SUPERFUND

Cleaning Up New England **PROPOSED PLAN**

Raymark Industries, Inc.

Stratford, CT

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

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

OPPORTUNITIES TO COMMENT ON THE PLAN

There will be three community involvement opportunities regarding this Proposed Plan.

Public Open House and Poster Session:
Wed., July 20, 2016 - 1:00 - 4:00 p.m.

Public Informational Meeting:
Wed., July 20, 2016 - 7:00 - 9:00 p.m.

Formal Public Hearing:
Tues., July 26, 2016 - Info. Session: 7:00 p.m.
Hearing: 7:30 p.m.

All meetings will take place at:
Stratford High School Auditorium
44 N. Parade St./Victoria Soto Way
Stratford, CT 06615

EPA will be accepting public comments on this proposed clean up plan from June 30, 2016 through July 29, 2016. You do not have to be a technical expert to comment. If you have a concern, suggestion, or preference regarding this Proposed Plan, EPA wants to hear from you before making a final decision on how to protect your community.

EPA is also specifically soliciting public comment concerning the following regulatory requirements: (i) its determination that the alternatives chosen are the least damaging practicable alternatives for protecting wetland and floodplain resources; (ii) its determinations regarding a Corrective Action Management Unit consolidation area at the Raybestos Memorial Ballfield; and (iii) its determination under the Toxic Substances Control Act regarding the management and on-site disposal of PCBs.

Comments can be sent by mail, e-mail, or fax (see page 46/47 for details). People can also offer oral or written comments at the formal public hearing (see page 46/47 for details). If you have specific needs for the upcoming public meeting or hearing, questions about the facility and its accessibility, or questions on how to comment, please contact Marilyn St. Fleur (see below).

CLEANUP PROPOSAL SNAPSHOT

EPA's Proposed Plan for the soil, sediment, and groundwater contamination at Operable Units ("OU") 2, 3, 4 and 6 at the Raymark Industries, Inc. Superfund Site ("Raymark Site" or "Site") generally includes the following elements:

Groundwater (Operable Unit 2)

- Install sub-slab contaminated vapor ventilation systems at 20 additional mostly residential properties;
- Assess potential vapor intrusion risks at four additional properties;
- Long-term maintenance of the existing and newly installed ventilation systems;
- Discontinue use of the existing passive DNAPL extraction system. This is a

continued >

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modification of the remedy set forth in the July 1995 Record of Decision for the OU1 facility;

- Institutional controls to limit future use of groundwater and to address potential vapor intrusion risks; and
- Long-term groundwater monitoring.

Upper Ferry Creek (Operable Unit 3)

- Excavation and removal of the top two feet of an estimated 4,650 cubic yards of sediment from the channel of Upper Ferry Creek from Interstate 95 to the Broad Street bridge;
- Excavation and removal to a depth of four feet of an estimated 22,600 cubic yards of soil that meets the definition of Raymark Waste (as described below) from the banks of Upper Ferry Creek;
- Excavation and removal to a depth of four feet of an estimated 7,600 cubic yards of wetland soil that meets the definition of Raymark Waste from abutting wetland areas;
- Replacement of excavated sediment and Raymark Waste with clean material. The bottom of each excavation would be lined with a geotextile fabric to serve as a warning layer;
- Restoration and revegetation of excavated areas with native species, and restoration of wetlands;
- Dewatering of sediment and Raymark Waste as necessary for transport;
- Sediment and Raymark Waste containing more heavily contaminated material that exceeds certain regulatory limits would be shipped to a licensed out-of-town disposal facility;
- Consolidation of excavated sediment and Raymark Waste at the Raybestos Memorial Ballfield (OU4);
- Sediment and Raymark Waste that exceeds the capacity of OU4 would be shipped to a licensed out-of-town disposal facility;
- Placement of institutional controls to limit future excavation, groundwater use, and other activities that could pose a risk, where necessary; and
- Long-term monitoring, and operation and maintenance.

Raybestos Memorial Ballfield (Operable Unit 4)

- Removal of existing vegetation, buildings, debris, and other infrastructure;
- Construction of an access road from Longbrook Avenue through the former Contract Plating property to the ballfield;
- Consolidation of excavated sediment and Raymark Waste from OU3 and OU6 with the existing 111,000 cubic yards of Raymark Waste on OU4;
- Construction of a permanent, low-permeability cap over the consolidation area to isolate contamination. The cap would be able to support redevelopment for commercial/industrial, municipal, and/or recreational uses. The top of the cap would not exceed a maximum elevation of 46 feet above mean sea level and the majority of the cap would have finished elevations between 30 and 40 feet above mean sea level;
- Construction of storm water management features;
- Construction of a permanent or temporary (based upon comments received from residents and property owners who live in this area and future design considerations) visual and sound barrier along the boundary with Patterson Avenue, Clinton Avenue and Cottage Place;
- Construction of a permanent vegetated berm along the border of Patterson Avenue. However, if it is determined, following public review and comment, that a permanent visual and sound barrier should be installed along the border with the Patterson Avenue residential properties, then construction of a berm would become unnecessary.
- Restoration of the property with vegetation and pavement as appropriate;
- Placement of institutional controls to protect the cap, limit groundwater use, and other activities that could pose a risk, where necessary; and
- Long-term monitoring and operation and maintenance.

Additional Properties (Operable Unit 6)

- Excavation and removal to a depth of four feet of approximately 71,000 cubic yards of soil that meets the definition of Raymark Waste from the 22 "Additional OU6 Properties";
- Replacement of excavated Raymark Waste with clean material. The bottom of each excavation would be lined with a geotextile fabric to serve as a warning layer;
- Restoration of excavated areas to the pre-excavation condition, with pavement or vegetation, as appropriate;
- Raymark Waste containing more heavily contaminated material that exceeds certain regulatory limits would be shipped to a licensed out-of-town disposal facility;

- Consolidation of excavated Raymark Waste at the Raybestos Memorial Ballfield (OU4);
- Raymark Waste that exceeds the capacity of OU4 would be shipped to a licensed out-of-town disposal facility;
- Placement of institutional controls to limit future excavation, groundwater use, and other activities that could pose a risk, where necessary; and
- Long-term monitoring and operation and maintenance.

This Proposed Plan is part of a conceptual comprehensive clean up approach, described below, and is based on a combination of remedial alternatives proposed in four separate Feasibility Study reports for OU2, OU3, OU4 and OU6. OU2 addresses groundwater and vapor intrusion. OUs 3, 4 and 6 collectively address soil and sediment. All of the remedial alternatives that were considered are summarized in this Proposed Plan. It is estimated that the clean up proposal would require about one year to design. For OU2, installation of vapor mitigation systems would require less than one year. For the consolidation proposal, excavation of Raymark Waste from OUs 3 and 6 would require about one year; and consolidation and construction of the cap on OU4 would require up to three years to complete. Therefore, design and construction of the overall clean up proposal is estimated to require up to four years. Operation and maintenance would continue indefinitely, including monitoring of groundwater and maintenance of the cap and vapor mitigation systems.

The estimated total present value cost of the clean up proposal, which includes capital costs (construction) and the estimated present value cost of long-term operation and maintenance ("O&M"), for these four operable units is $95.7 million. (The costs are based upon the most recent Feasibility Study reports. The concept of the present value cost is explained below.)

The costs of the individual clean up alternatives are as follows:

- OU2 Groundwater – total present value cost $3.1 million (capital cost $2.0 million plus O&M cost $1.1 million).
- OU3 Upper Ferry Creek – total present value cost $19.9 million (capital cost $17.8 million plus O&M cost $2.1 million).
- OU4 Raybestos Memorial Ballfield – total present value cost $45.7 million (capital cost $43.4 million plus O&M cost $2.3 million).
- OU6 Additional Properties – total present value cost $27.0 million (capital cost $18.0 million plus (O&M cost $9.0 million).

Understanding Costs

EPA guidance directs the Agency to use cost estimates based upon the present value or present worth method, so that a comparison can be made between clean up alternatives that have different construction completion dates and operating lifetimes. Present worth analysis produces a single cost figure representing the amount of money that, if invested at a particular rate of return in the base year - usually the present year - and dispersed as needed, would cover all estimated costs associated with the proposed alternative. In other words, the present worth analysis calculates a single cost number to capture all capital costs (that is, construction costs) and long-term operation and maintenance costs.

CONCEPTUAL COMPREHENSIVE CLEANUP APPROACH

Over the past twenty years, EPA has worked with officials and community leaders from the Town of Stratford, the Town-appointed Raymark Advisory Committee ("RAC"), the multi-stakeholder Raymark Superfund Team ("RST"), Save Stratford, Stratford Action for the Environment ("SAFE"), and others, in an effort to reach consensus on a path forward to clean up the Raymark Site. Throughout the years this effort has involved EPA's Regional Administrators, Connecticut Department of Energy and Environmental Protection's ("CTDEEP") Commissioners, and numerous federal, state, and local officials, with the objective being the development of a clean up approach with both long-term and short-term goals. These efforts culminated with EPA's issuance of a Conceptual Comprehensive Approach for the Raymark Site on March 20, 2015. The Conceptual Comprehensive Approach provided the framework for this Proposed Plan and presents an opportunity to move forward with this important and necessary clean up in a manner that is protective, cost effective and considers community concerns. Over the years, the Raymark Site has been divided into nine Study Areas, referred to as Operable Units ("OUs") (see page 49 and Figure on page 50). Clean up of OU1, the former

Raybestos facility, is complete. This Proposed Plan combines half of the remaining eight OUs – OU2 (Groundwater), OU3 (Upper Ferry Creek), OU4 (Raybestos Memorial Ballfield) and OU6 (Additional Properties) – in a unified approach, and is an important and significant step towards comprehensive clean up of the Raymark Site in that it addresses Raymark Waste in residential and commercial properties, including Ferry Creek, as well as vapor intrusion concerns from groundwater emanating from the former Raymark facility. The remaining four OUs (5, 7, 8, and 9) are in the active planning stages and will be addressed at a later date.

The Conceptual Comprehensive Approach and this Proposed Plan are not final agency decisions. By issuing this Proposed Plan, EPA seeks public comment on this phase of the clean up with the intent to finalize a Record of Decision. A copy of the Conceptual Comprehensive Approach is appended to the Feasibility Study (FS) reports for OUs 2, 3, 4 and 6, which can be found on-line at **www.epa.gov/superfund/raymark**, or at the Stratford Public Library, or at EPA's Record Center at 5 Post Office Square, Boston, MA.

COMMUNITY IMPACTS

EPA recognizes that there will be quality of life impacts that property owners, abutters, and the general Stratford community will endure during the active clean up. However, these clean up actions are necessary to protect the health and well-being of the Stratford community. EPA will implement best management practices throughout the duration of the clean up and attempt to buffer active work areas from the community to the extent practical. The following represents the most significant impacts and a discussion of the Construction Management Plan that EPA will develop during the design process.

Air Quality

Excavation and movement of Raymark Waste will be required as part of the proposed clean up. Any option that disturbs waste during clean up has the potential to present short-term risks during excavation, consolidation, capping, or other construction activities. Asbestos is of particular concern given the ability of fibers to become airborne when disturbed. EPA will use best available engineering practices, such as placement of covers and liners over and under excavated areas, and use of dust suppression methods to reduce potential short-term risks from asbestos fibers and other particulates. Continuous air monitoring for contaminants, including asbestos, will be performed to protect the public and workers, and to ensure that surrounding neighborhood air quality is not impacted.

Construction Noise

Large trucks and other construction equipment will be required to clean up Raymark Waste. This equipment will create noise. EPA will comply with state noise regulations, and excess noise levels will be reduced through engineering controls. However, EPA recognizes that an individual's threshold for tolerance of noise varies and wants to be clear that construction noise cannot be eliminated, and, therefore, EPA will limit construction activities to normal business hours (that is, 12-hour or less work days Monday through Friday). The remedial design will include a plan to monitor and control noise levels. EPA also intends to install a "highway" style barrier wall along the northwestern boundary of the OU4 and Contract Plating properties to provide a visual and noise buffer for area residents during remedial construction activities. This barrier may be temporary or permanent depending on the needs of the abutting residents. Temporary barriers in active construction areas such as the dewatering area will also be considered.

Truck Traffic

The proposed clean up of Raymark Waste requires major earth-moving activities. As part of the proposed work, Raymark Waste will need to be transported from the OU3 and OU6 properties to the OU4 ballfield for consolidation, and to an out-of-town disposal facility. Clean soil and other materials will need to be delivered to the OU3 and OU6 properties to backfill excavations, and to the OU4 consolidation area in order to construct the cap. In all, it is estimated that up to 130,000 cubic yards of Raymark Waste and sediment may need to be excavated, and up to 240,000 cubic yards of clean material may need to be transported to backfill excavations and construct the cap. Each tri-axle dump truck has a capacity of approximately 12 cubic yards, resulting in an estimated 31,000 truck trips over the estimated four-year duration of this proposed clean up effort. During active worktimes, this will result in about 100 trucks per day (12 per hour). Coordination with Town officials, community leaders, nearby residents, schools and local business owners will take place prior to the beginning of these activities to determine the best routes and traffic patterns to minimize impacts to area roadways. Coordination will continue and adjustments will be made as necessary throughout the duration of the clean up project. Note that these excavation amounts and estimated truck trips are based upon maximum excavation estimates, which could be less based upon predesign sampling and the extent of Raymark Waste.

Construction Management Plan

EPA will develop a Construction Management Plan to document methods and procedures for mitigating and responding to impacts. Prior to construction, EPA will engage Town officials, community leaders, nearby residents, schools and local business owners to develop detailed plans to mitigate, to the extent practical, the construction-related impacts. Such mitigation will involve the use of robust and appropriate dust suppression methods, continuous particulate air monitoring, restrictions on hours of work, truck traffic routes, drainage improvements, and isolating clean up activities from abutting neighbors and businesses to the extent practicable. Further details regarding such plans are contained in the Conceptual Comprehensive Approach.

EPA is Requesting Public Comment on the Following Proposed Determinations:

Impacts to Wetlands and Floodplains

Section 404 of the Clean Water Act and Executive Order 11990 (Protection of Wetlands) require a determination that there is no practical alternative to taking federal actions in a waters of the United States or wetlands. Should there be no alternative, the federal actions should minimize the destruction, loss, or degradation of these resources and preserve and enhance their natural and beneficial values. Through its analysis of the alternatives (See OU3 FS Report, Section 4.1.4), EPA has determined that because significant levels of Raymark Waste exist in Ferry Creek and associated wetlands within OU3 and OU6, especially in wetlands abutting Ferry Creek in OU3, there is no practicable alternative to conducting work in these areas. EPA is also required to make a determination that the clean up alternatives that are conducted are the least damaging practicable alternatives. EPA has determined, through its analysis of the various alternatives, that the proposed clean up alternatives, which impact Ferry Creek and its associated wetlands within OU3 and OU6, are the least damaging practicable alternatives. EPA would minimize potential harm and avoid adverse impacts on Ferry Creek and its associated wetlands by using best management practices during excavation to minimize harmful impacts on the wetlands, wildlife or habitat and by restoring these areas consistent with federal and state wetlands protection laws. Any wetlands affected by remedial work will be restored as a wetland area and such restoration will be monitored. Mitigation measures will be used to protect the Atlantic sturgeon and other aquatic life during remediation as necessary.

Before EPA can select a clean up alternative, Executive Order 11988 (Floodplain Management) and federal regulations require EPA to make a determination that there is no practicable alternative to activities that affect or result in the occupancy and modification of the floodplain. Through its analysis of alternatives (See OU3 FS Report, Section 4.1.5), EPA has determined that its proposed clean up will cause temporary impacts but will not result in the occupancy and modification of floodplains. The proposed consolidation area at OU4 is not located within the 100 year floodplain; however, a small area in the northeast corner of OU4 is located within the 500 year floodplain. Work will be designed to avoid any impacts to this area. Raymark Waste at OU3 and OU6 is located within the 100 and 500 year floodplains, but only temporary impacts to floodplains are anticipated. Waste located within the floodplain will be excavated and backfilled with clean fill and restored to grade so that the current flood storage capacity of Ferry Creek and the adjacent wetlands will not be diminished after completion of the remedial actions. Best management practices will be used during construction, which include erosion control measures, proper regrading, and restoration and monitoring of impacted areas. More detail regarding floodplain management can be found in the OU3 FS Report. **Through this Proposed Plan, EPA is specifically soliciting public comment concerning its determination that the alternatives chosen are the least damaging practicable alternatives for protecting Ferry Creek and the wetland and floodplain resources.**

Proposed Finding that the PCB Cleanup Level is Protective under the federal Toxic Substances Control Act (TSCA)

Polychlorinated biphenyls (PCBs) are a major component of Raymark Waste. PCBs are managed under the federal Toxic Substances Control Act (TSCA). Consistent with Section 761.61(c) of TSCA, EPA has made a draft finding that the on-site disposal of PCB contaminated material as described in this Proposed Plan does not result in an unreasonable risk of injury to human health or the environment as long as certain conditions are met. EPA's draft finding together with the required conditions related to PCBs is attached to this Proposed Plan. **EPA is specifically soliciting public comment on its proposed TSCA Determination.**

Proposed Determination that OU4 is the Appropriate Location for In-Town Consolidation of Raymark Waste and Excavated Sediment

Corrective Action Management Units ("CAMU") are designated areas created under federal Resource Conservation and Recovery Act ("RCRA") regulations to facilitate the treatment, storage, and disposal of hazardous waste, especially during clean ups. The CAMU regulations establish standards for CAMU-eligible waste and minimum design requirements for CAMUs to ensure that the consolidation of waste is implemented in a manner that is protective of human health and the environment.

When the original OU6 FS Report was prepared in 2011, an in-town location for a CAMU for consolidation of Raymark Waste had not been selected (Nobis, 2011). However, six possible consolidation locations were identified and screened in Appendix F of the OU6 FS: (1) the former Raybestos Memorial Field (OU4), (2) the Stratford Landfill and Short Beach Park Area (OU9), (3) the Lockwood Avenue property, (4) a portion of Ferry Creek (OU3), (5) the 576/600 East Broadway property, and (6) the properties at 230/250/280/300 Ferry Boulevard. The results of that screening indicated that OU4 and OU9 would be suitable consolidation areas.

Of these two areas, EPA has determined that OU4 is the appropriate CAMU location for the in-town consolidation of Raymark Waste. OU4 has a greater capacity (estimated 85,000 cubic yards) to accept waste than would OU9 (previously estimated at 50,000 cubic yards, although possibly far less due to recent Federal Aviation Administration height restrictions). OU4 is not situated within the 100-year floodplain, while portions of OU9 are located within the 100-year floodplain. (Only a very small portion of OU4 is located within the 500-year flood elevation.) OU4 is located closer to a majority of the OU3 and OU6 properties (about 1 mile verses 3 miles). Both OU4 and OU9 already have significant volumes of Raymark Waste. On the basis of these evaluations, OU4 is more suitable than OU9 as a CAMU for consolidating and managing Raymark Waste in the long term.

The CAMU rule establishes standards and minimum design requirements to ensure that waste consolidation is implemented in a protective manner. The minimum design standards for a new CAMU require a cap, liner, and leachate collection system. An alternative design, however, would be used for the OU4 CAMU. Pursuant to 40 Code of Federal Regulations Section 264.552(e)(3)(ii), a CAMU without a liner and leachate collection system may be constructed if an alternative design will prevent the migration of contamination at least as effectively as a CAMU with a liner and leachate collection system, or if a CAMU is to be established in an area with significant existing contamination and the alternative design would prevent migration that would exceed long-term remedial goals.

A CAMU at OU4 that does not have a liner and leachate collection system meets both of these alternative design requirements. OU4 contains significant levels of existing contamination, both within and outside of the Raymark Waste areas. There will be minimal, if any, leaching of any consolidated Raymark Waste because such waste will be placed well above the water table and covered by a low-permeability cap. Although Raymark Waste does not appear to present a significant leaching threat, all Raymark Waste excavated from OUs 3 and 6 will first be characterized and any portion found to be in excess of certain CAMU treatment standards will be transported offsite for treatment and disposal (see discussion of Principal Hazardous Constituents ("PHCs") below).

Also, a CAMU at OU4 will be located within a state-designated GB aquifer (groundwater not suitable for human consumption without prior treatment), where there are no drinking water wells or other private use wells in the area. The only potential exposure is to surface water receptors, and these exposures would not increase if a liner system is not present.

No additional waste is being placed within the water table, and, based on existing groundwater data from OU4, the Raymark Waste located beneath the low-permeability cap is not expected to generate significant leachate. Also, OU4 is located directly up gradient of the former facility (OU1), which is the location of the primary contaminant plume in groundwater. Accordingly, installing a liner and leachate collection system at OU4 would not materially increase protectiveness and would not be the best use of clean up resources.

A CAMU without a liner and leachate collection system will function at least as effectively as a CAMU with a liner. Also, the property will be created in an area with existing significant contamination, and the low-permeability cap over the entire CAMU should prevent migration that would exceed long-term remedial goals. Long-term monitoring and maintenance will be in place to ensure protectiveness.

EPA has determined that Raymark Waste to be excavated from OU3 and OU6 that meets the definition of "principal hazardous constituents (PHC)," as defined by the CAMU Rule, will be disposed of out-of-town. As defined by the RCRA CAMU rule, PHCs are those constituents that are regulated under RCRA that the EPA Regional Administrator determines are "substantially higher than the clean up levels or goals at the site." In general, PHCs are those "carcinogens that pose a potential direct risk from ingestion or inhalation at the site at or above 10^{-3}, and non-carcinogens that pose a potential direct risk from ingestion or inhalation at the site an order of magnitude or greater over their reference dose" (see 40 C.F.R. Section 264.552(e)(4)). Accordingly, the Raymark Waste that meets the following criteria will be disposed of out-of-town. Such Raymark Waste must (i) meet the RCRA hazardous waste definition for toxicity characteristic; (ii) contain constituents subject to RCRA's Land Disposal Restrictions; (iii) contain constituents above the PHC levels; and (iv) exceed the alternative RCRA Land Disposal Restriction (LDR) treatment standards for contaminated soil, which standard is ten times the RCRA Universal Treatment Standards (UTS) promulgated in 40 CFR 268.48. Based on an evaluation of the available data, EPA estimates that approximately 10% of the estimated +/-110,000 cubic yards of sediment and Raymark Waste to be excavated from OU3 and OU6 may exceed these regulatory PHC limits for CAMUs and thus be transported to an out-of-town, licensed disposal facility.

Also, any Raymark Waste that exceeds the available consolidation capacity at OU4 would be transported to an out-of-town licensed disposal facility. (It is estimated that approximately 25,000 of the 110,000 cubic yards of material from OU3 and OU6 would be disposed of out-of-town.) The capacity of the OU4 consolidation area cap is dictated by the elevations or height of the cap. As depicted in Figures 2 and 3, the majority of the cap would have finished elevations between 30 feet and 40 feet above mean sea level. The maximum elevation of the finished cap would be no more than 46 feet above mean sea level, but only a small portion of the cap would be at this maximum elevation. (Designed primarily with a 2% slope, the cap would range from 4 to 20 feet above the existing land surface.) The estimated volume of Raymark Waste that can be placed at the ballfield within these height restrictions is 85,000 cubic yards. The actual volume placed at OU4 in terms of cubic yards of material would be based on numerous factors that cannot be determined until actual construction of the consolidation area. These factors include final cap design, moisture content and other physical parameters of the excavated Raymark Waste, the amount of necessary compaction, and the final storm water management design. Overall, consistent with the 2015 Conceptual Comprehensive Plan, EPA anticipates that the Raymark Waste from the remaining OUs not addressed in this Proposed Plan will be shipped to out-of-town licensed disposal facilities. This means that overall approximately fifty percent of the Raymark Waste at the entire Site over all OUs would eventually be disposed of out-of-town.

For further details see Section 4.1.2 of the OU3 FS, Section 3.1.2 and Appendix F of the OU6 FS, and Section 2.5 of the OU6 FS Addendum.

EPA is specifically soliciting public comment on its proposed CAMU Determination.

SITE DESCRIPTION AND HISTORY

The Raymark Industries, Inc. Superfund Site (the "Site") consists of over 500 acres of land in the Town of Stratford, Connecticut. Raymark Industries, Inc. (formerly known as the Raybestos Manhattan Company) operated from 1919 until 1989, when the manufacturing plant was shut down and permanently closed. During the plant's operations, liquid wastes were disposed in unlined lagoons which seeped into groundwater and flowed into Ferry Creek. Solid waste material, now referred to as Raymark Waste, was disposed of on the Raymark facility property and was also used as "fill" material at various commercial, residential, municipal, and recreational properties throughout the Town of Stratford, and in wetlands adjacent to the Housatonic River. In 1993, the Agency for Toxic Substances and Disease Registry ("ATSDR") performed a health assessment in response to a citizen petition and shortly thereafter issued a Public Health Advisory for the Raymark facility and locations around the Town of Stratford where manufacturing wastes from the former Raymark facility had come to be located. EPA included the Site on the National Priorities List ("NPL") of Superfund sites on April 25, 1995. A public water supply provides drinking water and there is no known use of groundwater for any purpose in the area.

The Site includes the (former) Raymark Industries, Inc. facility and other locations where Raymark Waste has come to be located. Raymark Industries, Inc. is bankrupt, and the clean up is being conducted by the EPA, in coordination with the CTDEEP. For more details regarding the Site, see any of the Feasibility Study reports for OUs 2, 3, 4 or 6.

Raymark Industries, Inc. Site Timeline

EVENT	DATE
Raymark Industries, Inc. (formerly Raybestos Manhattan Company) manufactured automotive and heavy vehicle friction parts. Production processes generated waste by-products.	1919-1989
Waste by-products were disposed of in lagoons on the Raymark property. As lagoons became full, waste was excavated and used as fill on the Raymark property and throughout Stratford.	1919-1984
Stratford requests assistance from Connecticut Department of Environmental Protection (now CT DEEP) in evaluating several sites suspected of asbestos contamination. 12 areas are identified.	1975
The Town and CTDEEP installed a cover on a number of properties, temporarily protecting area residents from direct exposure to contaminated wastes.	1978 and 1993 – 1995
With EPA oversight, Raymark Industries, Inc. covered four lagoons, removed bags and containers filled with hazardous material, secured the property with fencing, boarded up buildings, and re-routed the on-site drainage system to minimize movement of contamination off the Raymark Facility.	Fall, 1992 – 1995
Agency for Toxic Substances and Disease Registry (ATSDR), at the request of the Town of Stratford, performed a health assessment and based on that assessment, ATSDR issued a public health advisory for areas in the Town that had received fill from Raymark. Sampling of residential, municipal, and commercial properties revealed extensive amounts of lead, PCBs, and asbestos in areas where Raymark fill was used in Stratford. The levels of these contaminants were reviewed by the Agency for Toxic Substances and Disease Registry and were considered a health risk. EPA began collecting and testing soil samples from properties located throughout Stratford where Raymark fill was suspected to have been used. About 40 residential areas showed contamination high enough to need clean up in the short term.	Spring, 1993
EPA conducted residential clean ups by excavating contaminated soils. The excavated material was trucked to and placed at the Raymark Facility.	1993 - 1995
To provide long-term funding, EPA proposed the Raymark Industries, Inc. site to the National Priorities List (NPL). Listing on the NPL authorizes the expenditure of Superfund monies.	January 18, 1994
The NPL listing was finalized.	April 25, 1995
Record of Decision for the former Raymark Facility (OU1) signed.	July 3, 1995
Demolition of on-site buildings at the former facility complete.	April, 1996
Stockpiling of contaminated soils from residential removals and Wooster School removal completed.	July, 1996
RCRA impermeable cap liner system installation at OU1 complete.	August, 1997
Site treatment systems began operating at OU1.	December, 1997
Operation and maintenance of OU1 turned over to CTDEEP.	August, 1998
EPA placed a soil and asphalt cover over areas with elevated levels of asbestos, lead, and PCBs in soils at the Housatonic Boat Club property and along Shore Road. This was a second temporary action supplementing an initial cover that CTDEEP had completed in 1994, which had worn and was no longer protective.	2000
Stratford Town Council established the Raymark Advisory Committee (RAC) to work with EPA and CTDEEP in addressing areas containing Raymark Waste. At the RAC's request, EPA developed OU6, a group of 24 (at that time) residential, commercial, state, and municipal properties that contain Raymark Waste.	June 2000 – September 2007

EVENT	DATE
First Five-Year Review Report for OU1.	September, 2000
Construction of Walmart, Shaws, and Home Depot on the capped OU1.	2002
EPA and CTDEEP installed sub-slab ventilation systems in over 100 homes to prevent contaminated ground water vapors from entering the buildings.	2004
Construction of Webster Bank on OU1.	June, 2005
Second Five-Year Review Report for OU1.	September, 2005
EPA worked with a new group, the Raymark Superfund Team (RST), in an effort to find common ground on potential clean up options to address the remaining Raymark Waste locations in Stratford.	August –December 2008
EPA samples approximately 300 monitoring wells installed around the former Raymark facility. Soil gas samples are collected at a number of the permanent monitoring stations located within the residential area bounded by Housatonic Avenue and Ferry Boulevard.	2009
EPA also releases a proposed clean up plan including final clean up actions at four OU6 properties and temporary (“interim”) actions for the remaining OU6 properties and other areas in-town contaminated with Raymark Waste.	September, 2010
Third Five-Year Review Report for OU1.	September, 2010
Health Consultation Follow-up Review of Bladder Cancer for Stratford, CT is released by the Connecticut Department of Public Health evaluating an additional 11 years of bladder cancer data (1997-2007), and concluding that over the entire period of follow up (1965-2007), there is no increasing or decreasing trend for bladder cancer in Stratford.	October, 2011
EPA issues a Record of Decision that finalizes Source Control Actions at four of the properties within OU6 and Interim Actions for all other locations where potential exposures to Raymark Waste could occur.	July, 2011
EPA's Remedial Program requests that EPA's Removal Program evaluate the OU6 Airport Property Site as a potential Raymark Waste removal site due to the impending Sikorsky Airport Improvements Project.	2013
The Sikorsky Airport Improvements Project begins. The goal of the project is to construct a runway safety area. In doing this construction work, about 14,000 cubic yards of Raymark Waste and invasive plant species were removed. The removal of Raymark Waste was overseen by EPA.	2014
EPA develops a Conceptual Comprehensive Plan for the Site that anticipates issuance of a proposed clean up plan for public review and comment for overall groundwater area (OU2), as well as the former Raybestos Memorial Field (OU4), Upper Ferry Creek (OU3), and approximately 20 properties remaining in OU6.	March 20, 2015
EPA completes oversight of the clean up of Raymark Waste at the Sikorsky Airport.	April, 2015
Fourth Five-Year Review Report for OU1.	September, 2015

WHY CLEANUP IS NEEDED

EPA has determined that there are both current and future potential threats to human health and the environment at OUs 2, 3, 4, and 6. The Remedial Investigation reports for these operable units define the extent of Raymark Waste and related contamination found in groundwater, surface water, sediment, and soil, and the exposure risks posed by Raymark Waste and related contaminated sediment. The definition of Raymark Waste and key findings for each OU are presented below.

Soil and Sediment Contaminants of Concern – Raymark Waste Defined

Raymark Waste contains asbestos, lead, copper, polychlorinated biphenyls (PCBs) and a variety of contaminants including solvents, adhesives, and resins. Soils containing these wastes were routinely used as fill at the former Raymark facility and at other locations within Stratford, including the locations that are the subject of this Proposed Plan. The various locations that received Raymark Waste as fill, however, also may have received fill material from other non-Raymark sources. As a result, it was necessary for EPA to develop an approach that would uniquely distinguish Raymark Waste from other contaminants that frequently were present within the same property or area. Lead, asbestos, PCBs, and copper were the most common constituents found in Raymark Waste. Based on these four constituents, the following definition of Raymark Waste was developed.

Raymark Waste in soil is defined as a single soil sample containing lead above 400 parts per million (ppm) and asbestos (chrysotile only) greater than 1 percent, and either copper above 288 ppm or polychlorinated biphenyls (PCBs) (Aroclor 1268 only) above 1 ppm. These four contaminants are used as a "fingerprint" to identify Raymark Waste locations. (See the OU6 Remedial Investigation for further details (TetraTech, June 2005).) Other contaminants of concern (COCs) that are either present in Raymark Waste, or were found to be co-located with Raymark Waste, are identified in the table below.

Soil/Sediment Contaminants of Concern (OUs 3, 4 and 6)
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Bis(2-ethylhexyl)phthalate
Dibenz(a,h)anthracene
Indeno(1,2,3-cd)pyrene
N-Nitroso-di-n-propylamine
Dieldrin
Aroclor-1242
Aroclor-1254
Aroclor-1260
Aroclor 1262
Aroclor 1268
Dioxin
Arsenic
Chromium
Copper
Thallium
Lead
Asbestos

Treatment of Raymark Waste/Principal Threat and Low-Level Wastes

The National Contingency Plan (NCP) which governs EPA clean ups, at 40 CFR Section 300.430(a)(1)(iii), states that EPA expects to use "treatment to address the principal threats posed by a site, wherever practicable" and "engineering controls, such as containment, for waste that poses a relatively low long-term threat" to achieve protection of human health and the environment. This expectation is further explained in an EPA fact sheet (OSWER #9380.3-06FS), which states that principal threat wastes are source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. There is no chemical-specific or overall threshold levels for determining what constitutes a principal threat waste, but where toxicity and mobility combine to pose a carcinogenic risk of 1×10^{-3} or greater, the fact sheet states that treatment should be evaluated.

For the OU3, OU4 and OU6 properties, the majority of Raymark Waste material in soil is not considered to be "principal threat waste," but rather "low-level threat waste." However, some areas of Raymark Waste do pose an estimated carcinogenic risk greater than 1×10^{-3} for some receptors. Therefore, as summarized in this Proposed Plan, EPA and CTDEEP evaluated numerous treatment methods, and combinations of methods, for treatment and have concluded that treatment is not viable or practicable due to the numerous and diverse nature of the contaminants found in Raymark Waste. No single or combination of treatment processes would completely destroy Raymark Waste. For more information, see the OU4 Feasibility Study Report.

As for groundwater, contamination in a denser-than-water undissolved state, called "dense non-aqueous phase liquid" or "DNAPL" is present beneath OU1. This DNAPL is a principal threat waste as it is toxic and a continuing source of contamination in the down-gradient groundwater, however, it is not mobile. As discussed below, because of a number of limitations, treatment of such DNAPL contamination would not be effective and implementable.

EPA'S CLEANUP SELECTION PROCESS

EPA first collects and then reviews the data regarding a site to determine whether there are potential exposure risks to human health and/or the environment. Exposures occur when people eat, drink, breathe, or have direct skin contact with a substance or waste material. Based on existing or anticipated future land uses, EPA develops different exposure scenarios to determine potential risk. If unacceptable exposure risks are estimated, EPA then determines the appropriate clean up levels, and develops potential clean up approaches to meet the Site-specific clean up goals. At the Raymark Site, human health and ecological risk evaluations confirmed the presence of potential unacceptable risk from exposure to Raymark Waste based upon a number of circumstances and exposure scenarios, as noted below (See "Human Health and Environmental Risks" discussed under each Operable Unit).

Once areas of potential risk were identified, clean up technologies were identified and evaluated, and clean up alternatives were developed in each of the four Feasibility Study reports to address the potential risks and to achieve Site-specific clean up goals for each Operable Unit. A short synopsis of the alternatives considered for each OU is provided below. A more detailed description and analysis of the clean up technologies and methods evaluated and each clean up alternative developed to reduce risks from Raymark Waste is presented in the Feasibility Study reports for each OU, which are available for public review and comment.

EPA first uses three screening criteria – effectiveness, implementability and cost – to compare and reduce the number of alternatives, if appropriate. EPA then applies nine required criteria to evaluate the remaining alternatives and recommend a final clean up plan (called a remedial action) that meets the statutory goals of protecting human health and the environment, maintaining protection over time, and minimizing contamination. These nine criteria make up the assessment process used for all Superfund sites.

The nine individual criteria are further described below:

Threshold Criteria

1. **Overall Protection of Human Health and the Environment:** Will the alternative protect human health and plant and animal life from the contamination released by the site? EPA will not choose a clean up plan that does not meet this criterion.
2. **Compliance with Applicable or Relevant and Appropriate Requirements (ARARs):** Does the alternative meet all pertinent federal and state environmental statues, regulations, and requirements? Is a waiver required? The chosen clean up plan must meet this criterion.

Balancing Criteria

3. **Long-term Effectiveness and Permanence:** Will the effects of the clean up plan last or could contamination cause future risk?
4. **Reduction of Toxicity, Mobility, or Volume through Treatment:** Does the alternative incorporate treatment to reduce the harmful effects of the contaminants, their ability to spread, and the amount of contaminated material present?
5. **Short-term Effectiveness:** How soon will site risks be adequately reduced? Are there short-term hazards to workers, the community, or the environment that could occur during the clean up process?
6. **Implementability:** Is the alternative technically and administratively feasible? Are the materials and services needed to implement the clean up alternative (e.g. treatment machinery, space at an approved disposal facility) readily available?
7. **Cost:** What is the total cost of constructing and maintaining the clean up alternative? Capital costs and the present value of all costs over the anticipated life of the clean up alternative are presented. EPA must select a clean up plan that provides necessary protection for a reasonable cost.

Modifying Criteria

8. **State Acceptance:** Do state environmental agencies agree with the recommendations? This criterion considers the state's preferences among or concerns about the alternatives, including comments on ARARs or the proposed use of waivers. This criterion is addressed following state input on the Feasibility Study and Proposed Plan.
9. **Community Acceptance:** Does the local community agree with EPA's analysis and preferred alternative? What support, objections, suggestions or modifications did the public offer during the comment period?

As part of each of the four Feasibility Study reports, each alternative (remaining following initial screening) was evaluated using the two threshold and five balancing criteria. EPA uses these criteria to balance the advantages and disadvantages of various clean up alternatives. As summarized below, EPA has evaluated how well each of the clean up alternatives meets these first seven criteria. Once comments from the State and the community are received and evaluated, EPA will evaluate the Modifying Criteria, respond in writing to comments, and select the final clean up plan in a formal Record of Decision or "ROD." This will be the final remedy for OUs 2, 3, 4 and 6.

The following contains a description of the estimated exposure risks at each OU, the clean up alternatives developed for that OU, and a comparison of the alternatives using the two threshold and the five balancing criteria.

How Are Exposure Risks to People Expressed?

Every person has a baseline risk from exposure to the numerous naturally occurring and man-made chemicals that are inherent in modern society. For example, the American Cancer Society estimates that 1 in 2 men, and 1 in 3 women, will develop cancer over a lifetime (Cancer Facts and Figures for 2016, American Cancer Society.) EPA refers to this risk as a person's baseline cancer risk. While people also have baseline exposure to non-carcinogens through naturally occurring and man-made chemicals that are inherent in modern society, these chemicals can result in toxic effects which are organ-specific, and therefore cannot be expressed in terms of probability.

In evaluating chemical exposure risk to humans at Superfund sites, EPA estimates the increased exposure risk, above the baseline, from carcinogens (chemicals that may contribute to cancer risk) and non-carcinogens (chemicals that may contribute to adverse toxic effects other than cancer, such as liver damage) differently. EPA also considers the cumulative carcinogenic and non-carcinogenic effects when multiple chemical exposures with similar target endpoints are present.

For carcinogens, risk estimates are expressed in terms of probability. For example, exposure to a particular carcinogenic chemical may present a 1 in 10,000 increased chance of causing cancer over the expected baseline cancer risk over an estimated lifetime of 70 years. This risk can also be expressed as 1×10^{-4}. The EPA acceptable risk range for carcinogens is 1×10^{-6} (1 in 1,000,000) to 1×10^{-4} (1 in 10,000). In general, calculated risks higher (greater) than this range would require consideration of clean up alternatives.

For non-carcinogens, exposures are first estimated and then compared to a reference dose ("RfD"). RfDs are developed by scientists to estimate the amount of a chemical a person (including the most sensitive person) could be exposed to over a lifetime without developing adverse health effects. The exposure dose is divided by the RfD to calculate the measure known as a hazard index ("HI") (a ratio). An HI greater than 1.0 suggests that adverse effects may be possible.

For lead, because of uncertainties in the dose-response relationship, there is no EPA-derived RfD for lead. Therefore, EPA uses a model, called the Integrated Exposure Uptake Biokinetic ("IEUBK") model, to evaluate potential risks from exposure to lead in soil. For example, the model predicts the probability that a child (under the age of seven) will have a lead blood level greater than the level associated with adverse health effects. EPA's goal is to have no more than a 5% probability of a child exceeding a blood lead level of 10 ug/dL.

As for risks from asbestos, at the national level, EPA has determined that the amount of asbestos in soil that presents a concern depends upon many factors and that a single value for protectiveness may not be appropriate in all instances. Evaluation through activity-based-sampling is the recommended approach for the characterization of soil to ensure protectiveness. In this approach, air monitoring is performed while activities that are likely to take place in the area are conducted. The objective is to characterize airborne particulates for the presence of asbestos fibers based upon the likely use of the area. This is believed to produce the most representative air data for potential exposures based on reasonable use.

Such asbestos activity based sampling, however, has not been performed at the Raymark Site. This is because all of the clean up approaches to address contaminated soil will eliminate the exposure pathway to asbestos in Raymark Waste. This will be accomplished by either capping the waste in place with a low-permeability cap (OU4) or excavating the top four feet soil containing asbestos in Raymark Waste, and then installing a clean soil cover (OU3 and OU6). Institutional controls to prevent digging into buried Raymark Waste will be placed on these properties for added protection.

CLEANUP ALTERNATIVES AND EVALUATION FOR GROUNDWATER (OU2)

OU2 consists of the groundwater (aquifer) impacted by contaminants released at the former Raymark facility and groundwater migrating from the facility to the Housatonic River, with some limited migration into upper Ferry Creek. Contaminants primarily consist of volatile organic compounds, or "VOCs," and some metals. VOCs (primarily trichloroethene (TCE)) were found to be volatizing (vaporizing) from the downgradient groundwater plume into residential buildings. Between 2001 and 2004, EPA and CTDEEP installed 106 sub-slab ventilation systems (similar to radon systems, also called depressurization systems) in residential homes to mitigate this potential threat. Groundwater in this area exceeds safe drinking water levels; however, it is not classified for use as a drinking water source.

EPA has sampled and studied the groundwater contamination in three Remedial Investigation Reports (RI Report (January 2005 (TTNUS)), RI Update (May 2014 (Nobis)), and RI Update Addendum (April 2015 (Nobis)). Sampling has shown that DNAPL, containing VOC contamination, is present in the groundwater beneath the former Raymark facility. This DNAPL source area is not mobile, is not dissolving quickly, and acts as a continuing source of VOC contamination to the downgradient groundwater plume. Because of this source, the contaminant levels in the downgradient plume have not significantly decreased. A DNAPL recovery system was installed in this area as part of OU1, but recovery of DNAPL has been minimal.

The Feasibility Study report for OU2 evaluated options to clean up this continuing DNAPL source area, to address contamination in the downgradient contaminated plume, and to address the potential threat posed by the contaminated vapors, known as "vapor intrusion" or "VI" into existing structures. The FS report identified a "Study Area" for VI and a smaller area, "VI Action Properties," which identified properties where action is needed to address potential health threats from VI. See Figure 4. Further details regarding these alternatives are described in the Feasibility Study Report for OU2.

OU2 HUMAN HEATH AND ENVIRONMENTAL RISKS

OU2 Human Health Risks

Contaminants of Concern and Summary of Human Health Risks	Carcinogenic Risks				Non Carcinogenic Risks
Modeled Indoor Air	$>10^{-3}$	$>10^{-4}$	$>10^{-5}$	$>10^{-6}$	HQ>1
1,1-Dichloroethane			X		
1,1-Dichloroethene					X
Benzene			X		
Chlorobenzene					X
Chloroform			X		
Ethylbenzene				X	
Chloroform					
Trichloroethene		X			X
Vinyl Chloride	X				X

Indoor Air: The Remedial Investigation Report, and its Update and Addendum, evaluated the potential risks from human exposure to contaminated vapors in indoor air originating from contaminated groundwater for both residential and commercial/industrial exposure scenarios. These evaluations determined that there were cancer and non-cancer risks exceeding acceptable levels, that is, risks requiring remedial action, referred to as an "actionable risk." The Feasibility Study assumed that an actionable risk to human health exists where exposure to Site-related contaminants from indoor air vapor intrusion may pose a cancer risk of 1 in 10,000 or greater, over an average person's baseline chance of having cancer, and may pose non-cancer health effects more than the acceptable level of a Hazard Index (HI) of 1.0, based upon multiple lines of evidence (such as groundwater, soil gas, and/or indoor air contaminant data) and site-specific factors. Carcinogenic risk drivers are vinyl chloride and trichloroethene. Noncarcinogenic risk drivers are 1,1 dichloroethene, chlorobenzene, trichloroethene, and vinyl chloride.

Surface Water Impacts: Groundwater contamination from OU2 that reaches the surface waters of Ferry Creek and the Housatonic River does not present a human health risk from surface water exposure to current recreational users and is not expected to present a human health risk to future recreational users of such water bodies.

Direct Contact and Ingestion Risks from Groundwater: There are currently no known operational wells and therefore no complete pathways for direct groundwater exposure, such as through drinking water exposure, for human receptors. But without any institutional controls to ensure that future wells are not installed, there is a potential for future direct contact and ingestion exposure to OU2 groundwater containing contaminant concentrations exceeding safe drinking water levels.

OU2 Human Health Risk Summary

Carcinogenic Risks EPA's Target Range is 10^{-6} to 10^{-4}	
Receptor	Risk
Residential Adult/Child (Current & Future) Inhalation	3.5×10^{-3}
Industrial/ Commercial Worker (Current & Future) Inhalation	2.9×10^{-4}

Non-Carcinogenic Risks EPA's Target Level is a Hazard Index (HI) ≤ 1.0	
Receptor	Risk
Residential Adult/Child (Current & Future) Inhalation	HI = 192.5
Industrial/ Commercial Worker (Current & Future) Inhalation	HI = 47

OU2 Ecological Risks: Although groundwater from the former Raymark facility flows into Ferry Creek and the Housatonic River, an ecological risk assessment conducted for the Remedial Investigation concluded that groundwater does not pose a current or future risk to ecological receptors in those surface waters.

CLEANUP ALTERNATIVES FOR OU2 (GROUNDWATER)

(The Alternatives being proposed in this plan are highlighted.)

Cleanup alternatives for OU2 were developed to fulfill the following clean up objectives (also called RAOs or Remedial Action Objectives).

The RAOs for protection of human health are:

(VI RAO) Prevent direct human exposure through inhalation by occupants of residential and commercial buildings of OU2 COCs in shallow groundwater that can volatilize into soil gas and migrate into indoor air through vapor intrusion and accumulate in enclosed building spaces at concentrations exceeding EPA's actionable risk threshold level for total excess lifetime cancer risks of 1×10^{-4} and/or a non-cancer Hazard Index greater than 1.0.

(Groundwater Direct Contact (Ingestion) RAO) Prevent direct human exposure through potential future ingestion by residents and workers of OU2 COCs in groundwater exceeding Maximum Contaminant Levels for drinking water and/or EPA's target risk range for total excess lifetime cancer risks of 1×10^{-6} (1 in 1,000,000) to 1×10^{-4} (1 in 10,000) and/or a non-cancer Hazard Index greater than 1.0.

Due to the lack of environmental risk posed by OU2 groundwater, there are no clean up objectives specifically for environmental receptors.

Potential clean up alternatives for groundwater have been developed and evaluated for three areas: the Source Area (SA) (location of DNAPL beneath the former Raymark facility), the Downgradient Area (DA) (contaminated groundwater plume locations beyond the former Raymark facility), and areas with buildings overlying the groundwater plume with potential for vapor intrusion impacts (VI). These alternatives, summarized below, are described in more detail in the 2016 OU2 Feasibility Study. The Alternatives being proposed in this Plan are highlighted. Except for the No Action alternatives, all alternatives include some form of operation and maintenance and long-term monitoring and five-year reviews. The No Action alternative also includes five-year reviews.

The Source Area (SA) Cleanup Alternatives to address the DNAPL VOC Source of Contamination at the Raymark Facility: (Note that each of the following SA alternatives must be combined with a Downgradient Area (DA) and a Vapor Intrusion (VI) alternative.)

SA-1: No Further Action: As a baseline to compare against other alternatives, no further action would be taken to address the DNAPL. Reviews would be conducted every five years, which is a feature of all OU2 alternatives. Existing institutional controls, including groundwater use restrictions, are already in place to protect the final capping remedy for OU1. No construction would take place. RAOs would be met in approximately 910 years through dispersion of groundwater contaminants. Costs associated with five year reviews are approximately $0.1 million.

SA-2: Limited Action, Optimization of Passive DNAPL Recovery Systems: A passive DNAPL recovery system that collects a small amount of DNAPL in a number of groundwater wells currently exists at the Raymark facility. This alternative would involve the optimization of this system and the installation of a new recovery system in eastern portion of OU1 in an effort to remove the underground DNAPL. Existing institutional controls, including groundwater use restrictions, are already in place to protect the final capping remedy for OU1. Construction would take approximately one year. RAOs would be met in approximately 900 years through dispersion of groundwater contaminants. Costs are approximately $5.5 million.

SA-3: Hydraulic Containment of DNAPL Source Area: This alternative would contain the contaminated DNAPL by installing an underground curtain or wall down to bedrock made by injecting flowable grout into boring holes. Groundwater recovery wells would actively pump and extract groundwater within the containment area to help ensure that the DNAPL is contained. The extracted groundwater would be pumped to a treatment building to be constructed on OU1 and, after treatment, discharged to the Town's wastewater treatment plant. Groundwater treatment would continue until clean up levels are achieved. Construction would take approximately two years. RAOs would be met in approximately 380 years. Costs are approximately $54.0 million.

SA-4: In-Situ Chemical Treatment of DNAPL Source Area: This alternative would treat the contaminated DNAPL through the injection of treatment chemicals into the DNAPL source zones via drilled injection wells. The DNAPL and thus the source of groundwater contamination would be reduced through chemical interactions to achieve groundwater clean up levels. Chemical oxidation was assumed to be the most effective treatment process. Construction/implementation would take approximately three years. RAOs would be met in approximately 740 years. Costs are approximately $13.8 million.

Downgradient Area (DA) Cleanup Alternatives to address the VOC Contamination Present in the Downgradient Groundwater Plume: (Note that each of the following DA alternatives must be combined with a Source Area (SA) and a Vapor Intrusion (VI) alternative.)

DA-1: No Action: Downgradient Area: As a baseline to compare against other alternatives, no further action would be taken to address the downgradient groundwater plume. No construction would take place. There would be no impact on time to achieve RAOs. Costs associated with five year reviews are approximately $0.1 million.

DA-2: Limited Action: Downgradient Area: No active treatment would occur, but institutional controls would be implemented to prevent the future use of groundwater. No construction would take place. There would be no impact on time to achieve RAOs. Costs associated with institutional controls are approximately $0.5 million (for example, legal fees).

DA-3: Targeted In-Situ Treatment: Downgradient Area: This alternative would involve in-situ treatment of targeted, high concentration areas ("hot-spots") within the contaminant plume downgradient of the OU1 property to decrease the time to achieve groundwater clean up levels in receptor areas. Institutional controls would also be implemented. Construction/implementation would take approximately two years. There would virtually be no impact on time to achieve RAOs. Costs are approximately $2.8 million.

DA-4: Comprehensive In-Situ Treatment: Downgradient Area: This would aggressively treat the downgradient dissolved contaminant plume with a goal of reducing the timeframe that ventilation systems would be needed in buildings within the area of potential for vapor intrusion. This Alternative is similar to DA-3, but contains significantly more points of injection, as the goal would be to treat the entire downgradient plume rather than targeted "hot spots". This alternative was eliminated due to significant uncertainties and difficulties concerning the complexity of geology and presence of homes in the treatment area which would limit reagent interface and overall potential effectiveness.

DA-5: Downgradient Area Groundwater Extraction, Treatment, and Re-infiltration into Shallow Groundwater to Mitigate Vapor Intrusion: This alternative would pump shallow contaminated groundwater downgradient of the OU1 source area and re-inject treated water into the ground throughout the residential and commercial areas. The goal of the re-injected treated water would be to introduce uncontaminated water to the top of the aquifer throughout the area of potential for vapor intrusion, thereby decreasing shallow groundwater contamination to below concentrations that pose a residential vapor inhalation risk. This alternative was eliminated as the FEMA 100-year flood zone would limit the amount of water that could be infiltrated in some areas. There would be very high costs with significant uncertainty due to the size of the aquifer and the required volume of water to be treated in order to be effective. The presence of homes and potential for flooding impacts in the treatment area would limit effectiveness.

DA-6: Groundwater Extraction in Commercial and Residential Areas to Lower Water Table to Mitigate the Potential for Vapor Intrusion: This alternative would lower the elevation of the groundwater table beneath the commercial and residential areas downgradient of the OU1 source areas in order to increase the vertical distance between the buildings and the top of the contaminated aquifer in order to decrease the potential for vapor intrusion. This alternative was eliminated due to very high costs with significant uncertainty due to the size of the aquifer and the required volume of water to be removed. The effectiveness could be severely limited due to the potential for inducing upward gradients in the water table.

Vapor Intrusion (VI) Cleanup Alternatives to address the Potential Threat Posed by Vapor Intrusion of VOC Contaminated Groundwater: (Note that each of the following VI alternatives must be combined with a Source Area (SA) and a Downgradient Area (DA) alternative.)

VI-1: No Further Action: Vapor Intrusion: This alternative would involve the continued maintenance of the 106 existing sub-slab ventilation systems by CTDEEP, but no new systems would be offered, and no institutional controls would be imposed. No construction would take place. There would be no impact on time to achieve RAOs. Costs associated with five year reviews are approximately $0.6 million.

VI-2: Installation and Maintenance of Sub-Slab Depressurization Systems: This alternative involves the installation of up to 20 new systems and operation and maintenance of both the new and existing ventilation systems at buildings identified in Figure 4, the VI Action Properties. An assessment of a limited number of additional properties would be conducted to determine whether systems are needed on those properties and, if so, VI systems will also be installed. Institutional controls would be implemented throughout the area where there is potential for vapor intrusion. Ongoing groundwater monitoring would be conducted during five year reviews to assess the condition of the contaminated groundwater plume. RAOs for each home would be achieved immediately upon completion of construction which is estimated to take approximately 1 year for all 20 buildings. Costs are approximately $2.5 million.

The twelve groundwater remedial alternatives above were screened for relative effectiveness, implementability, and cost. Three were eliminated (DA-4, DA-5, and DA-6), as described above in the individual alternatives, as a result of screening.

COMPARATIVE ANALYSIS OF THE OU2-GROUNDWATER CLEANUP ALTERNATIVES

Below is a summary of the comparative analysis for the above alternatives. For a more detailed discussion, see Sections 6.2.1 through 6.2.7 of the 2016 OU2 FS Report.

1. Overall Protection of Human Health and the Environment:

Source Area Alternatives:

Each of the four source area alternatives would meet the overall protection of human health criterion when combined with a downgradient area (DA) and a vapor intrusion (VI) alternative. Alternative SA-1 would rely solely on existing institutional controls to prevent the use of contaminated groundwater. Alternative SA-2 relies on existing institutional controls to prevent the use of contaminated groundwater and very limited action would be taken to reduce the ongoing risks presented by the DNAPL source area contamination. If successfully implemented, Alternatives SA-3 and SA-4 could reduce the source area contamination. But, complexities of the OU1 area present many significant challenges to the successful implementation of both alternatives. Such complexities include the differing nature of the subsurface material located above the bedrock, the depth and complex form of the bedrock itself, and OU1 limitations such as the presence of an impermeable cap, utilities, and an active shopping center. Based upon the estimated effectiveness of these two alternatives, clean up of the downgradient plume to protective levels would occur over many years (more than 380 years for SA-3 and over 740 for SA-4). In the interim, because contaminants in groundwater pose a vapor intrusion risk, these alternatives have to be paired with VI-2 to provide full mitigation of VI risks.

Downgradient Area Alternatives:

Except for Alternative DA-1, the downgradient area alternatives would meet the overall protection of human health criterion when combined with a source area (SA) and a vapor intrusion (VI) alternative. All downgradient alternatives rely on natural dispersion processes to reduce contaminant levels, but DA-2 and DA-3 would impose institutional controls to reduce long-term risks, and DA-3 would also use in-situ treatment to accelerate the contaminant degradation processes. None of the alternatives would significantly reduce the time to meet clean up levels, beyond the reduction provided by the active Source Area alternatives. DA-2 and DA-3 provide greater protection than DA-1 because they both include institutional controls to reduce risks.

Vapor Intrusion Alternatives:

Alternative VI-1 would not provide protection of public health because no action would be taken to prevent vapor intrusion into structures that currently do not have mitigation systems and are located within the area of potential for vapor intrusion. Alternative VI-2 would be protective of public health because VI-2 would include installation of ventilation systems in properties located within the area of potential for vapor intrusion that do not currently have systems and would include institutional controls to address potential VI-related risks.

2. Compliance with Applicable or Relevant and Appropriate Environmental Requirements (ARARs):

There is no ARARs analysis for the no action alternatives because no action is being taken under those alternatives. Unless the no action alternative is protective, these alternatives are not further discussed in this comparative analysis. Because Alternative SA-1 already includes an existing institutional control which addresses groundwater risk, it is carried through the analysis. (For further information regarding ARARs and how each alternative complies with ARARS, refer to the Feasibility Study for each OU.)

Source Area Alternatives:

SA-2, SA-3, and SA-4 would only meet chemical-specific ARARs regarding target groundwater concentrations necessary to prevent VI risks after hundreds of years. These alternatives would therefore have to be paired with VI-2 to provide full mitigation of VI risks. SA-1, which only includes a restriction on groundwater use in the source area, would also have to be paired with VI-2 to provide full mitigation of VI risks. The source area alternatives could meet action-specific ARARs, including the requirement in the CT DEEP cleanup regulations to contain or remove DNAPL to the maximum extent prudent.

Downgradient Area Alternatives:

To meet chemical specific ARARS, DA-2 and DA-3 would have to be paired with VI-2 and a source area alternative, until clean up goals are met, which would be in the hundreds of years. The down gradient alternatives could meet location and action-specific ARARs.

Vapor Intrusion Alternatives:

Alternative VI-1 would not meet chemical-specific ARARs. Specifically, VI-1 would not meet the requirement of the Connecticut volatilization regulations or federal risk criteria because some buildings within the area of potential for vapor intrusion would remain without ventilation systems. Alternative VI-2 would meet these regulations and other location and action-specific ARARs.

Because Alternative DA-1 and VI-1 failed both threshold criteria above (overall protection of human health and the environment, and compliance with ARARs), these alternatives are not included in the remainder of the comparative analysis.

3. Long-Term Effectiveness and Permanence:

Source Area Alternatives:

SA-1 and 2 would leave the most residual risk as no or very limited actions would be taken to reduce the DNAPL source. SA-3 depends upon the long-term maintenance of a groundwater extraction system to maintain the containment provided by the grout curtain. Also, complexities of OU1 present significant challenges for implementation. SA-4 would irreversibly address the DNAPL source area through chemical treatment, but challenges presented by OU1 significantly decrease the likely effectiveness of this alternative. The time estimates to achieve clean up goals are highly dependent on the assumed effectiveness of the treatment options.

Downgradient Area Alternatives:

DA-3 may provide slightly higher levels of long-term effectiveness compared to the other options because DA-3 relies upon hot spot treatment. However, DA-3 would result in little to no decrease in the overall time to obtain target groundwater clean up levels without first eliminating the DNAPL source areas.

Vapor Intrusion Alternatives:

Alternative VI-2 reduces risk through the installation of the additional ventilation systems and institutional controls and would be effective in the long term. However, VI-2 relies on engineered and institutional controls that mitigate, but do not eliminate, the underlying residual risk.

4. Reduction of Toxicity, Mobility, and Volume through Treatment:

Source Area Alternatives: Alternative SA-1 does not meet CERCLA's criterion for reduction of toxicity, mobility, or volume through treatment; SA-2 and SA-3 partially meet the criterion; and SA-4 meets the criterion through the chemical treatment of the source area contamination. SA-3 contains the source and only treats the extracted contaminated groundwater.

Downgradient Area Alternatives: DA-3 would destroy downgradient contamination in targeted "hot spot" areas and would result in a larger degree of reduction of toxicity, mobility and volume in these areas in a shorter timeframe compared to the other alternatives. However, DA-3 would not include treatment of the larger downgradient plume area and would therefore not reduce the overall time to achieve clean up objectives. DA-2 does not include active treatment, but it would result in reduction of toxicity, mobility and volume by natural attenuation. Active treatment is not included under DA-2, so the alternative does not satisfy the CERCLA preference for treatment.

Vapor Intrusion Alternatives: VI-2 would treat air emissions from the ventilation systems only if deemed necessary to meet ARARs; however, treatment is not anticipated.

5. Short-Term Effectiveness:

Source Area Alternatives:

Alternative SA-1 presents no short or long-term increased risks to the community, site workers, or the environment. The other alternatives present moderate short and long-term risks, but risks to the community and workers can be minimized through use of engineering controls and by proper implementation of a health and safety program.

Downgradient Area Alternatives:

No active remedial actions are associated with alternative DA-2; therefore, there would be no increased risks to the community, site workers, or the environment. DA-3 is an active treatment alternative that would be performed in a heavily developed and populated area, which could present some risks from the treatment chemicals. Such risks can be minimized through proper controls.

Vapor Intrusion Alternatives:

Alternative VI-2 is expected to have minimal impact to the community in the short term.

6. Implementability:

Source Area Alternatives:

SA-1 does not require any actions so there would not be any implementation issues. SA-2 would require some construction for additional investigation wells and multiple extraction/recovery wells, which could interrupt the shopping center located at OU1.

SA-3 is technically impracticable to implement because of the differing nature of the material above the bedrock, the depth and complex form of the bedrock itself, and OU1-related limitations, such as the presence of an impermeable cap, utilities, and an active shopping center. The grout curtain must be tied or keyed into the bedrock to effectively contain the residual DNAPL, but there are deep bedrock valleys that would make it extremely difficult to do so. This alternative would also require more than 300 years of maintenance to remain effective.

The implementation of SA-4 would be easier than SA-3, but still highly challenging to implement. Multiple treatment chemicals requiring high pressure injections may be necessary due to the mix of contaminants in soil and groundwater. The subsurface materials and depth of contaminants makes it difficult to ensure effective delivery of treatment chemicals. Long-term maintenance would not be required, but continued groundwater monitoring would be needed.

Downgradient Area Alternatives:

DA-2 only includes institutional controls, which are easily implementable. DA-3 is much more difficult to implement than DA-2. It may be difficult to optimize chemical treatment because of the location and depth of contaminant "hot spot" areas and wide variety of chemicals found in the source area. Chemicals used for treatment could also potentially increase volatilization during the treatment process, further impacting downgradient buildings located above the treated area.

Vapor Intrusion Alternatives:

VI-2 would be relatively easy to implement but would require maintenance and monitoring of the existing and new SSD systems.

7. Cost:

The total estimated present value cost of all of the OU2 clean up alternatives is presented in the table below. The cost of the Source Area alternatives ranges from $0.1 million to $54.0 million, and the cost of the down gradient alternatives ranges from $0.1 million to $2.8 million. Alternative VI-1, the no further action alternative, would cost $0.6 million, whereas the VI-2 alternative, which involves the installation of some new ventilation systems, would cost $2.5 million.

Detailed cost estimates, assumptions, and a sensitivity analysis for Present Value (PV) costs are included in the OU2 Feasibility Study, Appendix F. PV costs are calculated for a 30-year duration and use a 7% discount factor. A discussion of time estimates and sensitivity analysis are included in the OU2 Feasibility Study, Appendix E; all time estimates to achieve RAO values are modeled estimates developed as described in Appendix E. Modeling of time to achieve target groundwater concentrations for SA-3 assumed 90% containment of source area containment mass. Modeling assumes that alternative SA-3 is successfully implemented, however, SA-3 is considered to be not implementable because of significant technical and OU1 site challenges (see the OU2 Feasibility Study Table 5-1 and Section 6.2.6). Modeling of time to achieve target groundwater concentrations for SA-4 assumed 75% destruction of source area containment mass.

Alternative	Capital Cost (construction) (millions)	Present Value of O&M (millions)	Total Present Value Cost (construction & O&M) (millions)	TIME ESTIMATES TO ACHIEVE RAOs and Groundwater Target Concentrations (years)	
				Residential	Industrial/ Commercial
Source Area Alternatives					
SA-1: No Further Action - DNAPL Source Area (the preferred alternative)	**$ 0**	**$0.1**	**$0.1**	**760**	**910**
SA-2 : Limited Action: Optimization of Passive DNAPL Recovery Systems	$5.2	$0.3	$5.5	760	900
SA-3: Hydraulic Containment of DNAPL Source Area	$10.1	$43.9	$54.0	240	380 310 (at source)
SA-4: In-Situ Chemical Treatment of DNAPL Source Area	$13.5	$0.4	$13.8	590	740
Downgradient Area Alternatives					
DA-1: No Action - Downgradient Area	$0	$0.1	$0.1	No Change	No Change
DA-2: Limited Action – Downgradient Area (the preferred alternative)	**$0.4**	**$0.1**	**$0.5**	**No Change**	**No Change**
DA-3: Targeted In-Situ Treatment of Downgradient Area	$1.9	$0.9	$2.8	Reduces SA-3 or SA-4 time by 2 yrs	No Change-
Vapor Intrusion Alternatives					
VI-1: No Further Action - Vapor Intrusion	0	$0.6	$0.6	Does not achieve RAOs	
VI–2: Installation and Maintenance of SSD Systems (the preferred alternative)	**$1.6**	**$0.9**	**$2.5**	**1**	

CLEANUP ALTERNATIVES AND EVALUATION FOR UPPER FERRY CREEK (OU3)

OU3 currently consists of Upper Ferry Creek and adjacent wetlands from the Interstate 95 culvert to Broad Street (See Figure 5). The OU3 study area initially included Lower Ferry Creek (now known as OU7) and the Beacon Point Area (now known as OU8). These areas were designated as separate operable units to enable more focused investigations. Raymark Waste has been deposited in these areas through filling or through surface water transport. OU3 encompasses approximately seven acres, of which approximately 2.6 acres are wetlands and/or open water. Portions of Ferry Creek are also adjacent to some of the OU6 properties. For further information see Section 1.4 and Figure 1-3 of the OU3 FS Report.

OU3 HUMAN HEATH AND ENVIRONMENTAL RISKS

OU3 Human Health Risks

EPA conducted a human health risk assessment for OU3 in 1999. At that time, OU3 included areas that are now being addressed as OU7 and OU8. The 1999 risk assessment concluded that cancer risks to recreational users from exposure to soil, wetland soils, and sediment were at levels approaching an unacceptable risk. No adverse non-carcinogenic health effects were expected. Exposure to lead in surface soil, wetland soil, and sediment to frequent child recreational users was above levels of concern. Asbestos was also detected at an average concentration of five percent, which is above the level of concern (typically considered to be one percent). The 1999 risk assessment concluded that surface water, however, did not pose a risk to adolescent trespassers and child recreational visitors.

In the 2016 OU3 FS Report, EPA updated this 1999 exposure assessment using current risk screening levels for recreational exposures. This updated evaluation indicates that recreational exposures to sediment and wetland soils in Ferry Creek present a cancer and non-cancer risk above acceptable levels as follows:

Carcinogenic Risk EPA's Target Range is 10^{-6} to 10^{-4}	
Receptor	Risk
Current and Future Recreational Visitor	9.9×10^{-3}

Non-Carcinogenic Risk EPA's Target Level is a Hazard Index (HI) ≤ 1.0	
Receptor	Risk
Current and Future Recreational Visitor	HI = 22

Lead and asbestos are also present at unacceptable levels.

OU3 Ecological Risks

Ecological risks from exposure to contaminants in surface water, sediment, wetland soil and biota in Ferry Creek were evaluated as part of an ecological risk assessment conducted for the 1999 OU3 Remedial Investigation. In 2005, EPA further analyzed ecological risks from contaminated sediment. A summary ecological review was also recently performed and is included in the 2016 OU3 FS Report.

The risk assessments conclude that potentially unacceptable ecological risks are present in Ferry Creek sediment. These include risks to wildlife and sediment dwelling invertebrates from exposure to a number of contaminants. There are also unacceptable risks to wildlife from ingestion of contaminated biota tissue. The risk assessment evaluations concluded that the human health risks were more significant, and that any action taken to address human health risks would adequately address ecological risks.

CLEANUP ALTERNATIVES FOR OU3 (UPPER FERRY CREEK)
(The Alternative being proposed in this plan is highlighted.)

The clean up alternatives developed for OU3 are summarized below, but are described in more detail in the OU3 Feasibility Study Report prepared for this Proposed Plan. The Alternative being proposed in this plan is highlighted. Except for OU3-1, all alternatives require some form of operation and maintenance, and long-term monitoring. All alternatives include five-year reviews.

Cleanup alternatives for OU3 were developed to fulfill the following clean up objectives (also called "RAOs" or Remedial Action Objectives):

> Prevent direct human exposure through inhalation, dermal contact, and ingestion by recreational users of OU3 to contaminated soil that is defined as Raymark Waste and sediment contaminated with Raymark OU3 COCs. ("Raymark Waste" is defined to contain lead, asbestos, and either copper or PCBs in certain amounts. See Page 12 for more details on the definition of Raymark Waste.) By preventing such exposure and by responding to such Raymark Waste and OU3 COCs in sediment; lead, asbestos, copper, and PCBs will be addressed as well as any other contaminants co-located with such Raymark Waste, including, without limitation, all OU3 COCs at levels exceeding EPA's target risk range of a total excess lifetime cancer risk of 1 x 10-4 to 1 x 10-6 and/or a non-cancer Hazard Index greater than 1.0.
>
> Prevent exposure by ecological receptors to contaminated sediment in Ferry Creek that results in potential adverse impacts.

Alternative OU3-1 - No Action: Under the no action alternative, nothing would be done to reduce the human health and ecological risks associated with Ferry Creek. EPA is required to look at a no action alternative, which provides a baseline for comparison to the other clean up alternatives. Ongoing five-year reviews would be conducted for all alternatives to verify that there have been no changes in impacts from the Raymark Waste.

Alternative OU3-2 – Limited Action: No treatment, removal, or containment of Raymark Waste would occur under Alternative 2, but institutional control restrictions, such as prohibitions on certain types of excavations or on the use of groundwater, would be put in place to mitigate human health risks. Fencing and warning signs would be constructed to deter trespassers. Quarterly groundwater monitoring would be required for the first two years, then every nine months thereafter to ensure that there are no changes in the impacts from Raymark Waste.

Alternative OU3-3 – Excavation and Consolidation On-Site Adjacent to Ferry Creek: Alternative 3 would include excavation of the top two feet of channel sediment from the entire length of Ferry Creek from the I-95 culvert down to the Broad Street Bridge. Ferry Creek bank soil containing Raymark Waste above the mean high water line and adjacent wetland soil would be excavated to a depth of four feet. The bottom of each soil excavation would be lined with a geotextile fabric to serve as a warning layer, then backfilled with clean material. Excavated sediment and Raymark Waste-contaminated soil would be consolidated under a low-permeability cap on-Site adjacent to Ferry Creek on an upland OU6 parcel that already contains Raymark Waste (the Lot Behind 326 Ferry Boulevard), except for the sediment and Raymark Waste-contaminated soil containing more heavily contaminated material that exceeds certain regulatory limits which would be transported to a licensed out-of-town disposal facility. Institutional controls, such as deed restrictions or notices, would be required to prevent future excavation deeper than four feet in the backfilled areas, groundwater use, or any other activity that could result in an exposure to remaining waste or compromise the effectiveness of the remedy. Quarterly groundwater monitoring would be required for the first two years, then every nine months thereafter to ensure that there are no changes in the impacts from Raymark Waste.

Alternative OU3-4 – Excavation and In-Town Consolidation: Alternative OU3-4 is identical to Alternative OU3-3 except that the excavated materials would be consolidated at the proposed OU4 ballfield and covered with a low-permeability cap. Consistent with OU3-3, Raymark Waste containing more heavily contaminated material that exceeds certain regulatory limits would be transported to a licensed out-of-town disposal facility.

Alternative OU3-5 – Excavation and Out-of-Town Disposal: Alternative OU3-5 is identical to Alternatives OU3-3 and OU3-4 except that all excavated materials would be disposed at an out-of-town licensed facility.

Components common to Alternatives OU3-3, OU3-4, and OU3-5 are described below.

Soil Excavation: Soil containing Raymark Waste along both sides of Upper Ferry Creek, above the mean high water line, would be excavated to a depth of four feet below existing grade (approximately 22,600 cubic yards). Areas that do not contain Raymark Waste would not be excavated. The exact horizontal extent of excavation would be determined by additional pre-design sampling. The vertical extent of excavation to four feet would be protective and was determined to be acceptable to CTDEEP. The excavated areas would be backfilled with four feet of clean soil, but the heavily sloped areas along the east side of Ferry Creek (next to residential properties along Housatonic Avenue) would be replaced with two feet of clean fill and two feet of rip-rap armoring to maintain slope stability. On the east side of Ferry Creek, excavation of Raymark Waste would extend beyond the current boundary of OU3, if necessary, to excavate and remove soil meeting the definition of Raymark Waste. Raymark Waste on residential properties along Housatonic Avenue was excavated and removed during previous removal actions, therefore only minimal, if any, Raymark Waste is anticipated beyond the eastern boundary of OU3. On the west side of Ferry Creek, excavation of Raymark Waste would extend to the commercial properties to be excavated in OU6.

Wetland Soil Excavation: Wetland soil containing Raymark Waste would be excavated to four feet below existing grade (approximately 7,600 cubic yards maximum). Soil that does not contain Raymark Waste would not be excavated, and the exact horizontal extent of excavation would be determined by further sampling. The vertical extent of excavation to four feet would be protective, and was determined to be acceptable to CTDEEP. The excavated areas would be backfilled with clean material and restored as wetlands.

The above excavation amounts of 22,600 for soil and 7,600 for wetlands assume that the entire stretch of both banks of Ferry Creek, and all of the abutting wetlands, contain Raymark Waste and must be excavated. If Raymark Waste is not detected, the area not containing Raymark Waste will not be excavated. Thus, these excavation amounts are maximum estimates. Raymark Waste areas will be fully delineated during the pre-design study, and the final excavation amounts are expected to total less than the amounts shown.

Sediment Excavation: The Ferry Creek channel sediment would be excavated to a depth of two feet below existing grade throughout the entire length of the channel from the Interstate 95 culvert to the Broad Street Bridge (approximately 4,650 cubic yards). Two feet would be protective for ecological concerns and would address the biologically-active zone. The Ferry Creek channel sediment is defined as the area below the mean high water line of Ferry Creek. Dewatering of Ferry Creek would be required to complete the excavation of the creek sediment. While the exact methods for excavation will be determined in the remedial design, it is anticipated that either cofferdams (watertight enclosures formed by metal sheet piles) would be installed to isolate active excavation areas for dewatering. Temporary water pumping stations, bypass piping, and other water management methods may be employed. Hydraulic dredging may be used instead of cofferdams, if appropriate, as determined during the remedial design. After excavation, a two foot layer of clean silt would be placed along the entire length of the excavated area.

Disposition of Contaminated Material: Soil, wetland soil, and sediment may first be hauled to a staging area, which would most likely be located at 326 Ferry Boulevard and the Lot behind 326 Ferry Boulevard. Material may be temporarily staged at this area for characterization and dewatering prior to disposal. Saturated materials would be dewatered in a specially designed dewatering area. Excavated materials would be disposed at OU3, or the OU4 consolidation area, or at an out-of-town disposal facility. EPA will consider installing a temporary barrier to buffer construction impacts to adjacent property owners.

The five remedial alternatives were screened for relative effectiveness, implementability, and cost. Through screening, Alternative OU3-3 was eliminated because the proposed consolidation location is situated immediately adjacent to Ferry Creek within the 100-year floodplain, and there are other viable alternatives that have less adverse impacts on floodplains. The alternatives also include maintenance of excavated areas, long-term monitoring, and institutional controls, as further described in the OU3 Feasibility Study.

COMPARATIVE ANALYSIS FOR THE OU3-UPPER FERRY CREEK CLEANUP ALTERNATIVES

Below is a summary of the comparative analysis for the remaining four alternatives. For a more detailed discussion, see Sections 6.1 through 6.7 of the 2016 OU3 FS Report.

1. Overall Protection of Human Health and the Environment:

Alternative OU3-1 does not provide any protection of human health and the environment because no actions would be taken to address contaminated soils and sediment in excess of state clean up regulations and federal risk criteria.

Alternative OU3-2 provides minimal protection of human health and no protection of the environment. Institutional controls, such as fencing and signage, are the only actions taken to prevent direct human contact with contaminated soils and sediment, and such controls minimize but do not effectively reduce such exposure. There would be no protection of the environment under this alternative.

Alternatives OU3-4 and OU3-5 provide the most protection. The alternatives are equally protective and address contaminated soil and sediment by excavating/dredging Ferry Creek sediment, soils, and wetland soils. The alternatives would protect human health and the environment by preventing direct contact, ingestion, and inhalation through removal of the contaminated sediment and soil. The bottom of each excavation would be lined with a geotextile fabric to prevent serve as a warning layer then backfilled using clean soil material in order to create a clean soil cover that prevents direct contact with remaining contaminated material.

2. Compliance with Applicable or Relevant and Appropriate Environmental Requirements (ARARs):

There is no ARAR analysis for Alternative OU3-1 because no action is being taken under this alternative. Alternative OU3-2 would not comply with ARARs because contaminants in Raymark Waste would remain accessible in soil and sediment in excess of CTDEEP clean up regulations and federal risk criteria. Alternatives OU3-4 and OU3-5 would render the remaining contaminated soil and sediment inaccessible, and would be compliant with the chemical-specific CTDEEP Direct Exposure Criteria and Pollution Mobility Criteria. Alternative OU3-2 would comply with federal and state location-specific ARARs.

Alternatives OU3-4 and OU3-5 would comply with federal and state location-specific ARARs. OU3-4 and OU3-5 would have unavoidable impacts to the wetlands and Ferry Creek so that contaminated soil and sediment can be excavated and removed, but the alternatives would mitigate the damages, backfill with clean materials, and restore the wetlands vegetation and Ferry Creek. Although construction would occur in the floodplains, the completed remedial actions would not impair the flood way or decrease flood storage capacity because the area would be backfilled to the original grade. Evaluation for potential historic resources would be performed to identify and avoid potential disturbances. EPA has tentatively identified the Atlantic Sturgeon as an endangered species that may need protective measures during clean up to minimize potential disturbances. Other mitigation measures may be required during water diversion activities to protect aquatic life.

Alternatives OU3-4 and OU3-5 would comply with federal action-specific ARARs and To-Be-Considered regulations ("TBCs") by planning for contingencies during the remedial design for avoiding releases of asbestos, avoiding introduction of invasive species, managing storm water discharges, and managing PCB-contaminated wastes during the remedial action. Should wastewater be generated during remedial activities that requires either discharges to surface water bodies or a local publicly owned treatment works, appropriate substantive treatment and pre-treatment requirements would be met.

Alternatives OU3-4 and OU3-5 would comply with state regulations for categorizing, handling, and managing identified hazardous wastes. Alternative OU3-4 would also meet state capping requirements for hazardous waste through a low-permeability cap. Alternatives OU3-4 and OU3-5 would comply with state action-specific ARARs and TBCs by taking appropriate measures for well installation and abandonment, managing hazardous investigation-derived waste, controlling noise during remediation, and avoiding erosion through proper soil and sediment erosion control programs.

Because Alternative OU3-1 failed both threshold criteria above (overall protection of human health and the environment, and compliance with ARARs), this alternative is not included in the remainder of the comparative analysis.

3. Long-Term Effectiveness and Permanence:

Alternatives OU3-4 and OU3-5 offer the most long-term effectiveness and permanence, followed by Alternative OU3-2. Because active remediation is not a component of Alternative OU3-2, residual risks are only minimally decreased through institutional controls.

Alternatives OU3-4 and OU3-5 include excavation/dredging of contaminated soil, sediment, and wetland soil, which is a very reliable technology. However, the tidal influence on Ferry Creek means that there is the likelihood that the excavated areas may be re-contaminated to some extent by both up-stream and down-stream sources.

Alternative OU3-2 is the least reliable alternative, since the effectiveness of this alternative is contingent upon the implementation and maintenance of the institutional controls placed on OU3. Alternatives OU3-4 and OU3-5 are equally and very reliable. Additional remedial actions can be implemented for all three alternatives, if needed.

The effectiveness of each alternative is readily monitored through periodic inspections and maintenance. Five-Year Reviews would be required because contamination would remain at OU3 below a depth of two feet (in the Ferry Creek channel) or four feet (banks of Ferry Creek and wetland soils).

4. Reduction of Toxicity, Mobility, and Volume through Treatment:

Alternative OU3-5 would likely provide the most reduction of toxicity, mobility, and volume through treatment, followed by Alternative OU3-4. Under OU3-5, wastes to be accepted by an off-site licensed facility may require pre-treatment to reduce the potential mobility of lead. For OU3-4, only wastes that exceed certain regulatory levels would be sent for disposal at a licensed facility and would likely be pre-treated to meet disposal requirements. None of the alternatives, OU3-2 through OU3-5, would incorporate active treatment directly.

5. Short-Term Effectiveness:

Alternative OU3-2 would be the most effective in the short-term because risks to the community and workers during implementation would be minimal.

Alternatives OU3-4 and OU3-5 pose the most potential risks to the community and workers during implementation because both alternatives would involve the excavation, handling, and temporary storage of contaminated soil, wetland soils, and creek sediment. Additional risks to the community and workers may occur as the result of additional truck traffic in order to transport the excavated soil and sediment to the consolidation area (OU3-4) and to the out-of-town disposal facility (OU3-5). Because wastes have to be transported for much longer distances (several hundred miles) under OU3-5, it would pose more risks than OU3-4, which would require relatively short distances for waste transport.

Short-term impacts to the environment include emissions from on-site equipment, trucks delivering clean soil cover materials to OU3, and the transport of excavated material out of OU3. Wetlands would need to be cleared of vegetation prior to excavation, resulting in the unavoidable destruction of the wetlands. In addition, the excavation, diversion, and dewatering of Ferry Creek would cause unavoidable destruction to aquatic life in Ferry Creek. However, this alternative would include mitigation measures and restoration to rebuild the damaged wetlands, ecosystems, and stream channel.

Alternative OU3-2 has the shortest implementation time, of about 4 months, but would not achieve clean up goals. Alternatives OU3-4 and OU3-5 are anticipated to be implemented in approximately 10 months and would achieve RAOs at the end of the implementation period.

6. Implementability:

Alternative OU3-2 is the most readily implementable alternative, followed by alternatives OU3-4 and OU3-5. Due to the minimal construction required (well decommissioning and new well installation) for OU3-2, it would be the easiest to construct and operate. Both alternatives OU3-4 and OU3-5 include the excavation/dredging of contaminated soil, sediment, and wetland soil, which may be challenging due to its location in the 100-year and 500-year floodplains. In addition, for both Alternatives OU3-4 and OU3-5, the soil, sediment, and wetland soil contain hazardous materials, including asbestos, which would require specially trained workers and supervisors to perform the work, monitor conditions, and minimize potential airborne emissions. In addition, special measures may be used during the excavation of wetland soil and Ferry Creek sediment to minimize impacts to aquatic life.

Alternative OU3-2 would likely generate small quantities of waste materials (drilling spoils) that would need to be disposed at an off-site licensed facility. Alternative OU3-4 would require greater off-site disposal capacity because some excavated materials may exceed regulatory levels and would require off-site disposal. Alternative OU3-5 would require the most off-site disposal capacity because all excavated materials would be sent for off-site disposal. While a number of off-site facilities are capable of receiving RCRA hazardous wastes, PCB-contaminated wastes, and asbestos wastes, the combination of these three constituents, with leachable lead, may pose challenges for finding disposal facilities.

No specialty equipment or specialists are needed to implement alternative OU3-2. Generally, typical construction equipment (excavators, graders, trucks, etc.) with trained personnel are available to address hazardous waste remediation for Alternatives OU3-4 and OU3-5. However, some specialty equipment and personnel may be required to excavate or dredge Ferry Creek and the adjacent wetlands, control dust emissions, and dewater sediment. All prospective technologies are readily available.

7. Cost:

The total estimated capital and net present value cost of the four OU3 clean up alternatives is presented in the table below. Further details are presented in Appendix G of the OU3 FS Report. Alternative OU3-1 is the least expensive alternative, and Alternative OU3-5 is the most expensive. Both OU3-4 and OU3-5 provide the same degree of protectiveness, however, Alternative OU3-4 is much less costly than OU3-5. Alternative OU3-4 would cost approximately $19.9 million, while Alternative OU3-5 would cost $55.8 million, due to increased off-site transport and disposal costs.

Alternative	Capital Cost (construction) (millions)	Present Value of O&M (millions)	Total Present Value Cost (construction and O&M) (millions)	Time Estimate to Achieve RAOs (years)
OU3-1 – No Action	$0	$0.2	$0.2	Does not achieve RAOs
OU3-2 –Limited Action	$0.6	$2.1	$2.7	0.3
OU3-4 – Excavation and in-Town Consolidation	**$17.8**	**$2.1**	**$19.9**	**0.8**
OU3-5 –Excavation and Out-of-Town Disposal	$53.7	$2.1	$55.8	0.8

CLEANUP ALTERNATIVES AND EVALUATION FOR RAYBESTOS MEMORIAL BALLFIELD (OU4)

Operable Unit 4 is located north of the former Raymark facility just over the Metro-North railroad tracks leading to New York City (see Figure 6). It encompasses approximately 14 acres with residential properties bordering to the north/northwest and Town, commercial, and industrial properties located to the northeast. An inactive former industrial facility (Contract Plating) abuts the area to the south/southwest. OU4 was historically used as a gravel pit, then as a disposal area for wastes, including Raymark waste. Once filled, a portion of the property was used as a ballpark for a number of years. EPA investigations estimate that over 111,000 cubic yards of Raymark waste are currently present at depths of up to 16 feet.

Vita Nuova, an independent redevelopment consultant, has worked with EPA, CTDEEP, and the Town to assist in the planning and redevelopment of various options for OU4 and the abutting Contract Plating Site. Figure 7, the current conceptual redevelopment, has been created to ensure that the OU4 clean up objectives align with conceptual redevelopment plans.

OU4 HUMAN HEALTH AND ENVIRONMENTAL RISKS

OU4 Human Health Risks

EPA conducted a human health risk assessment in 1999 that evaluated and found human health risks posed by soil contamination on OU4. For the Feasibility Study for OU4, an evaluation was completed that updated the 1999 risk assessment. This update found that contamination at OU4 presents non-cancer and cancer risks above acceptable levels for recreational contact with surface soils, and future residential and commercial/industrial worker contact with soils from 0 to 15 feet below ground surface as follows:

Carcinogenic Risk EPA's Target Range is 10^{-4} to 10^{-6}	
Receptor	Risk
Current Recreational Visitor	1.0×10^{-4}
Future Resident	4.6×10^{-4}

Non-Carcinogenic Risk EPA's Target Level is a Hazard Index (HI) ≤ 1.0	
Receptor	Risk
Current Recreational Visitor	HI = 2.2
Future Resident	HI = 47
Future Worker	HI = 3.5

The lead and asbestos in OU4 soils also are present above unacceptable levels.

OU4 Environmental Risks

An ecological risk evaluation conducted in 1999 found no ecological receptors of note and poor ecological habitat in OU4. The OU4 area has been significantly disturbed by past uses. The study area does provide habitat for a variety of terrestrial wildlife; however, the habitats are not unique for this general region. No wetlands were observed. The surrounding developed areas, isolation from other habitats, lack of a perennial surface water source, and contaminated subsurface soils limit the quality of the available habitat.

CLEANUP ALTERNATIVES FOR OU4 (FORMER BALLFIELD)
(The Alternative being proposed in this plan is highlighted.)

Cleanup alternatives for OU4 were developed to fulfill the following clean up objective:

Prevent direct human exposure through inhalation, dermal contact, and ingestion by recreational users, future residential users, and future commercial workers of OU4 to contaminated soil that is defined as Raymark Waste. ("Raymark Waste" is defined to contain lead, asbestos, and either copper or PCBs in certain amounts. See Page 12 for more details on the definition of Raymark Waste.) By preventing such exposure and by responding to such Raymark Waste; lead, asbestos, copper, and PCBs will be addressed as well as any other contaminants co-located with such Raymark Waste, including, without limitation, all OU4 COCs at levels exceeding EPA's target risk range of a total excess lifetime cancer risk of 1×10^{-4} to 1×10^{-6} and/or a non-cancer Hazard Index greater than 1.0.

Due to the minimal environmental risk posed by OU4 soil, there are no clean up objectives specifically for environmental receptors.

Except for OU4-1, all alternatives include some form of operation and maintenance and long-term monitoring. All alternatives include five-year reviews.

Alternative OU4-1 - No Action: Under the no action alternative, nothing would be done to reduce the human health and ecological risks associated with OU4. EPA is required to look at a no action alternative, which provides a baseline for comparison to the other clean up alternatives. Ongoing five-year reviews would be conducted for all alternatives to verify that there have been no changes in impacts from the Raymark Waste.

Alternative OU4-2 – Limited Action: No treatment, removal, or containment of Raymark Waste would occur under Alternative 2. Restrictions, such as prohibitions on certain types of excavations or on the use of groundwater, would be put in place to mitigate human health risks. Fencing and warning signs would be constructed to deter trespassers. Quarterly groundwater monitoring would be required for the first two years, then every nine months thereafter to ensure that there are no changes in the impacts from Raymark Waste.

Alternative OU4-3 - Consolidation, Capping, and Institutional Controls: Under this alternative the ballfield would be designated as a CAMU and a low-permeability cap would be constructed over a large portion of OU4 to cover the existing Raymark Waste, as well as Raymark Waste and sediment that would be transported from OU3 and OU6 to be consolidated under the cap. The finished grade of the cap would be limited to a maximum elevation of 46 feet mean sea level in the northwest corner of OU4, but

would be graded to support planned redevelopment such that the majority of the cap would have finished elevations between 30 and 40 feet mean sea level. Figures showing the final grades of the cap as constructed are attached as Figures 2 and 3. During construction, a haul road would be constructed and used to access the ballfield from Longbrook Avenue. Construction of the haul road would prevent the need to drive through residential neighborhoods near the ballfield. A permanent, or temporary, visual and sound barrier would be installed along the border with Patterson Avenue, Clinton Avenue, and Cottage Place. After completion of the cap, a vegetative buffer and berm would be established along the border with Patterson Avenue. However, if a permanent barrier is installed along the Patterson Avenue properties, the vegetated berm may not be required. The cap would be designed to be consistent with redevelopment for commercial/industrial, municipal, or recreational uses. Controls would be used to mitigate construction-related impacts.

Non-Raymark Waste existing on OU4, but not currently co-located within Raymark Waste on OU4, would be covered with Raymark Waste from OU3 and OU6 and placed under the cap. Because the low-permeable cap will necessarily reduce stormwater infiltration at OU4, stormwater from the property would be managed with bioretention swales and an underground storage vault may need to be installed to detain stormwater during peak storm events to prevent flooding. If an underground vault is deemed necessary, an area of Raymark Waste may need to be excavated for the vault. The excavated Raymark Waste would be consolidated with Raymark Waste from OU3 and OU6, and placed under the cap. In this case, a portion of the non-Raymark Waste may be excavated and used as backfill in the vault area in a manner that complies with CTDEEP RSR clean up requirements. During the design process, EPA would explore less intrusive options for managing stormwater, including improvements to regional stormwater systems. Institutional control restrictions, such as prohibitions on certain types of excavations and on the use of groundwater, would be put in place to protect the cap and mitigate human health risks. Future monitoring and operation and maintenance activities would occur to ensure the protectiveness of the remedy.

Alternative OU4-4 - Excavation, Out-of-Town Disposal, and Institutional Controls: This alternative involves the excavation of all Raymark Waste at OU4 down to the mean high water table. All excavated Raymark Waste would then be disposed of out-of-town at an approved disposal facility. No Raymark Waste from other areas of the Site would be transported to OU4 for consolidation and no non-Raymark Waste on OU4 would be addressed by this alternative. The excavated areas would be backfilled with clean material and revegetated. Institutional control restrictions, such as prohibitions on certain types of excavations or on the use of groundwater, would be put in place to mitigate human health risks. Future monitoring and operation and maintenance activities would occur to ensure the protectiveness of the remedy.

Alternative OU4-5 - Capping and Institutional Controls: Under this alternative, a low-permeability cap would be constructed to cover the Raymark Waste located on OU4, but no other Raymark Waste would be transported to OU4. Some excavation and consolidation of the Raymark Waste on OU4 would occur before capping. Non-Raymark Waste would remain outside the capped area and would not be addressed by this alternative. Institutional control restrictions, such as prohibitions on certain types of excavations or on the use of groundwater, would be put in place to mitigate human health risks. Future monitoring and operation and maintenance activities would occur to ensure the protectiveness of the remedy.

Alternative OU4-6 - On-Site Treatment, Soil Cover, and Institutional Controls: Under this alternative several treatment processes would be employed to destroy, immobilize, or reduce the toxicity of contaminants present in excavated Raymark Waste in on-site soil and fill materials, and in Raymark Waste and sediment, soil, and fill materials to be consolidated from OU3 and OU6 properties. Non-Raymark Waste would not be addressed under this alternative. Organic contaminants would be destroyed through thermal oxidation, and lead and other metal contaminants and asbestos would be immobilized through solidification/stabilization. Once treatment goals were attained, the treated materials would be backfilled, graded, and placed under a permeable soil cover.

The six remedial alternatives were screened for relative effectiveness, implementability, and cost. Through screening, Alternative OU4-6 was eliminated because of potential effectiveness and implementability issues regarding treatment, as described above on Page 13.

COMPARATIVE ANALYSIS FOR THE OU4-BALLFIELD CLEANUP ALTERNATIVES

Below is a summary of the comparative analysis for the remaining five alternatives. For a more detailed discussion, see Sections 6.1 through 6.7 of the 2016 OU4 FS Report.

1. Overall Protection of Human Health and the Environment:

Alternative OU4-1 does not provide any protection of human health and the environment because no actions would be taken to address contaminated soil that exceeds state and federal risk criteria.

Alternative OU4-2 provides minimal protection of human health and no protection of the environment. Institutional controls, such as fencing and signage, are the only actions taken to prevent direct human contact with contaminated soil, and such controls minimize but do not effectively reduce such exposure.

Alternative OU4-4 is the most protective because all Raymark Waste above the water table would be removed for out-of-town disposal. Alternatives OU4-3 and OU4-5 provide comparable protection through a combination of excavating, consolidating and/or capping of contaminated waste. The capping alternatives would require on-going monitoring and maintenance. Alternative OU4-3 is the only alternative that would allow the consolidation of material from OU3 and OU6.

2. Compliance with Applicable or Relevant and Appropriate Environmental Requirements (ARARs):

There is no ARARs analysis for OU4-1 because no action is being taken under this Alternative. Alternative OU4-2 would not comply with ARARs because contaminants in Raymark Waste would remain accessible in soils in excess of CTDEEP clean up regulations and federal risk criteria. Alternatives OU4-3, 4 and 5 would render the remaining contaminated soil inaccessible and would be compliant with the chemical-specific CTDEEP Direct Exposure Criteria and Pollution Mobility Criteria.

Alternative OU4-2 would comply with federal and state location-specific ARARs. The installation of monitoring wells would not affect wetlands, floodplains, or tidal coastal areas. Evaluation for potential historic resources or endangered species and habitats would be performed prior to start of work to avoid potential disturbances. OU4-2 would also comply with federal action-specific ARARs by taking appropriate measures during drilling and monitoring well installation to avoid releases of asbestos and fugitive dusts, avoid the introduction of invasive species, and appropriately manage PCB-contaminated investigation-derived waste.

For location-specific ARARS, Alternatives OU4-3, 4, and 5 would evaluate the potential presence of historic resources and endangered species or habitat during remedial design and avoid or mitigate impacts. There are no wetlands on OU4, and a very small portion of OU4 in the south east corner (beyond the proposed capped area) is within the 500 year floodplain. Alternatives OU4-3, 4, and 5 would comply with action-specific ARARs.

Because Alternative OU4-1 failed both threshold criteria above (overall protection of human health and the environment, and compliance with ARARs), this alternative is not included in the remainder of the comparative analysis.

3. Long-Term Effectiveness and Permanence:

Alternatives OU4-3, OU-4, and OU4-5 have the most long-term effectiveness and permanence, followed by Alternative OU4-2.

Alternative OU4-2 only minimally decreases risks. Alternatives OU4-3, OU4-4, and OU4-5 have the most long-term effectiveness and permanence. Alternatives OU4-3 and OU4-5 are capping alternatives; once the cap is constructed, it is reliable as long as scheduled inspections and maintenance are performed. Alternative OU4-4 has the greatest long-term effectiveness and permanence because Raymark Waste above the mean high water table would be excavated and removed from OU4.

4. Reduction of Toxicity, Mobility, and Volume through Treatment:

None of the alternatives apply active treatment, as a treatment alternative was eliminated during the screening of alternatives due to a number of considerations described in Appendix F the OU4 Feasibility Study, and summarized in this Proposed Plan. Note, however, that for any alternative that involves out-of-town disposal, all wastes to be accepted by an off-site licensed disposal facility may require pre-treatment of some specific chemicals to meet disposal requirements.

5. Short-Term Effectiveness:

OU4-2 poses low risk to the community and workers during implementation since minimal constriction activities, such as well drilling, would be undertaken.

Of the active remediation alternatives, Alternative OU4-5 involves the least amount of handling and movement of Raymark Waste, followed by OU4-3, which would require Raymark Waste consolidation and capping. OU4-4, which would require excavation, dewatering, and long-distance transport of Raymark Waste, would pose the greatest short-term risk to the community and workers.

Alternative OU4-5 has a moderate risk to the community and workers during implementation. Since the Raymark Waste would be capped in place, only minor grading is proposed and no major excavation would be conducted. Non-Raymark Waste would remain outside the cap. Alternative OU4-3 would have greater risk than OU4-5, but less than Alternative OU4-4, which would pose the most risk to the community and workers during implementation. The construction of the OU4 consolidation area in alternative OU4-3 would result in possible emissions of dust and particulates and increased vehicular and truck traffic. Alternative OU4-4 would result in high potential for dust emissions and an increased number of trucks in order to transport the excavated Raymark Waste off-site, and bring clean fill material on-site. Engineering controls would be used to minimize dust creation from demolition, soil/sediment excavation, and consolidation area construction.

Alternative OU4-3 has an implementation time of 2.1 years. Alternative OU4-4 is anticipated to be implemented in 1.4 years and Alternative OU4-5 in 1.9 years.

6. Implementability:

Alternative OU4-2 is the most implementable alternative, followed (in order) by Alternatives OU4-5, OU4-3, and OU4-4.

Due to the minimal construction required, OU4-2 would be the easiest to implement. Alternatives OU4-3 and OU4-5 are more difficult to implement because of construction of the cap and need for significant stormwater management. Alternative OU4-4 uses basic excavation and out-of-town disposal methods to address the risks posed by the Raymark Waste contaminated soil and can be implemented more easily.

Alternative OU4-2 uses minimal technology, and long-term monitoring is reliable. Capping under OU4-3 and OU4-5 is a reliable technology when the caps are inspected and maintained. Alternative OU4-4's off-site transport and disposal is a reliable technology and is effective.

Alternative OU4-3 may require out-of-town off-site disposal of Raymark Waste material that exceeds the available consolidation capacity at OU4 (estimated at 85,000 cubic yards). OU4-5 may require a small amount of material to be sent to a licensed disposal facility. For OU4-4 all of the Raymark Waste contaminated material would be sent out-of-town. A limited number of disposal facilities are available to accept such Raymark Waste. These facilities have capacity to receive this waste, but they are located several hundred miles from the Site.

7. Cost:

Alternative OU4-1 is the least expensive alternative and alternative OU4-4 is the most expensive alternative. Cost summaries are included in the table below.

Alternative	Capital Cost (construction) (millions)	Present Value of O&M (millions)	Total Present Value Cost (construction and O&M) (millions)	Time Estimate to Achieve RAOs (years)
OU4-1 – No Action	$0	$0.04	$0.04	Does not achieve RAOs
OU4-2 – Limited Action	$0.3	$0.7	$1.0	Does not achieve RAOs
OU4-3 - Consolidation, Capping, and Institutional Controls	**$43.4**	**$2.3**	**$45.7**	**2.1**
OU4-4 - Excavation, Out-of-Town Disposal, and Institutional Controls	$143.9	$0.6	$144.5	1.4
OU4-5 – Capping and Institutional Controls	$31.7	$2.3	$34.0	1.9

CLEANUP ALTERNATIVES AND EVALUATION FOR ADDITIONAL PROPERTIES (OU6)

Operable Unit 6 consists of commercial, residential, state, and town owned properties located throughout the Town of Stratford where waste from the former Raymark facility was used to fill low-lying areas. The number of properties within Operable Unit 6 has changed since the completion of the Remedial Investigation as clean-ups have moved forward at some properties. In 2011, EPA issued a Record of Decision containing a final remedy for three OU6 properties – 576 and 600 East Broadway, the Third Avenue Property, and a portion of a fourth property (Beacon Point AOC2) – with interim remedies for the remaining properties. The 2011 ROD planned for Raymark Waste from the Third Avenue Property to be consolidated at 576/600 East Broadway but the Remedial Design determined that sufficient capacity does not exist at 576/600 East Broadway. In 2015, clean up of another OU6 property, the Airport Property, was completed by the Federal Aviation Administration, with oversight by EPA's Removal Program and CTDEEP, to allow for the creation of a runway safety zone. In 2016, an additional property, 336 Ferry Boulevard, was added after Raymark Waste was discovered during excavation by the property owner. There are 22 remaining OU6 properties, identified in the summary table below and shown in Figure 8, that are the subject of this Proposed Plan. EPA is currently conducting evaluations of several residential properties where previous removal actions were performed. These removal actions pre-dated the OU6 remedial investigation and the current definition of Raymark Waste. Should EPA's evaluations conclude that remaining areas of Raymark Waste pose unacceptable risks, these properties would then be identified as Additional Properties in OU6 and be addressed consistent with this Proposed Plan.

	OU6 PROPERTY LOCATION	PROPERTY TYPE
1	200 Ferry Boulevard	Active business
2	230 Ferry Boulevard	Active business
3	250 Ferry Boulevard	Active business
4	280 Ferry Boulevard	Active business
5	300 Ferry Boulevard	Active business
6/7	Lot Behind 326 Ferry Boulevard (and adjacent vacant lot)	Vacant/lightly vegetated
8	326 Ferry Boulevard	Active business
9	336 Ferry Boulevard	Active business
10	Lot Abutting I-95	Vacant/lightly vegetated
11	Connecticut Right-of-Way	Vacant/lightly vegetated
12	250 East Main Street	Active business
13	251 East Main Street	Active business
14	304 East Main Street	Active business
15	340 East Main Street	Active business
16	380 East Main Street	Active business
17	DPW Lot	Active municipal
18	Wooster Park	Recreational
19	Third Avenue Property	Residential
20	Lockwood Avenue	Vacant/wetlands
21	Beacon Point Area of Concern #1	Recreational
22	Beacon Point Area of Concern #3	Recreational

OU6 HUMAN HEALTH AND ENVIRONMENTAL HEALTH RISKS

OU6 Human Health Risks

A human health risk assessment was performed in the 2005 RI Report for each individual OU6 property (except the recently added 336 Ferry Boulevard property) which determined that there are estimated cancer, non-cancer, and/or lead risks from the estimated areas of Raymark Waste in excess of EPA's acceptable limits for commercial workers at ten of the OU6 properties, to recreational visitors at one property, and to residents at three properties. In addition, at six properties (five commercial and one residential) there are cancer risks above acceptable levels, even though lead and non-cancer risks fall within acceptable limits at these six properties. The remaining properties have asbestos present at unacceptable levels, but there is insufficient data to evaluate other potential health risks. All OU6 properties present an unacceptable inhalation risk based upon the presence of asbestos.

An updated evaluation of potential health risks was performed in the 2016 FS Addendum for OU6 that estimated the cumulative cancer and non-cancer risks from all of the 22 OU6 properties considered together, rather than for each individual property. This evaluation identified the overall risk estimates as shown in the table below. See Appendix B of the 2016 OU6 FS Addendum for more information.

Carcinogenic Risk EPA's Target Range is 10^{-6} to 10^{-4}	
Receptor	Risk
Current and Future Recreational Visitor	6.7×10^{-4}
Current and Future Resident	1.8×10^{-3}
Current and Future Commercial Worker	1.9×10^{-4}

Non-Carcinogenic Risk EPA's Target Level is a Hazard Index (HI) ≤ 1.0	
Receptor	Risk
Current and Future Recreational Visitor	HI = 23
Current and Future Resident	HI = 54
Current and Future Commercial Worker	HI = 3.8

This evaluation also included an independent review of the recently added property located at 336 Ferry Boulevard. This property is used as a service station and retail establishment. Soil data was collected by a representative of the property owner in 2014 that confirmed the presence of Raymark Waste. While the data set is insufficient to complete a detailed risk assessment, the results confirm the presence of unacceptable levels of asbestos and lead, as well as elevated concentrations of Aroclor 1268 and copper. See the 2016 OU6 FS Addendum, Appendix D for more information.

OU6 Ecological Risks

All of the OU6 properties have been disturbed by commercial development, past uses of Ferry Creek, or filling of wetlands prior to development. Nineteen of the 22 properties are located in urban areas and provide only limited use as habitat for birds, reptiles, and small mammals to forage, cover, rest, and breed because of the level of development, soil contamination, disturbed nature of the area, and low vegetation density and/or diversity. Because these properties do not provide significant habitat, Raymark Waste does not pose an ecological risk at these 19 properties. The remaining three properties – Lockwood Avenue, Beacon Point Area 1 and Beacon Point Area 3 – are wetland areas that were partially filled with Raymark Waste. Because these three properties are part of a broader ecosystem and because there is only a limited amount of accessible areas of Raymark Waste at these properties, the exposure frequency is low, and, therefore, Raymark Waste does not pose an ecological risk at these three properties.

CLEANUP ALTERNATIVES FOR OU6 (ADDITIONAL PROPERTIES)

(The Alternative being proposed in this plan is highlighted.)

Ten clean up alternatives for OU6 were evaluated in detail in a 2010 Feasibility Study prepared for the 2011 ROD. These ten alternatives are described below. With this Proposed Plan, EPA is issuing an OU6 FS Addendum that re-screens the remedial alternatives presented previously in the OU6 FS based upon current information and in consideration of the Conceptual Cleanup Plan.

Note that there are some exceedances of state regulatory clean up standards on some of the OU6 properties beyond those caused by Raymark Waste. Contamination remaining on such properties not located within the footprint of Raymark Waste will not be addressed by EPA's clean up action. These areas are referred to by EPA as non-Raymark Waste.

Cleanup alternatives for OU6 were developed to fulfill the following clean up objective:

Prevent direct human exposure through inhalation, dermal contact, and ingestion by current and future recreational users, residential users, and commercial workers of OU6 to contaminated soil that is defined as Raymark Waste. ("Raymark Waste" is defined to contain lead, asbestos, and either copper or PCBs in certain amounts. See Page 12 for more details on the definition of Raymark Waste.) By preventing such exposure and by responding to such Raymark Waste; lead, asbestos, copper, and PCBs will be addressed as well as any other contaminants co-located with such Raymark Waste, including, without limitation, all OU6 COCs at levels exceeding EPA's target risk range of a total excess lifetime cancer risk of 1×10^{-4} to 1×10^{-6} and/or a non-cancer Hazard Index greater than 1.0.

Due to the minimal environmental risk posed by OU6 soil, there are no clean up objectives specifically for environmental receptors.

Alternative 1 - No Action: Under the no action alternative, nothing would be done to reduce the human health risks associated with direct exposure to contaminants in soil. Any reduction in the toxicity or volume of contaminants would occur only as a result of natural attenuation or degradation processes. EPA is required to look at a no action alternative, which provides a baseline for comparison to the other clean up alternatives. Ongoing five-year reviews would be conducted for all alternatives to verify that there have been no changes in impacts from the Raymark Waste.

Alternative 2 – Limited Action: No treatment, removal, or containment of Raymark Waste would occur under Alternative 2, but institutional controls would be established to restrict access and/or monitor risks to human health and the environment. Restrictions, such as prohibitions on certain types of excavations or on the use of groundwater, would be put in place to mitigate human health risks. Fencing and warning signs would be constructed to deter trespassers. Quarterly groundwater monitoring would be required for the first two years, then every nine months thereafter to ensure that there are no changes in the impacts from Raymark Waste.

Alternative 3 – Excavation, In-Town Consolidation and Installation of Low Permeability Caps: Alternative 3 would consist of excavation of up to three feet of Raymark Waste (approximately 34,000 cubic yards) to accommodate the installation of low permeability caps (RCRA Subtitle C) on the individual OU6 properties. The excavated Raymark Waste would be transported to the proposed in-town consolidation area at the OU4 ballfield, except that Raymark Waste containing more heavily contaminated material that exceeds certain regulatory limits would be transported to a licensed out-of-town disposal facility. The finished topography and grades would remain unchanged so that continued use of the properties would remain unimpeded and flood storage capacity would not be reduced for those OU6 properties located within the floodplain. The caps would be inspected and maintained to ensure their integrity and protectiveness. Institutional controls, such as deed restrictions or notices, would be required to protect the caps.

Alternative 4 – Excavation, Out-of-Town Disposal and Installation of Low Permeability Caps: Alternative 4 is identical to Alternative 3 except that the excavated Raymark Waste would be transported to an out-of-town location for disposal.

Alternative 5 – Excavation and In-Town Consolidation: Alternative 5 would consist of the excavation of Raymark Waste to the water table (approximately 87,000 cubic yards) and backfilling with clean material. The bottom of each excavation would be lined with a geotextile fabric before backfilling to serve as a warning layer. The excavated Raymark Waste would be transported to the proposed in-town consolidation area at the OU4 ballfield, except that Raymark Waste containing more heavily contaminated material that exceeds certain regulatory limits would be transported to a licensed out-of-town disposal facility. The finished topography and grades would remain unchanged so that continued use of the properties would remain unimpeded and flood storage capacity would not be reduced for those OU6 properties located within the floodplain. Institutional controls, such as deed restrictions or notices, would be required to protect the remedy, especially from any future deep excavation.

Alternative 6 – Excavation and Out-of-Town Disposal: Alternative 6 is identical to Alternative 5 except that the excavated Raymark Waste would be transported to an out-of-town location for disposal.

Alternative 7 – Excavation to 2 Feet for Paved Areas and 4 Feet for Unpaved Areas, and In-Town Consolidation: Alternative 7 would include excavation to two feet for currently paved areas and backfilling with two feet of clean material, repaving, and maintaining pavement; and excavation to four feet for currently unpaved areas (27,000 cubic yards) and backfilling with four feet of clean fill. The bottom of each excavation would be lined with a geotextile fabric before backfilling to serve as a warning layer. The excavated Raymark Waste would be transported to the proposed in-town consolidation area at the OU4 ballfield, except that Raymark Waste containing more heavily contaminated material that exceeds certain regulatory limits would be transported to a licensed out-of-town disposal facility. Institutional controls, such as deed restrictions or notices, would be required to prevent future excavation deeper than two feet in paved areas, and four feet in unpaved areas, and to protect the integrity of the pavement.

Alternative 8 - Excavation to 2 Feet for Paved Areas and 4 Feet for Unpaved Areas, and Out-of-Town Disposal: Alternative 8 is identical to Alternative 7 except that the excavated Raymark Waste would be transported to an out-of-town location for disposal.

Alternative 9 – Excavation of the Top Four Feet and In-Town Consolidation: Alternative 9 would involve excavation of Raymark Waste to the depth of four feet (approximately 71,000 cubic yards), backfilling to the pre-existing grade, and restoration with clean materials to create four-foot soil covers for any remaining contaminated materials. The bottom of each excavation would be lined with a geotextile fabric before backfilling to serve as a warning layer. Areas that are currently covered with asphalt would be repaved. Unpaved areas would be revegetated. The excavated Raymark Waste would be transported to the proposed in-town consolidation area at the OU4 ballfield, except that Raymark Waste containing more heavily contaminated material that exceeds certain regulatory limits would be transported to a licensed out-of-town disposal facility. Institutional controls, such as deed restrictions or notices, would be required to prevent future excavation deeper than four feet in the backfilled areas, groundwater use, or any other activity that could result in an exposure to remaining waste or compromise the effectiveness of the remedy. After completion of the clean up at each property, at least two years of groundwater monitoring would be required. The four feet of cover installed on the properties would need to be maintained, and future inspections and monitoring of such covers would also be required. The four feet excavation depth was selected to comply with both CTDEEP's Direct Exposure Criteria and Pollutant Mobility Criteria through an alternative approach allowed under CTDEEP's Remediation Standard Regulations (RSRs). In general, areas on properties that do not meet the definition of Raymark Waste would not be excavated or addressed. Note that some of these non-Raymark Waste areas may contain contamination that exceeds certain CTDEEP clean up standards.

Alternative 10 – Excavation of the Top Four Feet and Out-of-Town Disposal: Alternative 10 is identical to Alternative 9, except that the excavated Raymark Waste would be transported to an out-of-town location for disposal.

COMPARATIVE ANALYSIS FOR OU6-ADDITIONAL PROPERTIES CLEANUP ALTERNATIVES

Alternatives 3 through 8 were screened out from further evaluation in the OU6 FS Addendum. Alternatives 3 and 4 were eliminated because many of the 22 properties are located within the 100-year floodplain. Also, the water table under many of the properties is relatively shallow, and a rising water table following a storm event may cause upward hydrostatic stress that could damage the low-permeability cap. Alternatives 5 and 6 were eliminated because they would generate a significantly larger volume of contaminated materials that would need to be addressed at the CAMU or disposed of off-site without any added protection over shallower excavations. Alternatives 7 and 8 were eliminated because they would require more long-term operation and maintenance and associated costs due to the need to more intensely monitor groundwater and maintain pavement as cover for numerous areas to comply with the CTDEEP RSRs. Also, these alternatives would impede future excavations by the property owners for routine activities such as maintenance of utilities. Accordingly, Alternatives 3 through 8 are not further discussed in the comparative analysis.

Except for Alternative 1, all alternatives would require some form of operation and maintenance and long-term monitoring. All alternatives would require five-year reviews.

Below is a summary of the comparative analysis for the remaining four alternatives. For a more detailed discussion, see Sections 4.1 through 4.7 of the 2016 OU6 FS Addendum.

1. Overall Protection of Human Health and the Environment:

Alternative 1 (No Action) would provide no protection of human health and the environment because contamination would remain in soil in excess of state and federal risk criteria. Alternative 2 (Limited Action) may provide limited protection, if institutional controls are followed, monitored, and enforced. Alternatives 9 and 10 (Excavation to four feet) would provide protection through the excavation of Raymark Waste and the backfilling with clean materials to create four foot soil covers for any remaining contaminated material. Institutional control restrictions are necessary to ensure that the remedy is maintained and that future exposures do not occur.

2. Compliance with Applicable or Relevant and Appropriate Environmental Requirements (ARARs):

There is no ARARs analysis for Alternative 1 because no action is being taken under this alternative. Alternative 2 would not comply with ARARs because contaminants in Raymark Waste would remain accessible in soils in excess of CTDEEP RSR clean up regulations and federal risk criteria. Alternatives 9 and 10 would render the remaining contaminated soil inaccessible and would be compliant with the chemical-specific CTDEEP RSR Direct Exposure Criteria and alternative Pollution Mobility Criteria, without the need to maintain pavement. Excavation and backfilling would be conducted to avoid or minimize impacts to wetlands and all areas would be restored to original grade to avoid impacts to floodplains. Alternatives 9 and 10 would comply with all other chemical-, action-, and location-specific ARARs.

Because Alternative 1 failed both threshold criteria above (overall protection of human health and the environment, and compliance with ARARs), this alternative is not included in the remainder of the comparative analysis.

3. Long-Term Effectiveness and Permanence:

Residual human health risks for Alternative 2 would still be above acceptable human health risk levels. Residual human health risks after implementation of Alternatives 9 and 10 would be within acceptable limits. However, some Raymark Waste would be left in place under both alternatives. Alternatives 9 and 10 would be equally reliable because Raymark Waste would be excavated and removed to a four foot depth, which would protect human health through elimination of direct contact with a four foot cover of clean fill. Alternatives 9 and 10 can provide protection in the long-term if the thickness of clean backfill is maintained. Alternatives 9 and 10 could be designed to allow for redevelopment.

4. Reduction of Toxicity, Mobility, and Volume through Treatment:

No treatment would be performed for Alternative 2. Alternatives 9 and 10 would not involve any on-Site treatment, but all wastes to be accepted by an off-site licensed disposal facility may require some pre-treatment to meet disposal requirements. This treatment would result in the reduction of toxicity, mobility, and volume of a portion of Raymark Waste.

5. Short-Term Effectiveness:

Minimal actions would be taken under Alternative 2, therefore there would be minimal short-term impacts to the community, workers, or the environment. The moderate, short-term impacts to the community, workers, and the environment from the implementation of Alternatives 9 and 10 would be similar and can be minimized using proper measures and controls. Alternative 10 would involve a higher volume of truck traffic over significantly longer distances to transport Raymark Waste and may have greater short-term impacts than Alternative 9. For both alternatives, any adverse impacts to wetlands and floodplains would be minimized. A range of remediation timeframes to achieve RAOs for both Alternatives 9 and 10 is presented in the table below as clean up timeframes and would be dependent upon the number of excavations that could occur at different properties simultaneously. The shortest timeframe (1.8 years) represents up to three simultaneous excavations and the longest timeframe (5.4 years) represents only a single excavation occurring at any one time. These estimated time frames do not include the amount of time necessary to complete remedial activities at the consolidation area at OU4. The final excavation approach would need to consider a number of factors including traffic patterns and would be determined in the Construction Management Plan during the remedial design.

6. Implementability

All alternatives would require coordination with property owners and state and local entities for implementation of land use controls and long-term monitoring. Alternative 2 can be easily implemented because equipment, materials, and trained personnel are readily available. Alternatives 9 and 10 can be implemented through standard construction and environmental remediation methods. Equipment, materials, and trained personnel are readily available to implement Alternatives 9 and 10, which would require excavation, placement of clean fill, backfilling, grading, paving, and minimal O&M to maintain backfill integrity.

Of the active remedial actions, Alternative 9 can be more readily implemented than Alternative 10 because the majority of excavated Raymark Waste would be consolidated at OU4 rather than long-distance shipping to an off-site disposal facility. Alternatives 9 and 10 are amenable to additional remedial actions at each property.

7. Cost

The total estimated present value cost of all of the OU6 clean up alternatives is presented in the table below. Alternative 1 would cost the least to implement as no actions would be implemented. Alternative 2 would cost more than Alternative 1 because limited actions would be taken. Of the protective alternatives, Alternative 9 would cost less than Alternative 10 because Alternative 10 has greater off-site transport and costs for disposal at a licensed facility. Alternative 9 would cost approximately $27.0 million, while Alternative 10 would cost $69.0 million.

Alternative	Capital Cost (construction) (millions)	Present Value of O&M (millions)	Total Present Value Cost (construction and O&M) (millions)	Time Estimate to Achieve RAOs (years)
1 – No Action	$0	$0.4	$0.4	Does not achieve RAOs
2 – Limited Action	$1.1	$9.8	$10.9	Does not achieve RAOs
9 – Excavation to 4 feet, In-Town Consolidation	**$18.0**	**$9.0**	**$27.0**	**1.8-5.4**
10 –Excavation to 4 feet, Out-of-Town Disposal	$60.0	$9.0	$69.0	1.8-5.4

Why EPA Recommends This Proposed Cleanup Plan

Based on the results of the Remedial Investigations, human health and ecological risk evaluations, community concerns expressed so far, and the Conceptual Comprehensive Plan, EPA has prepared Feasibility Studies for Operable Units (OUs) 2, 3 and 4, and a Feasibility Study Addendum for OU6, and recommends this proposed clean up plan because EPA believes it achieves the best balance among EPA's required criteria used to evaluate various alternatives. The Proposed Plan meets the clean up objectives or Remedial Action Objectives (RAOs) for each of the four OUs.

The following is a summary in general terms of why EPA recommends the clean up plan for each OU. For more detail, refer to other sections of this Proposed Plan and the individual Feasibility Study Reports for OUs 2, 3 and 4 and the Feasibility Study Addendum for OU6.

Groundwater (Operable Unit 2)

EPA recommends a combination of Source Area (SA) Alternative -1: No Further Action; Downgradient Area (DA) Alternative-2: Limited Action; and Vapor Intrusion (VI) Alternative-2: Installation and Maintenance of Sub-slab Ventilation Systems.

Source Area: SA-1 is selected because actions to eliminate the Volatile Organic Compound (VOC) Dense Non-Aqueous Phase Liquid (DNAPL) source at the former Raymark facility would not be effective and implementable given the mixed nature of the subsurface materials, the depth and form of the bedrock (especially the deep bedrock valleys), the constraints posed by the impermeable cap and retail development on OU1, and the difficulty of effectively injecting treatment chemicals into the DNAPL. Modeling of the effectiveness of the DNAPL containment and treatment alternatives indicates that such alternatives would only achieve target groundwater clean up levels after hundreds of years, at a significant cost. Although one modeled scenario indicates that the grout curtain alternative (SA-3) could achieve clean up levels in a reasonable time, SA-3 is technically impracticable to implement. Thus, the active Source Area alternatives would achieve little benefit at significant cost.

EPA also evaluated optimizing the existing passive DNAPL extraction system (SA-2). However, a thorough evaluation concludes that the system is only extracting a minimal amount of a mix of groundwater and DNAPL, and it cannot be effectively optimized to reduce the DNAPL source, or increase the attenuation of contamination much beyond natural attenuation. Accordingly, EPA is proposing to abandon and discontinue use of the existing passive system, and instead rely on the institutional controls that are already in place at OU1 and on the downgradient area, and vapor intrusion alternatives described below to address OU2 risks. See Section 1.5 of the OU2 FS for further details. Note that the abandonment of the passive system is a modification of the remedy set forth in the Record of Decision for the OU1 facility.

Downgradient Area: DA-2 is selected because the OU2 groundwater plume is contaminated above drinking water standards. Although public water is currently supplied to those living and working in the downgradient area, institutional controls are needed to address and prevent potential future risk from contaminated groundwater in the OU2 plume, such as from installing drinking wells. EPA's evaluation of the active alternative (DA-3), which would involve hot spot treatment, concluded that such treatment would not effectively reduce the time to meet groundwater clean up levels without first eliminating the DNAPL source areas.

Vapor Intrusion Alternatives: EPA is selecting VI-2, which involves the continued operation and maintenance of the existing 106 sub-slab ventilation systems, plus the installation of vapor ventilation systems in up to 20 additional buildings to prevent potential intrusion of vapors at those properties. Although there is no indoor air data that has confirmed an unacceptable vapor intrusion risk in those 20 additional buildings, VI-2 is being proposed as a conservative and pre-emptive action because they are located within an area of potentially unacceptable risks from vapor intrusion (see Figure 4). An assessment of a limited number of additional buildings will be also be conducted to determine whether vapor ventilation systems are needed on those properties and, if so, systems will be installed. These actions are necessary to address the potential inhalation risks resulting from intrusion of vapors from VOCs in groundwater into the indoor air of homes and buildings located above the contaminated groundwater plume.

Consolidation Alternatives (OUs 3, 4, and 6)

For OUs 3, 4, and 6, EPA recommends an in-town consolidation remedy that is a combination of Alternative OU3-4 for Ferry Creek, Alternative OU4-3 for the Ballfield, and Alternative 9 for the OU6 Additional Properties. OU4 contains an estimated 111,000 cubic yards of existing buried Raymark Waste from past facility disposal practices, as well as an estimated 100,000 cubic yards of buried non-Raymark Waste. This proposed consolidation and capping of Raymark Waste from OU3 and OU6 is a safe, proven, and cost-effective method for managing this large volume of waste material, and would allow the former Ballfield property to be returned to productive use. The overall estimated cost of the proposed consolidation remedy (not including OU2 costs) is $92.6 million. Were EPA to select a combination of alternatives that would result in excavation and out-of-town disposal of Raymark Waste from OUs 3, 4 and 6 (OU3-5 for Ferry Creek, OU4-4 for the Ballfield, and Alternative 10 for OU6), Raymark Waste would have to be transported several hundred miles to licensed facilities in the mid-west at an overall estimated cost of $269.3 million, with no added protection to human health or the environment. Because EPA is required by Superfund laws and regulations to select cost-effective remedies, out-of-town disposal, at about three times the cost of in-town consolidation, with no added protection, would not be a cost-effective remedy. Further evaluation for the selected alternative at OUs 3, 4 and 6 follows:

Upper Ferry Creek (Operable Unit 3)

Alternatives OU3-1 and OU3-2 are not viable because they would leave Raymark Waste in place above unacceptable human-health risk levels and would not comply with ARARs. Also, Raymark Waste is present at some surface locations along the banks of Ferry Creek, and Alternatives OU3-1 and OU3-2 would allow this waste to continue to erode into Ferry Creek, causing continued environmental risks.

Alternatives OU3-4 and OU3-5 are both protective of human health and the environment, and comply with ARARs. The alternatives address contaminated soil and sediment by excavating Ferry Creek sediment, bank soil, and wetland soil. The alternatives would protect human health and the environment by preventing direct contact, ingestion, and inhalation through removal of the contaminated sediment and soil. Each excavated soil area would be lined with a geotextile fabric and backfilled using clean soil material in order to create a soil cover that prevents direct contact. Clean sediment would be backfilled into Ferry Creek designed to promote a healthy eco-system, and Ferry Creek and any damaged wetlands would be restored.

Alternative OU3-4 is the preferred alternative because it is achieves the same level of protection but at a much lower cost than OU3-5. Alternative OU3-4 would cost approximately $19.9 million, while Alternative OU3-5 would cost $55.8 million, due to off-site transport and disposal costs. Alternative OU3-4 involves the consolidation of excavated material at the consolidation area at OU4 instead of the out-of-town disposal that is part of Alternative OU3-5. Alternative OU3-4 would also involve less truck traffic and energy use than Alternative OU3-5.

Former Ballfield (Operable Unit 4)

Alternatives OU4-1 and OU4-2 are not viable because they would leave Raymark Waste in place above unacceptable human-health risk levels and would not comply with ARARs.

Of the remaining alternatives, OU4-3 is the preferred alternative because it would provide for protection against the threats posed by the Raymark Waste currently located on OU4 and allow for the consolidation of Raymark Waste from OU3 and OU6. The alternative would also indirectly address the non-Raymark Waste located on OU4, allowing for redevelopment of the area. Short-term risks from construction activities would be mitigated and managed through controls such as air monitoring and dust suppression. Alternative OU4-3 would cost approximately $45.7 million, while Alternative OU4-4 would cost $144.5 million, due to off-site transport and disposal costs. Alternative OU4-5 would cost $34.1 million, but would not allow for consolidation of Raymark Waste from OU3 and OU6, significantly increasing the costs of those remedies.

OU4-4 would excavate and dispose of all Raymark Waste above the water table at an out-of-town facility, at more than three times the cost of the other two capping alternatives. It would also involve more truck traffic and the long-distance transportation of Raymark Waste to a disposal facility. This alternative would not allow for the consolidation of Raymark Waste from other areas of the Site. OU4-4 also would not address the non-Raymark Waste area located on OU4.

Alternative OU4-5 would involve the construction of a cap over OU4 without any consolidation. Although it would be less expensive than the preferred capping and consolidation alternative, it would not allow for the consolidation of Raymark Waste from OU3 or OU6 which would significantly increase overall Site clean up costs. Further, as with Alternative OU4-4, areas with non-Raymark Waste located on OU4 would not be addressed.

Additional Properties (Operable Unit 6)

Alternatives 1 and 2 are not viable because they would leave Raymark Waste in place above unacceptable human-health risk levels and would not comply with ARARs. Significant areas of fill material (Raymark Waste) from the former Raymark facility would remain beneath the OU6 properties, and in some cases, Raymark Waste is exposed at ground surface. In other areas, Raymark Waste remains just below ground surface or pavement and is subject to ongoing erosion or disturbance. Without a final, permanent remedy to remove or isolate and contain these contaminants, there would be continued opportunity for people to be exposed to the contamination. In areas where contaminated soil and sediment are exposed, asbestos fibers and other contaminants may continue to be released to the air and inhaled. People may unknowingly also come in direct contact with lead, copper, PCBs, and other contaminants.

EPA recommends Alternative 9 as the preferred alternative. It would provide protection against the potential threats posed by direct contact with Raymark Waste by excavating contaminated soil, and by backfilling and creating clean four-foot soil covers over any remaining contaminated materials. Ongoing minimal maintenance of these soil covers would meet state requirements for direct exposure criteria and alternative pollutant mobility criteria. The four-foot soil covers would also allow for most routine activities by the property owners (such as installing posts or accessing utilities) without unduly restrictive institutional controls.

Alternative 9 is as protective as Alternative 10 but is much less costly. Alternative 9 would cost approximately $27.0 million, while Alternative 10 would cost $69.0 million, due to off-site transport and disposal costs. Alternative 10 does not provide any additional protectiveness at a significantly higher cost. Also, Alternative 10 involves more truck traffic and energy use than Alternative 9 due to the need for long-distance transport of Raymark Waste.

It is EPA's current judgment that the preferred alternative identified in this Proposed Plan, or one of the other active measures considered in this Proposed Plan, is necessary to protect public health, welfare, or the environment from actual or threatened releases of hazardous substances into the environment.

Based on information currently available, EPA believes the preferred alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. EPA expects the preferred alternative to satisfy the following statutory requirements of CERCLA Section 121(b): (1) be protective of human health and the environment; (2) comply with ARARs (or justify a waiver); (3) be cost effective; (4) use permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and (5) satisfy the preference for treatment as a principal element (or justify not meeting the preference).

EPA has consulted with CTDEEP regarding this Proposed Plan. EPA has also held numerous discussions with local official, community leaders and some of the more impacted residents regarding this proposal and has attempted to address concerns to the extent practical.

WHAT IS A FORMAL COMMENT?

EPA will accept public comments regarding this Proposed Plan during a 30-day formal comment period. EPA considers and uses these comments to decide upon, and improve its clean up approach. During the formal comment period, EPA will accept written comments via mail, e-mail, and fax as described below. The public comment period lasts a minimum of 30 days. If requested, EPA will typically grant a 30 day extension.

Additionally, verbal comments may be made during the formal public hearing on July 26, 2016, during which a stenographer will record all offered comments for the Administrative Record. As a practical consideration, verbal comments should be limited in duration (e.g., 2 or 3 minutes) in order to allow all individuals present at the hearing to have an opportunity to speak their comments into the official record. Verbal comments may be elaborated in writing during the comment period and will become part of the official record. EPA does not respond to any of the comments at the Public Hearing. EPA, however, will provide a written response to each verbal comment as explained below. At the close of the hearing, EPA staff will remain available to answer questions.

EPA will hold an Open House and public informational meeting on July 20, 2016. The informational meeting will include a detailed Power Point presentation of the alternatives and other information presented in this Proposed Plan, and will allow for open discussion of questions and concerns with staff from EPA, CTDEEP and the Stratford Board of Health. The Open House will not include a formal presentation, but will present the Proposed Plan as a series of posters and will allow for one-on-one discussions with staff from EPA, CTDEEP, and the Stratford Department of Health. Comments made during the informational meeting and Open House will not be part of the official record.

EPA will also hold a brief informational meeting immediately prior to the start of the formal Public Hearing. This meeting will include a summary overview of this Proposed Plan by EPA staff, and will allow for some discussion prior to opening the formal public hearing. Comments made during the brief informational meeting will not be part of the official record.

Once the public comment period is closed, EPA will review the transcript of all formal oral comments recorded during the Public Hearing, and all written comments received during the formal comment period, before making a final clean up decision. EPA will then prepare a written response to all the formal oral and written comments received. Your formal comment will become part of the official public record. The transcript of comments and EPA's written responses will be issued in a document called a Responsiveness Summary when EPA releases the final clean up plan, in a document referred to as a Record of Decision. The Responsiveness Summary and Record of Decision will be made available to the public online, at the Stratford Public Library, and at the EPA Records Center (see addresses below). EPA will announce the final decision on the clean up plan through the local media and on EPA's website.

FOR MORE DETAILED INFORMATION:

Select technical and public information, including the Administrative Record for this Proposed Plan, which includes all documents that EPA has considered or relied upon in proposing this clean up plan for OUs 2, 3, 4, and 6 of the Raymark Industries, Inc. Superfund Site, are available for public review and comment at the following locations:

EPA Records and Information Center
5 Post Office Square
Boston, Massachusetts
617-918-1440

Stratford Public Library
2203 Main Street
Stratford, Connecticut
203-385-4161

The Administrative Record and other information is also available for review online at www.epa.gov/superfund/raymark

SEND US YOUR FORMAL COMMENTS:

Provide EPA with your formal written comments about the Proposed Plan for the Raymark Industries, Inc. Superfund Site for the official record.
Please e-mail **(dilorenzo.jim@epa.gov)**, fax (617-918-0247), or mail comments, postmarked no later than July 29, 2016 to:

Jim DiLorenzo
U.S. EPA Region I
5 Post Office Square, Suite 100
Mailcode OSRR07-4
Boston, MA 02109-3912

Acronyms

AOC	area of concern
ARARs	Applicable or Relevant and Appropriate Requirements
ATSDR	Agency for Toxic Substances and Disease Registry
CAMU	Corrective Action Management Unit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
CTDEEP	Connecticut Department of Energy and Environmental Protection
DA	Downgradient Area
DEC	Direct Exposure Criteria
dL	deciliter
DNAPL	dense non-aqueous phase liquid
DPW	Department of Public Works
EPA	United States Environmental Protection Agency
FS	Feasibility Study
HI	Hazard Index
IEUBK	Integrated Exposure Uptake Biokinetic
kg	kilogram
µg	microgram
mg	milligram
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
PHC	Principal Hazardous Constituent
PMC	Pollution Mobility Criteria
PCB	polychlorinated biphenyl
ppm	parts per million
PV	present value
RAC	Raymark Advisory Committee
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RfD	reference dose
RI	Remedial Investigation
ROD	Record of Decision
RSR	Remediation Standard Regulation
RST	Raymark Superfund Team
SA	Source Area
SAFE	Stratford Action for the Environment
SSDS	sub-slab depressurization system
TBC	To-Be-Considered
TCE	trichloroethene
TSCA	Toxic Substances Control Act
VI	vapor intrusion
VOC	volatile organic compound

In accordance with Section 117 of the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §9601 et seq. (CERCLA), the law that established the Superfund program, this document summarizes EPA's clean up proposal for portions of the Raymark Industries, Inc. Superfund Site. For more detailed information concerning the remedial alternatives evaluated for use at the Site, please refer to the Feasibility Study documents for OUs 2, 3, 4 and 6, and their accompanying Administrative Records. These documents are available for review online at **www.epa.gov/superfund/raymark** or at the Site information repositories at the Stratford Public Library, 2203 Main Street, Stratford, CT 06615, and at the EPA New England Records Center, 5 Post Office Sq., First Floor, Boston, MA 02109.

RAYMARK INDUSTRIES SUPERFUND SITE SUMMARY OF OPERABLE UNITS

Operable Unit 1: Former Raymark Facility - Location of former manufacturing facility - approximately 33 acres in size. In a removal action from 1991-1995, EPA excavated soil contaminated with Raymark Waste from 46 residential properties and consolidated approximately 100,000 cubic yards of the waste at the former facility property. OU1 is complete with an impermeable cap over contaminated soils and active contaminant recovery systems. CTDEEP took over O&M in 1998. The site has been redeveloped and now houses a Home Depot, ShopRite Supermarket, Walmart, and Webster Bank.

Operable Unit 2: Groundwater (Site wide) - The groundwater investigation focuses on a 500 acre area - extending from the facility to a surface water body (Ferry Creek) to the Housatonic River. Contaminants include volatile organic compounds VOCs (50,000+ ppm) and metals. Groundwater is not used as a drinking water supply in Stratford. VOCs were found to be volatilizing into buildings (primarily residential dwellings). In 2003-4, EPA and CTDEEP installed 106 sub-slab ventilation systems into residential homes (two were commercial buildings) to mitigate potential vapor intrusion.

Operable Unit 3: Upper Ferry Creek - This area encompasses Ferry Creek and approx. 5 acres of adjacent wetlands where Raymark Wastes were deposited through dumping or erosion. Primary risks are from contaminated sediment.

Operable Unit 4: Raybestos Memorial Field - Former ballfield and park that was built on top of over 100,000 CY of contaminated Raymark Wastes. Upwards of 18 feet of contaminated fill is found on portions of this 14 acre area. Under a 1992 removal action, the area was fenced, drums were removed, and a temporary six inch soil cover was placed over the Raymark Waste area.

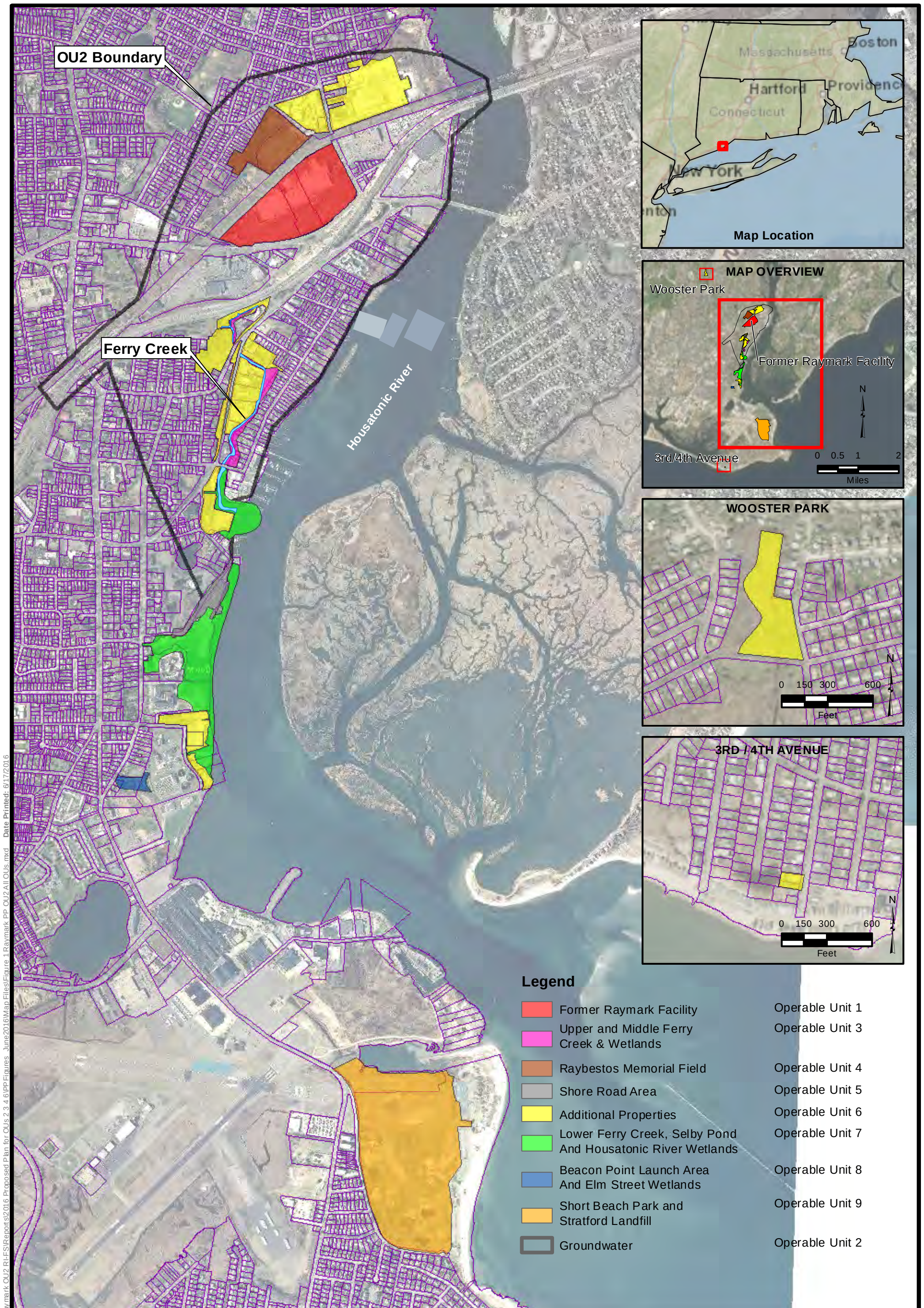
Operable Unit 5: Shore Road - Four acre area at the Housatonic Boat Club and near the former Shakespeare Theater bordering on the Housatonic River. Area was previously a wetland which was filled with Raymark Waste and other contaminated material. EPA installed a soil and asphalt cap in 2000.

Operable Unit 6: Additional Properties - This 151.7 acre area consists of 25 individual properties (17 commercially owned, two residentially owned, two state owned, and four town owned) that contain Raymark Waste.

Operable Unit 7: Lower Ferry Creek – Formerly part of OU3, this area includes approx. 26 acres of wetlands, shoreline, and a small pond. Risks are predominately ecological; however, human health risks are present from potential exposure to contaminated sediment.

Operable Unit 8: Beacon Point Area 2 – Formerly part of OU3, this area includes approximately 14 acres of wetlands and shoreline along the Housatonic River. Risks are predominately ecological, however, human health risks are present from potential exposure to contaminated sediment.

Operable Unit 9: Short Beach Park and Stratford Landfill - OU9 is approx. 94 acres in size consisting of a municipal landfill and portions of an abutting recreational area. The areas are former disposal sites containing Raymark Wastes. Between 1993 and 1995, the State installed approximately five feet of soil cover over a portion of the area containing Raymark Waste so that the area could be used for soccer fields.



Notes:

1. Aerial photography provided by ESRI.

FIGURE 1
RAYMARK
OPERABLE UNITS LOCATIONS


FIGURE 2
FINISHED GRADES
ALTERNATIVE OU4-3
GRAPHIC SCALE
BARNUM AVENUE CUT-OFF U.S. ROUTE #1
EAST MAIN STREET
SIDNEY ST.
WAL-MART
SHOP RITE
HOME DEPOT
RAILROAD
CLINTON AVE.
PATTERSON AVE.
PEARD TER.
HURD AVE.
COTTAGE PLACE

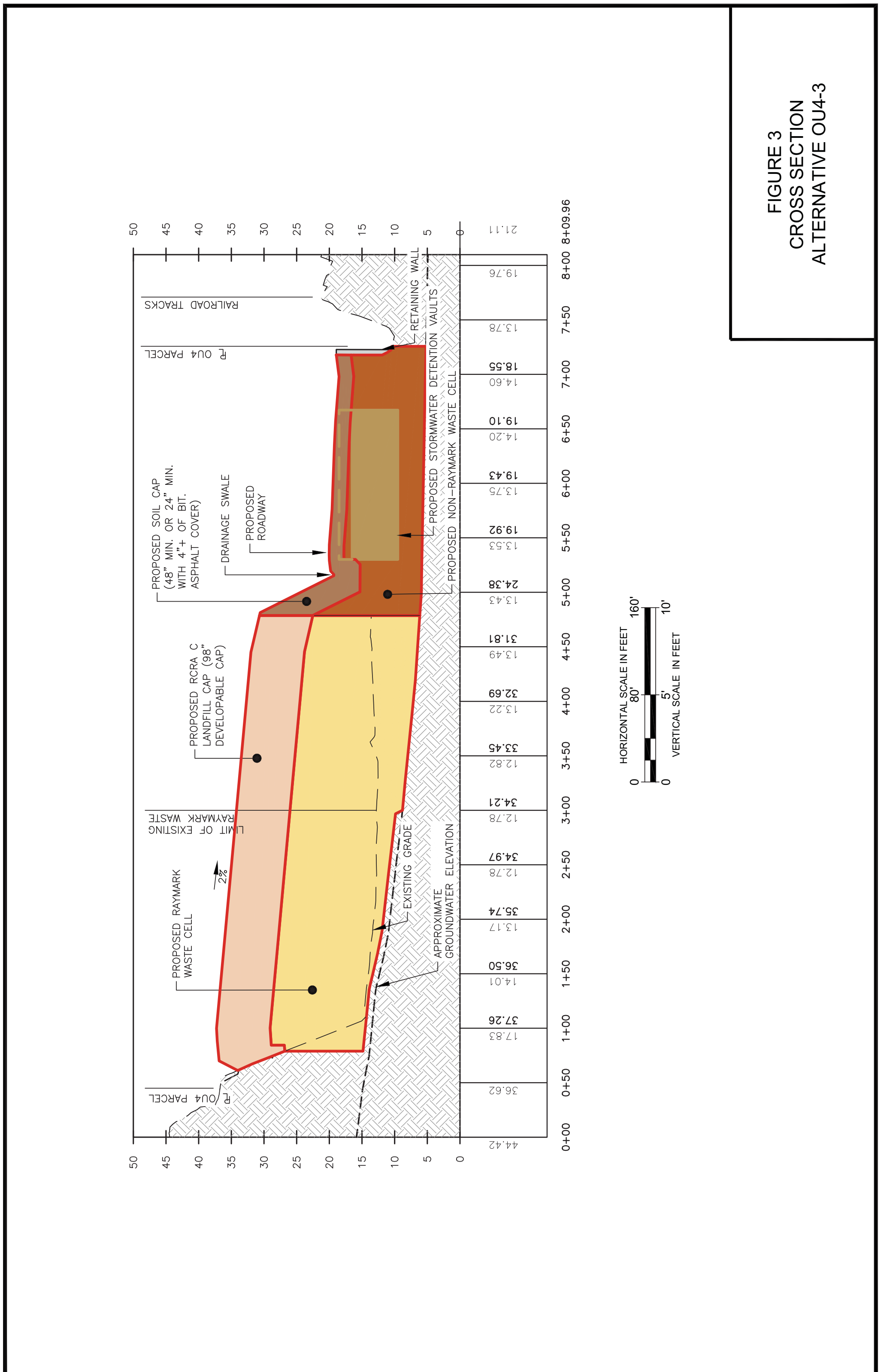
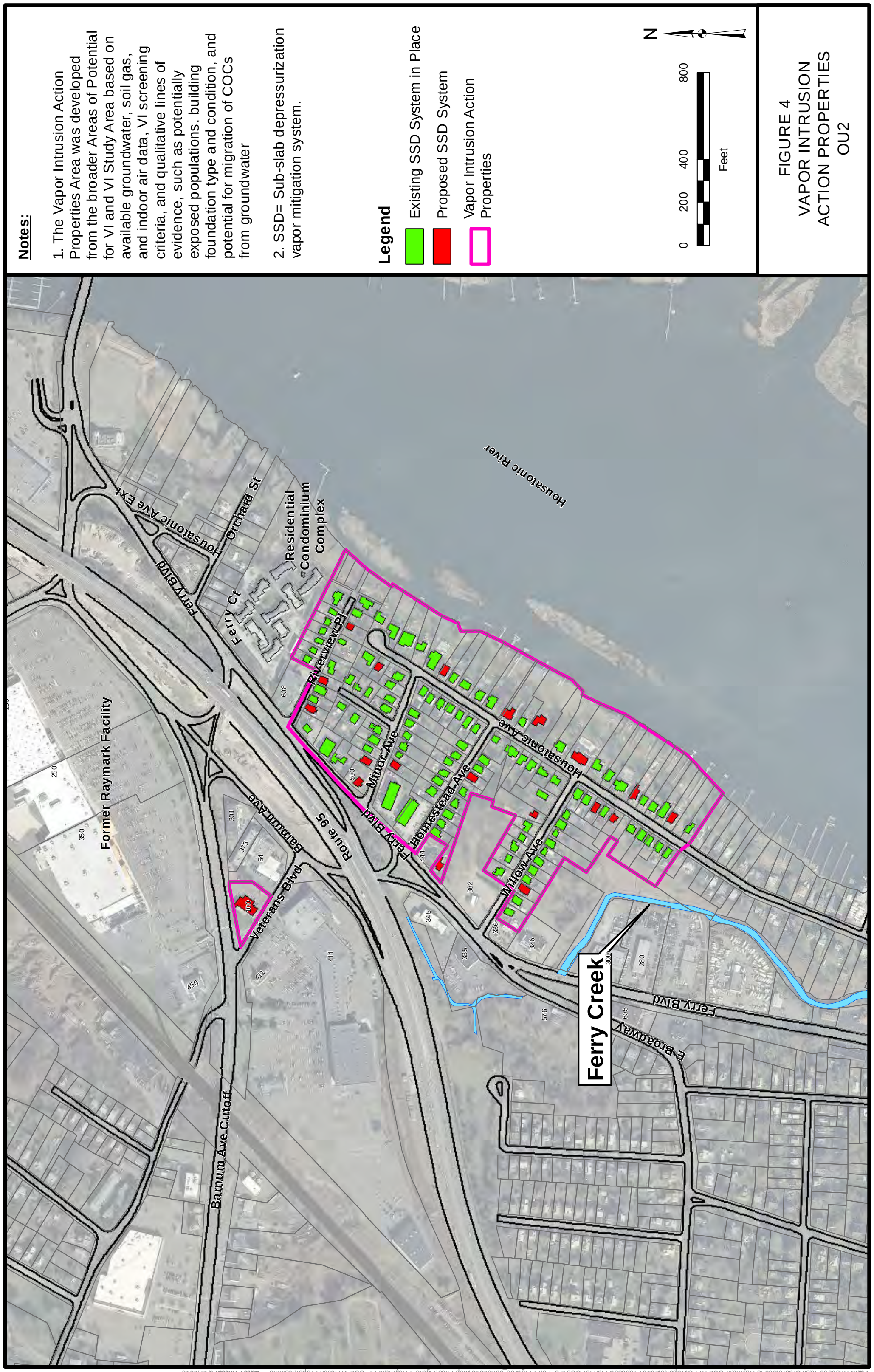


FIGURE 3
CROSS SECTION
ALTERNATIVE OU4-3
RAILROAD TRACKS
℄ OU4 PARCEL
PROPOSED SOIL CAP (48" MIN. OR 24" MIN. WITH 4"+ OF BIT. ASPHALT COVER)
DRAINAGE SWALE
PROPOSED ROADWAY
RETAINING WALL
PROPOSED STORMWATER DETENTION VAULTS
PROPOSED NON-RAYMARK WASTE CELL
PROPOSED RCRA C LANDFILL CAP (98" DEVELOPABLE CAP)
LIMIT OF EXISTING RAYMARK WASTE
PROPOSED RAYMARK WASTE CELL
2%
EXISTING GRADE
APPROXIMATE GROUNDWATER ELEVATION
HORIZONTAL SCALE IN FEET
VERTICAL SCALE IN FEET


Notes:
1. The Vapor Intrusion Action Properties Area was developed from the broader Areas of Potential for VI and VI Study Area based on available groundwater, soil gas, and indoor air data, VI screening criteria, and qualitative lines of evidence, such as potentially exposed populations, building foundation type and condition, and potential for migration of COCs from groundwater
2. SSD= Sub-slab depressurization vapor mitigation system.
Legend
Existing SSD System in Place
Proposed SSD System
Vapor Intrusion Action Properties
0 200 400 800
Feet
N
FIGURE 4
VAPOR INTRUSION
ACTION PROPERTIES
OU2
Housatonic River
Residential Condominium Complex
Former Raymark Facility
Ferry Creek
Housatonic Ave Ext
Orchard St
Ferry Blvd
Ferry Ct
Riverview Pl
Minor Ave
Homestead Ave
Housatonic Ave
Willow Ave
Route 95
Barnum Ave
Veterans Blvd
Barnum Ave Cutoff
E Broadway

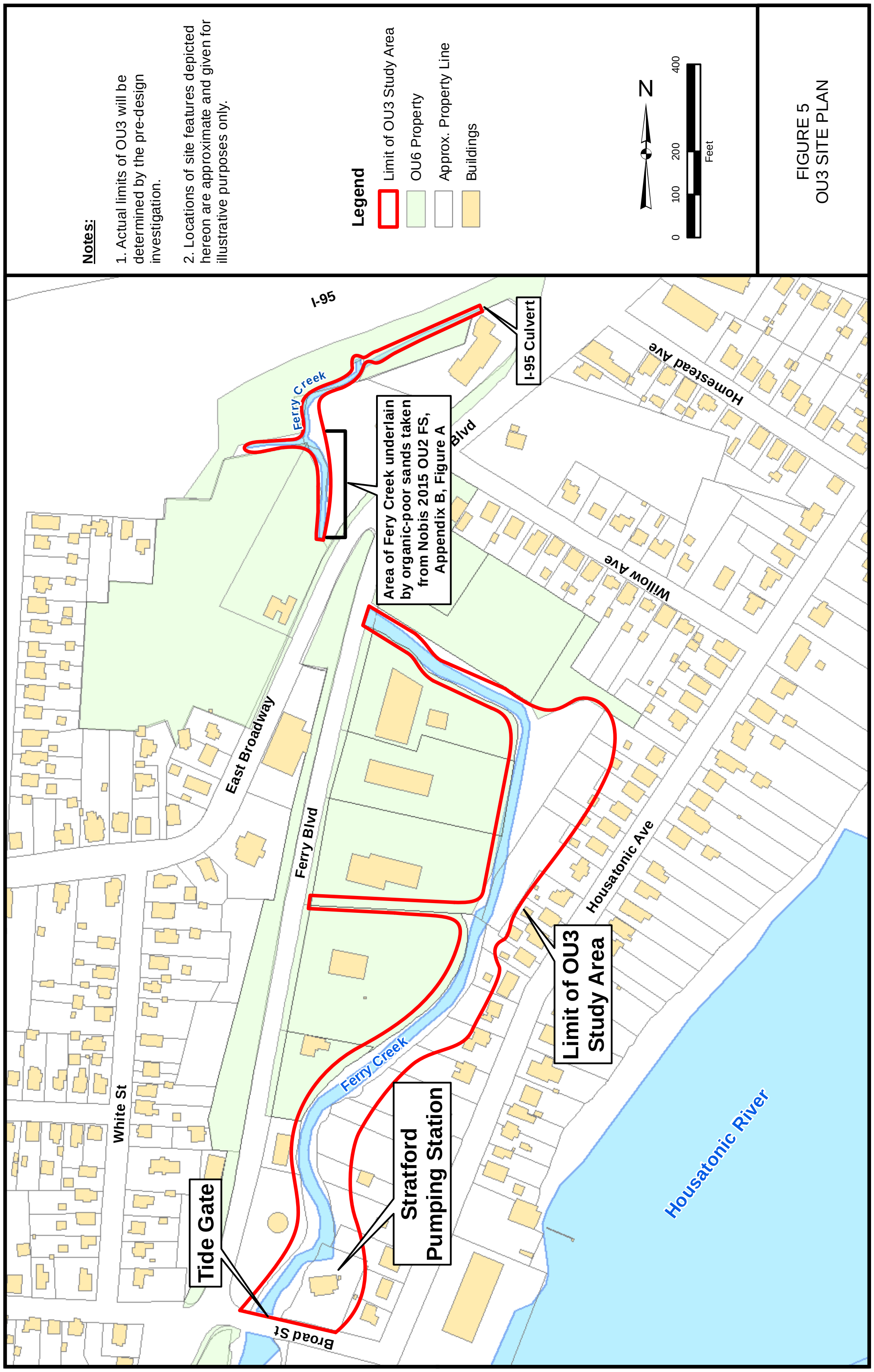


FIGURE 5
OU3 SITE PLAN

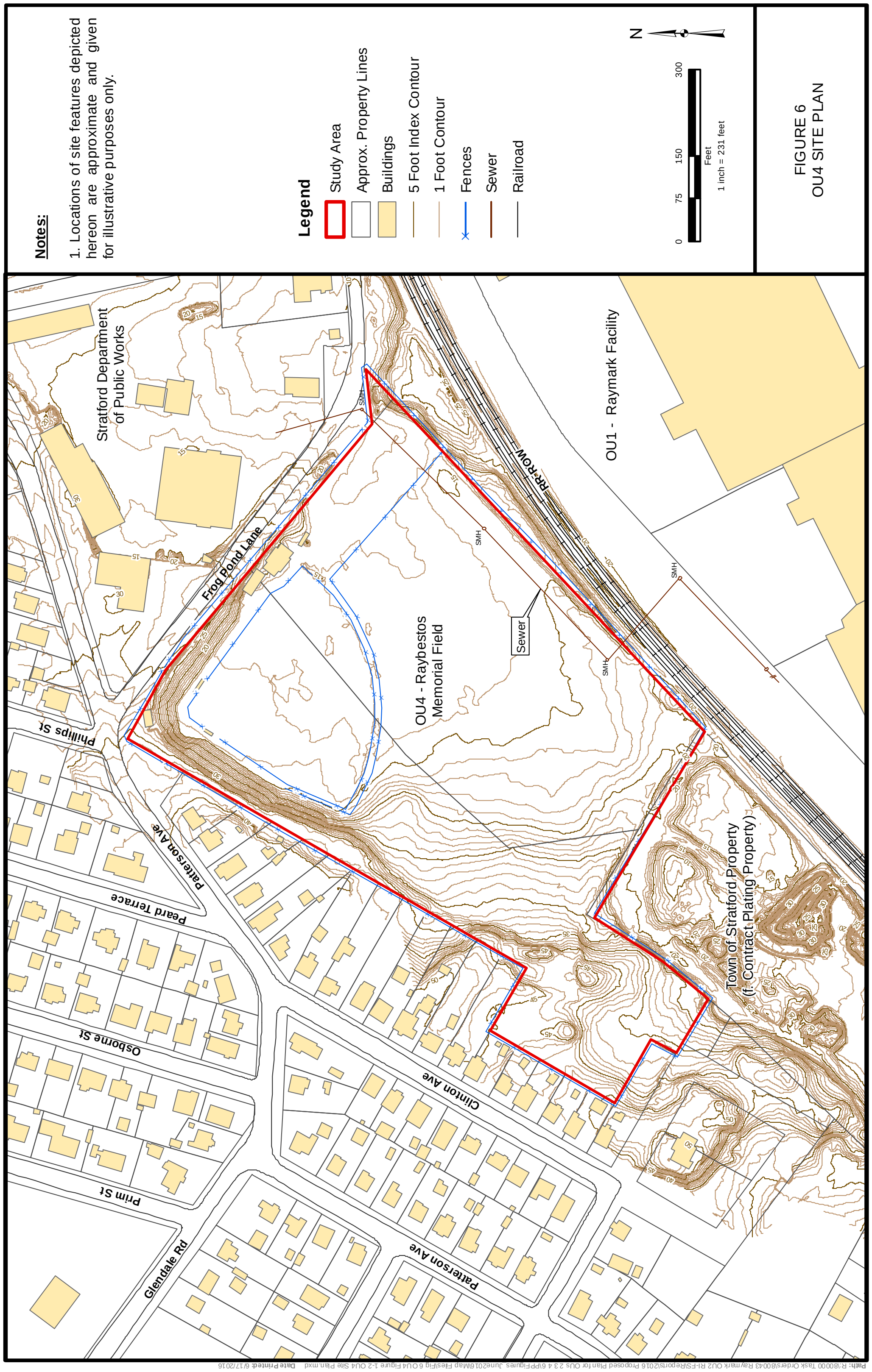
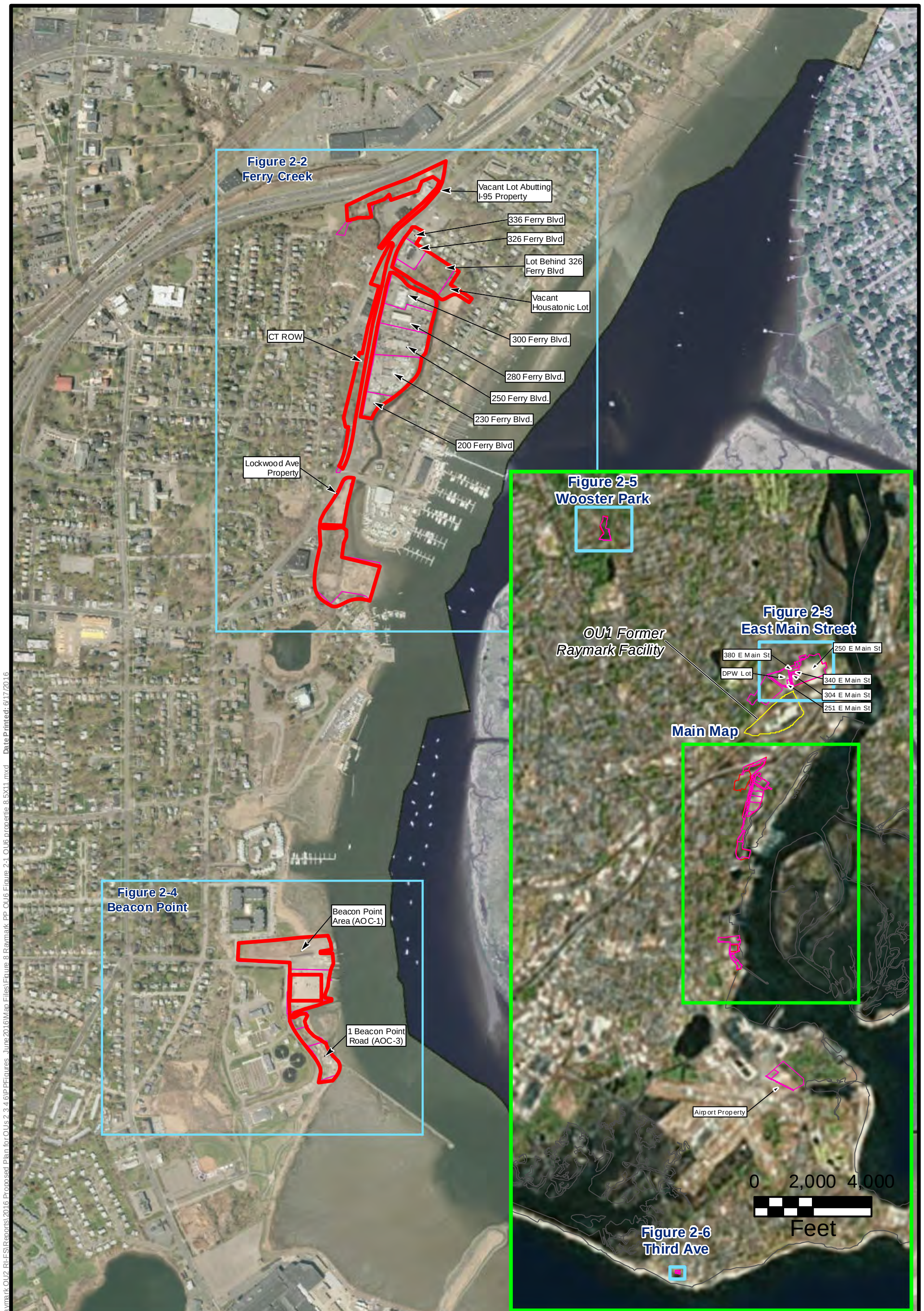

Notes:
1. Locations of site features depicted hereon are approximate and given for illustrative purposes only.
Legend
Study Area
Approx. Property Lines
Buildings
5 Foot Index Contour
1 Foot Contour
Fences
Sewer
Railroad
N
0
75
150
300
Feet
1 inch = 231 feet
FIGURE 6
OU4 SITE PLAN
Stratford Department of Public Works
OU1 - Raymark Facility
OU4 - Raybestos Memorial Field
Town of Stratford Property (f. Contract Plating Property)
Frog Pond Lane
RR ROW
Sewer
SMH
Phillips St
Patterson Ave
Peard Terrace
Osborne St
Clinton Ave
Prim St
Glendale Rd
Patterson Ave


FIGURE 7
CONCEPTUAL
REDEVELOPMENT PLAN
OU4



Notes:

1. Aerial photography provided by ESRI.

2. Locations of site features depicted hereon are approximate and given for illustrative purposes only.

0 250 500 1,000
Feet

N

FIGURE 8
OU6
PROPERTIES LOCATIONS

DRAFT

RAYMARK INDUSTRIES, INC. SUPERFUND SITE FINAL TSCA 40 C.F.R. § 761.61(c) DETERMINATION

On June 30, 2016, EPA issued, for public review and comment, a Proposed Plan and Administrative Records for four of the eight (8) remaining Operable Units (OUs) at the Raymark Industries, Inc. Superfund Site. The four OUs include:

1. OU2 – Site Groundwater
2. OU3 – Upper Ferry Creek
3. OU4 – Raybestos Memorial Ball Field
4. OU6 – Additional Properties (22)

The proposed remedy includes excavation of Raymark waste from OU3 and OU6; and in-town consolidation with existing Raymark waste at OU4. OU2 includes the installation and maintenance of sub-slab depressurization systems to capture vapors from groundwater. After considering all comments received, EPA has issued a Record of Decision (ROD) selecting a remedy for each of the four OUs. The ROD incorporates a Responsiveness Summary that fully responds to the comments received.

Consistent with 40 C.F.R. § 761.61(c) of the Toxic Substance Control Act (TSCA), I have reviewed the ROD and the Administrative Records for the four OUs. As required by 40 C.F.R. § 761.61(c), I have determ ined that the remedies selected in the ROD for the four OUs do not pose an unreasonable risk of injury to health or the environment as long as the following conditions are met:

1. Engineering controls for dust suppression shall be used during excavation activities. An Air Quality Management and Monitoring Plan shall be developed that includes the following: means and methods used to perform the excavation and waste handling, that minimizes airborne particulates; air monitoring procedures, parameters, and detection limits; air action levels, and corrective measures. Air quality shall be monitored until all remedial activities are complete, including backfilling.

2. Engineering controls for the collection and management of liquids from dewatering of soils and sediments, surface water runoff, dust suppression water, and decontamination water shall be used during excavation, storage, and decontamination activities to ensure that the PCB concentrations in any dewatered liquids, surface water runoff, dust suppression water, and decontamination water from the Site comply with applicable discharge permit requirements prior to discharge to a publicly owned treatment works (POTW) or to surface water.

3. PCB-contaminated soil that is excavated for disposal rather than for consolidation into OU4, shall be placed on an impermeable liner and securely covered in accordance with 40 C.F.R. § 761.65(c)(9) during temporary storage for disposal characterization. Hay bales or other erosion control devices shall be placed around all stockpiles. In the event that the stockpile PCB concentration is higher than the in situ PCB concentrations of the excavated soil, the stockpile shall be disposed of based on the higher PCB concentration.

4. Decontamination procedures for excavation equipment and other moveable equipment and vehicles shall be established to ensure that equipment and vehicles are appropriately decontaminated prior to leaving each work area.

5. Following completion of the OU4 cap, institutional controls shall be implemented to ensure the efficacy of the remedy by restricting, without limitation, disturbance of the cap, residential use of the property, and use of the groundwater. A monitoring and maintenance plan for the cap and groundwater shall be developed that includes, at a minimum, groundwater monitoring, monthly inspection and maintenance of the cap, and annual reporting of existing conditions. As required by CERCLA, five year reviews of the OU4 remedy and site conditions shall be conducted.

6. Following the excavation remedies at OU3 and the twenty two (22) OU6 properties, PCB confirmatory samples shall be collected to verify that the lateral extent for removal of Raymark waste has been achieved. A minimum of one sample or one sample per 30 linear feet, whichever is greater, shall be collected from each excavation area.

7. Following the excavation remedy at the twenty two (22) OU6 properties, a minimum of 4 feet of clean backfill shall be installed. Institutional controls shall be implemented to restrict excavation of the clean soil covers and the use of groundwater. Annual inspections of the soil cover at each property shall be conducted with submittal of annual inspection reports. Quarterly groundwater monitoring shall be conducted for the first two years after remedy implementation is completed with quarterly inspection reports. An evaluation of the groundwater data shall be conducted following the initial two year monitoring program to determine what the subsequent monitoring frequency shall be. As required by CERCLA, five year reviews of the OU6 remedy and site conditions at each of the 22-OU6 properties shall be conducted.

8. Following the excavation remedy at OU3, a minimum of 4 feet of clean backfill shall be installed above the channel high water line and a minimum of 2 feet of clean sediment shall be installed within the channel. Institutional controls shall be implemented to restrict excavation of the clean soil and sediment, and the onsite use of surface water and groundwater. Annual inspections of the clean covers (caps) shall be conducted with submittal of annual inspection reports. Quarterly surface water and groundwater monitoring shall be conducted for the first two years after remedy implementation is completed with quarterly inspection reports. An evaluation of the surface water and groundwater data shall be conducted following the initial two year monitoring program to determine what the subsequent monitoring frequency shall be. As required by CERCLA, five year reviews of the OU3 remedy and site conditions shall be conducted.

Bryan Olson, Director
Office of Site Remediation and Restoration
EPA Region I

Date