs cited in the OU1 ROD. These components were completed prior to the 2005 Five-Year Review.

CT Water Quality Standards (CT WQSs) have not been updated and remain applicable for evaluating long-term monitoring of groundwater and surface water. Because groundwater at the Site and downgradient of the Site is currently classified as GB (not suitable for human consumption), the current CT WQSs sets no chemical-specific groundwater criteria and, instead, relies on the CT RSRs for protection and compliance. The CT WQSs for surface water were last updated in 2002; standards include aquatic life criteria (salt water and fresh water) and human health criteria (water and organism consumption or organism only consumption).

OU2 ROD

The federal and state ARARs and TBCs for OU2 ROD are presented in Appendix D of the OU2 ROD and include:

- EPA Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (2002).
- CT DEP RSRs – RCSA 22a-133k 1-3.
- Proposed Revisions to CT DEP RSRs Volatilization Criteria – RCSA 22a-133k 1-3.
- National Pollutant Discharge Elimination system 40 CFR 122, 125.

- RCRA Standards for Hazardous Waste Generators 40 CFR 262.
- CT DEP Air Pollution Control Regulations – Control of organic emissions RCSA 22a-174-20.
- CT Environmental Land Use Restrictions RSCA 22a-133q-1.
- CT Guidelines for Soil Erosion and Sediment Control (2002).
- CT Control of Noise Regulations RCSA 22a-69-1 to 69-7.4.

The OU2 ROD identifies the following federal and state laws, regulations, and guidance (ARARs/TBCs) for addressing impacts via the vapor intrusion pathway:

- CT DEP Hazardous Waste Management Regulations RCSA 22-449(c)-100 – 110.
- CT DEP Environmental Land Use Restrictions RSCA 22a-133q-1.
- CT DEP Remediation Standards Regulations (RSRs) – RCSA 22a-133k 3(c).
- RCRA Groundwater Monitoring 40 CFR Part 264 Subpart F.
- RCRA Standards for Hazardous Waste Generators 40 CFR Part 262.
- EPA Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (2002).
- CT Site Characterization Guidance (September 2007)

Several new guidance documents have been issued by the State of Connecticut and should be considered as TBCs including: the Site Characterization Guidance (September 2007), Engineered Control Guidance Document (February 2009) and ELURs Guidance Document (November 2009). No other new ARARs or TBCs have been identified.

All work performed to support the OU2 ROD will comply or will be consistent with the ARARs and TBCs listed above.

Changes in Exposure Pathways

The human health exposure pathways considered in the human health risk assessment (ESE, 1993) performed during the RI included: (1) ingestion of groundwater as drinking water; (2) dermal contact and incidental ingestion of surface soils; (3) inhalation of indoor and outdoor air modeled from VOCs in surface soils; and (4) dermal contact and ingestion of surface water and sediment while swimming or wading in Black Pond and off-site wetlands. Following gas vent

sampling in 2002, a risk assessment was performed to evaluate nearby residential and On-Site worker risks from inhalation of VOC emissions from the gas vent system for the cap on the landfill (Kleinfelder, 2006b).

The presumptive remedy approach for capping was used at this Site. In addition, groundwater downgradient of the Site is classified as GB by the State of Connecticut and is no longer used as a drinking water source eliminating potential exposure through drinking water and household water use. Thus, several potential exposure pathways were not evaluated in the 1993 HHRA including dermal and inhalation exposures during household water use, dermal contact, incidental ingestion of subsurface soils, and inhalation of groundwater VOCs, which may volatilize into indoor air spaces. The selected source control remedy removed all residential and commercial structures from the Site, re-located all affected residents and businesses, and constructed a landfill cap, removing those potential exposures.

The OU2 ROD selected a remedy to address remaining risks from vapor intrusion into buildings. The risk assessment looked at the inhalation of groundwater VOCs, which may volatilize into indoor air spaces. A semi-qualitative evaluation was done where it compared the shallow groundwater monitoring data to EPA vapor intrusion guidance screening levels (EPA, 2002) and to the proposed CT RSR volatilization criteria (CT DEP, 2003) in the May 2006 Supplemental RI report (Kleinfelder, 2006a).

The construction of the landfill cap and installation of a landfill gas vent system, introduced the potential for inhalation of VOCs emitted from the gas vents at locations on-Site (workers) and down-wind from the landfill (residents). This pathway was evaluated in the 2006 risk assessment (Kleinfelder, 2006b).

The ecological risk assessment performed during the RI included a delineation of wetlands, a qualitative animal survey, and an ecological hazard assessment. Potential ecological effects to the aquatic system were evaluated by comparison of surface water data to NRWQC and sediment data to sediment benchmarks. It was concluded that potential risks to animals are generally low and that the landfill cap has eliminated potential ecological receptor contact with soils. The cap has also eliminated impacts to surface water and sediment. No additional ecological pathways have been identified. The 2009 fish tissue study determined that chemical concentrations observed in 2009 were not substantially different from those observed in 1992,

prior to the construction of the cap. Therefore, implementation of the source control remedy has not resulted in an adverse impact to fish living in Black Pond.

Changes in Toxicity and Other Contaminant Characteristics

Since the time of the original HHRA performed as part of the RI, EPA has re-examined and updated toxicity factors for some of the contaminants evaluated; however, because each of the pathways evaluated in the original HHRA are no longer complete, changes in toxicity values do not impact the OU1 ROD source control remedy.

The 2006 SRI (Kleinfelder, 2006a) evaluated residential inhalation of groundwater VOCs that may volatilize into indoor air spaces through comparison of shallow groundwater monitoring data to EPA vapor intrusion guidance screening levels (EPA, 2002) and proposed CT RSR volatilization criteria (CT DEP, 2003). The CT RSR volatilization criteria and EPA vapor intrusion guidance criteria have not changed since the 2006 Supplemental RI and ROD; however, the toxicity factors on which these criteria are based have changed for some of the VOCs. These changes in toxicity factors may impact the 2006 remedy which relies on exceedances of the CT RSR volatilization criteria to determine locations where institutional controls or ventilation systems are needed. The PRPs are required to follow the CT RSRs and use the more stringent information (actual or proposed).

Changes in Risk Assessment Methods

Since the HHRA and the OU1 ROD, changes have occurred in the methods used to calculate risks from exposures to soil, surface water, sediment, groundwater, and ambient air. Methods for evaluating the vapor intrusion pathway have been introduced (EPA, 2002). Recommendations for dermal permeability factors and revised guidance on dermal exposure evaluations have changed (EPA RAGS E, 2004). Guidance recommending the use of inhalation unit risk factors and reference concentrations in conjunction with average daily concentration estimates rather than average daily dose estimates for evaluating inhalation exposures has been published (EPA RAGS F, 2009). Because each of the pathways evaluated in the original HHRA are no longer complete, changes in risk assessment methods does not impact the 1994 source control remedy.

The 2006 risk assessment evaluated inhalation pathways utilizing the EPA vapor intrusion guidance (EPA, 2002) and inhalation unit risk factors as recommended in RAGS part F (EPA RAGS F, 2009). No additional changes in methodology for evaluating the inhalation pathway have occurred since 2006.

New Contaminants and/or Contaminant Sources

No new contaminant sources have been identified since startup of the remedy. However in December 2009, 1,4-dioxane was detected for the first time since the initiation of the cap effectiveness monitoring program, in G302A at a concentration of 45 µg/L, which is below the EPA's risk-based Regional Screening Level of 61 µg/L, if groundwater were to be used for tap water. Due to the low concentration and infrequent detection, the 1,4-dioxane does not represent a potential health hazard. However, it is recommended that monitoring be continued for this VOC.

Expected Progress Towards Meeting RAOs

The OU1 ROD and OU2 ROD RAOs were presented in Section 4.1 of this Five-Year Review.

The implementation of the interim source control remedy has effectively addressed most of the OU1 ROD RAOs. Capping and installation of the vertical gas barrier trench addressed potential human contact and uncontrolled landfill gas migration. Construction of the cap has not affected surface water and wetlands. However, capping has not achieved the minimization of landfill contaminants on groundwater quality data that indicated contaminant concentration in a number of downgradient monitoring wells which remain relatively unchanged. It is expected that the cap has reduced or minimized infiltration entering into the capped wastes, but the portion of the wastes present below the water table will continually leach contaminants. In general, the Site has been in compliance with federal and state ARARs. The landfill cap has reduced the release of contaminants from the landfill to groundwater, surface water, sediments, and air.

The PRPs are initiating the activities needed to achieve the OU2 ROD RAOs, which will be evaluated in the next Five-Year Review.

7.3 Question C: Has Any Other Information Come To Light That Could Call Into Question the Protectiveness of the Remedy?

No. There is no other information that calls into question the protectiveness of the remedy.

7.4 Technical Assessment Summary

Based on the data reviewed, the site inspection, and the interviews, the remedy is functioning as intended in the OU1 ROD. There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. Repairs to the gas vent system and the installation of a vertical gas barrier will protect the residents along Rejean Road from potential exposure to landfill gases.

Installation of the cap has prevented short and long term contact with landfill waste. With respect to the groundwater plume, the OU1 ROD (Section XI – Statutory Determinations) indicated that, over the long term, a significant improvement in groundwater quality was anticipated from the installation of the landfill cap which could cause a reduction in the amount of rainwater infiltrating through the contaminated waste materials residing above the water table. This was anticipated because approximately two thirds of the waste below the cap would remain above the water table and thus a reduction in contaminant release to the aquifer. To date, relatively little improvement in the downgradient chlorinated VOCs plume has been observed since the cap installation. This is likely due to the fact the one third of the waste will always remain in the water table and thus will continue to release contamination into the aquifer. Longer term, the available data suggests that the groundwater plume from the Site will continue to migrate westward for a protracted period of time. This, in turn, is likely to lengthen the time frames over which monitoring, institutional controls and/or active remediation may be required at the Site in order to ensure protectiveness. Currently, this issue does not directly impact the protectiveness of the remedy since the downgradient aquifer has been reclassified as Class GB (non-potable) by CT DEP. Institutional controls have been implemented on the northern portion of the landfill by the Town of Southington and it is expected that CT DEP will have finalized the implementation of ICs in the southern part of the landfill prior to the next FYR, 2015. The southern portion of the landfill is fenced and thus there is no public access to this part of the landfill.

With respect to OU2, the remedy is protective and operating as intended. There is currently no risk to human health at the Chuck & Eddy or Radio Station buildings. Through the long-term monitoring program, engineering controls will be implemented on an as need basis. The PRPs have initiated the implementation of ICs at these two properties and it is expected that ICs will be in place prior to the next five year review date. In August 2010 testing was performed at the Highland Hills neighborhood and the results confirmed that there is no vapor intrusion risk to this neighborhood and thus no further action is necessary in this area.

8.0 ISSUES

This section provides a summary of the issues identified during this second Five-Year Review. Recommendations and follow-up actions are presented in Section 9.0.

Table 8-1
Issues
Old Southington Landfill Superfund Site
Southington, Connecticut

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Capping has not diminished groundwater contaminant concentrations downgradient of the Site.	N	Y
While a portion of the aquifer downgradient of the Site has been designated as GB, it is uncertain whether the contaminated groundwater plume migrating westward may be encroaching into the GA aquifer.	N	Y
Vapor intrusion from VOCs in the groundwater plume pose potential future health risks to parcels situated in the downgradient plume.	N	Y
Institutional Controls are not yet in place for parcels that may be affected by vapor intrusion in the future. Institutional Controls are required to provide long-term protectiveness.	N	Y

9.0 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

The following is a summary of recommendations and follow-up actions that are proposed for the Site.

Table 9-1
Recommendations and Follow-Up Actions
Old Southington Landfill Superfund Site
Southington, Connecticut

Issue	Recommendations/ Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
Capping has not diminished groundwater contaminant concentrations downgradient of the Site.	Continue to monitor for long-term cap effectiveness.	PRPs	EPA, CT DEP	ongoing	N	Y
Contaminated groundwater at the GA/GB Boundary	Implement the GA/GB Boundary Study, which is detailed in the LA WP and supporting documents.	PRPs	EPA	2011	N	Y
Vapor intrusion from VOCs in the groundwater plume pose potential future health risks to parcels situated in the downgradient plume.	Implement the Vapor Intrusion Monitoring Plan for the Chuck and Eddy's Property and the Radio Station Property as detailed in the LA WP and supporting documents.	PRPs	EPA	2011	N	Y
Institutional Controls are not yet in place for parcels that may be affected by vapor intrusion in the future.	Institutional Controls (as ELURs) will be prepared and recorded in accordance with the LA WP.	PRP	EPA, CT DEP	2012	N	Y

10.0 PROTECTIVENESS STATEMENTS

The remedial components required by the OU1 ROD are functioning appropriately and are protective of human health. The landfill cap has effectively prevented dermal contact with landfill contaminants. Removal of commercial and residential structures in conjunction with the landfill cap construction has further supported overall protectiveness. While the cap has been effective in reducing precipitation infiltration, landfill wastes present below the water table may continue to act as groundwater contamination sources. The CT DEP has reclassified the groundwater impacted by the plume to a GB (non-potable) aquifer and everyone in the area is hooked up to municipal water. Thus, eliminating the potential for groundwater ingestion or dermal risk. The long-term protectiveness of the remedial action at the Site will continue to be verified through ongoing monitoring programs. The 2006 remedy, OU2, is currently protective. Monitoring will continue at certain parcels to ensure long-term protectiveness should land use or conditions change in the future.

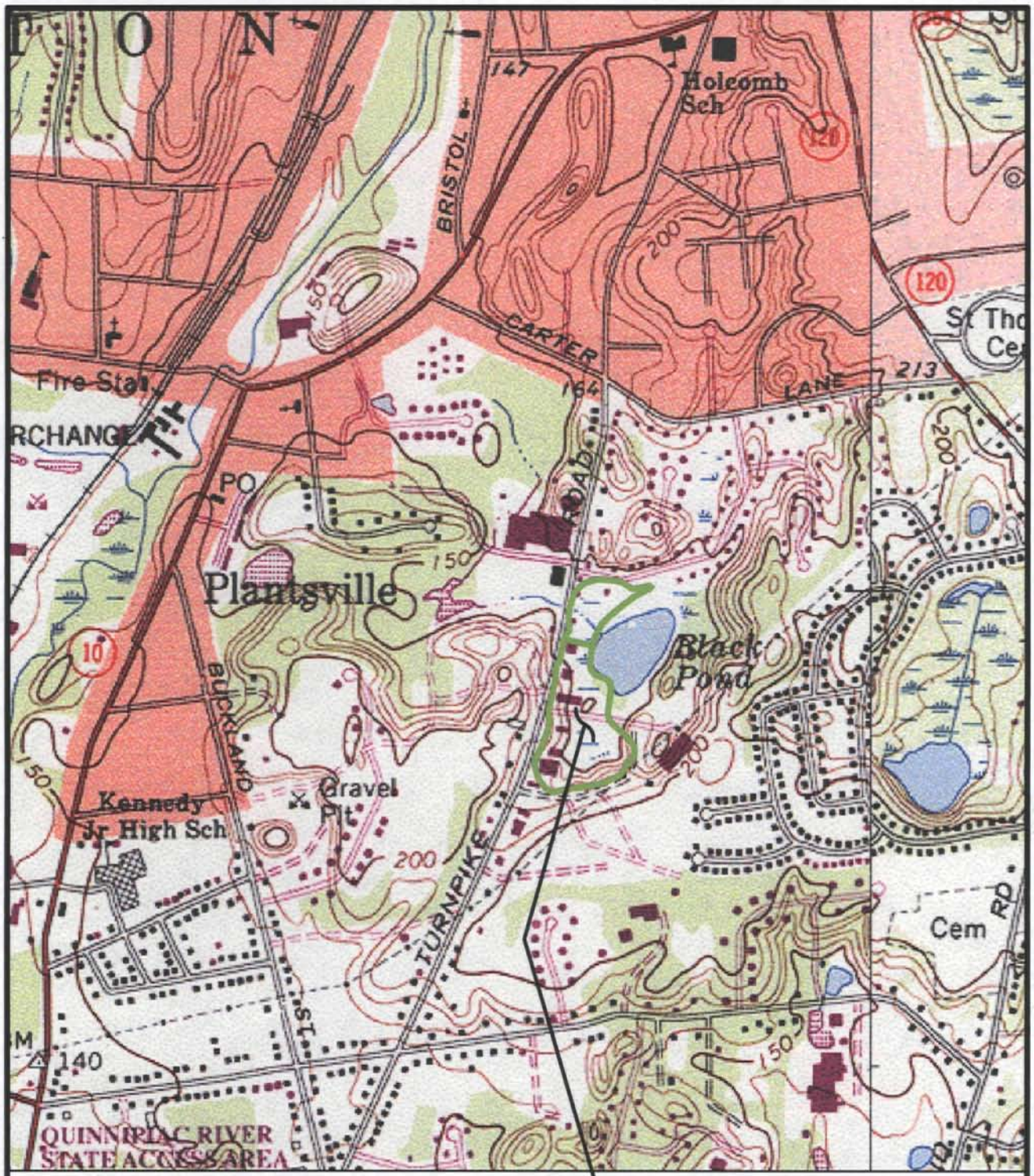
The long-term protectiveness of the remedial action at the Site will continue to be verified through ongoing groundwater, surface water, and landfill gas monitoring programs. These programs will address the downgradient groundwater plume, site-related gas emissions and possible impacts to surface waters which adjoin the Site, and vapor intrusion.

Site-wide construction has been completed at this Site. The Site-wide remedy is protective of human health and the environment. Exposure pathways that could result in unacceptable risks are being controlled.

11.0 NEXT REVIEW

A third Five-Year Review for the Site will be conducted in 2015. The target completion date is five years from the approval of this second Five-Year Review.

FIGURES



OLD SOUTHINGTON LANDFILL SUPERFUND SITE

500 0 500 1000 1500

SCALE IN FEET (APPROX.)

N

MAP REFERENCE:
PORTION OF 7.5 MINUTE SERIES MAP FOR THE SOUTHINGTON, CT QUADRANGLE DATED 1968 PHOTOREVISED 1992, N.G.V.D.1929, TAKEN FROM TOPO! CD. VERSION 1.2.4 ©1998 WILDFLOWER PRODUCTIONS.

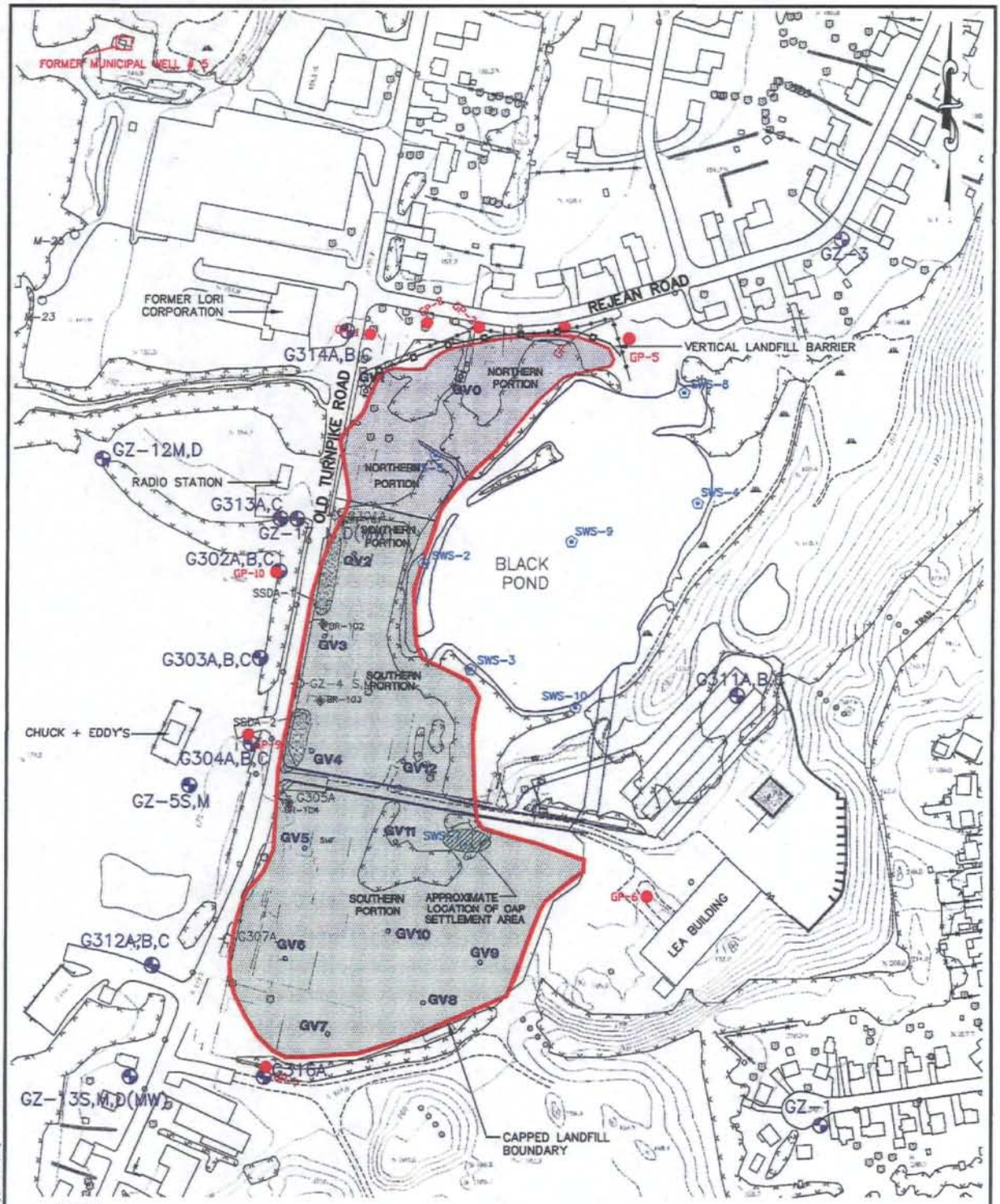
OLD SOUTHINGTON LANDFILL SUPERFUND SITE
SOUTHINGTON, CT

SITE LOCATION MAP

Comm.No.		
61SL702	**FIGURE 1**	LEA

G:\AUTOCAD\PROJECTS\61SL702\61SL702-USGS.DWG Tab:LAYOUT1 Saved: 4/27/2009 1:57 PM Plotted: 4/27/2009 2:00 PM

G:\AUTOCAD\PROJECTS\61SL902\TASK 001-EPA REQUEST\OSL-OVERLAY.DWG Tab Name: ALL Saved: 9/21/2010 3:31 PM Plotted: 9/21/2010 3:31 PM



Nobis

Nobis Engineering, Inc.
585 Middlesex St.
Lowell, MA 01852
Tel (978) 683-0891
Fax (978) 683-0966
www.nobisengineering.com

FIGURE 3

CURRENT DETAILED SITE MAP

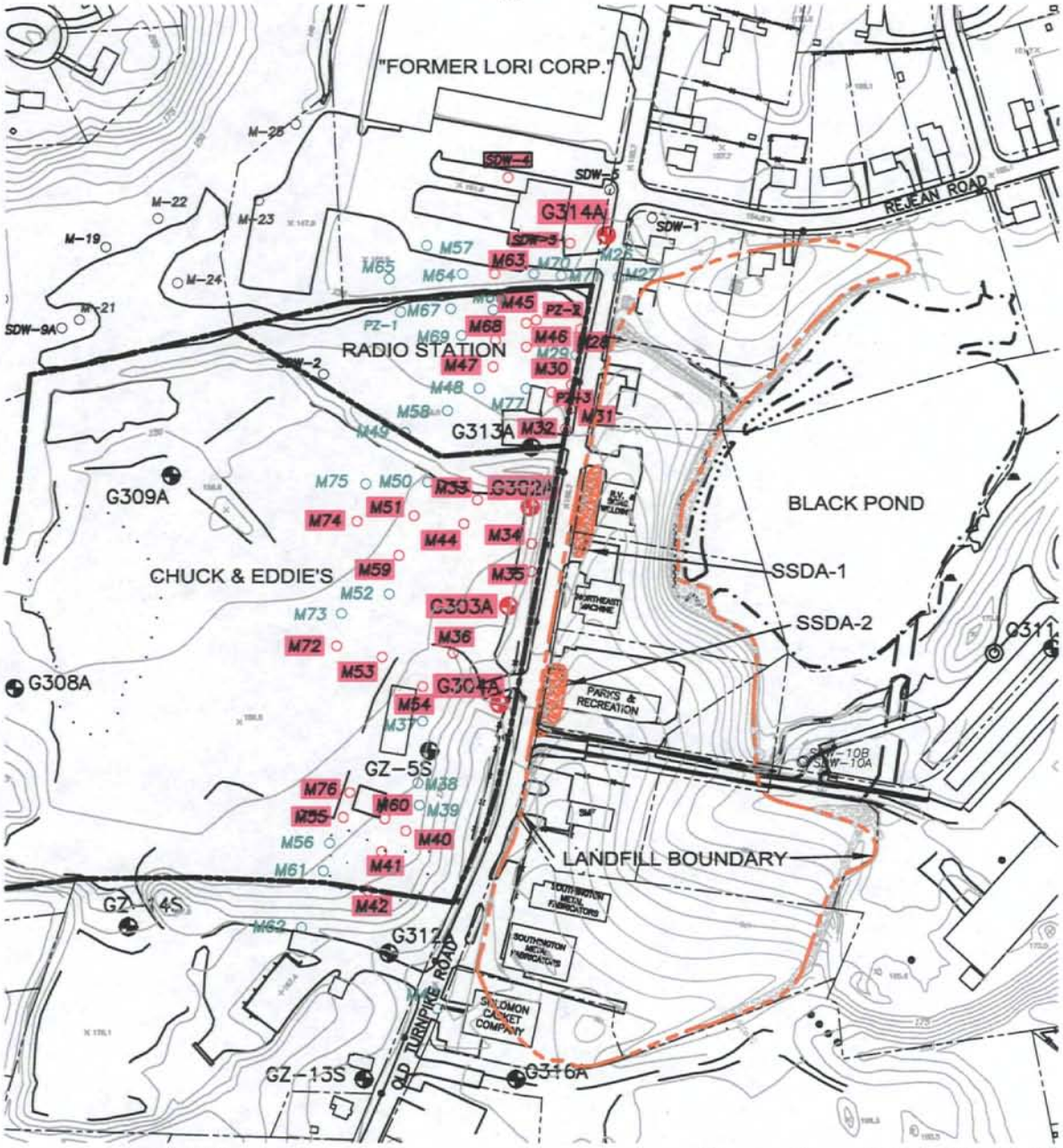
OLD SOUTINGTON LANDFILL SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

DRAWN BY:	ML	APPROVED BY:	JM
PROJECT:	80046.06		JULY 2010

Old Southington Landfill Superfund Site:

Wells Exceeding Residential Action Levels for Vapor Intrusion

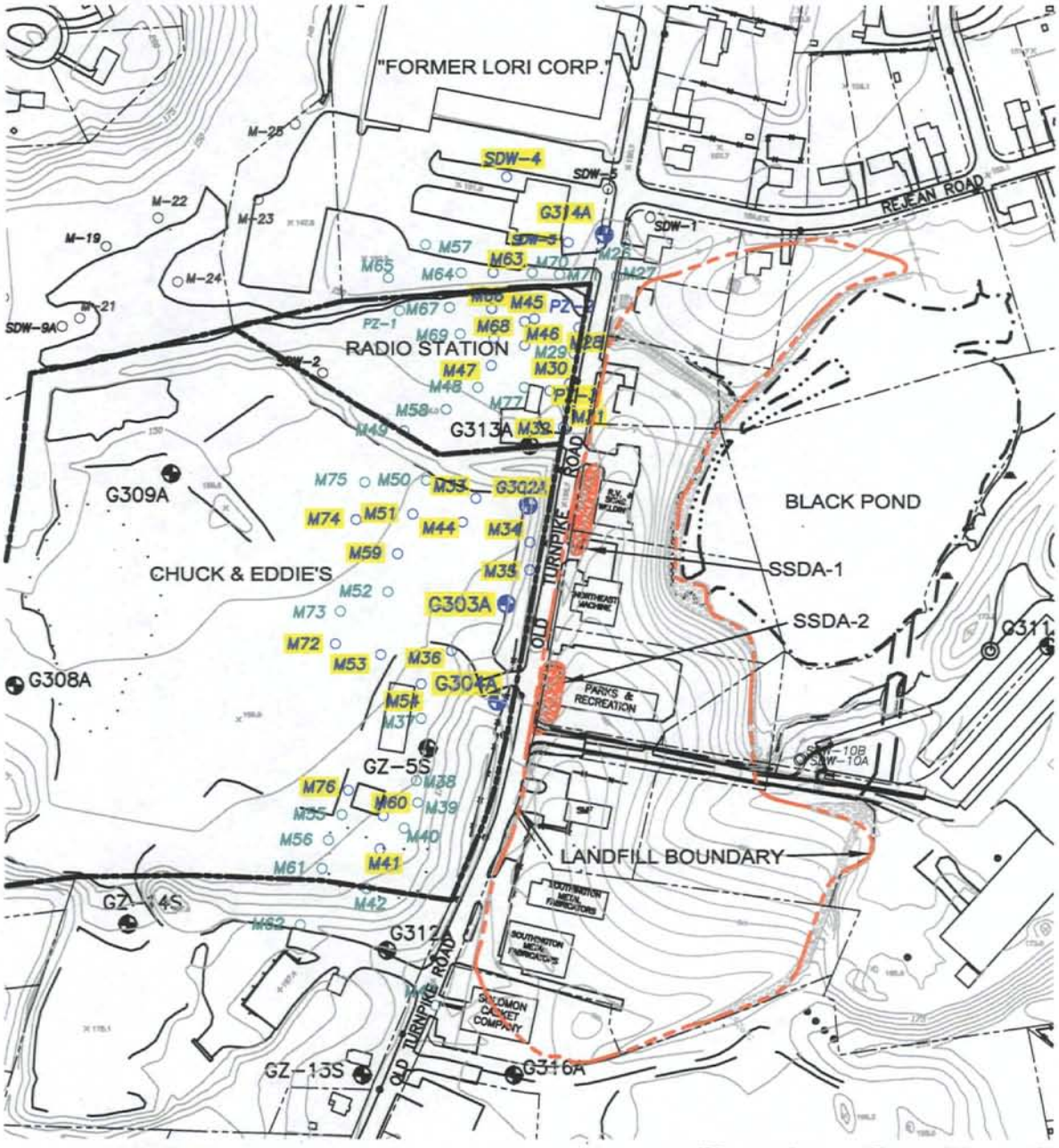
Figure 1



Old Southington Landfill Superfund Site:

Wells Exceeding Commercial/Industrial Action Levels for Vapor Intrusion

Figure 2



LEGEND:

EXISTING/PREVIOUS SAMPLING POINTS

G304A MONITORING WELLS

SDW-1 SMALL DIAMETER MONITORING WELLS

M19 – 25 MICROWELL POINTS – SEPTEMBER 2004

M72 EXISTING/PREVIOUS SAMPLING POINTS EXCEEDING COMM. VOL. RSRs

SAMPLING POINTS – OCTOBER/NOVEMBER 2005

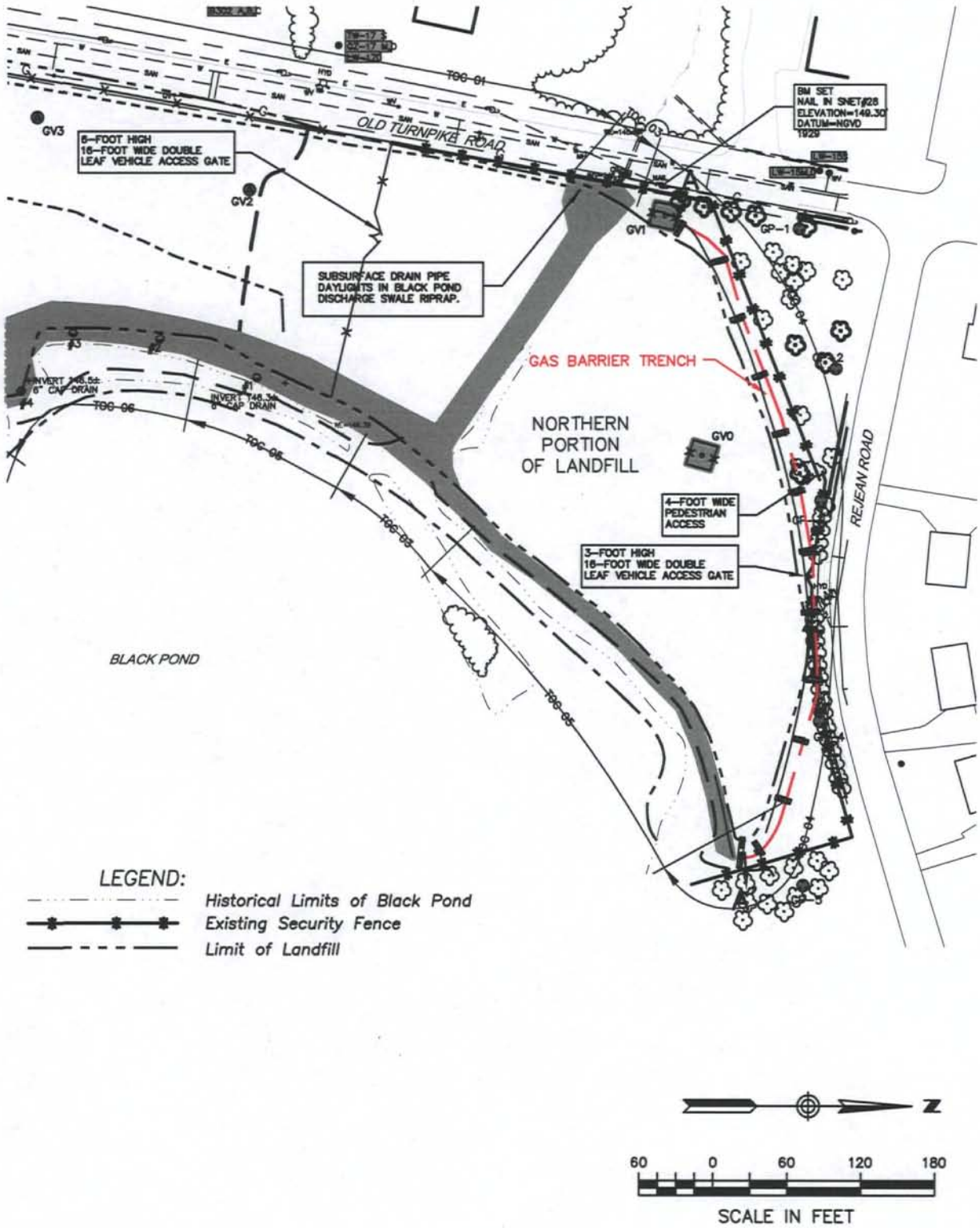
PZ-1 PIEZOMETER (does not exceed CT RSRs resid. volatilization)

M26 – 77 MICROWELL POINTS (does not exceed CT RSRs resid. volatilization)

EXTENT OF STUDY SITE

Old Southington Landfill Superfund Site: Combustible Gas Monitoring Locations And Soil Borings With Peat And Wetlands Extents

Old Southington Landfill Superfund Site:
Gas BarrierTrench Location Map
Figure



APPENDIX A

DOCUMENTS REVIEWED/REFERENCES

DOCUMENTS REVIEWED/REFERENCES CITED

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MACTEC Inc, 2006. Supplemental Remedial Investigation Report, Old Southington Landfill Superfund Site. February 2005, updated May 2006.

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APPENDIX B

PHOTOS DOCUMENTING SITE CONDITIONS

Photo Number 1 – August 2009: View of the soil gas probe being set up for the Soil Gas Tracer Study.

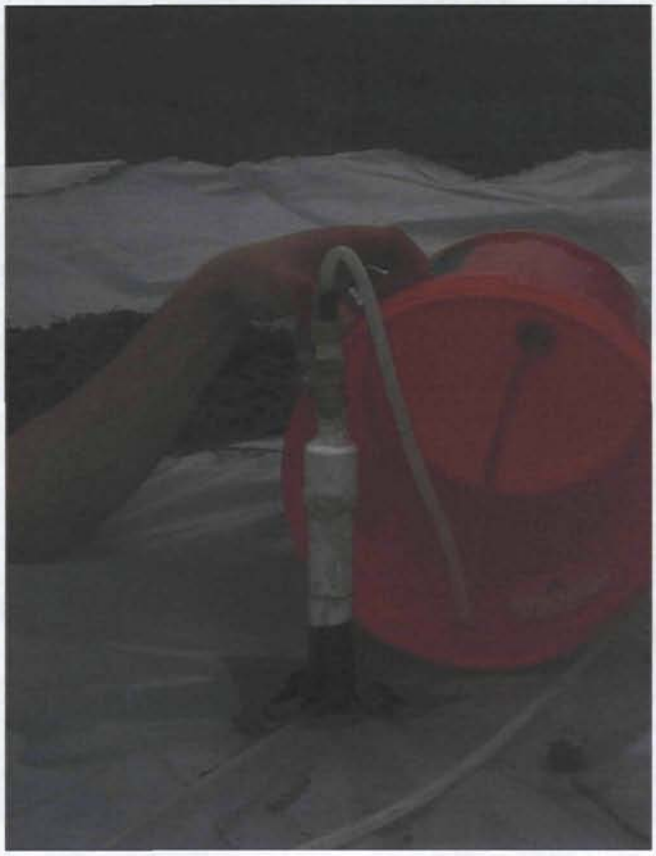


Photo Number 2 – August 2009: View of the soil gas probe set up for the Soil Gas Tracer Study.

Photo Number 3 – August 2009: Injection point set up for Soil Gas Tracer Study

Photo Number 4 – October 2009: Black Pond Fish Study

Photo Number 5 – December 2009: Installation of vertical landfill barrier.

Photo Number 6 – April 2010: Relandscaped northern portion of the landfill after restoration work from winter activities. View to the east

Photo Number 7 – April 2010: Repaved sidewalk after restoration work from winter activities. View to the west.

Photo Number 8 – View of northern portion of the landfill to the south.

Photo Number 9 – View of the Site to the northeast (Rejean Rd in background)

Photo Number 10 – Gas Vent (GV-1) secured with fencing

APPENDIX C

SITE INSPECTION CHECKLIST

Site Inspection Checklist

I. SITE INFORMATION	
Site name: Old Southington Landfill Superfund Site	**Date of inspection:** 4/27/2010
Location and Region: Southington, CT – Region 1	**EPA ID:** CTD980670806
Agency, office, or company leading the five-year review: US E.P.A. and Nobis Engineering, Inc.	**Weather/temperature:** Overcast, 55 degrees Fahrenheit

Remedy Includes: (Check all that apply)

- ☑ Landfill cover/containment
- ☑ Access controls
- ☑ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☐ Other:
- ☑ Monitored natural attenuation
- ☐ Groundwater containment
- ☑ Vertical barrier walls

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager**: David Fiereck Project Manager /Alternate Programs Coordinator 4/27/2010

Name Title Date

Interviewed ☑at site ☐ at office ☐ by phone

Problems, suggestions; ☐ Report attached

Mr. Fiereck indicated that institutional controls for the Site have not yet been put in place.

2. **O&M staff** Luke Chmielecki Scientist N/A

Name Title Date

Interviewed ☐ at site ☐ at office ☐ by phone no.

Problems, suggestions; ☐ Report attached

David Fiereck of LEA addressed O&M Site work.

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency: Town of Southington
Contact: John Weichsel, Town Manager Date: 4/27/2010 Telephone No.: (860) 276-6200
Problems; suggestions; ☑Report attached (interview questionnaire)

Agency: Town of Southington
Contact: Anthony J. Tranquillo, P.E., Town Engineer Date: 4/27/2010 Telephone No.: (860) 276-6231
Problems; suggestions; ☑Report attached (interview questionnaire)

Agency: CT Department of Environmental Protection
Contact: Gennady Shteynberg, Environmental Analyst 3 Date: 4/27/2010 Telephone No.: 860-424-3283
Problems; suggestions; ☑Report attached (interview questionnaire)

4. **Other interviews** (optional) ☑ Report attached.

See section 6.6 of the report for information on resident interviews conducted by Jim Murphy, EPA's Community Involvement Coordinator.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	☐ O&M manual	☑ Readily available	☐ Up to date	☐ N/A
	☐ As-built drawings	☑ Readily available	☐ Up to date	☐ N/A
	☐ Maintenance logs	☑ Readily available	☐ Up to date	☐ N/A
	Remarks: Documents are located at EPA's Region 1 Record Center and at LEA's office at 100 Northwest Drive, Plainville, CT 06062-1559			
2.	**Site-Specific Health and Safety Plan**	☑ Readily available	☐ Up to date	☐ N/A
	☐ Contingency plan/emergency response plan	☑ Readily available	☐ Up to date	☐ N/A
	Remarks: The SS HASP is located at EPA's Region 1 Record Center and at LEA's office at 100 Northwest Drive, Plainville, CT 06062-1559.			
3.	**O&M and OSHA Training Records**	☑ Readily available	☐ Up to date	☐ N/A
	Remarks: Records are located at LEA's office at 100 Northwest Drive, Plainville, CT 06062-1559.			
4.	**Permits and Service Agreements**			
	☐Air discharge permit	☐ Readily available	☐ Up to date	☑ N/A
	☐ Effluent discharge	☐ Readily available	☐ Up to date	☑ N/A
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☑ N/A
	☐ Other permits_____	☐ Readily available	☐ Up to date	☑ N/A
	Remarks: No permits are required at this time.			
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	☑ N/A
	Remarks: None			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	☑ N/A
	Remarks: None			
7.	**Groundwater Monitoring Records**	☐ Readily available	☐ Up to date	☑ N/A
	Remarks: None			

8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	☑ N/A
	Remarks: None			
9.	**Discharge Compliance Records**			
	☐ Air	☐ Readily available	☐ Up to date	☑ N/A
	☐ Water (effluent)	☐ Readily available	☐ Up to date	☑ N/A
	Remarks: None			
10.	**Daily Access/Security Logs**	☐ Readily available	☐ Up to date	☑ N/A
	Remarks: None			

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for State

☐ PRP in-house ☑ Contractor for PRP

☐ Federal Facility in-house ☐ Contractor for Federal Facility

☑ Other: Superfund Site

2. **O&M Cost Records**

☑ Readily available ☐ Up to date

☐ Funding mechanism/agreement in place

Original O&M cost estimate provided by David (LEA) ☐ Breakdown attached

The operation, maintenance, and monitoring activities are currently being implemented by the PRPs. Monitoring and maintenance reports are submitted to EPA and CT DEP for review. In addition, EPA has an oversight contractor perform Site inspections and oversee the PRP activities. The operation, maintenance, and monitoring activities focus on:

- The vegetative cover of the cap and repair of any erosion;
- Balancing the landfill gas extraction system and repair of any wells or conveyance lines;
- Shipment of leachate to an off-site treatment plant; and
- Collection and analysis of samples to monitor contaminant trends in groundwater;

See Section 4.3 of the report for Estimated O&M costs.

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons:

___None_____

_____

V. ACCESS AND INSTITUTIONAL CONTROLS ☑ Applicable ☐ N/A

A. Fencing

1.	**Fencing damaged** ☑ Location shown on site map ☑ Gates secured ☐ N/A Remarks: There is 3-foot high chain link fence along Rejean Road and around the northern portion of the landfill. There is an entry way that does not have a gate in order to allow for public access. It is wide enough for a person to walk through. This area is designated for passive recreation. The fence is in good condition. The southern portion of the landfill has a 6-foot high chain link fence. Public access is not allowed on this part of the landfill. This fence is also in good condition.	
B. Other Access Restrictions		
1.	**Signs and other security measures** ☐Location shown on site map ☑ N/A	
C. Institutional Controls (ICs)		

1.	**Implementation and enforcement**	
	Site conditions imply ICs not properly implemented	☐ Yes ☐ No ☑ N/A
	Site conditions imply ICs not being fully enforced	☐ Yes ☐ No ☑N/A
	Type of monitoring (*e.g.*, self-reporting, drive by):	
	Frequency:	
	Responsible party/agency :	
	Contact:	
	Reporting is up-to-date	☐ Yes ☐ No ☑ N/A
	Reports are verified by the lead agency	☐ Yes ☐ No ☑ N/A
	Specific requirements in deed or decision documents have been met ☐ Yes ☐ No ☑ N/A	
	Violations have been reported	☐ Yes ☐ No ☑ N/A
	Other problems or suggestions: ☐ Report attached	
	Remarks: Implementation of Institutional controls for the Site is included in the 1994 ROD. Institutional controls on the northern portion of the landfill are being implemented by the Town and will be in place by the end of September 2010. Institutional controls on the southern portion of the landfill will be established by Connecticut and are expected to be in place by the next FYR.	
2.	**Adequacy**	☐ ICs are adequate ☐ ICs are inadequate ☑ N/A
	Remarks: None	
D. General		
1.	**Vandalism/trespassing**	☐ Location shown on site map ☑ No vandalism evident
	Remarks: None	
2.	**Land use changes on site**	☑ N/A
	Remarks: None	
3.	**Land use changes off site**	☑N/A
	Remarks: None	

VI. GENERAL SITE CONDITIONS

A. Roads ☐ Applicable ☑N/A

1. **Roads damaged** ☐ Location shown on site map ☐ Roads adequate ☑ N/A

Remarks: None

B. Other Site Conditions

Remarks : None

VII. LANDFILL COVERS ☑ Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ☑ Settlement not evident

Areal extent_____ Depth_____

Remarks: Areas of settlement were noted in 2004 at MW-1 and near MW-4C during 2007. The settlement near MW-1 continues to be monitored, and the settlement that occurred in 2007 was repaired during the April 2008 site walk. There were no observations of settlement on April 2010 site visit.

2. **Cracks** ☐ Location shown on site map ☑ Cracking not evident

Lengths_____ Widths_____ Depths_____

Remarks: None

3. **Erosion** ☐ Location shown on site map ☑ Erosion not evident

Areal extent_____ Depth_____

Remarks: None

4. **Holes** ☐ Location shown on site map ☑ Holes not evident

Areal extent_____ Depth_____

Remarks: None

5.	**Vegetative Cover**	☑ Grass	☑ Cover properly established	☑ No signs of stress
	☑ Trees/Shrubs (indicate size and locations on a diagram)			
	Remarks: After the installation of the vertical landfill gas barrier installation in December 2009, there was a need for Site restoration. This work was completed over the spring and summer of 2010.			
6.	**Alternative Cover (armored rock, concrete, etc.)**		☑ N/A	
	Remarks: None			
7.	**Bulges**	☐ Location shown on site map	☑ Bulges not evident	
	Areal extent_____	Height_____		
Remarks: None				
8.	**Wet Areas/Water Damage**	☑ Wet areas/water damage not evident		
	☐ Wet areas	☐ Location shown on site map	Areal extent_____	
	☐ Ponding	☐ Location shown on site map	Areal extent_____	
	☐ Seeps	☐ Location shown on site map	Areal extent_____	
	☐ Soft subgrade	☐ Location shown on site map	Areal extent_____	
	Remarks: None			
9.	**Slope Instability** ☐ Slides ☐ Location shown on site map ☑ No evidence of slope instability			
	Areal extent_____			
	Remarks: None			
B. Benches	☐ Applicable	☑N/A		
	(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			
1.	**Flows Bypass Bench**	☐ Location shown on site map	☑ N/A or okay	
	Remarks: None			
2.	**Bench Breached**	☐ Location shown on site map	☑ N/A or okay	
	Remarks: None			
3.	**Bench Overtopped**	☐ Location shown on site map	☑ N/A or okay	
	Remarks: None			

C. Letdown Channels ☑Applicable ☐N/A

Remarks: A silt fence was put in place during the vertical gas barrier installation. It will be removed after the re-landscaping and the hydro seed has taken effect.

1. **Settlement** ☐ Location shown on site map ☑ No evidence of settlement

Areal extent_____ Depth_____

Remarks: None

2. **Material Degradation** ☐ Location shown on site map ☑ No evidence of degradation

Material type_____ Areal extent_____

Remarks: None

3. **Erosion** ☐ Location shown on site map ☑ No evidence of erosion

Areal extent_____ Depth_____

Remarks: None

4. **Undercutting** ☐ Location shown on site map ☑ No evidence of undercutting

Areal extent_____ Depth_____

Remarks: None

5. **Obstructions** Type_____

☑ No obstructions

☐ Location shown on site map Areal extent_____

Size_____

Remarks: None

6. **Excessive Vegetative Growth** Type_____

☑ No evidence of excessive growth

☐ Vegetation in channels does not obstruct flow

☐ Location shown on site map Areal extent_____

Remarks: None

D. Cover Penetrations ☑ Applicable ☐ N/A

1. **Gas Vents** ☐ Active ☑ Passive

☑ Properly secured/locked ☐ Functioning ☑ Routinely sampled ☑ Good condition

☐ Evidence of leakage at penetration ☐Needs Maintenance

☐ N/A

Remarks: Gas vent monitoring is performed on a monthly basis. There are nine probes located around the perimeter of the landfill.

2.	**Gas Monitoring Probes** ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs Maintenance ☑ N/A Remarks: None
3.	**Monitoring Wells** (within surface area of landfill) ☑ Properly secured/locked ☑ Functioning ☑ Routinely sampled ☑ Good condition ☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A Remarks: Groundwater monitoring is performed on a quarterly basis.
4.	**Leachate Extraction Wells** ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition ☐ Evidence of leakage at penetration ☐ Needs Maintenance ☑ N/A Remarks: None
5.	**Settlement Monuments** ☐ Located ☐ Routinely surveyed ☑ N/A Remarks: None
E. Gas Collection and Treatment	☐ Applicable ☑ N/A
1.	**Gas Treatment Facilities** ☑ N/A ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse ☐ Good condition ☐ Needs Maintenance Remarks: None
2.	**Gas Collection Wells, Manifolds and Piping** ☐ Good condition ☐ Needs Maintenance Remarks: None
3.	**Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings) ☐ Good condition ☐ Needs Maintenance ☑ N/A Remarks: None
F. Cover Drainage Layer	☐Applicable ☑ N/A
1.	**Outlet Pipes Inspected** ☐Functioning ☑ N/A Remarks: None
2.	**Outlet Rock Inspected** ☐Functioning ☑ N/A Remarks: None
G. Detention/Sedimentation Ponds	☐ Applicable ☑ N/A

1.	**Siltation** Areal extent_____ Depth_____ ☑ N/A ☑Siltation not evident Remarks: None
2.	**Erosion** Areal extent_____Depth_____ ☑ Erosion not evident Remarks: None
3.	**Outlet Works** ☐ Functioning ☑ N/A Remarks: None
4.	**Dam** ☐ Functioning ☑ N/A Remarks: None
H. Retaining Walls	☐ Applicable ☑ N/A
1.	**Deformations** ☐ Location shown on site map ☐ Deformation not evident Horizontal displacement_____ Vertical displacement_____ Rotational displacement_____ Remarks: None
2.	**Degradation** ☐ Location shown on site map ☐ Degradation not evident Remarks: None
I. Perimeter Ditches/Off-Site Discharge	☐Applicable ☑ N/A
1.	**Siltation** ☐ Location shown on site map ☑ Siltation not evident Areal extent_____ Depth_____ Remarks: None
2.	**Vegetative Growth** ☐ Location shown on site map ☐ N/A ☑ Vegetation does not impede flow Areal extent_____ Type_____ Remarks: None
3.	**Erosion** ☐ Location shown on site map ☑ Erosion not evident Areal extent_____ Depth_____ Remarks: None
4.	**Discharge Structure** ☐Functioning ☑N/A Remarks: None
VIII. VERTICAL GAS BARRIER WALL ☑ Applicable ☐ N/A	

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident

Areal extent: 556 linear feet Depth: 5-11 ft below ground surface

Remarks: The vertical landfill gas barrier trench was installed along the perimeter of the north end of the landfill in December 2009.

2. **Performance Monitoring** ☐ Performance not monitored ☐ Evidence of breaching

Type of monitoring: It is included as part of the gas monitoring effectiveness.

Frequency: Bimonthly

Head differential: unknown

Remarks: None

C. Treatment System ☐ Applicable ☑ N/A

1. **Treatment Train** (Check components that apply)

☐ Metals removal ☐ Oil/water separation ☐ Bioremediation

☐ Air stripping ☐ Carbon adsorbers

☐

Filters_____

___

☐ Additive (*e.g.*, chelation agent, flocculent)_____

☐ Others_____

☐ Good condition ☐ Needs Maintenance

☐ Sampling ports properly marked and functional

☐ Sampling/maintenance log displayed and up to date

☐Equipment properly identified

☐ Quantity of groundwater treated annually_____

☐ Quantity of surface water treated annually_____

Remarks: None

2. **Electrical Enclosures and Panels** (properly rated and functional)

☑ N/A ☐ Good condition ☐ Needs Maintenance

Remarks: None

3. **Tanks, Vaults, Storage Vessels**

☑N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance

Remarks: None

4. **Discharge Structure and Appurtenances**

☑N/A ☐Good condition ☐ Needs Maintenance

Remarks: None

5. **Treatment Building(s)**

☑ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair

☐Chemicals and equipment properly stored

Remarks: Loureiro Associates, Inc. has a field building located at the Site.

6. **Monitoring Wells** (pump and treatment remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs Maintenance ☑ N/A

Remarks: None

D. Monitoring Data

1. Monitoring Data

☑ Is routinely submitted on time ☑ Is of acceptable quality

2. Monitoring data suggests:

☑Groundwater plume is effectively contained ☐Contaminant concentrations are declining

Remarks: There does not appear to be indicators of further plume development and contaminant concentrations appear to be stable.

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☑Properly secured/locked ☑Functioning ☑Routinely sampled ☑ Good condition

☐ All required wells located ☐ Needs Maintenance ☐ N/A

Remarks: There are 23 groundwater monitoring wells that are monitored. There are over 70 monitoring wells that exist where water levels are recorded.

X. OTHER REMEDIES

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

	Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.). The remedy is designed to prevent and minimize further release of contaminants into the groundwater, surface water, sediments, and soil. The landfill cap system, helps to contain groundwater and soil gas (methane is an issue due to the soil type (peat) in the area). The vertical landfill gas barrier will prevent migration of the soil gases to the north. Monitoring results will indicate if this has been effective.
B.	**Adequacy of O&M**
	Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. No issues observed at this time.
C.	**Early Indicators of Potential Remedy Problems**
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future. The installation of the vertical landfill gas barrier and the re-landscaped landfill cap concluded in 2010 was an issue that was not foreseen in the last five year review. There are no anticipated additional activities identified that would change the cost or scope of the O&M work at this time. Continued monitoring activities (groundwater and gas vent) will provide data to indicate the effectiveness of the landfill cap.
D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. Schedule groundwater monitoring events at the same time as gas vent monitoring activities to reduce the amount of time and trips required to the Site for O&M work. By incorporating and overlapping required activities will help to reduce O&M operational costs for the Site.

APPENDIX D

COMMUNITY NOTIFICATION and INTERVIEW RECORD

INTERVIEW RECORD – Town Manager of Southington		
Site Name: Old Southington Landfill Superfund Site	**EPA ID No.:** CTD980670806	
Subject: Second Five-Year Review (2010)	**Time:** 11:00	**Date:** 4/27/10
Type: ☐ Telephone ☒ Visit ☐ Other **Location of Visit:** Town Offices	☐ Incoming ☐ Outgoing	

Contact Made By:

Name: Jim Murphy/ Kelly Armitage	**Title:** Community Coordinator / Project Engineer	**Organization:** US E.P.A/ Nobis Engineering, Inc.

Individual Contacted:

Name: John Weichsel	**Title:** Town Manager	**Organization:** Town of Southington

Telephone No: 860-276-6200 **Fax No:** 860-628-4727 **E-Mail Address:** weichselj@southington.org	**Street Address:** Town Hall, 75 Main Street **City, State, Zip:** Southington, CT 06489

Summary Of Conversation

Q1: What is your overall impression of the project and site?
A1: It is inappropriate for the Site to be a Superfund Site; it is a retroactive law and should not apply. He's accepted that and is moving forward. On the positive side, its appearance is in good shape and we're getting results. Visitors often mistake it for a park.

Q2: What effects have site operations had on the surrounding community?
A2: The residential community on Rejean Road has been very nervous over the years, but with time that has eased and lessoned. There hasn't been any real practical effect.

Q3: Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.
A3: Not aware of any.

Q4: Has there been any significant changes in the O&M activities or a chance to optimize the O&M?
A4: Not aware of any.

Q5: Do you feel that information related to the site is readily available?
A5: He feels well informed on the issues and events by the US E.P.A, the routine reports and the attorney office involved; there haven't been any real surprises.

Q6: Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.
A6: No incidents or emergency response activities have occurred at the Site.

Q7: Do you have any comments, suggestions, or recommendations regarding the site's management or operation?
A7: Nothing at this time.

INTERVIEW RECORD – Southington Town Engineer

Site Name: Old Southington Landfill Superfund Site	**EPA ID No.:** CTD980670806	
Subject: Second Five-Year Review (2010)	**Time:** 12:00	**Date:** 4/27/10
Type: ☐ Telephone ☒ Visit ☐ Other **Location of Visit:** Town Offices	☐ Incoming ☐ Outgoing	

Contact Made By:

Name: Jim Murphy/ Kelly Armitage	**Title:** Community Coordinator / Project Engineer	**Organization:** US E.P.A/ Nobis Engineering, Inc.

Individual Contacted:

Name: Anthony Tranquillo	**Title:** Town Engineer	**Organization:** Town of Southington

Telephone No: 860-276-6231 **Fax No:** 860-628-8669 **E-Mail Address:** tranquiloa@southington.org	**Street Address:** Town Hall, 75 Main Street **City, State, Zip:** Southington, CT 06489

Summary Of Conversation

Q1: What is your overall impression of the project and site?
A1: It is very well performed, professional and fair/reasonable. On the positive side, it's appearance is in good shape and we're getting results. Visitors often mistake it for a park. Feels confident in his inspectors and their training to get the grass mowed on a routine basis and to the specification required. Monthly reports are timely.

Q2: What effects have site operations had on the surrounding community?
A2: There have been almost no effects on the community. There are a lot of positive remarks about the Site having a "park like" appearance.

Q3: Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.
A3: The only concern was the migration of methane to north residences on Rejean Road despite the area having naturally occurring methane through the peat soil.

Q4: Has there been any significant changes in the O&M activities or a chance to optimize the O&M?
A4: Not aware of any.

Q5: Do you feel that information related to the site is readily available?
A5: He believes the Town Offices are well informed, but he doesn't always get information. The Town Office has internal issues with delivering the information to the necessary people. Suggests the Assistant Town Manager, Michael Sciota, be the point of contact.

Q6: Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.
A6: No incidents or emergency response activities have occurred at the Site.

Q7: Do you have any comments, suggestions, or recommendations regarding the site's management or operation?
A7: Inquired about the next Public meeting.

INTERVIEW RECORD – Subcontractor for PRPs			
Site Name: Old Southington Landfill Site		**EPA ID No.:** CTD980670806	
Subject: Second Five-Year Review (2010)		**Time: 10:00**	**Date: 4/27/2009**
Type: ☐ Telephone ☒ Visit ☐ Other **Location of Visit:** The Site. performed in conjunction with Landfill Inspection		☐ Incoming ☐ Outgoing	
Contact Made By:			
Name: Kelly Armitage	**Title:** Project Engineer	**Organization:** Nobis Engineering, Inc.	
Individual Contacted:			
Name: David Fiereck, P.E., L.E.P.	**Title:** Alternate Project Manager	**Organization:** Loureiro Engineering Associates, Inc.	
Telephone No: (860) 747-6181 **Fax No:** NA **E-Mail Address:** dfriereck@loureiro.com		**Street Address:** 100 Northwest Drive **City, State, Zip:** Plainville, CT 06062	
Summary Of Conversation			

Q1: What is your overall impression of the project and site?
A1: That the work and operation of the Site is moving along fine. Currently LEA is preparing to submit a Remedial Action Plan, with plans for work to be implemented early this summer (2010).

Q2: Is the remedy functioning as expected? How well is the remedy performing?
A2: The cap construction was completed in 2001. There have been no issues except for some early settlement at the south end of the landfill. The settlement has been rectified and there have been no incidents since.

Q3: What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?
A3: There has been no increasing trends in contaminant concentrations based on the cap effectiveness monitoring performed (monthly gas vent monitoring and the bi-annual groundwater monitoring events).

Q4: Is the remedy functioning as expected?
A4: Yes, the remedy appears to be functioning as expected.

Q5: Is there a continuous on-site O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, please describe staff and frequency of site inspections and activities.
A5: LEA performs the gas vent and groundwater monitoring and Site inspections on a routine basis.

Q6: Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last five years or a chance to optimize the O&M? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.
A6: The gas probes located north of Rejean Road are no longer monitored.

Q7: Have there been unexpected O&M difficulties or costs at the site since start-up or in the last five years? If so, please give details.
A7: During 2009 was determined that GV-1 was not ventilating any gas into the atmosphere. After further investigation, it was found that the three horizontal pipes that were supposedly connected to the vertical pipe of GV-1 were not. Thus not hooked up to the blowers that are in place in case water gets into the horizontal pipes and needs to be cleared out. The current passive vapor control system, as constructed, is ineffective at preventing vapor migration off of the landfill. Additionally, the conceptual model that any rogue "lighter than air" vapors leaving the landfill would migrate up to the grass surface and daylight above ground before reaching Rejean Road was proved wrong. In December 2009 a vertical barrier trench was installed along the northern boundary of the Site to help prevent migration of soil gas off Site towards Rejean Road.

Q8: Have there been any changes in the site or surrounding property in the last 5 years, or are changes planned?
A8: Chuck and Eddy's has a permit to further develop the property. The permit expires at the end of 2010. The Highland Heights housing complex behind the Chuck and Eddy's property was constructed and completed in 2009.

Q9: Are you aware of any changes in the state ARARs, groundwater quality standards, etc., since 2005?
A9: Not aware of any.

Q10: Do you have any comments, suggestions, or recommendations regarding the project?
A10: LEA is currently working on a Remedial Action Plan and expects activities to be implemented in 2010.

INTERVIEW RECORD

Site Name: Old Southington Landfill Superfund Site	**EPA ID No.:** CTD980670806	
Subject: Second Five-Year Review (2010)	**Time: 8:50**	**Date: 6/29/2010**
Type: ☒ Telephone ☐ Visit ☐ Other **Location of Visit:** Interview sent via email, follow up phone call.	☐ Incoming ☐ Outgoing	

Contact Made By:

Name: Kelly Armitage	**Title:** Project Engineer	**Organization:** Nobis Engineering, Inc.

Individual Contacted:

Name: Gennady Shteynberg	**Title:** Environmental Analyst 3	**Organization:** Connecticut Department of Environmental Protection

Telephone No: 860-424-3283 **Fax No:** N/A **E-Mail Address:** Gennady.shteynberg@ct.gov	**Street Address:** 79 Elm Street **City, State, Zip:** Hartford, CT 06106

Summary Of Conversation

Q1: What is your overall impression of the project and site?
A1: The project is under a very good oversight from an EPA team (Site Manager Almerinda Silva) and consultant, Nobis Engineering, Inc. There are good working relationships with the main contractor, LEA (Jeffrey Loureiro). The site has a long and complex history of investigation and remediation, but overall It is in a good shape based on the ongoing monitoring data and appearance.

Q2: What effects have site operations had on the surrounding community?
A2: Some of the site operations are visible to the surrounding community. However, the surrounding community is informed in advance and expresses little concerns.

Q3: Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.
A3: Not really. The surrounding community is informed regarding the status of operations and the general condition of the site. The recent, June 8, 2010, Public Information Meeting was attended just by a couple of residents, even though the event was highly publicized.

Q4: Is the remedy functioning as expected?
A4: Generally, yes.

Q5: Has there been any significant changes in the O&M activities or a chance to optimize the O&M?
A5: Installation of a Methane Barrier Trench in 2009-2010

Q6: Do you feel that information related to the site is readily available?
A6: Yes

Q7: Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.
A7: No

Q8: Do you have any comments, suggestions, or recommendations regarding the site's management or operation?
A8: Continue the good work.

NEIGHBORHOOD NOTICE!

Environmental fieldwork planned at the Old Southington Landfill

Landfill Gas Barrier Trench Installation and Notice of Five-Year Review

As part of its Second Five-Year Review of the cleanup remedy at the Old Southington Landfill (OSL), the United States Environmental Protection Agency (EPA) and the Connecticut Department of Environmental Protection (DEP) requested that the Performing Parties evaluate the effectiveness of the cleanup up work completed at the landfill. This included evaluating the existing landfill gas collection system, inspecting the landfill cap for rips and tears, conducting fish sampling in Black Pond, and continued groundwater monitoring. The Five Year Review will be completed during 2010.

As part of this overall evaluation, the Performing Parties recently conducted a helium gas study in the northern end of the landfill. This part of the landfill was chosen for the test because of its close proximity to the residential area. The study consisted of injecting helium, a safe inert gas, into the capped landfill and measuring for it on the outside area of the cap. This study revealed that a very small amount of helium migrated from the landfill. Thus, as an added measure of precaution, the Performing Parties have proposed to augment the existing landfill gas collection system with the installation of a gas barrier trench along the north perimeter of the landfill cap south of Rejean Road. The barrier trench which includes a liner installed beneath the surface will extend from Old Turnpike Road to Black Pond (see figure on back).

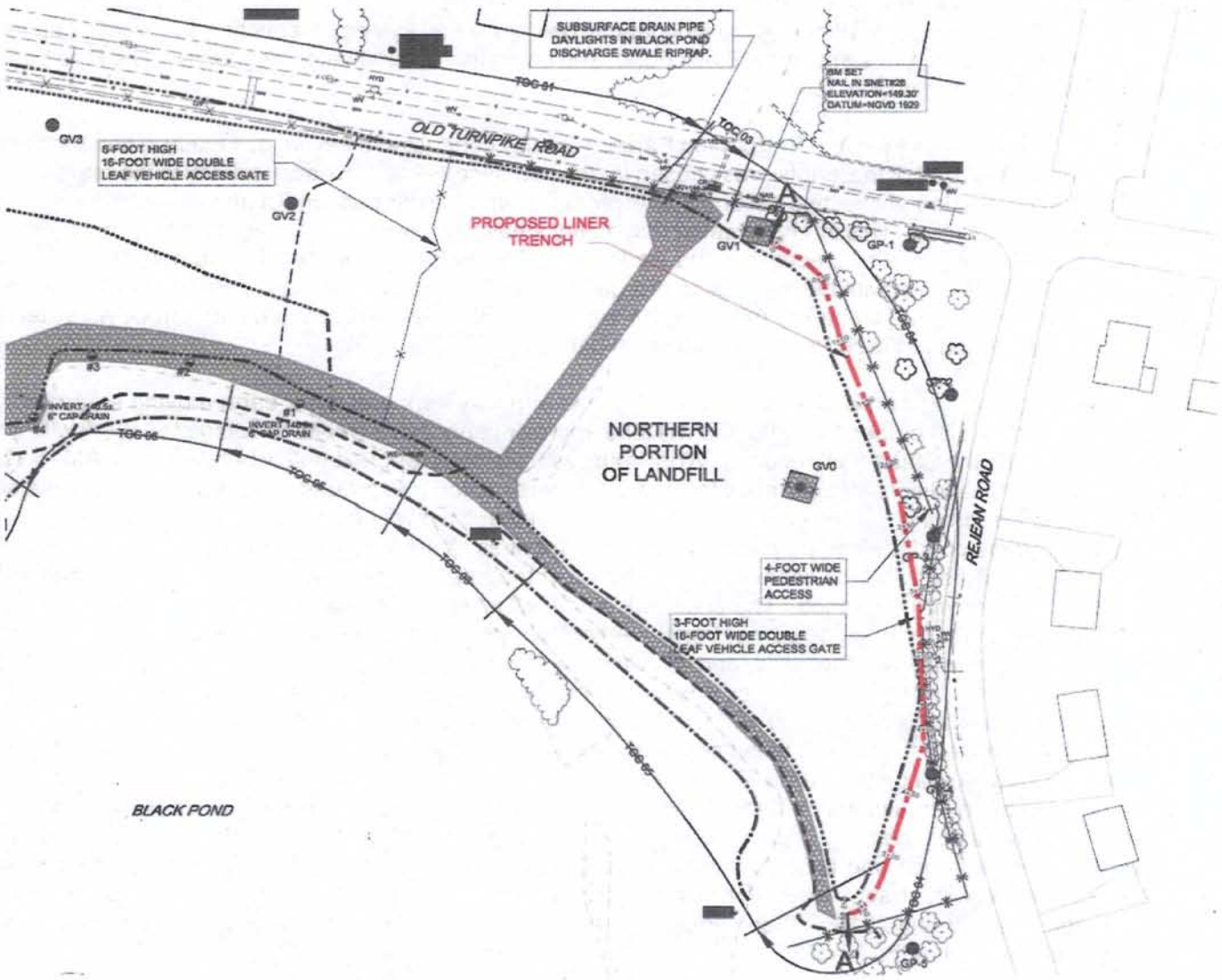
The installation of the gas barrier liner will involve the use of excavators and other earth moving equipment. The work will start on December 14, 2009 and will take approximately 2 to 3 weeks to complete. Work will not be performed during the Christmas Holidays. Work hours will take place approximately between 7:00 AM - 5:00 PM. Since weather conditions are currently favorable for construction (i.e. ground is not frozen and the water table is low) the Performing Parties will to do the work now rather than wait for spring/summer season.
Air monitoring will be conducted during open excavation activities. A silt fence will be installed down slope of the proposed gas barrier trench to control erosion. Some of the trees on the landfill side of Rejean Road will be moved or replaced with new ones. The chain link fence will be moved out a few feet toward Rejean Road to allow for the installation of the gas barrier trench. A fire hydrant may be relocated to a nearby location. The trench will be 560 feet long, two feet wide, and will vary in depth from 3 to 8 feet depending on the depth to the water table. The barrier trench will be placed one foot below the water table. The trench will be excavated using a track-mounted excavator. Only up to 100 foot long sections of the trench will be open at any time to allow the crew time to complete the work in these sections and backfill by the end of the day. The excavated soil will be temporarily staged in a general area. Because this soil is not from under the cap it is not contaminated. If small sections need to remain open until the next day, the crew will cover these areas with panels as a safety measure. They will also cover any excavated material that has not been backfilled. An impermeable liner will be placed inside the trench and backfilled. Following completion of construction, the disturbed area will be graded and covered with straw. The silt fence will remain in place through the winter and the disturbed area will be seeded in late spring 2010. When completed, this work will not affect the current passive recreational use of the northern part of the landfill.

The work will be performed on behalf of the Performing Parties by Loureiro Engineering Associates, Inc. of Plainville, Connecticut under supervision of the EPA and DEP.

(Over)

To continue to keep the community informed of the status of the Old Southington Landfill, EPA will hold a public meeting in spring 2010 to update local residents and businesses about the status of activities conducted this fall and to discuss any future environmental work. The presentation will include the Five-Year Review, the landfill gas barrier trench installation, the results of fish tissue sampling of Black Pond performed in October 2009, the results of on-going groundwater monitoring, and the plan for any future work. A meeting notice will be circulated as the date is selected and the agenda is better defined.

If you have questions concerning the gas collection system evaluation study and the barrier trench installation, please contact Almerinda Silva, EPA Remedial Project Manager, at 617-918-1246 or by e-mail at silva.almerinda@epa.gov, or Jim Murphy, EPA Community Outreach Coordinator, at 617-918-1028 or by e-mail at murphy.jim@epa.gov. If you have any health related questions, please contact Sharee Rusnak, CT Department of Public Health at (860)509-7583 or by email at sharee.rusnak@po.state.ct.us.



EPA United States Environmental Protection Agency

EPA United States Environmental Protection Agency

SAVE THE DATE!

EPA Public Meeting
Old Southington Landfill
Superfund site

Tuesday - June 8 , 2010 at 7 p.m.
Southington Police Department
Community Room
69 Lazy Lane
Southington, CT

The U.S. EPA invites you to attend a Public Information Meeting to hear about the progress of the cleanup at the Old Southington Landfill Superfund Site. Please come and visit with representatives from the U.S. Environmental Protection Agency, the CT Department of Environmental Protection and the CT Department of Public Health.

The meeting space is fully accessible. If you have questions, special needs or require translation please contact: Jim Murphy, EPA 1-888-372-7341 ext. 81028 or 617-918-1028

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SAVE THE DATE!

Old Southington Landfill
Superfund site meeting
Tuesday - June 8 , 2010 at 7 p.m.

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Old Southington Landfill
Superfund site meeting
Tuesday - June 8 , 2010 at 7 p.m.

Old Southington Landfill Superfund Site Public Information Meeting
Southington Police Department Community Room
June 8, 2010
7:00 p.m.

Agenda

Welcome, Introductions, Agenda Review
Jim Murphy, Community Involvement Coordinator,
U.S. Environmental Protection Agency

Site History, Updates on Recent and Upcoming Work, Overview of Five Year Review
Almerinda Silva, Project Manager
U.S. Environmental Protection Agency

Methane Discussion
Sharee Major Rusnak, Epidemiologist
CT Department of Public Health

Questions & Answers

Adjourn

Obituaries

Thoms Gemmell

Thomas Gemmell, 51, of Southington died Feb. 21, 2010 at Hospital of Central Connecticut at Bradley Memorial. He was the husband of Lesa (Hatch) Gemmell.

He was born Oct. 22, 1958, in Manchester, son of Allan Gemmell and the late Lucille (Lofgren) Gemmell. He had been employed by Hospital of Central Connecticut, New Britain and also at Mickey Finn's on the Berlin Turnpike. He was the owner of Gemmell's Landscaping and had been a hardworker and lived by the motto "anything worth doing, is worth doing well."

Besides his wife, he was the loving father of Joshua and Ryan Gemmell, of Southington and enjoyed helping them out with football; his brothers, John Gemmell and wife, Wendy, of Berlin and Paul Gemmell, of Boston; a sister, Lorna Gemmell, of Norfolk,Va.; his sisters-in-law, Leah Karo and her husband, Thomas, of Tennese and Jeri McEntire and her fiancé, David Nichols, of Lebanon; his nieces, Chelsea and Danielle Gemmell, Laura Benoit; and nephews, Matthew Benoit, Lucas and Jacob McEntire.

The funeral was held Feb. 27, 2010, at the DellaVecchia Funeral Home, Southington followed by a Mass at the First Congregational Church, Southington. Burial was at the convenience of the family. Memorial donations may be made to the Thomas Gemmell Children's Education Fund, c/o TD Bank, 121 Main St., Southington, CT 06489.

Peter Landino

Peter A. Landino, 72, a longtime resident of Southington, died Feb. 27, 2010, at the Jewish Home in New Haven.

He was born Oct. 31, 1937, in New Haven and was the son of the late Alphonse and Jennie (Spinelli) Landino. Prior to his retirement, he worked for Fafnir Bearing in New Britain as a machinist. He was also a Veteran of the U.S. Army serving from 1961 to 1963.

He is survived by his two sisters, Dorothy Murdock, of North Branford and Phyllis Piontek, of Florida; along with several nieces and nephews.

The burial will be Saturday March 6, 2010, at St. Thomas Cemetery, Meriden Avenue, Southington at 11 a.m. There are no calling hours. The DellaVecchia Funeral Home, Southington is assisting the family with the arrangements.

Ann Michaud

Ann R. (Gioia) Michaud, 96, of Southington, died peacefully Feb. 25, 2010, at The Summit of Plantsville. She was the wife of the late Edward Michaud.

She was born on Aug. 5, 1913, in Southington, daughter of the late Raphael and Petronilla (Angelillo) Gioia. Throughout her life, she enjoyed spending weekends with her sister, Margaret, at her Rhode Island cottage. Although she had no grandchildren, she was very involved in her grand-nieces' and grand-nephews' lives. She worked for Cuno Incorporated for many years and was a parishioner of St. Thomas Church.

She is survived by her brother, William Gioia, of Hawaii; two nephews, Darryl Fasulo and his wife, Cindy, of Southington and Royal "Buster" Strong Jr., of Florida; two nieces, Rosemary Trykowski, of Southington and Cheryl Cunningham, of North Carolina; and several other nieces and nephews. She was predeceased by three sisters, Rose Ricci, Margaret Fasulo, and Florence Strong; and one brother, David Gioia.

The funeral was held March 2, 2010, at St. Thomas Church followed by the burial in St. Thomas Cemetery. Donations may be made to The St. Thomas Ladies Guild, 99 Bristol St., Southington, CT 06489. The DellaVecchia Funeral Home, Southington was in charge of arrangements.

More obituaries on page 14

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EPA United States Environmental Protection Agency New England

Old Southington Landfill Superfund Site Five-Year Review

The United States Environmental Protection Agency (EPA) has begun its second five-year review at the Old Southington Landfill on Old Turnpike Road in Southington, Connecticut. The five-year review is generally performed five years following the initiation of a Superfund response action and is repeated every succeeding five years at sites where waste has been capped in place and use of the site remains restricted. The review is a comprehensive evaluation of the site remedy which will include an evaluation of the results of the ongoing sampling and monitoring activities to assess the performance of the cleanup systems. EPA will also talk with local Southington officials and citizens to gain a better understanding of any local concerns related to the landfill.

The review team will evaluate the information gathered and then make a determination as to whether the remedy is protective or not protective of public health and the environment. After completion of these activities, EPA will issue a Five-Year Review Report summarizing the findings with respect to the site.

The Old Southington Landfill is an 11-acre site that was used from the 1920s until 1967 as a municipal disposal area for Southington residents and businesses. After the landfill was closed in 1967, the landfill site was subdivided and sold for residential and commercial development. Several residential and commercial structures were built on the Site and on adjacent areas. In 1979, a nearby municipal well was closed because groundwater analyses indicated the presence of volatile organic compounds (VOCs) at levels that exceeded State standards. The well was permanently closed and the subsequent Superfund investigation led to an interim cleanup plan, called a Record of Decision, that was completed in September 2001. The cleanup plan consisted of permanent relocation of all on-site buildings, construction of a landfill cap over the entire Site, consolidation of a highly contaminated area in a lined cell underneath the cap and above the water table, installation of a soil gas collection system, and implementation of a long term monitoring program for groundwater and soil gas.

In 2006, EPA issued a final cleanup plan to address groundwater migrating from the Site. The 2006 Record of Decision contains five major components: institutional controls in the form of Environmental Land Use Restrictions at the down gradient properties, ventilation and vapor barrier technology, groundwater monitoring in areas of suspected vapor intrusion, maintenance and monitoring of engineering and institutional controls, and five year reviews.

EPA plans to hold a public information meeting this spring to keep the community informed of the status of activities at the site and will announce the time and location in the near future. In the meantime, anyone who has questions about the landfill, or who would like to be interviewed as part of the Five Year Review, may contact Jim Murphy, EPA's Community Involvement Coordinator at 617-918-1028 or murphy.jim@epa.gov

More information about cleanup activities at the Old Southington Landfill Superfund Site may be found on the EPA New England web site at www.epa.gov/region1/superfund/sites/oldsouthington.

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